

**NATIONAL PARK SERVICE
U.S. DEPARTMENT OF THE INTERIOR**

Appalachian National Scenic Trail
Harpers Ferry, West Virginia

Harpers Ferry National Historical Park
Harpers Ferry, WV



Dominion Virginia Power Mount Storm - Doubs Line 551 Electric Power Transmission Line Rebuild and Upgrade

*Appalachian National Scenic Trail and Harpers Ferry
National Historical Park*

Environmental Assessment/Assessment of Effect

July 2012

PROJECT SUMMARY

The geographic location of the proposed work is in adjacent sections of Appalachian National Scenic Trail (APPA) and Harpers Ferry National Historical Park (HAFE) near Harpers Ferry, WV. The Virginia and West Virginia boundary divides the project area. The focus of this environmental assessment (EA) is to consider the construction permit submitted by Dominion Virginia Power (DVP) to upgrade and reconfigure the existing transmission lines that currently run through the location in an established right-of-way (ROW). These lines are bordered on the west by the HAFE boundary and on the east by the APPA boundary.

The National Park Service (NPS) is preparing this EA to evaluate the potential impacts to the human, natural, and cultural environment of the proposed transmission configuration proposed for the existing transmission lines on park property. DVP, in cooperation with the NPS, proposes to upgrade and reconfigure the existing single-circuit structures within its corridor from the Mount Storm Substation east to the Doubs Substation. The current right-of-way (ROW) contains two transmission lines: the DVP single-circuit 500 kV line and a FirstEnergy-owned single-circuit 138 kV line. DVP proposes to replace its 500 kV line with a new single-circuit 500 kV line to include conductors of upgraded capacity (66% increase from 2,598 Megavolt-Ampere (MVA) to 4,325 MVA) within its existing transmission line ROW. The total length of the upgraded and reconfigured lines from the Mount Storm Substation to the Doubs Substation would be approximately 96.4 miles. Upon the approval of the construction permit, approximately 1,995 feet of transmission lines would be rebuilt within the parks.

The EA evaluates two alternatives: Alternative A, no action, and Alternative B, NPS approval of the construction permit in accordance with the construction plan. DVP and the Virginia State Corporation Commission (SCC) have determined that the rebuilding of the existing transmission line is warranted for public convenience and necessity. Under alternative B, the structures would remain in the currently maintained right-of-way; no new land would need to be cleared or acquired. Under the no action alternative (alternative A), the current configuration of the transmission line would not change.

Note to Reviewers and Respondents: If you wish to comment on the EA, you may mail comments directly or submit them electronically. Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Mailed comments can be sent to:

National Park Service
National Capital Region
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1100 Ohio Dr. SW
Washington, DC 20242

Comments can also be submitted online by following the appropriate links at:
<http://parkplanning.nps.gov/MSD551>

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PURPOSE AND NEED

Introduction

Virginia Electric and Power Company ("Dominion Virginia Power" or DVP) proposes to rebuild a portion of the existing 500 kV Mt. Storm-Doubs Line #551 (hereinafter MSD 551) that crosses in its 160 foot-wide existing perpetual easement through approximately 940 feet of Harpers Ferry (HAFE) National Historical Park (NHP) and 1055 feet of the Appalachian National Scenic Trail (APPA) (Figure 1). DVP applied to the National Park Service (NPS) – the landowner – to do the rebuild, and the NPS conditionally accepted the permit application. DVP states in its application that it is rebuilding the entire line, including the portions inside the Parks, to replace and upgrade the aging infrastructure. The MSD 551 project would remove existing weathering steel COR-TEN® lattice towers, originally constructed in 1966, and conductors and replace them with new 500 kV galvanized steel lattice towers and 3-1351 ACSR conductors over the entire length of the MSD 551 Line. Inside the parks, one tower in HAFE, two towers in APPA, and the length of the conductor over the right-of-way (ROW) are proposed for replacement. DVP has applied for and received a certificate of public convenience and necessity (CPCN) from the Virginia State Corporation Commission (VA SCC), and received approval to proceed without a CPCN from the West Virginia Public Service Commission (WV PSC) for the portions outside NPS land.

The project area is the existing corridor of the MSD 551 transmission line inside two units of the National Park System, HAFE and APPA. In its entirety, the MSD 551 line currently runs 99.26 miles from DVP's Mt. Storm Power Station in Grant County, West Virginia to The Potomac Edison Company's Doubs Substation in Maryland. Dominion Virginia Power's portion of the MSD 551 line is 96.4 miles long, of which 65.7 miles are in West Virginia and 30.7 miles are in Virginia. Potomac Edison owns the remaining 2.86 miles of the line which are in Maryland. From the west, the line and existing ROW enter HAFE at the far southern tip of Tract 109-02 ("Loudoun Heights") and traverses through to the border with APPA and the Eastern edge of the APPA boundary (Fig. 1). An existing 138 kV transmission line owned by FirstEnergy lies adjacent to MSD 551 inside the same cleared ROW. MSD 551 occupies the southern half (160 feet) and the FE line occupies the northern half (150 feet) of the ROW.

The alternatives assessed range from a "no-build" and consequent maintenance of current conditions to the DVP-proposed total rebuild. Within the build alternatives there are tower design and tower placement - which affects tower height - options for a total of three potential designs.

The total rebuild is a disassembly and subsequent installation of an upgrade of the facilities in which the height of towers and conductor density would be increased. Each circuit would contain tri-bundle conductors, or three wires - an increase from the existing dual-bundle. The height change is needed to support the heavier lines. The proposed towers are lattice-type steel structures.

This EA was completed in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended, and implementing regulations, 40 Code of Federal Regulations (CFR) Parts 1500-1508, NPS Director's Order 12 (DO-12): *Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 2010) and the accompanying DO-12 Handbook. This document has also been prepared to comply with the requirements of Section 106 of the NHPA in accordance with the regulations of the ACHP 36 CFR 800.8

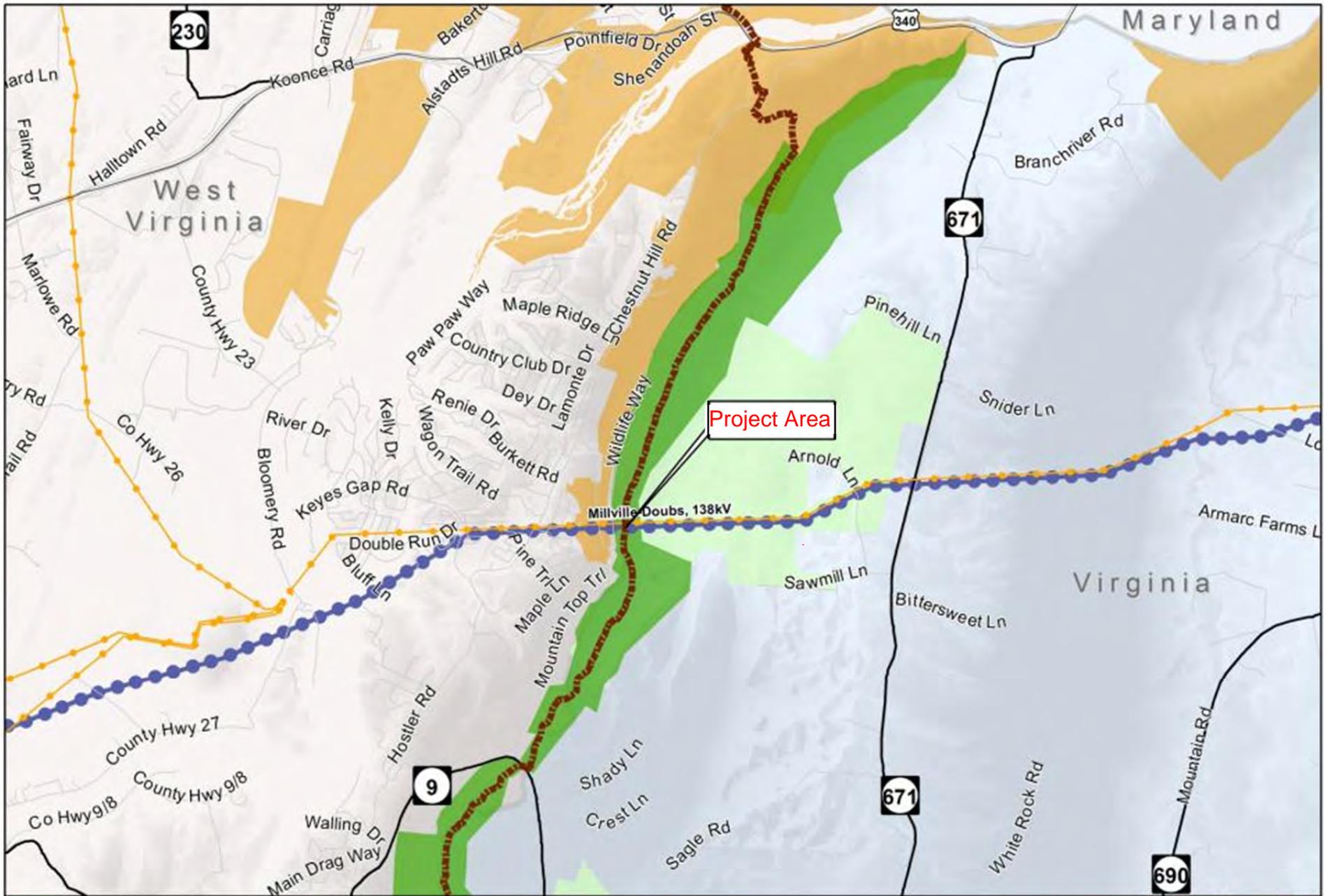
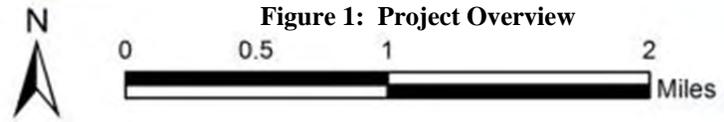


Figure 1: Project Overview



- - - Appalachian Trail
- - - 138kV/230kV
- - - 69kV/115kV
- - - Mt. Storm to Doubs 500kV Line
- NPS APPA Land
- Non-Profit Easement
- HAFE National Historic Park

Purpose of and Need for Action

Dominion Virginia Power

DVP's proposed action is replacing MSD 551. The applicant's stated purpose is to improve the safety of its facilities – which cannot be accomplished by maintenance alone – and to bring them into compliance with the current operating standards. According to the company, a total rebuild is necessary to ensure long-term safe, efficient, and reliable power transmission to customers. Upgrading of the conductor component of the line would increase the capacity of the line by approximately 66%, from 2,598 MVA to 4,325 MVA (NPS 2011a).

Review of appended materials to DVP's DOI Standard Form-299 Application for Transportation and Utility Systems and Facilities on Federal Lands (hereinafter "SF-299") identifies specific safety concerns with current materials. These include the deterioration of the COR-TEN® steel in many towers along the entire line. There are obvious dangers associated with undetected fractures in the towers and the project proposal would remove the danger from rusting structural components.

National Park Service

The NPS action is to determine whether and under what conditions to permit DVP to undertake construction on Park lands. DVP has applied with the SF-299 for facility removal, facility redesign, tower and footings placement change and associated rehabilitation of old footings. In conditionally accepting the permit application, the NPS must develop the alternatives for fulfilling the proposed project in a manner in which natural and cultural resources are protected. While the ROW in which construction would take place predates park boundary establishment in the area, the best practice on federal land is to limit new ground disturbance and allow for environmentally sound maintenance and refurbishment in existing ROWs. Also, since the proposal has completely new tower types and heights, and a completely new conductor type and configuration, the NPS is required to analyze these changes to existing characteristics in their impacts to park resources.

NPS action is required because DVP has a perpetual easement for the ROW recorded prior to NPS acquisition of the property. The easement agreement (Appendix A, Attachment 1) stipulates that DVP is assigned "the perpetual right, privilege and easement of right of way One Hundred and Sixty (160) feet in width, to construct, operate and maintain transmission line of poles towers or structures as Company may from time to time deem expedient or advisable, located on the right of way hereinafter described, for the purposes of transmitting electric power by one or more circuits, including all wires, poles, towers, attachments, ground connections, equipment, accessories and appurtenances desirable in connection therewith (hereinafter referred to as "facilities"), over, upon and across the lands of Owner...", and "...Company shall have the right to inspect, rebuild, remove, repair, improve, relocate on the right-of-way above described, and make such changes, alterations, substitutions, additions to or extension of its facilities as Company may from time to time deem advisable..."

The regulations of the NPS are applicable on NPS lands in which the United States owns a partial interest or a fee interest subject to an easement (See 36 C.F.R. § 1.2). Construction is generally forbidden without a permit (See 36 C.F.R. §§ 5.7, 1.6). The NPS may condition this permit, but may not deny DVP the use of its property interest. This document and future decision document are needed to identify any conditions for the permit application approval as well as to ensure the continued management of park resources and visitor experience are not degraded but preserved in perpetuity.

Project Background

Project History

The DVP portion of the MSD 511 line crosses two states: Virginia and West Virginia. Accordingly, the company is required by state law to secure authorization from the public utility regulatory bodies of each state before it can undertake replacement of the line.

In Virginia, the VA SCC is responsible for determining the need, route and environmental impact of transmission lines at 138 kV and above. Dominion submitted an application with the SCC on January 18, 2011 for authority to construct the rebuild, case number PUE-2011-00003. On September 1, 2011 the SCC found Dominion's application to construct and operate the proposed 500 kV Mt. Storm – Doubs transmission line is justified and a CPCN should be issued authorizing the construction and operation of the proposed project. The SCC ordered the transmission line shall be constructed and in service by July 1, 2015.

In West Virginia, the PSC is the responsible regulatory body. Dominion consulted with the PSC regarding the requirements of their regulatory laws. On December 16, 2010 the Public Service Commission of West Virginia concluded that Dominion's planned replacement of the existing facilities does not require a Certificate of Convenience and Necessity because it is an ordinary extension of an existing system in the usual course of business.

While a small portion of the line is located in Maryland, it is owned and operated by FirstEnergy, not Dominion. FirstEnergy would need to work with the Maryland Public Service Commission to secure approval in that state should it be deemed necessary.

On October 13, 2010, DVP representatives met with APPA and HAFE staff to discuss the project, and DVP was informed on October 25, 2010 that an EA would be needed for the proposed project. DVP signed and submitted SF-299 on June 3, 2011. The SF-299 was conditionally accepted by the NPS National Capital Region (NCR) and Northeast Region (NER) directorates on August 22, 2011. Park and Regional NPS staff met with representatives from DVP on July 8, 2011 at the NPS NCR Office to discuss the schedule and staff needs for completing an EA to inform the Parks' final decision on the application. The parties agreed on terms to fund completion of the EA by NPS personnel through cost recovery as authorized by 36 C.F.R. § 14.22(4). DVP noted its desire to hire a consultant to perform data collection needed to fill NPS-determined data gaps in project analysis and the NPS concurred with the arrangement.

Purpose and Significance of Appalachian National Scenic Trail and Harpers Ferry National Historical Park

Significance statements capture the essence of the park's importance to the country's natural and cultural heritage. Significance statements are not an inventory of park resources; rather, they describe the park's distinctiveness and help to place the park within its regional, national, and international contexts. Significance statements answer questions such as why are the park's resources distinctive? What contribution do they make to the nation's natural/cultural heritage? Defining a park's significance helps managers make decisions that preserve the resources and values necessary to accomplish the park's purpose.

The two park units are situated adjacently at the border between Virginia and West Virginia. The scenic values of the site are limited by the existing ROW; however the importance of the site to historical and natural values is significant.

Harpers Ferry National Historical Park

Harpers Ferry was designated a National Monument on June 30, 1944, and by act of Congress became a National Historical Park on May 29, 1963. HAFE's purpose is to preserve the Park for the benefit and enjoyment of the people of the United States as a public national memorial commemorating historical events that occurred at or near Harpers Ferry. The significance of HAFE was defined by NPS staff and planning team in the General Management Plan (NPS 2010) as follows:

1. The geography of the Harpers Ferry area has made this a key travel, trade, and communications crossroads from the times of the earliest human habitation by American Indians to the present.
2. George Washington designated Harpers Ferry as the second Federal Armory in 1796 because of its geography and natural resources. It became a center for technological innovation, such as interchangeable parts and a model of the American System of Manufacturing. The Federal Armory provided arms and supplies for the Lewis and Clark expedition.
3. Harpers Ferry preserves the site of John Brown's raid of 1859, an epic event occurring in opposition to slavery, which helped precipitate the Civil War.
4. Harpers Ferry's location 61 miles northwest of Washington, D.C., made it a strategic target for both North and South during the American Civil War. The biggest battle in present-day West Virginia occurred here in September 1862, when Stonewall Jackson forced the largest surrender of U.S. troops during the Civil War. Union forces occupied the town during much of the war, establishing extensive fortifications and enforcing martial law on a civilian population. Due to the Baltimore and Ohio Railroad, Harpers Ferry served as the principal supply base for Union military operations in the Shenandoah Valley during campaigns in 1862, 1863, and 1864.
5. Harpers Ferry hosted a broad range of African Americans, including slaves, freed blacks, and Civil War refugees. Storer College, which was established in 1867, was one of the first institutions of higher learning for former slaves. It was the site of the second Niagara Movement Convention in 1906, where W. E. B. DuBois devised the first modern philosophy and strategy for civil rights. This led to the formation of the National Association for the Advancement of Colored People (NAACP).
6. The view of the confluence of the Shenandoah and Potomac, which inspired Thomas Jefferson to say it is "worth a voyage across the Atlantic," continues to inspire visitors today.

Appalachian National Scenic Trail

In 1938 and 1939, the Appalachian Trailway Agreements were signed in conjunction with the ATC and the states the Trail passed through recognizing the existence of the Trail and the ATC's role to maintain it (NPS 1987). The Trail was managed under these guidelines for the next 30 years. On October 2, 1968, the National Trails System Act was signed, putting the Appalachian Trail under federal management by the NPS. Under the authority of the National Trails System Act and its amendments, the NPS would take administrative rights over the entire Trail, but would delegate certain management functions to private organizations and volunteers dedicated to preserving the Trail (NPS 1987). However, it was not until November 18, 1981 that the United States Government acquired the fee interest in the parcel where the DVP easement is located. Currently, the NPS, the U.S. Forest Service, and more than 30 volunteer-based organizations manage and maintain the Trail.

As stated in the Park's Strategic Plan (NPS 2005), the purpose and significance of the Appalachian National Scenic Trail are as follows:

Park Purpose: The Appalachian National Scenic Trail is administered primarily as a footpath in cooperation with the U.S. Forest Service, the ATC, and the 14 states encompassing the Trail, providing for maximum outdoor recreation potential as an extended Trail and for the conservation and enjoyment of the nationally significant scenic, historic, natural, and cultural resources of the areas through which the Trail passes.

Significance: The Appalachian Trail provides a continuous way from Maine to Georgia for travel on foot through the wild, scenic, wooded, pastoral, and culturally significant lands of the Appalachian Mountains. It is a means of sojourning among these lands, such that visitors may experience them by their own unaided efforts. The body of the Trail is provided by the lands it traverses, and its soul is in the living stewardship of the volunteers and partners of the Appalachian Trail Cooperative Management System.

Relationship to Laws, Executive Orders, Policies, and Other Plans

Applicable State and Federal Laws

NEPA requires that environmental analysis accompany federal decision-making. Under NEPA, federal agencies must prepare an analysis of the environmental effects of their proposed actions, and alternatives to the action, before making a decision. NEPA is intended to inform the agency decision, but does not mandate a particular decision. This EA is prepared pursuant to NEPA's procedural requirements. Three overarching environmental protection laws and policies guide the NPS in conducting NEPA analysis—NEPA and its implementing regulations, the National Parks Omnibus Management Act of 1998 (NPOMA), and the NPS Organic Act.

NEPA is implemented through regulations issued by the Council on Environmental Quality (CEQ) (40 CFR 1500–1508). The NPS has in turn adopted procedures to comply with the act and the CEQ regulations, as found in NPS Director's Order 12 (NPS 2001), its accompanying handbook, and the U.S. Department of the Interior regulations implementing NEPA (Department Manual 12).

NPOMA (16 USC 5901, et seq.) underscores NEPA in that both are fundamental to NPS Park management decisions. Both acts provide direction for articulating and connecting the ultimate resource management decision to the analysis of impacts using appropriate technical and scientific information. Both also recognize that such data may not be readily available, and they provide options for resource impact analysis should this be the case.

NPOMA directs the NPS to obtain scientific and technical information for analysis. The NPS handbook for Director's Order 12 states that "if such information cannot be obtained due to excessive cost or technical impossibility, the proposed alternative for decision will be modified to eliminate the action causing the unknown or uncertain impact or other alternatives will be selected" (sec. 4.4) (NPS 2001).

The **1916 NPS Organic Act** (16 USC 1) commits the NPS to making informed decisions that perpetuate the conservation and protection of Park resources unimpaired for the benefit and enjoyment of future generations. In the Organic Act, Congress directed the U.S. Department of the Interior and the NPS to manage units of the NPS "to conserve the scenery and the natural and historic objects and wildlife therein and to provide for the enjoyment of the same in such a manner and by such a means as will leave them unimpaired for the enjoyment of future generations" (16 USC 1). Congress reiterated this mandate in the

Redwood National Park Expansion Act of 1978 by stating that the NPS must conduct its actions in a manner that will ensure no “derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress” (16 USC 1a-1).

Other applicable NPS guiding laws, regulations, and policies include the following.

Redwood National Park Act of 1978, As Amended

All NPS units are to be managed and protected as Parks, whether established as a recreation area, historic site, or any other designation. This Act states that the NPS must conduct its actions in a manner that would ensure no “derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress.”

National Park Service Management Policies, 2006

Management Policies 2006 is the basic NPS-wide policy document, adherence to which is mandatory unless specifically waived or modified by the NPS Director or certain Departmental officials, including the Secretary. Several sections from the NPS Management Policies 2006 (NPS 2006) are relevant to processing applications for electric power ROWs at APPA and HAFE, such as Section 4: Natural Resource Management; Section 5: Cultural Resource Management; Section 8.2.5: Visitor Safety and Emergency Response; and Section 8.6.1.1: Requests for Permits.

NPS Management Policies 2006 require an analysis of potential effects to determine whether or not actions would impair park resources (NPS 2006). The fundamental purpose of the NPS is to conserve Park resources and values for the use and enjoyment of future generations. NPS managers have the discretion to allow impacts on Park resources and values when necessary and appropriate to fulfill the purposes of a Park, as long as the impacts do not constitute impairment of the affected resources and values. That discretion to allow certain impacts within the Park is limited by the statutory requirement that the NPS must leave Park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible manager, would harm the integrity of Park resources or values.

An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Park;
- Key to the natural or cultural integrity of the Park; or
- Identified as a goal in the Park’s general management plan, or other relevant NPS planning documents.

The Integrated Pest Management Program

Integrated Pest Management (IPM) is a decision-making process that coordinates knowledge of pest biology, the environment, and available technology. Current NPS policy (NPS-77 Natural Resources Management Guideline) and soon-to-be-released NPS policy (Director’s Order 77) requires that each Park develop and implement an IPM Program (NPS 2003a). Concessioners are required to comply with this policy. All proposed chemical pesticides must first be reviewed and approved by the Park IPM coordinator. This includes methods and chemicals that a concessioner’s third party pest management contractor would use in utility ROWs, for example. The calendar year prior to use, a concessioner must submit information on chemical pesticides it anticipates using; information may be submitted the year of actual use if previously unanticipated pest issues arise. A Pesticide Request Form (or comparable document) should be submitted to the Park for approval. The Park IPM coordinator is required to obtain

approval from the regional IPM coordinator through the NPS Pesticide Use Proposal System prior to pesticide use. The concessioners would be notified once the IPM coordinator receives approval (NPS 2003a).

Authority for Authorizing Construction Permit

Although DVP does not need any additional property rights to construct the upgrade, construction on any land within the Parks requires a special use permit for construction to harmonize the interest of the easement holder with that of the United States. The Supreme Court has repeatedly held the power of Congress over public lands under the Property Clause of the Constitution is “without limitations” (U.S. Const., Art IV, § 3, cl.2; See, e.g. *Kleppe v. New Mexico*, 426 U.S. 529, 539 [1976]). That power over lands owned by the federal government is expressed, with respect to the NPS, in the NPS Organic Act, which grants to the Secretary of the Interior the power to make such rules and regulations for the use and management of the NPS as he may deem necessary and proper for its use and management (16 U.S.C. § 2). Pursuant to that delegated authority, the regulations of the NPS are made generally applicable on lands within the NPS in which the United States owns a partial interest or a fee interest subject to an easement (36 C.F.R. § 1.2). Construction within the national park system is generally forbidden without a permit (See 36 C.F.R. §§ 5.7, 1.6).

Other Applicable Federal Laws, Executive Orders, Regulations, and Policies

The NPS is also required to comply with the following laws, executive orders, regulations, and policies in developing this EA.

National Historic Preservation Act of 1966, As Amended

Section 106 of this act requires federal agencies to consider the effects of their undertakings on properties listed or potentially eligible for listing on the National Register of Historic Places (NRHP). All actions affecting the Park’s cultural resources must comply with this law, which is implemented through 36 CFR 800.

Federal Noxious Weed Act, 1975

The Federal Noxious Weed Act (7 USC 2801–2814, January 3, 1975, as amended 1988 and 1994) provides for the control and management of non-indigenous weeds that injure, or have the potential to injure, the interests of agriculture and commerce, wildlife resources, or the public health.

Executive Order 11593, Protection and Enhancement of the Cultural Environment

This executive order directs the NPS to support the preservation of cultural properties and to identify and nominate to the NRHP cultural properties within the Park and to “exercise caution to assure that any NPS-owned property that might qualify for nomination is not inadvertently transferred, sold, demolished, or substantially altered.”

Director’s Order 28, Cultural Resource Management

NPS Director’s Order 28 (DO-28) directs the NPS to protect and manage cultural resources in its custody through effective research, planning, and stewardship in accordance with the policies and principals contained in the original NPS Management Policies 1998. The NPS management policies document was last updated in 2006, and all guidelines should be followed according to the most recent version. This Director’s Order is carried out through NPS 28, Cultural Resource Management Guidelines (NPS 1998), which provides the fundamental concepts of cultural resource management for the NPS. The cultural resource management guidelines address cultural landscapes stating “preservation practices [should be implemented] to enable long- term preservation of a resource’s historic features, qualities, and materials [of a cultural landscape]” (NPS 1998).

Energy Policy Act of 2005

This requires the Department of Energy (DOE) to designate National Interest Electric Transmission Corridors in areas where electrical transmission limitations adversely affect U.S. citizens. The study area falls within the Mid-Atlantic area national corridor. Under the provisions of the Energy Policy Act of 2005, the DOE may become the lead agency for purposes of coordinating all necessary federal permits and conducting a single federal environmental analysis under NEPA (See 16 U.S.C. § 824p). Pursuant to the Act, the DOE entered into a Memorandum of Understanding with the Department of the Interior and other agencies concerning such coordination. This was the Memorandum of Understanding on Early Coordination of Federal Authorizations and Related Environmental Reviews in Order to Site Electric Transmission Facilities (August 8, 2006). In this memorandum, the agencies agreed to the following: (1) within a week of receiving a proposal which the Agency believes would require a federal authorization, each agency would assess its role and contact DOE and other affected agencies; (2) adhere to DOE deadlines; (3) provide information to applicants and each other; and (4) generally cooperate, coordinate, and communicate with one another.

Appalachian National Scenic Trail and Harpers Ferry National Historical Park Policies and Actions

Comprehensive Plan for the Protection, Management, Development, and Use of the Appalachian National Scenic Trail, 1981; Abridged Version Published in 1987

The comprehensive plan describes a special recreational resource: the Appalachian Trail. The Trail's unique history and traditions require a management approach quite different from that in National Parks; the plan's content and format reflect this difference. The plan was called for initially in the March, 1978, amendments to the National Trails System Act. Its two-year deadline was subsequently extended by Public Law 95-625 to September 30, 1981.

The initial primary purpose of the plan was to provide Congress information it needed to meet its oversight responsibility for the Appalachian Trail. However, the plan also provides an opportunity to organize the accumulated policy directions, guidelines and understanding about administration of the Trail for the benefit of the private, state and federal partners in the Trail project. The plan is intended to provide a framework for development and management of the Trail and its immediate environs. Detailed guidance for managers is provided by other documents. Cooperative agreements among various partners define relationships at the national, state and local levels. Local plans and agreements between individual trail clubs and public agencies provide direction and establish responsibility for development and management of individual trail sections. Agency manuals and handbooks and the ATC's manual, Trail Design, Construction, and Maintenance provide policy and technical direction for management of the trail, related facilities and adjacent lands (NPS 1987).

The Comprehensive Plan does not specifically describe how projects should be carried out or prioritized and is not intended to be a substitute for more detailed plans, nor does it dictate precisely what other plans must cover. Rather, it is the one document that bridges management and protection topics related to the Appalachian Trail.

Appalachian National Scenic Trail Resource Management Plan

The Park Resource Management Plan (RMP) documents the Trail's natural and cultural resources and describes and set priorities for management, monitoring, and research programs aimed to ensure the best use for those resources. This plan provides a 10-year guide to resource management activities conducted by the NPS- Appalachian Trail Project Office (ATPO) and ATC, as well as other organizations who wish to participate. Further, the plan addresses ways to establish priorities for project funding and the need for preparation of future actions regarding specific resource management issues (NPS 2008). Management objectives are consistent with the Appalachian Trail Comprehensive Plan, the Appalachian Trail

Statement of Significance, and the Appalachian Trail Strategic Plan. The plan also presents the current status of resources, including:

- geology and soils
- biological resources
- air resources
- water resources
- cultural resources

The plan describes current resource management capabilities, issues, threats, and program needs for Trail-wide resource management programs and site-specific resource management needs and issues of land administered by the NPS-ATPO (NPS 2008).

Appalachian National Scenic Trail Strategic Plan

This plan focuses on the four NPS Service Goal Categories:

1. Preserve park resources.
2. Provide for the public enjoyment and visitor experience of Parks.
3. Strengthen and preserve natural and cultural resources and enhance recreational opportunities managed by partners.
4. Ensure organizational effectiveness.

APPA's mission and long-term goals focus on the Cooperative Management System Partner Satisfaction. This goal tracks the overall satisfaction of the local, state, federal, and private organizations that support APPA in managing the Trail. The NPS continues to collect information related to partners' satisfaction of the Cooperative Management System.

Appalachian Trail Conservancy 2009 Local Management Planning Guide, Chapter 4(F) Roads and Utilities

In 1983, the Forest Roads Task Force convened and produced a one-page statement—the first ATC policy on roads. In November 1988, the ATC Board of Managers adopted a policy statement on utilities and communications facilities. That policy was first amended in 1992 to address utility-line maintenance practices, amended again in April 1994 to include criteria for proposed utility-line crossings of the Appalachian Trail, and a third time in April 1996 to address the more specific impacts of communications sites, airport beacons, wind-generation towers, and other mountaintop facilities. In 2000, the Board adopted a policy on roads and utility developments that replaces both previous policies, but retains many of the previous provisions.

It is the policy of ATC to oppose construction of any such facilities on Appalachian Trail corridor lands or those facilities on adjacent lands that could have an adverse impact on the viewshed of the Trail, unless they meet all of the following criteria:

1. The proposed development represents the only prudent and feasible alternative to meet an overriding public need, as demonstrated in a thorough and detailed analysis of alternatives.
2. Any new impacts associated with the proposed development shall coincide with existing major impacts to the Trail experience.

3. Any proposed development of linear facilities shall be limited to a single crossing of the Appalachian Trail corridor.
4. Any adverse impacts of a proposed development shall be sufficiently mitigated so as to result in no net loss of recreational values or the quality of the recreation experience provided by the Appalachian Trail. To the extent practicable, mitigation shall occur onsite.
5. The proposed development shall avoid, at a minimum: (a) wilderness or wilderness study areas; (b) NPS natural areas; (c) U.S. Forest Service semi-primitive non-motorized or designated backcountry areas; (d) natural heritage sites; (e) cultural resource sites; (f) Trail-related facilities such as shelters and campsites; and (g) alpine zones, balds, and wetlands.
6. After construction, all impacted areas would be restored to the extent feasible. Restoration measures could include installation of permanent erosion control and planting of native vegetation.

Harpers Ferry National Historical Park General Management Plan/Environmental Impact Statement

The purpose of the HAFE General Management Plan (GMP) (NPS 2010) is to provide a comprehensive direction for resource preservation and visitor use and a basic foundation for decision making for the park for the next 15 to 20 years. The plan prescribes the resource conditions and visitor experiences that are to be achieved and maintained in the park over time. The clarification of what must be achieved according to law and policy is based on review of the park's purpose, significance, and special mandates.

In the study area vicinity of Loudoun Heights, the GMP states that NPS staff would work with the utility companies to mitigate the impacts of overhead utility lines in natural areas. The National Park Service would continue to work with the states of Virginia, Maryland, and West Virginia on the consideration of a highway bypass around Harpers Ferry (the Route 9 work in progress). The nonhistoric Sherwood house would be removed. A Civil War overlook with wayside interpretation would be constructed in its place. This site would include a vista opened on the Loudoun plateau overlooking the Shenandoah River and battlefield positions on Bolivar Heights, Camp Hill, and the Murphy Farm. Visitors would access the vista by vehicle from Chestnut Hill Road or a side trail from the Appalachian National Scenic Trail. A small parking area would be installed for visitors following a self-guided Civil War auto tour. Historic properties would be further identified and evaluated. A preservation and protection program for Civil War earthworks, camps, and remnant structures would be developed and implemented.

State, Local, and other Plans, Policies, and Actions

Regional Transmission Expansion Plan

PJM Interconnection is a regional transmission organization that coordinates the movement of wholesale electricity in all or parts of 13 states and the District of Columbia. In its Regional Transmission Expansion Plan, PJM Interconnection identified transmission system additions and improvements needed to maintain a reliable electric grid in its service area. Studies are carried out based on mandatory national standards and PJM regional standards to provide accurate statistics on weaknesses in the electric grid or where improvements are needed. These studies model electric load, voltage limitations, and reliability issues 15 years into the future (PJM 2010). In DVP's CPCN application to the VA SCC, the company notes that "PJM's 2010 study included consideration of the Line #551 rebuild project for inclusion in the RTEP as part of PJM's aging infrastructure program. On December 1, 2010, the PJM Board approved the inclusion of the Mt. Storm - Doubs Line rebuild project in its 2010 RTEP as a baseline reliability project to address aging infrastructure needs."

State Corporation Commission and Public Service Commission Actions

The SCC and PSC provide oversight to a variety of economic interests with authority in utilities and railroads, for instance. The MSD551 line rebuild was approved by the Virginia SCC on September 1, 2011 (Virginia SCC 2011), stating that the “Dominion Virginia Power is authorized to construct and operate in the counties of Frederick, Clarke, and Loudoun a 500 kV transmission line on the right-of-way now occupied by the existing Mt. Storm-Doubs 500 kV Transmission Line and to demolish those portions of the existing transmission line.” The SCC further noted that replacement is needed to ensure reliable and safe operation.

DVP consulted with the Staff of the PSC of West Virginia regarding the requirements of their regulatory laws. On December 16, 2010 the PSC of West Virginia concluded that Dominion's planned replacement of the existing facilities does not require a Certificate of Convenience and Necessity because it is an ordinary extension of an existing system in the usual course of business (DVP 2011).

Scoping Process and Public Participation

On June 23, 2011, an interdisciplinary team from the NPS NCR and the Parks met to discuss potential impacts related to the proposed rebuild and to identify potential issues through the completion of an environmental screening form. The issues identified are discussed below.

In accordance with DO-12 recommendations, public involvement was initiated to help scope the project and will be continued in coordination with the release of the EA to the public. In the public scoping period, a notice was sent by email on February 16, 2012 to all known potentially interested parties and news outlets directing them to comment on the project proposal by mail or on the NPS Planning, Environment and Public Comment (PEPC) website for a 30-day period from February 17 to March 18, 2012. The notice, and the comments and responses are in Appendix D and the issues raised were incorporated into the appropriate portions of this document. The parks may host one public meeting during the public EA review period. A newsletter would be sent to park mailing lists prior to the meeting. At the meeting, NPS officials would take public comments at designated areas for the entire meeting length. Also, the comments section of the PEPC website will be monitored and these comments collated with the meeting comments. All comments will be reviewed for substantive comments and determined if an NPS response is warranted and/or an errata is needed for important new issues or reasonable alternatives or mitigation measures.

DVP held public forums on the full MSD 551 project, with one held in Charles Town, WV in early 2011. Park staff attended this meeting and there was no known opposition to the project displayed while there. The MSD 551 rebuild is viewed by some landowners and other stakeholders as a desirable option for meeting transmission reliability standards in the region

On February 16, 2012, the NPS sent out a scoping period announcement email to initiate public involvement and solicit community feedback on the applicant's proposal for a special use permit for construction. All potentially interested news outlets were included by the NCR Communications Officer, and the Parks submitted the contacts of nearby residents, community organizations, and local and state officials that are regularly involved in this type of announcement. All recipients were encouraged to participate by contacting the project manager directly in writing or through the NPS PEPC website (<http://parkplanning.nps.gov/MSD551>). The public scoping announcement is provided in Appendix D.

Public scoping for this project began on February 17, 2012, and concluded on March 17, 2012. During the public comment period, NPS received two comments via PEPC. One comment received from the

Appalachian Trail Conservancy noted that special attention should be paid to scenic values, natural resources with specific mention of vegetation management and soils conservation, cultural resources with specific mention of the Trail's eligibility for the National Register of Historic Places, and hiker traffic facilitation. The other comment from an unaffiliated individual with extensive knowledge of the area pointed to specific archeological features on APPA in the ROW that had yet to be investigated, and to the desire for an emphasis in active native vegetation promotion in the ROW during reclamation.

Issues and the Impact Topics Analyzed in This EA

Issues describe problems or concerns associated with environmental conditions or current operations as well as problems that may arise from the implementation of any of the alternatives. Potential issues associated with this project were identified by Park staff, input from other agencies consulted, and concerns relayed by the public during scoping as detailed in the section above. They were used in identification of the following impact topics, which are further discussed in the "Affected Environment" chapter and analyzed in the "Environmental Consequences" chapter. The topics are resources of concern that could be beneficially or adversely affected by the actions proposed under each alternative and serve as points of comparison with the no-action alternative. These impact topics were identified based on the following: issues raised during scoping, federal laws, regulations, executive orders, NPS Management Policies 2006, and NPS knowledge of resources.

Soils

Construction activities would involve disturbance to bedrock and soils and could result in the loss of soil productivity, creation of tire ruts, and an increased potential for soil erosion and loss of topsoil. In addition, some grading and filling would be required. Activities associated with the proposed rebuild and upgrade of the existing line would include removing existing towers, rebuilding the existing line, placing new poles in new locations within the ROW, and use of an existing access road during construction. The soils of the study area consist of several different mapping units, all of which are comprised of either very flaggy loam or rock outcrops on slopes generally greater than 7% (NRCS, 2009; NRCS, 2010), with most occurring on slopes greater than 20%. Because there could be impacts to soils from the build alternative, this topic was analyzed in this EA.

Cultural Landscapes/Historic Districts

The NHPA (16 USC 470 et seq.), NEPA, Organic Act, NPS Management Policies 2006 (NPS 2006), DO-12, and NPS-28 (Cultural Resources Management Guidelines), require the consideration of impacts on any cultural resources that might be affected. The NHPA, in particular, requires the consideration of impacts on cultural resources either listed in, or eligible to be listed in, the NRHP. Temporary construction activities are going to impact the cultural landscape and historic districts of HAFE and APPA. Disruptions in the form of machinery noise, visual obstruction, and air quality at the historic district and to the cultural landscape would occur during construction. Facility visibility is going to increase incrementally over the cultural landscape and historic districts of the study area for the long term thereby affecting quality of connectedness of the cultural landscape and historic district resources. For these reasons, this impact topic will be analyzed in this EA.

Cultural resources include historic structures and districts, cultural landscapes, archeological resources, ethnographic resources, and museum collections (prehistoric and historic objects, artifacts, works of art, archival documents, and natural history specimens). Impacts to cultural landscape and historic districts are the cultural resource topics carried forward for analysis in this EA.

A historic district can be defined as a group of buildings, properties, landscapes, or sites that are historically or architecturally significant. Districts vary greatly in size depending on the location and significance of the area. Some can have hundreds of contributing structures, sites, and/or properties while others will be much smaller. APPA is a historic district that is eligible for inclusion in the NRHP. The Trail corridor as a whole and surrounding vegetation buffer is historically referred to as a “greenway.” A greenway is considered a legally protected area around the Trail that keeps the sights and sounds of civilization, logging, and development away from the solitary hiker (ATC 2009). The Trail runs along a series of ridge lines within the Appalachian Mountain chain, offering expansive views of the countryside below. The Trail and the surrounding “greenway” are considered historic district, as well as a cultural landscape; however, analysis here will focus on effects to the historic district as this designation is currently pursued for National Register listing in other sections of the Trail

A cultural landscape is a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions. HAFE preserves considerable historic topography as they may have appeared in 1862, the time of Civil War occupation. Current cultural landscape studies cover Lower Town, Virginius Island, and Schoolhouse Ridge South. However, this topic is of importance to the overall protection and preservation of the national historical park's historical appearance and interpretive needs. HAFE acquired much of the surrounding “Heights” in Virginia and Maryland in order to preserve this natural viewshed as seen from the national historical park and to protect historic sites.

Viewsheds

The long term quality of viewsheds belonging to the parks individually and as adjoined units could be degraded by the proposed rebuild action. While there are existing facilities in an existing ROW, the proposed taller structures could have an impact on the visual resources and scenic views associated with APPA and HAFE.

Section 4.7 of the NPS Management Policies 2006 (NPS 2006) states that the Clean Air Act recognizes integral vistas as those views perceived from within areas of a specific landmark or panorama located outside the boundary of the area. There are no regulations requiring special protection of these integral vistas, but NPS works to protect these Park-related resources by utilizing the needed mechanisms at its disposal. Analysis is needed to determine the changes in viewsheds that are likely with the build alternative. Alteration of the viewshed through the implementation of the build alternative could change the aesthetics of the scenes and thus needs to be analyzed.

Visitor Use and Experience

The long term quality of the visitor experience at APPA could be degraded. Visual intrusions of the new facilities (towers and conductors) on visitor use and experience will be analyzed under the Viewsheds impact topic. There would be temporary disruptions to the noise level component of Visitor Use and Experience. There could also be changes to the long-term background noise levels produced by the corona effect around the conductors. The frequencies, magnitudes, and duration of human-caused sound considered acceptable varies among NPS units, as well as throughout each Park unit, being generally greater in developed areas and less in undeveloped areas. Sound generating activities would include the use of construction equipment, as well as noise produced by the transmission lines during normal operation.

Analysis is needed to determine the changes in noise levels that are likely with the build alternative. Impacts from the potential sources of noise could have an effect on visitor experience; therefore, this impact topic – Visitor Use and Experience as found in the noise component – was carried forward for analysis in the EA.

Vegetation

The transmission line runs through Appalachian oak forest; the easement itself contains many species of plants that could be disturbed by construction activities and long-term ROW maintenance. Loss of vegetative cover in the short term would be an indisputable effect of the build alternative here. Access roads will be cleared with machinery, and trees bordering the ROW and access roads would require trimming or removal. There is potential for a long term effect on the quality of the vegetative cover in the ROW as well. If exotic invasive vegetation is allowed to propagate and gain a foothold there is high probability for the spread of the undesirable and ecologically damaging species into adjacent NPS and other protected land. Loss of large trees in the bordering Park land to trimming efforts could provide one such route of entry. Other impacts could ensue such as loss of vegetative and wildlife diversity in the ROW. With time it would be harder to eliminate the exotic vegetation, requiring more substantial application of herbicides.

Preliminary consultation with the U.S. Fish and Wildlife Service (USFWS) shows no existing evidence of Threatened and Endangered plant species at the proposed work location. However, the USFWS references a frequently updated repository of presence data and the NPS will consult USFWS for updates during project review as needed. In general, because construction and maintenance activities would impact established, non-sensitive plant communities in the Parks, vegetation was carried forward as an impact topic in the EA. Analysis and thoroughly documented mitigations under this complex topic are needed to determine the levels of the anticipated impacts.

Impact Topics Dismissed from Further Analysis

The following impact topics were eliminated from further analysis in this EA. A brief rationale for dismissal is provided for each topic. Potential impacts on these resources would be none or negligible, and localized.

Geology, Geologic Hazards, Topography

The existing structure foundations would be removed to 1.5 feet below for each structure utilizing an excavator with a hydraulic ram. The new structure foundations would be placed by digging holes into the soil and rock using augers; no blasting would be used. The proposed new towers would be constructed of steel lattice and would each have four foundation footings comprised of poured concrete.

DVP contracted the consultant to perform a boring to characterize the soil and rock present at the site and to determine the quality of the soil and/or rock to support structures. Data from the boring would be used to determine the best depth to anchor the tower foundations. Review of these data by NPS staff has resulted in the determination that removal and replacement of towers and the subsequent anchoring of the towers can be done in a manner in which geological resources are impacted negligibly. Since geology in the form of bedrock or other geological resources is expected to be negligibly or minimally affected, this topic was dismissed from further analysis.

Hydrology

The hydrology and hydrological cycle of the project area would not be affected by the project. All ground disturbance is addressed by Best Management Practices (BMP) so that silting of connected waterways is not anticipated. DVP has submitted these BMPs in the form of its 2011 Erosion and Sedimentation Specifications and 2011 Stormwater Pollution Prevention Plan to the Virginia State Corporation Commission in the permitting process for the entire transmission line rebuild through the state. If the build alternative is chosen by NPS managers, all bare soils and compacted areas would be amended to as near pre-construction conditions as possible within the shortest time possible as stated in these documents. This will limit the scope and time of impacts to hydrological resources that are downstream of the study area to insignificant levels. The site of construction has no standing or running water. A spring seep is just outside the ROW on the ridge's East side in APPA; however, it is small and does not drain to the ROW area. Based on these considerations, this topic was dismissed from further analysis.

Water Quality

DVP's consultant company conducted wetland and stream field surveys along the ROW and found no watercourses or wetlands on NPS property. The nearest surface water body is the Shenandoah River at 1.3 miles from the project boundary and would not be impacted due to the distance, and erosion and sedimentation controls and stormwater pollution prevention practices that would be utilized. Impacts to groundwater would also be negligible for several reasons. During construction, blasting would not occur, thus particulate pollution from blasting agents would not be present. DVP does not plan to use herbicides across the entire width of the ROW; instead, spot treatments would be applied on cleared stumps to ensure sucker saplings do not sprout. DVP states in their Construction Plan (Appendix A) that they would follow a Stormwater Pollution Prevention Plan to avoid polluting any groundwater with oils and solvents that could be present during construction. The following mitigation measures would be implemented to avoid contamination:

1. Vehicle fueling would take place offsite, at the equipment location. Care would be taken to avoid spills at the construction site. Accidental spills would be cleaned up immediately to avoid discharge.
2. DVP's contractor would utilize portable, open top plastic pools for concrete washdown located on the right of way at a location to be determined. The pools would be located such that concrete trucks can wash off excess materials before leaving the site. No on-site, on-ground washdown of concrete would occur.

Subsequently, impacts to both surface water and groundwater would be negligible to minor; therefore this impact topic was not carried forward for analysis.

Wetlands

Executive Order 11990 directs the NPS: 1) to provide leadership and to take action to minimize the destruction, loss, or degradation of wetlands; 2) to preserve and enhance the natural and beneficial values of wetlands; and 3) to avoid direct or indirect support of new construction in wetlands unless there are no practicable alternatives to such construction and the proposed action includes all practicable measures to minimize harm to wetlands. NPS Director's Order 77-1 sets forth the guidance to accomplish these broad mandates and an overarching goal for NPS activities to have no net loss of wetlands and strive to add net wetland area.

A team of certified wetland delineators surveyed the project area for possible wetlands in June and August 2010 using the definition prescribed in the U.S. Army Corps of Engineers Wetlands Delineation

Manual (USACE 1987). Additionally, the consultant also used a broader definition of wetlands, prescribed in the National Park Service Procedural Manual No. 77-1: Wetland Protection (NPS 2012). Under DO 77-1, all areas that are classified as wetlands according to the USFWS Classification of Wetlands and Deepwater Habitat (Cowardin *et al.* 1979) are considered wetlands. The consultant found no wetland area in the affected project area under the accepted NPS definition, and the soils' stony flaggy nature in the area shows no potential to perch water. Wetlands would not be carried forward for analysis.

Floodplains

Executive Order 11988 (Floodplain Management) requires an examination of impacts to floodplains and the potential risk involved in placing facilities within floodplains. The NPS Management Policies 2006, Section 4.6.4, Floodplains (NPS 2006); and Director's Order 77-2, 1993 NPS Floodplain Management Guidelines, provide guidelines on developments proposed in floodplains. The construction site is located outside Federal Emergency Management Agency (FEMA) floodplain zones. The ridgeline location precludes any threat of water accumulation.

Wildlife

Short term construction activities would potentially cause minor disturbance to wildlife during active work hours, however these are not likely to be substantial, and edge-dependent species can utilize other sections along the ROW outside of active work areas. Long-term structural changes to the ROW would be non-existent to minimal.

A survey performed by the consultant for the NPS detailed results on habitat presence and use by seven species denoted by the Parks as of critical interest. Analyzing this report with knowledge of the study area led to a no adverse effect determination for wildlife resources and therefore this impact topic is not carried forward.

Rare, Threatened, and Endangered Species

USFWS responded to consultation request and subsequent information provided by the NPS with a form letter dated December 5, 2011 giving preliminary clearance to the transmission line rebuild in the existing ROW at the study area. See the ESA consultation package in Appendix E. According to this determination, there are no known occurrences of Threatened and Endangered (T&E) species in the project area.

Also, per USFWS recommendations, an inquiry was made into bald eagle presence data at the online Center for Conservation Biology (<http://www.ccb-wm.org/virginiaeagles/index.htm>). The results are listed in the package in Appendix E. There are no occurrences in the work area and in summation, the USFWS concurs with the "no effect" and "not likely to adversely affect" determinations for proposed/listed species and proposed/designated critical habitat and "no Eagle Act permit required" determinations for eagles. To complete the consultation, a copy of the concurred review package was sent to the USFWS VA Field Office in December 2011.

Consultations with the appropriate state agencies confirmed that the site has no known instances of threatened or endangered animals or plants. In addition, contracted surveys in August 2010 of the area for sensitive species and their habitat found potential habitat for several species of concern but no signs of usage. The area is a regularly maintained clearance for transmission facilities. In its current configuration since 1966, the changes proposed by the project applicant are unlikely to affect rare, threatened and endangered species and their movements and requirements and this topic would not be carried forward in the EA.

Air Quality

Hauling materials and operating equipment would result in increased vehicle exhaust and emissions during the construction period. Hydrocarbons, NO₂, and SO₂ emissions would likely be rapidly dissipated by air drainage. Fugitive dust plumes from construction equipment could occasionally increase airborne particulates in the area near the project site. It is expected that these temporary sources of emissions from construction vehicles and increased dust would not change regional air quality. This would result in negligible impacts to air quality during the construction phase.

After construction (operational phase), there would be no further impacts to air quality associated with the power line upgrade other than minor emissions during line maintenance. Emissions and particulate matter levels would remain below minimum thresholds during both the construction and operational phases of this project; therefore, this resource was not carried forward for analysis in this EA.

Archeology

The consultant surveyed the area for archeological resources in 2010 under a separate project (NPS 2011b) and located two previously undocumented charcoal hearth sites that are contributing features to the Armory Woodland cultural landscape that is considered in the Cultural Landscape impact topic section. These sites – 46JF539 and 46JF540 – contain charcoal hearths and the road traces that connect them. The hearths lay outside the ROW while the road traces cross the ROW and have therefore been irrevocably altered from their original state. The westernmost trace known as “Bear Pond Road” is mapped and would be marked for protection during construction and subsequent maintenance. Protection would be in the form of wooden matting detailed in the Mitigation section in Chapter 2 of this document. The other trace is indistinct in its likely original route.

DVP has developed an Unanticipated Discoveries Plan that defines the procedures to be followed in the event that cultural materials are uncovered during project construction. If cultural and/or paleontological resources are discovered during construction activities on NPS property, DVP would immediately inform the Park Manager (or representative) and would work with the Virginia or West Virginia State Historic Preservation Officer (SHPO) to define appropriate mitigation measures. Any artifacts found on NPS lands are recognized as the property of the NPS. The Unanticipated Discoveries Plan is described in detail in the Mitigation section in Chapter 2. Because of the adequacy of the DVP Unanticipated Discoveries Plan were any new archeological resources to be found, and the fact that potential and known archeological sites are going to be carefully marked for avoidance, this topic was not carried forward for analysis in this EA.

Museum Collections

Implementation of the rebuild alternative would have no effect upon museum collections (historic artifacts, natural specimens, and archival and manuscript material) or the buildings that house them because the physical effects are limited to the project area; therefore, the issue of museum collections was dismissed as an impact topic.

Ethnography

There are no ethnographic populations associated within the existing ROW of APPA or HAFE that would be impacted by the upgrade of the existing transmission facilities; therefore, the subject of ethnography was dismissed as an impact topic.

Historic Structures

There are no historic structures associated within the existing ROW of APPA or HAFE that would be impacted by the upgrade of the existing transmission facilities; therefore, historic structures were dismissed as an impact topic.

American Indian Traditional Cultural Properties

The NCR Regional Archeologist confirmed there are no known Native American resources in the study area, and the SHPOs confirmed that there are no federally affiliated tribes in the study area.

Human Health and Safety

At the study site, human exposure to electromagnetic fields (EMF) is limited mainly to hikers passing through the ROW and a few nearby dwellings outside of the ROW. Because the equipment is being upgraded to more efficient conductors – and the overall current would not change - there is going to be a potential improvement in EMF due to less incidental radiation from improved efficiency. However, effects of EMF are unknown and therefore, no determination can be made as to an increase in benefit. This topic would not be carried forward because any change that would occur would be negligible due to the short exposure time for individuals passing under the transmission line in the study area.

The safety of the area after the construction could improve due to new facilities and removal of aging ones. However this topic will not be carried forward. Because of the currently clean safety record of the MSD551 through the APPA/HAFE ROW there are no data to judge change.

Park Operations and Management

Both parks would be able to provide for all operations and management needs during construction. At the time that construction would be occurring at the trail crossing, reroutes would be carefully planned and placed in consultation with park staff. Park staff would be able to access all areas of park property to perform any needed work after notifying the construction manager. No effects are expected for this impact topic and it will not be carried forward.

Transportation

The proposed project includes the use of one existing access road (Spring Park Trail) located off Chestnut Hill Road as stated in the construction plan under Appendix A. Neighbors along the adjoining access roads of Cub Lane and Muskrat Run would be notified of work schedules and all accommodations for unencumbered local traffic therein would be made to the extent possible. Another access option is the privately-owned Wildlife Way off of Chestnut Hill Road that enters the Park lands further up the slope in the project area. Work in the ROW would not impact traffic along major roadways in the area including WV Rt. 9 or US 340. Because the build alternative would not impact traffic patterns, this topic was not carried forward for analysis in the EA.

Land Use

The build alternative proposed by DVP makes no changes to current land usage in the affected area. The existing usage of the electric transmission line passing through the two Parks is determined by the easement that DVP holds. One minor change could be less frequent maintenance than would occur under the no-build alternative. To the degree that the completion of the MSD rebuild lessens the need for

additional transmission capacity it may forestall similar transmission development projects for some time. Since the status of land use is proposed to remain the same in the ROW, this topic will not be considered further.

Socioeconomics

Possible impacts from transmission lines include impacts to property or home values on adjacent lands. Facilities already exist at the site; the Upgrade of these facilities would change their size and appearance, but would not function in a way that would impact population characteristics or demographics, local economic characteristics, housing characteristics, community services or facilities, or types of local businesses that operate near the site. Because there would be no more than negligible impacts, this impact topic was dismissed from further analysis in this EA.

Environmental Justice

Presidential Executive Order 12898, General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high and/or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.

Since the impacts associated with implementation of the proposed alternative would not disproportionately adversely affect any minority or low-income population or community, or would not rise above minor short-term intensity, Environmental Justice is dismissed as an impact topic.

ALTERNATIVES

NEPA requires that federal agencies explore a range of reasonable alternatives in their NEPA documents. The alternatives under consideration must include the No Action Alternative as prescribed by 40 CFR 1502.14. Project alternatives may originate from the proponent agency, local government officials, members of the public at public meetings, or during the early stages of project development. Alternatives may also be developed in response to comments from coordinating or cooperating agencies. The alternatives analyzed in this document, in accordance with NEPA, are the result of public scoping, internal scoping, further coordination of the NPS interdisciplinary team, and the development of a construction plan by DVP that includes measures proposed by the NPS to mitigate adverse impacts.

The NPS explored several alternatives and selected two alternatives for detailed evaluation in this EA:

Alternative A, No Action: The Parks would maintain the status quo and no action would be taken on the request for a special use permit for construction submitted by DVP. The existing transmission line would continue to operate and be maintained in accordance with the existing agreement.

Alternative B (the Preferred Alternative): The NPS would approve the request for a special use permit for the rebuild of the existing line in accordance with the construction plan (Appendix A). The construction plan was developed by a collaborative process between DVP and the NPS during the preparation of this EA. This led to the revision of the construction plan to include a number of mitigation measures (see mitigation table in Appendix A, Attachment 2).

Construction actions would include:

1. Removal of the existing 500 kV transmission line
2. Installation of new 500 kV transmission line including new foundations, structures, and conductors
3. The use of two access roads

The construction plan, included in Appendix A, contains details and specifications pertaining to the construction process; general construction and safety procedures; plans for restoration, reclamation, and landscaping; and vehicular access control. The construction plan outlines actions that would be performed by DVP during and after construction in the Parks. As expressed in the construction plan, DVP's goals include the following:

- Maintain the unobstructed and safe passage of APPA hikers/HAFE visitors during construction
- Minimize adverse environmental effects
- Remove the existing transmission line from the existing ROW on NPS land
- Construct the new transmission line including new towers within the existing 160-foot-wide ROW
- Restore the affected portions of APPA and HAFE after the completion of line installation

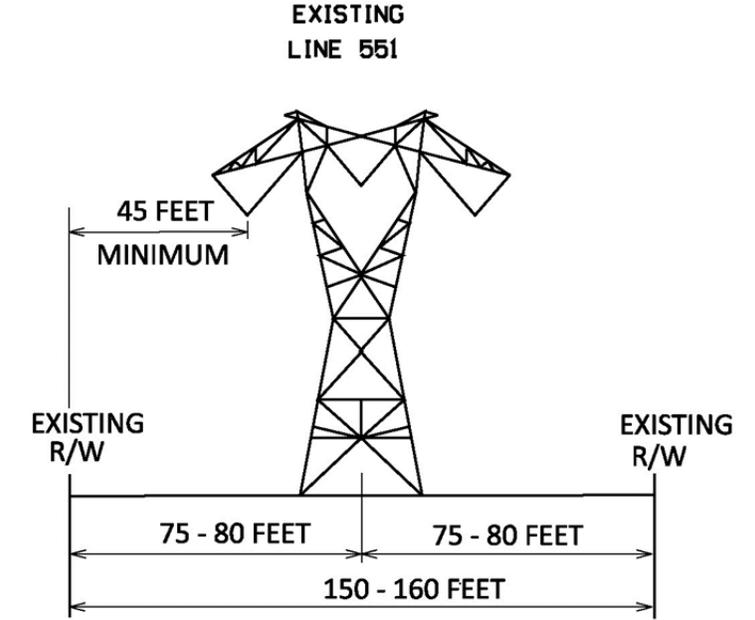
Alternative A – No Action

The No Action Alternative serves as the baseline by which all other alternatives are compared. Under the No Action Alternative, the current electrical transmission line configuration within project area of APPA and HAFE would remain as it is: a 500-kV single-circuit line on two lattice and one guy wire-supported (hereinafter “guyed”) structure. The ROW traverses approximately 2,000 feet of the Parks (1055 feet in APPA, 940 feet in HAFE), is 160 feet wide, and is adjacent to and partially overlaps a separately owned and operated 150-foot-wide ROW. Currently, the 500-kV towers range from 74 to 99 feet tall, with a base area of approximately 29 feet by 19 feet for HAFE lattice tower No. 399 (Figure 2a), and central foundation diameter of the guyed APPA tower of approximately 1.5 feet (Figure 2b). The guy wires extend the effective footprint of the guyed tower type out from this central point as seen in Figure 2b.

Under Alternative A, there would be no action taken by the Parks on the request for a special use permit for construction submitted by DVP. Maintenance would continue on the existing lines including periodic field inspections, NPS-approved selective tree removal within the ROW and immediately adjacent to the ROW for “danger trees”, and spot treatment with EPA-approved herbicides, as needed. The configuration of the existing line is shown in Figures 2a-2b.

Alternative B – NPS Preferred Alternative, the Approval of the Special Use Permit for the Upgrade of the Existing Transmission Line In Accordance with the Construction Plan

Under Alternative B, the NPS would approve the request for a special use permit for construction. Within the terms of the permit, the current transmission line and three structures would be removed and replaced by one 500-kV transmission line on a total of 3 lattice tower structures (two in APPA, and one in HAFE) as seen in the drawing of the project area in Appendix B. Each existing tower foundation would be removed 1.5 feet below grade. The proposed structures would be steel lattice towers at 101, 101, and 106 feet in height; an increase of, respectively, 2, 27, and 16 feet (Table 1 summarizes the specific changes proposed for each tower). The increased height is needed to meet required safety clearances, to accommodate the voltage of each line, to stay within the existing 160-foot-wide ROW, to adjust lateral distances between towers for visual aesthetics, and to eliminate the need for additional vegetation clearing. Each structure would consist of four footings at a diameter of 4 feet and cross arm widths of about 84 feet. The general proposed tower design and ROW cross section is shown in Figure 3.

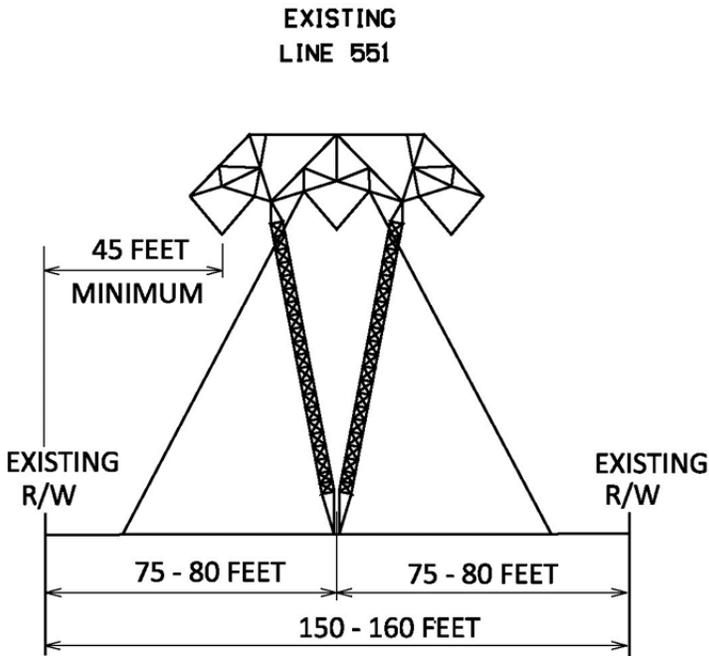


**EXISTING CONFIGURATION
TYPICAL RIGHT OF WAY LOOKING TOWARD MOUNT STORM**

TYPE OF STRUCTURE:	WEATHERING STEEL (CORTEN) LATTICE TOWER
FOUNDATION:	CONCRETE
APPROXIMATE AVG HEIGHT:	100 FEET
WIDTH AT CROSSARM:	77 FEET
WIDTH AT BASE:	32 FEET
AVERAGE SPAN LENGTH:	1100 FEET
CONDUCTOR TYPE:	2-2049 KCMIL ALUMINUM
RIGHT OF WAY WIDTH:	150-160 FEET

\$DGN\$SPEC\$

Figure 2a. Representative existing configuration at the MSD551 crossing of the project area – self-supporting lattice structure type

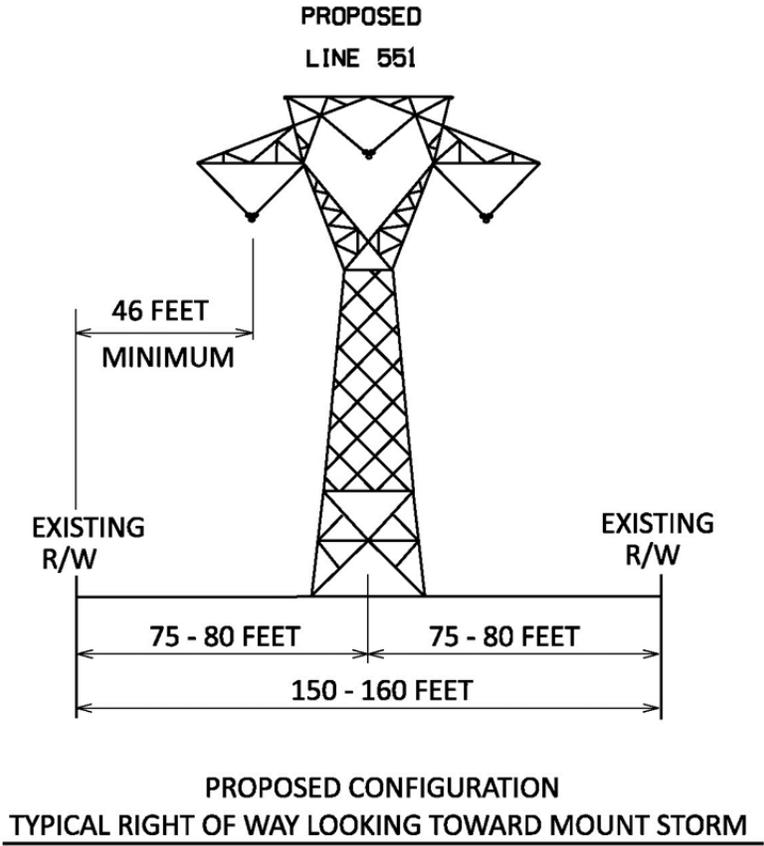


**EXISTING CONFIGURATION
TYPICAL RIGHT OF WAY LOOKING TOWARD MOUNT STORM**

TYPE OF STRUCTURE:	WEATHERING STEEL (CORTEN) LATTICE TOWER
FOUNDATION:	STEEL GRILLAGE
APPROXIMATE AVG HEIGHT:	100 FEET
WIDTH AT CROSSARM:	77 FEET
WIDTH AT BASE:	1.5 FEET
AVERAGE SPAN LENGTH:	1100 FEET
CONDUCTOR TYPE:	2-2049 KCMIL ALUMINUM
RIGHT OF WAY WIDTH:	150-160 FEET

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Figure 2b. Representative existing configuration at the MSD551 crossing of the project area – guyed-V structure type



TYPE OF STRUCTURE:	GALVANIZED STEEL LATTICE TOWER
FOUNDATION:	CONCRETE
APPROXIMATE AVG HEIGHT:	130 FEET
WIDTH AT CROSSARM:	84 FEET
WIDTH AT BASE:	35 FEET
AVERAGE SPAN LENGTH:	1100 FEET
CONDUCTOR TYPE:	3-1351 KCMIL ACSR
RIGHT OF WAY WIDTH:	150-160 FEET

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Figure 3. Representative proposed structure and ROW configuration

Table 1. Summary of Proposed Structure Changes

Existing/ Proposed	Structures within NPS Boundaries	Type of Structure	Existing Structure No. 399 Proposed Structure No. 398 (feet)	Existing Structure No. 400 Proposed Structure No. 399 (feet)	Existing Structure No. 401 Proposed Structure No. 400 (feet)	Number of Foundations per tower	Approx. Diameter of Foundation (feet)
Existing Structures (to be removed)	3	Lattice Steel	90	74	99	4	4.9
Proposed Structures	3	Lattice	106	101	101	4	4

Under Alternative B, construction of the rebuild would commence in 2012 upon NPS approval of the special use permit for construction. Construction would be expected to be completed by May 2013 with the lines energized by summer 2015. Construction of the lines may be intermittent due to weather and scheduled outages. Figures 4 and 5 are visual simulations of the proposed rebuild as seen within the project area from the Appalachian Trail looking east and west, respectively. Chapters 3 and 4 have visualizations of the impacted viewsheds under the cumulative impact scenario.



Figure 4. Current (top) and proposed (bottom) tower and transmission line rebuild looking east from the Appalachian Trail in the project area



Figure 5. Current (left) and proposed (right) tower and transmission line rebuild looking west from the Appalachian Trail in the project area, note the neighboring FirstEnergy 138kV line to the right (north) in the project area.

Construction Sequence

Details of the proposed construction activities can be found in the construction plan (Appendix A). In general, the proposed construction sequence would be as follows:

1. Install foundations for all new structures on Park property (four foundations per structure). It would take approximately three months to pour the new foundation and one month to remove the existing towers and foundations.
2. Bring in and erect the new steel lattice towers (approximately two months)
3. String in the wire conductor on both lines and energize lines (approximately two months)
4. Rehabilitation of the ROW, discussed in Section 6, Appendix A (approximately 1.5 months)

Construction Access

Construction access to existing structure No. 399/ proposed new structure No. 398 on NPS properties would be from Spring Park Trail to Muskrat Run, and then Cub Lane, and then eastward within the ROW. A historic road bed trace known as Bear Pond Road lies approximately 850' westward of existing structure No. 399 (see Appendix B). Effects from crossing of this feature will be mitigated as discussed below in the *Mitigation Measures* section. Construction access to existing structures No.400 and No. 401/ proposed structures No. 399 and No. 400 would be from Sawmill Lane and then westward up the existing maintenance route in the ROW. The construction drawing (Appendix B) shows the locations of these access roads. By approaching from opposite directions, DVP can avoid physically crossing the Appalachian Trail. No new road grading would occur inside NPS lands, and the existing contours would remain the same. No tree trimming would be needed along these previously cleared routes that DVP currently uses for maintenance activities.

General Construction Procedures

A survey would be performed to stake the new structure locations prior to construction. The NPS property line and sensitive resources would be marked to ensure they are well defined during construction. This is further detailed below in *Mitigation Measures*. During construction and while within NPS properties, the DVP maintenance dirt access road (construction drawing, Appendix B) would be utilized. After construction this road would be reclaimed with the NPS-approved seed mix. Construction pads (cleared, level areas for equipment) would be developed immediately adjacent to each of the existing and proposed structures. A portion of these areas would serve as a level surface for construction equipment to sit. After construction, the original contours would be restored as close as practical and the area rehabilitated. In the immediate vicinity of the new structures, a level area approximately 50 feet X 100 feet would remain for future use; however, these areas would be re-seeded.

Vegetation Management: Construction and Maintenance

Details of vegetation management for this proposal and associated long-term maintenance are described in the Integrated Vegetation Management Plan (hereinafter, "IVM Plan") and in *Mitigation Measures* below – though IVM Plan language is still under review at the time of this writing. Vegetation management would include the implementation of a landscape plan for the ROW developed by DVP's arborist (see Appendix A: Section 6.2, and drawing of plan in Attachment 5), in consultation with NPS specialists. DVP would maintain a low-growing (10 feet and under) plant community on the transmission

ROW, including the landscaped sites. Besides limiting potential woody plant heights using certified arborist practices, a key component to the long term maintenance is the inhibition of invasive, especially exotic, species in the ROW.

While line maintenance is being performed, IVM Plan vegetation maintenance procedures are to be followed. All trees expected to reach more than 10 feet in height would be removed (trees or shrubs planted as part of the landscape plan may be trimmed, but not removed during this process). This selective trimming and/or removal of vegetation would be performed under the overview of a certified arborist. While preventing undue vegetation damage, the methods would avoid any violation of Federal Energy Regulatory Commission (FERC) regulations put in place to prevent outages due to ROW vegetation. DVP's easement allows for removal of hazard trees outside the 160 foot ROW; however as agreed upon by DVP, Park Superintendents will be consulted regarding desired removals as detailed in the Construction Plan (Appendix A). During all future vegetation maintenance, care shall be taken to prevent damage to the Appalachian Trail footpath, APPA and HAFE cultural resources, and surrounding landscape planting.

Mitigation Measures of Alternative B

The NPS places a strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of natural and cultural resources and the quality of the visitor experience, DVP would implement the protective measures described in this section and has already incorporated the mitigation measures proposed by the NPS and agreed to by DVP into the construction plan. NPS-proposed mitigation measures include:

1. Reinforcement of the existing ATV barrier on the western edge of the ROW
2. Implementation of a Landscape and IVM Plan for the entire ROW
3. Protection and avoidance of sensitive resources during construction
4. Inventory and formal documentation of historic properties potentially affected by the project

In addition to the list above, DVP would adhere to regulatory requirements and project construction specifications, including those pertaining to safety and environmental inspection. Sources of these standards include the following: the SCC, Department of Historic Resources (DHR), and Department of Environmental Quality (DEQ) of Virginia; the Department of Natural Resources (DNR), and the Department of Culture and History (DCH) of West Virginia; the US Army Corps of Engineers (USACE); and the *Stormwater Pollution Prevention Plan* (DVP 2011b), and *General Erosion and Sedimentation Control Specifications for the Construction and Maintenance of Electric Transmission Lines*, or ESCS (Appendix A Attachment 4). In correspondence dated November 24, 2010, the Virginia Soil and Water Conservation Board approved the 2011 ESCS for DVP. This included the clarification that DVP would install and maintain all erosion and sediment control practices in accordance with the 1992 Virginia Erosion and Sediment Control Handbook. In addition to the ESCS, DVP would implement special procedures for construction activities on NPS properties, with the objective of conforming to the requirements of the Construction Plan (Appendix A).

DVP would be required to submit any additional mitigation measures beyond those listed above and detailed below to the NPS for review and approval. During the construction phase, DVP would ensure all appropriate regulations are followed. This would assure compliance and help ensure protective measures are properly executed and are achieving their intended results.

Soils and Related Water Resources

DVP has developed and implemented an approved Virginia Soil Erosion Control Plan prior to construction for the entire Mount Storm to Doubs 500kV transmission line project. The Virginia Soil Erosion and Sediment Control Program regulates all land-disturbing activities to prevent accelerated erosion and transport of sediment to its receiving waters. The program is submitted for review and approval by the VDCR for compliance with the regulations regarding construction and grading plans. Plans may call for the use of measures or a combination of measures to reduce the amount of soil washing away from construction sites during storm events. This would be accomplished through spreading topsoil; dispersing rock; installing permanent erosion and sediment control devices as appropriate; and liming, fertilizing, seeding, and mulching. These standard techniques are detailed in the DVP ESCS (Appendix A, Attachment 4). An NPS-approved seed mix would be used on NPS properties, and this seed mix would include only non-genetically modified seeds. This process would take approximately 1.5 months following the completion of construction activities. See the Construction Plan (Appendix A) for more details on the seed mix and site preparation methodology.

The DVP Stormwater Pollution Prevention Plan was filed with Virginia and West Virginia as required, and describes ways to avoid potential pollution sources onsite, including vehicle fueling, sanitary waste facilities, limited chemical usage, construction debris, litter, and concrete washdown. These measures are summarized in the Construction Plan.

Further mitigation related to protecting soils and soil water resources would include ensuring that equipment is fueled by a fuel truck that visits each piece of equipment at its respective location, at or near each structure site. Crew cabs, pick-up trucks, concrete trucks, and similar vehicles would be refueled offsite. Equipment that may need to be fueled onsite includes drill rigs, cranes, and generators. Care would be taken to avoid spills at the site. Accidental spills would be cleaned up immediately to avoid potential discharge to the water. Oil spill cleanup materials would be kept onsite in the event that petroleum products are spilled (such as a hydraulic line break or fuel spill).

Other mitigation related to soils and soil water resources would include the following:

- Providing portable sanitary facilities onsite at all times and servicing such facilities as appropriate
- Prohibiting the use of chemicals, not including fuels and oils, during excavation or construction or concrete-curing compounds commonly used for foundation construction
- Loading construction debris into a container and removing debris containers as needed
- Loading litter into a container and removing litter containers as needed

A proposed concrete washdown area would receive rinse water used to clean concrete trucks after foundations are poured. DVP's contractor is utilizing plastic "baby" pools for concrete washdown located at each tower. No on-site, on-ground washdown of concrete would occur.

Cultural Resources

As part of pre-construction project planning, DVP conducted cultural resource surveys of the Area of Potential Effect (APE) on NPS properties. An archaeological survey of the proposed 500-kV single-circuit transmission line was conducted in the winter of 2010-2011, and a report was submitted to DVP and SHPO in the spring of 2011.

Field work consisted of a pedestrian survey and subsurface testing in the APE, which includes the existing ROW in the Parks. The pedestrian survey consisted of a walk-over inspection to identify portions of the area of potential effect that did not require subsurface testing due to a high degree of slope, or prior disturbance. Subsurface testing generally consisted of the excavation of shovel tests at 50-foot intervals along two transects. Subsurface testing for the existing ROW was limited to a section of less than 20% slope in the mountainous study area (see Chapter 3). Public commenting during the public scoping for the project informed the NPS that there were as yet unidentified organized rock features in the higher-slope APPA section of the ROW potentially associated with historic ruin feature 44LD1592 (see Chapter 3). As a result, DVP was tasked by NPS to identify these features specifically, and to perform general steep slope investigations. The Parks' recommended mitigation from this work is for avoidance of the features by thorough archeologist-supervised marking of the feature extent, and care in preserving context by not creating similar rock piles.

The Harpers Ferry United States Armory Woodland (hereinafter the "Armory Woodland") is bisected by the MSD551 ROW. Identified as a data deficiency early in the compliance process, the NPS asked DVP for a complete identification of the resources associated with the Armory Woodland in the form of completion of the National Register update for the location. The importance of the area historically necessitates complete study because it is clear that the ROW and the rebuild work proposed are having and would have adverse impacts on the resources associated with the Harpers Ferry United States Armory Woodland and the Appalachian Trail. Because the preference is for a National Register update to be submitted in a complete, organized, and coherent whole befitting the connections between the mosaic pieces - mitigation for the impacts to the HAFE Armory Woodland cultural landscape entails the completion of the other HAFE properties outside of the ROW in need of an NRHP update. These remaining properties are: B&O Railroad Harpers Ferry Station, the Murphy-Chambers Farm, School House Ridge, and the U.S. Armory Musket Factory. At APPA, the mitigation for adverse impacts to the APPA historic district would entail performing the necessary research on APPA's contributing features to the Armory Woodland cultural landscape. This would be appended to the NRHP filing already underway for HAFE. The work would also serve as reference for any future NRHP nomination of the APPA historic district.

All features in both parks known at the time of construction would be protected from any construction-related impacts with construction matting on the road traces, for instance, and with visually-obvious demarcation like unique flagging. Direct placement of flagged stakes in cultural resource sites like Bear Pond Rd would be avoided, and all flagged stakes would be removed upon completion of construction. Monuments and cultural features (see Affected Environment, Chapter 3) within the ROW would also be marked in a similar manner, i.e., with flagged stakes or a circle of flagging. A historic road bed trace known as Bear Pond Road lies approximately 850' westward of existing structure No. 399 (see Appendix B). During construction, this road trace would be protected with matting or simple bridge of a sufficiently robust design yet to be determined).

DVP also developed an unanticipated discoveries plan that defines procedures that would be followed in the event that cultural materials are uncovered during construction. If cultural or paleontological resources are discovered during construction activities on NPS property, DVP would immediately inform the Park Manager (or representative) and would work with the Virginia or West Virginia SHPO to define

appropriate mitigation measures. Artifacts found on NPS lands would be recognized as the property of the NPS. The unanticipated discoveries plan is included in the construction plan and described below:

DVP would ensure the onsite construction documents contain the following provisions for the treatment of unexpected discoveries. First, in the event that a previously unidentified archaeological resource is discovered during ground-disturbing activities, DVP's contractor or staff would notify the Park Manager(s) or cultural resource staff. DVP would then immediately notify the SHPO. All construction work involving subsurface disturbance would be halted in the area of the resource and in the surrounding area where further subsurface remains can be reasonably expected to occur. DVP and the SHPO, or an archaeologist meeting The Secretary of the Interior's Professional Qualifications Standards (48 FR 44 738-9), would immediately inspect the work site and determine the area and the nature of the affected archaeological property. Construction work may then continue in the construction area outside the site. Second, DVP would consult with the SHPO to determine NRHP eligibility of the previously unidentified resource. Potentially eligible historic properties would be evaluated using the NRHP criteria in accordance with 36 CFR 800.4(c). If the SHPO determines that the resource meets the NRHP Criteria for Evaluation (36 CFR 60.6), DVP shall ensure compliance with Section 800.13(b)(3) of the ACHP's regulations. Work in the affected area shall not proceed until a determination is made that the located resource is not eligible for inclusion on the NRHP.

Vegetation

A DVP or DVP-contracted certified arborist would supervise all vegetation management operations. After construction is complete, DVP would restore the ROW. Project area restoration would include regrading any contours that may have been disturbed or changed, as close to pre-construction conditions as practical. This would be accomplished through spreading topsoil; dispersing rock; installing permanent erosion and sediment control devices as appropriate; and liming, fertilizing, seeding, and mulching. The non-genetically modified seed mix used would be approved by the NPS and is described in Appendix A. These standard techniques are detailed in the erosion and sedimentation specifications in Appendix A, Attachment 4.

A landscape plan (Appendix A, Section 6.2) and IVM protocol specific to the site would be implemented that would mitigate the visual disruption of the construction disturbance and the presence and future intrusion of exotic invasive species of plants. The goal of the landscaping and IVM plans is the long term success of the rehabilitated vegetation community on the ROW to function as viable wildlife habitat and corridor. The basis for cooperation among the member companies of the Edison Electric Institute (including DVP) and federal land management agencies (including the NPS) in managing for habitat quality is laid out in the 2006 Memorandum of Understanding (MOU). As detailed in the landscape plan, native evergreen and deciduous species would be used to restore disturbed vegetation. A selection of native vegetation (detailed in Appendix A) would be planted out from both sides of the Trail for about 30 feet to present a soft layering in height/form/texture. Out from the 30 foot densely planted buffer, random planting throughout the remaining ROW of patches of desirable woody plants would be planned. The intent is to avoid creating straight lines by planting in groups that add interest and variation, and resemble natural vegetation growth of the area while also helping to slow the spread of invasive undesirable species. The maximum height of all vegetation within the ROW would be maintained at 10 feet to avoid any interference with the transmission line.

Maintenance of the landscape plan would be accomplished in the framework of the IVM plan. Per the IVM plan, control of exotic and tall-growing species would involve spot treatments of EPA and NPS-approved herbicides, ANSI-approved manual trimming and removal methods supervised by a certified arborist, and promotion of the naturally occurring native species and landscape plantings in order to inhibit exotics and tall-growing species. No broadcast spraying or tractor-mulching would be used. Unless

otherwise agreed to by FirstEnergy and DVP, the overlapping 35 feet between the separately owned ROWs would be subject to rehabilitation by DVP as set forth in the IVM and landscape plans.

Viewsheds

The mitigation of adverse impacts to visual resources along the Trail in the ROW is directly addressed with the mitigation of adverse impacts to vegetation resources above. Design options of the facilities brought forward in analysis have their visual intrusiveness reduced to the minimum level associated with the proposed upgrade in conductor type (from dual-bundle to tri-bundle, with a capacity increase of 66%). Final tower design (lattice steel) was chosen by NPS staff in consultation with DVP; the design was thought less obtrusive in the viewshed than other tower options (see *Alternatives and Options Considered but Not Carried Forward* below).

Access Control – ATV Barriers

To ensure no increase in the illegal use of ATVs in the ROW, DVP would consult with NPS on the best methodology to reinforce the current boulder fence at the western edge of the ROW on Appalachian Trail Conservancy property (see Appendix B, Construction Drawing). This could include a combination of upgrading the swinging gate and placement of additional boulders.

Alternatives and Options Considered but Not Carried Forward

CEQ regulations for implementing NEPA require federal agencies to explore and objectively evaluate all reasonable alternatives to the applicant's proposal, and to briefly discuss the rationale for eliminating any alternatives that were not considered in detail. This section describes those alternatives that were eliminated from further evaluation and documents the rationale for their elimination.

During the course of scoping, multiple alternatives were considered but deemed to be unreasonable and were not carried forward for analysis in this EA. Justification for eliminating these options from further analysis was based on the following factors:

- Technical or economic feasibility
- Inability to meet project objectives or resolve need
- Duplication with other, less environmentally damaging or less expensive alternatives
- Conflict with an up-to-date and valid Park plan, statement of purpose and significance, or other policy, such that a major change in the plan or policy would be needed
- Too great an environmental impact

The following alternatives were considered but dismissed for the listed reasons.

Structure Type Design Alternative

During internal scoping, a monopole design for the towers in the project area was considered for its potential to reduce the visual intrusion of the towers in viewshed. The lattice design proposed by DVP is similar in style to the majority of structures on the existing MSD551 line. Currently on NPS land there is one guyed lattice V (tower No. 400) and two self-supporting lattice tower structures (towers No. 399 and No. 401). Self-supporting lattice structures could also be thought of as less visually intrusive than a broader single shaft steel monopole due to the lower height and compatibility with what already exist directly outside the project area. An inspection of the monopole line recently installed at the

Meadowbrook-Loudoun 500-kV crossing of APPA confirmed that monopole structures can actually draw one's eye to it to a greater extent than the lattice which at greater distances can become less distinct than a monopole and provide a more transparent view to the background. Therefore, the monopole design alternative was dismissed because of duplication with other, less environmentally damaging or less expensive alternatives.

Placement Design Alternative

In general, structure placement (the physical location on the ground) in the design of a new transmission line is in the highest elevations to reduce the number of structures. During internal scoping, DVP was made aware that NPS desires to also minimize height of the structures to alleviate visual disruption. The proposed construction plan of Alternative B mandates a move of proposed tower No. 399 (APPA land) approximately 30 feet further from the trail and of 60 feet further from the trail for proposed tower No. 398 (HAFE land). These moves entail a tower height increase of 27 feet at No. 399 and 16 feet at No. 398 (see Figures 4 and 5, respectively). The structure placement alternatives considered included the options of leaving the placements as they are, or moving the proposed foreground tower No. 399 significantly further from the AT. The former is undesirable because the tower is left in the foreground of the hiker's view, and the latter would necessarily increase the height of proposed towers No. 399 and No. 398 to a greater extent than Alternative B in order for the conductors to be strung at the necessary height across the ridge. Alternately, a shorter conductor height at the current tower placements was never considered as this would increase the ROW width needed to accommodate the minimum FERC tree hazard clearances. It is reasonable to conclude that shorter structures are preferable to significantly taller structures or continued foreground obstruction that would come with the alternate design options. Alternative B also ensures protection of the Trail during construction by placing the tower further away. Therefore, the alternate tower placement alternative was dismissed because of duplication with other, less environmentally damaging or less expensive alternatives.

National Park Service Preferred Alternative

Alternative B is the NPS's preferred alternative. This alternative meets NPS objectives to a large degree while respecting the applicant's existing property rights across NPS lands. DVP would implement a number of mitigation measures to reduce and manage the impacts of construction and the installation of new high transmission towers and line. While the new towers would be taller than the existing towers, the impact to the viewshed would be relatively minimal. The mitigation measures are documented in the applicant's construction plan and in this EA. Additionally, as has been made clear through DVP presentations in the State Corporation Commission and federal agency (NPS) permitting processes, the structures are increasingly prone to failure due to age and the associated weathering of the corrosive COR-TEN steel, and the conductors are composed of outdated and inefficient materials. In all, the upgrade/rebuild would better meet the NPS mandate of visitor safety.

The Environmentally Preferable Alternative

In accordance with the DO-12 Handbook, the NPS identifies the environmentally preferable alternative in its NEPA documents for public review and comment [Sect. 4.5 E(9)]. The environmentally preferable alternative is the alternative that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources. The environmentally preferable alternative is identified upon consideration and weighing by the Responsible Official of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources. In some situations, such as when different alternatives impact different resources to different degrees, there may be more than one environmentally preferable alternative (43 CFR 46.30)

In this instance, the environmentally preferable alternative is Alternative A. The No Action Alternative would result in no further construction disturbance and would not increase impacts to the viewshed. There would be no impacts to potential archaeological sites, vegetation, or wildlife habitat. See Table 2 for a summary of the Environmental Consequences of the Alternatives brought forward for analysis.

Table 2. Summary of Environmental Consequences

Impact Topic	Alternative A: No Action	Alternative B: Preferred Alternative
Soils	Implementation of Alternative A would result in long-term negligible adverse impacts to soils due to continued maintenance activities that contribute to the compaction of soils. Cumulative impacts under Alternative A would be long-term negligible to minor adverse.	Upgrading the existing transmission facilities under Alternative B would involve loss of soils at new foundations, disturbance and compaction along access roads, and reclamation of soils in former access road and foundations sites. All actions would incorporate mitigation measures to reduce soil erosion, limit areas of compaction, and replace disturbed soils. This would result in short- and long-term minor to moderate adverse impacts to soils from the increased potential for erosion, compaction, and disturbance of soils and geology resulting from construction and maintenance activities. Cumulative impacts would be long-term minor adverse.
Vegetation	Under Alternative A, current maintenance activities would continue. These include the treatment and/or removal of trees and tall-growing shrubs in the area around and in the right-of-way, which would have long-term minor adverse impacts. Continued invasive species presence in disturbed area of the right-of-way would result in long-term minor adverse impacts to vegetation. Cumulative impacts would be long-term minor adverse.	Due to vegetation clearing to widen right-of-way access road and the implementation of the landscape and IVM plans, Alternative B would have short-and long-term minor adverse impacts on vegetation. Continued maintenance activities that include the treatment or removal of trees and tall-growing vegetation in and on the area of the right-of-way would have long-term minor impacts. Cumulative impacts would be long-term minor adverse.
Viewsheds	Implementation of Alternative A would result in short- and long-term minor adverse impacts to the scenic views and visual resources associated with the Parks due to the presence of the transmission towers crossing the Trail and historical landscape of HAFE, and operational and maintenance activities. Long-term minor adverse cumulative impacts would occur under Alternative A.	Implementation of Alternative B would result in moderate adverse impacts to the viewsheds at APPA during construction while ground is disturbed and hikers pass through the work area, and by machinery and workers. In the long term, there would continue to be minor adverse impacts to viewsheds at the directly-impacted Key Observation Points of APPA-East/West and HAFE-SRSn. Cumulative impacts would be long-term minor adverse because of the background nature of the tower changes off the ROW, and the pre-existing industrialized view in the ROW. Vividness of the viewsheds at the KOPs can be increased incrementally by improvements to vegetation management (IVM), and by mitigation planting to soften the cut border of the ROW. The IVM practices would also allow for the more authentic visual patterns normally associated with historic landscapes such as the Armory Woodland of the project area.

Table 2. Summary of Environmental Consequences, *continued*

Impact Topic	Alternative A: No Action	Alternative B: Preferred Alternative
Historic District	Implementation of Alternative A would have negligible to minor adverse impacts to historic districts, resulting in no adverse effects for the purposes of Section 106. Cumulative impacts under Alternative A would be long-term minor adverse, or no adverse effect for the purposes of Section 106.	Implementation of Alternative B would result in long-term negligible to minor impacts to historic districts due to impacts from the presence of construction and maintenance equipment and associated activity. The current project and management practices design has been developed in consultation with the Park to include measures that minimize impacts to the historic district. Cumulative impacts under Alternative B would be minor adverse.
Visitor Use and Experience	Implementation of Alternative A would result in short- and long-term negligible to minor adverse impacts to the natural noise level, including the slight noise emitted by the existing lines and occasional maintenance. In combination with the WV Route 9 project, this would result in short- and long-term minor cumulative impacts.	Implementation of Alternative B would result in localized short-term moderate adverse impacts during time of maintenance and construction from the presence of equipment and other personnel. Because the location of the proposed action is narrow and is buffered dense vegetation, there would be limited exposure along the Appalachian Trail where visitors could hear construction activities, and none expected at HAFE. Long-term minor impacts would occur from the corona noise associated with the operation of the transmission lines, and the reinforced ATV barrier would reduce impacts from illegal ATV use. Under Alternative B there would be short-term minor to moderate adverse impacts and long-term minor to moderate adverse cumulative impacts.

AFFECTED ENVIRONMENT

In Chapter 2 the alternative build designs for accomplishing the objectives of the proposal, and the no-action alternative were described in detail. This chapter sets the boundaries for potential impacts of the alternatives, describing the affected resources in the spatial and temporal boundaries that are subject to impact (the Affected Environment). The next chapter, *Environmental Consequences*, uses the limits set forth here to quantify or qualitatively judge the levels of impact to each affected resource. Where necessary, the sections below will describe the environment by Park unit. The project area is along the border of Virginia and West Virginia, and is divided by the Parks. The eastern side is incorporated by APPA and includes two towers (current numeric designations 400 and 401), and the western side is incorporated by HAFE and includes one tower (No. 399). The tower replacements proposed will follow the same nomenclature as the existing towers.

Soils

The project area is in the middle section of the Valley and Ridge physiographic province, which is part of the Appalachian Highlands division. The Valley and Ridge province consists of steep, mountainous areas interspersed with long valleys. The study area for soils was limited to areas on HAFE and APPA as described above. The study area substrate is comprised of metamorphic quartzite and phyllite, and shalestone and conglomerate rock from the Chilohowee group, part of the Weverton - Loudoun Formation (Cardwell et al. 1968; Johnson and Leveritch 1998). The Chilohowee Group formed in the Cambrian period during the Paleozoic era approximately between 542 and 488 million years ago. Mapped soils in the study area consist of several different mapping units, all of which are comprised of either very flaggy loam or rock outcrops on slopes generally greater than 7% (NRCS 2009; NRCS 2010). A detailed description of the soil map units in the study area is provided below. Soil textures are described using the United States Department of Agriculture classification system (USDA) and the Unified Soil Classification System and engineering system (USCS).

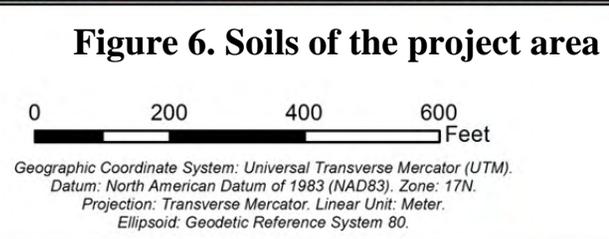
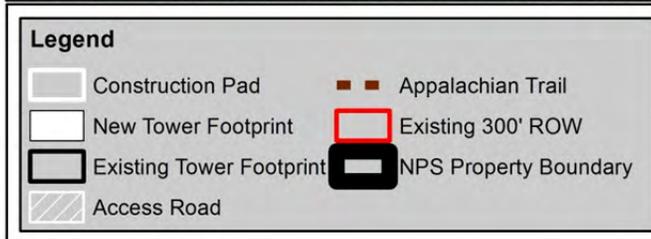
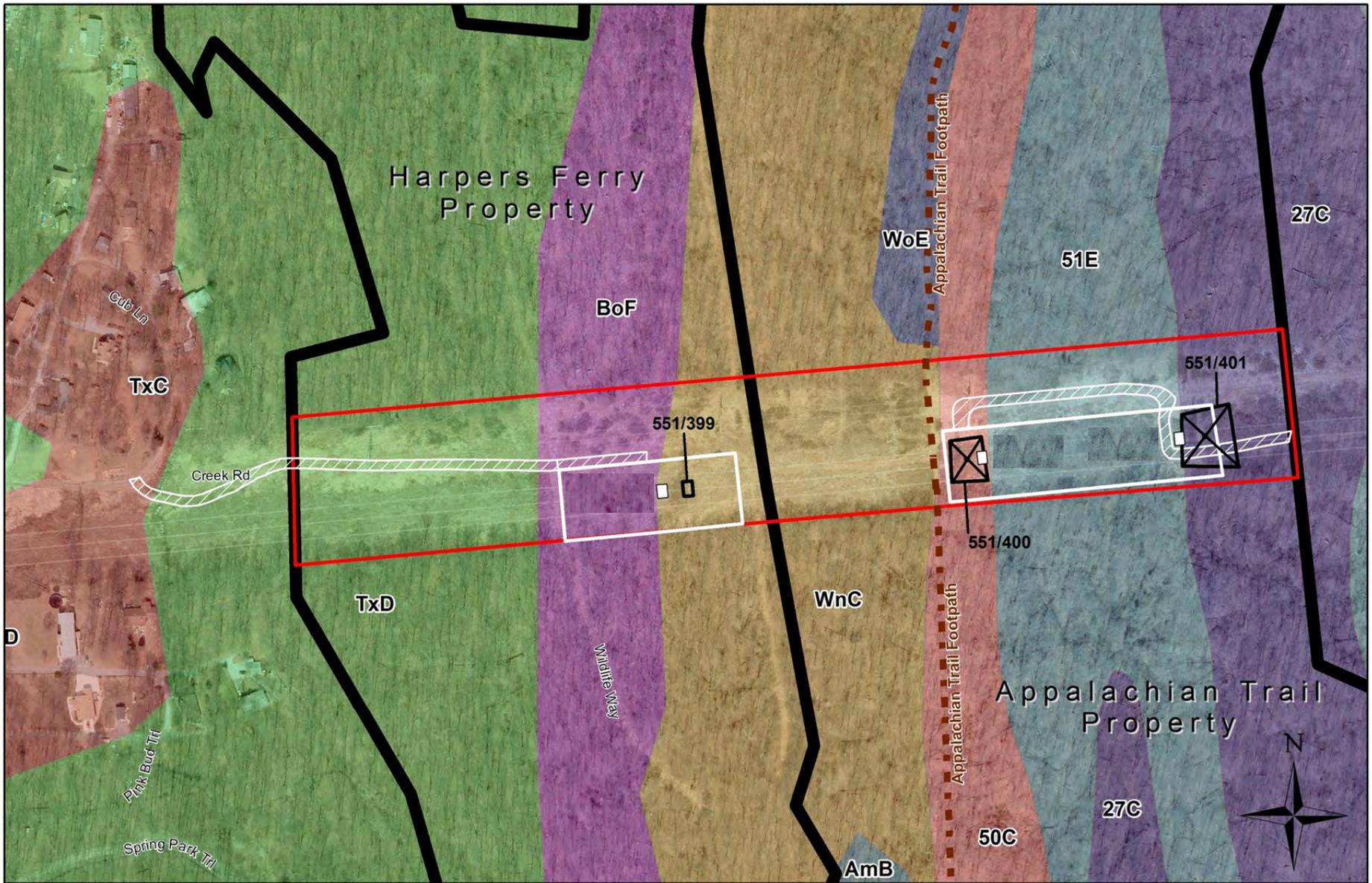
Harpers Ferry National Historical Park

Based on the Soil Survey of Jefferson County, WV (NRCS 2010), three soil mapping units occur in the portion of the study area within HAFE (Figure 6). The following text provides general descriptions of the soil mapping units occurring in the portion of the project area within HAFE.

- BoF - Bagtown-Stumptown-Rock outcrop complex, 25 to 65 percent slopes. Soils in the BoF map unit are deep to bedrock (75 inches below the surface), except where rock outcrops exist at the surface. Surface soil textures range from sandy loam to silt loam (USDA) and gravelly to clay (USCS). Soil erosion factors (Kw) through the entire soil profile range between 0.15 and 0.20, and the soil falls in the number 8 wind erodibility group. Soil pH through the entire profile is typically between 4.5 and 5.5.
- TxD - Trego very flaggy loam, 15 to 25 percent slopes. Soils in the TxD map unit are deep to bedrock (70 inches below the surface). Surface soil textures range from loam to silt loam (USDA) and silt to clay (USCS). Kw through the entire profile ranges from 0.28 to 0.37, and the soil falls in the number 5 wind erodibility group. Soil pH in the upper 30 inches is typically between 5.1 and 6.0; whereas, soil pH in the lower horizons is typically between 4.5 and 5.5.
- WnC - Weverton very flaggy loam, 3 to 15 percent slopes, very stony. Soils in the WnC map unit are deep to bedrock (70 inches below the surface). Surface soil textures

range from sandy loam to silt loam (USDA) and sandy clay to sandy silt (USCS). K_w through the entire profile ranges from 0.05 to 0.10, and the soil falls in the number 8 wind erodibility group. Soil pH through the entire profile is typically between 4.5 and 5.5.

The location of the proposed rebuild structure (No. 399) occurs on soils that are a transition between the BoF and WnC soil map units. A geotechnical boring was performed in this transition zone between the two soil map units; the data sheet for the boring is included in Appendix C. The results revealed a soil deep to bedrock (approximately 7 feet below the surface). The upper 4.5 feet are comprised of loose sandy silt (USCS) with few rock fragments. The lower subsurface is comprised of very dense weathered quartzite. Below approximately 7 feet, the material is primarily medium hard to hard quartzite to approximately 29 feet below the surface; a thin clay seam was present at approximately 23 feet below the surface. The bedrock was recorded as primarily broken between approximately 7 and 19 feet below the surface and then again between approximately 21 and 29 feet below the surface. Between approximately 19 and 21 feet below the surface the rock was described as blocky. Between approximately 7 and 19 feet below the surface the rock quality was between 20 and 36 percent; however, below approximately 19 feet the rock quality improves. Between approximately 19 and 24 feet below the surface, the rock quality was 92 percent, and then decreases to 60 percent between approximately 24 and 28 feet below the surface, and 50 percent between approximately 28 and 29 feet below the surface. The calculated slope at the proposed location of the structure rebuild No. 399 was 8%.



Appalachian National Scenic Trail

Based on the Soil Survey of Loudoun County, VA (NRCS 2009), five soil mapping units occur in the portion of the project area within APPA (Figure 6). The following text provides general descriptions of the soil mapping units occurring in the portion of the project area within APPA.

- WnC - Weverton very flaggy loam, 3 to 15 percent slopes, very stony. Soils in the WnC map unit are deep to bedrock (70 inches below the surface). Surface soil textures range from sandy loam to silt loam (USDA) and sandy clay to sandy silt (USCS). Kw through the entire profile ranges from 0.05 to 0.10, and the soil falls in the number 8 wind erodibility group. Soil pH through the entire profile is typically between 4.5 and 5.5.
- WoE - Weverton - Rock outcrop complex, 15 to 45 percent slopes, very stony. Soils in the WoE map unit are deep to bedrock (77 inches below the surface), except where rock outcrops exist at the surface. Surface soil textures range from sandy loam to silt loam (USDA) and sandy clay to sandy silt (USCS). Kw through the entire profile ranges from 0.05 to 0.10, and the soil falls in the number 8 wind erodibility group. Soil pH through the entire profile is typically between 4.5 and 5.5.
- 27C - Flairmont very flaggy loam, 7 to 15 percent slopes. Soils in the 27C map unit are very deep to bedrock (135 inches below the surface). Surface soil textures range from sandy loam to loam (USDA) and sandy silt to clay (USCS). Kw through the entire soil profile ranges from 0.05 to 0.10, and the soil falls in the number 8 wind erodibility group. Soil pH through the entire profile is typically between 4.5 and 5.5.
- 50C - Stumptown very flaggy loam, 7 to 15 percent slopes. Soils in the 50C map unit are moderate to bedrock (43 inches below the surface). Surface soil textures range from sandy loam to loam (USDA) and gravelly to sandy clay (USCS). Kw through the entire soil profile ranges from 0.10 to 0.20, and the soil falls in the number 5 wind erodibility group. Soil pH through the entire profile is typically between 4.5 and 5.5.
- 51E - Stumptown-Rock outcrop complex, 25 to 45 percent slopes. Soils in the 51E map unit are moderate to bedrock (43 inches below the surface), except where rock outcrops exist at the surface. Surface soil textures range from sandy loam to loam (USDA) and gravelly to sandy clay (USCS). Kw through the entire soil profile ranges from 0.10 to 0.20, and the soil falls in the number 5 wind erodibility group. Soil pH through the entire profile is typically between 4.5 and 5.5.

The location of the proposed rebuild structure No. 400 occurs on soils in the 50C soil map unit; the location of the proposed rebuild structure No. 401 occurs on soils that are a transition between 51E and 27C soil map units. No geotechnical borings were performed adjacent to these two structures. The calculated slopes at the proposed location of rebuild structures No. 400 and No. 401 were 12% and 7%, respectively.

Cultural Resources: Cultural Landscapes

Harpers Ferry National Historical Park and Appalachian National Scenic Trail

According to DO-28, a cultural landscape is an “expression of human manipulation and adaptation of the land.” Cultural landscapes are the result of the long interaction between people and the land, and reflect the influence of human beliefs and actions over time upon the natural landscape. Shaped through time by historical land-use and management practices, as well as politics and property laws, levels of technology, and economic conditions, cultural landscapes provide a living record of an area’s past, and a visual chronicle of its history. The dynamic nature of modern human life, however, contributes to the continual reshaping of cultural landscapes, making them a valuable source of information about specific times and places on one hand, but rendering their long-term preservation a challenge on the other.

In order for a cultural landscape to be listed in the National Register, it must possess significance (the meaning or value ascribed to the landscape) and retain the integrity of those features necessary to convey its significance as well as meet one or more of the National Register Criteria (36 CFR 63). The character-defining features of a cultural landscape include spatial organization and land patterns; topography; vegetation; circulation patterns; water features; and structures/buildings, site furnishings, and objects. Individual features of the landscape are never examined alone but only in relationship to the overall landscape. The arrangement and interrelationships of a cultural landscape’s organizational elements and character-defining features provide the key to determining the potential impacts and effects of proposed undertakings on a cultural landscape (see The Secretary of the Interior’s *Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (Birnbaum 1996)).

The Armory Woodland is a cultural landscape directly affected by the project because the ROW intersects the boundaries of the tract that was historically used for that purpose. The site was part of a web of roads and charcoal hearths that were sustained by the forests of the ridges in the area. Charcoal and other forest products were shipped to the U.S. Armory in nearby Harpers Ferry.

In 1794, President George Washington arranged to have one of the country's two arsenals situated at Harpers Ferry (the other was located in Springfield, Massachusetts). Two years later, the government purchased from the heirs of Robert Harper a 125-acre parcel of land bounded by the Potomac and Shenandoah rivers. Construction started on the "United States Armory and Arsenal at Harpers Ferry" in 1799 and full-scale production of weapons began in 1802. In 1809, the government contracted with Ferdinando Fairfax, who owned woodland on what was later known as Loudoun Heights, located above the town of Harpers Ferry on the south side of the Potomac and Shenandoah rivers. The contract allowed the government to cut 1,400 cords of wood for use at the armory at the cost of \$1,400. The wood heated the shops of the armory as well as the houses of its workers while charcoal fueled the smelting of iron in the armory’s furnaces.

The Armory Woodland (Figure 7) consists of four National Park Service tracts: Tract 109-01, consisting of 26 acres; Tract 109-02 consisting of 377.3 acres, Tract 109-10, 11.4 acres, and Tract 105-11, 85.7 acres. The APE is entirely within Tract 109-02., Historically, the tracts were part of the Armory Woodland, which was acquired by the U.S. Government to supply fuel, both wood and charcoal, for the nearby armory. When combined with the adjacent 276.8-acre Loudoun Heights, which is located within the 1981 boundaries of the Harpers Ferry National Historical Park Historic District, the tracts comprise over one-half of the original 1,395-acre Armory Woodland.

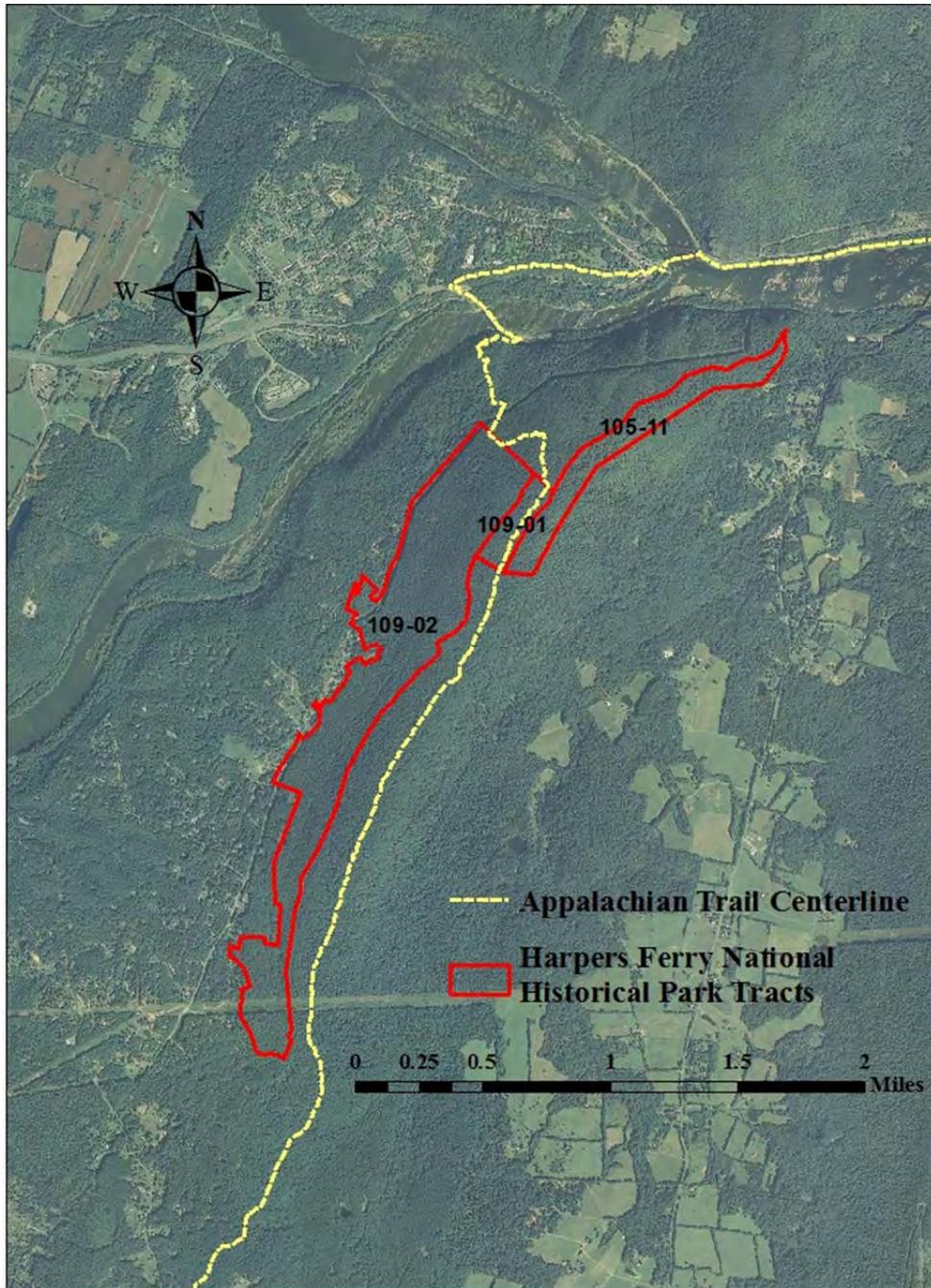


Figure 7. The Armory Woodland overview, Harpers Ferry National Historical Park. Specific land tracts are outlined in red.

The Armory Woodland contains sites that are related to the production of charcoal for the army in Harpers Ferry during the first half of the nineteenth century and Civil War encampment sites that were most likely occupied by Union troops in 1862. Remnants from these two themes are evidenced in the form of charcoal hearths and road traces and the stone walls, hearths, foundations, and platforms of Civil War-era campsites. The period of significance is 1809 to 1862.

Physical Characteristics

Due to its proximity to the Armory at Harpers Ferry, the Armory Woodland was recognized early on as a convenient source of wood products and charcoal for use in the Armory's forges and stoves. While in use from 1809-1861, the Armory Woodland was covered with a hardwood forest and likely was characterized by trees of mixed ages, the product of rotating harvesting methods. Presently, the site contains the remains associated with the nineteenth-century charcoaling industry that supported the armory, including charcoal hearths and a system of roadways for transporting forest products.

Though a complete inventory has not been made, four charcoal hearths sites have been documented on the Armory Woodland and more are known to exist within its boundaries. While none of the hearths are exactly alike, they exhibit similar characteristics. The hearths are typically elliptical or semi-circular in shape and are built into hillsides to form a level surface. The uphill side of the hearth was cut out and the dirt transferred to the downhill side to create the sides of the pit for the hearth. Road traces usually enter into the hearths and link them to a larger road system, also evidenced by traces. The individual placement on the landscape leads to superficial differences in size, configuration, and state of preservation; however, in general they are easily identified by their cleared, level surfaces.

The Armory Woodland also contains military fortifications and encampments from the Civil War, the result of its topographic prominence above the strategically important town of Harpers Ferry. The three blockhouse fortifications are believed to have been built by Confederate troops in May 1861, but were never completed since the rebel forces abandoned Harpers Ferry in June of the same year. Union troops took over the blockhouses shortly thereafter; however, no substantial force occupied the area around the blockhouses until 1862. While there is a scarcity of historical records and physical descriptions of the encampments, previous research strongly suggests that they date to the Federal occupation in the fall and early winter of 1862. The encampment features include dry-laid stone walls and foundations, stone alignments, and tent platforms. Nine identified encampments are within the boundaries of the Armory Woodland, though outside of the APE. Today, after the intrusion of bulldozed roadways associated with a subdivision and development plan in the mid-1980s, the site is once again entirely forested. The sites and structural ruins of the charcoal hearths and encampments remain as evidence of its nineteenth-century use.

Integrity

A subdivision development plan in the mid-1980s resulted in several modern road traces within Tract 109-02. These roads are evidenced by cleared paths roughly the width of a bulldozer. The roads were never paved and the subdivision plans were abandoned, thus the traces have started to erode and are often hidden by vegetation. Despite these intrusions, the Armory Woodland's relative isolation, steep terrain, limited access, and federal ownership have all combined to help maintain the location and setting of the property. These factors also have resulted in a good state of preservation for the property's resources, which display noteworthy levels of workmanship, feeling, and association. Thus, the Armory Woodland possesses sufficient integrity to convey the property's historic character as a group of features associated with the nineteenth-century industrial and military history of Harpers Ferry.

In February 2011 an archeological survey in the APE provided a complete inventory of all contributing resources and evaluated those sites that did not contain intact deposits. The fieldwork consisted of surface reconnaissance, shovel testing at a 15-meter (50-foot) interval, and metal detecting of the APE within the HAFE park boundaries. During this survey, two sites associated with the charcoal manufacturing for Harpers Ferry Armory were identified in HAFE. Road traces associated individually with the sites cross the ROW, and a large hearth area is about 40 feet from the APE edge.

The historic remains of a mid-1800's charcoal manufacturing area for the Harpers Ferry Armory is located on a transition area from steep slopes to more moderate slopes. The site, measuring 100 x 100 feet (30 x 30 meters), is located on the eastern boundary of APPA and consists of a charcoal hearth. This site is located within the APE, but is in the adjacent ROW owned by FirstEnergy. DVP has permission to use this ROW as needed; however, there are mitigation steps to avoid impacting cultural resources that would be made mandatory on a permitted project.

Numerous nineteenth-century road traces traverse the Armory Woodland and illustrate the use of the property as a wood and charcoal source for the Harpers Ferry Armory. Smaller roads connected the charcoal hearths and fed into larger roads, which led down the mountain to the armory. Other roads served as crossing points and provided access to the east and west sides of the mountain. The road traces are evidenced by linear depressions in the landscape. Some road traces have eroded due to runoff and are identifiable by deep cuts leading down the mountain. Though generally destroyed by the ROW, a charcoal hearth road trace is partially present in the APE in APPA and one trace (Bear Pond Road) is fully apparent across the APE at the western boundary of HAFE.

Cultural Resources: Historic Districts

Appalachian National Scenic Trail

The NRHP is the official list of historic properties determined to be worthy of protection. A historic district eligible or listed in the NRHP must meet criteria set forth in 36 CFR 60 and National Register Bulletin 15. The definition of a historic district from the National Register Federal Program Regulations (36CFR60 Section 3): "A district is a geographically definable area, urban or rural, possessing a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united by past events or aesthetically by plan or physical development. A district may also comprise individual elements separated geographically but linked by association or history." Additionally, the trail itself – exclusive of the buffering lands – is probably qualified to be listed as a national historic landmark.

The Appalachian National Scenic Trail was completed in 1937 and has come to be associated with historic structures, landscapes, shelters, bridges, and other miscellaneous objects and vistas that contribute to the current eligibility of the Trail lands as a historic district in the NRHP. The Trail corridor greenway and various contributing sites within are also eligible for listing individually. Robert Grumet, a National Park Service historian, completed a cultural resources survey (Grumet, 2002) that identified more than 1,200 components that contribute to the trail's national significance, such as shelters, Civilian Conservation Corps camps, viewpoints, improved roads, bridges, impoundments, buildings, monuments, towers, railroad grades, and the ruins of a moonshine still. Grumet's study includes this summary of the historic context of the Trail:

Born in the mind of forester Benton MacKaye (1921), the Appalachian Trail became a reality in 1925 with the founding of the Appalachian Trail Conference (Waterman and Waterman 1989). Initially led by Arthur Perkins and later by Myron Avery (1931-1952), the Appalachian Trail Conference coordinated efforts of club Trail construction crews. Assisted by New Deal-era Civilian Conservation Corps and Works Progress Administration agencies (Carr 1998; McClelland 1993), Trail crews completed construction of a continuous Trail route running from Maine to Georgia by 1937.

Rebuilt in the years following World War II, the Trail gradually became a vital Trailway used by thousands of hikers. The Trail came to symbolize many things to many people (Bryson 1998; Redick 2001; and Rubin 2000). Trail maintenance and management procedures employed a technology calculated to preserve values treasured by hikers (Birchard and Proudman 2000). Public concern for the Trailway finally resulted in its designation as one of the first National Scenic Trails created by the National Trail System Act of 1968 (Foster 1987). Since that time, a unique partnership of volunteer organizations and public agencies has worked together to manage and maintain the Appalachian National Scenic Trail as a cultural resource of unparalleled national significance.

Because a charcoal manufacturing site on APPA was important for the operation of the Harpers Ferry Armory and thus is intrinsic to the Armory's significance in the Antebellum and Civil War periods, it would be a contributing element to the Trail's nomination as a historic district.

Viewsheds

Harpers Ferry National Historical Park

HAFE is roughly centered on the town of Harpers Ferry, West Virginia and at the confluence of the Potomac and Shenandoah Rivers; however the park is not inclusive of the towns of Harpers Ferry or the adjacent town of Bolivar. HAFE surrounding the project area (Figure 8) and along the rivers (Figure 9) is largely forested, however HAFE at Schoolhouse Ridge South (Figures 11 and 12) is predominately maintained as open agricultural fields, interspersed with pockets of forest cover. The location of each figure referenced above is shown on the viewshed analysis map in Figure 12.

The MSD 551 project would cross approximately 940 feet of HAFE (Tract 109-02). The crossed parcel currently contains a transmission ROW with one DVP structure (No. 399) proposed to be removed and replaced. With the exception of the ROW, the majority of the parcel is wooded with scattered residences adjacent to the park boundary. The portion of HAFE adjacent to APPA is not a central area of recreation or visitation. The majority of potential viewers in the vicinity are residents along Chestnut Hill Road. After review of the viewshed of Figure 12, the current towers are not visible anywhere else in the HAFE Tract 109-02 parcel, except from within the ROW, which is an area unlikely to attract visitor use and recreation.

The existing 551 MSD transmission line is, however, visible from two other locations within HAFE including the Murphy-Chambers Farm (Figure 9) and Schoolhouse Ridge South (Figures 11 and 12). These sites constitute the Key Observation Points (KOPs) for assessing impacts to the visitor's experience at these viewsheds.



Figure 8. The view to the west in the project area in HAFE.



Figure 9. The view to the southwest from the Murphy-Chambers Farm Key Observation Point.



Figure 10. The view to the southeast from the Schoolhouse Ridge South northern Key Observation Point.



Figure 11. The view to the southeast from the Schoolhouse Ridge South southern Key Observation Point.

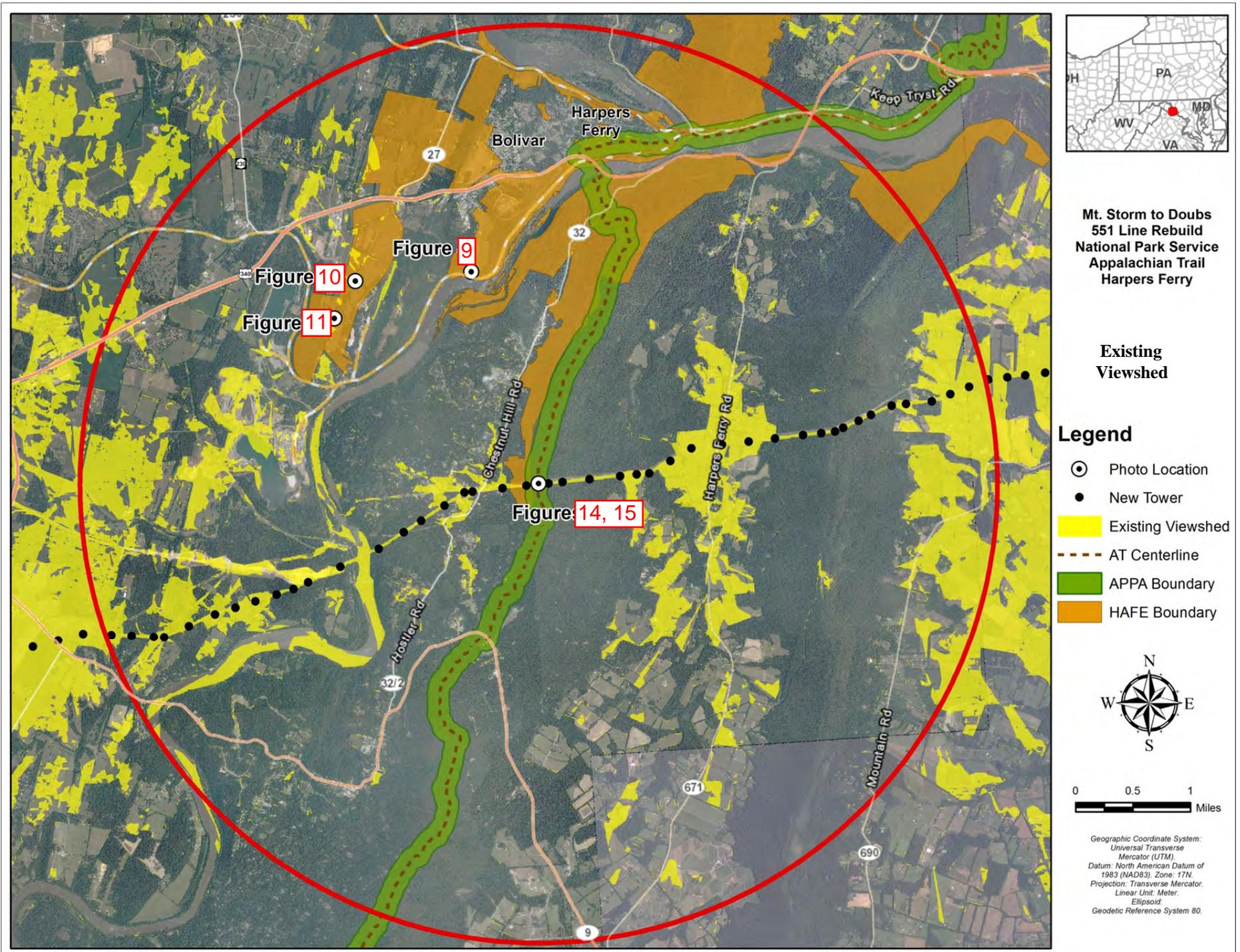


Figure 12. Current viewshed analysis of the project area. The KOP locations are marked by their corresponding current condition images of Chapter 3.

The Murphy-Chambers Farm is located approximately 2 miles northwest from where the existing MSD 551 transmission line crosses NPS lands. It is the site of three landscape components, two of which directly relate to the development of Harpers Ferry. In addition to the agricultural setting that is the dominant component of the landscape, the farm contains both Civil War earthworks and the foundation of the 1895-1910 temporary location of John Brown's Fort. Remnant Civil War earthworks are positioned over the Shenandoah River with a panoramic view of the river valley. Currently a heavily forested ridgeline, the vegetation around these earthworks was cleared during the Civil War to provide an open field of fire to anyone approaching Harpers Ferry by road or railroad bed. The Murphy-Chambers farm KOP site is a view largely unchanged in hundreds of years (Figure 9). The MSD551 line to the west of the project area is visible in the background. This section of line is slated to undergo a proportional increase in size to that in the project area.

The Schoolhouse Ridge South area is located about 2.3 miles northwest of where the existing MSD 551 line crosses of NPS lands (Figure 12). Part of Stonewall Jackson's main battle line during the 1862 Battle of Harpers Ferry, Schoolhouse Ridge South is a primary destination and visitor use area within HAFE. There are large patches of open fields, intermixed with forest cover (Figures 11 and 12). Schoolhouse Ridge South was under agricultural cultivation prior to the Civil War. For the most part this land has remained in agricultural use up to the present time. However, the area also exhibits a connection to the industrial history of Jefferson County and the nearby town of Millville. The Standard Lime and Stone Company constructed employee housing there in the early twentieth century (NPS 2003b). Those structures are now in ruins and associated landscape components have also suffered neglect since the families left. Little survives that would constitute a historic vernacular landscape of a residential community (NPS 2010).

A hiking trail winds through the edges of the fields with vistas of the bucolic landscape. Viewsheds to East are broken only by the presence of the low-traffic road and an electric distribution line while the MSD551 is visible in the background.

Appalachian National Scenic Trail

The Appalachian Trail is a 2,175 mile trail that runs through 14 states along the eastern United States. The MSD551 existing transmission line crosses the Appalachian Trail between the towns of Harpers Ferry, West Virginia and Lovettsville, Virginia. The MSD551 project would cross approximately 1055 feet of APPA, adjacent to HAFE. The crossed parcel currently contains a transmission line ROW with two DVP structures (No. 400 and No. 401) proposed to be removed and replaced.

The landscape of APPA in the survey area is heavily forested and dominated by steep topography. The existing viewshed in Figure 12 shows that the transmission line is only visible within the APPA and directly under the ROW. A site visit confirmed the results of the viewshed analysis, and it was noted that a visitor on the trail would not likely notice the transmission line prior to entering the ROW due to the thick tree cover and varying topography along the trail in the vicinity of the crossing.

Approaching from the north, a visitor would pass under the FirstEnergy-owned 138 kV transmission line before crossing under the MSD551 transmission line (Figure 13). Looking east from the middle of the ROW, structure No. 401 is located at the bottom of a steep slope, the top of which is visible from the trail (Figure 14). Looking west from the middle of the ROW, structure No. 399 is located at the bottom of a more gradual slope on HAFE lands. The structure is located down the slope outside of the immediate foreground (Figure 15), but is visible in its entirety from the trail.

Continuing south through the ROW, tower No. 400 is located in the immediate foreground and directly to the east of the trail (Figure 16). Due to the very close proximity of structure No. 400 to the trail, the tower

could be considered visually intrusive to a visitor. The existing structure has four guy wires for support, increasing its total footprint. While these three towers are visible from the Appalachian Trail, it would not take a visitor long to pass through the affected area given the relatively short width of the ROW. A re-route of the trail, potentially needed during construction of the build alternative, would temporarily change the viewshed for a hiker from the top of the ridge to only one side of the ridge.



Figure 13. The view to the south in the project area on the Appalachian Trail.



Figure 14. The Key Observation Point view in the middle of the project area on the Appalachian Trail, looking to the east.



Figure 15. The Key Observation Point view in the middle of the project area on the Appalachian Trail, looking to the west.



Figure 16. The view on the Appalachian Trail looking north, and in proximity to tower No. 400.

Visitor Use and Experience

Appalachian National Scenic Trail

The discussion of noise is limited to APPA because visitors to HAFE's points of interest will not be in audible range of the transmission facilities to hear corona or construction noise. On this portion of APPA, hikers can hear noise (known as corona) from the operation of the transmission lines. The physical manifestations of corona include a crackling or hissing noise and very small amounts of light. During relatively dry conditions, corona noise typically results in continuous noise levels of 40 to 50 dBA (A-weighted, or frequency-weighted, decibels) in proximity to the transmission line, such as at the edge of the ROW. In times of extreme humidity or rain, the corona noise can be higher, in the range of 50 to 60 dBA (California Public Utilities Commission 2009). For a comparison, Table 3 lists common sounds and their associated noise levels. The noise levels in the vicinity of the Trail would be expected to have the noise equivalent of a quiet rural area at night (32 to 35 dBA).

For verification, noise levels were measured on February 14, 2012 at the ROW edge on the Trail. At the time of measurement the noise was measured at 37 dBA, relative humidity was 40%, and the air temperature ranged from 43 degrees F to 47 degrees F.

Maintenance operations occur at various times of the year for selective clearing or for repairing damaged transmission lines and can also be a temporary source of noise. Routine inspection and maintenance of the transmission lines are accomplished by vehicular access from the existing access road. Pick-up trucks and chainsaws are examples of equipment that may be used in maintenance activities. Their relative sound is compared in Table 3. The existing structures require routine inspection and maintenance, which also bring traffic and an additional noise source to the site.

Source	Level
Normal breathing	10 dBA
Rustling leaves	20 dBA
Whisper	20–30 dBA
Quiet rural area at night	32–35 dBA
Ambient noise in an average home	50 dBA
Pick-up Truck	55dBA
Normal conversation at 3 feet	60–65 dBA
Vacuum cleaner	60–82 dBA
Freeway traffic at 165 feet	70 dBA
Garbage disposal at 3 feet	80 dBA
Chain Saw	85 dBA
Rock concert	90–115 dBA
Jet flyover at 1,000 feet	110 dBA
Apollo liftoff	188 dBA

Table 3. Common Sounds and Their Associated Noise Levels. Sources: California Public Utilities Commission 2009; Minor 2001

Vegetation

Harpers Ferry National Historical Park and Appalachian National Scenic Trail

Mature forest and the ROW vegetation

The project area is a disturbed, artificially maintained meadow and scrub in Southern and Central Appalachian Oak Forest, and Central Appalachian Oak and Pine Forest (USGS 2012). Mature Oak and Pine-dominated forest bordering the project area are not to be accessed according to the construction plan, other than on existing roadbeds. There are tree branches and herbaceous species lining these roads. Whole, mature ROW edge trees are also considered as part of the affected environment, because continuing tree hazard maintenance planned by DVP involves trimming or taking hazard trees eventually. Forested areas to the north and south of the ROW are dominated by chestnut oak (*Quercus prinus*), although white oak (*Q. alba*), black oak (*Q. velutina*), black gum (*Nyssa sylvatica*), pignut hickory (*Carya glabra*), and pawpaw (*Asimina triloba*) also occur. The Virginia creeper (*Parthenocissus quinquefolia*) and common greenbrier are the most common understory species present; the latter being particularly so adjacent to the open ROW.

At the time of a vegetation survey for the project on June 21-22, 2010, the south side of the ROW was dominated by a very dense stand of sapling size black locust (*Robinia pseudoacacia*) (Figure 17). At the western end, substantial tree-of-heaven (*Ailanthus altissima*) and other woody species were also present. The understory was mostly Nepal microstegium (*Microstegium vinineum*) and deertongue grass (*Dichanthelium clandestinum*). However, this section of the ROW was found to be entirely cut over by the next visit on August 27, 2010 (Figure 17). The north side of the ROW (FirstEnergy-owned) supports primarily large open meadow areas dominated by a number of goldenrods, such as early goldenrod (*Solidago juncea*) and tall goldenrod (*S. altissima*), Chinese bushclover (*Lespedeza cuneata*), and various grasses and forbs (Figure 18), while the south side of the ROW (DVP-owned) is dominated by mostly invasive species. Large patches of common greenbrier (*Smilax rotundifolia*) and blackberry (*Rubus sp.*) were present throughout the whole ROW; however they are denser in the southern half (Figure 19).

The meadow areas, particularly at or near the forest edge, can support scattered woody plants and native herbaceous plants, such as wild bergamot (*Monarda fistulosa*), American false pimpernel (*Hedeoma pulegioides*), Indian tobacco (*Lobelia inflata*), whitewood aster (*Eurybia divaricata*), gray goldenrod (*Solidago nemoralis*), wreath goldenrod (*S. caesia*), dittany (*Cunila organoides*), pale Indian plantain (*Cacalia atriplicifolia*), clustered mountain-mint (*Pycnanthemum muticum*), and purple lovegrass (*Eragrostis spectabilis*). Photographs of select sections of the ROW and forest are shown in Figures 20 and 21.



Photo 1 – Dense stand of sapling size black locust (*Robinia pseudoacacia*).



Photo 2 – Cut down black locust stand (August 2010).

Figure 17. Example of Black Locust (*Robinia Pseudoacacia*) in the project area.



Figure 18. View of the vegetation cover looking west in the northern half (FirstEnergy-owned) of the shared right-of-way.



Figure 19. View of the vegetation cover looking east in the southern half (DVP-owned) of the shared right-of-way.



Figure 20. Example wide view of vegetation in the right-of-way, summer.



Figure 21. Example of forested area adjacent to the right-of-way, summer.

Exotic Invasive Plants

A number of invasive exotic species are encountered in the project area with some quite abundant. Invasive species were present in the scope of the survey and can be presumed to occur in all survey areas covered. The location of invasive species were not individually mapped, but were grouped by general population. The generalized identification approach is consistent with USFWS general protocol for invasive species surveys (USFWS 2009). It is assumed that black locust can be found throughout the entire southern half of the ROW and is within each polygon identified in Figure 22. Each polygon has been given an arbitrary map ID number that corresponds with the species composition and represents one or more dominant invasive species as listed in Table 4.

A list of the most prevalent exotic invasives is also given below.

- Mile-a-minute plant (*Polygonum perfoliatum*)
- Chinese bush-clover (*Lespedeza cuneata*)
- Japanese honeysuckle (*Lonicera japonica*)
- Nepal microstegium (*Microstegium vimineum*)
- Multiflora rose (*Rosa multiflora*)
- Wine raspberry (*Rubus phoenicolasius*)
- Tree-of-heaven (*Ailanthus altissima*)
- Spiny plumeless thistle (*Carduus acanthoides*)
- Spotted knapweed (*Centaurea stoebe ssp. micranthos*)
- Black locust (*Robinia pseudoacacia*)
- Princess tree (*Paulonia tomentosa*)
- European privet (*Ligustrum vulgare*)
- Coral berry (*Symphoricarpos orbiculatus*)
- Bird cherry (*Prunus avium*)
- Asiatic bittersweet (*Celastrus orbiculatus*)
- Japanese barberry (*Berberis thunbergii*)
- Elaeagnus sp.

Of these species, the Chinese bush-clover, Japanese honeysuckle, Nepal microstegium, spiny plumeless thistle, spotted knapweed, and tree-of-heaven are all exotic and quite abundant within the entire existing ROW. The Japanese honeysuckle is also abundant in the forested area to the north of the ROW, as is Nepal microstegium along old dirt roads.

Although the black locust is a native species, it can be quite aggressive, as demonstrated at this site, and is considered undesirable when it displaces native grassland species. In both Maryland and Virginia, for example, Nepal microstegium is considered invasive (Invasive Species, 2010). Mile-a-minute plant is a very aggressive species once it gets established, but as of yet is only localized along the existing ROW. The remaining species listed above occur mostly as scattered individuals or in a few small patches, although a relatively large patch of Asiatic bittersweet is located at the east end of the existing ROW. One species, the coral berry, is present in the forest north of the existing ROW and may not actually be aggressive in the area, since Hamon, Ford-Werntz, & Grafton (2006) consider it native. Alternately, Strausbaugh & Core (*n.d.*, 2nd ed.) mention that the coral berry is a native species that is often cultivated and commonly colonizes adjacent areas. They also indicate that it is now difficult to determine what its natural range is in West Virginia. In addition, an unidentified umbelliferous plant was noted in the forest at this site. Its identity too could be verified during its flowering period in a future site visit.

Table 4. Key to mapping units of Figure 22

Map ID	Species Composition
1	<i>Ailanthus altissima</i>
2	<i>Ailanthus altissima</i> - <i>Lonicera japonica</i>
3	<i>Ailanthus altissima</i> - <i>Lonicera japonica</i> - <i>Rosa multiflora</i>
4	<i>Bamboo spp</i>
5	<i>Carduus acanthoides</i>
6	<i>Celastrus orbiculatus</i>
7	<i>Centaurea stoebe sp. micranthos</i>
8	<i>Lespedeza cuneata</i>
9	<i>Lespedeza cuneata</i> - <i>Centaurea stoebe</i>
10	<i>Lonicera japonica</i>
11	<i>Lonicera japonica</i> - <i>Symphoricarpos orbiculatus</i>
12	<i>Lonicera japonica</i> - <i>Verbesina sp.</i>
13	<i>Microstegium vimineum</i>
14	<i>Polygonum perfoliatum</i>
15	<i>L.japonica</i> - <i>P.perfoliatum</i> - <i>M.vimineum</i> - <i>A.altissima</i> - <i>C.acanthoides</i>
16	<i>Carduus acanthoides</i> - <i>Lonicera japonica</i> - <i>Ailanthus altissima</i>
17	<i>Lonicera japonica</i> - <i>Microstegium vimineum</i>
18	<i>Lonicera japonica</i> - <i>Ailanthus altissima</i>
19	<i>Lonicera japonica</i> - <i>Ailanthus altissima</i> - <i>Polygonum perfoliatum</i>
20	<i>Symphoricarpos orbiculatus</i>

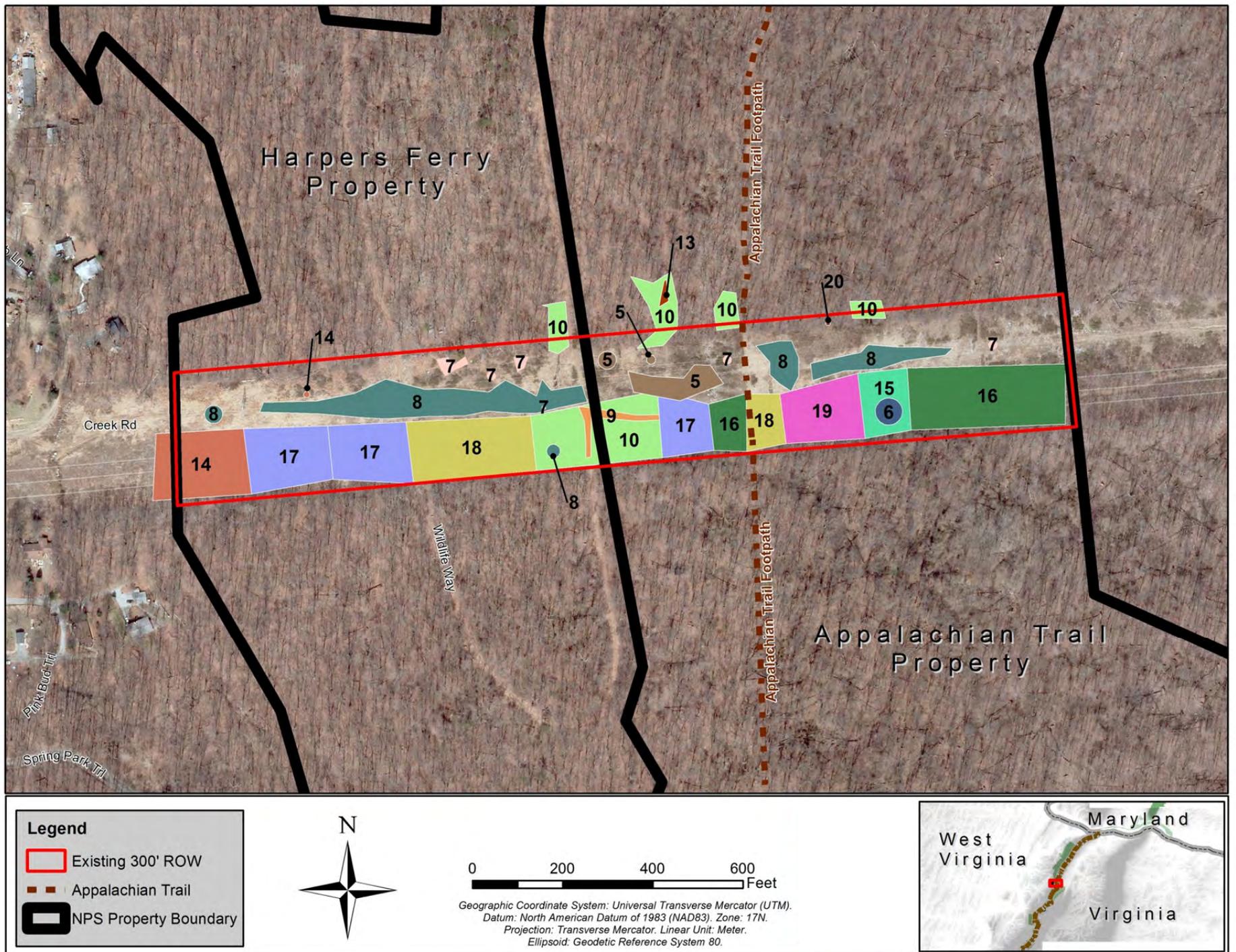


Figure 22. Undesirable invasive plants in the project area. Polygon numbers refer to dominant species as identified in Table 4.

ENVIRONMENTAL CONSEQUENCES

General Methodology for Establishing Impact Thresholds and Measuring Effects

This chapter addresses the potential impacts to each of the impact topics discussed in the “Affected Environment” chapter for each of the alternatives. The action alternative is compared to the no action alternative, or baseline condition of the project area within APPA and HAFE. In the absence of quantitative data, best professional judgment was used. In general, effects were determined through consultation and collaboration with a multidisciplinary team of NPS, and other professional staff. Agency consultation was conducted with the USFWS, the ACHP, the Virginia Department of Game and Inland Fisheries, the Virginia Department of Conservation and Recreation, the Virginia Department of Historic Resources, the West Virginia Division of Natural Resources, the West Virginia Division of Culture and History, and the US Army Corps of Engineers. In addition to the following analyses, the Assessment of Effect (AOE) (found in Appendix E) for cultural landscapes and historic districts was completed by NPS staff in compliance with Section 106 of NHPA and is summarized under each impact topic and alternative. Applicant-contracted, NPS-verified data reports and other existing data sources such as park planning documents and studies on the ROW were also used to assess the potential impact of each alternative. Potential impacts of all alternatives are described in terms of type (beneficial or adverse); context; duration (short- or long-term); and intensity (negligible, minor, moderate, major). Definitions of these descriptors include the following:

Beneficial: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.

Adverse: A change that declines, degrades, and/or moves the resource away from a desired condition or detracts from its appearance or condition.

Context: Context is the affected environment within which an impact would occur, such as local, park-wide, regional, global, affected interests, society as whole, or any combination of these. Context is variable and depends on the circumstances involved with each impact topic. As such, the impact analysis determines the context, not vice versa

Duration: The duration of the impact is described as short-term or long-term. Duration is variable with each impact topic; therefore, definitions related to each impact topic are provided in the specific impact analysis narrative.

Intensity: Because definitions of impact intensity (negligible, minor, moderate, and major) vary by impact topic, intensity definitions are provided separately for each impact topic analyzed.

Cumulative Impacts

The CEQ regulations to implement NEPA require the assessment of cumulative impacts in the decision making process for federal projects. Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7).

Cumulative impacts are considered for all alternatives, including the no action alternative. Therefore, it was necessary to identify completed, ongoing, or reasonably foreseeable future projects and plans in APPA and HAFE, and if applicable, the surrounding region. Table 5 summarizes these actions that could affect the various resources at the parks. These actions are described in more detail in the “Related Policies, Laws, Plans, and Actions” section of this document (see the “Purpose and Need for Action” chapter). In addition to these plans, cumulative impacts also took into account the impacts of past park development and operations as part of past actions.

The analysis of cumulative effects was accomplished using four steps:

- Step 1—Resources Affected. Fully identify resources affected by any of the alternatives.
- Step 2—Boundaries. Identify an appropriate spatial boundary for each resource.
- Step 3—Cumulative Action Scenario. Determine which actions to include with each resource.
- Step 4—Cumulative Impact Analysis. Summarize the cumulative impact, which is the effect of the proposed action plus other actions affecting the resource; defining context, intensity, duration and timing; defining thresholds, methodology, etc.

Table 5. Cumulative Impact Scenario

Impact Topic	Study Area	Past Actions	Current Actions	Future Actions
Soils	APPA and HAFE Park property within the right-of-way and adjacent Park property up to 1/2 mile on either side of the right-of-way and the length of all planned access routes	Establishment and maintenance of the 500-kV single-circuit transmission line	HAFE General Management Plan, APPA Resource Management Plan; facility and ROW maintenance	HAFE General Management Plan, APPA Resource Management Plan; facility and ROW maintenance
Vegetation	APPA and HAFE Park property within the right-of-way and adjacent Park property up to 1/2 mile on either side of the right-of-way and the length of all planned access routes	Establishment and maintenance of the 500-kV single-circuit transmission line	HAFE General Management Plan, APPA Resource Management Plan; facility and ROW maintenance	HAFE General Management Plan, APPA Resource Management Plan; facility and ROW maintenance
Historic Districts	The geographic study area for this historic district is the footpath which crosses underneath the existing transmission line and the adjacent or Park lands, which include any resources contributing to the historic district. The distance used to evaluate historic districts is 1.5 miles	The establishment and maintenance of the 500-kV single-circuit transmission line and the WV Route 9 crossing that is within 1.5 miles of the CWA	APPA Resource Management Plan; APPA facility and ROW maintenance ; WV Route 9 Bypass project	APPA Resource Management Plan; facility and ROW maintenance
Cultural Landscapes	The geographic study area for this cultural landscape is the HAFE land underneath the existing transmission line right-of-way and the adjacent Park lands, which include any resources contributing to the cultural landscape. The distance used to evaluate cultural landscapes is 1.5 miles	Establishment and maintenance of 500-kV single-circuit transmission line; the WV Route 9 crossing; subdivision planning and Wildlife Way road-building	HAFE General Management Plan; facility and ROW maintenance ; Route Bypass 9 project	HAFE General Management Plan; facility and ROW maintenance; National Register listing completion
Viewsheds	Areas that can be viewed during crossing of the right-of-way on the Trail and any viewshed that includes views of the transmission line that may exist from locations within the Parks based on viewshed analysis and simulations	Establishment and maintenance of 500-kV single-circuit transmission line; subdivision planning; Routes 340 and 9 establishment, widening , and route changes; DHS facility construction (Schoolhouse Ridge South)	Facility and ROW maintenance ; WV Route 9 Bypass construction	Facility and ROW maintenance
Visitor Use and Experience	APPA and HAFE Park property within the right-of-way (on the trail) and adjacent Park property; may extend up to 6,400 feet from right-of-way for construction noise impacts	Establishment and maintenance of 500-kV single-circuit transmission line; Chestnut Hill Road installation;	Facility and ROW maintenance ; Route 9 Bypass project; existing local road noise; DHS facility shooting range (Schoolhouse Ridge South)	Facility and ROW maintenance; Use of existing roads including Chestnut Hill Road and WV Route 9

Soils

Methodology and Assumptions

Potential impacts to soils are assessed based on the extent of disturbance to natural undisturbed soils, the potential for soil erosion resulting from disturbance, and limitations associated with the particular soils. Analysis of possible impacts to soils was based on onsite inspection of the resource within the project area, review of existing literature and maps, and information provided by the NPS and other agencies.

The major factors in assessing impacts to soils are the physical measures of soil erosion factor (K_w), wind erodibility, slope, and texture. Mapping of the project plan over soil types allows for analysis of potential disturbance extent and severity by using the erosion factors. Soil types were mapped using County soil surveys prepared by the Natural Resources Conservation Service (NRCS) for Jefferson County, West Virginia (NRCS 2010) and Loudoun County, Virginia (NRCS 2009). Soil textures are described using the USDA and the USCS systems. Slope within project area was determined by analyzing a digital elevation model (DEM) in Geographic Information Systems (GIS) (USGS 2011). These data were used to determine the erosion potential from gravity, referred to as soil creep. Soil creep occurs as a function of gravity working on bare soil particles on steep slopes (generally greater than 25%). Geographic coordinates of the proposed rebuild structures, access roads, and construction pads were obtained from DVP, which were viewed with the affected resources using ArcGIS. Soil series and the locations of the rebuild structures, access roads, and construction pads can be seen in Figure 6.

Geographic Area

The geographic study area for soils is contained within the boundaries of the project area, including the location of the access roads and tower footings. Construction activities would not occur outside this area.

Impact Thresholds

The following thresholds were used to determine the magnitude of impacts on soils:

- Negligible:** Soils would not be impacted, or the impact would be below or at the lower levels of detection. Any impacts to soils would be slight.
- Minor:** Impacts to soils would be detectable. Impacts to undisturbed areas would be small. Mitigation would be needed to offset adverse impacts and would be relatively simple to implement and would likely be successful.
- Moderate:** Impacts to soils would be readily apparent and result in a change to the soil character over a relatively wide area. Mitigation measures would be necessary to offset adverse impacts and would likely be successful.
- Major:** Impacts to soils would be readily apparent and substantially change the character of the soils over a large area both in and out of the park.
- Duration:** Short-term impacts occur during the time of construction; long-term impacts extend beyond construction, and include maintenance activities.

Alternative A – No Action

Analysis

Under Alternative A, the existing ROW where the transmission facilities are located would remain unchanged. No construction activities would occur; therefore there would be no impacts to soils from construction. Occasional maintenance activities would continue to occur, which could result in minimal amounts of soil compaction from vehicles accessing the site. There is the potential for maintenance access needs to increase in frequency as the facilities are in deteriorating condition.

Compacted soils contribute to reduced water infiltration rates, allowing for greater runoff and increased potential for erosion. The degree of compacted soils due to vehicular activities would be minimal because maintenance vehicles would access the ROW on established access roads. Compacted soils can also inhibit seed germination and plant growth, which over the long term decreases the amount of organic material within the soils and decreases overall soil productivity (i.e., the capacity of the soil to produce vegetative biomass). Under this alternative, adverse impacts to soils would be long-term localized and negligible, as access for maintenance would be infrequent and any impacts from compaction and runoff would be slight.

Cumulative Impacts

Cumulative impacts to soils within the park include effects from previous land-disturbing activities and construction of facilities and access roads. Projects and actions that could contribute to cumulative impacts to soils in the area of the ROW include implementation of the HAFE GMP and APPA RMP, as well as the prior establishment and relocation of transmission lines within the park and other linear crossings. The project area is crossed twice by Wildlife Way, an unimproved road. Disused, the road contributes long-term impacts on soils that are negligible to minor adverse. When combined with the long-term negligible adverse impacts of Alternative A, cumulative impacts to soils would be long-term negligible to minor adverse.

Conclusion

Alternative A could result in an overall slight increase of facility maintenance activities and a related compaction of soils. As all work would be on established ROW and access roads, there would be long-term negligible impacts. Cumulative impacts under Alternative A would be long-term negligible to minor adverse.

Alternative B – NPS Preferred Alternative, The Approval of the Special Use Permit for Upgrading the Dominion 551 Transmission Line in Accordance With the Construction Plan.

Analysis

DVP proposes to remove three existing transmission towers located within HAFE and APPA and replace them with three new towers. The existing structure foundations would be removed to 1.5 feet below the surface for each structure utilizing an excavator with a hydraulic ram. Concrete debris would be removed and hauled offsite for disposal. Each area would be graded to match the surrounding contour and seeded with an NPS-approved seed mix. The new structure foundations would be placed by digging holes into the soil and rock using augers; no blasting would be used. Foundation holes would be poured with

concrete and the immediate area would be graded level for future use should repairs and maintenance become necessary.

The locations of the proposed new towers and their construction pads are shown in Appendix B. They would be constructed of steel lattice and each have four foundation footings comprised of poured concrete. To facilitate the construction of the proposed towers, it is necessary for DVP to prepare two temporary construction pads which would be cleared of vegetation, and graded. After construction, the original contours would be restored as close as practical and the area rehabilitated. The western-most construction pad, which would be approximately 1.09 acre in size, would be prepared within HAFE property, immediately to the west of Wildlife Way. The eastern-most construction pad, which would be approximately 1.74 acres in size, would be prepared within the APPA boundaries, approximately 90 feet east of the Appalachian Trail.

No new access roads would be constructed within NPS lands for this project; instead, DVP would use an existing dirt access road in the ROW to access the project area from the east and west separately (see Figure 6). The existing dirt road must be maintained to an average width of 12 feet; minor grading of the lane to prevent damage to construction vehicles is planned; however, gravel would not be added to this road unless measures are required for erosion and sediment control.

The project as proposed is going to require markedly increased activity and traffic of construction vehicles, heavy machinery and associated personnel and vehicles. The existing travel lane progressing from Spring Park Trail-to Muskrat Run-to Cub Lane would be the main route of vehicular traffic. Compaction would occur and hence soils would be susceptible to greater rainfall runoff. Compacted soil can inhibit seed germination and plant growth, reducing the amount of organic matter and related soil productivity.

Three existing towers and associated footings would be removed and replaced without blasting, however soils in the areas surrounding the poles would be temporarily disturbed and compacted by the use of heavy equipment around the pole locations during installation and removal operations. The excavation for new foundations would result in direct disturbance of the soil profile to a depth of 1.5 ft. Reclamation of excavated footings would involve the filling of old excavations with rock and soil from the new footing locations.

The new tower facilities are going to require greater foundation area than is currently allocated to the respective tower sites. Overall disturbance would then increase in changing to steel lattice from the current guyed V-style at towers MSD 551/400, and 401. Tower MSD 551/399 is currently steel lattice and would increase only slightly in foundation area needed. The four footings per tower would be driven to a depth between 19 and 24 feet.

The soil series in which the work is planned are ranked low to moderate in terms of erodibility from wind and water, though slopes are a potential issue throughout the area. A soil series of concern is TxD (Figure 6) with a moderate potential for erosion by wind and water. Most of the western ROW access road passes through this soil. On the east side at towers 400 and 401, these soils are less erodible by water yet are moderately wind erodible. At the planned location for the replacement of tower 400, the slope measures 12%.

With these plans, short-term moderate adverse impacts to soils are anticipated. In the long-term, minor adverse impacts due to the slight increase in excavated soil area, are expected. Mitigation efforts and Best Management Practices, as detailed in Chapter 2, would be monitored closely to ensure that complete and timely efforts are applied to all exposed soil such as erosion and sedimentation reduction, re-vegetation, and re-grading.

Cumulative Impacts

The existing cumulative impacts to soils are long term negligible to minor adverse as described in Alternative A. When combined with Alternative B's long term minor adverse impacts, the net results are long term minor adverse cumulative impacts to soils.

Conclusion

Reconfiguration and upgrade of the existing transmission facilities under Alternative B would incorporate mitigation measures to reduce soil erosion, limit areas of compaction, and replace disturbed soils. This would result in short-term moderate and long-term minor adverse impacts to soils from the increased potential for erosion, compaction, and disturbance of soils resulting from construction and maintenance activities. Cumulative impacts would be long-term minor adverse.

Vegetation

Methodology and Assumptions

The following describes the methodology used to evaluate the impacts of the proposed alternatives on vegetation in the project area. This discussion focuses on general vegetation of the project area in the forest fringing the ROW and the vegetation within the ROW, and incorporates the best available research related to the construction and operation of transmission facilities and its effect on vegetation.

Data used in the analysis were collected from available literature and park staff. In addition, site surveys were done to document sensitive species. This rare plant survey was conducted by W. S. Sipple Wetland & Environmental Training & Consulting in tandem with the general vegetation and exotic vegetation surveys. Field surveys were conducted based on flowering/fruited seasons and were on June 21-22, July 19-21, August 23-24, and September 27, 2010. The approach to the survey was to search for species consistent with their expected habitats and flowering/fruited periods. No rare plants were found.

Geographic Area

The geographic study area for vegetation is the existing DVP ROW, including the locations of the access roads, construction pads, and tower footings. It is expected that construction activities would not occur outside this area.

Impact Thresholds

The following thresholds were used to determine the magnitude of impacts on vegetation:

- Negligible:** There would be no observable or measurable impacts to native vegetation. Impacts would be well within natural fluctuations.
- Minor:** Impacts on native vegetation would be detectable, but would not be outside the natural range of variability. Occasional disturbance to individual plants could be expected, but without affecting population levels. Small changes to local population numbers might occur. Sufficient habitat in the Park would remain functional to maintain the viability of the species in the Park.

- Moderate:** Impacts on native vegetation would be detectable and could be outside the natural range of variability. Frequent responses to disturbance by some individuals could be expected, with negative impacts to local population levels. Some impacts might occur in key characteristics of habitat in the Park. However, sufficient population numbers or habitat in the Park would remain functional to maintain the viability of the species in the Park.
- Major:** Impacts on native vegetation would be expected to be outside the natural range of variability, and would be permanent. Frequent responses to disturbance by some individuals would be expected, with negative impacts to Park population levels. Impacts would occur during critical periods of the plants' life cycle and key habitats in the Park would be lost, resulting in direct mortality or loss of habitat that might affect the viability of a sensitive species. Local population numbers might experience large declines.
- Duration:** Short-term impacts would be those lasting less than two growing seasons after the initial impact. Long term impacts would last longer than two growing seasons.

ALTERNATIVE A – NO ACTION

Analysis

Under Alternative A, the upgrade and reconfiguration of the existing transmission lines would not occur. The ROW would continue to be maintained for transmission line operations. As of now, and expected to remain in effect if this alternative is chosen, the easement under which DVP operates in the ROW stipulates DVP can clear trees and undergrowth in the ROW as needed, and also trim or remove "hazard" trees outside the ROW by approval of the NPS Superintendents of HAFE or APPA. Hazard trees are trees that do, or would with falling, come within 10 feet of the facilities.

DVP has stated they practice an integrated vegetation maintenance program at the project area. This would continue and would include activities like spot treatment methods to control vegetation growth with EPA and NPS-approved herbicides, as needed, every six years. Application of herbicides would be conducted pursuant to the existing DVP vegetation maintenance program developed in 2003. The program uses successive, low volume, selective applications of herbicides (including stump spray) designed to reduce and eventually eliminate the existing root mass left after the clearing of tall-growing trees for the installation of the transmission line. Once the competition from these sprouts or brush is removed, the more desirable native varieties of grasses, forbs, and low growing shrubs and trees could fill in and thicken to resist the seeding in of taller tree species in the ROW. This extends the length of the maintenance cycle from a three-year cycle to a four- or five-year cycle depending upon the vegetation type and conductor height. It could also produce a diverse, early successional plant community in the ROW that provides habitat of variable vegetative structure. Stems of taller trees that have survived herbicide application and pose a threat to the conductors are also identified for remedial spot treatment on the arborist's regular patrol.

The research performed for this EA as seen in Chapter 3, Affected Environment, demonstrated that the DVP-owned portion of the ROW has an undesirable proportion of exotic invasive species of plants and none of the sensitive native species that are potential colonizers of this area. Continuation under the current maintenance plan as practiced would continue to result in minor adverse impacts to vegetation.

Cumulative Impacts

Cumulative impacts to vegetation would include the previous establishment and relocation of the transmission lines and other developments within the parks, implementation of the HAFE GMP, and APPA RMP. The clearing of vegetation for the establishment and continued operation of the transmission lines has already occurred, and park plans, such as the GMP and RMP, have set forth goals to protect park vegetation including sensitive species. Development in HAFE related to the GMP, or actions related to the APPA RMP, would be expected to avoid disturbance to vegetation, in particular sensitive species, to the maximum extent possible and would have short- and long-term negligible to minor adverse impacts to park vegetation. These impacts, in combination with the minor adverse impacts of Alternative A, would result in long-term minor adverse cumulative impacts.

Conclusion

Alternative A, under which DVP would continue to implement the DVP IVM plan for the ROW, would have long-term minor adverse impacts to vegetation. The ROW would be maintained for low-growing, native woody species. Fairly intensive treatments would be needed periodically to maintain desired vegetative habitat as well as safe operating conditions for transmission line facilities. Cumulative impacts would be long-term minor adverse.

Alternative B – NPS Preferred Alternative, The Approval of the Special Use Permit for Upgrading the Dominion 551 Transmission Line in Accordance With the Construction Plan.

Analysis

Under Alternative B, the NPS would approve the DVP construction permit, authorizing the reconfiguration and upgrade of the existing transmission lines within the park. All construction activities would occur within the existing 275-foot-wide ROW and no additional clearing would take place. Short-term minor adverse impacts to vegetation would be expected as a result of facility maintenance described under Alternative A. As described in the “Soils” section, construction of the reconfigured transmission line and associated staging area would create ground disturbance and compact soil, resulting in a temporary loss of vegetation in that area until reclamation of the construction area takes place, as required by the construction plan (see Appendix A). The construction plan would also require removing vegetation to accommodate the new footings, resulting in a permanent loss of vegetation at the base of each footing. Because the footings are increasing in area from the previous style of towers, there would be a minor net loss of vegetated area. As stated in the construction plan, reclamation activities would use a NPS specified seed mix that contains native forbs and grasses.

In accordance with the DVP hazard tree plan, taller lines for the new project would impact taller, more mature trees directly outside the ROW¹. Since the time for any one tree to reach the hazard criteria to the line will increase with the greater hazard zone heights, those trees would be older and larger than under the current hazard zones. This results in the loss of structural diversity in the standing vegetated habitat in

¹ DVP has notified the NPS of two trees that if they fall are likely to come within ten feet of the proposed facilities, causing arcing and potential power disruption or fire. The trees are to be inspected prior to removal for nesting wildlife and the proper professionals contacted to relocate the wildlife or provide other options.

and around the project area, and the loss of the potential ecological benefit of decaying downed trees. Mitigation for the loss of virtually irreplaceable taller trees is discussed in Chapter 2.

Vegetation in the ROW is considered habitat and also valuable in its inherent potential for diversity of native plant species and healthy ecosystem functioning. As stated above under *Soils*, compaction of soils by construction vehicles, personnel and equipment are going to reduce germination by native seeded plants. Also, in total there could be 2.83 acres of direct disturbance through staging pad clearing and grading in addition to impacts to vegetation from vehicle access. There were no sensitive native species found in the project area, so impacts to rare, threatened and endangered species are not expected with proposed construction activities. Invasive plant extent in the project area is currently a substantial impact on vegetation as seen in Figure 22 and described in *Affected Environment*. Exposure of bare soil expected with construction can promote the invasion by exotic species. Bare soil conditions would be mitigated by the DVP plan for planting native vegetation described in the 'Dominion's 2011 Erosion and Sedimentation Control Specifications'.

It is expected that adherence to IVM – as developed by NPS and DVP cooperatively for mitigation of impacts to vegetation – in the entire cleared ROW with the agreed-upon objectives for habitat properties would increase the ROW's suitability as vegetated habitat. DVP would fund at least two years of monitoring of the ROW vegetation for attainment of the agreed-upon objectives that would be fully described in the permit. The Parks would decide prior to a final decision on the permit application on the desired habitat outcomes of IVM at the project area and would stipulate this in the decision document. Further, mitigation of impacts to existing vegetation in the form of woody landscape plantings would be required. This would involve intensive management and monitoring during and post-construction.

The impacts of Alternative B are moderate adverse in the short-term and minor adverse in the long term because: taller trees would be requested for removal than are currently under DVP's hazard tree plan; the small net loss in vegetated ground for more tower footing area; and construction would impact vegetation directly. The impacts would not rise above minor in the long-term because the approval of this alternative would be accompanied by NPS stipulations for landscaping and strict adherence to, and monitoring of results of, IVM. DVP will provide the funding for this monitoring with the transfer of all data and analysis to the NPS as a deliverable.

Cumulative Impacts

The existing cumulative impacts to vegetation are long-term minor adverse as described in Alternative A. When combined with Alternative B's moderate short-term and minor long-term adverse impacts, the net results are long term minor adverse cumulative impacts to vegetation that would not rise to moderate since there would be benefits to vegetation in the form of invasive species resistance, habitat quality, and ecosystem functioning from renewed IVM emphasis and landscaping.

Conclusion

Alternative B would have moderate adverse impacts in the short-term and minor adverse impacts in the long term. The long-term impacts to ROW vegetation would be lessened to what they otherwise would be by the coordinated agreement with DVP on a Park-approved IVM program. Cumulative impacts would be long-term and minor.

Viewsheds

Methodology and Assumptions

The analysis of impacts for scenic views and visual resources assesses the potential impact associated with constructing, operating, and maintaining the proposed transmission lines along the alternate alignments being evaluated in this EA. The analysis also assesses the potential impact associated with decommissioning the existing transmission line. Visual quality is by nature subjective. The Federal Highway Administration (FHWA) developed an analytical method for assessing visual quality effects that attempts to reduce subjectivity and allow for a more objective assessment of visual effects. This method is described in detail in the manual Visual Impact Assessment for Highway Projects (FHWA n.d.).

Visual quality is the character of the landscape that generally gives visual value to the setting. Metrics based on individually ranking independent viewshed elements are used to quantify the visual assessment. The elements considered and appraised are critical characteristics of landscape visual quality: vividness, intactness, and unity. Definitions of these terms are (FHWA 1988, 48):

Vividness: The combination of **landform, water, vegetation, and human development** that form a memorable composition and distinctive visual scene. Contrast and visual interest tend to contribute to strong vividness. The numeric rating for vividness is derived by appraising each of these four components and dividing their sum by four. If a component detracts from the quality of a scene, a commensurate negative value is used. The numeric breakdown is as follows:

- 7–Very high
- 6–High
- 5–Moderately high
- 4–Average
- 3–Moderately low
- 2–Low
- 1–Very low

Intactness: The visual integrity of the natural and built environment and its freedom from visually encroaching elements. The numeric rating is derived by appraising these two components and then dividing their sum by two. The numeric breakdown is then the same as for vividness.

Unity: The degree to which the visible components of the landscape combine to form a coherent, harmonious visual pattern. Human development can contribute to visual unity by adhering to principles of context sensitive design. The numeric breakdown is the same as for vividness.

Evaluations based on these three criteria have proven to be good predictors of the visual quality using the following sample equation:

$$\text{Visual Quality (VQ)} = (\text{Vividness} + \text{Intactness} + \text{Unity})/3$$

The total visual quality was then defined based on the following breakdown:

- 5.7–7.0: Very high
- 4.7–5.6: High
- 3.7–4.6: Moderately high
- 2.7–3.6: Average

1.9–2.6: Moderately low
1.1–1.8: Low
0.0–1.0: Very low

Following the discussion for each alternative, a table provides the visual quality numeric scoring for each KOP analyzed for the given alternative. The numeric scoring shown in the tables and provided in this analysis was calculated (and in some cases rounded) to two significant digits.

Other terms and definitions used in performing the visual quality assessment include the following:

Viewer Position: The position from which the viewer observes the subject. The viewer is superior when above the subject and inferior when below the subject. The normal position is when the viewer is level with the subject. In addition, exposure, sensitivity, frequency, viewer numbers, and duration are each terms FHWA uses to identify and consider how viewers interact with and respond to views being evaluated.

Enabling legislation and park management and operations support the mission of the NPS by including the preservation of scenic places, among other special qualities of places (i.e., historic, cultural, biological, etc.). Therefore, the integrity of national park system units is reliant on freedom from incompatible visual encroachments or elements in scenic views that conflict with the characteristics that define the visual quality. The context in which viewsheds are analyzed is identified qualitatively based on the visitor experience. The visual resources that contribute to the viewshed experience are analyzed as indirect impacts but not stated as such. The NPS does not distinguish between direct and indirect impacts; rather analysis is conducted objectively for both without identifying which is one or the other.

In summary, the analysis generally followed these steps:

1. Determine the viewshed. A viewshed can be thought of as the ‘seen area’ from a given point in the landscape.
2. Determine KOPs, which provide a broad range of representative views from which to view the alternatives (described in more detail below).
3. Conduct field work to establish visual quality at KOPs in their present condition using the visual quality rating process described above.
4. Prepare visual simulations to represent the changes that would be expected under the proposed alternative as seen from the KOPs.
5. Establish visual quality of the effects of the proposed action as described above using the simulations. Visual quality considers the entire view from a KOP, which may include positive or negative features that are not always able to be captured in the representative photograph used to create the simulations. To account for this, the simulations were taken into the field and compared with the present view where feasible.
6. Determine visual impacts on KOPs based on the overall change in visual quality ratings. Also, a qualitative discussion of the overall effects of the proposed alternatives is provided in each conclusion.

These analyses were then translated into typical NPS impact determinations as seen in *Impact Thresholds* below.

Field and desktop work

NPS developed a scope of survey for visual resources for the existing DVP transmission line ROW across NPS lands. An overview of the NPS ROW crossing is depicted in Figure 1. The study area for visual resources was expanded to a 4 mile radius around the center of the transmission line crossing of NPS-managed lands. The survey area is shown in Figure 12. The information used to assess viewshed resource impacts was derived from a variety of data sources including: 2008 & 2009 aerial photography, 10 meter DEM, site visits, geographic viewshed analyses and 3D photosimulations.

Viewshed Identification

The USDA Landscape Aesthetics Handbook for Scenery Management and associated Scenery Management System (SMS) guided the determination of the study area. The handbook defines distance zones for classification, analysis, and simplification of inventory data (USDA 1995). To gain a basic understanding of the potential visual impacts on the landscape both before and after construction, viewsheds were calculated for both the existing and proposed structures. Viewshed calculations consider the effects of topography, structure height, and the potential effects of intervening vegetation/forest cover on line-of-sight visibility. The analysis used ESRI ArcGIS Spatial Analyst to calculate viewsheds within a four-mile buffer centered on the midpoint of the ROW crossing of NPS lands (Figure 12). A six-mile analysis buffer is typical for areas of average relief; however, given the topography of the area, long, broad vistas are not possible and it is unlikely that a distance over four miles would be visible, as those areas would be blocked by hills, mountains and tree cover. As such, a four mile buffer was used as the boundary or limit for the survey area and the analysis of effect the MSD 551 line project would have on visual resources.

For all calculations, topography was determined using a USGS 10 meter DEM, which provides an estimate of the ground surface elevation for every 10 x 10 meter square area across the entire study area. Vegetation was incorporated by overlaying a forest cover data layer (delineated using aerial photography) on top of the elevation data layer, assuming an average canopy height of 75 feet. Existing tower locations and heights within the project area were digitized using aerial photography and the locations of the respective, proposed towers were provided by DVP. The top of each tower was identified as the observation point from which the viewshed was calculated. This viewshed was then mapped to indicate where the towers would be visible across the landscape.

Photographic Simulations

Photographic simulations of the proposed tower design and alternative designs were used to provide representative views of the MSD 551 transmission line from KOPs within the study area. KOPs were determined by the NPS and PATC personnel. The simulations are intended to provide a visual picture of the rebuilt 500kV structures in representative sensitive settings in the study area landscape. A set of 3-D models, provided by DVP and representative of the proposed transmission line facilities, were used to complete the photosimulations. These simulations are not inclusive of all of the areas where visual concerns may occur; rather they are the presently known visually sensitive observation points within the study area.

Analysis of impacts at KOPs is done in the context of likely viewer position. Relative distance scales include the foreground (1/2 mile from the line), middleground (up to 4 miles from the foreground), and background (4 miles to the horizon line). Landscapes that are not visible from the foreground, middle ground, or background are considered “seldom seen areas”. All KOPs are within the 4-mile buffer of the project area that was defined under the viewshed analysis procedures.

Figure 12 shows the results of a viewshed analysis depicting where the existing towers are visible within the study area, and displays the locations of the KOPs for the visual quality change analysis. Figures 10-12 and 15-16 are the images of present conditions and the photo simulations used for this analysis are in Figures 25-30 of this chapter. The yellow polygons represent areas from which a tower(s) would likely be visible. Note, areas under thick forest vegetation may be included in the visible area under this approach, but visibility on the ground is likely obstructed in these areas. Thus, the analysis is a liberal measure of visibility.

APPA Special Considerations

The viewshed at the APPA KOP is unnaturally opened by the ROW, and the KOP is the direct result of obtaining the view by hiking through the ROW. Analysis was performed in this context such that the facilities are a component of the current viewshed there. Since disunity is a preexisting feature of this section of trail, and the facilities are an integral part of the foreground, the action alternative has been designed in the effort to keep existing levels of disunity or improve them. Ranking of visual quality here is done; however, final determination is focused on how well the alternative prevents deterioration of the hiker's visual experience. Vegetation within the ROW is a visual component and can be improved to lessen the impact of the proposed action on the hiker's eye.

Geographic Area

The study area includes all places in the parks in which visitors could see the effects of the proposed construction. Two tiers exist in the study area: 1) the potential viewing area described by the Viewshed Analysis exercise, and 2) the viewshed at the park-identified KOPs.

Impact Thresholds

The following thresholds were used to determine the magnitude of impacts on viewsheds:

- Negligible:** Viewers would likely be unaware of impacts associated with implementation of the alternative. There would be no noticeable change to the scenic views and visual resources or in any defined indicators of the scenic landscape.
- Minor:** Changes in scenic views and visual resources would be slight and detectable, but would not appreciably limit or enhance critical characteristics of the scenic resources.
- Moderate:** Few characteristics of the desired scenic views and visual resources would change, though there would be perceptible man-made additions to viewsheds. The viewshed would not be completely altered, but there would be a visual addition to the existing conditions.
- Major:** Multiple characteristics of the desired scenic views and visual resources would change and/or the number of viewing opportunities would be greatly affected. These actions would completely alter the viewshed and would constitute a major impact to the existing conditions.
- Duration:** Short-term impacts would be immediate, occurring during construction or other activities. Long-term impacts would persist after the construction or other activities are completed.

ALTERNATIVE A – NO ACTION

Analysis

Under Alternative A, no construction activities would occur, and the existing transmission lines would continue to operate in the existing DVP 160-foot-wide ROW. The 90 foot-tall lattice tower at HAFE and the 74 and 99 foot-tall guyed towers at APPA would remain in place. The maintained low-growth vegetation would continue to fragment the naturally forested area surrounding the Trail and this portion of HAFE. Under Alternative A, no further impacts to scenic vistas would occur. The viewshed analysis found that the topography and dense vegetation cover provide a visual barrier from the nearby portions of the Trail and regularly visited sections of HAFE (Figure 12). The viewshed exercise confirms that the project area and the three towers are visible from along the trail within the ROW and from Schoolhouse Ridge South.

From Schoolhouse Ridge, the existing towers in the project area are visible from the northern section along the interpretive trail depicted in the KOP photo Figure 10. On the Trail, all towers are visible as one hikes through the 275-foot wide cleared ROW. These views are depicted by photographs in the east and west APPA KOPs of Figures 15-16.

The presence of the existing transmission line would continue to have long-term minor adverse impacts to viewsheds. The presence and continued maintenance of the facilities would continue to preclude a natural scene more in keeping with APPA Comprehensive Plan (1987) policy to preserve open areas and vistas associated with the Trail, and NPS policy (NPS 2006) at HAFE to preserve cultural landscapes.

Under Alternative A, the existing transmission facilities would continue to operate and regular maintenance of the facilities and ROW would continue. Maintenance activities include field inspections every year; removal of “hazard trees” immediately adjacent to the ROW every three years; and spot treatment with EPA/NPS-approved herbicides, as needed, every six years. Temporary disturbances during maintenance activities would affect scenic viewsheds but only in areas where the Trail is within the ROW. These activities would be infrequent and of short duration, and it is expected that it would not take visitors long to cross through the area. Short- and long-term minor adverse impacts would occur under Alternative A.

Cumulative Impacts

Cumulative actions that would impact views and visual resources associated with APPA and HAFE include: the establishment of the transmission line and the WV Route 9 established crossing of the Trail; the newly constructed roadway for WV Route 9 visible at Schoolhouse Ridge South, southern section in HAFE; the establishment of Route 340 visible from Schoolhouse Ridge South, northern section; the Department of Homeland Security training facility visible near Schoolhouse Ridge South, northern section; and the ROW for the FE-owned 138 kV transmission line that diverts from the shared ROW with DVP west of the project area and is visible at HAFE’s Schoolhouse Ridge South, southern section.

No specific measures are established or elaborated on under the APPA 1987 Comprehensive Plan, APPA 2005 Strategic Plan, or the HAFE GMP in the vicinity of this project. These impacts, in combination with the short- and long-term minor adverse impacts of Alternative A, would result in overall short- and long-term minor adverse cumulative impacts to the viewshed.

Conclusion

Implementation of Alternative A would result in short- and long-term minor adverse impacts to the scenic views and visual resources associated with the NPS units due to the presence of the transmission towers crossing the Trail and the historical landscape of HAFE, and the associated operational and maintenance activities. Long-term minor adverse cumulative impacts would occur under Alternative A.

Alternative B – NPS Preferred Alternative, The Approval of the Special Use Permit for Upgrading the Dominion 551 Transmission Line in Accordance With the Construction Plan.

Analysis

Under Alternative B, a special use permit for removal and construction of electric transmission facilities would be issued. Construction activities would include removing three existing towers ranging from 74 to 99 feet in height in the project area and replacing them with three structures ranging from 101 to 106 feet in height. The upgrade of the towers would follow the construction plan, a collaborative effort between the NPS and DVP, as shown in Appendix A. Construction activities would include installing foundations for the new towers, removing the existing towers and lines (conductors), installing the new towers, and installing and energizing the conductors. All construction activities would occur within the existing DVP/FE shared 275-foot-wide ROW.

Viewshed

Viewshed analysis confirms that there are likely no other impacts to the viewsheds experienced by most Park visitors other than at the KOPs previously identified. The change in viewshed is delineated by the yellow “visible change” area in Figure 23. According to the results, visible change would occur to the Bolivar Heights section of HAFE, however this was not determined on reconnaissance by the NPS to be a KOP and the change in VQ would not be assessed directly. It is reasonable to assume that with the distance involved and the aspect of the line of sight, the impacts would be minor adverse with perhaps towers No. 399 and No. 400 visible over the trees.

KOPs

Figure 12 shows the location of the KOPs that were identified by NPS and PATC staff in field visits (see Chapter 3). VQ calculations are made on current viewshed images and after-construction viewshed simulation results. Note that vegetation change due to planned diligent adherence to IVM principles and the mitigation planting in APPA detailed in Chapter 2 has not been simulated. The results of the Visual Quality comparisons between current and simulated conditions are in Table 6.

APPA-West

Figure 15 shows the current view at the APPA-West KOP: from the Appalachian Trail (AT) looking west. VQ could improve slightly here (from 1.3 to 1.5) with the application of IVM principles and the mitigation planting described in Chapter 2 (see simulation Figure 24). Though landscaping and IVM plans were not simulated, Figure 25 is included here to demonstrate potential initial outcomes of such plans. These examples are from the landscaping installed after construction at the AT crossing of the Meadowbrook-Loudoun transmission line. In terms of the human development portion of the Vividness

rating, the new tower should not decrease the overall VQ from this vantage point since it should be further in distance and narrower, and therefore somewhat less obtrusive to the viewer (Figure 24). The VQ improvement of 0.2 would be long-term negligible in terms of impact. Moderate adverse impacts to the viewshed would occur in the short term during construction activities.

APPA-East

Figure 14 shows the current view at the APPA-East KOP: from the AT looking east. In the current view there is disruption due to foreground eye-level with the appearance of guy lines, tower legs, the upper half of the middleground view tower, and the conductors that run from the foreground to middleground. VQ can currently be rated at 1.6. The change to a lattice tower that is further from the trail, but 32 feet taller, should not detract from the overall VQ (see simulation in Figure 26). Cooperative implementation by NPS and DVP of IVM principles to ROW maintenance, and APPA mitigation plantings, would improve the VQ slightly to 1.8 through increased Vividness. Again, the VQ change of 0.2 is interpreted here as negligible long-term impact. Moderate adverse impacts to the viewshed would occur in the short term during construction activities.

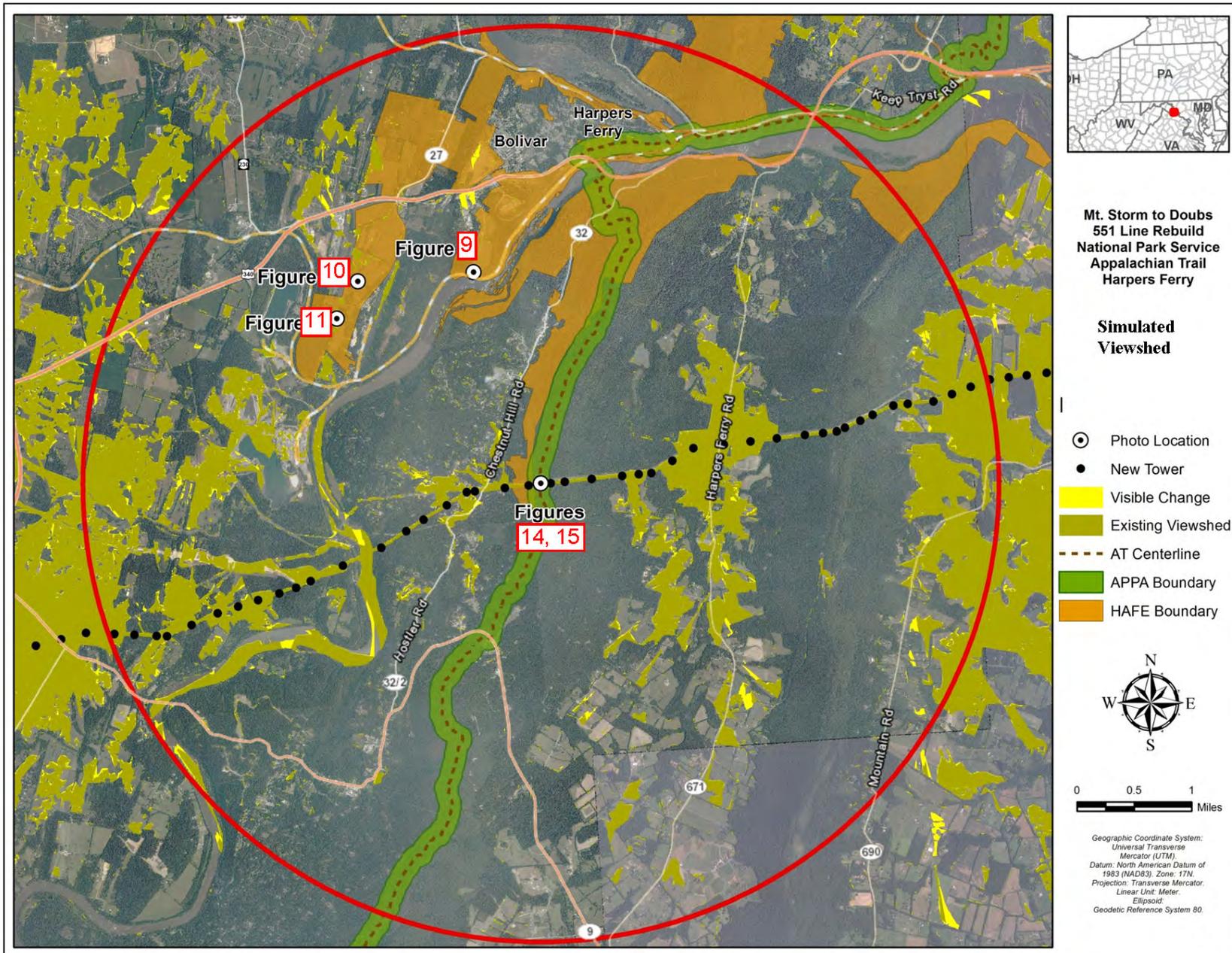


Figure 23. Simulated project area viewedshed analysis for the rebuild proposal. Bright yellow denotes change from current conditions that were assessed in Figure 12. The KOP locations are marked by their corresponding current condition images of Chapter 3.



Figure 24. The photographic simulation for the APPA-West KOP: current conditions (top) vs. proposed configuration of Alternative B (bottom).



Figure 25. Example mitigation landscape plantings of desired configuration at the AT crossing by the Meadowbrook –Loudoun 500kV transmission line; seen at fall after planting (top) and the following spring (bottom).



Figure 26. The photographic simulation for the APPA-East KOP: current conditions (left) vs. proposed configuration of Alternative B (right).

HAFE on the Trail

Trail users are potentially HAFE visitors interested in the NPS interpretation of the Armory Woodland. All of the above mentioned considerations in the APPA KOPs apply to the assessment of the casual hiker’s visual experience. Most critically, IVM would help maintain some semblance of a natural environment. As detailed in Chapter 2, the mitigation to fully update HAFE to the National Register of Historic places would be necessary to these interpretive efforts. Taken together, the impact to the HAFE visitor on the Trail would be negligible in the long term. Moderate adverse viewshed impacts would occur in the short term during construction activities.

HAFE Schoolhouse Ridge South, northern section

Figure 10 shows the current view from the HAFE- Schoolhouse Ridge South, northern section (SRSn) KOP: from the hiking trail looking southeast. As pointed out by the arrow in Figure 27, the current leaf-on view at the SRSn KOP of HAFE includes the top of a tower in or near the project area. The simulation of the proposed project adds tower height to the project area structures and as seen in Figure 27, the increase would elevate the top of a tower (probably current No. 400) into view. This has the effect of creating an increase in the negative factor of human development on the scene. The Vividness element of VQ decreases and the overall VQ declines from 6.1 to 5.5. Because of the background nature of the change, the VQ would be unchanged going from leaf-on to the leaf-off views of Figure 28. Also, because the completion of the full NRHP Update is attached as mitigation to approval of the construction plan of Alternative B, the viewshed including the Woodland could be better interpreted. The VQ change of 0.6 would be minor adverse in the long term. Minor adverse impacts to the viewshed would occur in the short term during construction activities.

Table 6. Visual Quality calculations.

APPA KOP West:

	Vividness	Intactness	Unity	Total Score	Visual Quality
Before	1	1	2	4	1.33
After	1.5	1	2	4.5	1.5

APPA KOP East:

	Vividness	Intactness	Unity	Total Score	Visual Quality
Before	1.33	1	2.5	4.83	1.61
After	1.8	1	2.5	5.3	1.77

HAFE SRSN leaf-on

	Vividness	Intactness	Unity	Total Score	Visual Quality
Before	6.33	6	6	18.33	6.11
After	6.00	5.5	5	16.5	5.5



Figure 27. The photographic simulation for the HAFE Schoolhouse Ridge South-northern KOP, leaf-on: current conditions (top) vs. proposed configuration of Alternative B (bottom). Arrows point to tower features as indicated in the analysis.



Figure 28. The photographic simulation for the HAFE Schoolhouse Ridge South-northern KOP, leaf-off: current conditions (top) vs. proposed configuration of Alternative B (bottom). Arrows point to tower features as indicated in the analysis.

Cumulative Impacts

There were two KOPs identified that are assessed for cumulative impacts of the project: Schoolhouse Ridge South, southern section, and the Murphy-Chambers Farm, both of HAFE. Chesapeake and Ohio Canal National Historical Park (CHOH) would be affected by Alternative B as the Maryland section of the planned rebuild traverses CHOH. Also considered in the cumulative impact analysis is the presence of an access road built to reach adjacent towers on the MSD 551 line to the east of APPA that is visible as one hikes through the ROW. The rebuild of the line outside of the project area and its impact on two KOPs and a related NPS unit is a cumulative impact as are other previous, existing or planned projects on all the KOPs. The preceding were analyzed in more general terms than the direct impact study using the FHWA methodology above.

Schoolhouse Ridge South, southern section

Figure 11 shows the current view from the HAFE- Schoolhouse Ridge South, southern section (SRSs) KOP: from the hiking trail looking southeast. SRSs is impacted by adjacent developments and industry; impacts from the proposed rebuild would be in addition to these other projects. The WV Route 9 project is visible on the ridge (Figure 11) in the background of the view. A simulation was performed here and shows the addition of a tower (arrow, Figure 29) outside of the project area becomes visible near the WV Route 9 clearing. The visibility of the WV Route 9 should decrease as vegetation is allowed to grow back along the cut banks.

Murphy-Chambers Farm

Figure 9 shows the current view from the Murphy-Chambers Farm KOP: from the overlook looking southwest. The view here is the most pristine offered in the study area. The viewshed would be impacted adversely by DVP's related actions in adjacent lands in WV. The portion of the MSD551 line visible in the background of Figure 30 (towers pointed out by arrows) is going to be rebuilt to similar proportions as the project at the NPS site. The simulation of the Alternative B proposal in Figure 30 shows that the existing towers could become incrementally more visible, with one new tower partially appearing in the scene's background.

CHOH

In addition to the cumulative impacts above, Alternative B would affect the viewshed from the CHOH unit of the NPS. Because the area of direct impact on CHOH is governed by the line's owner in Maryland, FirstEnergy, the final design of the Maryland is not available to this study. However, DVP obtained for NPS confirmation from FirstEnergy that the upgrade would be of similar configuration, similar tower design, and similar proportion to the upgrade in Virginia and West Virginia. CHOH staff would process the permit application expected from FirstEnergy and would perform the necessary compliance at that time.



Figure 29. The photographic simulation for the HAFE Schoolhouse Ridge South-southern KOP: current conditions (top) vs. proposed configuration of Alternative B (bottom). Arrows point to tower features as indicated in the analysis.



Figure 30. The photographic simulation for the HAFE Murphy-Chambers Farm KOP: current conditions (top) vs. proposed configuration of Alternative B (bottom). Arrows point to tower features as indicated in the analysis.

Summary

In all, the cumulative impacts of the rebuild alternative originating from areas outside the project area, and the other projects in the viewshed are of minor to moderate short and minor long-term adverse impact. When combined with the minor to moderate short-term and negligible to minor long-term impacts of Alternative B, overall cumulative impacts are long-term minor adverse.

Conclusion

In the short term, where the project area is in the background (on the interpretive path at Schoolhouse Ridge South and from Bolivar Heights) visitors could see dust and construction activities at the project area. There would be moderate adverse impacts to the viewsheds at APPA during construction while ground is disturbed and hikers pass through the work area and by machinery and workers. In the long term, there would continue to be minor adverse impacts to viewsheds at the KOPs of APPA-East/West and HAFE-SRSn. Cumulative impacts would be long-term minor adverse.

Seen in the VQ analyses of the simulations of the project, the vividness of the viewsheds at the KOPs can be increased incrementally by improvements to vegetation management through IVM, and by mitigation planting to soften the cut border of the ROW. The landscaping and IVM practices would also allow for the more authentic visual patterns normally associated with historic landscapes such as the Armory Woodland of the project area.

Visitor Use and Experience

Methodology and Assumptions

The area of analysis for Visitor Use and Experience in reference to noise levels is defined as a 6,400 foot radius around any locations where construction occurs. It is estimated that at 6,400 feet from any construction activities is the distance at which construction noise is expected to decrease to about the background level. This was calculated assuming a noise level decrease of approximately 7.5 dBA for every doubling of distance from the noise source with an intervening “soft surface” such as vegetation (Caltrans 1998). The decrease could actually reach up to 10 dBA with a doubling of distance for taller and denser vegetation similar to what is found along the AT, but a conservative estimate of 7.5 dBA was used in this analysis (Caltrans 1998). Change of 5dBA is readily noticeable. A 10 dBA increase in noise levels is judged by most people as a doubling of sound loudness. Since the AT is directly under the transmission facilities, noise could reach periodically high levels to hikers moving through the ROW.

Background levels (a quiet rural area at night) in this area are estimated to be between 32 and 35 dBA (Minor 2001). DVP estimated that existing noise levels due to corona underneath the facilities on a fair day are 49.7 dBA, and 57.8 dBA on a rainy day. Corona is light and noise produced by electric lines when the electric field on the conductor surface exceeds the breakdown strength of air. Corona noise levels modulate due to: conductor diameter and configuration, distance from ground, absolute elevation, voltage, atmospheric temperature, and atmospheric humidity.

DVP also provided the NPS with the expected levels after construction of the proposed facilities. These are 35.1 dBA in fair and 47.5 dBA in wet conditions. On February 14, 2012, a technical specialist from a DVP contractor measured the ground-level noise under the MSD551 at two locations using standard industry equipment. Weather conditions this day could have been considered close to fair. MSD551 Tower 40, near Scherr, WV was measured to get a comparison of the predicted levels and actual levels for

this section which is of a similar configuration proposed by DVP for this study. This would provide a background accuracy that could be expected of predicting sound-level change on the rebuild proposed in the current project at MSD551 Towers 399, 400 and 401. The second set of measurements was made at tower MSD551/400 on the AT (the south side of the ROW). The MSD551/400 site measurements ranged from 31 -35dBA while under the current facilities at the project area the measurements ranged from 36-37 dBA. It is reasonable to conclude that there would likely be no marked improvement in corona with the proposed facility upgrade.

Geographic Area

The geographic study area for the noise level component of Visitor Use and Experience is the existing transmission line crossing and areas along the Trail and within the Parks, where construction noise could be heard above rural background noise levels (approximately 6,400 feet). For analysis purposes, the affected area would mainly be the accessible parts of the project area, limited to the AT through and near the project area.

Impact Thresholds

- Negligible:** Visitors would likely be unaware of impacts associated with implementation of the alternative. There would be no noticeable change in visitor use and experience or in any defined indicators of visitor satisfaction or behavior.
- Minor:** Changes in visitor use and/or experience would be slight and detectable, but would not appreciably limit or enhance critical characteristics of the visitor experience. Visitor satisfaction would remain stable. Few critical characteristics of the desired visitor experience would change. The number of participants engaging in a specified activity would be altered.
- Moderate:** Some visitors who desire their continued use and enjoyment of the activity/visitor experience might be required to pursue their choices in other available local or regional areas. Visitor satisfaction would begin to either decline or increase.
- Major:** Multiple critical characteristics of the desired visitor experience would change and/or the number of participants engaging in an activity would be greatly reduced or increased. Visitors who desire their continued use and enjoyment of the activity/visitor experience would be required to pursue their choices in other available local or regional areas. Visitor satisfaction would markedly decline or increase.
- Duration:** Short-term impacts would be immediate, occurring during construction. Long-term impacts would persist after the construction.

ALTERNATIVE A – NO ACTION

Analysis

Under Alternative A, the existing transmission lines would continue to operate in the 160-foot-wide ROW. The lattice tower would remain in place at HAFE, the guyed towers at APPA, and no major construction or subsequent noise activity would occur. Noise emitted by the transmission lines are heard

as a crackle when directly under or immediately adjacent to the transmission line. In general, dry conditions appear to emit approximately 35 dBA and damp or humid conditions are expected to emit an additional 12dBA.

Under Alternative A, there would be no change in impacts to noise levels and impacts would remain long-term minor adverse. Under Alternative A, maintenance and operation of the facilities would continue. Maintenance activities include field inspections every year; selective tree removal of “hazard trees” immediately adjacent to the ROW every three years; and spot treatment with EPA/NPS-approved herbicides, as needed, every six years. A temporary noise disturbance could occur in the area during the short duration of the maintenance activity as personnel and maintenance equipment such as saws, trucks, and herbicide application equipment would be present in the ROW. These activities would be infrequent and short in duration, and it is expected that it would not take visitors long to pass through this area. Short- and long-term negligible to minor adverse impacts would occur under Alternative A from maintenance activities.

Cumulative Impacts

Cumulative actions that would impact the natural ambient noise at the project area include the establishment of the transmission line within the Parks, and traffic on Chestnut Hill Road resulting in periodic but long-term minor noise intrusions along the Trail. The West Virginia Route 9 re-route project is underway and could be in progress as the MSD551 project decision is made. This is a four-lane highway construction project occurring within about 1 mile of the project area. It is unclear if the movement of the road nearer to the ROW would impact long-term noise levels from traffic at the AT in the project area; however, heavy vegetation and significant topography between the closest road section and the AT should buffer noise over the 1 mile distance. These impacts, in combination with the short- and long-term negligible to minor adverse impacts of Alternative A, would result in overall short- and long-term minor cumulative adverse impacts to noise levels.

Conclusion

Implementation of Alternative A would result in short- and long-term negligible to minor adverse impacts to the natural soundscape, including the slight noise emitted by the existing transmission lines and occasional maintenance. In combination with the WV Route 9 project, this would result in short- and long-term minor cumulative impacts.

Alternative B – NPS Preferred Alternative, The Approval of the Special Use Permit for Upgrading the Dominion 551 Transmission Line in Accordance With the Construction Plan.

Analysis

Under Alternative B, the special use permit for construction would be issued. Construction activities would include removing the three towers ranging from 74 to 99 feet in height in the project area and replacing them with 3 structures ranging from 101 to 106 feet in height. The upgrade of the towers would follow the construction plan, a collaborative effort between the Park and DVP, as shown in Appendix A. Construction activities would include installing foundations for the new towers, removing the existing towers and lines (conductors), and installing the new towers and energizing the conductors. All construction activities would occur within the ROW. The main impacts to current background noise would result from the various equipment and vehicles needed for construction. Table 7 lists potential

construction equipment that may be used during the rebuild, the associated noise levels and estimated distance for reduction of noise to estimated ambient levels.

Table 7. Distance Needed to Decrease Construction Noise to Ambient Levels. Source: USFHWA, 2006.

Equipment Description	dBA at 50 feet from source	Distance (feet) to decrease noise to a range of 32 to 35 dBA (Assuming an attenuation of 7.5 dB with doubling of distance; Caltrans 1998)
Pickup Truck	55	400
Backhoe	80	3,200
Bar Bender	80	3,200
Boring Jack Power Unit	80	3,200
Compactor (ground)	80	3,200
Compressor (air)	80	3,200
Drum Mixer	80	3,200
Front End Loader	80	3,200
Soil Mix Drill Rig	80	3,200
Vibratory Concrete Mixer	80	3,200
Concrete Pump Truck	82	6,400
Concrete Batch Plant	83	6,400
Drill Rig Truck	84	6,400
Dump Truck	84	6,400
Flat Bed Truck	84	6,400
Tractor	84	6,400
All Other Equipment > 5 HP	85	6,400
Auger Drill Rig	85	6,400
Chain Saw	85	6,400
Concrete Mixer Truck	85	6,400
Crane	85	6,400
Dozer	85	6,400
Excavator	85	6,400
Gradall	85	6,400
Grader	85	6,400
Grapple (on backhoe)	85	6,400
Jackhammer	85	6,400
Pneumatic Tools	85	6,400
Rock Drill	85	6,400

Given the dense vegetation and intervening topography, the effective distances in Table 7 above may be shorter. The distances were based on the assumption for a point source, such as stationary construction equipment; noise levels would decrease approximately 7.5 dBA for every doubling of distance from the noise source with intervening vegetation (Caltrans 1998). This decrease could be up to 10 dBA with denser and taller vegetation, like that found in the vicinity of the AT; however, the 7.5 dBA decrease was

used as a conservative assessment. Given the increase in noise associated with construction activities, Alternative B could have localized, short-term moderate adverse impacts to the natural soundscape associated with the AT.

As discussed in the Methodology and Assumptions section above, the corona noise is expected to remain unchanged upon completion of the construction and energizing of the new lines. The background corona noise when traversing the project area on the AT would likely be about 37 dBA in fair conditions and approximately 49 dBA in rainy/very humid conditions. This would result in long-term negligible to minor adverse impacts to noise levels in the immediate vicinity of the line, and the change would not be noticeable over current conditions.

The mitigation to improve the rock barrier of the ROW near Cub Lane (see construction drawing, Appendix B) would help reduce further intrusions to the ROW by illegal ATVs. This barrier would eliminate or reduce the noise impacts associated with illegal ATV use in the vicinity of the AT crossing thus reducing impacts to negligible levels. Under Alternative B there would be short-term minor to moderate impacts to Visitor Use and Experience due to noise during times of active construction and long-term negligible to minor adverse impacts due to routine maintenance activities.

Cumulative Impacts

The existing cumulative impacts to Visitor Use and Experience are short- and long-term minor adverse as described in Alternative A. When combined with Alternative B's long-term negligible to minor adverse impacts and localized short-term minor to moderate adverse impacts during maintenance and construction activities, implementation of Alternative B would result in long-term minor adverse cumulative impacts.

Conclusion

Implementation of Alternative B would result in localized short-term moderate adverse impacts to Visitor Use and Experience due to noise during time of maintenance and construction. Because the location of the proposed action is narrow and is buffered by dense vegetation, there would be limited exposure along the AT where visitors could hear construction activities, and none expected at HAFE. Long-term minor impacts would occur from the corona noise associated with the operation of the transmission lines, and the reinforced ATV barrier would reduce impacts from illegal ATV use. Under Alternative B there would be short-term minor to moderate adverse impacts and long-term minor adverse cumulative impacts.

Cultural Resources

General Considerations

Methodology and Assumptions

The analyses of effects on cultural resources, that is, any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register, that are presented in this section respond to the separate requirements of both NEPA and Section 106 of the NHPA.

Under the implementing regulations for Section 106, if no historic properties are identified or there is no effect on historic properties and the SHPO concurs, then the Section 106 process is complete (see 36 CFR 800.d). If, on the other hand, there is a determination that there are adverse effects or no adverse effects to historic properties, continued consultation among the SHPO, consulting parties, and the public is required (36 CFR 800.5(a)). An adverse effect occurs whenever an impact alters, directly or indirectly, any

characteristic of a cultural resource that qualifies it for inclusion in the National Register (e.g., diminishing the integrity of the resource's location, design, setting, materials, workmanship, feeling, or association). Adverse effects also include reasonably foreseeable effects caused by the proposed alternative that would occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5(a) (1)). A determination of no adverse effect means that the effect would not diminish in any way the characteristics of the historic property that qualify it for inclusion in the National Register or that the project has been modified or conditions are imposed to ensure consistency with the Secretary of Interior's Standards for the Treatment of Historic Properties (36 CFR 68).

CEQ regulations and the NPS Conservation Planning, Environmental Impact Analysis and Decision-making (Director's Order 12) also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, for example, reducing the intensity of an impact from major to moderate or minor. Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under NEPA only. Cultural resources are non-renewable resources and adverse effects generally consume, diminish, or destroy the original historic materials or form, resulting in a loss in the integrity of the resource that can never be recovered. Therefore, although actions determined to have an adverse effect under Section 106 may be mitigated, the effect remains adverse.

The NPS guidance for evaluating impacts (Director's Order 12, Conservation Planning, Environmental Impact Analysis, and Decision-making) (NPS 2001) requires that impact assessment be scientific, accurate, and quantified to the extent possible. For cultural resources, it is seldom possible to measure impacts in quantifiable terms; therefore, impact thresholds must rely heavily on the professional judgment of resource experts. The impact analysis is an assessment of the effect, based upon the Advisory Council's criteria of adverse effect, of the undertaking (implementation of the alternative) on National Register eligible or listed cultural resources only. Assessment of effects should therefore focus on the potential for compromising integrity of specific contributing resources to the National Register listing of APPA as a historic district and HAFE as a Cultural Landscape.

Cultural Landscapes

Geographic Area

The study area for Cultural Landscapes potential effects is limited to the Armory Woodland of HAFE and APPA (Figure 7) including access routes and a 1.5 mile-radius buffer around the APE. The APE including the planned access routes is within the Woodland. The impacts of concern are those that directly affect the character of the landscape. Viewshed changes are considered impacts to the character of the landscape but were addressed under Visitor Experience earlier in this chapter.

Impact Thresholds

For purposes of analyzing potential impacts to cultural landscapes, the thresholds of change for the intensity of an impact are defined as follows:

Negligible: The impact is at the lowest levels of detection or barely perceptible and not measurable. For purposes of Section 106, the determination of effect would be no adverse effect.

Minor: The impact would not affect the character-defining features of a cultural landscape listed in or eligible for listing on the National Register. For purposes of Section 106, the determination of effect would be no adverse effect.

Moderate: The impact would alter a character-defining feature or features of the cultural landscape but would not diminish the integrity of the landscape to the extent that its National Register eligibility would be jeopardized. For purposes of Section 106, the determination of effect would be an adverse effect.

Major: The impact would alter a character-defining feature(s) of the cultural landscape, diminishing the integrity of the resource to the extent that it would no longer be eligible to be listed in the National Register. For purposes of Section 106, the determination of effect would be adverse effect.

Duration: All impacts are considered long-term.

ALTERNATIVE A – NO ACTION

Analysis

Under Alternative A, the existing ROW where the transmission facilities are located would remain unchanged. No construction activities would occur under this alternative, therefore having no further impacts on cultural landscapes.

Operation of the existing transmission lines would continue to include maintenance activities by DVP and the park. As stated in the DVP easement, and further defined in the IVM plan to be developed by the parks and DVP, DVP may keep the ROW clear of trees, stumps, roots, and undergrowth as needed for safe and uninterrupted operation of DVP facilities. Additional stipulations allow DVP, with the approval of the park superintendent, to trim or remove any tree outside of the ROW which, in the opinion of DVP may endanger the safe or proper operation of the transmission facilities. This includes trees that come within ten feet of the facilities (Pers. Comm., Courtney Fisher). These continued maintenance activities would have negligible to minor adverse impacts on the observation of historic themes associated with this cultural landscape.

Cumulative Impacts

Cumulative impacts to the cultural landscape of the Armory Woodland of Loudoun Heights would include the establishment of the transmission lines within the Park, and other linear features within the Park at a 1.5 mile radius, and implementation of HAFE's GMP and complete National Register listing update. The transmission lines, the previously constructed Wildlife Way subdivision road bed, and WV Route 9 have the potential to introduce elements that impact the character-defining features of the landscape. Impacts to the cultural landscape would be minimal due to intervening heavy vegetation, varying topography and the condition that the immediate surrounding land is already developed to medium density on the west side, and buffered by protected forested land of the Blue Ridge Center for Environmental Stewardship to the east resulting in negligible to minor adverse impacts. The implementation of HAFE's GMP and complete National Register listing update would be expected to have long-term beneficial impacts to cultural landscapes as these documents describe and evaluate the significance of resources which will in turn inform the management decision-making process. In effect, impacts on the Woodland would be negligible adverse. Combined with the negligible to minor adverse

impacts of Alternative A, these other projects and plans would result in negligible to minor cumulative adverse impacts.

Conclusion

Implementation of Alternative A would have negligible adverse impacts to cultural landscapes. Cumulative impacts under Alternative A would be long-term negligible to minor adverse.

Section 106 Summary

After applying the ACHP's criteria of adverse effect (36 CFR 800.5), the NPS proposes that implementing Alternative A would have no impact to the character-defining features of HAFE and APPA and there would be no adverse effect under Section 106 of the NHPA.

Alternative B – NPS Preferred Alternative, The Approval of the Special Use Permit for Upgrading the Dominion 551 Transmission Line in Accordance With the Construction Plan.

Analysis

Under Alternative B, the NPS would approve the DVP construction permit, authorizing the reconfiguration and upgrade of the existing transmission facilities within the park. The proposed design, shown in Appendix B, has been developed in consultation with the parks to minimize impacts to cultural landscapes by minimizing the increase in tower height to the extent possible and using high grade conductors to limit corona. All construction activities would occur within the existing 160-foot-wide ROW and no additional clearing would take place. Some work or staging may be needed in the adjoining 150 foot-wide ROW owned by FirstEnergy. Preliminary data collection for this analysis was done in the entire cleared ROW comprised of DVP and FirstEnergy easements. Chapter 2 details some specific protection issues for contributing resources to the cultural landscape in the construction zone. For instance, mitigation would be implemented to ensure long-term viability of Bear Pond Road as a contributing resource; unknown stone pile elements in the APPA section of ROW potentially associated with a charcoal manufacturing site would not be impacted.

The towers would be constructed of galvanized steel, and be 2, 16, and 32 feet taller, and could have minor adverse long-term impacts to cultural landscapes. New facilities would maintain the current land use for the foreseeable future. Since the magnitude of impact is judged from the existing condition, and this effect has been in place before NPS acquisition of the land, implementing the preferred alternative will not impact as greatly the cultural landscape's integrity as it would on pristine land.

Once construction is completed, operation of the transmission facilities would include regular maintenance activities such as occasional pruning of trees and shrubs near the facilities to minimize potential for damage to the facilities and to provide clear access for maintenance. As planned for in a supplemental IVM agreement to the DVP easement, DVP would still keep the ROW clear of trees, stumps, roots, and undergrowth. Additional stipulations would allow DVP, with the approval of the HAFE Superintendent and APPA Park Manager, to trim or remove trees outside of the ROW which may endanger the safe or proper operation of the transmission facilities. This includes trees that can come within ten feet of the facilities.

The vegetation maintenance would result in the continuation of current status of the ROW as a utility corridor, precluding indefinitely the reversion to historical era conditions. The continued crossing of Bear Pond Road would submit this contributing resource to otherwise undue potential for erosion and damage. These coupled with the installation of the taller, non-weathering steel towers, and slightly larger conductor lines, would have long-term negligible to minor adverse impacts to cultural landscapes. The NRHP Update detailed in Chapter 2 would mitigate the adverse impact by identifying and evaluating the historic significance of Park resources, and thereby enabling the Park to better manage future actions and projects.

Cumulative Impacts

Actions contributing to cumulative impacts under Alternative B would be the same as those under Alternative A. These actions, combined with the long-term negligible to minor adverse impacts of Alternative B, would have long-term minor cumulative impacts.

The existing cumulative impacts to cultural landscapes are negligible to minor adverse as described in Alternative A. When combined with Alternative B's negligible to minor adverse impacts to cultural landscapes, the net results are long-term minor cumulative impacts to cultural landscapes.

Conclusion

Implementation of Alternative B would have negligible to minor adverse impacts to cultural landscapes. There would be a slight increase in the diminishment of historical values of the area through the installation of larger facilities. The current facility design was developed in consultation with the NPS to minimize impacts to cultural landscapes. Cumulative impacts under Alternative B would be long-term minor adverse. As covered in the analysis above, the NRHP Update for all remaining properties of HAFE would mitigate some of the adverse impacts to the cultural landscapes.

Section 106 Summary

After applying the ACHP's criteria of adverse effect (36 CFR 800.5), the NPS proposes that implementing Alternative B would have no impact to the character-defining features of HAFE and APPA and there would be no adverse effect under Section 106 of the NHPA.

Historic Districts

Geographic Area

The geographic study area for this historic district is the Appalachian Trail footpath, which crosses under the existing transmission line, and the adjacent APPA lands - within the APE and a 1.5 mile-radius buffer - which include any resources contributing to the historic district. Viewshed changes are considered impacts to the character of the historic district but were addressed earlier in this chapter under Visitor Experience.

Impact Thresholds

Negligible: The impact is at the lowest level of detection with neither adverse nor beneficial consequences. For purposes of Section 106, the determination of effect would be no adverse effect.

- Minor:** Alteration of a pattern(s) or feature(s) of a historic district or structure listed on or eligible for the NRHP would not diminish the integrity of a character-defining feature(s) or the overall integrity of the historic property. For purposes of Section 106, the determination of effect would be no adverse effect.
- Moderate:** The impact would alter a character-defining feature(s) of a historic district or structure and diminish the integrity of that feature(s) of the historic property. For purposes of Section 106, the determination of effect would be adverse effect.
- Major:** The impact would alter a character-defining feature(s) of the historic district or structure and severely diminish the integrity of that feature(s) and the overall integrity of the historic property. For purposes of Section 106, the determination of effect would be adverse effect.
- Duration:** Short-term impacts would last for the duration of construction activities associated with the proposed alternative; long-term impacts would last beyond the construction activities.

ALTERNATIVE A – NO ACTION

Analysis

A historic district is defined as a group of buildings, properties, landscapes, or sites that are historically or architecturally significant. The cultural landscape associated with this historic district is referred to as the “greenway”. The Trail was originally intended to provide panoramic vistas of the pastoral countryside and a wilderness experience as visitors travelled the east coast by foot. The significance of the trail historically is as a recreational linkage along the spine of the Appalachian Mountains in 14 states uniquely developed by visionary preservationists.

Under Alternative A, the existing ROW containing transmission facilities would remain unchanged. No construction activities would occur under this alternative, therefore having no additional impacts on this historic district. The existing transmission line was in operation prior to the determination that the Trail is eligible for inclusion in the NRHP. The existing transmission line is considered a noncontributing feature to the district. When the 150-foot transmission line ROW was constructed, the historically dense forest surrounding the Trail was converted to a grassland and shrubland habitat.

The contributing elements to the historic district in the APPA lands contained by the APE are limited to the trail itself, and the surrounding natural lands. No shelters, springhouses, or other contributing elements to APPA’s eligibility as a National Register-listed historic district are found in the APE. There are the remains of the Armory Woodland and, potentially, Civil War encampment markers within the APPA historic district, however these contributing resources are considered under the cultural landscape section.

Under the no action alternative, operation of the existing transmission lines would continue to include maintenance activities by DVP and the Park. As stated in the DVP easement, DVP may keep the ROW clear of all trees, stumps, roots, and undergrowth. DVP is allowed to trim or remove any tree outside of the ROW which, in the opinion of DVP, may endanger the safe or proper operation of the transmission facilities. This includes trees that can come within 10 feet of the facilities. Because the stated purpose of

the Appalachian Trail is to “provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which such trails may pass” (Public Law 90-543; 16 U.S.C. 1241 et. Seq.), the occasional removal of hazardous trees through continued maintenance activities would have negligible to minor adverse impacts on the historic district by affecting associated natural areas.

Cumulative Impacts

Cumulative actions that would impact the historic district associated with the Trail include the prior establishment of the existing transmission line, other linear features within the Park at a 1.5 mile radius – specifically the new WV Route 9 - and any actions associated with the Appalachian Trail Strategic Plan and Comprehensive Plan actions. No specific measures have been established or elaborated upon under the 1987 Comprehensive Plan or the 2005 Strategic Plan to protect historic districts in the vicinity of this project. The transmission lines and Route 9 have the potential to introduce elements that impact the character-defining features of the landscape. The effect at the APE is negligible to minor adverse. Combined with the negligible to minor adverse impacts of the ongoing maintenance of the ROW and bordering vegetation under Alternative A, these other projects and plans would result in minor cumulative adverse impacts.

Conclusion

Implementation of Alternative A would have negligible to minor adverse impacts to historic districts. Cumulative impacts under Alternative A would be long-term minor adverse.

Section 106 Summary

After applying the ACHP’s criteria of adverse effect (36 CFR 800.5), the NPS proposes that implementing Alternative A would have no impact to the character-defining features of APPA and there would be no adverse effect under Section 106 of the NHPA.

Alternative B – NPS Preferred Alternative, The Approval of the Special Use Permit for Upgrading the Dominion 551 Transmission Line in Accordance With the Construction Plan.

Analysis

Under Alternative B, the NPS would approve the DVP construction permit, authorizing the reconfiguration and upgrade of the existing transmission facilities within the park. All construction activities would occur within the existing 160-foot-wide ROW and no additional clearing would take place. Some work or staging may be needed in the adjoining 150 foot-wide ROW owned by FirstEnergy.

The replacement of the towers would follow the construction plan, a collaborative effort between the NPS and DVP, as shown in Appendix A. The contributing elements of the footpath, and the surrounding natural lands to the historic district of the study area that form a linkage in the entire Appalachian Trail historic district would be impacted by construction and ongoing maintenance activities.

Construction activities would include marking park boundaries with flagging and/or stakes, installing foundations for the new lines, removing the existing lines, and erecting the new lines. These would have

short-term minor to moderate adverse impacts to the historic district due to the presence of industrial machinery and construction equipment in the ROW and along the Trail.

During construction and continued ROW maintenance after construction, the actual footpath would be protected by Best Management Practices the details of which are described in the Integrated Vegetation Management Plan. In short, there is no need to alter the trail, and there is expectation that the trail would be crossed sparingly during routine ROW and facility maintenance. If heavy machinery is to cross the trail during construction and after, matting would be installed to fully protect the trail and immediate buffer. The construction plan also details the protection of the trail as a recreational resource during all construction and maintenance activities. Best Management Practices in the form of awareness of hiker visitors and alteration of work cycles and timing to avoid disturbance during peak visitation would be employed. Temporary re-routing of the footpath during construction would be carefully engineered for safety and for ease of movement of hikers at any time of day.

The associated natural lands would be protected during and after construction by Best Management Practices detailed in the IVM plan in which vegetation is managed to produce a more naturally variable habitat in the ROW and manages mature trees at the edge carefully. Application of these management practices would limit the impacts to the historic district from the construction and maintenance activities.

Expected improvement with the expectation to maintain and monitor under a revised and renewed agreement for IVM at the ROW, and the protection of the physical and recreational attributes of the footpath would result in limiting effects from the alternative to long-term negligible to minor adverse. Impacts would be limited to minor adverse through rigorous implementation of IVM practices at the APE.

Cumulative Impacts

The existing cumulative impacts to historic districts are long-term minor adverse as described in Alternative A. When combined with Alternative B's long-term negligible to minor adverse impacts, the net results are long-term minor adverse cumulative impacts to historic districts.

Conclusion

Implementation of Alternative B would result in long-term negligible to minor adverse impacts to historic districts due to the presence of construction and maintenance equipment and associated activity. The current project and management practices design has been developed in consultation with the NPS to include measures that minimize impacts to the historic district. Cumulative impacts under Alternative B would be long-term minor adverse.

Section 106 Summary

After applying the ACHP's criteria of adverse effect (36 CFR 800.5), the NPS proposes that implementing Alternative B would have no impact to the character-defining features of APPA and there would be no adverse effect under Section 106 of the NHPA.

COORDINATION AND CONSULTATION

The NPS places a high priority on public involvement in the NEPA process. As part of the NPS NEPA process for this project, issues associated with DVP's proposal were identified during the internal scoping meeting, through solicitation of public comments and input from affected agencies and stakeholders. Stakeholders include representatives for local towns and the counties of Jefferson (WV) and Loudoun (VA), state and local agencies, local and national businesses with an interest in the power lines, adjacent landowners, and the general public. Agency contacts were made during the initial siting phase of this project. These contacts included the USFWS and the Advisory Council on Historic Preservation (ACHP) at the federal level. State contacts included the Virginia Department of Game and Inland Fisheries, the VA Department of Conservation and Recreation (DCR), Virginia DHR, the Virginia SHPO, and the counterparts of these in West Virginia

Coordination with local and federal agencies, as well as various interest groups, as described above, was conducted during the NEPA process to identify issues and/or concerns related to the DVP transmission upgrade rebuild across the NPS lands. In 2012, NPS representatives sent notifications of the NPS-affected portion of the project and the Section 106 compliance method to the ACHP and the state SHPOs, while DVP had previously satisfied the consultation requirements for all portions of the transmission line project with the Virginia and West Virginia natural and cultural resource agencies in 2011. The NPS received a response on October 13, 2011 from the ACHP to its notification (Appendix E). The ACHP outlined continued actions expected of NPS in the process, and requested further consultation if adverse impacts were to be expected. No responses by the state SHPOs have been received by the NPS. Notice of this EA will be posted on PEPC, and the previously contacted organizations, agencies, and individuals will be notified of its availability.

Federal and State Agency Coordination and Consultation

Coordination with federal agencies was conducted during and prior to the NEPA process (concurrent with scoping for the entire MSD551 500-kV transmission line siting process) to identify issues or concerns related to natural and cultural resources found within the study area at APPA and HAFE. Consultation with VA DHR and the WV DCH started in October 2010 with letters from Louis Berger Group, Inc. during the original siting process. During the spring of 2011, The Louis Berger Group, Inc. (DVP-contracted NEPA/Section 106 coordinator) submitted additional requested information to VA DHR and WV DCH for the proposed MSD551 500-kV line which encompasses the APPA and HAFE crossing. As mentioned above, the NPS sent notices in August 2011 to the ACHP and state SHPOs that this EA will be used to comply with Section 106. Continuing Section 106 consultation will be accomplished with the review of this EA in this order:

An AOE has been produced (Appendix E) by the NPS for the purpose of informing SHPO and ACHP offices of the NPS determination of no adverse effect and why that determination was made. Coordinated letters outlining this process and asking for SHPO and ACHP concurrence on the NPS determination have also been sent (Appendix E). Section 106 compliance will be concluded upon concurrence from the VA and WV SHPOs and the ACHP.

In accordance with Section 7 of the Endangered Species Act of 1973, the NPS sent letters to the USFWS State Field Offices to solicit comments regarding potential occurrences of any federal or state listed species within the project area that could be adversely impacted by the proposed project. A letter of

response from the WV Field Office dated November 15, 2011 signified a finding by that office of “no effect” on federally listed T&E species. The “no effect” finding for the VA Field Office was determined through the self-led online project review, and USFWS concurrence was generated on December 5, 2011. Concurrently, the USFWS recommended consultation with the Virginia Department of Game and Inland Fisheries (DGIF) and the VA Eagles (Bald Eagle Nest locator) and these were submitted as part of the full compliance package online. Prior to this effort, Louis Berger Group, Inc. submitted a project review request to the VA DGIF and a subsequent follow-up that determined no likely effects to VA-listed T&E in the project area across NPS lands. On September 27, 2011 the DGIF recommended protections for two potentially impacted species, offering preliminary concurrence of no effect applying DGIF recommendations during construction.

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ACRONYMS

ACHP	Advisory Council on Historic Preservation
AOE	Assessment of Effect
APE	Area of Potential Effect
APPA	Appalachian National Scenic Trail
AT	Appalachian Trail
ATC	Appalachian Trail Conservancy
ATPO	Appalachian Trail Project Office
BMP	Best Management Practices
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CHOH	Chesapeake and Ohio Canal National Historical Park
CPCN	Certificate of Public Convenience and Necessity
DCH	Department of Culture and History
DCR	Department of Conservation and Recreation
DEM	Digital Elevation Model
DEQ	Department of Environmental Quality
DGIF	Department of Game and Inland Fisheries
DHR	Department of Historic Resources
DNR	Department of Natural Resources
DO	Director's Order
DOE	Department of Energy
DVP	Dominion Virginia Power
EMF	Electromagnetic Field
ESCS	Erosion and Sedimentation Control Specifications
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
GIS	Geographic Information Systems
GMP	General Management Plan
HAFE	Harpers Ferry National Historical Park

IPM	Integrated Pest Management
IVM	Integrated Vegetation Management
KOP	Key Observation Point
MOU	Memorandum of Understanding
MSD551	Mt. Storm-Doubs Line #551
NCR	National Capital Region
NEPA	National Environmental Policy Act
NER	Northeast Region
NESC	National Electric Safety Code
NHPA	National Historic Preservation Act
NPOMA	National Parks Omnibus Management Act
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PATC	Potomac Appalachian Trail Club
PATH	Potomac Appalachian Transmission Highline
PEPC	Planning, Environment and Public Comment
PSC	Public Service Commission
RMP	Resource Management Plan
ROW	Right-of-Way
SCC	State Corporation Commission
SHPO	State Historic Preservation Officer
SMS	Scenery Management System
SRS	Schoolhouse Ridge South
T&E	Threatened and Endangered
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USCS	Unified Soil Classification System
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VQ	Visual Quality



As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering wise use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historic places, and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people. The department also promotes the goals of the Take Pride in America campaign by encouraging stewardship and citizen responsibility for the public lands and promoting citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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