

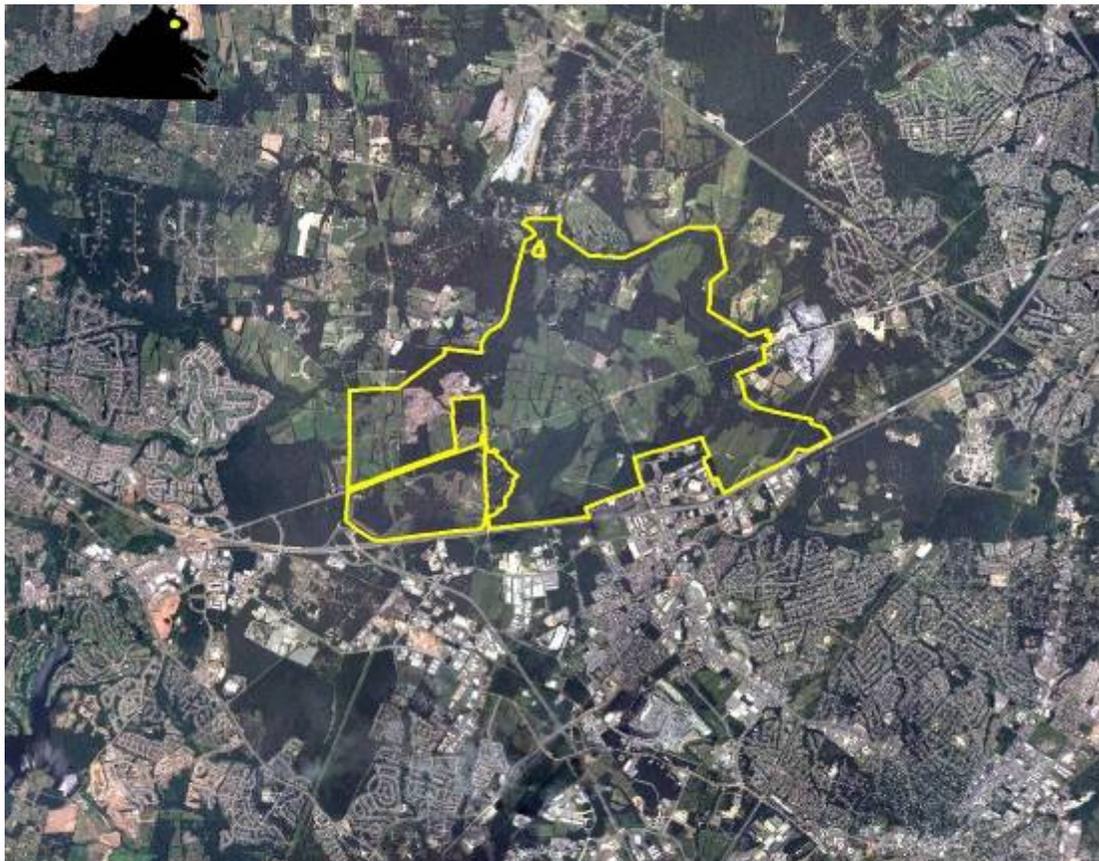


# Environmental Assessment

## Dominion Virginia Power Electric Power Transmission Upgrade

### Manassas National Battlefield Park

March 2009



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**Environmental Assessment**  
**Dominion Virginia Power Electric Power Transmission Upgrade**  
**Manassas National Battlefield Park**

**March 2009**

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## PROJECT SUMMARY

The Manassas National Battlefield Park (the park) is located northwest of the city of Manassas in Prince William County, Virginia. The park commemorates the Battles of First and Second Manassas, two important Civil War battles fought one year apart over much of the same ground. 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 along the western edge of the park. These lines are bordered on the south by Interstate 66, on the west by Pageland Lane, and on the east by Groveton Road.

The National Park Service (NPS) is preparing this EA to evaluate the potential impacts to the human, natural, and cultural environment of the new transmission configuration proposed for the existing transmission lines on park property, upon the approval of the construction permit. DVP, in cooperation with the NPS, proposes to upgrade and reconfigure the existing structures within the corridor from the Gainesville Substation north to the Loudoun Substation as double-circuit structures. The line reconfigurations are located on the western border of the park in the vicinity of the Stuart's Hill Center and Brawner Farm. The current right-of-way contains two transmission lines: one single-circuit 500 kV line and one double-circuit 230 kV / 115 kV line. DVP proposes to replace the existing lines with one double-circuit 500 kV / 230 kV line and one double-circuit 500 kV / 115 kV line, all within the existing transmission line right-of-way. The total length of the upgraded and reconfigured lines from the Gainesville Substation to the Loudoun Substation would be approximately 7.25 miles. Upon the approval of the construction permit, approximately 1.8 miles of transmission lines would be rebuilt within the park.

The EA evaluates three alternatives: alternative A, no action; alternative B, NPS approval of the construction permit without additional permit terms and conditions; and alternative C, NPS approval of the construction permit with additional permit terms and conditions. DVP and the Virginia State Corporation Commission (SCC) have determined that the reconfiguration of the existing transmission line is needed to ensure reliable electric service to customers in Northern Virginia. Under alternative B and C, 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, but this alternative does not address DVP's need for the project.

**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:

Manassas National Battlefield Park Headquarters  
Attn: Dominion Transmission Project  
12521 Lee Highway  
Manassas, VA 20109

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

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- Appendix C: Construction Plan

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## PURPOSE AND NEED FOR ACTION

The Manassas National Battlefield Park (the park) is located northwest of the city of Manassas in Prince William County, Virginia (figure 1). The park commemorates the location of two Civil War battles, The Battle of First Manassas (July 21, 1861) and The Battle of Second Manassas (August 28–30, 1862). The park comprises 5,071 acres and offers activities such as guided tours, hiking and horseback riding trails, and picnic areas. Stuart's Hill was incorporated into the park in 1988, while Brawner Farm tract was included in the 1980 revision to the boundary but was not acquired until 1985.

These two tracts, which comprise 870 acres, are located on the western edge of the park, bordered on the south by Interstate 66, on the west by Pageland Lane, and on the east by Groveton Road. U.S. Route 29 runs between the tracts. Figure 2 depicts the park and the major tracts and use areas.

Dominion Virginia Power (DVP) has an existing transmission corridor in a 240-foot-wide right-of-way within the park, which contains one single-circuit 500 kilovolt (kV) line and one double-circuit 230 kV / 115 kV line. These lines existed when the NPS acquired the Brawner Farm and Stuart's Hill tracts. The lines were relocated and continue to operate through a 1996 Deed of Easement between the National Park Service (NPS) and DVP. The lines run parallel to each other along the western edge of the Brawner Farm and Stuart's Hill tracts, approximately 3.75 miles from the main visitor center area (see figure 2). The total right-of-way through the park is approximately 52.4 acres (1.8 miles long and 240 feet wide). The focus of this environmental assessment (EA) is to address the consideration of a construction permit submitted by DVP to upgrade and reconfigure the transmission lines. Under the construction permit, DVP would remove the existing single-circuit 500 kV line and the existing double-circuit 230 kV / 115 kV line and replace these with parallel double-circuit structures, one 500 kV / 230 kV and one 500 kV / 115 kV.

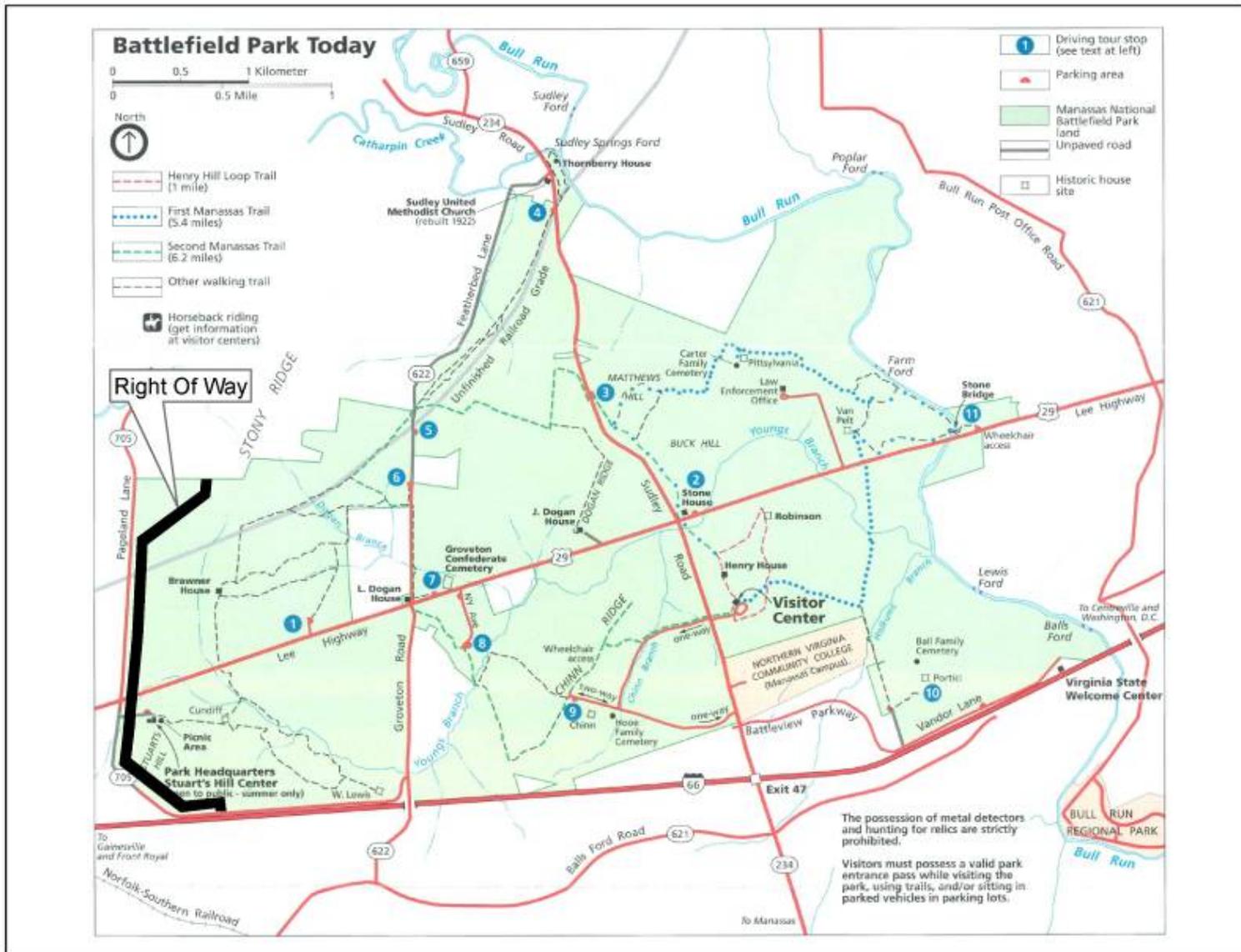
This EA evaluates the impacts that would result from the implementation of three alternatives:

- No action (alternative A): Under alternative A, the park would not take action on the construction permit application and the existing transmission lines would continue to operate as currently configured.
- Approval of the construction permit without additional permit terms and conditions (alternative B): Under alternative B, the park would approve the DVP application as submitted for a construction permit to reconfigure and upgrade the existing transmission lines, without additional permit terms and conditions.
- Approval of the construction permit with additional permit terms and conditions (alternative C): Under alternative C, the park would approve the DVP application for a construction permit to reconfigure and upgrade the existing transmission lines, with permit terms and conditions applied to mitigate impacts on sensitive park resources, specifically the use of vegetative screening at the Brawner house.

Figure 1: Vicinity Map



Figure 2: Park Map



DVP and the Virginia State Corporation Commission (SCC) have determined that the reconfiguration of the existing transmission line is needed to ensure reliable electric service to customers in Northern Virginia. The structures would remain in the currently maintained right-of-way; no new right-of-way would need to be cleared or acquired.

This EA has been prepared in accordance with the *National Environmental Policy Act* (NEPA) of 1969 and implementing regulations, 40 CFR 1500–1508, and NPS Director’s Order 12 and Handbook, *Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 2001). Compliance with Section 106 of the *National Historic Preservation Act of 1966* has been conducted as part of the NEPA process, but is not part of this NEPA document. The results of all consultation are provided in this document in the analysis and in appendix A.

## **Purpose of the Action**

In July 2008, the NPS received a construction plan from DVP proposing removal, replacement, and construction of two transmission lines on an existing right-of-way crossing the western border of the park. The upgraded line, the entire length of which would run between the existing Meadow Brook Substation in Frederick County and the existing Loudoun Substation in Loudoun County, would help to stabilize the national electric grid on the east coast of the United States. The construction plan specific to the park proposes routing the lines for 1.8 miles near Brawner Farm and Stuart’s Hill. The purpose of this EA is to consider the applicant’s construction plan and determine whether to issue or deny the construction permit, or whether to issue a construction permit with additional stipulations to minimize adverse impacts to the park.

## **Need for the Action**

The action is needed because the applicant has submitted a construction plan seeking to replace the existing line. The construction plan was submitted in accordance with authorization of the right-of-way through the park, as stated under 16 USC 79 and 16 USC 5.

The easement agreement between the park and DVP for the existing facilities allows for DVP to, “inspect, rebuild, remove or repair” its facilities within the Manassas National Battlefield Park and requires consideration of the construction permit.

## **Objectives in Taking Action**

Objectives were developed in accordance with NPS Director’s Order 12, *Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 2001). Under Director’s Order 12, an objective is a statement of goals to meet the purpose and need for action. The objectives of a plan must be achieved to a large degree for the action to be considered a success (NPS 2001). All action alternatives selected for detailed analysis must meet project objectives to a large degree, and resolve the purpose of and need for action.

Objectives must be grounded in the park’s enabling legislation, purpose, significance, and mission goals, and must be compatible with direction and guidance provided in the park’s general management plan (GMP), strategic plan, and/or other management guidance. The objectives for this EA are listed below.

### **MANAGEMENT METHODOLOGY**

- Provide the basis for making decisions regarding the construction plan for the DVP lines within the park.
- Determine management stipulations for the installation, operation, and maintenance of transmission lines that can be implemented to protect the park’s cultural and natural resources.

### **CULTURAL RESOURCES**

Protect those features contributing to the historic designed landscape, archeological resources, and historic structures at Manassas National Battlefield Park.

## **NATURAL RESOURCES**

Minimize impacts to the natural resources within the park including wetlands and sensitive species.

## **HEALTH AND SAFETY**

Protect the health and safety of park employees and visitors from exposure to construction activities when the line is upgraded.

## **COMMUNICATION AND COORDINATION**

Communicate and coordinate with adjacent property owners throughout the planning, construction, and implementation of activities related to the proposed transmission line within the park.

## **Purpose and Significance of Manassas National Battlefield Park**

The initial desire to preserve the Civil War battlefield area included within the park came from the vision of George Carr Round, a Union veteran, who settled in the small Manassas community after the Civil War. Round recognized the need for people to visit the landscape on which the battles took place and Round began efforts to get the federal government to legally acquire the battlefield. These efforts were furthered in 1921 when the Sons of Confederate Veterans established the land as Confederate Park, and 14 years later the Franklin D. Roosevelt administration included Confederate Park in a New Deal recreational demonstration area (Zenzen 1998). Finally, on May 10, 1940, the Secretary of the Interior, in accordance with authority of Public Law 74-292, designated the area the Manassas National Battlefield Park due to its historical importance as the site of the Battles of First and Second Manassas.

Subsequent congressional legislation preserved the most important historic lands relating to the two battles of Manassas. The legislation that brought Stuart's Hill into the park boundary was authorized on November 10, 1988, with enactment of Public Law 100-647. This act vested in the United States all rights, title, and interests to approximately 558 acres of private property near the park.

The Manassas National Battlefield Park was ultimately created to preserve the historic landscape that encompasses the buildings, objects, and views relating to the historical significance of the Battles of First and Second Manassas. The park is one of the only Civil War parks that includes actual battlefields. Visitors can see the areas where troops formed, fought, and died (NPS 2008a). The park also provides important cultural landscapes and the historic features that lie within. As stated in the park's GMP (NPS 2008a), the purpose and significance of Manassas National Battlefield Park are as follows:

**Park Purpose:** Manassas National Battlefield Park was established to preserve the historic landscape containing historic sites, buildings, objects, and views that contribute to the national significance of the Battles of First and Second Manassas, for the use, inspiration, and benefit of the public.

**Park Significance:** Manassas National Battlefield Park is nationally significant because it includes the locations of the Battles of First and Second Manassas. Many park resources contribute to this national significance, the public's appreciation of the battlefield events, and its understanding of the social and economic impacts of the Civil War. The park contains cultural landscapes from the period of the battles (1861–1862) that contain historic features of the battles, as well as woodlands, fields, streams, rolling hills, and certain views or vistas that are representative of the physical setting that existed at the time of the battles. The park also contains cultural landscapes from the period after the battles (1865–1940) that commemorate the battles with monuments and other objects erected in memory of soldiers who fought there.

## Project Background

When Brawner Farm and Stuart's Hill were included within the park boundary in 1985 and 1988, the DVP transmission lines already existed, and the lines and right-of-way were therefore included within the new park boundary. The original 230 kV / 115 kV and 500 kV transmission configuration disrupted the historic line-of-sight between sites associated with General Lee and both wings of his army (on Stuart's Hill), General Longstreet (west and later east of Stuart's Hill), and General Jackson (north of the unfinished railroad), during the Battle of Second Manassas. Because of this disruption to the cultural landscape, the existing transmission lines were relocated to their current location in 1998, on the western edge of the park; bordered on the south by Interstate 66, on the west by Pageland Lane, and on the east by Groveton Road, with U.S. Route 29 running between the tracts. See figure 3 for a general overview of the area before the lines were moved in 1998. The transmission lines were configured as a double-circuit 230 kV / 115 kV line paralleled by a single-circuit 500 kV line (all on H-frame structures). The existing lines are located on the Brawner Farm and Stuart's Hill tracts, which are described below.

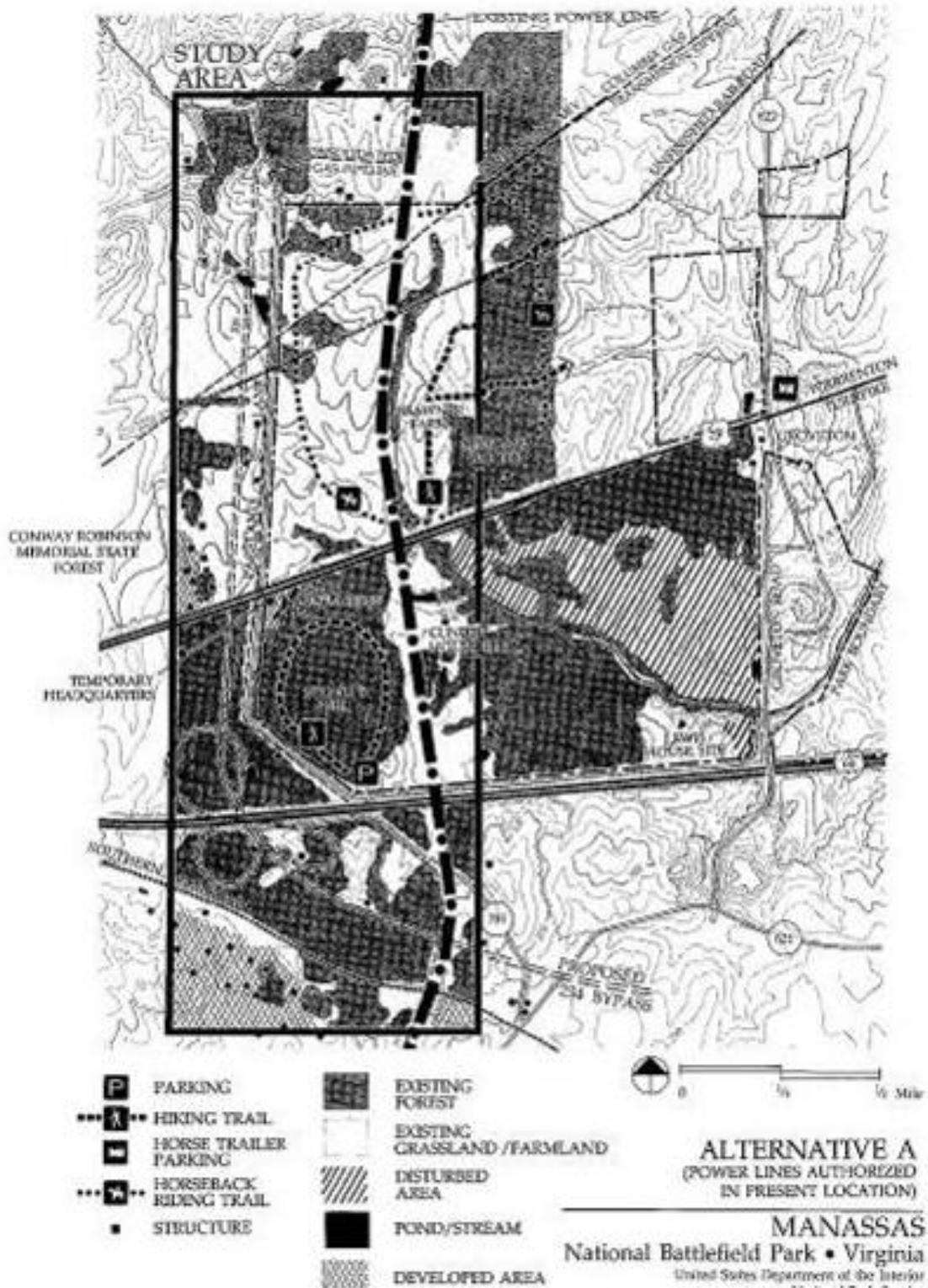
**Brawner Farm:** On August 28, 1862, John Brawner's Farm became the background for the opening engagements between Union and Confederate forces in the Second Battle of Manassas. The property provided heavy woods allowing the Confederates to conceal themselves as the Union approached. The DVP transmission line is currently located about 1,850 feet from the Brawner house.

**Stuart's Hill:** In 1862 the landscape on Monroe Hill (now known as Stuart's Hill) was that of agricultural fields. It included a series of pastures alternated with woods to separate properties. It was a peaceful setting in a rural community. On August 29, 1862 General Robert Lee assumed command of the battle started the previous night at Brawner Farm, north of Stuart's Hill. This location became an important signaling and communication area throughout the battle. In 1988 Stuart's Hill was incorporated into the park boundaries. The DVP transmission line was relocated about 425 feet from the Stuart's Hill Center in 1998.

The existing right-of-way agreement states that on these properties, DVP has the "perpetual right, privilege and easement of right-of-way two hundred forty (240) feet in width to construct, operate, and maintain one or more lines of poles, towers or structures, as Company [DVP] may from time to time deem expedient or advisable...for the purpose of transmitting electric power by one or more circuits, including all poles, towers, non-reflective conductors, attachments, ground connections, equipment, accessories and appurtenances desirable in connection" (NPS 1996).

Currently, the Northern Virginia area, including areas surrounding the park, has experienced a boom in population and development. 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, including Virginia. In a regional transmission expansion plan, PJM Interconnection identified this area of Virginia as needing improvements to maintain a reliably 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 need to be made. These studies model electric load, voltage limitations, and reliability issues 15 years into the future (PJM 2008). The Meadow Brook – Loudoun 500 kV transmission line was approved by the PJM Board in June 2006; a portion of which includes the Manassas National Battlefield Park.

Figure 3: Original Transmission Line Configuration



As the 2006 Regional Transmission Expansion Plan report indicated, DVP's proposed project would resolve reliability criteria violations that could occur in 2011 by providing critical support to the eastern Mid-Atlantic PJM area. If reliability criteria are not met by DVP, black-outs and brown-outs could occur in the PJM Interconnection service area. The proposed upgrade is included in the PJM study to maintain reliability in Northern Virginia and the Baltimore/Washington D.C. area (PJM 2006). The 500 kV line proposed is a joint effort between DVP and Trans-Allegheny Interstate Line, which includes the portion through the park, and was approved by the SCC on Oct. 7, 2008 (SCC 2008). The SCC stated that the "joint request to build a 500 kV electric transmission line in Northern Virginia meets the applicable standards under Virginia law and, as result, must be approved." The SCC agreed that the line was needed to address the reliability issue by 2011 due to increased demand.

Figure 4 shows an aerial view of the Brawner Farm and Stuart's Hill area and the current location of the transmission lines.

## National Park Service Guiding Laws, Regulations, and Policies

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*.

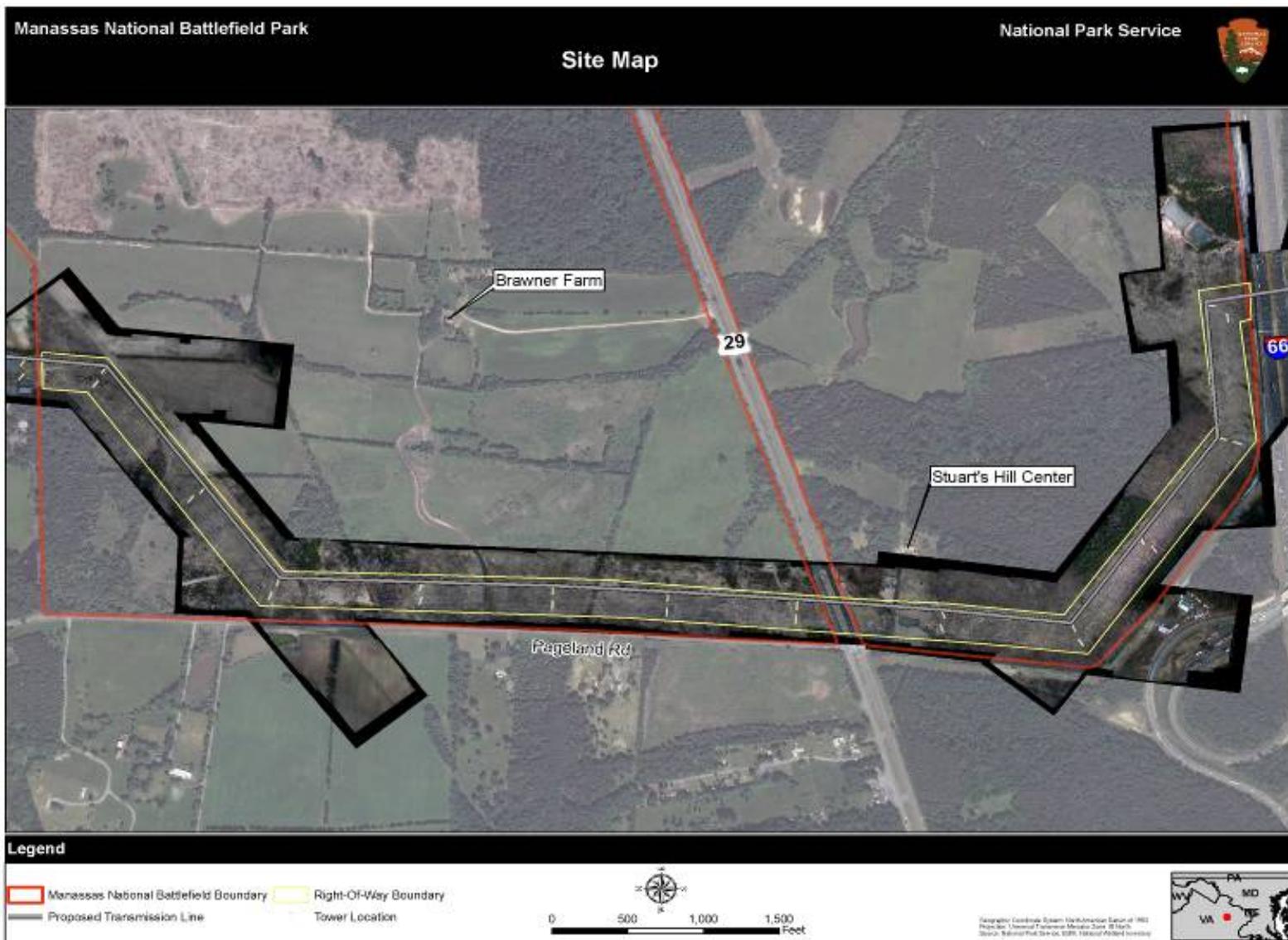
**NEPA** is implemented through regulations of the Council on Environmental Quality (CEQ) (40 CFR 1500–1508). The NPS has in turn adopted procedures to comply with the act and the CEQ regulations, as found in NPS Director's Order 12, *Conservation Planning, Environmental Impact Analysis, and Decision-making* (NPS 2001), its accompanying handbook, and the 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).

Section 4.5 of Director's Order 12 adds to this guidance by stating, "when it is not possible to modify alternatives to eliminate an activity with unknown or uncertain potential impacts, and such information is essential to making a well-reasoned decision, the NPS will follow the provisions of the regulations of the CEQ (40 CFR 1502.22)." In summary, the NPS must state in an EA or EIS (1) whether such information is incomplete or unavailable; (2) the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment; (3) a summary of existing credible scientific adverse impacts relevant to evaluating the reasonably foreseeable significant adverse impacts; and (4) an evaluation of such impacts based on theoretical approaches or research methods generally accepted in the scientific community.

Figure 4: Aerial View of Brawner Farm and Stuart's Hill



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 national park system “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).

The *Organic Act* and its amendments afford the NPS latitude when making resource decisions about visitor use and resource preservation. Despite this discretion, courts consistently interpret the *Organic Act* and its amendments to elevate resource conservation above visitor use (see *Michigan United Conservation Clubs v. Lujan*, 949 F.2d 202, 206 (6th Cir. 1991) (holding that in enacting the *Organic Act* “Congress placed specific emphasis on conservation”); *National Rifle Association of America v. Potter*, 628 F. Supp. 903, 909 (D.D.C. 1986) (stating that “in the *Organic Act* Congress speaks of but a single purpose, namely, conservation”). By these acts Congress “empowered [the NPS] with the authority to determine what uses of park resources are proper and what proportion of the parks resources are available for each use” (*Bicycle Trails Council of Marin v. Babbitt*, 82 F.3d 1445, 1453 [9th Cir. 1996]). The *NPS Management Policies 2006* also recognize that resource conservation takes precedence over visitor use. The policy dictates “when there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant” (NPS 2006, sec. 1.4.3).

Because conservation remains predominant, the NPS seeks to avoid or minimize adverse impacts on park resources and values. Yet, the NPS has discretion to allow negative impacts when necessary and appropriate to fulfill the purposes of the park, as long as the impact does not constitute impairment (NPS 2006, sec. 1.4.3).

While some actions and activities cause impacts, the NPS cannot allow an adverse impact that constitutes resource impairment (NPS 2006, sec. 1.4.3). The *Organic Act* prohibits actions that permanently impair park resources unless a law directly and specifically allows for the action (16 USC 1a-1). An action constitutes an impairment when its impacts “harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values” (NPS 2006, sec. 1.4.5). To determine impairment, the NPS must evaluate “the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts” (NPS 2006, sec. 1.4.5). This EA, therefore, analyzes the effects of the alternatives on park resources and values and determines if these effects would cause impairment.

*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 national park system 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.

Impairment is a subset of major adverse impacts that has an effect on 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 GMP or other relevant NPS planning documents.

Other applicable NPS guiding laws, regulations, and policies are described below.

**REDWOOD NATIONAL PARK ACT OF 1978, AS AMENDED**

All national park system 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 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.”

**NATIONAL PARK SERVICE MANAGEMENT POLICIES 2006**

This 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 right-of-ways at Manassas National Battlefield Park, such as Section 4: 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.

**AUTHORITY FOR AUTHORIZING CONSTRUCTION PERMIT**

In June 2008, a draft memo was issued by the NPS regarding “Permit Requirements for Construction, Maintenance and Repairs of Utilities within Easements on Parklands.” This memo states:

With demand for power and public services increasing, many utility companies, including electric power, telephone, cable TV, pipelines and sewer and water providers, are planning to construct new facilities or up-grade existing infrastructure. The National Park Service may only allow utilities to right use and occupy park lands and waters subject to a specific legal authority (generally 16 U.S.C. §§5, 79). In order to occupy and use park lands or waters utilities require a right-of-way permit granted by the National Park Service pursuant to 36 C.F.R § 14. Permits include terms and conditions that seek to minimize unacceptable impacts to park natural and cultural resources and the visitor experience as a result of the utility right-of-way.

However, there are occasions where the utility may hold an existing easement on parklands. Through an easement, the utility has acquired the right to use park lands for a specific purpose. It is important that park managers read the title file and deed for the tract of land encumbered with an easement to determine the full extent of the utility’s rights. The deed will describe the limits of the easement, such as the width, or the number, type and size of facilities that may occupy the easement. The easement may give the utility the right to construct a new facility, increase the size or number of facilities constructed in the easement, perform maintenance or do repairs on a utility. The easement may also specify how the maintenance may be performed, i.e. vegetation removal through mechanical means.

If the United States, through the National Park Service, owns the underlying interest in the land, the National Park Service has the responsibility to minimize, avoid or mitigate unacceptable impacts to park resources and values with the expressed intent of protecting government interests.

DVP requires construction permit (a type of special use permit) from the NPS for the upgrade of the existing transmission lines on DVP’s existing easement, since DVP already holds an existing easement and does not require a right-of-way permit. The authority to manage and permit special park uses can be found in NPS Director’s Order 53, Special Park Uses. The authority to issue the Director’s Order is contained in 16 USC 1 through 4, and in delegations of authority contained in Part 245 of the Department of the Interior Manual. The accompanying Reference Manual 53, Special Park Uses, states that “... special park uses can involve both rights and privileges, and may or may not support the purposes for which the park was established. Each of these requests, regardless of the magnitude and duration, must be

carefully analyzed and thoughtfully considered. If found to be legal and appropriate, necessary and/or acceptable, the special park use may be allowed through the issuance of the appropriate permitting instrument.” RM 53 further describes NPS authority for special use permits in Chapter 3.

## **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.

### **ENDANGERED SPECIES ACT OF 1973, AS AMENDED**

This act requires all federal agencies to consult with the Secretary of the Interior on all projects and proposals with the potential to impact federally endangered or threatened plants and animals.

### **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. All actions affecting the park’s cultural resources must comply with this law, which is implemented through 36 CFR 800.

### **HISTORIC SITES ACT OF 1935**

This act declares as national policy the preservation for public use of historic sites, buildings, objects, and properties of national significance. It authorizes the Secretary of the Interior and the NPS to restore, reconstruct, rehabilitate, preserve, and maintain historic or prehistoric sites, buildings, objects, and properties of national historical or archaeological significance.

### **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 National Register 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 (NPS 1998) 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 *NPS Management Policies 2006*. This director’s order is carried out through the NPS 28 Cultural Resource Management Guideline that provides the fundamental concepts of cultural resource management for the NPS.

### **ENERGY POLICY ACT OF 2005**

This requires the Department of Energy to designate National Interest Electric Transmission Corridors in areas where electrical transmission limitations are adversely affecting US Citizens. Northern Virginia (including Prince William County) falls within the Mid-Atlantic area national corridor. The designation of these corridors expedites the construction of electrical corridors in areas where electrical power generation is greater than electrical power transmission. If state and local governments fail to issue permits allowing the construction of new transmission, the *Energy Policy Act of 2005* gives the Federal Energy Regulatory Committee the ability to issue a federal permit allowing the construction (U.S. Government 2005).

## **Manassas National Battlefield Park Plans, Policies, and Actions**

### **MANASSAS NATIONAL BATTLEFIELD PARK: FINAL GENERAL MANAGEMENT PLAN / ENVIRONMENTAL IMPACT STATEMENT - APRIL 2008**

Within the GMP, the NPS proposed alternatives to promote the continued longevity, enjoyment, and historic preservation of the park. These alternatives consider the natural environment (including air quality, soundscape, vegetation, wildlife, and water resources), cultural environment (including historic structures, cultural landscapes, and archeological resources), transportation and traffic (including roadway characteristics, traffic counts, and level of service, safety, and emergency response), socioeconomic environment (including population, economy, employment, per capita income, and poverty), recreation, visitor experience (including visitation use and patterns, visitor profile, and projection of future use) and park operations and maintenance. This GMP does not 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 all topics and is cross-cutting in its focus. The GMP looks at the “big picture” of how the park can be changed and maintained for the future. To this end, the selected alternative of the GMP proposed a future condition at the park that focused on interpreting the two battles of Manassas and distinct military events. The visitor center at Henry Hill would orient visitors to the park as a whole and focus on the Battle of First Manassas. A separate visitor contact station at Brawner Farm would focus of the events of the Battle of Second Manassas.

The GMP addresses proposed actions to guide decision making and problem solving in order to protect the natural and cultural integrity of the park and proposes alternatives to address the current needs of the park. Since the acquisition of Stuart’s Hill, the park has been able to offer a more comprehensive interpretation of the Battle of Second Manassas now that both sides of the battlefield are owned by the government.

Goals within the park’s GMP that relate to upgrading of a transmission line include the following:

- The historic landscape is maintained in a way that gives visitors an understanding of the events of the two battles.
- All park uses and visitor experiences are conducted in a manner that is compatible with the park’s purpose.
- Modern intrusions into the historic landscape are minimal.
- The park cooperates with local, state, and other national groups to protect resources and tell the stories of the battles of Manassas.
- The rural and agrarian character of views outside the park is maintained.

### **MANASSAS NATIONAL BATTLEFIELD PARK BYPASS ENVIRONMENTAL IMPACT STATEMENT (BATTLEFIELD BYPASS STUDY), FEDERAL HIGHWAY ADMINISTRATION AND NATIONAL PARK SERVICE**

This study evaluates a variety of transportation improvement alternatives in the vicinity of the Manassas National Battlefield Park to alleviate traffic and congestion within the park. The study area for the project covers portions of Prince William, Loudoun, Fairfax, and Fauquier Counties, the Cities of Manassas and Manassas Park, and the Town of Haymarket. These efforts would improve circulation and visitor experience within the park by removing commuter and truck traffic from the state and federal highways in the park (NPS 2008a). As these actions could be occurring the same time as the proposed upgrade of the transmission lines within the park, it was considered during this EA process.

### **COMPREHENSIVE INTERPRETIVE PLAN FOR MANASSAS NATIONAL BATTLEFIELD PARK (ONGOING)**

The park staff is in the process of building on the recommendations developed in the 1994 interpretive prospectus for Manassas National Battlefield Park. The park staff reaffirmed the park significance statements and interpretive themes. Based on this work, park staff and their partners have developed an array of desired

visitor experience goals that will guide the development of interpretive media, exhibits, and facilities (NPS 2008a). The proposed upgrade of the transmission lines would take this plan into consideration to ensure that actions are consistent with this plan.

#### **MANASSAS NATIONAL BATTLEFIELD PARK FIRE MANAGEMENT PLAN**

This plan guides the decision-making process where safety, social, political, and resource values are evaluated, and appropriate management response strategies are identified. It is used to provide a framework for fuels management strategies through the use of prescribed fire and mechanical treatments, and to provide a basis from which to cooperate more fully in planning and implementing a fire program across agency boundaries. As actions under this plan occur throughout the park, it was considered to ensure there were no conflicts between the proposed upgrade of the transmission facilities and this plan.

#### **MANASSAS NATIONAL BATTLEFIELD PARK VISITOR STUDY (NPS 1995A)**

This report summarizes the results of visitor surveys and helps the park staff refine visitor services, facilities, and interpretation. The results of this study would be considered when planning construction and maintenance activities for the proposed upgrade of the transmission facilities, to take into account when and where visitation occurs.

### **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 aims to identify transmission system additions and improvements needed to maintain a reliably 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 need to be made. These studies model electric load, voltage limitations, and reliability issues 15 years into the future (PJM 2008). The Meadow Brook – Loudoun 500 kV transmission line was approved by the PJM Board in June 2006, as discussed in the “Project Background” section.

#### **STATE CORPORATION COMMISSION ACTIONS**

The SCC is one of Virginia's primary regulatory agencies. The SCC provides oversight to a variety of businesses and economic interests throughout the Commonwealth of Virginia. The SCC's authority encompasses utilities, insurance, state-chartered financial institutions, securities, retail franchising, and railroads. The SCC also serves as the Commonwealth's central filing office for corporations, limited partnerships, limited liability companies, business trusts, and Uniform Commercial Code filings (SCC n.d.). The 500 kV line proposed in a joint effort by DVP and Trans-Allegheny Interstate Line, which includes the portion through the park, was approved by the SCC on Oct. 7, 2008 (SCC 2008), stating that the “joint request to build a 500-kilovolt electric transmission line in Northern Virginia meets the applicable standards under Virginia law and, as result, must be approved.” The SCC agreed that the line was needed to address the reliability issue by 2011 due to increased demand. Without action, the transmission system in Northern Virginia would violate mandatory federal reliability standards. This ultimately could result in black-outs and brown-outs to Northern Virginia residents.

### **Scoping**

On September 15, 2008, an interdisciplinary team from the park met to discuss potential impacts related to the proposed upgrade and identify potential issues through the completion of an environmental screening form. The issues identified are discussed below.

The public scoping process was initiated on November 26, 2008, when NPS and DVP sent out 709 public scoping letters to the NPS mailing list, nearby residents, community organizations, and other organizations. In addition, notification of the meeting was advertised in the legal section on Saturday, December 6, 2008 and

Sunday, December 7, 2008 editions of the Prince William County edition of *The Washington Post* and *The Manassas Journal*. The public scoping meeting was also announced on the NPS Planning, Environment, and Public Comment (PEPC) website ([www.parkplanning.nps.gov/MANA](http://www.parkplanning.nps.gov/MANA)). Public scoping letters and announcements are provided in appendix B.

On December 11, 2008, the NPS and DVP held a public scoping meeting to further solicit community feedback on the proposed action to reconfigure and upgrade the transmission lines through the park. The meeting was held from 6:00 p.m. to 8:00 p.m. at the Stuart's Hill Center, 12521 Lee Highway, Manassas, Virginia, 20109. This location was chosen because it is located within the Manassas National Battlefield Park and near the existing transmission line.

The public scoping meeting provided numerous methods by which the public could comment on the proposed action. At the meeting, the NPS and the DVP engaged in an open dialogue with the meeting participants, soliciting comments regarding the proposed action. Several NPS and DVP employees attended the meeting to answer questions about the purpose and need regarding the construction of the new transmission reconfiguration. Attendees could complete comments cards and return them at the meeting or return the comment cards later. Those attending the meeting were provided information about the opportunity to comment on the project through the NPS PEPC website. Four people attended this meeting.

The public scoping period concluded on January 2, 2009, as announced by the November 26, 2008 scoping letter (appendix B). During the public scoping comment period, NPS received 10 comments. Comment topics included line configuration and the possibilities for underground placement, impacts to the Virginia Department of Transportation system, federal and state listed rare or endangered species, electric and magnetic field (EMF) health concerns, and wastewater and stormwater policies.

## Issues and Impact Topics

Issues describe problems or concerns associated with current impacts from environmental conditions or current operations, as well as problems that may arise from the implementation of any of the alternatives, and result in the development of impact topics. Potential issues associated with this project were identified by the public, park staff, and input from other agencies consulted, and contributed to the identification of the following impact topics, which are 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 were developed to ensure that the alternatives are evaluated and compared based on the most relevant resource topics. 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 limited or easily impacted resources.

Issues raised during scoping included comments and letters received from the Virginia Department of Transportation, the U.S. Fish and Wildlife Service (USFWS), and concerned citizens. Christopher Adkins with Virginia Department of Transportation wrote a letter about the possible impacts to I-66, US-29 and VA-234 during the construction phase of the project. This topic was dismissed from further consideration in the text below on page 22 as local road networks would not be impacted during construction or operation.

In a letter dated January 21, 2009, Susan Lingenfelter with the USFWS recommended conducting surveys in any appropriate habitat where the small whorled pogonia (*Isotria medeoloides*) may be affected by construction associated with erecting a new transmission line on an existing alignment within an existing cleared right-of-way at the park. The Louis Berger Group, Inc., asked W.S. Sipple Wetland & Environmental Training & Consulting to address the request since William Sipple is on the USFWS list of small whorled pogonia surveyors in Virginia. During 2008, William Sipple performed an extensive diabase rare plant search at the park involving five potential species during five different search weeks between May and September. Although small whorled pogonia was not the target species for this study, Mr. Sipple stated that none were found in the study area. Mr. Sipple reported that this basically mesic woodland species would not be expected to grow along an open right-of-way, especially one with such dense grasslands, thick shrubby vegetation, and wetland communities that occur along the Manassas National Battlefield Park right-of-way. Mr. Sipple also pointed out that this species was not listed by Gary. P. Flemming and Allen Belden, Jr. in their publication,

The Flora of Manassas National Battlefield Park, Prince William and Fairfax Counties, Virginia, which was published in *Banisteria* in 2004.

Marshall Popkin with the Northern Virginia Regional Commission wrote a letter to the park stating concerns about wastewater and stormwater policies and that the project should comply with the Virginia Storm Water Management Regulations. This topic was dismissed from further consideration (see page 20). James Lighthizer with the Civil War Preservation Trust wrote a letter to the park expressing concerns about the potential impacts to the cultural viewshed and the physical disruption with the reconfiguration of these towers. These topics were addressed and discussed as impacts in this EA.

Kevin Black, representing the County of Prince William, raised concerns about the potential impact of hazardous materials and wastes, as well as impacts that the construction and use of the six temporary roads would have to water resources and water quality, biological resources, air quality, cultural and historic resources, infrastructure, land use and planning, and noise and visual resources. These topics were addressed or dismissed as discussed further in this section.

Katherine Heritage, representing the County of Fauquier, wrote a letter to the park raising concerns about numerous federally significant historical, cultural, and environmental resources along the entire path of the line and urged the park to oppose this project. Historical, cultural, and environmental resources are addressed as part of this EA.

A concerned citizen wrote a letter to the park about placing lines underground during the rebuild of this transmission line. This alternative was considered but dismissed from further consideration as described on page 40.

Three comments were received on the PEPC website; two of which were the same letter received from the Civil War Preservation Trust and Prince William County detailed above. The Department of Conservation and Recreation-Division of Natural Heritage submitted comments related to the Manassas Diabase Uplands Conservation Site. These conservation areas were surveyed for rare plants as part of the 2008 rare plant search conducted by Bill Sipple described above on this page.

A brief rationale for the selection of each impact topic is given below, as well as the rationale for dismissing specific topics from further consideration.

## **SOILS**

Activities associated with the proposed construction for the upgrade and reconfiguration of the existing lines would include rebuilding these lines, placing new towers in new locations within the right-of-way, and removing existing towers, as well as the use of six temporary access roads during construction. Four of the six roads are currently in use and maintained and three of the six were used when the lines were relocated in the mid-1990s. The other roads are an existing gated access road constructed by the NPS and a previously constructed access road that would be re-opened. Construction activities would involve ground disturbance and could result in the loss of soil productivity, creation of long-lasting tire ruts, and an increased potential for soil erosion and loss of topsoil. In addition, some grading and filling would be required. As a result of potential impacts to soils from the proposed action alternatives, potential impacts to soils were addressed in this EA.

## **WETLANDS**

The USFWS classifies wetlands as lands where saturation with water is the dominant factor that determines the nature of soil development, and the types of plant and animal communities living in the soil and on the soil surface (USFWS 2008). Wetlands include areas inundated or saturated by surface or groundwater for a sufficient length of time during the growing season to develop and support hydric soils and hydrophytic vegetation. The NPS classifies wetlands based on the USFWS *Classification of Wetlands and Deepwater Habitats of the United States*, also known as the Cowardin classification system (Cowardin et al. 1979). Based on this classification system, a wetland must have one or more of the following attributes:

- The habitat at least periodically supports predominately hydrophytic vegetation;
- The substrate is predominately undrained hydric soil; or

- The substrate is non-soil and saturated with water, or covered by shallow water at some time during the growing season.

The U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (EPA) provided the definitions for hydrophytic vegetation and hydric soils that were adopted by USFWS. Hydrophytic vegetation consists of macrophytic plant life growing in water or on a substrate that is periodically deficient of oxygen as a result of excessive water content (USACE 1987). Hydric soils are those soils that formed under saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USACE 1987). A wetland delineation using USACE methodology was conducted in the study area and all jurisdictional wetlands were identified. Access Road #1 is located a Palustrine Emergent Wetland area delineated under USACE standards, however, this access road is currently cleared, hardened, above grade, and in use for maintenance and access to the gas pipeline; thus there would be no new impacts to this area of the wetland.

In addition to these jurisdictional wetlands, the study area contains “wet meadows,” as mapped by the Virginia Department of Conservation (VDCR). These areas are wet during the majority of the year, but do not possess the criteria to be considered a jurisdictional wetland. When rebuilt, all or part of the two tower structure foundations would be in an area that was mapped as a “wet meadow.” While this area is not considered a jurisdictional wetland under USACE methodology, it is considered a wetland by the USFWS classification system, which was used by the VDCR and the NPS. Although no wetlands delineated under the USACE methodology would be impacted and a Statement of Findings would not be required, activities would occur in areas classified as wet meadow. Therefore, this impact topic was analyzed in this EA.

#### **VEGETATION (INCLUDING SENSITIVE SPECIES)**

The existing power line right-of-way runs along the far western boundaries of the park, and in the highest part of the park. The terrain is gently rolling to flat. The park and the right-of-way are in the Triassic formation of the Northern Virginia Piedmont physiographic province, which is underlain by intrusive volcanic diabase, and sedimentary calcareous siltstone, sandstone, and metasiltstone providing the parent material for diabase soils. When exposed by erosion, diabase and metasiltstone form soils that can create the habitat for rare, drought-tolerant plant communities called diabase glades. Rare plant communities often exist on diabase soils where frequent disturbances such as fire or mechanical clearing encourage herbaceous plant growth. Although diabase glades promote the growth of some rare species, the diabase soils themselves are not rare or endangered. The VDCR Heritage Program has designated a number of Diabase Conservation Areas throughout Manassas that support these uncommon plant communities, which are not afforded special protection. A portion of the study area is contained within the Manassas Diabase Conservation Area. The Manassas Diabase Conservation Area within the park is known to support two state listed rare species: the marsh hedgenettle (*Stachys pilosa* var. *arenicola*), and purple milkweed (*Asclepias purpurascens*). According to the VDCR there is potential for a number of additional rare plant species that may occur in diabase conservation areas including earleaf foxglove (*Agalinis auriculata*), blue-hearts (*Buchnera Americana*), downy phlox (*Phlox pilosa*), and stiff goldenrod (*Oligoneuron rigidum*). Other plant communities in the area have the potential to be impacted during construction and maintenance as vehicles are taken into the area.

DVP conducted consultation with the USFWS via a letter sent on July 25, 2006. In the letter of reply dated September 28, 2006, the USFWS suggested the Virginia Department of Game and Inland Fisheries and the VDCR be contacted regarding the presence of federally listed threatened or endangered species. DVP received comments from these agencies on August 17, 2006, and September 8, 2006, respectively, via letter. The VDCR stated that Northern Virginia supports occurrences of several global and state rare plant species due to the diabase soil in Prince William and County. The consulting letters between DVP, the NPS, USFWS, and VDCR are included in appendix A.

Because construction and maintenance activities may impact plant communities in the park, vegetation was carried forward in the EA.

## **WILDLIFE AND WILDLIFE HABITAT**

The park provides local wildlife habitat through a patchwork of grasslands and forests. Other habitat contained within the park includes streams and wetlands that provide habitat for several species of mammals, shrubland and grassland birds, amphibians and reptiles. The existing right-of-way bisects some forest areas providing wildlife habitat. The right-of-way itself also serves as habitat for amphibians and aquatic species in the wetlands, and deer and other mammals that browse in the upland areas. Although the access roads would be placed and built so as not to have long-term impacts on the site, construction activities could temporarily impact wildlife habitat. In the long term, this area would provide additional areas of wildlife habitat in an urbanized area, providing beneficial impacts; therefore this topic was carried forward for analysis in this EA.

## **CULTURAL RESOURCES**

The National Historic Preservation Act (NHPA; 16 USC 470 et seq.), NEPA, NPS 1916 *Organic Act*, the NPS *Management Policies 2006* (NPS 2006), Director's Order 12 (*Conservation Planning, Environmental Impact Analysis and Decision-making*), and NPS Director's Order 28 (*Cultural Resources Management Guideline*) require the consideration of impacts on any cultural resources that might be affected, and, in particular, on cultural resources either listed in or eligible to be listed in the National Register of Historic Places (NRHP). Manassas National Battlefield Park was established on May 10, 1940, to preserve the historic landscape that encompasses the buildings, objects, and views relating to the Battles of First and Second Manassas. A portion of the existing transmission right-of-way crosses the western edge of the Manassas National Battlefield Park in the vicinity of Stuart's Hill, Stony Ridge, and Brawner Farm, the area of the Battle of Second Manassas. For this study, efforts to identify cultural resources included a review of information provided by the park supplemented by interviews with park staff and other published and unpublished sources, including NRHP listings. Since this area of the park contains archaeological resources, historic structures, and cultural landscapes that could be impacted under the action alternatives, this topic was carried forward for analysis in this EA.

Section 106 consultation is being handled separately from this EA. Consultation with DHR and the Advisory Council on Historic Places (ACHP) started on July 25, 2006, with a letter from Burns and MacDonald during the original siting process. ACHP responded on January 10, 2007, stating the need for the 106 process to be carried forward. During the fall of 2008, The Louis Berger Group, Inc., submitted a cultural resource survey for the entire Meadowbrook to Loudoun proposed 500 kV line to DHR (LaBudde et al. 2008). DHR responded on November 12, 2008, stating they have the right to comment on the report pursuant with Section 106. An appended letter was received on November 12, 2008, stating no archaeological resources were associated with the Manassas National Battlefield Park and concurring that no further archaeological investigations are warranted at this time. Further correspondence from the DHR on October 2, 2007, and January 9, 2008, stated that the archeological and historic resources evaluated were not eligible for listing in the NRHP and that no further work was warranted. These letters are provided in appendix A. However, if there is any change to the route or configuration, DHR would like the opportunity to provide additional comments. Each of these resources is discussed in detail below.

### **Historic Structures**

Within Manassas National Battlefield Park there are 40 classified structures including buildings, roads, monuments, and a bridge. The park's GMP provides for the planning efforts related to these structures, including the appropriate level of stabilization or rehabilitation. The reconfiguration of the existing transmission lines has the potential to alter the setting where these historic structures are located, and therefore this topic was carried forward for analysis in this EA.

### **Archeological Resources**

There are known archaeological resources in the vicinity of the Stuart's Hill and Brawner Farm tracts. Both of these areas have been surveyed and the location of these resources is known. Since the proposed action alternatives would include ground disturbing activities, the location of archaeological resources in relationship to these resources was evaluated in this EA.

## **Cultural Landscapes**

As a Civil War battlefield, cultural landscapes are an integral part of Manassas National Battlefield Park. Although portions of the former battlefield have become wooded, portions of the park still retain their wartime appearance. Maintenance of these remaining areas provides a sense of place and contemplative atmosphere for visitors to the park (NPS 2008a). The introduction of any new element, including a newly configured transmission facility, has the potential to impact these landscapes. Due to their importance to the park and the visitor experience, the topic of cultural landscapes was carried forward for further analysis.

## **VISITOR USE AND EXPERIENCE**

Manassas National Battlefield Park has over 470,000 visitors a year. The cultural landscape is a predominant feature of the park. The existing power transmission line right-of-way was relocated to its current location in 1995 to move it away from Brawner Farm to allow for restoring the historic landscape. Although the right-of-way is now relocated west of the most historically sensitive sites, and has been mitigated with plantings to obscure the view of the structures, the right-of-way remains within park boundaries.

Stuart's Hill now serves mostly as park headquarters and a picnic area, but does receive outside visitors. Brawner Farm is important to the interpretation of the Battle of Second Manassas, and will serve as a contact station for visitors in that area. Some recreational trails are also near the right-of-way.

If an action alternative is selected, principal construction activities would include installing foundations for all new towers, removing the existing towers and lines and foundations, bringing in and erecting new steel towers, stringing wire conductor and energizing the lines, and rehabilitating the right-of-way. Sediment and erosion control and safety barriers would likely be installed for the duration of the project, which could include brightly-colored blaze fencing, bales, etc., that may be visible from certain vantage points. Truck traffic during the construction period may be noticeable to visitors as well.

Construction activities would be near visitor use areas in the western side of the park and could affect the visual experience for visitors to the park in this area and could introduce a temporary source of noise that could impact the park and the themes it interprets in this area. Noise from the operation of the transmission lines (corona) could also impact any visitors close to the lines, and the lines would continue to be a visual intrusion into the park. Another temporary source of noise would occur from the maintenance operations that occur at various times of the year for selective clearing or if a transmission line were damaged. Because of the potential for noise and visual impacts that would affect visitor use and experience during the construction and operation of the transmission lines, this topic was carried forward for analysis in the EA.

## **HEALTH AND SAFETY**

The safety and health of park visitors and staff would be a concern during construction activities. To avoid compromising visitor safety, DVP would implement a number of safety precautions if the construction plan is approved by the park. These are listed in the mitigation section of chapter 2. Because of the potential for impacts to health and safety, and concerns raised by the public for this and similar projects, this topic was carried forward for analysis in the EA.

## **Impact Topics Dismissed from Further Analysis and Consideration**

The following impact topics were eliminated from further analysis in this EA. A brief rationale for dismissal is provided for each topic. With mitigation, potential impacts to these resources would be negligible and localized.

## **TOPOGRAPHY AND GEOLOGY**

There would be minor alterations to the topography and geology during construction, pending the approval of the construction plan. Minor changes to topography could occur from possible re-grading to construct access roads, but these impacts would be expected to be negligible because the right-of-way is already established and the area is already disturbed. Since the topography in this area is relatively flat, and any impacts would be negligible, this topic was not carried forward for analysis in the EA.

## **WATER QUALITY**

Small surface water areas are located in or adjacent to the proposed project site, including an intermittent stream located 250 feet northeast from a new tower location in the vicinity of Access Road #1. A small vernal pool is located underneath the existing transmission facilities; this pool has water during most of the year.

Any impacts to these water bodies would be minimal since the existing right-of-way was cleared years ago to its full width, thus no new clearing would occur to widen the right-of-way. Construction and maintenance activities that would occur within the right-of-way would avoid the vernal pool area, resulting in negligible impacts to this water resource. To minimize the effects of soil erosion, DVP would adhere to erosion and sedimentation specifications drafted and approved as document number TE-VEP-8000-08-00[1] (approved 11/14/07; see appendix C).

Impacts to groundwater would 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 on using herbicides across the entire width of the right-of-way, instead spot treatments would be applied on cleared stumps to ensure sucker-saplings do not sprout. Furthermore, herbicides would not be used in wetland areas. The construction plan states that DVP would follow a Stormwater Pollution Prevention Plan to avoid polluting surrounding waters or wetlands with oils and solvents that could be present during construction. Mitigation measures would be implemented to avoid contamination:

- 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.
- A concrete washdown area would be constructed with proper erosion and sediment control at the beginning of the project. Debris from that area would be removed as necessary. The area would be reclaimed and stabilized at the completion of the project.

DVP would use best management practices to minimize erosion and sedimentation as part of the construction plan. DVP would use minimal applications of herbicides, and only outside of wetland areas. Therefore, impacts to both surface water and groundwater would be minor and this impact topic was not carried forward for analysis.

## **PRIME FARMLAND**

Prime farmland, as defined by the U.S. Department of Agriculture (USDA), is the land best suited for food, feed, forage, fiber, and oilseed crops. It may be cultivated land, pasture, woodland, or other land, but it is not urban or built-up land or water areas. Prime farmland is protected under the Farmland Protection Policy Act of 1981, which minimizes the extent to which federal programs contribute to the unnecessary or irreversible conversion of farmland to nonagricultural uses. All soil types within the park are considered prime farm soils, however no or negligible adverse impacts would occur on prime farmland soils with approval of the construction permit. Additionally, the right-of-way would be managed for early successional shrub habitat and would not include any areas of hay leasing or cultivating. The proposed actions would not involve significant excavation, grading, or change to the current terrain; the terrain already contains an existing transmission line. Therefore, this impact topic was dismissed from further analysis in this EA.

## **AIR QUALITY**

The 1963 Clean Air Act as amended in 1977 (42 USC 7401 et seq.) requires federal land managers to follow policies that protect park air quality. The act also assigns the federal land manager (park superintendent) an affirmative responsibility to protect the park's air quality related values – including visibility, plants, animals, soils, water quality, cultural and historic resources and objects, and visitors – from adverse air pollution impacts. Section 118 of the Clean Air Act requires the park to meet all federal, state, and local air pollution standards.

The proposed project is located within the Virginia Air Quality Control Region VII; an area the EPA has designated as a moderate non-attainment area for the criteria pollutant ozone (O<sub>3</sub>), and as a non-attainment area for particulate matter less than 2.5 micrometers (PM<sub>2.5</sub>). The region is in attainment for the following National

Ambient Air Quality Standards criteria pollutants: particulate matter less than 10 micrometers (PM<sub>10</sub>), sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), and lead (Pb). The EPA has designated Washington, D.C. as in maintenance for carbon monoxide (CO). Washington, D.C. was designated as in attainment for CO as of March 15, 1996.

Under both action alternatives, local air quality would be temporarily affected by dust and emissions from construction vehicles. Hauling materials and operating equipment would result in increased vehicle exhaust and emissions during the construction period. Hydrocarbons, nitrogen oxide, and sulfur dioxide emissions would be rapidly dissipated by air drainage since air stagnation is uncommon at the project site. Fugitive dust plumes from construction equipment could occasionally increase airborne particulates in the area near the project site. Based on projects of similar scale and nature, it is expected that these temporary sources of emissions from construction vehicles and increased dust would not change regional air quality and would fall well below the minimum pollutant levels for a non-attainment PM<sub>2.5</sub> and a moderate ozone non-attainment area (subject to 40 CFR 93, "Determining Conformity of Federal Actions to State or Federal Implementation Plans"). This would result in negligible impacts to air quality to both alternatives during the construction phase (EPA 2008).

Should the no action alternative be selected, there would be no additional impacts to air quality because this alternative represents the park's current condition. With the action alternatives, temporary increases in air pollution would occur during construction, primarily from operation of construction equipment.

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. Since emissions and particulate matter levels would remain below the minimum thresholds during both the construction and operation phases of this project, this resource was not carried forward for analysis in the EA.

### **THREATENED AND ENDANGERED SPECIES**

During the development of this EA, the USFWS was consulted by letter regarding the existing transmission corridor (reply received on September 28, 2006, by Burns and MacDonald during the original siting period). This consultation examined the entire line between Frederick County and Loudoun County, Virginia. Within Prince William County, the location of the park, the USFWS did not identify any state or federal threatened or endangered species. This correspondence is provided in appendix A. Since there were no federally threatened or endangered species identified, this resource was not carried forward for analysis in the EA. Species of special concern were identified, and these are addressed in the "Vegetation" section.

### **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; and Director's Order 77-2, *1993 NPS Floodplain Management Guidelines*, provide guidelines on developments proposed in floodplains. The construction site is current located in an "X" designated Federal Emergency Management Agency (FEMA) floodplain. According to FEMA, "X" designated areas are outside the 500-year floodplain with less than 0.2 percent annual probability of flooding. Due to the topography of the area, the proposed project area is not located within either a 100- or 500-year floodplain (FIRM 1100010030B, 1985). Therefore, the proposed site is not likely prone to flooding. Because the action alternatives and no action alternative would have no long- or short-term adverse impacts associated with the occupancy and modification of floodplains, and would avoid direct or indirect support of floodplain development, this impact topic was dismissed from further analysis in this EA.

### **SOUNDSCAPES**

In accordance with the NPS *Management Policies 2006* (NPS 2006) and Director's Order 47, *Sound Preservation and Noise Management* (NPS 2000), an important part of the NPS mission is preservation of natural soundscapes associated with national park units. Natural soundscapes exist in the absence of human-caused sound. Natural ambient soundscapes are the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive, and can be transmitted through air, water, or solid materials.

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. Under the action and no action alternatives, sound generating activities would include the use of construction equipments, as well as noise produced by the transmission lines during operation. Impacts from these potential sources of noise are discussed in the “Visitor Use and Experience” section and not as a separate impact topic.

### **MUSEUM COLLECTIONS**

Implementation of any alternative would have no effects upon museum collections (historic artifacts, natural specimens, and archival and manuscript material); therefore, museum collections was dismissed as an impact topic.

### **ETHNOGRAPHIC RESOURCES**

There are no known ethnographic populations associated with Manassas National Battlefield Park that would be impacted by the relocation and reconfiguration of the existing transmission facilities; therefore, ethnographic resources was dismissed as an impact topic.

### **TRAFFIC AND TRANSPORTATION**

The proposed project includes the use of six access roads that are already located in the park. Of the six access points identified under the proposed action, five are existing access ways to park property and one is an access point that was used when the line was originally relocated in the mid-1990s and would be temporarily reopened for this project. All of these access points are off of Pageland Road and work in the park would not impact traffic along major roadways in the area including I-66, US-29 or VA-234. No temporary road closures were required when DVP relocated the line in the mid-1990s and it is expected that no temporary road closures would be required under the proposed action. No vegetation clearing would be required for any of the five existing access ways and only minor brush removal and tree trimming may be required to re-open Access Point #4. The project would begin in July 2009. A sequence of different activities would occur first on one side of the right-of-way and then on the other, and work at the park would be completed by December 2010. During construction, Virginia Department of Transportation property would be affected by the line segment in this EA that crosses US-29, which would be a rebuild of the transmission line crossing that was built in the mid-1990s. This section of the project is completely within Manassas National Battlefield Park and as such would not affect I-66, VA-234, or the US-29 interchange in Gainesville, the Tri-County Parkway west of the park, or the VA 234 Bypass North. Other Virginia Department of Transportation road crossings are necessary for the completion of the entire project, but those are outside of the scope of this EA. Under the action alternatives, these access points would temporarily become active, and then after the approximately five-month-long construction period would not be used again. Because the action alternatives would not require closures of these roadways, or otherwise impact the area transportation network, this topic was not carried forward for analysis in the EA.

### **UNIQUE ECOSYSTEMS, BIOSPHERE RESERVES, WORLD HERITAGE SITES**

There are no known biosphere reserves, World Heritage sites, or unique ecosystems listed within or adjacent to Manassas National Battlefield Park; therefore, this impact topic was dismissed from further analysis in this EA.

### **SOCIOECONOMIC RESOURCES**

Possible impacts from the transmission lines include impacts to property or home values on adjacent lands; however, under the action and no action alternatives, there are already existing facilities at the site. The upgrade and reconfiguration of these facilities would not change their size, appearance, or functioning 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. According to the EPA, environmental justice is described as follows:

...fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.

The goal of 'fair treatment' is not to shift risks among populations, but to identify potentially disproportionately high and adverse effects and identify alternatives that may mitigate these impacts.

Both minority and low-income populations are present near Manassas National Battlefield Park; however, environmental justice is dismissed as an impact topic for the following reasons:

- The impacts associated with implementation of the proposed alternatives would not disproportionately adversely affect any minority or low-income population or community.
- Implementation of the proposed alternatives would not result in any identified effects that would be specific to any minority or low-income community.
- Any impacts to the socioeconomic environment would not appreciably alter the physical and social structure of the nearby communities.

## ELECTROMAGNETIC FIELDS

During public scoping, comments were made regarding electric and magnetic fields (EMF). Electric fields are created by differences in voltage, i.e., a transmission line and the ground beneath it. Electric fields are essentially constant and do not change with demand fluctuation on the electric system. Magnetic fields are created by current (Amperes) flowing in a conductor. Magnetic fields are quite variable and change proportionally with demand changes in the electric system. Both of these fields are commonly produced by electrical wires. Electric fields are measured in Volts per meter (V/m); these fields are easily shielded by common materials. Electric fields are much less of a health concern after many years of research. Magnetic fields are typically measured in Gauss (G); these fields are more difficult to shield and pass through most materials (NIEHS 2002).

All EMF emitted by transmission lines is at a frequency of 60 Hertz and are classified as Extremely Low Frequency (ELF), which is defined as between 3 and 300 Hertz. The 60 Hertz transmission line frequency EMF carries very little energy and has no ionizing effects and usually no thermal effects. Non-ionizing effects means that the magnetic field does not carry enough energy to charge ions when passing through matter. Charged ions have the ability to break chemical bonds and could damage DNA. Thermal effects refer to the reaction of the biological system as a result of temperature increase.

Since the late 1970s, concerns have been raised about the possible health effects regarding the impact of EMF associated with high voltage transmission lines on human health. Due to their size and visibility, transmission lines have attracted a large amount of media attention related to health and safety. Numerous studies have been performed by epidemiologists, biologists, and other experts in the field to determine if there is a measurable connection between human health and high voltage transmission lines. Most of this research has proved to be inconclusive in finding a link between EMF and adverse impacts to human health. In an effort to gather additional data, the Virginia Department of Health (VDH) was required by Senate Joint Resolution No. 126 of the 1985 session of the Virginia General Assembly to submit an annual EMF research monitoring report to discuss possible health effects of high voltage transmission lines. On October 30, 2000, the VDH issued a final

report pursuant to Senate Bill No. 379 of the 1998 session of the Virginia General Assembly (VDH 2000). This final report summarizes the results of the five-year Electric and Magnetic Fields Research and Public Information Dissemination (EMF-RAPID) Program mandated by the U.S. Congress under the 1992 Energy Policy Act.

The National Institute of Environmental Health and Safety report suggested scientific evidence suggesting that ELF-EMF exposures pose any health risk is weak. The strongest evidence for health effects comes from associations observed in human populations with two forms of cancer: childhood leukemia and chronic lymphocytic leukemia in occupationally exposed adults. However, virtually all laboratory studies have shown no causal relationship between exposures to EMF and its relationship to biological function or disease. The report further stated that the lack of consistent, positive findings in animal or mechanistic studies weakens the belief that this association is actually due to ELF-EMF, but it cannot completely discount the epidemiological findings.

Using criteria developed by the International Agency for Research on Cancer (IARC), none of the member of NIEHS Working Group considered the evidence strong enough to label ELF-EMF exposure as a “known human carcinogen” (IARC Group 1) or “probable human carcinogen” (IARC Group 2a). However, a majority of the members of this NIEHS Working Group (19 of 28 voting members) concluded that exposure to power line frequency ELF-EMF is a “possible” human carcinogen (IARC Group 2b). This decision was based largely on “limited evidence of an increased risk for childhood leukemias with residential exposure and an increased occurrence of chronic lymphocytic leukemia associated with occupational exposure.” For other cancers and for non-cancer health endpoints, the NIEHS Working Group categorized the experimental data as providing much weaker evidence or no support for effects from exposure to ELF-EMF (NIEHS 2002).

The VDH stated in its final report on EMF “there is no conclusive and convincing evidence that exposure to extremely low frequency EMF emanated from nearby high voltage transmission lines is causally associated with an increased incidence of cancer or other detrimental health effects in humans” (VDH 2000).

Using the IARC criteria, NIEHS has labeled EMF as a 2b or “possibly carcinogenic to humans” not a “known human carcinogen.” There are many common items also included in the 2b classification, such as coffee, urethane, and dry-cleaning solutions. Overall, there still is no clear or conclusive evidence that EMF is a public health concern (VDH 2000).

Currently in the United States, there are no federal laws regulating the occupational or residential exposure to EMF in relation to the voltage carried in the transmission lines (NIEHS 2002). However, the International Committee on Non-Ionizing Radiation Protection (ICNIRP) provides guidelines for the amount of magnetic field that is considered to have no health or safety effects based on short-term exposure. This guideline states that a magnetic field is to be below 833 milligauss (mG) at all times for exposures to the general public. The current transmission configuration in the park emits between 91.33 mG and 233.80 mG; as a comparison a typical computer monitor emits a magnetic field of 10 to 20 mG.

The National Electrical Safety Code (NESC) states that electric fields must be kept below a level that will limit the steady state current due to electrostatic effects to 5 milliAmperes if the largest anticipated truck, vehicle or equipment under the line were short-circuited to ground. The current transmission configuration in the park meets with this requirement and proposed facilities will be designed to satisfy the NESC requirement.

High voltage transmission lines, such as the ones currently located at Manassas National Battlefield Park, emit some EMF. The transmission lines within the park emit a maximum magnetic field of 233.80 mG on the eastern side and 91.33 mG on the western side of the right-of-way. Therefore, the transmission lines within the park are well below the standards established by ICNIRP. The facilities are also in full compliance with the electric field requirements of the NESC. Since there is no conclusive evidence that EMF result in adverse health effects and since the towers currently do and would continue to operate below all standards, this topic was not carried forward for further analysis in this EA.

## **PARK OPERATIONS AND MANAGEMENT**

The proposed construction plan for the upgrade and realignment of the DVP transmission line would not add additional managerial or operational responsibilities to park staff. Current maintenance of the line and right-of-way would continue to occur by DVP, as is currently the case, with no increase or decrease in park

responsibilities. Because park operations and maintenance would not change either under the no action or action alternatives, this topic was not carried forward in the EA.

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## ALTERNATIVES

NEPA requires that federal agencies explore a range of reasonable alternatives. 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 design scoping and internal scoping.

The construction plan contains details and specifications pertaining to the construction process; including general process, goals, environmental impacts and restoration activities. The construction plan, submitted by DVP to the NPS, outlines actions to be performed by DVP during construction in the park. The main goals of the submitted construction plan, part of all action alternatives, include the following:

- Maintain the safety of park visitors during the construction period;
- Minimize adverse environmental effects;
- Rebuild the existing and new transmission line on separate structures, but within the existing 240-foot-wide transmission line right-of-way; and
- Restore the portions of the park and other NPS properties after the completion of line installation.

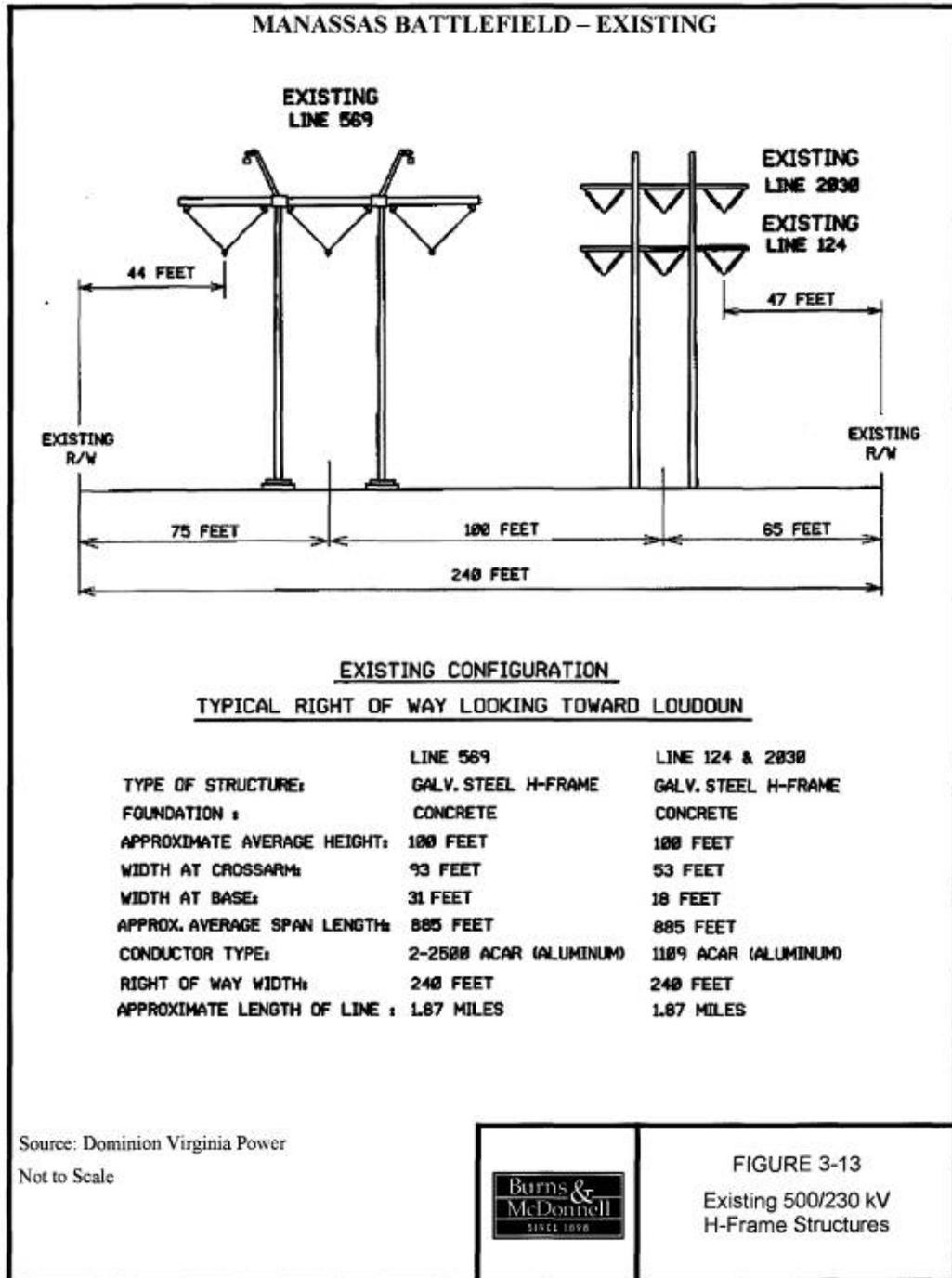
The NPS explored and evaluated three alternatives in this EA:

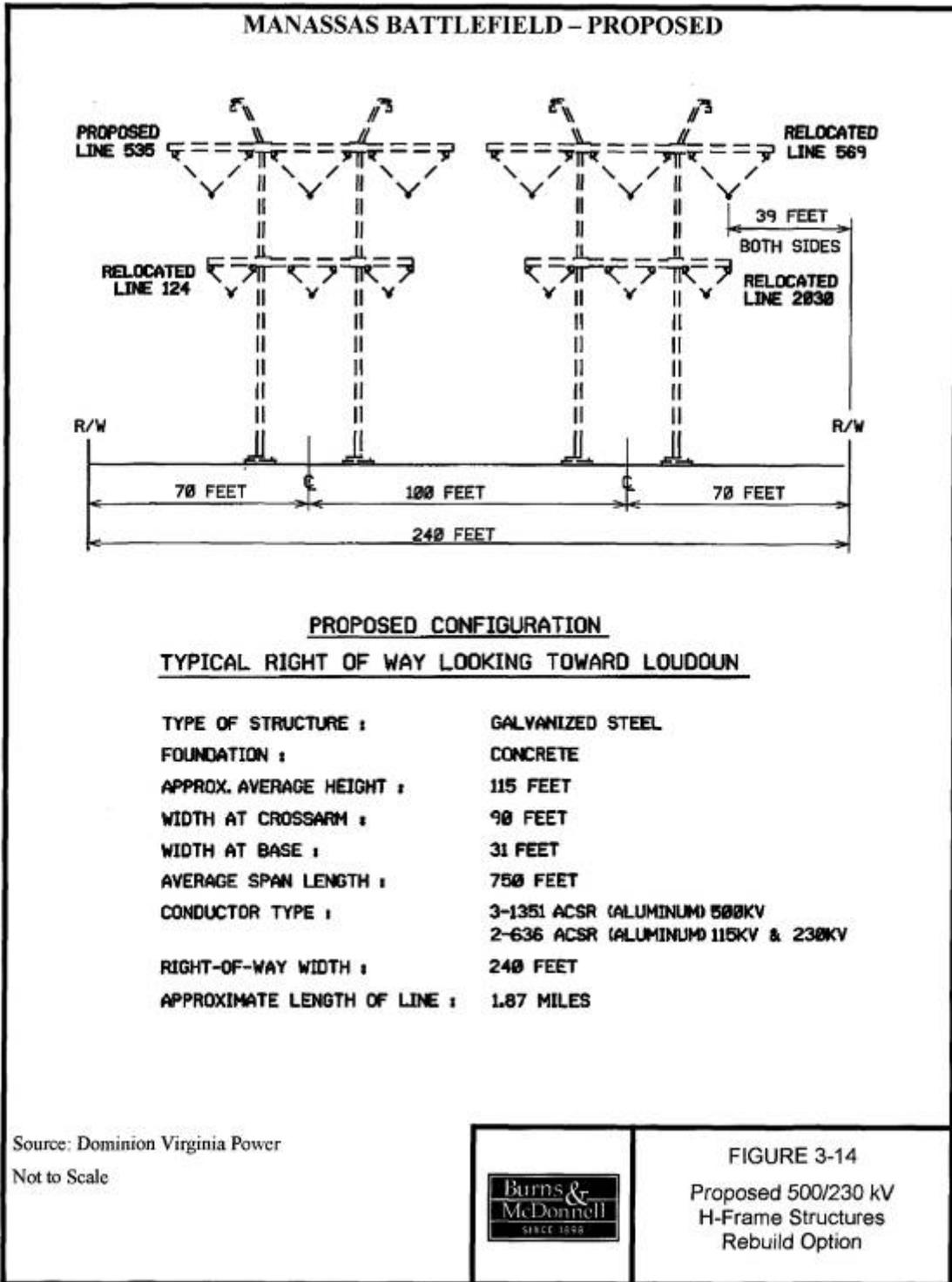
- Alternative A, No Action: The park would maintain the status quo and no action would be taken on the construction plan submitted by DVP.
- Alternative B: The NPS would approve the construction permit to upgrade and reconfigure the existing transmission line without additional permit terms and conditions. Actions would include:
  - Installation of new foundations, structures and lines;
  - Removal of the existing lines; and
  - The use of six access roads.
  - Alternative B would include construction procedures detailed in the construction plan (appendix C), such as erosion and sediment control procedures and safety procedures and site restoration.
- Alternative C: The NPS would approve the construction permit with additional permit terms and conditions. Under alternative C, the NPS would approve the construction plan described in alternative B with stipulations such as the addition of a landscaping plan that would provide additional screening at Brawner Farm.

### 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 configuration within the Manassas National Battlefield Park would remain as it is: a single-circuit 500 kV line paralleled by a double-circuit 230 kV / 115 kV line on H-frame structures. The right-of-way runs through approximately 1.8 miles of the western edge of the park. Currently, the 500 kV structure is approximately 100–116 feet tall to the top of the structure and 93 feet wide; the 230 kV / 115 kV line is approximately 100–116 feet tall to the top of the structure and 53 feet wide, as noted on the bottom of figure 5. These two lines are parallel to one another within the same 240-foot right-of-way with a total of 11 structures on each line. There would be no action taken by the park on construction plan submitted by DVP. Maintenance would continue on the existing lines, which consists of yearly field inspections, selective tree removal within the right-of-way and immediately adjacent to the right-of-way for “danger trees” every three years, and spot treatment with EPA-approved herbicides, as needed.

Figure 5: Existing and Proposed Configuration of Upgraded Transmission Lines





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## **Alternative B – NPS Approval of the Construction Permit without Additional Permit Terms and Conditions**

Under this alternative, the NPS would approve the construction plan (appendix C) submitted by DVP and a construction permit would be granted. Within the terms of the construction permit, the current transmission line would be removed and replaced by two facilities, one of which would contain a parallel double-circuit 500 kV / 230 kV and the other a double-circuit 500 kV / 115 kV transmission line. The proposed structures would both be 110.5–136.5 feet tall and 90 feet wide. The structures would be increased in height by 15 feet over the existing structures to meet required safety clearances and to accommodate the voltage of each line. The two structures would remain parallel to each other, and would be located within the existing 240-foot right-of-way. Each H-frame structure would consist of two footings, each 6 feet in diameter. Each footing would be placed approximately 32 feet apart. DVP would string non-reflective conductors across the rebuilt system in order to avoid the negative visual effect as a result of sunlight hitting the lines. These are required by the 1996 deed. This proposed reconfiguration, shown in figure 5, would address the projected growth and associated electrical needs of Northern Virginia in the next 10 years. Figures 6, 7 and 8 provide a visual simulation of how the proposed reconfiguration would look, as seen from Stuart's Hill parking lot, the corner of Pageland Road and Route 29, and from the Brawner House, respectively. Under alternative B, upon NPS approval of the construction permit, construction of the reconfigured line would commence in the summer of 2009, and would take approximately five months to complete.

The general process regarding the construction of the reconfigured line across park property would be as follows:

- Install foundations for all the new poles on park property;
- Remove the existing steel pole tower lines;
- Bring in and erect the new steel poles;
- String in the wire conductor on both lines and energize lines; and
- Rehabilitate the right-of-way.

The removal of all existing structures would be done in sections and all concrete foundations would be excavated to a point 1.5 feet below grade, similar to foundation removal performed for the relocation project in 1995 (DVP 2008). The proposed upgrade and reconfiguration of the transmission line within the existing right-of-way would require the use of six access roads. Five are existing access ways onto park property that are currently being used. The sixth access road is not currently in use, but was used when the line was originally relocated in the mid-1990s and would be temporarily reopened for this project. Gravel may be added to these roads, however no new grading would occur and the existing contours would remain the same. Access Road #1 is an existing gated access road for the gas pipeline off Pageland Road; Access Road #2 is a paved road used as an access point for visitors to see the Brawner Farm; Access Road #3 is just north of Lee Highway and is a gated maintained access road; Access Road #4 is the main drive to the Stuart's Hill Center; Access Road #5 is the road which is currently closed and would need to be reopened during construction; Access Road #6 is an existing gated access off of a paved road that parallels I-66. The five roads are currently available for use and would remain after construction, except for Access Road #5, which would be closed after construction. Figure 9 shows the location of these access roads.

DVP currently has ingress/egress rights at four of the six locations. The other two locations are the paved road to the Brawner Farm and an existing gate off of Pageland Lane at the south end of the park. DVP would coordinate with park staff for ingress/egress at these locations.

**Figure 6: Visual Simulation of Proposed Reconfiguration from Stuart's Hill Parking Lot**



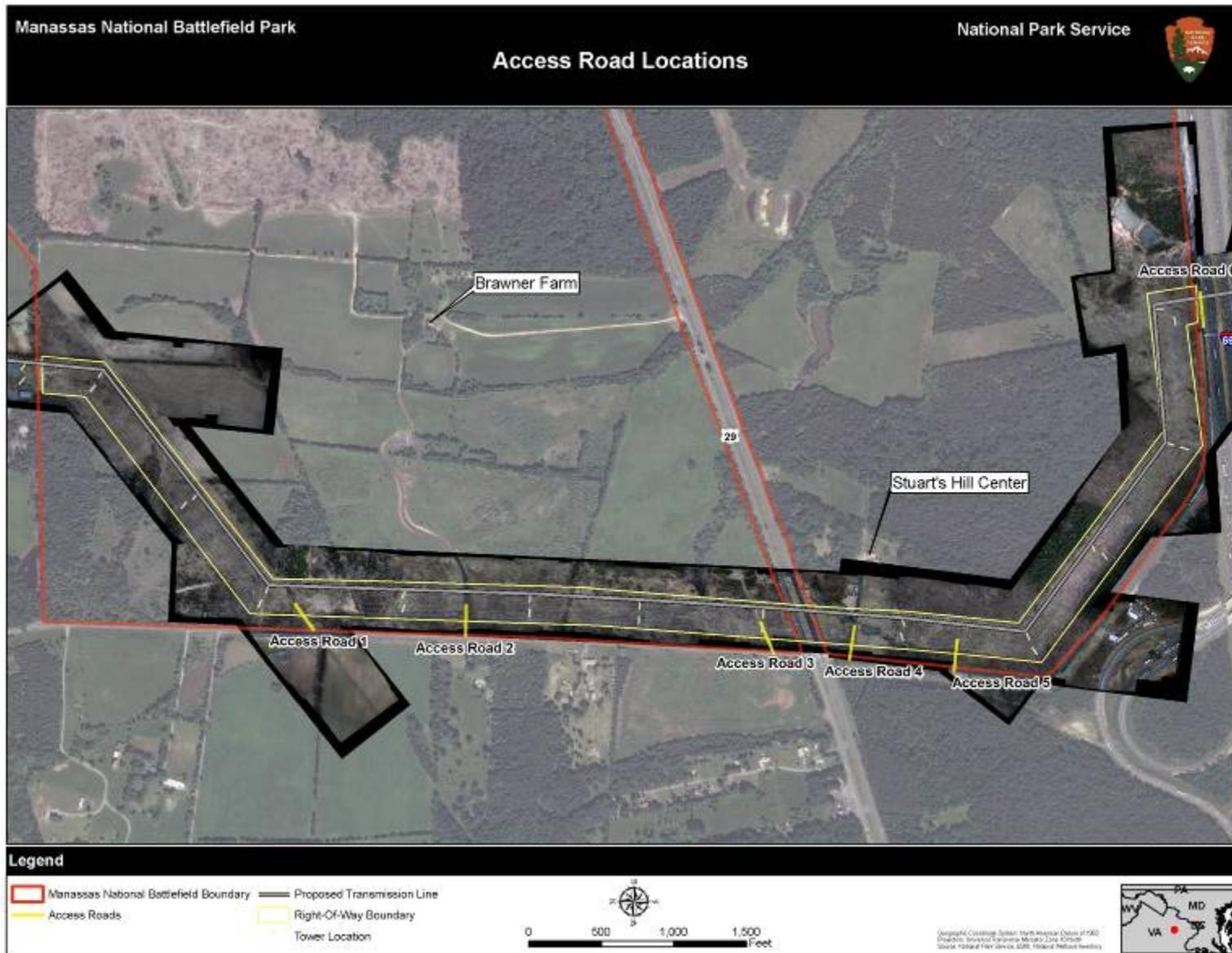
**Figure 7: Visual Simulation of Proposed Reconfiguration from Pageland Road and Route 29**



**Figure 8: Visual Simulation of Proposed Reconfiguration from the Brawner House**



Figure 9: Locations of Access Roads within Manassas National Battlefield



Once construction is completed and the new towers are installed, the restoration and reclamation process of the right-of-way would occur. This process would include re-grading (if necessary) in compliance with the *Clean Water Act* to restore pre-construction contours as close as practical; spreading topsoil; dispersing rock; installing permanent erosion and sediment control devices as appropriate; and liming, fertilizing, seeding, and mulching. The following seed mix would be used within the park in equal parts:

*Schizachyrium scoparium* (*Andropogon scoparius*) (Little Bluestem)

*Elymus virginicus* (Virginia Wild Rye)

*Sorghastrum nutans* (Indiangrass)

*Tridens flavus* (Purple Top)

*Coreopsis lanceolata* (Lance Leaved Coreopsis)

*Parthenium integrifolium* (Wild Quinine)

*Rudbeckia hirta* (Black Eyed Susan)

*Senna hebecarpa* (Cassia h.) (Wild Senna)

*Chamaecrista fasciculata* (Cassia f.) (Partridge Pea)

*Penstemon laevigatus* (Appalachian Beard Tongue)

*Monarda punctata* (Spotted Beebalm)

*Silphium trifoliatum* (Whorled Rosinweed)

*Asclepias tuberosa* (Butterfly Milkweed)

*Aster novae-angliae* (*Symphotrichum* n.) (New England Aster)

*Tradescantia virginiana* (Virginia Spiderwort) (Ernst Seeds 2009)

Lime would be spread at the rate of 4,000 pounds per acre and fertilizer would be spread at the rate of 600 pounds per acre.

## **Alternative C – NPS Approval of the Construction Permit with Additional Permit Terms and Conditions**

Under alternative C, NPS would approve the construction plan with additional stipulations. This alternative would follow the general construction plan described above under alternative B, but the NPS would add terms and conditions to the construction plan, including the development of a landscaping plan to reduce visual impacts. This landscape plan would provide for additional vegetative screening at the Brawner House to mitigate impacts to cultural resources and to address potential visual impacts at the Brawner Farm property. At this time, a specific landscape vegetation plan has not been developed. This plan would be developed after construction of the transmission facilities so it would have the maximum flexibility and the maximum benefit for screening. When developed, this plan would include the following elements:

- A planting plan and specifications for the screening landscape plantings would be developed by a landscape architect for review and approval by the park staff and National Capital Region Staff. This plan would be developed by DVP and the park as soon as the new transmission lines construction process is complete. This plan would provide for vegetative screening at Brawner Farm and would be approved by the park prior to implementation.
- Plantings would be supplied and planted in accordance with the specifications of that plan and installed plantings would be subject to approval by the park and/or National Capital Region before being accepted.

- At a minimum, there would be a one-year replacement guarantee and maintenance contract for all plantings under the landscape plan.

### **MITIGATION MEASURES OF THE ACTION ALTERNATIVES**

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 ensure the protective measures described in this section would be implemented as part of either of the action alternatives. DVP would be required to submit all mitigation measures to the NPS for reviewed and approval. During the construction phase, DVP would ensure all appropriate regulations would be followed. This would assure compliance and help ensure that protective measures are properly executed and achieving their intended results.

For crossing the park, DVP would adhere to standard SCC, Department of Historic Resources U.S. Army Corps of Engineers, and Department of Environmental Quality regulatory requirements and project construction specifications, including those pertaining to safety, environmental inspection, the Stormwater Pollution Prevention Plan, and erosion and sediment control. The erosion and sediment control specifications are detailed in DVP's *2008 Erosion and Sedimentation Control Specifications* (DVP 2008). In addition to the standard erosion and sedimentation specifications, DVP would implement special procedures for construction activities on NPS properties, with the objectives of conforming to the requirements of the construction plan, which can be found in appendix C.

### **Soils, Water Resources, Wetlands**

Pursuant to VA 4 VAC 50-60-10 (which covers actions disturbing greater than five acres), a Virginia Stormwater Management Program (VSMP) General Permit for Discharges of Stormwater for Construction Activities must be submitted. The Virginia Department of Conservation and Recreation administers the federal program pertaining to construction activities as part of the VSMP permit program, which is authorized under the Virginia Stormwater Management Act. As mandated by the Clean Water Act and EPA's Phase 1 (11/16/90) and Phase 2 (12/8/99) stormwater regulations, the federal permitting requirements have been incorporated into the Permit Regulation in sections 4 VAC50-60-380 and 390 (VDCR 2006).

DVP would develop and implement an approved Virginia Soil Erosion Control Plan prior to any construction associated with the applicant's proposal. 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 reviews and approves construction and grading plans submitted to the Virginia Department of Conservation and Recreation for compliance with the regulations. 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. DVP's Stormwater Pollution Prevention Plan describes ways to avoid potential pollution sources onsite, including vehicle fueling, sanitary waste facilities, limited chemical usage, construction debris, litter, and concrete washdown. The following precautions are included in the plan:

- Vehicle fueling would take place offsite, at the equipment location. Care would be taken to avoid spills on the site. Any accidental spill would be cleaned up immediately to avoid any discharge.
- Portable sanitary facilities would be available onsite at all times and serviced as appropriate.
- Chemical use would be limited during excavation and construction. Any chemical used or stored onsite would be properly labeled and stored in the tool trailer.
- Construction debris would be loaded in a container and disposed of offsite periodically as required.
- Litter would be loaded in a container as it occurs and disposed of offsite periodically as required.
- An area for concrete washdown would be constructed with proper erosion and sediment control at the beginning of the project. Debris from that area would be removed as necessary. The area would be reclaimed and stabilized at the completion of the project.

Construction debris and litter would be disposed of offsite in licensed facilities. Construction spoils would be stockpiled with appropriate erosion and sediment control measures and periodically loaded and disposed of offsite as necessary (DVP 2008). Inspections would be conducted at the construction sites to ensure that control devices were constructed in accordance with approved plans. These inspections would be made by a responsible land disturber every 14 days and within 48 hours of the end of a runoff producing storm event. An inspection report regarding whether the requirements of the permit are met would be developed and retained as part of the Stormwater Pollution Prevention Plan. These reports would identify any noncompliance (DVP 2008).

In regards to wetland disturbance, proper erosion and sedimentation practices would be employed prior to any necessary clearing and during the entire construction process. It may be necessary to remove individual trees within areas designated by the NPS as wetlands; the trees would be removed at ground level and the root mass would remain intact. These wetland areas are not delineated wetlands under the USACE methodology, and therefore a statement of findings is not required. For those areas that are NPS designated wetlands, but not USACE designated wetlands, clearing within 100 feet of streams and within wetlands would be accomplished by hand; saplings and shrubs less than 3 inches in diameter would be left in place. Equipment access within wetland areas would be on temporary mats. Soil spoils would be stabilized or protected with sediment trapping measures during construction; after construction is complete spoils would be removed from the wetlands. The right-of-way would be rehabilitated after construction. Periodic maintenance would consist of hand clearing, machine mowing, and herbicide application.

### **Wildlife and Wildlife Habitat**

In order to provide beneficial impacts to wildlife and wildlife habitat, the right-of-way at Manassas National Battlefield Park would be managed as early successional habitat. This is the early stage of a vegetative community where vines, forbs, and shrubs thrive and trees and brush do not compete with desirable low-growing vegetation. These open areas provide food sources, nesting sites, and protection from predators for countless species of wildlife, including butterflies, songbirds, turkeys, mice, rabbits, and quail. Unfortunately, early successional habitat is rapidly disappearing from wildlife ecosystems due to excessive development and poor vegetation management. Some estimates suggest that right-of-ways account for 80 percent of the early successional habitat remaining in New England.

Management of the right-of-way as habitat would include the following actions:

- Selectively using herbicides to control tall-growing species in order to maintain a shrub community of 10 feet or less in height. Selective basal application or low-volume basal application would be used in this situation.
- Along the right-of-way edges, tall trees would be topped enough so they do not represent a danger of hitting the power lines. Trunks would be girdled to kill the trees if needed.
- Clearing and grubbing operations in which all vegetation is cut down and soil and roots are disturbed would be avoided and shrubs and preferred low-growing trees would be left in place.
- Trees cut down during clearing or maintenance activities would be placed along the corridor edge to form brush piles.
- If chipping occurs, it could be left onsite but at a rate no thicker than 2 to 3 inches in any area.

### **Health and Safety**

Appropriate barriers, safety fencing, and/or signs would be installed at or along the park crossing, as appropriate, prior to initiating construction activities on NPS properties. The objective of these measures would be to protect visitors and allow safe passage across or around the area of construction. Safety measures would be maintained throughout the construction process on NPS properties. One specific safety measure includes immediately repairing any ruts in or around the transmission line construction site that could pose a hazard to a visitor. At all times during construction across and in the vicinity of the park, the DVP contractor

would establish a safety zone within which visitors would not be allowed. The contractor would post personnel along these areas to inform visitors.

### **Cultural Resources**

As part of pre-construction project planning, DVP has conducted cultural resource surveys of the construction work area, including the construction work area on NPS properties. DVP has identified mitigation measures for potential adverse effects on all known cultural sites, as described in this section. These measures are included in the DVP construction plan (see appendix C), which would be approved by the NPS under the action alternatives. In addition, 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.

The unanticipated discoveries plan states that DVP would ensure that construction documents contain the following provisions for the treatment of unexpected discoveries. First, in the event that a previously unidentified archeological resource were discovered during ground disturbing activities, the DVP contractor or staff would notify Manassas National Battlefield Park cultural resource staff (park superintendent or representative). DVP would then immediately notify the State Historic Preservation Officer (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 reasonably be expected to occur. DVP and the SHPO, or an archeologist meeting The Secretary of the Interior's Professional Qualifications Standards (48 FR 44 738-9), immediately would inspect the work site and determine the area and the nature of the affected archeological property. Construction work may then continue in the project area outside the site area. Second, DVP would consult with the SHPO to determine the National Register eligibility of the previously unidentified resource. Potentially eligible historic properties would be evaluated using the National Register criteria in accordance with 36 CFR 800.4(c). If DVP and SHPO determine that the resource meets the National Register Criteria for Evaluation (36 CFR 60.6), DVP shall ensure compliance with Section 800.13(b)(3) of ACHP 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 National Register.

Any artifacts found on NPS lands are recognized as the property of the NPS and would be handled according to all applicable standards and regulations. If artifacts were found on the park property appropriate park staff would be contacted concerning disposition of said artifacts.

### **How Alternatives Meet Objectives**

As stated in the: "Purpose and Need for Action" chapter, all action alternatives selected for analysis must meet all objectives to a large degree. The action alternatives must also address the stated purpose of taking action and resolve the need for action; therefore, the alternatives and the effects they would have in the study area were individually assessed in light of how well they would meet the objectives as compared to alternative A, no action. Alternatives that did not meet the objectives were not analyzed further (see the "Alternatives and Options Considered but not Carried Forward" section).

Table 1 compares how each of the alternatives described in this chapter would meet the listed project objectives. The "Environmental Consequences" chapter describes the effects on each impact topic under each of the alternatives. These impacts are summarized in table 2. Table 2 is at the end of this chapter.

**Table 1: Analysis of How Alternatives Meet Objectives**

<b>Objective</b>	<b>Alternative A: No Action</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Management Methodology</b>			
Provide the basis for making decisions regarding the construction plan for the DVP line within the park.	Alternative A <b>would not meet the objective</b> for providing a basis for decision making as no action would be taken on the construction permit.	Alternative B <b>would fully meet the objective</b> for providing a basis for decision making as the park would review the construction plan submitted by DVP and approve the construction permit.	Alternative C <b>would fully meet the objective</b> for providing a basis for decision making as the park would review the construction plan submitted by DVP and approve the construction permit, with additional stipulations.
Determine management stipulations for the installation, operation, and maintenance of transmission lines that can be implemented to protect the park's cultural and natural resources.	Alternative A <b>would not meet the objective</b> for determining management stipulations as no action would be taken on the construction permit.	Alternative B <b>would partially meet the objective</b> for determining management stipulations as the park would review the construction plan submitted by DVP and approve the construction permit based on this plan without additional stipulations.	Alternative C <b>would fully meet the objective</b> for providing a basis for determining management stipulations as the park would review the construction plan submitted by DVP and approve the construction permit, with additional stipulations to further protect park resources.
<b>Cultural Resources</b>			
Protect those features contributing to the historic designed landscape, archeological resources, and historic structures at Manassas National Battlefield Park.	Alternative A <b>would fully meet this objective</b> as no action would be taken and the current transmission lines, which were previously relocated to reduce cultural resource impacts, would remain in place.	Alternative B <b>would partially meet this objective</b> as the upgraded and re-aligned transmission towers would take into consideration the cultural resources in the area, but may impact these resources due to the presence of the transmission facilities.	Alternative C <b>would partially meet this objective</b> as the upgraded and re-aligned transmission towers would take into consideration the cultural resources in the area, but may impact these resources due to the presence of the transmission facilities. A reduction in visual impacts would be realized from the addition of a landscape plan and screening at Brawner Farm
<b>Natural Resources</b>			
Minimize impacts to the natural resources in the park including wetlands and sensitive species.	Alternative A <b>would fully meet this objective</b> as no action would be taken and the current transmission lines and no natural resources would be disturbed.	Alternative B <b>would fully meet this objective</b> as mitigation measures implemented during construction would minimize impacts to the park's natural resources including wetlands and sensitive vegetation.	Alternative C <b>would fully meet this objective</b> as mitigation measures implemented during construction would minimize impacts to the park's natural resources including wetlands and sensitive vegetation.

Objective	Alternative A: No Action	Alternative B	Alternative C
<b>Health and Safety</b>			
Protect the health and safety of park employees and visitors from exposure to construction activities when the line is upgraded.	Alternative A <b>would fully meet this objective</b> as no construction would occur and there would be no potential impacts from construction.	Alternative B <b>would fully meet this objective</b> as construction to upgrade the lines would occur and DVP would enact mitigation measures to ensure that park staff and visitors are not impacted by these activities.	Alternative C <b>would fully meet this objective</b> as construction to upgrade the lines would occur and DVP would enact mitigation measures to ensure that park staff and visitors are not impacted by these activities.
<b>Communication and Coordination</b>			
Communicate and coordinate with adjacent property owners throughout the planning, construction, and implementation of activities related to the proposed transmission line within the park.	Alternative A <b>would fully meet this objective</b> as the park and DVP would continue coordination with the public regarding activities related to the transmission line within the park.	Alternative B <b>would fully meet this objective</b> as the park and DVP would continue coordination with the public regarding activities related to the transmission line within the park.	Alternative C <b>would fully meet this objective</b> as the park and DVP would continue coordination with the public regarding activities related to the transmission line within the park.

## Alternatives and Options Considered but Not Carried Forward

The CEQ regulations for implementing NEPA require federal agencies explore and objectively evaluate all reasonable alternatives to the proposed action, 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 study and documents the rationale for their elimination.

During the course of scoping, several 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 to implement; or
- Too great an environmental impact.

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

### RELOCATING THE LINE

On October 7, 2008, the SCC approved the application submitted by DVP therefore approving the location of the proposed line. A full routing study was completed by the consulting company Burns and MacDonald that considered several alternatives in the Manassas National Battlefield Park area. These included a line that would skirt around the park and an overhead alternative route that would parallel existing transmission lines along the western edge of the park (Burns and MacDonald 2007). Burns and MacDonald analyzed these routes based on technical and economic feasibility and considered five main components: (1) field reconnaissance; (2) review of USGS topographic maps, aerial photography, and GIS data; (3) review of local land use, planning, and zoning information; (4) contacts with local, state, and federal agencies; and (5) input from

governmental officials and landowners. In addition to these components, the analysis considered using existing rights-of-way where possible, maximizing the distance of the line from existing homes and residential areas, minimizing impacts to known cultural resource sites, avoiding designated open-space easements, and minimizing the visual effect of the project. The selected route through the park was decided because it had the least impact on nearby residences and commercial buildings and was in an existing right-of-way, among other factors. Ultimately the proposed route as described in this EA was selected and approved by the SCC as the preferred route. Since the location of the line was based on an analysis of feasibility and was approved by the state, no other line locations were considered in this EA. Further, by using the existing right-of-way, the selected route minimizes the environmental impact.

### **PLACING THE LINE UNDERGROUND**

Locating the transmission line underground was suggested during public comment, and was considered in the DVP application to SCC. The cost of placing lines underground is always two to three times more than the cost of the proposed overhead lines but can cost as much as ten times more than the typical overhead cost. In addition, the initial cost to power companies to install underground lines is so great it could lead to a raise in the price of electricity to consumers. Overall, cost is a major factor dismissing the use of underground transmission (AEP 2007). In addition, in DVP testimony before the SCC, it was stated that an underground line was not feasible for this site, in part, because it was less reliable than an overhead line. This difference in reliability can be contributed to the amount of time required to repair an outage, which is greater when the line is placed underground. In the area served by the transmission line within Manassas National Battlefield Park, quickly repairing outages is important because of the amount of power carried within the system and the large number of customers that would be impacted. Due to the intense manual labor required to repair spliced lines, isolating and repairing damaged underground lines could take up to a month or longer, compared with overhead lines, increasing the impact from maintenance activities. This significantly slows the rate at which power could be restored to customers (AEP 2007). Additionally, it generally takes longer to obtain replacement parts for underground lines due to the low amount of demand for these parts on manufacturers. In most cases, emergency back-up parts are kept in order to expedite repairs, but this in turn drives up the overall costs of the already expensive underground cables (AEP 2007). Further, underground transmission lines that operate at 500 kV are rare, and except for short runs of cables installed in the Grand Coulee Dam, there are no 500 kV underground cables in the United States (DVP 2007).

When considering underground transmission lines, the difference in construction impacts between an underground and overhead line were also considered. The impacts from an underground line are much greater because the duration of construction is much longer and ground disturbance would require a continuous open trench, rather than just ground disturbance at the site of the overhead facilities. Overhead facilities can be designed to span natural resources including wetlands and other wildlife habitats (thus reducing impacts), while underground lines would have to run through or below natural resources, wetlands, or other wildlife habitats (AEP 2007). With underground lines, a significant amount of material would be excavated to dig the large trenches needed to install underground lines. This additional material would need to be hauled away and disposed of offsite in order to prevent any erosion or stormwater impacts while the lines are built. Additionally, oil filled transmission lines can leak and cause groundwater pollution. Since the line would be completely underground it would be difficult and very labor intensive to find the source of the leak and repair the damage in a timely manner. Due to the technical issues and greater construction impacts, in combination with the financial constraints, this alternative was not carried forward for analysis.

### **SHORTER TOWERS**

During planning for the proposed reconfiguration of the existing transmission facilities starting in 2006, the idea of shorter towers was explored to reduce the visual impact of the towers. DVP presented the alternative of shorter towers to the park. During this consultation it was explained to the park that in order to have shorter facilities, an additional set of structures next to Brawner Farm road would be required because as tower height decreases, the span between towers becomes shorter and more facilities are required. As a result, the park opted for fewer, taller towers to minimize the impact to the Brawner Farm entrance. Thus, the impact of shorter towers would be greater on the cultural landscapes and historic structures, and the proposed slightly

taller towers would not have substantially different impacts, shorter towers were not carried forward for analysis.

### **The Environmentally Preferred Alternative**

The environmentally preferred alternative is defined by CEQ as the alternative that would promote the national environmental policy as expressed in Section 101 of the NEPA:

1. Fulfilling the responsibilities of each generation as trustee of the environment for succeeding generations;
2. Assuring for all generations safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
3. Attaining the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences;
4. Preserving important historic, cultural and natural aspects of our national heritage and maintaining, wherever possible, an environment that supports diversity and variety of individual choice;
5. Achieving a balance between population and resource use that would permit high standards of living and a wide sharing of life's amenities; and
6. Enhancing the quality of renewable resources and approaching the maximum attainable recycling of depletable resources (NEPA, Section 101).

Simply put, this means that the environmentally preferred alternative is the alternative that causes the least damage to the biological and physical environment; it also means it is the alternative that best protects, preserves, and enhances historic, cultural, and natural resources.

The environmentally preferred alternative for upgrading and reconfiguring the transmission lines is based on these national environmental policy goals. Under alternative A, the no action alternative, the transmission lines would not be removed and replaced. Because there would be no new impacts, alternative A would provide the greatest protection of area to the park's resources and values. Alternative A, meets most of the above criteria and is therefore the environmentally preferred alternative.

Alternatives B and C would have greater effects on the environment because of the removal and replacement construction activities. Although additional stipulations and mitigation measures under alternative C would reduce effects to the park's resources and values, there would still be adverse effects related to the construction and slightly higher structures; therefore, these alternatives would not meet the NPS environmental policy goals as thoroughly as alternative A, the no action alternative.

### **NATIONAL PARK SERVICE PREFERRED ALTERNATIVE**

Alternative A is the environmentally preferred because it surpasses alternatives B and C in realizing the full range of national environmental policy goals as stated in §101 of NEPA. However, alternative C is the NPS preferred alternative because under the Deed of Easement between DVP and the park, DVP has the legal authority and "the perpetual right, privilege and easement of right-of-way Two Hundred Forty (240) feet in width, to construct, operate and maintain one or more lines of poles, towers or structures, as Company may from time to time deem expedient or advisable." Under Alternative C, the NPS would

accept the construction permit with additional stipulations and mitigation measures submitted by the park which, when implemented, would result in minimal impacts to park resources and values. The NPS believes this alternative would fulfill its park protection mandates while allowing Dominion Virginia Power to exercise its property right interests.

**Table 2: Summary of Environmental Consequences**

<b>Impact Topic</b>	<b>Alternative A: No Action</b>	<b>Alternative B</b>	<b>Alternative C</b>
<b>Soils</b>	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. There would be no impairment of soils under alternative A.	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- 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. There would be no impairment of soils under alternative B.	Reconfiguration and upgrade of the existing transmission facilities, with the addition of a landscape plan, under alternative C 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 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. There would be no impairment of soils under alternative C.
<b>Wetlands</b>	Alternative A would have negligible impacts on wetlands because construction activities would not occur, and maintenance activities would be infrequent and short in duration and access would be limited to existing access roads. Cumulative impacts to wetlands would be long-term negligible adverse. There would be no impairment to wetlands under alternative A.	Alternative B would have long-term minor impacts on wetlands due to the location of two towers or four foundations within the “wet meadow” areas and continued maintenance activities. Cumulative impacts to wetlands would be long-term minor adverse. There would be no impairment to wetlands under alternative B.	Alternative C would have long-term minor impacts on wetlands due to the location of two towers or four foundations within the “wet meadow” areas and continued maintenance activities. Cumulative impacts to wetlands would be long-term minor adverse. There would be no impairment to wetlands under alternative C.
<b>Vegetation (including Sensitive Species)</b>	Alternative A would have beneficial impacts on rare species since construction activities would not occur and the habitat available for vegetation, including sensitive species, would be maintained. Continued maintenance activities that include the removal of trees in the area around the right-of-way, as well as within the right-of-way, would have long-term minor impacts. Cumulative impacts would be short- and long-term minor adverse. There would be no impairment to vegetation under alternative A.	Alternative B would have short-term moderate adverse and long-term minor adverse impacts. Continued maintenance activities that include the removal of trees in the area around the right-of-way would have long-term minor impacts and some beneficial impacts. Cumulative impacts would be long-term minor to moderate adverse. There would be no impairment to vegetation under alternative B.	Alternative C would have short-term moderate adverse and long-term minor adverse impacts, with additional mitigation at the Brawner House adding to the vegetation on the site. Treatment of exotic plants would provide a beneficial long-term effect for the entire right-of-way. Continued maintenance activities that include the removal of trees in the area around the right-of-way would have long-term minor impacts. Cumulative impacts would be long-term minor to moderate adverse. There would be no impairment to vegetation under alternative C.

Impact Topic	Alternative A: No Action	Alternative B	Alternative C
<b>Wildlife and Wildlife Habitat</b>	Under alternative A, continued operation and maintenance of the existing transmission lines would have short- and long-term negligible adverse impacts to wildlife and wildlife habitat. Cumulative impacts would be long-term minor adverse. There would be no impairment to wildlife and wildlife habitat under alternative A.	Disturbance from construction activities, including ground disturbance and noise, would have short-term moderate impacts on wildlife and wildlife habitat and these areas would not be available to species during this time. After construction, the areas would be reclaimed and the amount of habitat available would be the same as pre-construction, resulting in long-term negligible to minor impacts from periodic maintenance. Cumulative impacts under alternative B would be long-term minor adverse. There would be no impairment to wildlife and wildlife resources under alternative B.	Disturbance from construction activities, including ground disturbance and noise, would have short-term moderate impacts on wildlife and wildlife habitat and these areas would not be available to areas species during this time. After construction, the area would be reclaimed and the amount of habitat available would be the same as pre-construction, resulting in long-term negligible to minor impacts from continued maintenance activities. There would be no impacts to wildlife and wildlife habitat from implementing a vegetative screening plan as a permit condition. Cumulative impacts under alternative C would be long-term minor adverse. There would be no impairment to wildlife and wildlife resources under alternative C.
<b>Cultural Resources – Historic Structures</b>	Implementation of alternative A would have negligible to minor impacts to historic resources from facility maintenance, resulting in no adverse effects. Any adverse effects to historic resources have been resolved previously through the execution of an MOA when the existing right-of-way and location of the current towers were established. Cumulative impacts under alternative A would be long-term minor adverse. There would be no impairment to historic structures under alternative A.	Alternative B, as currently designed, would have minor impacts to historic structures, resulting in no adverse effects. The current design has been developed in consultation with the park and SHPO to minimize impacts to historic resources. Cumulative impacts under alternative B would be long-term minor adverse. There would be no impairment to historic structures under alternative B.	The design of alternative C has been developed in consultation with the SHPO and the park. Tower heights, locations, and the addition of vegetative screening would result in negligible to minor impacts to historic resources, resulting in no adverse effects to historic resources. Cumulative impacts under alternative C would be long-term minor adverse. There would be no impairment to historic structures under alternative C.

Impact Topic	Alternative A: No Action	Alternative B	Alternative C
<p><b>Cultural Resources – Archeological Resources</b></p>	<p>Implementation of alternative A would have negligible impacts to archeological sites, resulting in no adverse effects. Adverse effects to archeological sites have been resolved previously through the execution of an MOA, when the existing right-of-way and location of the current towers were established. Cumulative impacts under alternative A would be negligible adverse. There would be no impairment to archeological resources under alternative A.</p>	<p>Implementation of alternative B would have no or negligible impacts to archeological sites, resulting in no adverse effects as currently designed. The current design has been developed in consultation with the park and SHPO to minimize impacts to archeological sites by relocating ground-disturbing activities outside site boundaries within the existing 240-foot-wide right-of-way. Cumulative impacts under alternative B would be long-term negligible adverse. There would be no impairment to archeological resources under alternative B.</p>	<p>As currently designed, alternative C would have negligible to minor adverse long-term impacts to archeological sites, resulting in no adverse effects as currently designed. The current design has been developed in consultation with the park and SHPO to minimize impacts to archeological sites by relocating ground-disturbing activities outside site boundaries within the existing 240-foot-wide right-of-way. The addition of a landscape plan would include surveying areas outside of the 240-foot right-of-way for any archeological resources. Cumulative impacts under alternative C would be long-term negligible adverse. There would be no impairment to archeological resources under alternative C.</p>
<p><b>Cultural Resources – Cultural Landscapes</b></p>	<p>Implementation of alternative A would have negligible to minor impacts to cultural landscapes, resulting in no adverse effects. Adverse effects to cultural landscapes have been resolved previously through the execution of an MOA, when the existing right-of-way and location of the current towers were established. Cumulative impacts under alternative A would be long-term minor adverse. There would be no impairment to cultural landscapes under alternative A.</p>	<p>Implementation of alternative B would have negligible to minor impacts to cultural landscapes, resulting in no adverse effects as currently designed. There would be a slight visual impact to cultural landscapes under alternative B due to the 15-foot height increase of the towers. The current design has been developed in consultation with the park to develop alternatives that minimize impacts to cultural landscapes. Cumulative impacts under alternative B would be long-term minor adverse.</p>	<p>The current design of alternative C has been developed in consultation with the park and SHPO to minimize impacts to cultural landscapes by restricting tower heights and including vegetative screening. All construction activities would occur within the existing 240-foot-wide right-of-way and no additional clearing would take place. As currently designed, alternative C would have negligible to minor adverse long-term impacts to cultural landscapes. Cumulative impacts under alternative C would be long-term minor adverse. There would be no impairment to cultural landscapes under alternative C.</p>

Impact Topic	Alternative A: No Action	Alternative B	Alternative C
<b>Visitor Use and Experience</b>	Implementation of alternative A would result in long-term minor adverse impacts to visitor use and experience from the presence of the transmission towers on the landscape, the minimal amount of places that park users would be able to see the towers, and the slight noise emitted by the existing lines and operational maintenance. No impacts would occur to access as no construction activities would occur. Long-term beneficial cumulative impacts would occur under alternative A, as well as short-term minor adverse impacts.	Implementation of alternative B would result in localized short-term minor adverse impacts during construction from construction noise during their visit. Alternative B would also have long-term minor to possibly moderate adverse impacts to visitor use and experience from the presence of the taller transmission towers on the landscape. Although there would be a minimal amount of places where park users would be able to see the towers, an increase in tower height would slightly increase their visibility. No impacts would occur to visitor access during operation. Long-term negligible adverse cumulative impacts would occur under alternative B.	Implementation of alternative C would result in short-term minor adverse impacts during construction as visitors would experience construction noise during their visit. With implementation of the proposed screening, Alternative C would have long-term minor adverse impacts to visitor use and experience from the presence of the transmission towers on the landscape, since the screening would reduce potential moderate impacts to minor levels. No impacts would occur to visitor access during operation but there would be short-term minor adverse impacts from maintenance activities. Long-term beneficial cumulative impacts would occur under alternative C.
<b>Health and Safety</b>	Under alternative A, occasional maintenance activities would occur for the existing transmission lines, with DVP taking steps necessary to ensure there are no impacts to park staff or visitor safety during these activities, resulting in localized, intermittent, negligible adverse impacts. Cumulative impacts under alternative A would be long-term beneficial and short-term negligible to minor adverse.	The implementation of alternative B would result in short-term negligible to minor adverse from construction activities to the health and safety of park visitors. Specific protocol concerning construction safety matters would be followed as to not compromise the safety of park visitors during the construction phase. There would be long-term beneficial and short-term negligible to minor adverse cumulative impacts.	The implementation of alternative C would result in short-term negligible to minor adverse from construction activities to the health and safety of park visitors. Specific protocols concerning construction safety matters would be followed to prevent compromising the safety of park visitors during the construction phase. Cumulative impacts under alternative C would be long-term beneficial and short-term negligible to minor adverse.

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## AFFECTED ENVIRONMENT

### Soils

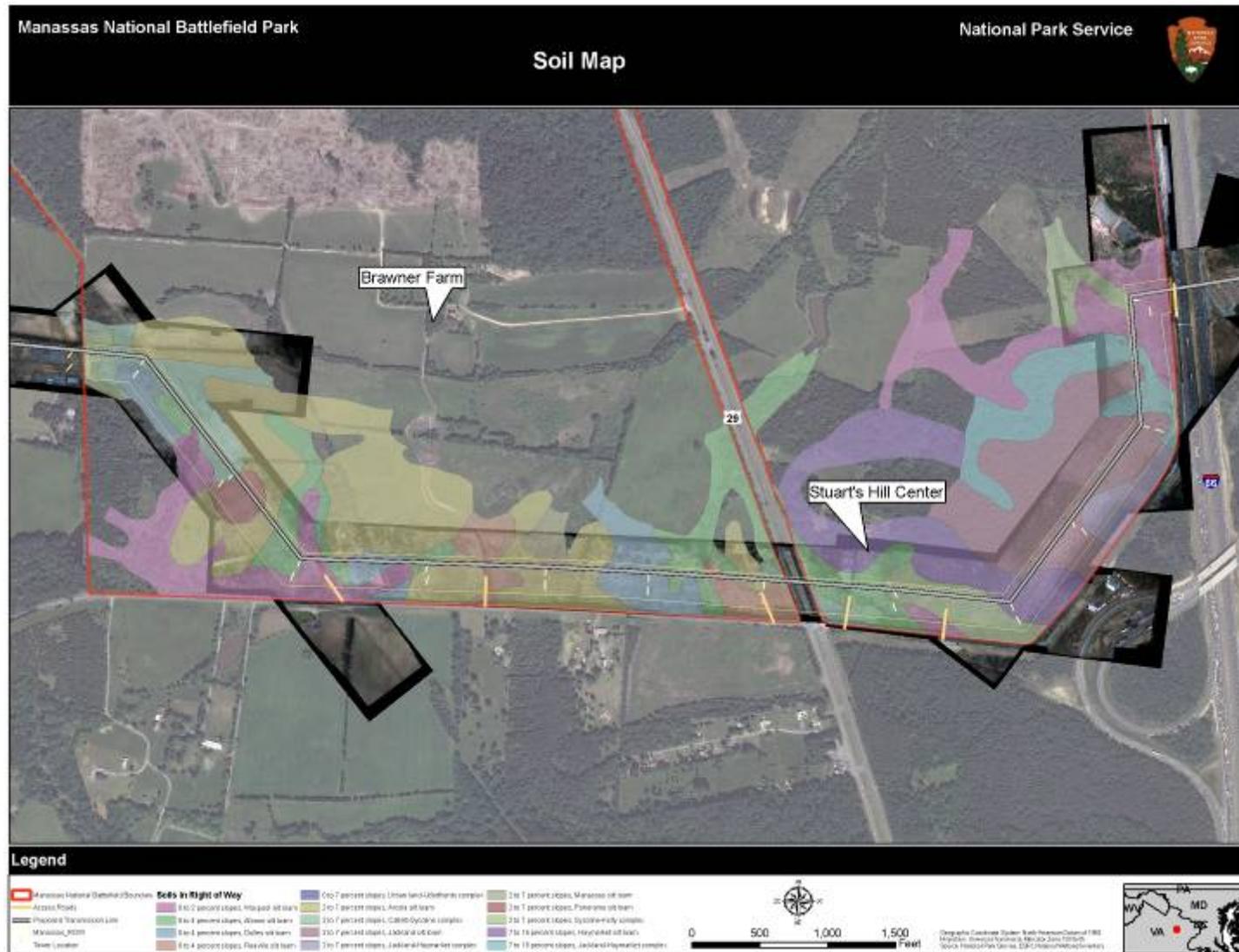
The park and the right-of-way are in the Triassic oration of the Northern Virginia Piedmont physiographic province, which is underlain by intrusive volcanic diabase, a sedimentary calcareous siltstone, sandstone, and metasilstone rock, which provides the parent material for diabase soils.

There are 13 different soil types within the maintained right-of-way in the park (see figure 10). They include:

- Albano Silt Loam, 0 to 4 percent slopes
- Arcola Silt Loam, 2 to 7 percent slopes
- Catlett-Sycoline complex, 2 to 7 percent slopes
- Dulles silt Loam, 0 to 4 percent slopes
- Haymarket Silt Loam 7 to 15 percent slopes
- Jackland Silt Loam, 2 to 7 percent slopes
- Jackland-Haymarket complex, 7 to 15 percent slopes
- Manassas Silt Loam, 2 to 7 percent slopes
- Panorama Silt Loam 2 to 7 percent slopes
- Reaville Silt Loam, 0 to 4 percent slopes
- Sycoline-Kelly Complex, 2 to 7 percent slopes
- Urban land-Udorthents complex, 0 to 7 percent slopes
- Waxpool Silt loam, 0 to 2 percent slopes

The four predominant soils in the area of the right-of-way are Albano silt loam (0–4 percent slopes); Arcola silt loam (2–7 percent slopes); Dulles silt loam (0–4 percent slopes); and Waxpool silt loam (0–2 percent slopes). These soils range from poorly draining to well draining and have moderate water capacity. The predominate soils units are all underlain by bedrock, with either silt loam, clay, or a mixture of both on top, and are rated as very limited for shallow excavation. The majority of the 13 soils found onsite are classified as having a low-infiltration rate, creating a high potential for runoff, because of the clay present in the soil (NRCS 2008a). These 13 soil units are slight to moderately erodible (NRCS 2008b).

Figure 10: Soils in the Proposed Project Area



## Wetlands

The USFWS classifies wetlands as lands where saturation with water is the dominant factor that determines the nature of soil development, and the types of plant and animal communities living in the soil and on the soil surface (USFWS 2008). Wetlands include areas inundated or saturated by surface water or groundwater for a sufficient length of time during the growing season to develop and support hydric soils and hydrophytic vegetation. The NPS classifies wetlands based on the USFWS *Classification of Wetlands and Deepwater Habitats of the United States*, also known as the Cowardin classification system (Cowardin et al. 1979). Based on this classification system, a wetland must have one or more of the following attributes:

- The habitat at least periodically supports predominately hydrophytic vegetation;
- The substrate is predominately undrained hydric soil; or
- The substrate is non-soil and saturated with water, or covered by shallow water at some time during the growing season.

The USACE and the EPA provided the definitions for hydrophytic vegetation and hydric soils that were adopted by USFWS. Hydrophytic vegetation consists of macrophytic plant life growing in water or on a substrate that is periodically deficient of oxygen as a result of excessive water content (USACE 1987); hydric soils are those soils that formed under saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (USACE 1987).

Wetlands are located throughout the park including the adjacent riparian areas, bottomlands, and ponds associated with the park's water courses (NPS 2008a). Based on the above classification system, a wetland delineation was conducted in 2008 and found wetland areas in the proposed project area.

A vernal pond is located within the scrub-shrub wetland, in the existing transmission line right-of-way near the Brawner Farm (VDCR 2003). In general, vernal ponds are temporary in nature, as they often fill during the winter and dry out as the growing season progresses (VDCR 2003). The emergent wetland in this area is dominated by broad-leaf cattails, (*Typha latifolia*) sedges (*Carex* sp.), and soft rush and is approximately 0.5 acre (LBG 2008a). Just to the west of the Stuart's Hill Center within the existing right-of-way, there is an area (approximately 1 acre) of palustrine wetlands, which is comprised of emergent, forested, and scrub-shrub areas. The forested wetland area (approximately 0.1 acre) is dominated by sycamore (*Platanus occidentalis*), blackhaw viburnum (*Viburnum prunifolium*), black willow, persimmon (*Diospyros virginiana*), soft rush, broad-leaf cattail, and hop sedge (*Carex lupulina*). The scrub-shrub wetland (approximately 0.1 acre) is dominated by sycamore, persimmon, black willow (*Salix nigra*), poison ivy (*Toxicodendron radicans*), soft rush, woolgrass (*Scirpus cyperinus*), Japanese honeysuckle (*Lonicera japonica*), and common greenbrier (*Smilax rotundifolia*). The emergent wetland (approximately 0.8 acres) is dominated by blackhaw viburnum, broad-leaf cattail, sedges, and soft rush (*Juncus effusus*). Hydrology is provided primarily by runoff from the adjacent upland fields (LBG 2008a).

In addition to these delineated wetlands, other areas exist in the park that may have one characteristic of a wetland, but not all three. In the vicinity of the project area, these are known as "wet meadows" (figure 11). Along the western border of the Brawner Farm tract, surrounded by wet meadow, is an area of scrub-shrub wetland approximately 3 acres in size that is located within the right-of-way (VDCR 2003). This unit represents wetlands in successional transition from herbaceous to woody; usually dominated by shrubs and sapling trees (VDCR 2003). This wetland is dominated by sycamore, persimmon, black willow, poison ivy, soft rush, woolgrass, Japanese honeysuckle, and common greenbrier. Hydrology is provided primarily by runoff from the adjacent upland fields (LBG 2008a). Although VDCR cites the scrub-shrub wetland as being 3 acres, the recent wetland delineation only identified an area of approximately 1.8 acres (LBG 2008a). Figure 12 illustrates the results of this delineation. Those areas classified as delineated wetlands are those that met the USACE criteria described above. Those areas classified as NPS or National Wetland Inventory wetlands on figure 12 may have one of the criteria for wetland but not all three USACE criteria. Discrepancies in the area are due to VDCR only requiring one of the three wetland criterion; whereas the recent study followed the

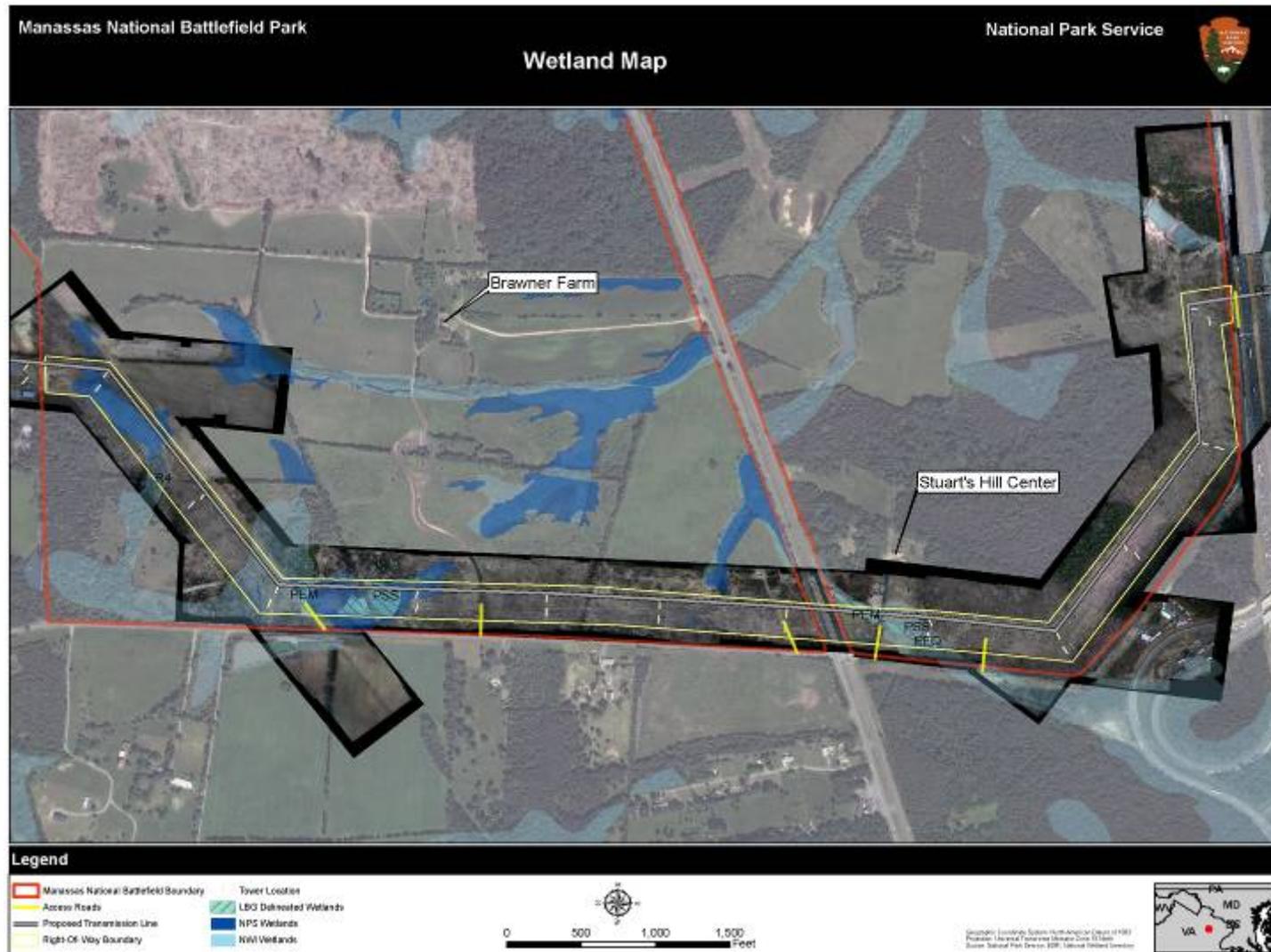
USACE criteria, which requires all three criteria to be present in order to identify an area as a delineated wetland.



**Figure 11: Wetland Area under Existing Transmission Towers, Adjacent to Stuart's Hill**

In the area of the existing transmission right-of-way, the majority of wetland area has been classified as “wet meadow,” by NPS (figures 11 and 12), whose wetlands classifications differ from those of the USFWS as described above. These wetlands are mostly part of the headwater drainage features of the landscape that eventually flow into Young’s Branch or Bull Run River. Frequent mowing of these sites promotes the dominance of herbaceous vegetation and prevents woody species from reaching maturity. A lack of forest cover allows water to stand longer, promoting herbaceous wetland plant growth in these areas. Two areas of wet meadow are located within, or adjacent to, the right-of-way on the Brawner Farm tract. One of these is located near the northern boundary of the tract and is approximately 3 acres in size and the other is on the western side and is approximately 2 acres in size (VDCR 2003).

Figure 12: Wetlands in the Proposed Project Area



## Vegetation (including Sensitive Species)

The park's vegetation is a mosaic of open fields and forest in a range of successional stages, as well as stream and wetland habitat. Fields are maintained by agricultural leases, as well as mowing by park personnel. The forests, approximately 50 percent of the park, are primarily deciduous, and include stands of oak/hickory, pine/cedar, mixed pine/hardwood, and bottomland hardwood. Many of the open areas contain native communities of grassland. Throughout the park, over 700 taxa of vascular plants can be found, 124 of which were classified as exotic, invasive species (NPS 2008a).

The area of the existing DVP transmission lines is composed of mostly grasslands and open prairie vegetation, wet meadows and scrub-shrub emergent wetlands, but also includes some manicured lawn areas planted with fescue near the park headquarters at Stuart's Hill. The right-of-way goes through forested areas, as described above. Grasslands include a number of native grasses and other plants in the right-of-way, such as eastern grama grass (*Tripsacum dactyloides*), Indian grass (*Sorghastrum nutans*), switch grass (*Panicum virgatum*), big and little bluestem (*Andropogon gerardii* and *Schizachyrium scoparium*), and native forbs, such as purple coneflower (*Echinacea purpurea*).

When the transmission lines were relocated in 1995, the disturbance for the establishment of the right-of-way, as well as ongoing right-of-way maintenance, exposed several diabase intrusions, or historically fire-dominated grassland vegetation on relatively nutrient rich soils underlain by Triassic bedrock. As a result the right-of-way supports a diabase glade that contains two state-listed rare plants, marsh hedgenettle (*Stachys pilosa* var. *arenicola*), and purple milkweed. Most of the state's known population of marsh hedgenettle is in the park (NPS 2008a).

A rare plant survey was requested by the Virginia Department of Conservation and Recreation, along three sections of the Meadowbrook to Loudoun 500 kV transmission line in Prince William County on September 8, 2006. This survey area included portions of the transmission line right-of-way that were within the park boundaries. The area within the right-of-way is part of a Manassas Diabase Conservation Area. The right-of-way was surveyed five times in 2008: May, June, July, August, and September. It was found that this area supports two state-listed rare species, the marsh hedgenettle (*Stachys pilosa* var. *arenicola*), and purple milkweed (*Ascleias purpurascens*), as shown in figure 13. An EA at this site completed in 1994 also confirmed the presence of the marsh hedgenettle in a wet swale near the Brawner Farm tract (NPS 1994). It is not known if these species were present before the transmission lines were constructed; however, these species prefer a habitat similar to that of a maintained transmission right-of-way, thus through regular mechanical clearing a high quality habitat is created for these species as they prefer cleared areas. In response to the notice of preparation of an EA, the USFWS wrote a letter to Manassas National Battlefield Park on January 21, 2009, regarding the presence of endangered species at the park. In this letter the USFWS recommended that surveys be conducted for the federally threatened, small whorled



**Figure 13: Examples of Marsh Hedgenettle (top) and Purple Milkweed (bottom)**

pagonia, in any appropriate habitat that would be affected by construction. The 2008 surveys were conducted in part by a surveyor qualified by the USFWS to survey for this species. During the surveys, this species was not found in the proposed construction area.

## **Wildlife and Wildlife Habitat**

Manassas National Battlefield Park is home to a variety of wildlife including 168 bird species, 26 mammal species, 23 reptile species, and 19 amphibian species. The patchwork nature of the open meadows, tree lines, and the several stages of forest create good habitat for several species, such as white-tailed deer (*Odocoileus virginianus*), eastern cottontail (*Sylvilagus floridanus*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), beaver (*Castor canadensis*), and many species of songbirds. In addition, wetland areas and vernal pools provide good habitat for amphibians such as wood frogs (*Rana sylvatica*), spring peepers (*Pseudacris crucifer*) and marbled salamanders (*Ambystoma opacum*) (NPS 2008a).

The area in and around the existing transmission line right-of-way is approximately 52.4 acres of habitat for wildlife including native grasslands and wetlands. Open savannas, riparian areas, and forest in various stages of succession exist within the vicinity of the right-of-way. The habitat in the area of the right-of-way is used by all wildlife within the park, but specifically those species that use edge habitats, such as white-tailed deer. Additionally, there are positive benefits of creating wildlife habitat in the right-of-way under the transmission line. With the correct seed mix and cutting regime, the right-of-way could provide valuable habitat to many shrubland and grassland species.

Consultation was conducted with the USFWS regarding the existing transmission corridor on September 28, 2006, by Burns and MacDonald during the original siting period. This consultation examined the entire line between Frederick County and Loudoun County, Virginia. Within Prince William County, the location of the park, the USFWS did not identify any state or federal threatened or endangered species. Additional consultation was received by the USFWS regarding the potential presence of an endangered plant in the park, as describe above in the “Vegetation” section. USFWS consultation correspondence is provided in appendix A.

## **Cultural Resources**

Manassas National Battlefield Park was established on May 10, 1940, to preserve the historic landscape that encompasses the buildings, objects, and views relating to the Battles of First and Second Manassas. The boundary expansion that brought Brawner Farm and Stuart's Hill into the park boundary was authorized on November 10, 1988, with enactment of Public Law 100-647. This act vested in the United States all rights, title, and interests to approximately 558 acres of private property near the park, including property owned by DVP. With the implementation of the act, however, all DVP easements, transmission lines, and towers became the property of the United States. The United States, in settlement of the taking, paid the cost of (1) the construction of new transmission lines on the right-of-way; and (2) the removal of the existing transmission lines that intruded into the core area of the Battle of Second Manassas. The new right-of-way was relocated along the western perimeter of the newly acquired acreage, but within the expanded boundaries of the park.

### **BATTLE OF SECOND MANASSAS**

Two of the Civil War's key battles occurred in Prince William County, and it was a traumatic period for the general region as well. Because there were a limited number of railroads in the south, both the Orange and Alexandria and the Manassas Gap lines played important roles in the movement of troops and supplies during the Civil War. In 1861 the war's first major land battle was the Battle of Bull Run, where the Union and the Confederacy fought for control for the railroads that ran through Manassas Junction. A second battle occurred at the same site 13 months later. Both battles were won by the Confederacy, and the second, bloodier battle, considered to be General Robert E. Lee's greatest success in the war, paved the way for invasion of the North (VDHR, File 076-0271).

A portion of the existing right-of-way crosses the western edge of the Manassas National Battlefield Park in the vicinity of Stuart's Hill, Stony Ridge, and Brawner Farm. Much of the first day of fighting during the Battle of Second Manassas took place on the Brawner Farm property, while Stony Ridge was the site of Confederate batteries later in the battle. Stuart's Hill served as the headquarters for General Robert E. Lee

(Hennessy 1990, 1993). The following summary was developed from both primary (Official Records of the War of the Rebellion; Gibbon 1928) and secondary sources (Hennessy 1990, 1993; Early and Fanning 2002).

On the evening of August 28, Union troops marching east toward Centreville, following the Warrenton Turnpike, were fired on by Confederate artillery. Union Brigadier General John Gibbon, commander of the "Black Hat" Brigade, sent his 2nd Wisconsin regiment up the hill just east of the Brawner Farm to silence the guns. But instead of one Confederate battery, they found a line of Confederate infantry coming at them across the open fields. This was the Stonewall Brigade, the lead unit of six brigades that Jackson would eventually bring into the fight. Gibbon hurriedly brought the rest of his men into line. On his left was the 19th Indiana, their left flank anchored on the Brawner Farm house. For about 90 minutes, until darkness fell, two lines of infantry stood 70 to 80 yards apart and shot it out in what Gibbon said was the most intense small-arms fire he saw during the entire war. He later wrote, "The left of my line rested at the Douglas House, and from that point as darkness came on, I could see the enemy's line extending far to my left. Should the enemy get possession of the house, and yard full of trees, he would entirely flank my line and enfilade it" (Gibbon 1928). Toward the close of the fighting Virginia troops under William Taliaferro did take the farm, and the Indiana men fell back toward Brawner's woods. Taliaferro later recalled the fighting thus:

A farm-house, an orchard, a few stacks of hay, and a rotten "worm" fence were the only cover afforded the opposing lines of infantry; it was a stand-up combat, dogged and unflinching, in a field almost bare. . . Twice our lines were advanced until we reached a farm-house and orchard on the right of our line and were within about 80 yards of a greatly superior force of the enemy. . . Our troops held the farm house and one edge of the orchard, while the enemy held the orchard and inclosure next to the turnpike. To our left was no cover, and our men stood in the open field without shelter of any kind [Earley and Fanning 2002].

After nightfall, the fighting moved away from the farm. However, the house and the high ground surrounding it continued to play some part in the battle. A battery of Pennsylvania light artillery occupied the site the following morning, and Confederate guns massed all along this ridge (Stony Ridge) in the afternoon of August 29 and during the day of August 30. By mid-morning on August 29, Jackson's forces were entrenched in a strong defensive position that stretched nearly two and a half miles. As General Robert E. Lee noted in his June 1863 report on the battle: "The troops were disposed in rear of Groveton along the line of the unfinished branch of the Manassas Gap Railroad, and extended from a point a short distance west of the turnpike toward Sudley Mill" (Official Records of the War of the Rebellion 12(2)).

Union troops, under the ultimate command of Major General John Pope, with corps led by Major General Franz Sigel and Major General Samuel P. Heintzelmann, assaulted Jackson's line throughout the morning, but were unable to breach it before the armies of Lee and Major General James Longstreet arrived on scene to secure Jackson's right flank. Lee established his headquarters from the vantage point of Stuart's Hill, where it would remain until late afternoon on August 30. By mid-afternoon, the Confederate army was now arrayed along the Independent Line to the north, the crossroads of the Warrenton Turnpike and Pageland Lane, and the Brawner Farm tract to the west, while the Union forces occupied Governor's Woods, Dogan's Ridge, and the intersection of Lewis Lane and Warrenton Turnpike to the east and southeast. The two armies clashed throughout the day, with heavy casualties to both sides. Several Union forays pressed Jackson's line, and Brigadier General Cuvier Grover's brigade actually broke through the Confederate line, but was forced to retreat due to a lack of support. Meanwhile, Lee ordered a substantial portion of Brigadier General John B. Hood's division to establish a forward base to the east of the Confederate positions. By midnight, this "reconnaissance in force," after successfully repulsing a Union division at the crossroads, had advanced the Confederate line well east of the crossroads, mere yards from Pope's main army. However, Lee, deciding the forward troops were too exposed, halted the attack and ordered Hood's forces to withdraw.

The morning of the final day of battle, Pope, erroneously believing that the Confederate army was retreating from the field (and apparently unwilling to acknowledge that Longstreet's sizable force stretched south of the turnpike), focused his attack along the Turnpike and the Sudley Haymarket Road. Unfortunately for Pope, Confederate forces massed south of the Turnpike succeeded in turning the Union left flank, while Longstreet's army and heavy artillery fire from Brawner Farm caused the Union attack to collapse. The Union forces were forced to retreat to Chinn Ridge, where several Union brigades managed to halt the Confederate advance

temporarily and allow the rest of the Union Army to regroup at Henry Hill and make a final stand that ended the battle. Ultimately, Pope would withdraw his army back into the defenses of Washington.

While Pope was directing his unsuccessful attack, Major General Fitz John Porter, still operating on orders issued by Pope on the previous day, was advancing on Jackson's position on the unfinished line, in the vicinity of the Deep Cut. By mid-afternoon, Union troops had again managed to overrun sections of the Confederate defenses, and some Confederate troops, completely out of ammunition, were forced to use rocks pulled from the unfinished railroad grade as projectiles. Once again, however, the Union forces assaulting Jackson's troops were denied reinforcements, and were unable to press their advantage, in part due to a deadly barrage from Confederate batteries as the Union troops crossed the open battlefield. Eventually, Porter's forces were repulsed, and forced to retreat with the rest of the Union Army.

Though the Confederate army was unable to capitalize on its victory by overwhelming the Union army completely, they clearly controlled the entire battlefield by the evening of the final day, and historians acknowledge the Confederate victory as "the decisive battle of the Northern Virginia Campaign" (ABPP 2008). Though mistakes were made by the commanders of both armies during the engagement, those committed by Pope proved to be the most costly, and within a few weeks he was relieved of his command (Sifakis 1988).

All observers agreed that the Manassas battlefield was devastated by the fighting. A reporter for the Washington Star wrote in 1865:

From Alexandria to the battlefield is one wide area of desolation. Fences are utterly swept away. Here and there a dilapidated farm house shelters a few squalid inmates and occasionally a small patch of wheat or corn is passed, but the whole face of the country is changed [Earley and Fanning 2002].

An examination of the maps depicting troop movements during the Battle of Second Manassas reveals that Confederate forces retained firm control of the terrain on which the existing right-of-way is situated for the entire course of the battle (Hennessy 1990). During the first day, the bulk of the fighting centered on the Brawner Farm house, located to the east of the existing right-of-way. However, elements under Taliferro's command did occupy ground within the existing right-of-way during the evening of August 28, and other small Confederate forces moved through the area, particularly in the vicinity of the unfinished railroad line (Site 44PW0299). By midday on August 29, the bulk of Lee and Longstreet's forces were concentrated on Stuart's Hill and the surrounding vicinity, including the existing right-of-way, and Lee would set up his main headquarters southeast of the Pageland Lane-Warrenton Turnpike crossroads on the eastern portion of Stuart's Hill, with elements of his army occupying the area that includes the existing right-of-way. Minor troop movements crossing this area would continue throughout the day to the north of Lee's command center, though by late afternoon Jackson's right flank appears to have shifted south and east, just outside of the existing transmission line corridor. For the most part, the overall position occupied by Confederate forces within the existing right-of-way remained largely unchanged during August 30, though the specific positions of individual elements shifted throughout the day, as units and divisions moved around on Stuart's Hill. By late afternoon on August 30, Lee had decamped from his headquarters, and his army was on the march, advancing in conjunction with Longstreet against Pope's forces to the east, and only one element of the Confederate army remained within and around the existing right-of-way, along Pageland Lane to the north of the crossroads. By early evening on the 30th, all of the Confederate forces were in pursuit of the Union army.

Manassas National Battlefield Park has a variety of archeological resources, historic structures and cultural landscapes, as discussed below.

## **HISTORIC STRUCTURES**

The term "historic resources" refers to historic properties that are buildings, structures, objects, and districts listed in or eligible for inclusion in the National Register. In order for an historic resource to be listed in the National Register, a particular resource must meet one or more of the National Register criteria (36 CFR 63). The resource must be associated with an important historic context. In other words, it must possess significance — the meaning or value ascribed to the historic resource — and retain the integrity of those character-defining features necessary to convey its significance (i.e., location, design, setting, workmanship,

materials, feeling, and association; see National Register Bulletin #15, How to Apply the National Register Criteria for Evaluation; NPS 1995c). Impact analyses under NEPA and Section 106 examine the manner and degree to which the proposed alternatives may impact or affect the qualities and integrity of an individual historic resource's character-defining features, significance, and National Register eligibility.

In 1994, the NPS prepared an EA as part of the relocation of the transmission lines and identified cultural resources both within and adjacent to the park that had been identified during the park's compliance with the NHPA, including historic structures. When considering historic structures, the architectural survey recommended that none of the historic structures located in the vicinity of the right-of-way was eligible for the NRHP under Criterion C (Neville et al. 1995). Pageland II (VDHR # 76-137) and Pageland I (VDHR # 76-138), former residences, are contributing resources to the Manassas battlefield under Criterion A. The Brown House (76-443) and two frame 20th-century houses are located within the boundaries of the larger battlefield and the parcels on which the structures are located may be eligible under Criterion A. These architectural resources are not eligible for inclusion in the NRHP for their architectural value (Criteria B, C, or D).

## ARCHEOLOGICAL RESOURCES

Archeological resources consist of buried and above-ground prehistoric and historic remains and artifacts significant to our study of prehistory and history. As these resources exist primarily in subsurface contexts, potential impacts to archeological resources are assessed according to the extent to which the proposed alternatives would involve ground-disturbing activities such as excavation or grading. Analysis of possible impacts to archeological resources was based on a review of previous archeological studies, consideration of the proposed alternatives, and other information provided by the NPS. The analysis of potential impacts to archeological resources begins with the identification and evaluation of archeological sites in the study area. Information concerning site location, type, age and National Register eligibility provides an essential understanding of not only known sites, but, based on certain environmental factors, such as proximity to water and slope of ground, where potential undocumented archeological resources sites may be found. National Register listed and eligible archeological sites are then assessed for potential impacts from the proposed alternatives. Construction of the upgraded transmission facilities could possibly impact the physical character of any of the identified archeological resources.

The 1994 survey discussed in the "Historic Structures" section also looked at archaeological resources. This study found one National Register-eligible archaeological site within the existing right-of-way. Site 44PW299 consists of the above-ground remains of the rail bed for the Independent Line of the Manassas Gap Railroad as well as an associated quarry, which date to ca. 1854 (Neville et al. 1995). In 1853, the Manassas Gap Railroad Company, weary of paying hefty trackage fees for access into Alexandria via the Orange and Alexandria line, announced plans to build its own line that would connect Gainesville and Alexandria, avoiding Manassas Junction completely. Construction of the Independent Line of the Manassas Gap Railroad started in 1854 using local labor, but was considerably delayed by rising land prices and the difficulties of creating a level grade through the rolling terrain. By 1857, the Manassas Gap Railroad Company, experiencing significant financial stress as a result of a collapse in the Midwest economy that depressed wheat prices, could no longer afford to continue construction, and work was suspended. Skirmishes and battles, including the Battle of Second Manassas, along the grade of the unfinished line during the Civil War resulted in significant damage to the track, and efforts by the company to resume construction and rebuild the line after the war proved unsuccessful. The unfinished track of the Independent Line of the Manassas Gap Railroad, discussed above, also played a role in the battle. Confederate troops, under the command of General "Stonewall" Jackson, took up defensive positions at cuts and fills along the abandoned line near Sudley, to the east of the existing right-of-way (Johnson 2004; Hennessy 1993). In 1867, a merger of the Manassas Gap Railroad Company and the Orange and Alexandria line resulted in the creation of the Orange, Alexandria, and Manassas Railroad, negating the need for the independent line, and so construction was permanently halted, and no track was ever laid (Boyd 1994; Hennessy 1993; Johnson 2004). The unfinished line crosses the northern portion of the proposed area of potential effect near one of the existing transmission facilities. Site 44PW299, representing both a small remnant of railroad bed and a related stone quarry within the existing right-of-way. This site was recommended as eligible for inclusion in the NRHP under Criteria A and D (Neville et al. 1995).

Four additional previously recorded archaeological sites are located within 500 feet of each side of the proposed transmission facility realignment. These four archaeological sites include one prehistoric site, one

multi-component (prehistoric/historic) site, and two historic sites. The prehistoric site (44PW0017) is a temporary camp of unknown temporal affiliation. The multi-component site (44PW0579) consists of a prehistoric site of undetermined function and unknown temporal affiliation, and an historic Civil War burial dating to 1862. The historic sites consist of a twentieth-century farmstead (44PW0968), which was recommended as not eligible for inclusion in the NRHP (Neville et al. 1995).

In 2008, an additional archaeological survey was conducted of the existing right-of-way within the boundaries of the park. The survey was conducted pursuant to an Archaeological Resources Protection Act (ARPA) Permit obtained from the NPS. During this survey no new archaeological resources were found in addition to the resources that already exist within the right-of-way.

## CULTURAL LANDSCAPES

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 1994 survey also included viewshed analysis of the transmission lines in their original location and the proposed relocation areas relative to "sensitive viewpoints in and outside the park" (NPS 1994). In particular, the analysis considered the visual impacts to the newly acquired Stuart's Hill and Brawner Farm parcels. The analysis showed that the preferred realignment (the current location of the transmission towers) "would substantially reduce the associated visual impacts as seen from key viewpoints of the park, particularly from the Brawner Farm." The analysis also found that viewing areas at Stuart's Hill could be situated so the observer would not be looking toward the lines. The combination of "topographic angle of view," relocation to the western perimeter of the park, and existing height of the forest canopy would "represent a substantial improvement...as seen from the viewpoints within the park associated with the Second Battle of Manassas." Based on this, the transmission lines were relocated to their present location.

Even with the advantages of the relocation cited above, it was determined that the new right-of-way and associated transmission line would have an adverse effect on the park. In resolution to this adverse effect, a Memorandum of Agreement (MOA) was executed among the NPS, the SHPO, and the Advisory Council of Historic Preservation on November 7, 1994. The MOA included stipulations to ensure that tower locations would minimize visual impacts to historic properties and that an archaeological survey would be conducted within the proposed right-of-way. A cultural resource survey was conducted of the proposed right-of-way, consisting of an intensive archaeological survey — including a metal detector survey and subsurface testing and an architectural survey of resources in the vicinity (Neville et al. 1995).

Cultural landscapes, as defined by The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes, consist of "a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein) associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values (NPS 1995b)." As part of its ongoing efforts to identify and properly manage its significant cultural resources, the NPS has initiated the identification, documentation, and appropriate treatment of cultural landscapes at Manassas National

Battlefield Park. As part of these efforts, in 1996, the National Capital Region of the NPS conducted three cultural landscape inventories of different parts of the park. These inventories did not include the Stuart's Hill tract, which had previously been studied by the University of Georgia, School of Environmental Design. The 1996 effort produced a cultural landscape rehabilitation report. Each study included a reconnaissance section that identified the scope of the cultural landscape, what is known about the resource, and future research needs. Each study also contained an analysis and evaluation section, which provided a site history of the landscape development, defined the characteristics that contribute to the historic character of the landscape, and identified the individual features associated with those characteristics.

The historic battlefield landscape constitutes the park's most important resource and provides the setting for understanding the events of the Civil War battles fought here. Although the ground cover has changed in some areas, the terrain remains largely unaltered, and key landscape features survive. Within the battlefield landscape are numerous resources that contribute to the park's significance, including historic buildings, archeological sites and ruins, remnants of historic fence lines, cemeteries and burial sites, traces of wartime roads and farm lanes, the reconstructed Stone Bridge, and the graded bed of the unfinished railroad.

## **Visitor Use and Experience**

Visitor use resources at Manassas National Battlefield Park include one visitor center, one visitor contact station, a picnic area, 5,071 acres of the park, 12 miles of tour road, 150 interpretive park signs, 21 miles of hiking trails, and 23 miles of bridle trails (NPS 2008a). In the past 10 years, visitation to the park has decreased almost 45 percent from 1,025,826 visitors in 1997 to 584,926 visitors in 2007. From 2000 to 2007, the number of annual visitors has ranged from 584,926 in 2007 to 822,684 in 2001 (NPS 2008b). In November 2008, there were 28,472 visits to the park, with approximately half of those visitors going to the Visitor's Center (NPS 2008b).

Although Manassas National Battlefield Park is open year round, visitation varies seasonally, with the lowest level of use in the winter and the highest level of use in the summer. This was seen in 2007 with visitation ranging from 51,030 to 58,158 between May and September, and dropping to 18,915 to 38,592 from October to February (NPS 2008b). During periods of high visitation, most occurs on the weekends (NPS 2008a). In general, there are three categories of visitors to Manassas National Battlefield Park:

**General visitors:** These people usually have limited specific interests in, or knowledge of, the battles. They visit the park to gain a general understanding of the park's significance. These visitors usually spend less than two hours in the park, mostly at the visitor center and the Henry Hill area.

**Historical visitors:** These individuals have a good understanding of the overall significance of the battles, and they are looking to examine and understand the actions and details of the two battles. They will spend about five hours in the park touring the battle sites.

**Recreational visitors:** These people are seeking recreational experiences such as cross-country skiing, fishing, hiking, horseback riding, jogging, nature study, picnicking, and sledding. They usually come to the park on spring, summer, and fall weekends and holidays (NPS 2008a).

In the area of the existing transmission lines, visitor use facilities include Stuart's Hill Visitor's Center and Brawner Farm, shown in figure 12 (page 51). Stuart's Hill Visitor Center had been historically operated seasonally, but is now used mainly as a headquarters for park employees. This contact station did not have any permanent staff and was not widely used by park visitors. Although no longer a contact station, visitor use facilities that remain around Stuart's Hill include picnic tables. The Brawner Farm will serve as a contact station, specifically related to the interpretation of the Battle of Second Manassas (NPS 2008a). When completed in summer 2009, this facility will include a limited amount of interpretive displays and museum items relevant to the second battle, as well as basic visitor services such as providing orientation and information (NPS 2008a). The existing transmission lines can be seen from both the Stuart's Hill (about 400 feet away) and Brawner Farm areas (1,800 feet away). Noise, as a result of this project, could occur during

construction and operational activities. During the construction phase noise could occur from the use of heavy machinery to remove and rebuild the transmission lines. During everyday operation the line would produce a crackling noise in areas immediately under and adjacent to the right-of-way. Additionally, noise could occur from regular maintenance operation at specified times of the year.

## **Health and Safety**

The NPS is committed to providing appropriate, high-quality opportunities for visitors and employees to enjoy the parks in a safe and healthful environment. Further, the NPS will strive to protect human life and provide for injury-free visits. Human health and safety concerns associated with the proposed project include the safety of park staff and visitors during construction and maintenance activities.

Currently, DVP is not performing any major construction at the Manassas National Battlefield Park; however general maintenance does occur. These activities include: field inspections every year; selective tree removal of “danger trees” immediately adjacent to the right-of-way, every three years; and spot treatment with EPA approved herbicides, as needed, every six years. DVP ensures the safety of park visitors during maintenance activities through proper signage and personnel.

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## 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 alternatives are compared to the no action alternative, or baseline condition of the project area within Manassas National Battlefield Park, to determine impacts to resource topics. 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. Regulatory agency consultation with the USFWS, the Virginia Department of Game and Inland Fisheries, the Virginia Department of Conservation and Recreation, the Virginia Department of Historic Resources and other existing data sources such as park planning documents and studies on the right-of-way 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 other ongoing or reasonably foreseeable future projects and plans in Manassas National Battlefield Park, and if applicable, the surrounding region. Table 3 summarizes these actions that could affect the various resources at the park. 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 effects of the proposed action plus other actions effecting the resource; defining context, intensity, duration and timing; defining thresholds, methodology, etc.

**Table 3. Cumulative Impact Scenario**

<b>Impact Topic</b>	<b>Study Area</b>	<b>Past Actions</b>	<b>Current Actions</b>	<b>Future Actions</b>
Soils (page 16)	Manassas National Battlefield Park boundaries	Establishment and relocation of transmission lines within the park , other park development	General Management Plan Fire Management Plan	General Management Plan Fire Management Plan
Wetlands (page 16)	Manassas National Battlefield Park boundaries	Establishment and relocation of transmission lines within the park	General Management Plan	General Management Plan
Vegetation (including Sensitive Species) (page 17)	Manassas National Battlefield Park boundaries	Establishment and relocation of transmission lines within the park, other park development	General Management Plan Fire Management Plan	General Management Plan Fire Management Plan
Wildlife and Wildlife Habitat (page 18)	Manassas National Battlefield Park boundaries	Establishment and relocation of transmission lines within the park, other park development	General Management Plan Battlefield Bypass Study Fire Management Plan	General Management Plan Implementation of the Battlefield Bypass Fire Management Plan
Cultural Resources (page 18)	Manassas National Battlefield Park boundaries and adjacent lands	Establishment and relocation of transmission lines within the park  Manassas National Battlefield Park Visitors Study	General Management Plan Battlefield Bypass Study Comprehensive Interpretive Plan Fire Management Plan Manassas National Battlefield Park Visitors Study	General Management Plan Implementation of the Battlefield Bypass Implementation of the Comprehensive Interpretive Plan Fire Management Plan Manassas National Battlefield Park Visitors Study Plan

Impact Topic	Study Area	Past Actions	Current Actions	Future Actions
Visitor Use and Experience (page 19)	Manassas National Battlefield Park boundaries	Establishment and relocation of transmission lines within the park  Manassas National Battlefield Park Visitors Study, past visitor use facilities and programs	General Management Plan  Battlefield Bypass Study  Comprehensive Interpretive Plan Fire Management Plan  Manassas National Battlefield Park Visitors Study	General Management Plan  Implementation of the Battlefield Bypass  Implementation of the Comprehensive Interpretive Plan  Fire Management Plan  Manassas National Battlefield Park Visitors Study
Health and Safety (page 19)	Manassas National Battlefield Park boundaries	Establishment and relocation of transmission lines within the park  SCC actions	General Management Plan  Battlefield Bypass Study  Fire Management Plan  Regional Transmission Expansion Plan  SCC actions	General Management Plan  Implementation of the Battlefield Bypass  Fire Management Plan  Regional Transmission Expansion Plan  SCC actions

### IMPAIRMENT ANALYSIS

The NPS *Management Policies 2006* (NPS 2006) require an analysis of potential effects to determine whether or not actions would impact park resources, but also to determine whether those actions would impair park resources. The fundamental purpose of the national park system as established by the *Organic Act* and reaffirmed by the *General Authorities Act*, as amended, begins with a mandate to conserve park resources and values. These laws give the NPS the management discretion to allow impacts to park resources and values (when necessary and appropriate) to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. NPS managers must always seek ways to avoid or minimize to the greatest degree practicable, adversely impacting park resources and values.

The impairment prohibited by the *Organic Act* and the *General Authorities Act* is an impact, in the professional judgment of the responsible NPS manager, that harms the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact to any park resource or value may constitute impairment, but an impact would be more likely to constitute impairment to the extent that it has a major or severe adverse effect upon 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 to opportunities for enjoyment of the park; or
- Identified as a goal in the park’s GMP or other relevant NPS planning documents.

Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by contractors, and others operating in the park. An impairment determination is included in the conclusion statement for all impact topics related to all Manassas National Battlefield Park natural resources (soils, surface waters, vegetation, cultural landscapes, and historic structures). Impairment determinations are not

made for visitor use and enjoyment, health and safety, socioeconomics, or park operations and management, because impairment findings relate back to park resources and values and these impact areas are not generally considered to be park resources or values. Impairment determinations are not made for visitor use and experience because, according to the *Organic Act*, enjoyment cannot be impaired in the same way an action can impair park resources and values.

### UNACCEPTABLE IMPACTS

The NPS *Management Policies 2006* require parks to address “unacceptable impacts” in their NEPA analysis. The evaluation of unacceptable impacts addresses the concept that, while an impact may not reach the level of impairment, it would still not be acceptable within a park’s particular environment. Section 1.4.7.1 states that unacceptable impacts are those, “that, individually or cumulatively, would

- Be inconsistent with the park’s purpose or values; or
- Impede the attainment of a park’s desired future conditions for natural and cultural resources as identified through the park’s planning process; or
- Create an unsafe or unhealthful environment for visitors or employees; or
- Diminish opportunities for current or future generations to enjoy, learn about, or be inspired by park resources or values; or
- Unreasonably interfere with
  - Park programs or activities; or
  - An appropriate use: or
  - The atmosphere of peace and tranquility, or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park; or
  - NPS concessioner or contractor operations or services.”

## 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 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.

### STUDY 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, to include maintenance activities.

## **ALTERNATIVE A – NO ACTION**

### **Analysis**

Under alternative A, the existing right-of-way 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. 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 right-of-way 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 right-of-way include implementation of the park GMP and Fire Management Plan, as well as the prior establishment and relocation of transmission lines within the park. The Fire Management Plan prescribes actions that are aimed at protecting soil through minimum impact suppression tactics and prescribed fire. However, fire management actions can cause localized impacts to soil cover disturbed during fire suppression actions. 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**

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. There would be no impairment of soils under alternative A.

## **ALTERNATIVE B – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITHOUT ADDITIONAL PERMIT TERMS AND CONDITIONS**

### **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 240-foot-wide right-of-way and no additional clearing would take place. Construction would include the placement of foundations, the erection of the tubular steel structures, and installation of conductors. Concrete foundations would be installed for each structure pole. These would be dug with a mechanical auger, and then structures would be erected using a crane. Excess soil would be distributed evenly at each pole site and stabilized.

During construction, ground disturbance would occur as the current footings for the transmission towers are removed and new ones constructed. A total of 24 structures, each having two footings, would be removed and

re-built in the right-of-way. The existing towers are approximately 5 feet in diameter (approximately 19.63 square feet in area) and would be removed 1.5 feet below grade. A total of 29.5 cubic feet of the existing concrete foundation would be removed for each footing. Overall, a total of 2,035.75 cubic feet of existing concrete foundation would be removed, and a total of 942 square feet of surface area would be available for reclamation where the old structure foundations were removed. The new footings would be located less than 50 feet from the existing location. The base of each tower would be approximately 6 feet in diameter or 28.27 square feet. Each new footing would extend, on average, 20 feet into the ground, and a total of approximately 1,357 square feet of surface area would be encompassed by the pole footprints, where all surface soils would be removed by final construction of the new structures. In addition, 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.

Six access points would be established during construction, five of which are currently used. The sixth access road was used in the mid-1990s during relocation of the line and would be re-opened temporarily for access, which could result in disturbance during construction. Gravel may be added to these roads, however no new grading would occur and the existing contours would remain the same. The five access roads currently open and in regular use would require little or no additional gravel for the construction process. The re-opened road could have approximately 5,000 square feet of disturbance from the re-establishment (200 feet long by 25 feet wide); however this disturbance would be minimal due to the prior establishment of this access point. Once construction is complete, the re-opened road would no longer be in regular use or maintained by DVP or the park.

Ground disturbance during construction activities would compact soils, disturb and modify the soil layer structure, expose soils, and increase the overall potential for erosion. Soils would be lost in the footprint of the new pole locations, but would be reclaimed in the area of the old pole locations, although there could be some lingering effects from the presence of the old concrete footing beneath the surface, which could impede drainage. Compacted soils contribute to reducing water infiltration rates, allowing for greater runoff and increased potential for erosion. 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). During construction of the lines and reconstruction of the one access road, mitigation measures would be implemented to minimize adverse impacts to soils. As detailed in the construction plan (appendix C) these measures would include adhering to the sedimentation and erosion control specifications approved annually by the VDCR. The full erosion and sediment control plan that would be followed is contained in attachment C of the construction plan (appendix C). In addition to erosion and sediment control measures, DVP would implement a Stormwater Pollution Prevention Plan (detailed in the "Alternatives" chapter) that would further address erosion and sedimentation issues. With these measures, impacts to soils during construction would be localized long-term minor adverse, as impact could be noticeable but would be limited to relatively small areas, much of which has already been disturbed.

During operation of the reconfigured and upgraded transmission facilities, occasional maintenance activities would occur, which could result in minimal amounts of soils compaction from vehicles accessing the site. Under this alternative, adverse impacts to soils from maintenance actions would be similar to those described for alternative A and would be long term and negligible as access for maintenance would be infrequent and any impacts from compaction and runoff would be slight.

### **Cumulative Impacts**

Cumulative impacts under alternative B would be the similar to those under alternative A. When combined with the long-term minor adverse impacts of alternative B, cumulative impacts to soils would be long-term minor adverse.

### **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- 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. There would be no impairment of soils under alternative B.

## **ALTERNATIVE C – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITH ADDITIONAL PERMIT TERMS AND CONDITIONS**

### **Analysis**

Under alternative C, the NPS would approve the DVP construction permit, authorizing the reconfiguration and upgrade of the existing transmission lines within the park as detailed under alternative B, with the addition of additional stipulations in the landscape plan at the Brawner house such as vegetative screening. As under alternative B, ground disturbance would occur within the existing right-of-way and during line maintenance and with the mitigation measures detailed in the “Alternatives” chapter, impacts to soils would be short and long-term minor, adverse, as described under alternative B. In addition, a minimal amount of ground disturbance would occur at the Brawner house to incorporate the landscape plan. The area of disturbance would be minimal and topsoils would be added to the areas where planting would occur, so impacts to soils from implementation of the landscape plan would be slight, resulting in long-term very localized negligible adverse impacts.

### **Cumulative Impacts**

Cumulative impacts under alternative C would be the same as those described under alternative A. When combined with the long-term minor adverse impacts of alternative C, cumulative impacts to soils would be long-term minor adverse.

### **Conclusion**

Reconfiguration and upgrade of the existing transmission facilities, with the addition of a landscape plan, under alternative C 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 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. There would be no impairment of soils under alternative C.

## **Wetlands**

### **METHODOLOGY AND ASSUMPTIONS**

Potential impacts to wetlands were assessed based on the extent of disturbance to mapped wetland areas within and adjacent to the transmission line right-of-way. Analysis of possible impacts to wetlands was based on onsite inspection and documentation of the resource within the project area by VDCR and The Louis Berger Group, Inc., review of existing literature and maps, and information provided by the NPS and other agencies.

### **STUDY AREA**

The geographic study area for wetlands is contained within the boundaries of the right-of-way (the 240-foot-wide area surrounding the existing transmission line) including the location of the access roads and tower footings. It is expected that construction activities would not occur outside this area.

### **IMPACT THRESHOLDS**

**Negligible:** An action would have no measurable or detectable effect on the quality, functions, or values of wetlands. The impact would be localized and not measurable or at the lowest level of detection. Reclamation would not be necessary.

**Minor:** An action would have measurable effects on the quality, functions, or values of wetlands. The impact would be localized and detectable but inconsequential. Mitigation measures, if needed to offset adverse effects, would be simple and

successful.

**Moderate:** An action would have clearly detectable effects on the quality, functions, or values of wetlands. The impact would be readily apparent and appreciable. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.

**Major:** An action would have substantial effects on the quality, functions, or values of wetlands. The impact would be severe and highly noticeable. Extensive mitigation measures would be needed to offset any adverse effects, and their success would not be guaranteed. Reclamation of disturbed areas may not be attainable.

**Duration:** A short-term impact would last less than one year and a long-term impact would last more than one year and would be more permanent in nature.

## **ALTERNATIVE A – NO ACTION**

### **Analysis**

Under alternative A, the existing right-of-way where the transmission facilities are located would remain unchanged. No construction activities would occur and there would be no impacts to wetlands from construction. The site would be accessed for maintenance including field inspections every year; selective tree removal of “danger trees” immediately adjacent to the right-of-way every three years, selective clearing of woody vegetation, and periodic mowing. Herbicides would not be used in wetlands. Maintenance activities would occur infrequently and for a short-duration of time. Wet-meadow areas would continue to be mowed in order to promote the growth of sensitive species. While accessing the site, maintenance personnel would make use of the five permanent access roads to avoid wetlands, but could still enter wetland areas. Due to the brief duration of the action, the impacts would not be measurable or detectable and no reclamation would be necessary, resulting in long-term negligible adverse impacts.

### **Cumulative Impacts**

Cumulative impacts to wetlands would include the previous establishment and relocation of the transmission lines and the implementation of the GMP. The establishment and continued operation of the transmission lines in a wetland area have already occurred. Other park plans, such as the GMP, set forth goals to protect wetland areas. Any development in the park related to the GMP would be expected to avoid wetland disturbance, per park guidance, and would have short- and long-term negligible adverse impacts to wetlands. When combined with the long-term negligible adverse impacts of alternative A, cumulative impacts to wetlands would be long-term negligible adverse.

### **Conclusion**

Alternative A would have negligible impacts on wetlands because construction activities would not occur, and maintenance activities would be infrequent and short in duration and access would be limited to existing access roads. Cumulative impacts to wetlands would be long-term negligible adverse. There would be no impairment to wetlands under alternative A.

## **ALTERNATIVE B – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITHOUT ADDITIONAL PERMIT TERMS AND CONDITIONS**

### **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 240-foot-wide right-of-way and no additional clearing to widen the right-of-way would take place. Construction would include the placement of foundations, the erection of the tubular steel structures, and installation of conductors. Concrete foundations would be installed for each structure pole. These would be dug with a mechanical auger, and then structures would be erected using a crane. Excess soil would be distributed evenly at each pole site and stabilized. In wet meadow areas, the method used for the installation of

poles would depend on the nature of the sub-surface conditions. If poor sub-surface soil conditions are expected, steel caissons may be necessary. The steel caisson would be vibrated into the ground and the poles would be set on top of the steel caisson.

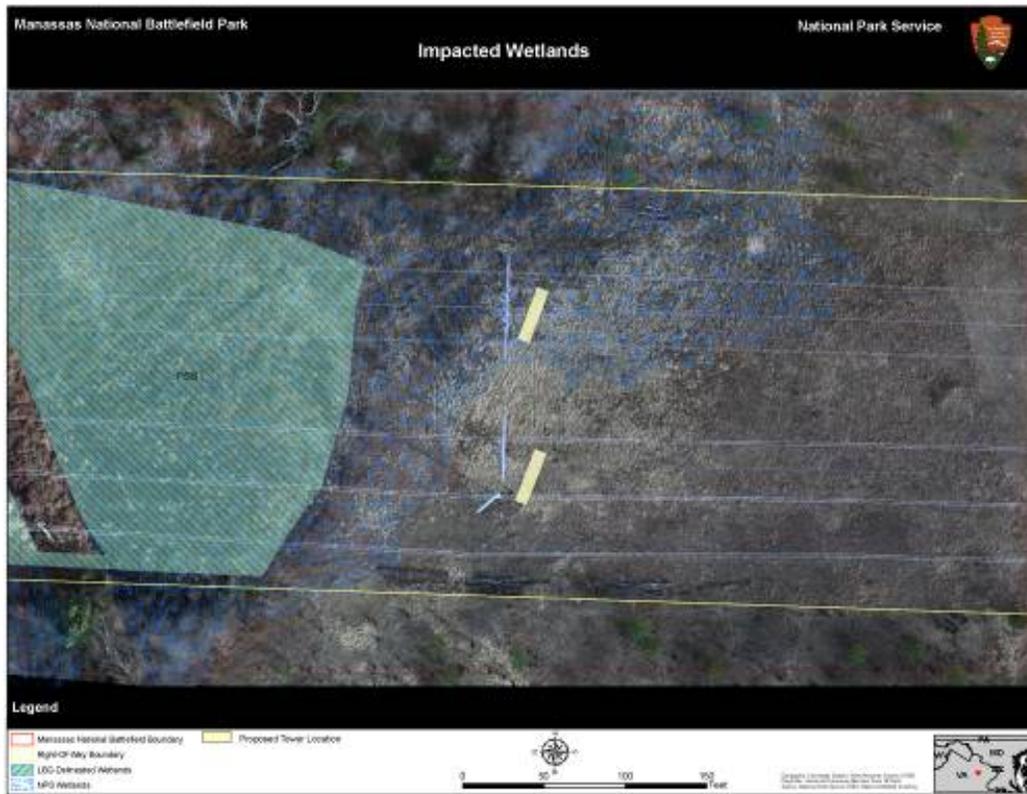
Two tower structures or four tower footings would have all or part of their foundations in an area that was mapped as a “wet meadow” by the VDCR in December 2003, and two towers or four footings would be removed in the wet meadow. While this area is not considered a jurisdictional wetland, it does contain at least one criteria, but not all criteria, for wetland areas. Frequent mowing in the right-of-way is a contributing factor in the growth of wetland vegetation and its characterization as a wet meadow (VDCR 2003). For the new towers, each footing would have an approximate diameter of 6 feet or 28.27 square feet, so roughly, 113 square feet of wet meadows would be directly disturbed at the surface by constructing these towers. For removing the old towers, the footings are 5 feet in diameter and approximately 78 square feet would be reclaimed in the area where the old towers used to be. Figures 14 and 15 show the location of these wetlands in relation to the proposed towers.

During construction, Access Road #1, which runs through part of a Palustrine Emergent Wetland area delineated under USACE standards (see figure 16), would be used. However, this access road has a hard-rock surface and is currently cleared and in use for regular maintenance and access to a gas pipeline. The addition of gravel and/or use of this access road during construction would not further impact this USACE delineated wetland. No other impacts to delineated wetlands would occur under alternative B.

**Figure 15: Impacted Wet Meadow Areas**



Figure 16: Impacted Wet Meadow Areas





Under this alternative, impacts to wetlands would be long-term and minor adverse, as only a small amount of “wet meadow” would be directly impacted by construction activities. The areas where the transmission line would be removed would eventually be reclaimed as a “wet meadow.” Indirect impacts would occur to wet meadow areas surrounding the tower footing locations, since access would be needed for maneuvering equipment around the structure locations during the removal of the old poles and installation of the new ones. Proper erosion and sedimentation practices would be employed prior to any necessary clearing and during the entire construction process for both the structures and any access roads. If any trees within wetlands and wet meadows would need to be removed during the construction period; the trees would be removed at ground level and the root mass would remain intact. Equipment access within wet meadows would be on temporary mats. Soil spoils would be stabilized or protected with sediment trapping measures during construction; after construction is complete spoils would be removed from the wetlands. The right-of-way would be rehabilitated after construction through reseeded, if needed, especially in areas where structures were removed. Periodic maintenance would consist of hand clearing if needed, and machine mowing. Wet meadows would continue to be mowed in order to promote the growth of sensitive species. Wet meadow vegetation would respond more quickly to hydrologic change (such as that resulting from topographic alteration/soil placement) than areas dominated by woody vegetation (VCDR 2003). Any noticeable impacts could be offset through mitigation, including the use of wooden and slated mats in addition to stormwater run-off prevention techniques.

As required by Director’s Order 77-1, the NPS must avoid adverse impacts on wetlands to the extent practicable, must minimize any impacts that could not be avoided, and must compensate for any remaining unavoidable adverse impacts on wetlands (NPS 2008c). This project would avoid many of the sensitive wetland resources in the park by locating all construction within the existing right-of-way and using existing access roads (including one that is already hardened). New structures would be located in wet meadows that can recover relatively quickly and provide habitat for rare plant species if maintained by mowing (see vegetation analysis). Aforementioned erosion and sedimentation mitigation measures would minimize any unavoidable impacts to wetlands. Because of the physical and regulatory requirements for the installation of transmission lines (required distance between support structures, required distance from power line to adjacent structure/ground, etc.), all remaining impacts to wetlands would be unavoidable. Site restoration would include replanting of appropriate species, per NPS direction. Based on discussion with the NPS wetlands staff (K. Noon, pers. comm., 2009) because of the nature of the wet meadow areas that would be disturbed (only one wetland parameter [vegetation] present), a Statement of Findings is not needed for this project.

### **Cumulative Impacts**

Cumulative impacts to wetlands under alternative B would be the similar to those under alternative A. When combined with the long-term and minor adverse impacts associated with alternative B, cumulative impacts to wetlands would be long-term minor adverse.

### **Conclusion**

Alternative B would have long-term minor impacts on wetlands due to the location of two towers or four foundations within the “wet meadow” areas and continued maintenance activities. Cumulative impacts to wetlands would be long-term minor adverse. There would be no impairment to wetlands under alternative B.

## **ALTERNATIVE C – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITH ADDITIONAL PERMIT TERMS AND CONDITIONS**

### **Analysis**

Under alternative C, the NPS would approve the DVP construction permit, authorizing the reconfiguration and upgrade of the existing transmission lines within the park as detailed under alternative B, with the addition of a landscape plan at the Brawner house. Construction impacts to wetlands associated with this alternative would be identical to those described under alternative B, since there are no wetlands within the location of the landscape plan. Therefore, the impacts of alternative C would be the same as those under alternative B, long-term minor adverse.

## Cumulative Impacts

Cumulative impacts to wetlands under alternative C would be the same as those under alternative B, long-term negligible adverse.

## Conclusion

Alternative C would have long-term minor impacts on wetlands due to the location of two towers or four foundations within the “wet meadow” areas and continued maintenance activities. Cumulative impacts to wetlands would be long-term minor adverse. There would be no impairment to wetlands under alternative C.

## Vegetation (Including Sensitive Species)

### METHODOLOGY AND ASSUMPTIONS

The following describes the methodology used to evaluate the impacts of the proposed alternatives on vegetation in Manassas National Battlefield Park. This discussion focuses on general vegetation, including known sensitive species, 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 in May, June, July, August, and September of 2008 to confirm and document the locations of sensitive species. Analysis of potential impacts on vegetation was based on the potential for species that to occur in vicinity of the transmission facilities.

### STUDY AREA

The geographic study area for vegetation is the boundaries of the existing right-of-way, including the location of the access roads and tower footings. It is expected that construction activities would not occur outside this area.

### IMPACT THRESHOLDS

- 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. 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. State-listed rare species, marsh hedgenettle, and purple milkweed populations currently live in the right-of-way and under this alternative, would continue to exist without further disruption. The right-of-way would continue to be maintained through mowing in the wet meadow areas, thus allowing this habitat to endure and provide suitable habitat for the marsh hedgenettle and purple milkweed, a beneficial effect.

Operation of the existing transmission lines would continue to include maintenance activities. As stated in the DVP easement, DVP may keep the right-of-way clear of all trees, stumps, roots, and undergrowth, since they could affect the reliability of the transmission line. Additional stipulations in the DVP easement agreement allow DVP with the approval of the park superintendent, to trim or remove any tree outside of the right-of-way which may endanger the proper operation of the transmission facilities. This includes trees that come within ten feet of the facilities (DVP 1996). The occasional removal of trees through continued maintenance activities would have long-term minor adverse impacts on vegetation, as there would be occasional disturbance to plants, but no effect on overall population levels in the vicinity of the right-of-way. These activities would also include spot treatment methods to control vegetation growth with EPA approved herbicides, as needed, every six years. Application of herbicides would be conducted under the DVP Integrated Vegetation Management program, which was 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 grasses, forbs, and low growing shrubs would fill in and thicken to resist the seeding in of tree species on the right-of-way. 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 would also produce a diverse, early successional plant community on the right-of-way that provides excellent habitat for wildlife species like quail. Brush stems 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. Remedial treatments would be less intensive compared with the initial treatment of the area.

### **Cumulative Impacts**

Cumulative impacts to vegetation would include the previous establishment and relocation of the transmission lines and other developments within the park, implementation of the GMP, and implementation of the Fire Management Plan. The clearing of vegetation for the establishment and continued operation of the transmission lines has already occurred, with other park plans, such as the GMP, setting forth goals to protect park vegetation (including sensitive species). Development in the park related to the GMP, or actions related to the Fire Management Plan, would be expected to avoid disturbance to vegetation, in particular sensitive species, to the maximum extent possible, per park guidance, and would have short- and long-term negligible to minor adverse impacts to park vegetation. Cumulative impacts would also occur from implementation of the park's Fire Management Plan. This plan would provide a framework for fuels management in the park, using prescribed burns where necessary. No specific areas were identified in the Fire Management Plan but prescribed burning may be used at the park to achieve resource management objectives on a site specific basis (NPS 2004). Impacts from the implementation of this plan would be beneficial. Clearing old brush would provide more areas for new vegetation. These impacts, in combination with the beneficial impacts and long-term minor adverse impacts of alternative A, would result in long-term minor adverse cumulative impacts.

### **Conclusion**

Alternative A would have beneficial impacts on rare species since construction activities would not occur and the habitat available for vegetation, including sensitive species, would be maintained. Continued maintenance activities that include the removal of trees in the area around the right-of-way, as well as within the right-of-way, would have long-term minor impacts. Cumulative impacts would be short- and long-term minor adverse. There would be no impairment to vegetation under alternative A.

**ALTERNATIVE B – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITHOUT ADDITIONAL PERMIT TERMS AND CONDITIONS****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 240-foot-wide right-of-way 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, with beneficial impacts on rare plants in the maintained wet meadow areas. 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 C). 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. As stated in the construction plan, reclamation activities would use a NPS specified seed mix that contains native forbs and grasses.

All known state-listed rare plants in the Manassas National Battlefield Park area were marked with flags by a survey team in 2008. These include locations identified by DVP in 2008 and additional locations from the VDCR database. When possible, the following actions would be taken to protect and lessen the impact of construction on the state-listed rare plants: (1) use of wooden mats to lessen the impact of heavy machinery; (2) use of existing roads or trails; and (3) planting of an annual cover crop or native plants to assist recovery of disturbed areas. With these measures, impacts to vegetation, especially any rare plants, would be short-term localized moderate adverse, as the park’s populations would remain viable but impacts may be noticeable. Mitigation would be effective in the long term, resulting in long-term minor adverse impacts to these species including the marsh hedgenettle and purple milkweed, a state-listed rare species found in the park. Once construction is completed, operation of the transmission facilities would include regular maintenance activities such as mechanical clearing of vegetation and pruning of trees and shrubs near the facilities. Mowing certain areas, particularly wet-meadows, could be beneficial and preferred for vegetative species contained within. These actions would be required to minimize potential for damage to the facilities and to provide clear access for maintenance. As stated in the DVP easement, DVP may keep the right-of-way clear of all trees, stumps, roots, and undergrowth. This type of vegetation would be identified during yearly inspections. Additional stipulations would allow DVP, with the approval of the park superintendent, to trim or remove any tree outside of the right-of-way which (in the opinion of DVP) may endanger the safe or proper operation of the transmission facilities every three years. This includes trees that come within ten feet of the facilities (DVP 1996). The occasional removal of trees through continued maintenance activities would have long-term minor adverse impacts as there would be occasional disturbance to plants, but no effect on population levels in the vicinity of the right-of-way. In addition, DVP may use spot treatment methods to control vegetation growth with EPA approved herbicides, as needed, every six years.

**Cumulative Impacts**

Cumulative impacts to vegetation from other actions would be the same as those under alternative A. These impacts, in combination with the short-term moderate adverse and long-term minor adverse impacts of alternative B, would result in long-term minor to moderate cumulative impacts.

**Conclusion**

Alternative B would have short-term moderate adverse and long-term minor adverse impacts. Continued maintenance activities that include the removal of trees in the area around the right-of-way would have long-term minor impacts and some beneficial impacts. Cumulative impacts would be long-term minor to moderate adverse. There would be no impairment to vegetation under alternative B.

## ALTERNATIVE C – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITH ADDITIONAL PERMIT TERMS AND CONDITIONS

### Analysis

Under alternative C, the construction permit for upgrading the existing transmission facilities would be granted as detailed under alternative B, but would include the addition of a vegetative screen, developed under the Landscape Plan, at the Brawner house as an additional permit condition. Impacts related to the construction and operation activities within the right-of-way would be the same as those under alternative B, short-term moderate adverse and long-term minor adverse. The establishment of this screen would not require existing vegetation to be removed and would not impact sensitive plant species in the area. Other stimulations could include the treatment of exotics species with in the entire right-of-way. The installation of the new lines would bring a certain level of ground disturbance, opening up the area, which would allow some exotic plants to thrive, competing with native species. This treatment would be developed further in the Landscape Plan.

### Cumulative Impacts

Cumulative impacts under alternative C would be the same as those under alternative A. These impacts, in combination with the short-term moderate adverse and long-term minor adverse impacts of alternative C, would result in long-term minor to moderate cumulative impacts.

### Conclusion

Alternative C would have short-term moderate adverse and long-term minor adverse impacts, with additional mitigation at the Brawner House adding to the vegetation on the site. Treatment of exotic plants would provide a beneficial long-term effect for the entire right-of-way. Continued maintenance activities that include the removal of trees in the area around the right-of-way would have long-term minor impacts. Cumulative impacts would be long-term minor to moderate adverse. There would be no impairment to vegetation under alternative C.

## Wildlife and Wildlife Habitat

### METHODOLOGY AND ASSUMPTIONS

Methodology used to evaluate the impacts of the proposed alternatives on wildlife and wildlife habitat at Manassas National Battlefield Park focuses on general wildlife and wildlife habitat areas, such as forested and meadow areas, and incorporates the best available research related to the construction and operation of transmission facilities and the effect on wildlife and wildlife habitat.

Data used in the analysis were collected from available literature and park staff. Analysis of potential impacts to flora and fauna species was based on the potential for species likely to occur in habitats at and in the vicinity of the transmission facilities. It is assumed that due to the urban setting of the park, the majority of wildlife and wildlife habitat has received some amount of disturbance associated with human activities.

### STUDY AREA

The geographic study area for wildlife and wildlife habitat is the boundaries of the existing right-of-way, and adjacent land that could be impacted by noise during construction. It is expected that construction activities and wildlife disturbance would not occur outside this area.

### IMPACT THRESHOLDS

- Negligible:** There would be no observable or measurable impacts to native species, their habitats, or the natural processes sustaining them. Impacts would be well within natural fluctuations.
- Minor:** Impacts on native species, their habitats, or the natural processes sustaining them would be detectable, but would not be outside the natural range of variability. Occasional responses to disturbance by some individuals could be expected, but

without interference to feeding, reproduction, resting, or other factors affecting population levels. Small changes to local population numbers, population structure, and other demographic factors might occur. However, some impacts might occur during critical reproduction periods or migration for a species, but would not result in injury or mortality. Sufficient habitat in the park would remain functional to maintain the viability of the species in the park.

**Moderate:** Impacts on native species, their habitats, or the natural processes sustaining them would be detectable and could be outside the natural range of variability. Frequent responses to disturbance by some individuals could be expected, with some negative impacts to feeding, reproduction, resting, migrating, or other factors affecting 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 species, their habitats, or the natural processes sustaining them would be detectable, 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 feeding, reproduction, or other factors resulting in a decrease in park population levels. Impacts would occur during critical periods of reproduction or in key habitats in the park and result in direct mortality or loss of habitat that might affect the viability of a sensitive species. Local population numbers, population structure, and other demographic factors might experience large declines.

**Duration:** Short-term effects would be one to two breeding seasons for native fauna species. Long-term effects would be anything beyond two breeding seasons.

## **ALTERNATIVE A – NO ACTION**

### **Analysis**

Under alternative A, the upgrade and reconfiguration of the existing transmission lines would not occur. Currently, area under the right-of-way is a patchwork of open meadows and tree lines, and the several stages of forest create good habitat for several species, such as white-tailed deer, eastern cottontail, red fox, raccoon, beaver, and many species of songbirds. In addition, wetland areas and vernal pools provide good habitat for amphibians such as wood frogs, spring peepers, and marbled salamanders (NPS 2008a). Populations of these species currently live in the right-of-way and under alternative A, would continue to exist without further disruption. Additionally, there would be benefits to creating wildlife habitat in the right-of-way under the transmission line. With the correct seed mix and cutting regime, the right-of-way could be very valuable habitat to many shrubland and grassland species.

Operation of the existing transmission lines would continue to include maintenance activities. As stated in the DVP easement, DVP may keep the right-of-way clear of all trees, stumps, roots, and undergrowth, as they could affect the reliability of the transmission line. Additional stipulations in the DVP easement agreement allow DVP, with the approval of the park superintendent, to trim or remove any tree outside of the right-of-way which may endanger the proper operation of the transmission facilities. This includes trees that come within ten feet of the facilities (DVP 1996). The occasional removal of trees through continued maintenance activities would have long-term minor adverse impacts on vegetation, as there would be occasional disturbance to plants, but no effect on overall population levels in the vicinity of the right-of-way. These activities would also include spot treatment methods to control vegetation growth with EPA approved herbicides, as needed, every six years. Application of herbicides would be conducted under the DVP Integrated Vegetation Management program, which was developed in 2003. The program would use 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 grasses, forbs, and low growing

shrubs would fill in and thicken to resist the seeding in of tree species on the right-of-way. This would extend 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 would also produce a diverse, early successional plant community on the right-of-way that provides excellent habitat for wildlife species like quail. Brush stems that have survived herbicide application and pose a threat to the conductors would be identified for remedial spot treatment on the arborist's regular patrol. Remedial treatments would be less intensive compared with the initial treatment of the area.

Under alternative A, the existing transmission facilities in the park would continue to operate and no construction related to upgrading would occur. Maintenance and operation of the facilities would continue to occur. Maintenance activities would include field inspections every year; selective tree removal of "danger trees" immediately adjacent to the right-of-way every three years; and spot treatment with EPA approved herbicides, as needed, every six years. Temporary disturbance could occur to wildlife in the area during the short duration of the maintenance activity as noise and human presence would deter wildlife from using this area. These activities would be infrequent and short in nature, and it is expected that wildlife would return to using the site after completion of the maintenance activity. There would be no measurable impacts. Short- and long-term negligible adverse impacts would occur under alternative A.

### **Cumulative Impacts**

Cumulative impacts to wildlife and wildlife habitat would include the previous establishment and relocation of the transmission lines, implementation of the GMP, implementation of the Fire Management Plan, and implementation of the Battlefield Bypass. The clearing of vegetation and subsequent loss of habitat for the establishment and continued operation of the transmission lines has already occurred, under other park plans, such as the GMP, setting forth goals to protect park wildlife and wildlife habitat. Any development in the park related to the GMP or actions related to the Fire Management Plan would be expected to avoid disturbance to wildlife and wildlife habitat within the park, to the maximum extent possible, per park guidance, and would have short- and long-term negligible to minor adverse impacts to park wildlife and wildlife habitat. Implementation of the Battlefield Bypass, although located outside the park, would involve the removal of habitat in the region; therefore, reducing available habitat in the area making Manassas National Battlefield Park even more of an "oasis" of habitat. Cumulative impacts would also occur from implementation of the park's Fire Management Plan. This plan would provide a framework for fuels management in the park, using prescribed burns where necessary. Impacts from the implementation of this plan would be beneficial as old brush is cleared, providing more areas for new vegetation. These impacts, in combination with the negligible adverse impacts of alternative A, would result in long-term minor adverse cumulative impacts.

### **Conclusion**

Under alternative A, continued operation and maintenance of the existing transmission lines would have short- and long-term negligible adverse impacts to wildlife and wildlife habitat. Cumulative impacts would be long-term minor adverse. There would be no impairment to wildlife and wildlife habitat under alternative A.

## **ALTERNATIVE B – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITHOUT ADDITIONAL PERMIT TERMS AND CONDITIONS**

### **Analysis**

Under alternative B, the construction permit for upgrading the existing transmission facilities would be granted. Construction activities, lasting approximately five months, would occur within the existing 240-foot-wide right-of-way. These activities would include removing the existing footings and establishing new footings. The new footings would be established, in most cases, less than 50 feet from the existing footing. Construction would also include the use of six access roads on the site. Construction activities would create a temporary noise disturbance and bring an increased human presence, which would result in temporary minor displacement of wildlife from the construction area to other surrounding habitats. Once construction is over and reclamation of the site has occurred, species would be expected to resume using the habitat located within the right-of-way. Over time, the right-of-way would return to a state that would serve as a habitat for amphibians and aquatic species in the wetlands, and birds, deer and other mammals in the upland and shrub

areas. The impacts during construction would be short-term minor adverse impacts temporary, and would not be expected to influence the viability of the species within the park.

Once construction is completed, operation of the transmission facilities would include regular maintenance activities such as mechanical clearing of vegetation and pruning of trees and shrubs near the facilities. Mowing certain areas, particularly wet-meadows, can be beneficial and preferred for vegetative species contained within. These actions would be required to minimize potential for damage to the facilities and to provide clear access for maintenance. As stated in the DVP easement, DVP may keep the right-of-way clear of all trees, stumps, roots, and undergrowth. This type of vegetation would be identified during yearly inspections. Additional stipulations allow DVP, with the approval of the park superintendent, to trim or remove any tree outside of the right-of-way which, in the opinion of DVP may endanger the safe or proper operation of the transmission facilities every three years. This includes trees that come within ten feet of the facilities (DVP 1996). The occasional removal of trees through continued maintenance activities would have long-term minor adverse impacts as there would be occasional disturbance to plants and residing animals, but no effect on population levels in the vicinity of the right-of-way. In addition, DVP may use spot treatment methods to control vegetation growth with EPA approved herbicides, as needed, every six years. Once construction is over and reclamation of the site has occurred, the amount of habitat available before construction would still be available to local species, resulting in long-term negligible to minor adverse impacts, as periodic maintenance of the site would continue. Additionally, there are positive benefits of creating wildlife habitat in the right-of-way under the transmission line. With the correct seed mix and cutting regime, this could be very valuable habitat to many shrubland and grassland species.

### **Cumulative Impacts**

Cumulative impacts under alternative B would be the same as those under alternative A. These impacts, in combination with the short-term moderate adverse and long-term negligible to minor adverse impacts of alternative B, would result in long-term minor adverse cumulative impacts.

### **Conclusion**

Disturbance from construction activities, including ground disturbance and noise, would have short-term moderate impacts on wildlife and wildlife habitat and these areas would not be available to species during this time. After construction, the areas would be reclaimed and the amount of habitat available would be the same as pre-construction, resulting in long-term negligible to minor impacts from periodic maintenance. Cumulative impacts under alternative B would be long-term minor adverse. There would be no impairment to wildlife and wildlife resources under alternative B.

## **ALTERNATIVE C – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITH ADDITIONAL PERMIT TERMS AND CONDITIONS**

### **Analysis**

Under alternative C, the construction permit for upgrading the existing transmission facilities would be granted as detailed under alternative B, but would include the addition of a vegetative screen under the Landscape Plan at the Brawner house as an additional permit condition. The additional vegetation screen around the Brawner house could provide additional habitat and food for several species, especially songbirds. Another condition under Alternative C would be the use of the NPS specified wildlife seed mix in order to promote the growth of a shrub scrub wildlife habitat under the right-of-way. With this seed mix the right-of-way would develop into a stage of early succession, including low growing shrubs and tall grasses. Therefore, alternative C would not create additional adverse impacts to habitat during construction or operation beyond what was described under alternative B. These impacts would be localized and would not be expected to influence the viability of the species within the park and would be short-term minor adverse. Once construction is complete and reclamation of the site has occurred, the amount of habitat available before construction would still be available to local species, resulting in long-term negligible to minor adverse impacts.

## Cumulative Impacts

Cumulative impacts to alternative C would be the same as those under alternative A. These impacts, in combination with the short-term moderate adverse and long-term negligible to minor adverse impacts of alternative C, would result in long-term minor adverse cumulative impacts.

## Conclusion

Disturbance from construction activities, including ground disturbance and noise, would have short-term moderate impacts on wildlife and wildlife habitat and these areas would not be available to areas species during this time. After construction, the area would be reclaimed and the amount of habitat available would be the same as pre-construction, resulting in long-term negligible to minor impacts from continued maintenance activities. There would be no impacts to wildlife and wildlife habitat from implementing a vegetative screening plan as a permit condition. Cumulative impacts under alternative C would be long-term minor adverse. There would be no impairment to wildlife and wildlife resources under alternative C.

## Cultural Resources

### METHODOLOGY AND ASSUMPTIONS

The analyses of effects on historic properties, 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. Section 106 was handled separately from this document.

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.

In addition, the SHPO has established *Guidelines for Conducting Cultural Resource Surveys in Virginia* (VDHR 2003) and *Guidelines for Assessing Impacts of Proposed Electric Transmission Lines and Associated Facilities on Historic Resources in the Commonwealth of Virginia* (VDHR 2008).

A summary is included in this impact analysis section for historic resources, cultural landscapes, and archeological resources to comply with NEPA and incorporate the Section 106 consultation that has occurred separately from this document. 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. The following assumptions were used for identifying cultural resources.

**Historic Resources (Historic Structures):** The term "historic resources" refers to historic properties that are buildings, structures, objects, or districts listed in or eligible for inclusion in the National Register. In order for an historic resource to be listed in the National Register, a particular resource must meet one or more of the National Register Criteria (36 CFR 63). The resource must be associated with an important historic context. In other words, it must possess significance — the meaning or value ascribed to the historic resource — and retain the integrity of those character-defining features necessary to convey its significance (i.e., location, design, setting, workmanship, materials, feeling, and association; see National Register Bulletin #15, How to Apply the National Register Criteria for Evaluation (NPS 1995c)). Impact analyses under NEPA and Section 106 examine the manner and degree to which the proposed alternatives may impact or affect the qualities and integrity of an individual historic resource's character-defining features, significance, and National Register eligibility.

**Archeological Resources:** Archeological resources consist of buried and above-ground prehistoric and historic remains and artifacts significant to our study of prehistory and history. As these resources exist primarily in subsurface contexts, potential impacts to archeological resources are assessed according to the extent to which the proposed alternatives would involve ground-disturbing activities such as excavation or grading. Analysis of possible impacts to archeological resources was based on a review of previous archeological studies, consideration of the proposed alternatives, and other information provided by the NPS. The analysis of potential impacts to archeological resources begins with the identification and evaluation of archeological sites in the study area. Information concerning site location, type, age and National Register eligibility provides an essential understanding of not only known sites, but, based on certain environmental factors, such as proximity to water and slope of ground, where potential undocumented archeological resources sites may be found. National Register listed and eligible archeological sites are then assessed for potential impacts from the proposed alternatives.

**Cultural Landscapes:** 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)).

## STUDY AREA

In November 1994, a MOA was executed among the NPS, the SHPO, and the Advisory Council on Historic Preservation — with DVP signing as a concurring party, for the original relocation of the power lines and establishment of the existing right-of-way. Cultural resource investigations were conducted in association with the relocation of the power lines as stipulated in the MOA (see the "Affected Environment" chapter). Pursuant

to Section 106 of the NHPA and 36 CFR 800, the Area of Potential Effects was defined in consultation with the SHPO and Manassas National Battlefield Park. The Area of Potential Effects is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist (36 CFR 800.16 (d)).

As a MOA was executed for the existing 500 kV transmission line and right-of-way, the SHPO recommended that a total of 27 previously identified eligible or listed historic resources be relocated, evaluated as to their current condition, and an assessment of their surrounding cultural landscape be conducted. The results of this survey and analysis are included in a report entitled *Cultural Resource Survey of the Proposed Bristers-Loudoun 500kV Transmission Line, Fauquier, Loudoun, and Prince William Counties, Virginia (VDHR File No. 2006-1202)* by Gregory J. LaBudde, Brad M. Duplantis, and Megan Rupnik (2008). For archeological resources, the SHPO and NPS recommended that subsurface testing be conducted in areas of ground-disturbing activities, for example, tower locations and access roads, within the existing right-of-way to identify archaeological sites. In addition, the SHPO recommended that the boundaries of all previously identified sites that are eligible for inclusion in, or listed in the National Register, be relocated and clearly delimited. Pursuant to the Archaeological Resources Protection Act, a permit was obtained from the NPS prior to conducting an archaeological survey within the boundaries of the park. The results of this survey are included in a report entitled, *Supplemental Archaeological Survey of the Proposed Bristers-Loudoun 500kV Transmission Line, Manassas National Battlefield Park, Prince William County, Virginia*, by Gregory J. LaBudde and Tracey L. Jones (2008).

### IMPACT THRESHOLDS – HISTORIC STRUCTURES

For purposes of analyzing potential impacts to historic structures, 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:** Adverse impact — The impact would not affect the character-defining features of an historic resource listed in or eligible for listing on the National Register. For purposes of Section 106, the determination of effect would be *no adverse effect*.  
Beneficial impact — Character-defining features would be preserved in accordance with the *Secretary of the Interior's Standards*, therefore maintaining the integrity of the historic resource. For purposes of Section 106, the determination of effect would be *no adverse effect*.
- Moderate:** Adverse impact — The impact would alter a character-defining feature or features of the historic resource but would not diminish the integrity of the historic resource 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*.  
Beneficial impact — The historic resource would be rehabilitated in accordance with the *Secretary of the Interior's Standards* to make possible a compatible use of the historic resource while preserving its character-defining features. For purposes of Section 106, the determination of effect would be *resolution of the adverse effect through mitigation*.
- Major:** Adverse impact — The impact would alter a character-defining feature(s) of the historic resource, diminishing the integrity of the resource to the extent that it would no longer be eligible to be listed on the National Register. For purposes of Section 106, the determination of effect would be *adverse effect*.  
Beneficial impact — The historic resource would be restored in accordance with the

*Secretary of the Interior's Standards* to accurately depict the features and character of an historic resource as it appeared during its period of significance. For purposes of Section 106, the determination of effect would be *resolution of the adverse effect through mitigation*.

**Duration:** All impacts are considered long-term.

## **ALTERNATIVE A – NO ACTION**

### **Analysis**

Under alternative A, the existing right-of-way where the transmission facilities are located would remain unchanged. No construction activities would occur and there would be negligible impacts to historic resources, resulting in no adverse effects.

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 right-of-way clear of all trees, stumps, roots, and undergrowth. Additional stipulations allow DVP, with the approval of the park superintendent, to trim or remove any tree outside of the right-of-way 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 (DVP 1996). The occasional removal of trees through continued maintenance activities could have long-term negligible to minor adverse impacts to viewsheds of historic structures.

### **Cumulative Impacts**

Cumulative impacts to historic resources would include the establishment of the transmission towers within the park, implementation of the park's GMP, the Comprehensive Interpretive Plan, and the Fire Management Plan. Implementation of plans within the park, such as the GMP and Comprehensive Interpretive Plan, would be expected to have long-term beneficial impacts to historic structures as these documents layout goals to protect this resource and further interpret it to park visitors. Implementation of the Fire Management Plan would further benefit historic structures by managing the landscape at Manassas National Battlefield Park in a way that keeps it in its historical context. Potential adverse impacts to historic structures in the park would include on-going development around the park, as well as transportation improvement projects, all of which have the potential to introduce elements that take historic structures in the park out of their historical context. However, most of the historical structures in the park would not be impacted by such development, resulting in minor adverse impacts. These projects, when combined with the negligible to minor adverse impacts of alternative A, would have minor cumulative adverse impacts.

### **Conclusion**

Implementation of alternative A would have negligible to minor impacts to historic resources from facility maintenance, resulting in no adverse effects. Any adverse effects to historic resources have been resolved previously through the execution of an MOA when the existing right-of-way and location of the current towers were established. Cumulative impacts under alternative A would be long-term minor adverse. There would be no impairment to historic structures under alternative A.

## **ALTERNATIVE B – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITHOUT ADDITIONAL PERMIT TERMS AND CONDITIONS**

### **Analysis**

Under alternative B, the NPS would approve the DVP construction permit, authorizing the reconfiguration and upgrade of the existing transmission lines. The current design, shown in figure 5 (page 27), has been developed in consultation with the park and SHPO to minimize impacts to historic resources by minimizing the increase in tower height. All construction activities would occur within the existing 240-foot-wide right-of-way and no additional clearing would take place. As currently designed, tower locations and heights would have minor adverse long-term impacts to viewsheds of historic resources.

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 stated in the DVP easement, DVP may keep the right-of-way clear of all trees, stumps, roots, and undergrowth. Additional stipulations allow DVP, with the approval of the park superintendent, to trim or remove any trees outside of the right-of-way 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 (DVP 1996). The occasional removal of trees through continued maintenance activities would have negligible to minor adverse impacts to the viewsheds of historic resources.

### **Cumulative Impacts**

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

### **Conclusion**

Alternative B, as currently designed, would have minor impacts to historic structures, resulting in no adverse effects. The current design has been developed in consultation with the park and SHPO to minimize impacts to historic resources. Cumulative impacts under alternative B would be long-term minor adverse. There would be no impairment to historic structures under alternative B.

## **ALTERNATIVE C – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITH ADDITIONAL PERMIT TERMS AND CONDITIONS**

### **Analysis**

Under alternative C, the construction permit for upgrading the existing transmission facilities would be granted as detailed under alternative B. Tower heights, which would increase minimally, and locations developed in consultation with the park and SHPO, would be applied, and the addition of vegetation screening would be used between the right-of-way and historic structures. As currently designed, with the addition of the screening, construction of alternative C would have negligible to minor adverse long-term impacts to historic resources.

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 stated in the DVP easement, DVP may keep the right-of-way clear of all trees, stumps, roots, and undergrowth. Additional stipulations allow DVP, with the approval of the park superintendent, to trim or remove any tree outside of the right-of-way 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 (DVP 1996). The occasional removal of trees through continued maintenance activities would have negligible to minor adverse impacts to historic resources.

### **Cumulative Impacts**

Actions contributing to cumulative impacts under alternative C would be the same as those under alternative A. These actions, combined with the negligible to minor adverse impacts of alternative C would have minor adverse cumulative impacts.

### **Conclusion**

The design of alternative C has been developed in consultation with the SHPO and the park. Tower heights, locations, and the addition of vegetative screening would result in negligible to minor impacts to historic resources, resulting in no adverse effects to historic resources. Cumulative impacts under alternative C would be long-term minor adverse. There would be no impairment to historic structures under alternative C.

## **IMPACT THRESHOLDS – ARCHEOLOGICAL RESOURCES**

For purposes of analyzing potential impacts to archeological sites, 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:** Adverse impact — The impact would not affect the character-defining features of an archeological site listed in or eligible for listing on the National Register. For purposes of Section 106, the determination of effect would be *no adverse effect*.  
Beneficial impact — Character-defining features would be preserved in accordance with the *Secretary of the Interior's Standards*, therefore maintaining the integrity of the archeological site. For purposes of Section 106, the determination of effect would be *no adverse effect*.
- Moderate:** Adverse impact — The impact would alter a character-defining feature or features of the archeological site, but would not diminish the integrity of the archeological site 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*.  
Beneficial impact — The archeological site would be mitigated in accordance with the *Secretary of the Interior's Standards*. For purposes of Section 106, the determination of effect would be *resolution of the adverse effect through mitigation*.
- Major:** Adverse impact — The impact would alter a character-defining feature(s) of the archeological site, diminishing the integrity of the site 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*.  
Beneficial impact — The archeological site would be mitigated in accordance with the *Secretary of the Interior's Standards*. For purposes of Section 106, the determination of effect would be *resolution of the adverse effect through mitigation*.
- Duration:** All impacts are considered long-term.

## ALTERNATIVE A – NO ACTION

### Analysis

Under alternative A, the existing right-of-way where the transmission facilities are located would remain unchanged. No construction activities would occur and there would be negligible to minor long-term impacts to archaeological sites.

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 right-of-way clear of all trees, stumps, roots, and undergrowth. Additional stipulations allow DVP, with the approval of the park superintendent, to trim or remove any tree outside of the right-of-way 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 (DVP 1996). The occasional removal of trees through continued maintenance activities could have long-term negligible adverse impacts to archeological sites.

### Cumulative Impacts

Cumulative impacts to archeological resources would include the establishment of the transmission towers within the park, implementation of the park's GMP, the Comprehensive Interpretive Plan, and the Fire Management Plan. Implementation of plans within the park, such as the GMP and Comprehensive Interpretive Plan, would be expected to have long-term beneficial impacts to archeological resources as these documents lay out goals to protect this resource and further interpret it to park visitors. There would be no potential adverse impacts to archeological resources as there is no other planned development in the right-of-way. These projects, when combined with the negligible adverse impacts of alternative A, would have negligible cumulative adverse impacts.

## **Conclusion**

Implementation of alternative A would have negligible impacts to archaeological sites, resulting in no adverse effects. Adverse effects to archaeological sites have been resolved previously through the execution of an MOA, when the existing right-of-way and location of the current towers were established. Cumulative impacts under alternative A would be negligible adverse. There would be no impairment to archaeological resources under alternative A.

## **ALTERNATIVE B – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITHOUT ADDITIONAL PERMIT TERMS AND CONDITIONS**

### **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. The current design, shown in figure 5 (page 27), has been developed in consultation with the park and SHPO to minimize impacts archaeological sites by restricting ground-disturbing activities to areas without archaeological resources, and would stay within the existing 240-foot-wide right-of-way. Site boundaries have been established with sub-meter Global Positioning Systems receivers, marked on construction maps provided to the contractor, and would be flagged prior to construction in a manner acceptable to the park. As currently designed, and based on the results of archeological surveys showing no archeological sites in the proposed area of disturbance, ground-disturbing activities would be expected to have no or negligible adverse long-term impacts to archeological sites.

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 stated in the DVP easement, DVP may keep the right-of-way clear of all trees, stumps, roots, and undergrowth. Additional stipulations allow DVP, with the approval of the park superintendent, to trim or remove any tree outside of the right-of-way 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 (DVP 1996). The occasional removal of trees through continued maintenance activities would have long-term negligible adverse impacts to archeological sites.

### **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 adverse impacts of alternative B, would have long-term negligible cumulative impacts.

### **Conclusion**

Implementation of alternative B would have no or negligible impacts to archeological sites, resulting in no adverse effects as currently designed. The current design has been developed in consultation with the park and SHPO to minimize impacts to archaeological sites by relocating ground-disturbing activities outside site boundaries within the existing 240-foot-wide right-of-way. Cumulative impacts under alternative B would be long-term negligible adverse. There would be no impairment to archaeological resources under alternative B.

## **ALTERNATIVE C – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITH ADDITIONAL PERMIT TERMS AND CONDITIONS**

### **Analysis**

Under alternative C, the construction permit for upgrading the existing transmission facilities would be granted as detailed under alternative B, with the addition of landscape vegetation for screening at the Brawner Farm. The current design has been developed in consultation with the park and SHPO to minimize impacts to archaeological sites by relocating ground-disturbing activities outside the boundaries of known archaeological sites, and within the existing 240-foot-wide right-of-way. Site boundaries have been established with sub-meter Global Positioning Systems receivers, marked on construction maps provided to the contractor, and would be flagged prior to construction in a manner acceptable to the park. As currently designed, ground-disturbing activities on the right-of-way are expected to have negligible adverse long-term impacts to

archeological sites. The addition of the Landscape Plan could extend to areas located outside of the right-of-way, in order to add a vegetative screen between the Brawner House and the right-of-way. These areas have not yet been surveyed, and would be surveyed for archeological resources, based on recommendation from the park cultural resource staff, before the implementation of the Landscape Plan. Any additional ground-disturbing activities, outside of the right-of-way would be expected to have negligible to minor adverse long-term impacts to archeological sites.

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 stated in the DVP easement, DVP may keep the right-of-way clear of all trees, stumps, roots, and undergrowth. Additional stipulations allow DVP, with the approval of the park superintendent, to trim or remove any tree outside of the right-of-way 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 (DVP 1996). The occasional removal of trees through continued maintenance activities would have long-term negligible to minor adverse impacts to archeological sites.

### **Cumulative Impacts**

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

### **Conclusion**

As currently designed, alternative C would have negligible to minor adverse long-term impacts to archeological sites, resulting in no adverse effects as currently designed. The current design has been developed in consultation with the park and SHPO to minimize impacts to archaeological sites by relocating ground-disturbing activities outside site boundaries within the existing 240-foot-wide right-of-way. The addition of a landscape plan would include surveying areas outside of the 240-foot right-of-way for any archeological resources. Cumulative impacts under alternative C would be long-term negligible adverse. There would be no impairment to archaeological resources under alternative C.

### **IMPACT THRESHOLDS – CULTURAL LANDSCAPES**

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:** Adverse impact — 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*.
- Beneficial impact — Character-defining features would be preserved in accordance with the *Secretary of the Interior's Standards*, therefore maintaining the integrity of the cultural landscape. For purposes of Section 106, the determination of effect would be *no adverse effect*.
- Moderate:** Adverse impact — 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*.
- Beneficial impact — The landscape or its features would be rehabilitated in accordance with the *Secretary of the Interior's Standards* to make possible a compatible use of the landscape while preserving its character-defining features. For purposes of Section 106, the determination of effect would be *resolution of the*

*adverse effect through mitigation.*

**Major:** Adverse impact — 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*.

Beneficial impact — The cultural landscape would be restored in accordance with the *Secretary of the Interior's Standards* to accurately depict the features and character of a landscape as it appeared during its period of significance. For purposes of Section 106, the determination of effect would be *resolution of the adverse effect through mitigation*.

**Duration:** All impacts are considered long-term.

## ALTERNATIVE A – NO ACTION

### Analysis

Under alternative A, the existing right-of-way 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, DVP may keep the right-of-way clear of all trees, stumps, roots, and undergrowth. Additional stipulations allow DVP, with the approval of the park superintendent, to trim or remove any tree outside of the right-of-way 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 (DVP 1996). The occasional removal of trees through continued maintenance activities could have negligible to minor adverse visual impacts associated with the vistas within the cultural landscape.

### Cumulative Impacts

Cumulative impacts to cultural landscapes would include the establishment of the transmission towers within the park, implementation of the park's GMP, the Comprehensive Interpretive Plan, and the Fire Management Plan. Implementation of plans within the park, such as the GMP and Comprehensive Interpretive Plan, would be expected to have long-term beneficial impacts to cultural landscapes as these documents lay out goals to protect this resource and further interpret it to park visitors. The Fire Management Plan would further benefit cultural landscapes by managing the landscape at Manassas National Battlefield Park in a way that keeps it in its historical context. Potential adverse impacts to historic structures in the park would include ongoing development around the park, as well as transportation improvement projects, all of which have the potential to introduce elements that take the cultural landscape in the park out of their historical context. However, most of the cultural landscapes in the park would not be impacted by such development, resulting in minor adverse impacts. These projects, when combined with the negligible to minor adverse impacts of alternative A, would have minor cumulative adverse impacts.

### Conclusion

Implementation of alternative A would have negligible to minor impacts to cultural landscapes, resulting in no adverse effects. Adverse effects to cultural landscapes have been resolved previously through the execution of an MOA, when the existing right-of-way and location of the current towers were established. Cumulative impacts under alternative A would be long-term minor adverse. There would be no impairment to cultural landscapes under alternative A.

**ALTERNATIVE B – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITHOUT ADDITIONAL PERMIT TERMS AND CONDITIONS****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. The current design, shown in figure 5 (page 27), has been developed in consultation with the park and SHPO to minimize impacts to cultural landscapes by minimizing the increase in tower height. All construction activities would occur within the existing 240-foot-wide right-of-way and no additional clearing would take place. As currently designed, tower locations would be, on average 15 feet taller, and could have minor adverse long-term impacts (mainly visual) to cultural landscapes from certain areas within the park.

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 stated in the DVP easement, DVP may keep the right-of-way clear of all trees, stumps, roots, and undergrowth. Additional stipulations allow DVP, with the approval of the park superintendent, to trim or remove any trees outside of the right-of-way 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 (DVP 1996). The occasional removal of trees through continued maintenance activities would have long-term negligible to minor adverse impacts to cultural landscapes due to any additional clearing that may occur.

**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.

**Conclusion**

Implementation of alternative B would have negligible to minor impacts to cultural landscapes, resulting in no adverse effects as currently designed. There would be a slight visual impact to cultural landscapes under alternative B due to the 15-foot height increase of the towers. The current design has been developed in consultation with the park to develop alternatives that minimize impacts to cultural landscapes. Cumulative impacts under alternative B would be long-term minor adverse.

**ALTERNATIVE C – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITH ADDITIONAL PERMIT TERMS AND CONDITIONS****Analysis**

Under alternative C, the construction permit for upgrading the existing transmission facilities would be granted as detailed under alternative B. The facility design was developed in consultation with the park and SHPO to minimize impacts to cultural landscapes by adding vegetative screening to the Landscape Plan for the area around the Brawner house. All construction activities for the rebuild and reconfiguration of the transmission lines would occur within the existing 240-foot-wide right-of-way and no additional clearing would take place. As currently designed, tower locations and heights would have negligible adverse long-term impacts to cultural landscapes due to the addition of vegetative screening at Brawner Farm that would minimize impacts to the cultural landscape in this area.

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 stated in the DVP easement, DVP may keep the right-of-way clear of all trees, stumps, roots, and undergrowth. Additional stipulations allow DVP, with the approval of the park superintendent, to trim or remove any trees outside of the right-of-way 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 (DVP 1996). The occasional removal of trees through continued maintenance activities would have long-term negligible to minor adverse impacts to cultural landscapes.

## Cumulative Impacts

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

## Conclusion

The current design of alternative C has been developed in consultation with the park and SHPO to minimize impacts to cultural landscapes by restricting tower heights and including vegetative screening. All construction activities would occur within the existing 240-foot-wide right-of-way and no additional clearing would take place. As currently designed, alternative C would have negligible to minor adverse long-term impacts to cultural landscapes. Cumulative impacts under alternative C would be long-term minor adverse. There would be no impairment to cultural landscapes under alternative C.

## Visitor Use and Experience

### METHODOLOGY AND ASSUMPTIONS

Impacts to visitor use and experience were determined by considering the effect of the existing conditions and the proposed construction/operation of the transmission lines on the overall experience of those park visitors who use the area.

### STUDY AREA

The geographic study area for visitor use and experience is within the Manassas National Battlefield Park and primarily the recreational areas around the existing right-of-way, including Stuart's Hill and Brawner Farm.

### IMPACT THRESHOLDS

The following thresholds were defined:

- 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.
- Moderate:** Few critical characteristics of the desired visitor experience would change. The number of participants engaging in a specified activity would be altered. 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 240-foot-wide right-of-way. Visitors would continue to use Stuart's Hill and Brawner Farm for various recreational activities including picnics and obtaining information (Brawner Farm). The 100-foot-tall towers would remain in place and could be seen by visitors from the Stuart's Hill and Brawner Farm tracts. Current visitor trends would most likely continue into the future, with a potential for an increase in activity at Brawner Farm as it begins to operate as a contact station. There would be no visitation expected in the immediate vicinity of the line.

A visual analysis conducted in 1994, when the existing towers were relocated, found that the topography of the surrounding area and the vegetation provided a visual barrier from visitor use areas in the park, particularly Brawner Farm, to the site of the transmission line. The tops of the towers would remain slightly visible when looking west and south from Brawner Farm and other locations in the park. The transmission lines would remain visible from the residential and highway viewpoints outside the park to the west (NPS 1994). Impacts to visitors in other areas of the park from the transmission lines being part of the viewscape would be long-term minor adverse. Visitors could be aware of the presence of transmission towers, but it would not appreciably limit the critical characteristics of the visitor experience, or visitor use of the property, since these lines are not readily visible from the park's high visitor use areas. Further, the right-of-way and immediately adjacent lands are not currently used for any visitor activity; therefore the continued operation of the current towers would not impact the visitor use in the area of the towers. Under alternative A, no construction would occur, and therefore there would be no temporary closures of any visitor use areas and no restrictions on visitor access.

Currently, the noise emitted by the existing transmission line is very limited and can only be heard as a slight crackle when directly under or immediately adjacent to the transmission line, mainly during damp or humid conditions. Additionally, some noise may be heard during maintenance operations for general upkeep and repair at specified times of the year. Since visitors are not permitted to walk within the right-of-way, and do not use the land immediately adjacent to the right-of-way, noise relating to the transmission lines would have no impact.

### **Cumulative Impacts**

Cumulative actions that would impact visitor use and experience within Manassas National Battlefield Park include the establishment of the transmission lines within the park, implementation of the park's GMP, planning and establishment of the Battlefield Bypass, and implementation of the Comprehensive Interpretive Plan and the Manassas National Battlefield Park Visitor Use Study, as well as the many visitor facilities and informational programs that have been developed over the years. The GMP, Comprehensive Interpretive Plan, and Visitor Use Study would serve as tools to allow the park to provide more visitor use opportunities. Implementation of both of these plans would have a beneficial impact to visitor use and experience as the unique opportunities at Manassas National Battlefield Park are identified and enhanced per these plans. Construction projects in the area to increase the growing population of suburban Washington, D.C. such as the Battlefield Bypass, would result in short-term minor to moderate adverse impacts as construction activities may make it more difficult for visitors to access the park and surrounding areas. Once completed, these projects would have a beneficial impact; it would be easier for visitors to access the park on the regional transportation network. These impacts, in combination with the long-term minor adverse impacts of alternative A, would result in overall long-term beneficial cumulative impacts to visitor use and experience under alternative A, as well as short-term minor adverse impacts.

### **Conclusion**

Implementation of alternative A would result in long-term minor adverse impacts to visitor use and experience from the presence of the transmission towers on the landscape, the minimal amount of places that park users would be able to see the towers, and the slight noise emitted by the existing lines and operational maintenance. No impacts would occur to access as no construction activities would occur. Long-term beneficial cumulative impacts would occur under alternative A, as well as short-term minor adverse impacts.

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**ALTERNATIVE B – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITHOUT ADDITIONAL PERMIT TERMS AND CONDITIONS****Analysis**

Under alternative B, the NPS would approve the construction permit for to upgrade the existing transmission towers. This would include relocating all of the towers, as well as increasing the height of the towers from a range of 100 feet to 116 feet to a range of feet to 110.5 feet to 136.5 feet. The upgrade of the towers would follow the construction plan submitted to the NPS by DVP, as shown in appendix C. Construction activities would include installing foundations for the new lines, removing the existing lines, and installing the new lines, all which would occur within the existing right-of-way. The plan calls for special procedures to limit direct impacts to the park, mitigate visual effects, and minimize the potential for inconvenience to park users (DVP 2008). However, construction activities would not be expected to impact park visitors since the area of the park adjacent to the right-of-way does not typically attract many visitors, and visitor access to the primary areas used by visitors would not be affected. During construction activities, DVP would provide appropriate barriers, safety fencing, and/or signage along the park crossing to alert the public, including park visitors, to the construction and to keep any visitors that might approach the area at a safe distance from the construction. These measures would be in place for the duration of construction, expected to last approximately five months. Other safety measures that would be taken include securing all construction materials and equipment in the vicinity of the park at the end of each work day. Construction activities would result in the area of the right-of-way being inaccessible for up to five months. The right-of-way is an area not currently used by park visitors. Visitors would also be impacted by noise intermittently during the five month construction period, as the construction noise is not consistent with the battlefield landscape being interpreted at the park. These impacts would also be short-term, localized, minor adverse. During the construction period there would be some additional noise from heavy machinery used to remove and replace the transmission lines. Since all of the construction would take place within the right-of-way, little associated noise would be heard from the popular visiting locations.

Once construction activities are completed, all areas in and around the right-of-way would be open for visitor use, and use would not change from the current condition. When in operation, the upgraded transmission towers would range from 110.5 feet to 136.5 feet; approximately 15 feet, on average, taller than the current facilities. The configuration of the facilities would also change. Figure 5 (page 27) provides a visual comparison of the existing transmission lines with the upgraded transmission lines that would be constructed under alternative B, as seen from the Stuart's Hill parking lot. Construction plans would also include the restoration of the right-of-way to address disturbance during construction. These activities would include spreading top soil, dispersing rock, installing permanent erosion and sediment control measures, and liming, fertilizing, seeding, and mulching. A seed mix of native forbs and grasses would be used, as requested by the NPS.

Once in operation, the 15-foot increase in tower height would be slightly more noticeable from various areas of the park than the existing towers. In the direct area of the towers, such as Stuart's Hill and Brawner Farm and Brawner House, this height difference would be detectable, resulting in long-term minor to possibly moderate adverse impacts from the visual intrusion into the viewscape, as the towers would be out of character with the visitor experience. During operation, no areas would be closed to the public as a result of the transmission towers and visitors would be able to access all areas of the park. Maintenance activities would occur periodically including field inspections every year; selective tree removal of "danger trees" immediately adjacent to the right-of-way every three years; and spot treatment with EPA approved herbicides, as needed, every six years. It is not expected that visitors would be substantially impacted by the noise from maintenance activity as it would be short term. Additionally, the distance between the right-of-way and the nearby visitor use areas is great enough that noise impacts would be largely reduced. Therefore, there would be short-term localized minor impacts to visitor use and experience under alternative B due to the noise created during construction.

## **Cumulative Impacts**

Cumulative impacts under alternative B would be the same as those under alternative A. These impacts, in combination with the long- and short-term minor to moderate adverse impacts of alternative B, would result in long-term negligible adverse cumulative impacts.

## **Conclusion**

Implementation of alternative B would result in localized short-term minor adverse impacts during construction from construction noise during their visit. Alternative B would also have long-term minor to possibly moderate adverse impacts to visitor use and experience from the presence of the taller transmission towers on the landscape. Although there would be a minimal amount of places where park users would be able to see the towers, an increase in tower height would slightly increase their visibility. No impacts would occur to visitor access during operation. Long-term negligible adverse cumulative impacts would occur under alternative B.

## **ALTERNATIVE C – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITH ADDITIONAL PERMIT TERMS AND CONDITIONS**

### **Analysis**

Under alternative C, NPS would approve the DVP construction permit for the upgrade of the existing transmission lines, as described under alternative B. The impacts of construction activities under alternative C would be the same as alternative B including intermittent construction noise during the five-month construction period and the subsequent noise associated with the general operation and maintenance activities. These impacts would be short-term minor adverse and very localized.

During operation, impacts of alternative C would be similar to those under alternative B; however, alternative C would include a landscape plan at the Brawner house that would include vegetative screening. Screening at the Brawner house would reduce adverse impacts to minor levels over time as it would reduce the chances of visitors seeing the transmission towers and impacting their visitor experience. Other operational impacts under alternative C would be the same as those under alternative B.

### **Cumulative Impacts**

Cumulative impacts under alternative C would be the same as those under alternative A. These impacts, in combination with the long-term minor adverse impacts of alternative C, would result in long-term beneficial cumulative impacts.

### **Conclusion**

Implementation of alternative C would result in short-term minor adverse impacts during construction as visitors would experience construction noise during their visit. With implementation of the proposed screening, Alternative C would have long-term minor adverse impacts to visitor use and experience from the presence of the transmission towers on the landscape, since the screening would reduce potential moderate impacts to minor levels. No impacts would occur to visitor access during operation but there would be short-term minor adverse impacts from maintenance activities. Long-term beneficial cumulative impacts would occur under alternative C.

## **Health and Safety**

### **METHODOLOGY AND ASSUMPTIONS**

The NPS is concerned about the safety of visitors to its parks and will cooperate with proposals to enhance visitor safety as long as those proposals do not result in a derogation of NPS resources or conflict with the current or planned use of NPS property (NPS 2006).

The NPS *Management Policies 2006* state that the NPS is committed to providing appropriate, high-quality opportunities for visitors to enjoy the parks. The policies also state, “While recognizing that there are limitations on its capability to totally eliminate all hazards, the NPS and its concessionaires, contractors, and

cooperators will seek to provide a safe and healthful environment for visitors and employees” (sec. 8.2.5.1). Further, the NPS will strive to protect human life and provide for injury-free visits (sec. 8.2.5).

Impacts were assessed by examining the potential for health and safety issues related to construction of the transmission facilities were also addressed in this section in a qualitative manner.

## STUDY AREA

The study area for health and safety includes the project area for the transmission facilities, as well as adjacent lands where construction activities would occur.

## IMPACT THRESHOLDS

- Negligible:** The impact to visitor or park staff health and safety would not be measurable or perceptible.
- Minor:** The impact to visitor or park staff health and safety would be measurable or perceptible, but it would be limited to a relatively small number of visitors or staff at localized areas.
- Moderate:** The impact to visitor or park staff health and safety would be sufficient to create the potential for additional conflicts in areas that currently do not exhibit noticeable accident trends or to create impacts or improvements to safety that are measurable or perceptible to a large portion of park visitors. Where impacts to visitor safety became moderate, it is assumed that current visitor satisfaction and safety levels would begin to decline and some of the national park’s long-term visitor goals would not be achieved.
- Major:** The impact to visitor or park staff health and safety would be substantial. Accident rates in areas usually limited to low accident potential would be expected to substantially increase in the short- and long-term and impacts to the safety of park visitors would be readily apparent throughout the park.
- Duration:** Short-term impacts would last during facility construction, approximately five months.
- Long-term impacts would occur throughout the life of the facility, taking into consideration operation and maintenance of the facility.

## ALTERNATIVE A – NO ACTION

### Analysis

Under alternative A, the existing transmission lines would continue to operate within the 240-foot-wide right-of-way. Under this alternative, no major construction activities would take place, however periodic maintenance and operation of the facilities would continue to occur. Maintenance activities would include field inspections every year; selective tree removal of “danger trees” immediately adjacent to the right-of-way every three years; and spot treatment with EPA approved herbicides, as needed, every six years. The appropriate signage and personnel would be onsite to minimize any possible safety hazards during these temporary and infrequent maintenance activities, resulting in intermittent localized negligible adverse impacts.

### Cumulative Impacts

Cumulative actions that would affect the health and safety of visitors within Manassas National Battlefield Park include the establishment of the transmission lines within the park, implementation of the park’s GMP, and planning and establishment of the Battlefield Bypass. The GMP would serve as a tool to improve the safety of park visitors by the construction of the Battlefield Bypass to reduce the amount of street traffic in and around the park, especially at the intersection of US-29 and VA-234. This plan would have a beneficial impact to health and safety, as the amount of heavy traffic congestion would be minimized through the

implementation of the GMP. The construction of the Battlefield Bypass would result in short-term minor to moderate adverse impacts as construction activities may make it more difficult for potential visitors to access the park and surrounding areas. Once completed, this project would have a beneficial impact as it would make it easier and safer for pedestrians and bicyclists to access the park with the reduced heavy congestion from US-29 and VA-234 and the rest of the regional transportation network. The park's Fire Management Plan, under Director's Order 18, places public safety as their number one priority in a fire situation within a national park at all times. All of these plans and actions, in combination with the negligible adverse impacts of line maintenance under alternative A, would result in negligible adverse cumulative impacts on health and safety.

### **Conclusion**

Under alternative A, occasional maintenance activities would occur for the existing transmission lines, with DVP taking steps necessary to ensure there are no impacts to park staff or visitor safety during these activities, resulting in localized, intermittent, negligible adverse impacts. Cumulative impacts under alternative A would be long-term beneficial and short-term negligible to minor adverse.

## **ALTERNATIVE B – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITHOUT ADDITIONAL PERMIT TERMS AND CONDITIONS**

### **Analysis**

Under alternative B, the NPS would approve the construction permit for the electrical upgrade and reconfiguration of the existing transmission towers. This process would follow the construction plan submitted to the NPS from DVP, as shown in appendix C. Construction activities would include installing foundations for the new lines, removing the existing lines, and installing the new lines, all which would occur within the existing 240-foot transmission line corridor. Manassas National Battlefield Park recognizes that the safety of park visitors is of the utmost importance. DVP would minimize the amount of disturbance and possible hazards to visitors during the construction phase of this project. In order to practice these safety measures DVP would use appropriate barriers, safety fencing, and/or signage, at or along the park crossing, as appropriate, prior to the initiation of construction activities on NPS properties. Safety measures would be maintained throughout the construction process on NPS properties. The removal and replacement of the existing transmission line and the installation of the new transmission line, across the park, would be performed as expeditiously as possible and would be expected to be accomplished within five months. At the end of each day all construction materials and construction equipment in the vicinity of the park would be appropriately secured prior to cessation of work in order to avoid any injuries or disturbances to park visitors. Therefore, the health and safety effects related to the construction would be short-term negligible to minor, localized, adverse due to construction activities.

### **Cumulative Impacts**

Cumulative actions under alternative B would be the same as those under alternative A. These impacts, in combination with the short-term minor to negligible adverse would result in long-term beneficial impacts and short-term negligible to minor adverse cumulative impacts.

### **Conclusion**

The implementation of alternative B would result in short-term negligible to minor adverse from construction activities to the health and safety of park visitors. Specific protocol concerning construction safety matters would be followed as to not compromise the safety of park visitors during the construction phase. There would be long-term beneficial and short-term negligible to minor adverse cumulative impacts.

## **ALTERNATIVE C – NPS APPROVAL OF THE CONSTRUCTION PERMIT WITH ADDITIONAL PERMIT TERMS AND CONDITIONS**

### **Analysis**

Under alternative C, the construction permit for upgrading the existing transmission facilities would be granted as detailed under alternative B, with additional landscape vegetation included at the Brawner House. The

impacts to health and safety under alternative C would be the same as those under alternative B, with the addition of a landscape plan submitted by DVP to the park.

Construction activities under alternative C would be the same as those under alternative B, resulting in short-term negligible to minor adverse impacts. With the addition of a landscape plan, additional construction activities could occur. Machinery may be used to plant trees or grade the landscape in order to provide a visual buffer between the transmission lines and the Brawner House, which is a more highly used visitor area. DVP would adhere to the proper safety measures, described above, to minimize any safety hazards during construction activities and keep both park staff and visitors away from construction zones. Therefore, the health and safety effects related to the construction of the transmission line and the landscape plan would be short-term localized negligible to minor adverse from construction activities.

### **Cumulative Impacts**

Cumulative actions under alternative C would be the same as those under alternative B, with long-term beneficial and short-term negligible to minor adverse cumulative impacts.

### **Conclusion**

The implementation of alternative C would result in short-term negligible to minor adverse from construction activities to the health and safety of park visitors. Specific protocols concerning construction safety matters would be followed to prevent compromising the safety of park visitors during the construction phase. Cumulative impacts under alternative C would be long-term beneficial and short-term negligible to minor adverse.

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## COORDINATION AND CONSULTATION

The NPS places a high priority on meeting the intent of public involvement in the NEPA process, and giving the public an opportunity to comment on proposed actions. As part of the NPS NEPA process, issues associated with DVPs proposal were identified during the internal scoping meeting with NPS staff and with other affected agencies and stakeholders. Stakeholders include congressional representatives for Virginia and Prince William County, state and local agencies, local and national businesses with an interest in the power lines, adjacent land owners, and the general public. The NPS, in addition to consulting with its own specialists, also contacted outside subject matter experts regarding issues related to the construction, operation, and maintenance of the power lines, including the impact of construction activities on the wetlands, diabase glades, and archeological and cultural resources, and how to avoid or minimize disturbance during and after the construction period. Agency contacts were made during the initial siting phase of this project, which was completed in 2006. These contacts included the USFWS, the Virginia Department of Game and Inland Fisheries, the VDCR, Virginia Department of Historic Resources, the Virginia State Historic Preservation Officer, and the Advisory Council on Historic Preservation, the Virginia Department of Transportation, the Virginia Outdoors Foundation, the Virginia Marine Resources Commission, and the Shenandoah Valley Battlefields Foundation.

### Public Meetings and Comment Period

On December 11, 2008, the NPS and DVP held a public meeting to initiate public involvement and solicit community feedback on the applicant's proposal to approve the construction permit submitted by DVP. The meeting was held from 6:00 p.m. to 8:00 p.m. at the Stuart's Hill Center, 12521 Lee Highway, Manassas, Virginia, 20109. This location was chosen because it is located on park property and is in site of the existing transmission line. Representatives from the NPS, DVP and The Louis Berger Group, Inc., present. Four people attended the meeting.

The NPS mailed 709 public scoping letters to the NPS contact list, which included nearby residents as well as local and national organizations. These letters notified the public about the project and the public meeting. Meeting notices were also posted on the NPS PEPC website. Notification was advertised in two newspapers: *The Manassas Journal* and in the Prince William County Section of *The Washington Post* on December 6 and 7, 2008 (see appendix A).

Public scoping for the Manassas National Battlefield Park EA for the DVP Electric Power Transmission Upgrade project began on November 26, 2008, and concluded on January 2, 2009. During this comment period the public could participate at the public meeting, by providing written comments by mail to the NPS, or by posting comments on the NPS PEPC website.

Ten public comments were received during the public comment period, seven letters and three comments in PEPC. The Virginia Department of Transportation expressed concerns over the placement of access roads and possible construction impacts on the local transportation system. The Northern Virginia Regional Commission Staff addressed issues regarding the construction site's proximity to the Chesapeake Bay Watershed. They want ensure that state and local stormwater regulations are followed. A local resident raised the question of building the power line underground in order to completely mitigate viewshed and other concerns. Three comments were received on the PEPC website. The Civil War Preservation Trust raised concerns about the viewshed impact from taller towers and the impacts to the land's cultural value. A representative of Prince William County Attorney's Office commented on the construction of the access roads and their effect on hazardous material and waste to the watershed, as a result of disposal. The Department of Conservation and Recreation's Division of Natural Heritage (DCR-DNH) submitted mitigation measures on how to protect and avoid impacts on plants associated with the Diabase Glade Area. All comments received during the public comment period, through meetings, mail, email, or through the NPS PEPC system, were considered in this EA.

## Consultation

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 in Manassas National Battlefield Park. Notice of this EA will be posted on PEPC and the following organizations, agencies, and individuals will be notified of its availability.

### FEDERAL AGENCY COORDINATION AND CONSULTATION

Coordination with federal agencies was conducted during and prior to the NEPA process (concurrent with scoping for the entire Meadowbrook to Loudoun 500 kV transmission line siting process) to identify issues or concerns related to natural and cultural resources found within the study area at Manassas National Battlefield Park.

All consultations with the Virginia SHPO, as mandated in Section 106 of the National Historic Preservation Act of 1966 (NHPA Section 106), were filed separately as part of the Meadowbrook to Loudoun 500kV permitting process and the results of those consultations incorporated into the “Cultural Resources” section of this EA.

In accordance with Section 7 of the Endangered Species Act of 1973, a letter was sent to the USFWS 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 alternatives. A letter of response was received on September 28, 2006, from the USFWS recommending consultation with the Virginia Department of Game and Inland Fisheries. In a letter dated August 17, 2006, the Virginia Department of Game and Inland Fisheries identified no known rare, threatened, or endangered species in the vicinity of the study area at Manassas National Battlefield. In a letter dated September 8, 2006, The VDCR Heritage Program designated a number of Diabase Conservation Areas throughout Virginia that support these uncommon plant communities. The portion of the park within the Manassas Diabase Conservation Area is known to support two state listed rare species, the marsh hedgesettle and purple milkweed. According to the VDCR there is potential for a number of additional rare plant species that may occur in diabase conservation areas including earleaf foxglove, blue-hearts, downy phlox, and stiff goldenrod.

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## **List of Preparers**

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## ACRONYMS

ACHP	Advisory Council on Historic Preservation
ARPA	Archaeological Resource Protection Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DVP	Dominion Virginia Power
EA	Environmental Assessment
ELF	Extremely Low Frequency
EMF	Electromagnetic (or Electric and Magnetic) Field
EMF-RAPID	Electric and Magnetic Fields Research and Public Information Dissemination Program
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GMP	general management plan
ICNIRP	The International Commission on Non-Ionizing Radiation Protection
IARC	International Agency for Research on Cancer
kHz	kilohertz
kV	kilovolt
MHz	megahertz
MOA	Memorandum of Agreement
NEPA	National Environmental Policy Act
NESC	The National Electrical Safety Code
NHPA	National Historic Preservation Act
NIEHS	National Institute of Environmental Health and Safety
NPOMA	National Parks Omnibus Management Act of 1998

NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PEPC	Planning, Environment and Public Comment
PM	Particulate Matter
SCC	Virginia State Corporation Commission
SHPO	State Historic Preservation Officer
SWPPP	Stormwater Pollution Prevention Plan
USACE	United States Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	United States Fish and Wildlife Service
USC	United States Code
USGS	U.S. Geological Survey
VDCR	Virginia Department of Conservation and Recreation
VDH	Virginia Department of Health
VSMP	Virginia Stormwater Management Program

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## GLOSSARY

**Affected Environment** — The existing environment to be affected by a proposed action and alternatives.

**Contributing Resource** — A building, site, structure, or object that adds to the historic significance of a property or district.

**Council on Environmental Quality (CEQ)** — Established by Congress within the Executive Office of the President with passage of the *National Environmental Policy Act of 1969*. CEQ coordinates federal environmental efforts and works closely with agencies and other White House offices in the development of environmental policies and initiatives.

**Cultural Resources** — Historic districts, sites, buildings, objects, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or any other reason.

**Cumulative Impacts** — Under NEPA regulations, the incremental environmental impact or effect of an action together with the effects of past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions (40 CFR 1508.7).

**Enabling Legislation** — National Park Service legislation setting forth the legal parameters by which each park may operate.

**Endangered Species** — “...any species (including subspecies or qualifying distinct population segment) that is in danger of extinction throughout all or a significant portion of its range (*Endangered Species Act* Section 3(6)).” The lead federal agency, U.S. Fish and Wildlife Service, for the listing of a species as endangered is responsible for reviewing the status of the species on a five-year basis.

**Endangered Species Act (ESA) (16 USC 1531 et seq.)** — An Act to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved and to provide a program for the conservation of such endangered species and threatened species.

**Environmental Assessment (EA)** — An environmental analysis prepared pursuant to the *National Environmental Policy Act* to determine whether a federal action would significantly affect the environment and thus require a more detailed environmental impact statement (EIS).

**Executive Order** — Official proclamation issued by the President that may set forth policy or direction or establish specific duties in connection with the execution of federal laws and programs.

**Finding of No Significant Impact** — A document prepared by a federal agency showing why a proposed action would not have a significant impact on the environment and thus would not require preparation of an Environmental Impact Statement. A finding of no significant impact is based on the results of an environmental assessment.

**National Environmental Policy Act (NEPA)** — The Act as amended articulates the federal law that mandates protecting the quality of the human environment. It requires federal agencies to systematically assess the environmental impacts of their proposed activities, programs, and projects including the “no action” alternative of not pursuing the proposed action. NEPA requires agencies to consider alternative ways of accomplishing their missions in ways which are less damaging to the environment.

**National Historic Preservation Act of 1966 (16 USC 470 et seq.)** — An Act to establish a program for the preservation of historic properties throughout the nation, and for other purposes, approved October 15,

1966 [Public Law 89-665; 80 STAT.915; 16 USC 470 as amended by Public Law 91-243, Public Law 93-54, Public Law 94-422, Public Law 94-458, Public Law 96-199, Public Law 96-244, Public Law 96-515, Public Law 98-483, Public Law 99-514, Public Law 100-127, and Public Law 102-575].

**National Register of Historic Places (National Register)** — A register of districts, sites, buildings, structures, and objects important in American history, architecture, archaeology, and culture, maintained by the Secretary of the Interior under authority of Section 2(b) of the *Historic Sites Act of 1935* and Section 101(a)(1) of the *National Historic Preservation Act of 1966*, as amended.

**Organic Act** — Enacted in 1916, this Act commits the National Park Service to making informed decisions that perpetuate the conservation and protection of park resources unimpaired for the benefit and enjoyment of future generations.

**Scoping** — Scoping, as part of the *National Environmental Policy Act* (NEPA), requires examining a proposed action and its possible effects; establishing the depth of environmental analysis needed; determining analysis procedures, data needed, and task assignments. The public is encouraged to participate and submit comments on proposed projects during the scoping period.



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## **Appendix A: Agency Consultation**

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## **Appendix B: Public Scoping Information**

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## **Appendix C: Construction Plan**

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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 major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.