

AFFECTED ENVIRONMENT

This chapter of the EA describes existing environmental conditions in the areas potentially affected by the alternatives evaluated. The impact analysis is presented in the Environmental Consequences section of this EA.

VEGETATION

Prince William Forest Park contains the largest contiguous piedmont forest system in the National Park Service. The park sits in a transitional zone between northern and southern climates, and eastern and western physiographic provinces. There are at least two distinct types of forest ecosystems in the upland areas of Prince William Forest Park. On the ridges and upper slopes is a mixed oak (*Quercus* spp.) forest, and on the lower slopes above the floodplain is a mesic hardwood forest. Some common understory vegetation includes dogwood (*Cornus* spp.), redbud (*Cercis canadensis*), mountain laurel (*Kalmia latifolia*), spotted wintergreen (*Pyrola* sp.), and sassafras (*Sassafras albidum*). Ferns, mosses, vines, briars, and numerous wildflowers form the groundcover (NPS, 2008). Native vegetation has been disturbed by soil compaction and trampling in the developed areas of the park. This soil compaction has resulted in vegetation loss and increased erosion, which has led to an increase in stream sedimentation. As a result, the native vegetation in these disturbed areas has been replaced with invasive or exotic species, such as honeysuckle (*Lonicera* spp.) and wisteria (*Wisteria* spp.) creating resource management problems (NPS, 1999). According to park staff, Chinese wisteria (*Wisteria sinensis*) is the most pervasive and destructive within Prince William Forest Park (NPS, 2010).

Areas of exposed ground are susceptible to the introduction of non-native plant species. Since many of the species present within the unique ecotone present in Prince William Forest Park are on the outer limits of their range, they can be particularly sensitive to changes in species composition, abundance and diversity brought on by non-native species introduction. Once established, invasive and exotic species can spread rapidly, replacing or limiting native species, and are usually difficult to eradicate.

The project area contains at least 17 different species, as shown in Table 3. According to park staff, all of the species identified within the project area are common in the park, and no locally rare species were noted (NPS, 2011c). Following the Table are Figures showing the conceptual parking lot options and the locations and types of tree species within each parking lot option footprint.

Table 3: Tree Species Present in Project Area

Common Name	Scientific Name	Number
American beech	<i>Fagus grandifolia</i>	31
American holly	<i>Ilex opaca</i>	30
black cherry	<i>Prunus serotina</i>	2
common persimmon	<i>Diospyros virginiana</i>	2
crab apple	<i>Malus</i> sp.	1
Eastern black oak	<i>Quercus velutina</i>	4
Eastern red cedar	<i>Juniperus virginiana</i>	5
Eastern white oak	<i>Quercus alba</i>	7
flowering dogwood	<i>Cornus</i> sp.	32

Table 3: Tree Species Present in Project Area, continued

Common Name	Scientific Name	Number
Northern red oak	<i>Quercus rubra</i>	2
pignut hickory	<i>Carya glabra</i>	1
post oak	<i>Quercus stellata</i>	8
red maple	<i>Acer rubrum</i>	38
sweet gum	<i>Liquidambar styraciflua</i>	16
tulip poplar	<i>Liriodendron tulipifera</i>	10
unknown	-	2
Virginia pine	<i>Pinus virginiana</i>	30

Prince William Forest Park
Virginia

National Park Service
U.S. Department of the Interior



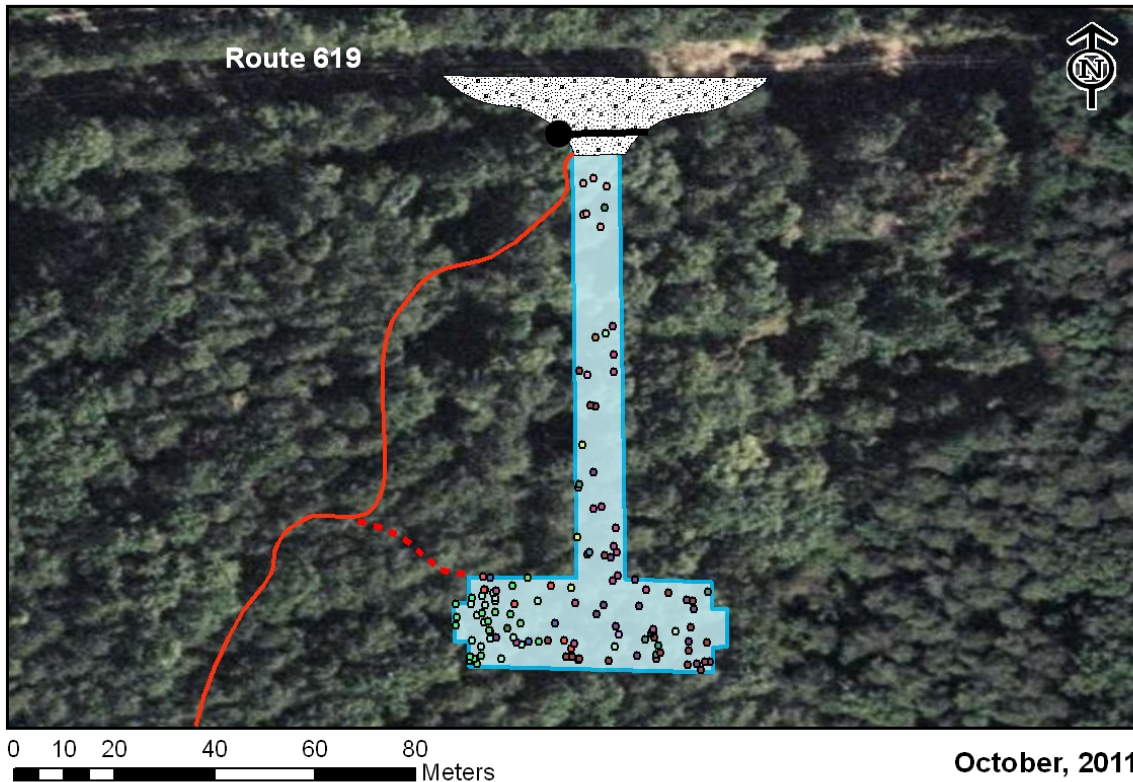
Chopawamsic Backcountry Area

New Entrance - Option 1



Bobcat Ridge Road	eastern red cedar
Proposed Trail	eastern white oak
Entrance Gate	flowering dogwood
Paved Apron	northern red oak
Tree Species	
american beech	red maple
american holly	sweet gum
black cherry	tulip poplar
crab apple	unknown
eastern black oak	virginia pine
	Option 1 Site

Site area: .19 acres
Removed trees: 124 (2790 square feet in basal area)
Removed soil: 153 cubic yards



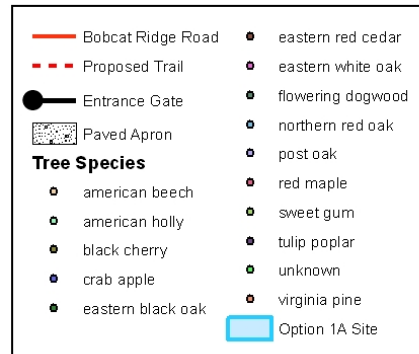
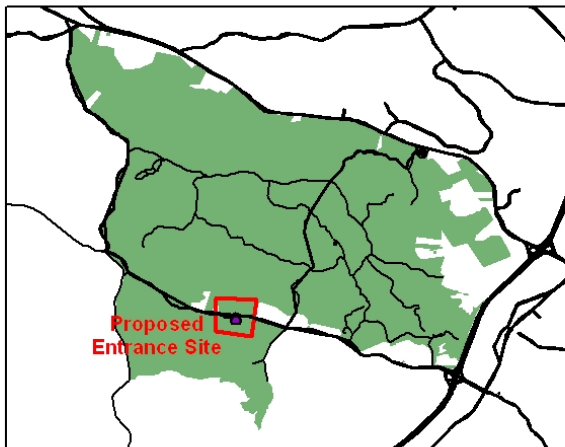
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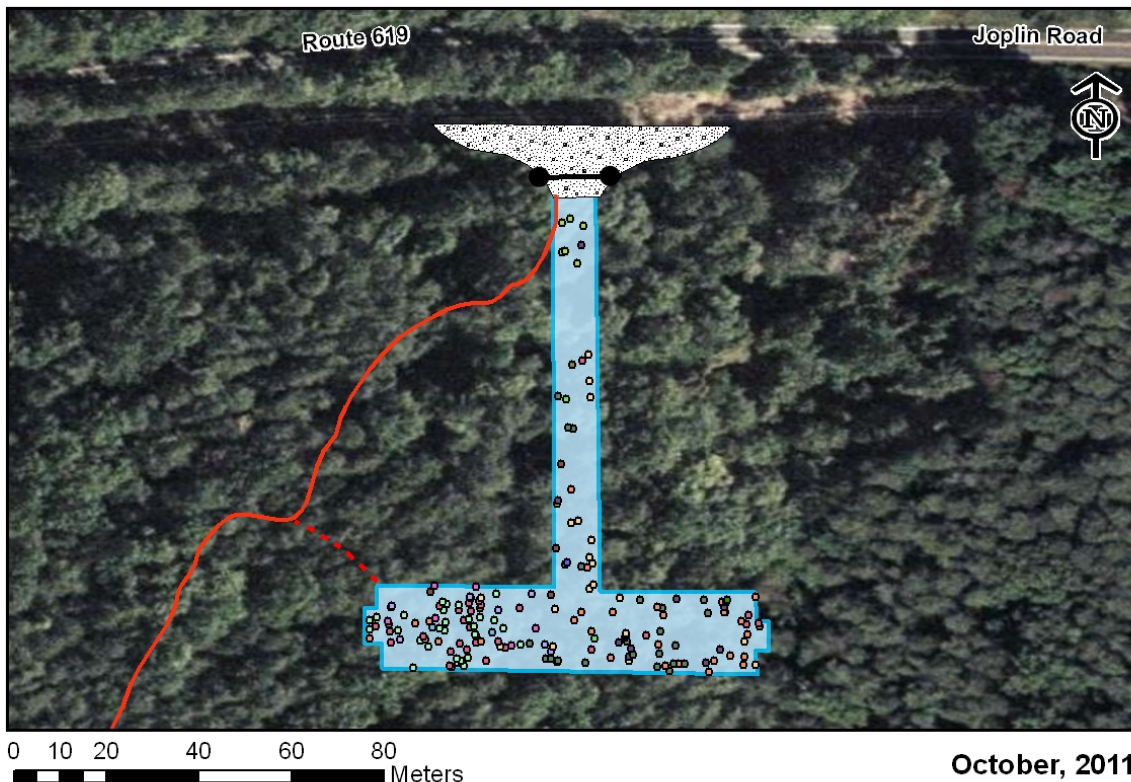


Chopawamsic Backcountry Area

New Entrance - Option 1 A



Site area: .32 acres
Removed trees: 179 (5506 square feet in basal area)
Removed soil: 258 cubic yards



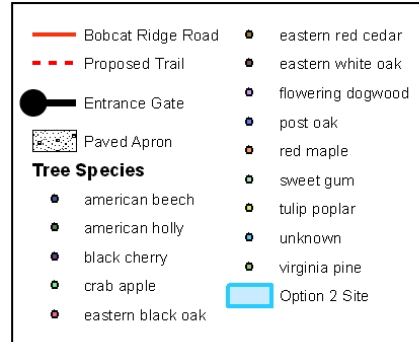
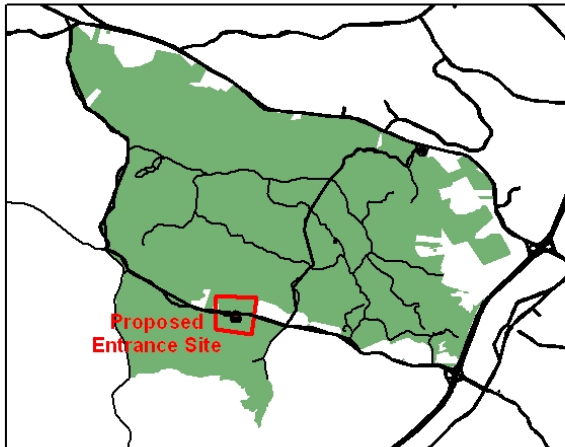
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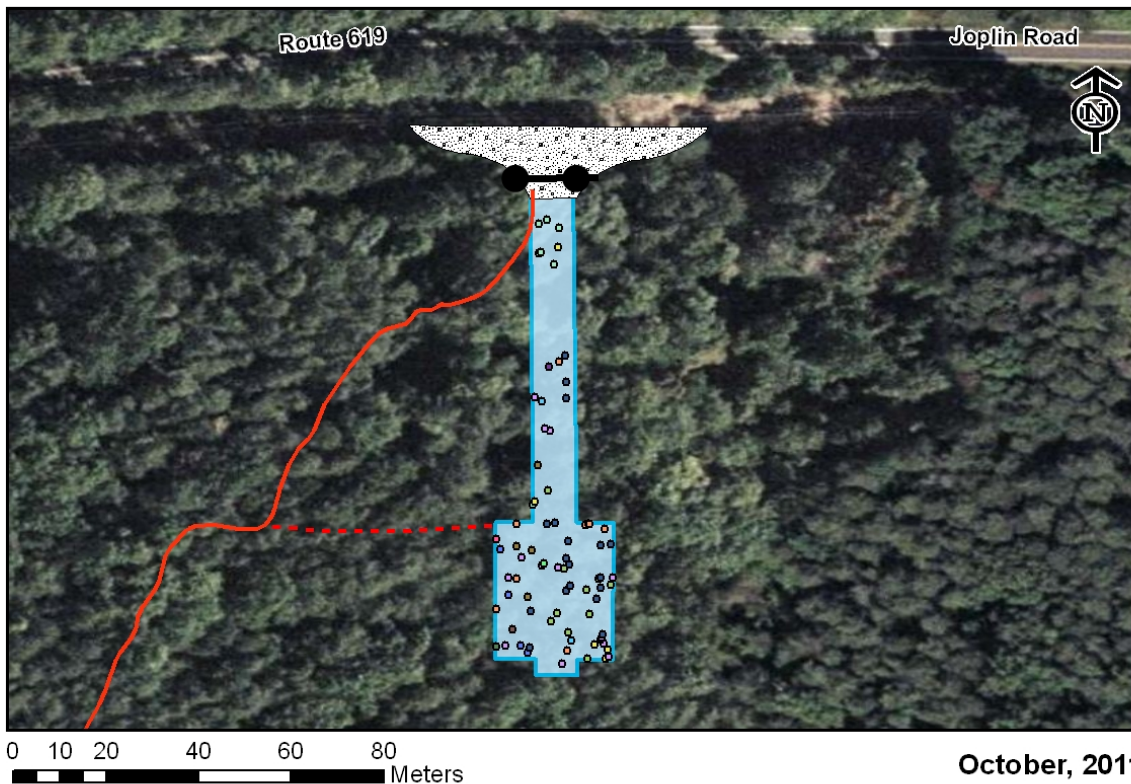


Chopawamsic Backcountry Area

New Entrance - Option 2



Site area: .15 acres
Removed trees: 80 (1210 square feet in basal area)
Removed soil: 121 cubic yards



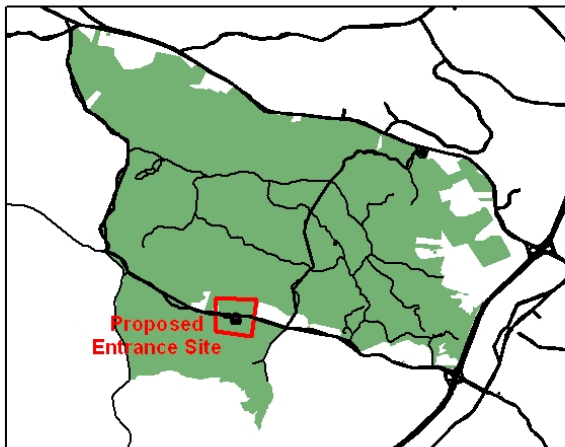
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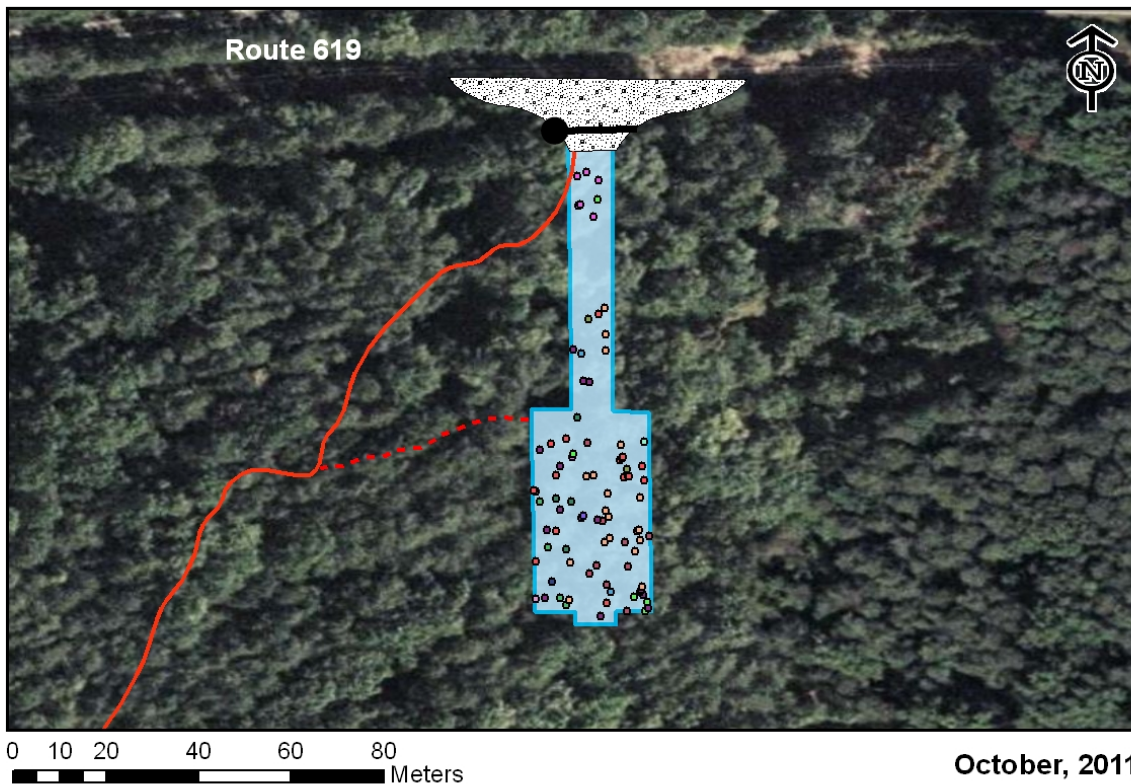
Chopawamsic Backcountry Area

New Entrance - Option 2 A



— Bobcat Ridge Road	● eastern black oak
- - - Proposed Trail	● eastern red cedar
● Entrance Gate	● eastern white oak
Paved Apron	● flowering dogwood
Species	
● american beech	● post oak
● american holly	● red maple
● black cherry	● sweet gum
● common persimmon	● tulip poplar
● crab apple	● unknown
	● virginia pine
	 Option 2A Site

Site area: .21 acres
Removed trees: 90 (1561 square feet in basal area)
Removed soil: 170 cubic yards



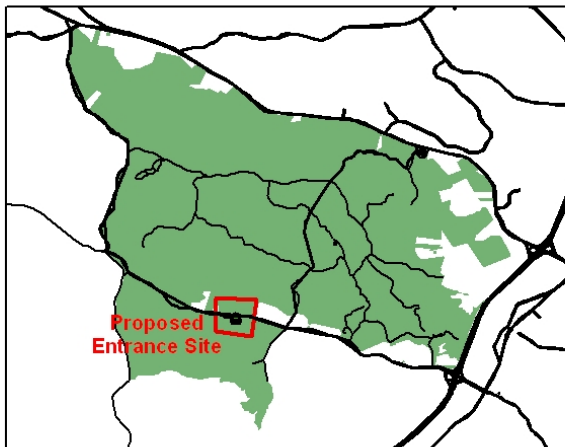
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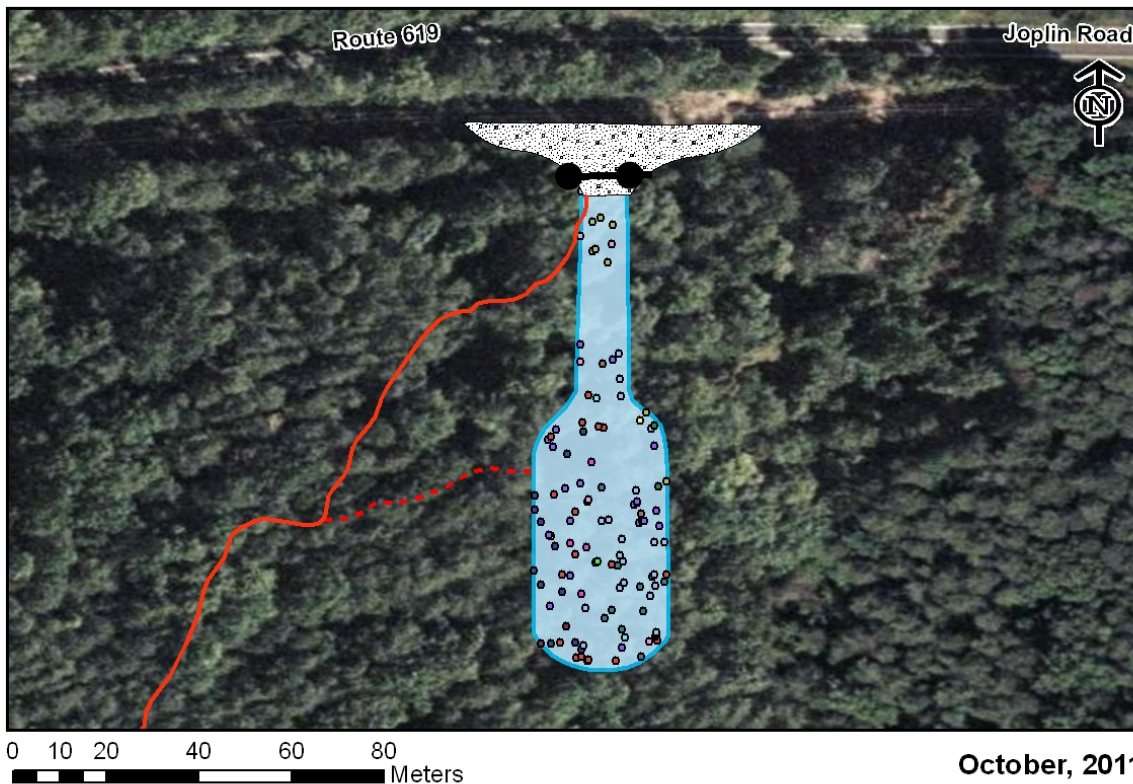
Chopawamsic Backcountry Area

New Entrance - Option 3



Bobcat Ridge Road	eastern black oak
Proposed Trail	eastern red cedar
Entrance Gate	eastern white oak
Paved Apron	flowering dogwood
Tree Species	
american beech	post oak
american holly	red maple
black cherry	sweet gum
common persimmon	tulip poplar
crab apple	unknown
	virginia pine
	Option 3 Site

Site area: .37 acres
Removed trees: 116 (2520 square feet in basal area)
Removed soil: 282 cubic yards



October, 2011

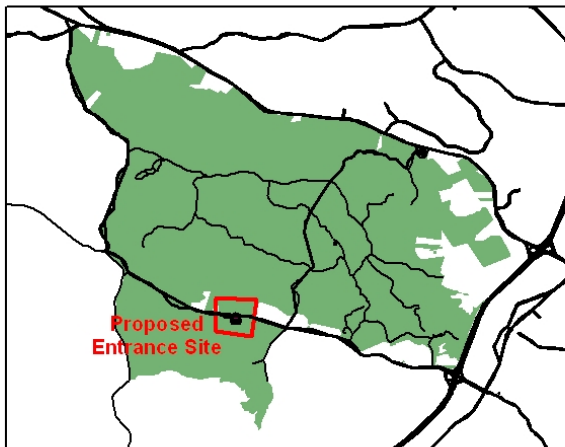
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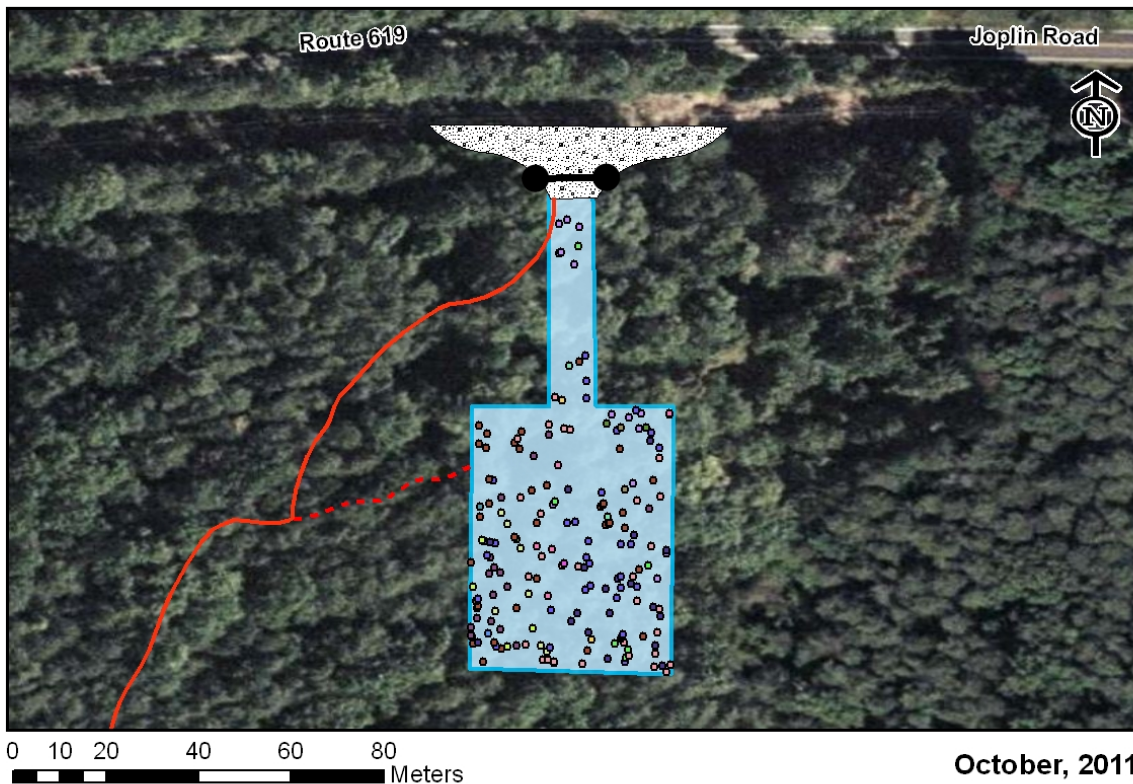
Chopawamsic Backcountry Area

New Entrance - Option 3 A



Bobcat Ridge Road	eastern red cedar
Proposed Trail	eastern white oak
Entrance Gate	flowering dogwood
Paved Apron	northern red oak
Tree Species	pignut hickory
american beech	post oak
american holly	red maple
black cherry	sweet gum
common persimmon	tulip poplar
crab apple	unknown
eastern black oak	virginia pine
	Option 3A Site

Site area: .5 acres
 Removed trees: 189 (6630 square feet in basal area)
 Removed soil: 403 cubic yards



SOILS

Undulating topography, steep sided valleys and narrow ridge tops characterize the landscape within the park. As reported in the park General Management Plan, the steep terrain and sandy soils combine to create severe erosion problems (NPS, 1999). According to the US Department of Agriculture, Natural Resources Conservation Service, the soils in the project area are Bourne loam, rock substratum, 2 to 6 percent slopes (BoB). The Bourne series soils formed in loamy sediments on the Coastal Plain. Bourne soils have a strongly acid to very strongly acid subsoil and are low in natural fertility and organic-matter content.

Bourne loam, rock substratum, 2 to 6 percent slopes is primarily located on broad ridges along the eastern edge of the Piedmont Plateau where fluvial materials overlie weathered Piedmont rocks. Oak and hickory are the primary native vegetation associated with this soil type. However, on former farmland reverting to woodland, Virginia pine and loblolly pine are common. Erosion is a severe hazard if this soil is exposed.

CULTURAL LANDSCAPES

The National Historic Preservation Act of 1966, as amended (16 USC 470 et seq.); the National Environmental Policy Act of 1969 (42 USC 4321 et seq.); NPS *Director's Order #28: Cultural Resource Management Guideline* (NPS 1998), NPS *Management Policies 2001* (NPS 2000a), and NPS *Director's Order #12: Conservation Planning, Environmental Impact Analysis, and Decision-making* and its accompanying handbook (NPS 2001a) require the consideration of impacts on cultural landscapes listed in or eligible for listing in the National Register of Historic Places (NRHP).

According to the NPS *Cultural Resource Management Guideline* (DO #28), a cultural landscape is defined as “a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined by both physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions” (NPS 1998).

Cultural landscapes are the result of the long interaction between people and the land, the influence of human beliefs and actions over time on 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, a visual chronicle of its history. The dynamic nature of modern human life, however, contributes to the continual reshaping of cultural landscapes, making them good sources of information about specific times and places, but at the same time rendering their long-term preservation a challenge.

There is no Cultural Landscape documentation available for the Chopawamsic Backcountry Area of Prince William Forest Park. However, the archeological survey conducted for the proposed parking lot area notes that “an old dirt road known as Bobcat Ridge Road runs through the project area from north to south” (Bedell 2010). This road appears on the 1927 USGS topographic map, but is not present on the Brown (1901) map reproduced in Bedell (2004). The 2004 archeological survey report of the park (covering the area north of Joplin Road) stated that nearly all of the historic occupation sites were found on the ridge tops (Bedell 2004). As shown on the topographic map on the following page (Figure 7),

Bobcat Ridge Road follows the local ridge. Therefore, Bobcat Ridge Road would be considered a contributing feature of the potential cultural landscape.

VISITOR USE AND EXPERIENCE

Within an hour's drive for more than 4 million people, Prince William Forest Park provides a rare undeveloped landscape of mixed hardwood forest and many opportunities to experience the outdoors. Recreational activities such as camping, hiking, picnicking, and biking have become increasingly popular in the park. There are 37 miles of hiking trails, three wooden bridges, five actively used cabin camps, the Cabin Branch Pyrite Mine ruins, Civil War-era plantation sites, and more than 25 miles of streams within the park. The park contains a tributary to the Chesapeake Bay, Quantico Creek. Due to the pristine water quality, the Quantico Creek is a reference stream to for scientific research in surrounding piedmont watersheds, and has a positive impact on the Chesapeake Bay.

Retaining part of the park's original name, the Chopawamsic Backcountry Area provides approximately 1,700 acres of forest to explore. A total of eight primitive tent campsites are available around the two mile hiking trail. This area is accessed by permit only and camping is limited to four people or one family per campsite. In addition, there are two cemeteries that are accessible along Breckenridge Road. Upon request, Prince William Forest Park opens the gates and grants visitor access to the cemeteries.

The park is open daily from sunrise to sunset. The visitor center is open all year 9:00 a.m. to 5:00 p.m. Sunday through Thursday and from 9:00 a.m. to 9:30 p.m. on Friday and Saturday nights. The visitor center is closed Thanksgiving, Christmas, and New Years holidays.

The NPS visitation records indicate annual use for the Chopawamsic Backcountry Area in past five years as follows:

2006: 283 individuals

2007: 353 individuals

2008: 396 individuals

2009: 317 individuals






2010: 368 individuals

These visitor use statistics do not distinguish use between campers and day users. However, a majority of the use is from March through November and primarily on weekends. The Chopawamsic Backcountry Area has never been at maximum capacity, and rarely are there more than 10 people in the area at one time (NPS, 2011c).



Figure 7: Topographic Map

Environmental Assessment
Proposed Chopawamsic Access

-  Proposed Parking Lot Area
-  NPS Boundary
-  Streams
-  Bobcat Ridge Road
-  Trails

In a recent visitor survey, the most important reasons for visiting Prince William Forest park include being close to nature, getting away from the usual demands of life, enjoying the sounds of nature, and getting exercise (Lawson, et. al., 2006). The survey indicated that visitors rank the maintenance of park facilities, roads and trails (Lawson, et. al., 2006) as an important component of their park experience. Adequate parking and access to clean, maintained restroom facilities were also rated as important to most respondents.

As discussed under the purpose and need section of this EA, visitors using the Chopawamsic Backcountry Area currently access the hiking trails and camping areas from Breckenridge Road. This road contains locking gates owned and maintained by both the NPS and Quantico; therefore, both organizations must lock and unlock gates to provide visitor access. Parking facilities for visitors wishing to access the hiking trails or primitive campsites in the Chopawamsic Backcountry Area consist of a small gravel parking lot located off Breckenridge Road. This parking lot provides approximately 10 parking spaces for the eight primitive campsites. The existing portable toilet unit currently located adjacent to the gravel parking lot near the existing entrance from Breckenridge Road is in poor condition. Photographs on the following pages show the current gate on Breckenridge Road (photograph 1) and the existing parking area (photographs 2 through 8).

PARK MANAGEMENT AND OPERATIONS

The current entrance to the Chopawamsic Backcountry Area lies along Breckenridge Road, adjacent to the Quantico Marine Base. The entrance is a gated unpaved spur road extending approximately 250 meters southwest from Breckenridge Road to a small open parking area. The parking area contains an information bulletin board, a portable restroom, and open space for approximately 10 vehicles. The parking area serves as the trailhead for the Chopawamsic Backcountry Trail which enters and exits on both the north and south sides of the parking area.

Both Quantico and Prince William Forest Park use Breckenridge Road as an access point to their respective facilities. Prince William Forest Park uses the road to allow visitor and staff access the Chopawamsic Backcountry Area and to the family cemeteries that are present in this area of the park. Quantico uses Breckenridge Road as a secondary access point to the base, and to access the Breckenridge Reservoir, which serves as a drinking water source for the base. A gate with NPS and Quantico locks prevents unauthorized access to these areas. Since both agencies maintain locks on this gate, Quantico personnel are regularly cutting off the NPS lock and replacing with a Quantico lock. As a result, park staff frequently replaces the damaged NPS locks and are sometimes required to cut Quantico locks or chains to provide access (NPS, 2011c).

Currently, access for day use or camping in the Chopawamsic Backcountry Area is restricted to permitted users only. Visitors wishing to access the Chopawamsic Backcountry Area go to the Visitor Center to fill out a Backcountry Permit and check out a gate key. The permit form includes the individuals' name, contact information, dates of permit use, entry and exit locations, travel method, number of people in the group, and campsite number. Upon leaving the Chopawamsic Backcountry Area, the permittee comes back to the Visitor Center to return the gate key. The same process is followed for access to the two cemeteries that are accessible along Breckenridge Road.



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8

Prince William Forest Park allows a maximum of 10 camping permits a day in the Backcountry Area. Eight permits are available for each of the eight campsites along the Chopawamsic Trail, and two permits are granted to off trail campers. Each permit allows for a maximum of 4 individuals, resulting in a maximum capacity of 40 individuals per night. For camping, no dogs are allowed, and campfires are restricted to the eight permanent campsites within existing fire rings. Those individuals camping on non-permanent campsites are prohibited from having camp fires. Day use permits also are available for up to 10 individuals on any given day. Considering day use and camping allowances, a maximum of 50 visitors are permitted in the Chopawamsic Backcountry Area at any one time. Approved recreational activities in the Chopawamsic Backcountry Area consist of hiking, camping and fishing.

At least once a day, park law enforcement rangers patrol the parking area of the Chopawamsic Backcountry Area. Few violations are reported in the Chopawamsic Backcountry Area; reported violations are usually minor offenses such as alcohol or building a fire outside of the existing fire ring. Law enforcement rangers occasionally find dumping along this road, and in this area of the park. Items such as trash or poached animals have been reported.

While no elevated threat levels have resulted in a closure of Quantico to date, in the event of a base closure, emergency information would be disseminated through the base's mass notification system to base personnel and neighboring communities. It is possible that park visitors could become locked inside the gates until NPS law enforcement or Quantico personnel were cleared to unlock the gates. Park visitors would be notified of the emergency and asked to remain in their location during a closure or retrieved by park staff.

ENVIRONMENTAL CONSEQUENCES

This “Environmental Consequences” chapter analyzes both beneficial and adverse impacts that would result from implementing any of the alternatives considered in this EA. This chapter also includes definitions of impact thresholds (e.g., negligible, minor, moderate, and major), methods used to analyze impacts, and the analysis methods used for determining cumulative impacts. As required by the Council on Environmental Quality (CEQ) regulations implementing the NEPA, a summary of the environmental consequences for each alternative is provided in Table 2 which can be found in “Chapter 2: Alternatives.” The resource topics presented in this chapter, and the organization of the topics, correspond to the resource discussions contained in “Chapter 3: Affected Environment.”

GENERAL METHODOLOGY FOR ESTABLISHING IMPACT THRESHOLDS AND MEASURING EFFECTS BY RESOURCE

The following elements were used in the general approach for establishing impact thresholds and measuring the effects of the alternatives on each resource category:

- general analysis methods as described in guiding regulations, including the context and duration of environmental effects;
- basic assumptions used to formulate the specific methods used in this analysis;
- thresholds used to define the level of impact resulting from each alternative;
- methods used to evaluate the cumulative impacts of each alternative in combination with unrelated factors or actions affecting park resources; and
- methods and thresholds used to determine if impairment of specific resources would occur under any alternative

These elements are described in the following sections.

GENERAL ANALYSIS METHODS

The analysis of impacts follows CEQ guidelines and Director’s Order 12 procedures (NPS 2001) and is based on the underlying goal of supporting forest regeneration and providing for long-term protection, conservation, and restoration of native species and cultural landscapes at the park. This analysis incorporates the best available scientific literature applicable to the region and setting, the species being evaluated, and the actions being considered in the alternatives.

As described in chapter 1, the NPS created an interdisciplinary science team to provide important input to the impact analysis. For each resource topic addressed in this chapter, the applicable analysis methods are discussed, including assumptions and impact intensity thresholds.

ASSUMPTIONS

Several guiding assumptions were made to provide context for this analysis. These assumptions are described below.

Analysis Period – The analysis period is approximately ten years.

Geographic Area Evaluated for Impacts (Area of Analysis) - The geographic study area (or area of analysis) for this project is the 1.8 acre project area, plus Bobcat Ridge Road from Joplin Road to the Chopawamsic Backcountry Trail, as identified in Chapter 1. The area of analysis may extend beyond Prince William Forest Park’s boundaries for some cumulative impact assessments. The specific area of analysis for each impact topic is defined at the beginning of each topic discussion.

IMPACT THRESHOLDS

Determining impact thresholds is a key component in applying NPS *Management Policies* and Director's Order 12. These thresholds provide the reader with an idea of the intensity of a given impact on a specific topic. The impact threshold is determined primarily by comparing the effect to a relevant standard based on applicable or relevant/appropriate regulations or guidance, scientific literature and research, or best professional judgment. Because definitions of intensity vary by impact topic, intensity definitions are provided separately for each impact topic analyzed in this document. Intensity definitions are provided throughout the analysis for negligible, minor, moderate, and major impacts. In all cases, the impact thresholds are defined for adverse impacts. Beneficial impacts are addressed qualitatively.

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:

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 ANALYSIS METHOD

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 nonfederal) or person undertakes such other actions” (40 CFR 1508.7). As stated in the CEQ handbook, “Considering Cumulative Effects” (CEQ 1997), cumulative impacts need to be analyzed in terms of the specific resource, ecosystem, and human community being affected and should focus on effects that are truly meaningful. Cumulative impacts are considered for all alternatives, including the no action alternative.

Cumulative impacts were determined by combining the impacts of the alternative being considered with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects and plans at Prince William Forest Park and, if applicable, the surrounding area. Table 3 summarizes these actions that could affect the various resources at the park, along with the plans and policies of both the park and surrounding jurisdictions, which were discussed in chapter 1.

The analysis of cumulative impacts was accomplished using four steps:

Step 1 — Identify Resources Affected - Fully identify resources affected by any of the alternatives. These include the resources addressed as impact topics in chapters 3 and 4 of the document.

Step 2 — Set Boundaries - Identify an appropriate spatial and temporal boundary for each resource. The temporal boundaries are noted at the top of Table 24 and the spatial boundary for each resource topic is listed under each topic.

Step 3 — Identify Cumulative Action Scenario - Determine which past, present, and reasonably foreseeable future actions to include with each resource. These are listed in Table 3 and described below.

Step 4 — Cumulative Impact Analysis - Summarize impacts of these other actions (x) plus impacts of the proposed action (y), to arrive at the total cumulative impact (z). This analysis is included for each resource in chapter 4.

The geographic scope for this analysis includes elements generally within or near Prince William Forest Park boundaries, while the temporal scope includes projects within a range of approximately 10 years. Given this, Table 4 summarizes the actions that could affect the various resources at the park that are being evaluated in this EA.

Table 4: Projects Contributing to the Cumulative Effects

Project/Action	Potentially Affected Resources	Status
Long Range Interpretive Plan - The Prince William Forest Park Long Range Interpretive Plan calls for an improved visitor center with new enhanced exhibits and interpretive waysides at major trailheads.	Visitor use and experience and cultural resources	Future
New Access Entrance on VA 234 — The NPS is proposing to construct a new vehicular access entrance on VA 234 (Dumfries Road) along with an adjacent bike and pedestrian path. An Environmental Assessment was completed in May 2006.	Cultural resources, visitor use and experience, vegetation, soils	Future
Resurface Public Roads and Rehabilitate parking Areas – The NPS recently reconstructed or repaved several roads and parking lots.	Cultural resources, visitor use and experience, vegetation, soils	Past
Planned Residential Communities on Dumfries Road – Planned residential communities would be constructed in the area north of Dumfries Road, which borders the park on its northeast side (PWC 2008a).	Cultural resources, visitor use and experience, vegetation, soils	Future

Table 4: Projects Contributing to the Cumulative Effects, continued

Project/Action	Potentially Affected Resources	Status
Route 1 Expansion – This project included widening sections of Route 1 from Joplin Road to Bradys Hill Road to a six-lane divided facility in an effort to relieve congestion and improve safety. The project included a 16-foot wide median, curb and gutter, on-road bike lane, and an off-road pedestrian trail.	Cultural resources, visitor use and experience, vegetation, soils	Ongoing
RV Campground Improvements – This project would include minor roadway widening and the upgrading of water and electrical hook-ups and sanitary sewer hook-ups.	Cultural resources, visitor use and experience, vegetation, soils	Future

VEGETATION

METHODOLOGY AND ASSUMPTIONS

Available information on vegetation and vegetative communities occurring within the project area was compiled and reviewed. Predictions about short and long-term project impacts on vegetation were based on proposed actions.

STUDY AREA

The study area for this project is the approximately 1.8 acre project area, which includes the proposed area for the parking lot, plus the Bobcat Ridge Road from Joplin Road to the Chopawamsic Trail. When considering cumulative impacts, the land surrounding the park was also considered.

IMPACT THRESHOLDS

The definitions of intensity levels and duration for this specific impact topic are as follows:

- Negligible: Some individual native plants would be affected, but there would be no effect on native species populations.
- Minor: Some individual native plants and a small portion of that species population would be impacted. Mitigation would be required and would likely be successful at attenuating the impacts.
- Moderate: A sizeable segment of the species population over a relatively large area would be impacted. Mitigation would be required and would likely be successful at attenuating the impacts.
- Major: A considerable effect on native plant populations, including species of special concern, would be impacted. A large area could be affected within and outside Prince William Forest Park boundaries. Mitigation would be required but the success of these measures would not be guaranteed.
- Short-term Duration: Impacts persist less than three years.
- Long-term Duration: Impacts would persist beyond three years.

IMPACTS OF NO ACTION ALTERNATIVE (ALTERNATIVE A)

Analysis - Under the no action alternative, no vegetation impacts would occur.

Cumulative Impacts – Since this alternative would have no impacts on vegetation, no cumulative impacts would result.

Conclusion - Implementation of the no action alternative would result in no impacts to vegetation. There would be no cumulative impacts to existing vegetation.

IMPACTS OF ALTERNATIVE B (PREFERRED)

Analysis - Under the preferred alternative, vegetation removal would be required for the construction of the gravel parking area, access road and vault toilet. As summarized in Tables 4 and 5 and depicted in the parking lot option figures provided in the affected environment chapter, the project would impact a maximum of 189 trees (6,630 square feet in basal area) and remove 403 cubic yards of topsoil.

Table 4: Vegetation Impacts

Option	Trees	Tree Basal Area (square feet)	Acres	Topsoil Removed (cubic yards)	Parking Spaces
Option 1	124	2,790	0.19	153	20
Option 1a	179	5,506	0.32	258	39
Option 2	80	1,210	0.15	121	20
Option 2a	90	1,561	0.21	170	31
Option 3	116	2,520	0.37	282	20
Option 3a	189	6,630	0.5	403	44

Table 5: Tree Species Impacts

Common Name	Scientific Name	Option 1	Option 1A	Option 2	Option 2A	Option 3	Option 3A
American beech	<i>Fagus grandifolia</i>	17	19	18	18	22	31
American holly	<i>Ilex opaca</i>	18	30	1	1	6	16
black cherry	<i>Prunus serotina</i>	1	1	1	2	2	2
common persimmon	<i>Diospyros virginiana</i>	0	0	0	1	2	2
crab apple	<i>Malus sp.</i>	1	1	1	1	1	1
Eastern black oak	<i>Quercus velutina</i>	1	1	2	2	3	4
Eastern red cedar	<i>Juniperus virginiana</i>	3	4	4	4	4	5
Eastern white oak	<i>Quercus alba</i>	4	7	1	1	2	5
flowering dogwood	<i>Cornus sp.</i>	22	26	13	14	20	32
Northern red oak	<i>Quercus rubra</i>	1	2	0	0	0	1
pignut hickory	<i>Carya glabra</i>	0	0	0	0	0	1
post oak	<i>Quercus stellata</i>	7	8	4	4	6	7
red maple	<i>Acer rubrum</i>	18	30	9	16	21	38
sweet gum	<i>Liquidambar styraciflua</i>	8	8	8	8	10	16
tulip poplar	<i>Liriodendron tulipifera</i>	6	10	5	5	4	6
unknown	-	2	2	2	2	2	2
Virginia pine	<i>Pinus virginiana</i>	15	30	11	11	11	20
Total		124	179	80	90	116	189

As shown in Table 5, the vegetation within the 0.5 acre impact area contains species that are widespread in the park; no locally rare species are present (NPS, 2011c). The project area is surrounded by over 1,700 acres of similar vegetation and the removal of the trees would not impact the local tree populations. Since up to 0.5 acres of the mesic hardwood forest system would be impacted, the resulting impacts on vegetation would be adverse, moderate, and long-term.

While adverse impacts on trees and other vegetation in the project area may occur due to the potential for tree root damage outside of the construction area, considering the mitigation measures that would be in place to prevent damage outside of the construction area, adverse impacts are expected to be short-term and negligible.

Visitor use of the area would be expected to increase based on the increased visibility of the entrance, which would increase the potential for destruction of native plants and introduction of non-native species within this area of the park. Since visitors would be limited to 50 per day, this increase in visitation would be controlled. As a result, the increased use would result in a long-term, minor adverse impact on vegetation.

During the clean up of Bobcat Ridge Road, trampling of native vegetation could occur during the removal of trash and woody debris. As a result, only short-term, negligible adverse impacts on vegetation would be expected from the trail clean up.

Cumulative Impacts - Past, and future foreseeable projects that would impact vegetation include the park road rehabilitation, the park RV transportation improvement project, the new park access entrance on VA 234 and the local and regional development projects. The past roadway rehabilitation project within Prince William Forest Park resulted in a minor long-term adverse impact on the vegetation. The future park RV project and the park access from VA 234 would be expected to have a minor adverse impact on native vegetation due to the removal of vegetation for the transportation improvements. The local roadway widening project would have a long-term minor adverse impact on trees and other vegetation near the roadway due to the vegetation removal and potential for tree root damage outside of the construction area. The residential development project would have a moderate impact on local or regional vegetation due to the removal of a large area of vegetation for the construction of the homes.

The combined effects of alternative B along with the cumulative impacts from the past and future foreseeable projects would result in long-term, minor adverse impacts to vegetation. The overall contribution of this alternative to the cumulative impacts on vegetation would be minor.

Conclusion - Implementation of alternative B would result in short and long-term, negligible to moderate adverse impacts to vegetation due to the disturbance of up to 0.5 acres of vegetation, including the removal of up to 189 trees, for the construction of the gravel parking area, access road and vault toilet, and as a result of increased visitor use. Cumulative impacts to vegetation would be long-term, minor adverse.

IMPACTS OF ALTERNATIVE C

Analysis - Under the alternative C, vegetation removal would be required for the construction of the gravel parking area, access road and vault toilet. Implementation of this alternative would impact a maximum of 189 trees (6,630 square feet in basal area) and remove 403 cubic yards of topsoil.

The vegetation within the 0.5 acre impact area contains species that are widespread in the park; no locally rare species are present (NPS, 2011c). The project area is surrounded by over 1,700 acres of similar vegetation and the removal of the trees would not impact the local tree populations. Since up to 0.5 acres of the mesic hardwood forest system would be impacted, and no locally rare species were identified, the resulting impacts on vegetation would be adverse, moderate and long-term.

While adverse impacts on trees and other vegetation in the project area may occur due to the potential for tree root damage outside of the construction area, considering the mitigation measures that would be in place to prevent damage outside of the construction area, adverse impacts are expected to be short-term and negligible.

Visitor use of the area would be expected to increase based on the increased visibility of the entrance, which would increase the potential for destruction of native plants and introduction of non-native species. Unlike under the preferred alternative, under alternative C, visitor use would be unrestricted. Since visitor use would be unlimited, the increased use would be a long-term, minor adverse impact on vegetation due to the potential for destruction of native plants and introduction of non-native species.

During the clean up of Bobcat Ridge Road, trampling of native vegetation could occur during the removal of trash and woody debris. As a result, only short-term, negligible adverse impacts on vegetation would be expected from the trail clean up.

Cumulative Impacts - Past, and future foreseeable projects that would impact vegetation include the park road rehabilitation, the park RV transportation improvement project, the new park access entrance on VA 234 and the local and regional development projects. The past roadway rehabilitation project within Prince William Forest Park resulted in a minor long-term adverse impact on the vegetation. The future park RV project and the park access from VA 234 would be expected to have a minor adverse impact on native vegetation due to the removal of vegetation for the transportation improvements. The local roadway widening project would have a long-term minor adverse impact on trees and other vegetation near the roadway due to the vegetation removal and potential for tree root damage outside of the construction area. The residential development project would have a moderate impact on local or regional vegetation due to the removal of a large area of vegetation for the construction of the homes. The combined effects of alternative C along with the cumulative impacts from the past and future foreseeable projects would result in short and long-term, minor adverse impacts to vegetation. The overall contribution of this alternative to the cumulative impacts on vegetation would be minor.

Conclusion - Implementation of alternative C would result in short and long-term, negligible to minor adverse impacts to vegetation due to the disturbance of up to 0.5 acres of vegetation, including the removal of up to 189 trees, for the construction of the gravel parking area, access road and vault toilet, and as a result of increased visitor use. Cumulative impacts to vegetation would be long-term, minor adverse.

SOILS

METHODOLOGY AND ASSUMPTIONS

Available information on soils occurring within the project area was compiled and reviewed. Predictions about short and long-term project impacts on soils were based on proposed actions.

STUDY AREA

The study area for this project is the approximately 1.8 acre project area, which includes the proposed area for the parking lot, plus the Bobcat Ridge Road from Joplin Road to the Chopawamsic Trail. When considering cumulative impacts, the land surrounding the park was also considered.

IMPACT THRESHOLDS

The definitions of intensity levels and duration for this specific impact topic are as follows:

- Negligible: Impacts to soils would be at or below the level of detection.
- Minor: Impacts would be detectable. Effects to soil areas would be small. Mitigation may be needed and would likely be successful.
- Moderate: A change in the soil character would occur over a sizable amount of area. Mitigation would be needed and would likely be successful.
- Major: The effects would be readily apparent and substantially change the character of the soils over a large area both inside and outside the park. Mitigation would be required but the success of these measures would not be guaranteed.
- Short-term Duration: Recovery takes less than three years.
- Long-term Duration: Recovery takes over three years.

IMPACTS OF NO ACTION ALTERNATIVE (ALTERNATIVE A)

Analysis - Under the no action alternative, Breckenridge Road would continue to be the access point into the Chopawamsic Backcountry Area. No new gravel entrance road, parking lot or vault toilet would be constructed, no wayside exhibits would be installed, and no clean up of Bobcat Ridge Road would occur. As a result, the no action alternative would have no impacts on the soils in the project area.

Cumulative Impacts – Since this alternative would have no impacts on soils, no cumulative impacts would result.

Conclusion - Implementation of the no action alternative would result in no impacts to soils. There would be no cumulative impacts to soils.

IMPACTS OF ALTERNATIVE B (PREFERRED)

Analysis – During construction of the proposed improvements, the potential for soil erosion would increase in the project area, resulting in short-term, minor and adverse impacts. Under the preferred alternative, soil functions would be lost for the installation of the gravel parking lot. Depending on the parking lot option selected, this would impact between 0.19 and 0.50 acres and would require the removal of between 121 and 403 cubic yards of topsoil. The acres of impact for each parking lot option, along

with the amount of soil that would be removed, are summarized in Table 6 below. The resulting impacts to soils would be adverse, minor, and long-term.

Table 6: Soil Impacts

Option	Acres	Topsoil Removed (cubic yards)	Parking Spaces
Option 1	0.19	153	20
Option 1a	0.32	258	39
Option 2	0.15	121	20
Option 2a	0.21	170	31
Option 3	0.37	282	20
Option 3a	0.5	403	44

The clean up of Bobcat Ridge Road, an old dirt fire road, would be limited to the removal of trash and woody debris that is currently present on the road. During the clean up activities, the potential for soil erosion would increase, resulting in short-term, adverse, negligible impacts.

Under alternative B, visitor use of the area would be expected to increase based on the increased visibility of the entrance. However, visitor use would be limited to 50 individuals per day. Therefore, long-term, adverse minor impact on soils would result due to the potential for increased erosion in the project area.

Cumulative Impacts: The previously implemented or future projects in the area such as the waterline project, the new park entrance, the park roadway resurfacing, and the proposed RV park improvements would have short-term minor adverse impacts due to the soil exposure and subsequent erosion during construction. The long-term plans for the park for new exhibits, and the enhancement of interpretive elements at the visitor center would not contribute to soil impacts. The impacts from alternative B, combined with the impacts of the projects identified in the cumulative effects scenario, would result in long-term, minor, adverse cumulative impacts. The overall contribution of this alternative to the cumulative impacts on soils would be negligible.

Conclusion - Implementation of alternative B would result in short and long-term, negligible to minor impacts to soils resulting from the proposed improvements and the increased visitor use. Cumulative impacts to soil would be long-term, minor and adverse, with the proposed project contributing a negligible increment.

IMPACTS OF ALTERNATIVE C

Analysis – As with alternative B, under alternative C, the construction of the gravel parking area, access road and vault toilet, and the clean up of Bobcat Ridge Road would result in short and long-term negligible to minor adverse impacts to soils.

Under alternative C, visitor use of the area would be expected to increase based on the increased visibility of the entrance and the unlimited visitor access. Therefore, long-term, adverse moderate impact on soils would result due to the potential for increased erosion in the project area from increased visitor use.

Cumulative Impacts: The previously implemented or future projects in the area such as the waterline project, the new park entrance and the proposed RV park improvements would have short-term minor adverse impacts due to the soil exposure and subsequent erosion during construction. The long-term plans in the park for new exhibits, and the enhancement of interpretive elements at the visitor center would not contribute to soil impacts. The impacts from alternative C, combined with the impacts of the projects identified in the cumulative effects scenario, would result in long-term, minor adverse cumulative impacts. The overall contribution of this alternative to the cumulative impacts on soils would be negligible.

Conclusion - Implementation of alternative C would result in short and long-term, negligible to moderate adverse impacts to soils resulting from the proposed improvements and the increased visitor use. Cumulative impacts to soil would be short and long-term, minor adverse, with the proposed project contributing a negligible increment.

CULTURAL LANDSCAPES

METHODOLOGY AND ASSUMPTIONS

Available information on cultural resources occurring within the project area was compiled and reviewed. Predictions about short and long-term project impacts on cultural landscapes were based on proposed actions.

STUDY AREA

The study area for this project is the approximately 1.8 acre project area, which includes the proposed area for the parking lot, plus the Bobcat Ridge Road from Joplin Road to the Chopawamsic Trail.

IMPACT THRESHOLDS

Cultural landscapes are the result of the long interaction between people and the land, the influence of human beliefs and actions over time on 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, a visual chronicle of its history. The dynamic nature of modern human life, however, contributes to the continual reshaping of cultural landscapes, making them good sources of information about specific times and places, but at the same time rendering their long-term preservation a challenge.

Properties more than 50 years old, including cultural landscapes, may be eligible for the National Register if they meet the criteria for listing and for contributions at the national, state, or local level. In order for a property to be listed in the National Register, it also must possess historic integrity of those features necessary to convey its significance, (i.e., location, design, setting, workmanship, materials, feeling, and association). To date, Bobcat Ridge and the roadbed that lies along it have not been formally evaluated for National Register eligibility. Nonetheless, the cultural landscape category is useful in examining the impacts of the alternatives on Bobcat Ridge Road.

The definitions of intensity levels and duration for this specific impact topic are as follows:

- Negligible: Impact(s) is at the lowest levels of detection with neither adverse nor beneficial consequences. The determination of effect for Section 106 would be “*no adverse effect*.”
- Minor: Adverse impact - alteration of a pattern(s) or feature(s) of the landscape would not diminish the overall integrity of the landscape. The determination of effect for Section 106 would be “*no adverse effect*.”
- Moderate: Adverse impact - alteration of a pattern(s) or feature(s) of the landscape would diminish the overall integrity of the landscape. The determination of effect for Section 106 would be “*adverse effect*.” A memorandum of agreement is executed among the NPS and applicable state or tribal historic preservation officer and, if necessary, the Advisory Council on Historic Preservation in accordance with 36 CFR 800.6(b). Measures identified in the MOA to minimize or mitigate adverse impacts would reduce the intensity of impact under NEPA from moderate to minor.
- Major: Adverse impact - alteration of a pattern(s) or feature(s) of the landscape would diminish the overall integrity of the landscape. The determination of effect for Section 106 would be “*adverse effect*.” Measures to minimize or mitigate adverse impacts cannot be agreed upon and the NPS and applicable state or tribal historic preservation officer and/or Advisory Council are unable to negotiate and execute a memorandum of agreement in accordance with 36 CFR 800.6(b).
- Short-term Duration: Occurs only during the implementation of the alternative.
- Long-term Duration: Occurs after the implementation of the alternative.

IMPACTS OF NO ACTION ALTERNATIVE (ALTERNATIVE A)

Analysis - Under the no action alternative, there would be no construction of a parking lot or toilet facilities and no clean up of the existing Bobcat Ridge Roadbed. There would be no new signage or wayside information stations. Any degradation of the road bed due to erosion or usage that is now occurring would continue. The impact of this alternative would be negligible, long-term, and adverse; a determination of no adverse effect under NHPA Section 106

Cumulative Impacts – Past, present, and reasonably foreseeable future projects with the potential to affect cultural landscapes include the Prince William Forest Park long range interpretive plan, the new access entrance on VA-234, the resurfacing of public roads and rehabilitation of parking areas, planned residential communities on Dumfries Road (VA-234), and the expansion of Route 1. These projects have the potential to change the contributing features or overall character of a potential cultural landscape. The projects would be designed to minimize such impacts. As a result, assuming appropriate mitigation measures are enacted for any negative impacts from these projects, the cumulative impacts to potential cultural landscapes would be short-term to long-term, negligible to minor, and adverse.

The combined effects of the no action alternative along with the cumulative impacts from the past and future foreseeable projects would result in long-term minor adverse impacts to cultural resources. The

overall contribution of this alternative to the cumulative impacts on cultural landscapes would be negligible.

Conclusion - The No Action Alternative would result in short-term and long-term minor adverse impacts on the potential cultural landscape, due to continued degradation of Bobcat Ridge Road. Cumulative impacts would be long-term minor adverse, with the project contributing a negligible increment.

Section 106 Summary - Because the impact would not diminish the overall integrity of the potential cultural landscape, the determination of effect for Section 106 would be “no adverse effect.”

IMPACTS OF ALTERNATIVE B (PREFERRED)

Analysis - Under the preferred alternative, the existing roadbed of the old Bobcat Ridge Road would become a trail for accessing the Chopawamsic Trail and would be improved/rehabilitated. A short portion of the northern section of the old road near Joplin Road would have a parking lot, toilet facilities, and a new access to Joplin Road constructed on or near it. Upon completion of this alternative, the remainder of the former Bobcat Ridge Road would be re-opened as a public trail. The visual impact to the overall landscape setting would be apparent during the construction process and would result in short-term, negligible to minor, adverse impacts to the Bobcat Ridge Road potential cultural landscape. Redesigning the access to Joplin Road would have a long-term, minor, adverse impact. The impact of the proposed clean up of the Bobcat Ridge roadbed would be short-term, negligible to minor, adverse and long-term, beneficial. Visitor use of the area would be expected to increase, but no adverse impacts to potential cultural landscapes would be expected as a result. These impacts equate with a finding of no adverse effect to the potential cultural landscape under Section 106 of the National Historic Preservation Act.

Cumulative Impacts – Past, present, and reasonably foreseeable future projects with the potential to affect cultural landscapes include the Prince William Forest Park long range interpretive plan, the new access entrance on VA-234, the resurfacing of public roads and rehabilitation of parking areas, planned residential communities on Dumfries Road (VA-234), and the expansion of Route 1. These projects have the potential to change the contributing features or overall character of a potential cultural landscape. The projects would be designed to minimize such impacts. As a result, assuming appropriate mitigation measures are enacted for any negative impacts from these projects, the cumulative impacts on cultural landscapes resulting from the preferred alternative combined with the impacts from these projects would be long-term, minor, and adverse. The overall contribution of this alternative to the cumulative impacts on cultural landscapes would be negligible.

Conclusion - The preferred alternative would result in short-term and long-term minor adverse and long-term beneficial impacts on the potential cultural landscape. The proposed changes would alter the northern section of Bobcat Ridge Road, resulting in long-term, minor, adverse impacts to the potential cultural landscape, and the clean up of the roadbed would have a short-term, negligible to minor, adverse and long-term beneficial impact. Cumulative impacts would be long-term, minor, and adverse.

Section 106 Summary - The proposed activities of the preferred alternative would not preclude a future evaluation of the former Bobcat Ridge Road for National Register eligibility. Because the impact would not diminish the overall integrity of the potential cultural landscape, the determination of effect for Section 106 would be “no adverse effect.”

IMPACTS OF ALTERNATIVE C

Analysis – Identical to the impacts under the preferred alternative, alternative C would result in short-term and long-term minor adverse and long-term beneficial impacts on the potential cultural landscape. The proposed changes would alter the northern section of Bobcat Ridge Road, resulting in long-term, minor, adverse impacts to the potential cultural landscape, and the clean up of the roadbed would have a short-term, negligible to minor, adverse and long-term beneficial impact. Cumulative impacts would be short and long-term, negligible to minor, adverse, and long-term beneficial. While this alternative would be expected to result in a higher level of increased visitor use of the area than that which would occur under either of the other alternatives, no adverse impacts to potential cultural landscapes would be expected. These impacts equate with a finding of no adverse effect to the potential cultural landscape under Section 106 of the National Historic Preservation Act.

Cumulative Impacts – Past, present, and reasonably foreseeable future projects with the potential to affect cultural landscapes include the Prince William Forest Park long range interpretive plan, the new access entrance on VA-234, the resurfacing of public roads and rehabilitation of parking areas, planned residential communities on Dumfries Road (VA-234), and the expansion of Route 1. These projects have the potential to change the contributing features or overall character of a potential cultural landscape. The projects would be designed to minimize such impacts. As a result, assuming appropriate mitigation measures are enacted for any negative impacts from these projects, the cumulative impacts on cultural landscapes resulting from alternative C combined with the impacts from these projects would be long-term, negligible to minor, adverse, and long-term beneficial. The overall contribution of this alternative to the cumulative impacts on cultural landscapes would be negligible.

Conclusion - Alternative C would result in short and long-term minor adverse and long-term beneficial impacts on the potential cultural landscape. The proposed changes would alter the northern section of Bobcat Ridge Road, resulting in long-term, minor, adverse impacts to the potential cultural landscape, and the clean up of the roadbed would have a short-term, negligible to minor, adverse and long-term beneficial impact. Cumulative impacts would be long-term minor, and adverse.

Section 106 Summary - The proposed activities of alternative C would not preclude a future evaluation of the former Bobcat Ridge Road for National Register eligibility. Because the impact would not diminish the overall integrity of the potential cultural landscape, the determination of effect for Section 106 would be “no adverse effect.”

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 new Chopawamsic Backcountry Area access and attendant features on the overall experience of those park visitors who utilize the area, and for the visitors to the adjacent Quantico land.

STUDY AREA

The study area for visitor use and experience includes Prince William Forest Park and the adjacent Quantico lands.

IMPACT INTENSITY

The definitions of intensity levels and duration for this specific impact topic are as follows:

- **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 decline.
- **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.
- **Short-term Duration:** Occurs only during the implementation of the alternative.
- **Long-term Duration:** Occurs after the implementation of the alternative.

IMPACTS OF NO ACTION ALTERNATIVE (ALTERNATIVE A)

Analysis - Under the no action alternative, access to the Chopawamsic Backcountry Area would continue to be provided by Breckenridge Road. The existing parking and restroom facilities and the existing out-of-date wayside exhibits would remain as the gateway to this primitive camping and hiking area. The appearance and condition of the existing facilities could detract from the experience for some visitors. The lack of easy access to the Chopawamsic Backcountry Area could also deter some visitors from utilizing this area of Prince William Forest Park. Based on the anticipated limited number of visitors that this would impact, these adverse impacts would be negligible and long-term.

For visitors desiring a more primitive experience in an area of the park not often utilized, the no action alternative would be a long-term beneficial impact on visitor use and experience.

As described previously, there are two cemeteries that are accessible along Breckenridge Road. Under the no action alternative, Prince William Forest Park would continue to open the gates and grant visitor access to the cemeteries. No resulting impact on visitor use and experience would occur.

Cumulative Impacts - Past, and future foreseeable projects that would impact visitor use and experience include the Prince William Forest Park Long Range Interpretive Plan, the various park improvement projects, and the local and regional development projects. During construction activities, each of these projects would be expected to have short-term minor adverse impacts on visitor use and experience. The past roadway rehabilitation project within Prince William Forest Park resulted in long-term beneficial impacts on visitor use and experience due to the improved roadways and parking facilities. The future park Access Entrance on VA 234 would be expected to have a long-term beneficial impact on visitor use and experience due the appropriately located access point. The future RV park transportation improvements would be expected to have a long-term beneficial impact on visitor use and experience due to the improved facilities. The local roadway widening project would be expected to have a long-term beneficial impact on visitor use and experience due to the improved traffic patterns in the vicinity of the park. The residential development project has the potential to have a long-term beneficial impact on visitor use and experience due to the increased public use of Prince William Forest Park due to visitor proximity.

The combined effects of the no action alternative along with the cumulative impacts from the past and future foreseeable projects would result in long-term negligible long-term impacts to visitor use and experience.

Conclusion - The no action alternative would have a long-term negligible adverse impact on visitor use and experience due to the appearance and condition of the existing facilities and the lack of easy access to the Chopawamsic Backcountry Area. For visitors desiring a more primitive experience in an area of the park not often utilized, the no action alternative would be a long-term beneficial impact on visitor use and experience. Cumulative impacts would be long-term negligible to minor adverse and long-term beneficial, Alternative C would result in short and long-term minor adverse and long-term beneficial impacts on the potential cultural landscape. The proposed changes would alter the northern section of Bobcat Ridge Road, resulting in long-term, minor, adverse impacts to the potential cultural landscape, and the clean up of the roadbed would have a short-term, negligible to minor, adverse and long-term beneficial impact. Cumulative impacts would be long-term, negligible, adverse.

IMPACTS OF ALTERNATIVE B (PREFERRED)

Analysis – Alternative B would provide an access point to the Chopawamsic Backcountry Area from Route 619 (Joplin Road), a paved two lane route that is used primarily by motorists from Route 234 (a four lane road) to Interstate 95. Visitor use would be expected to increase just based on the heightened visibility of the entrance. Post construction, the preferred alternative would provide a more efficient and easier access for the public and would improve the aesthetic appearance of the restroom facilities and would be expected to enhance visitors' enjoyment and use of the park. The resulting impacts on visitor use and experience would be long-term and beneficial.

For visitors that prefer a more primitive experience, opening this area of the park to more visitors would be a long-term minor adverse impact on visitor use and experience.

As described previously, there are two cemeteries that are accessible along Breckenridge Road. Under the preferred alternative, Breckenridge Road would be closed to the public. However, upon request, Prince William Forest Park would open the gates and grant visitor access to the cemeteries. Since this is essentially the same procedure that is currently used for this area of the park, no impact on visitor use and experience would occur.

The preferred alternative would result in short-term localized adverse impacts on the visual quality of Prince William Forest Park due to the presence of construction equipment and materials. The NPS Management Policies require that visual intrusions from construction activities be kept to a minimum. Therefore, to reduce these impacts, the proposed staging area for the preferred alternative would be in the proposed parking area, an area of Prince William Forest Park that is not generally accessed by the public. Therefore short-term, minor adverse impacts to visitor use and experience would occur.

During construction, impacts would also result from the attendant human activity and noise associated with implementation of the preferred alternative. The intrusiveness of the construction activities on the visitor use and experience would be minimized by confining activities to the fenced construction zone, and by requiring construction contractors to properly maintain construction equipment to minimize noise from their use. The resulting adverse impact on visitor use and experience would be short-term and minor.

Cumulative Impacts - Past, and future foreseeable projects that would impact visitor use and experience include the Prince William Forest Park Long Range Interpretive Plan, the various park improvement projects, and the local and regional development projects. During construction activities, each of these projects would be expected to have short-term minor adverse impacts on visitor use and experience. The past roadway rehabilitation project within Prince William Forest Park resulted in long-term beneficial impacts on visitor use and experience due to the improved roadways and parking facilities. The future park Access Entrance on VA 234 would be expected to have a long-term beneficial impact on visitor use and experience due the appropriately located access point. The future RV park transportation improvements would be expected to have a long-term beneficial impact on visitor use and experience due to the improved facilities. The local roadway widening project would be expected to have a long-term beneficial impact on visitor use and experience due to the improved traffic patterns in the vicinity of the park. The residential development project has the potential to have a long-term beneficial impact on visitor use and experience due to the increased public use of Prince William Forest Park due to visitor proximity.

The combined effects of the preferred alternative along with the cumulative impacts from the past and future foreseeable projects would result in long-term minor impacts to visitor use and experience. The overall contribution of this alternative to the cumulative impacts on visitor use and experience would be minor.

Conclusion – The preferred alternative would have a short-term negligible adverse and a long-term beneficial impact on visitor use and experience based the short-term impacts during construction and the improved facilities post-construction. For visitors that prefer a more primitive experience, opening this

area of the park to more visitors would be a long-term minor adverse impact on visitor use and experience. Cumulative impacts would be minor, long-term, and adverse, with the project contributing a negligible increment.

IMPACTS OF ALTERNATIVE C

Analysis – Similar to the preferred alternative, Alternative C would provide an access point to the Chopawamsic Backcountry Area from Route 619 (Joplin Road). Visitor use would be expected to increase just based on the heightened visibility of the entrance. Post construction, the preferred alternative would provide a more efficient and easier access for the public and would improve the aesthetic appearance of the restroom facilities and would be expected to enhance visitors' enjoyment of the park. Since permits would not be required for hikers, and the visibility of the entrance would be increased, visitor use is expected to increase. The resulting impacts on visitor use and experience would be long-term and beneficial.

For visitors that prefer a more primitive experience, opening this area of the park to unlimited visitors would be a long-term minor adverse impact on visitor use and experience.

As described previously, there are two cemeteries that are accessible along Breckenridge Road. Under alternative C, Breckenridge Road would be closed to the public. However, upon request, Prince William Forest Park would open the gates and grant visitor access to the cemeteries. Since this is essentially the same procedure that is currently used for this area of the park, no impact on visitor use and experience would occur.

Similar to the preferred alternative, alternative C would result in short-term localized adverse impacts on the visual quality of Prince William Forest Park due to the presence of construction equipment and materials, the attendant human activity and noise. Considering the mitigation measures that would be implemented, short-term, minor adverse impacts to visitor use and experience would occur.

Cumulative Impacts - Past, and future foreseeable projects that would impact visitor use and experience include the Prince William Forest Park Long Range Interpretive Plan, the various park improvement projects, and the local and regional development projects. During construction activities, each of these projects would be expected to have short-term minor adverse impacts on visitor use and experience. The past roadway rehabilitation project within Prince William Forest Park resulted in long-term beneficial impacts on visitor use and experience due to the improved roadways and parking facilities. The future park Access Entrance on VA 234 would be expected to have a long-term beneficial impact on visitor use and experience due the appropriately located access point. The future RV park transportation improvements would be expected to have a long-term beneficial impact on visitor use and experience due to the improved facilities. The local roadway widening project would be expected to have a long-term beneficial impact on visitor use and experience due to the improved traffic patterns in the vicinity of the park. The residential development project has the potential to have a long-term beneficial impact on visitor use and experience due to the increased public use of Prince William Forest Park due to visitor proximity.

The combined effects of alternative C along with the cumulative impacts from the past and future foreseeable projects would result in long-term minor adverse impacts to visitor use and experience. The

overall contribution of this alternative to the cumulative impacts on visitor use and experience would be negligible.

Conclusion – Alternative C would have a short-term minor adverse and a long-term beneficial impact on visitor use and experience based the short-term impacts during construction and the improved facilities post-construction. For visitors that prefer a more primitive experience, opening this area of the park to unlimited visitors would be a long-term minor adverse impact on visitor use and experience. Cumulative impacts would be minor, long-term, and adverse, with the project contributing a negligible increment.

PARK MANAGEMENT AND OPERATIONS

METHODOLOGY AND ASSUMPTIONS

Impacts to visitor use and experience were determined by considering the effect of the existing conditions and the proposed new Chopawamsic Backcountry Area access and attendant features on park and Quantico management and operations.

STUDY AREA

The study area for park management and operations includes Prince William Forest Park and the adjacent Quantico lands.

IMPACT INTENSITY

The definitions of intensity levels and duration for this specific impact topic are as follows:

- Negligible: Changes in park operations would be just at the level of detection.
- Minor: Changes in park operations would be detectable, although the changes would be slight. Visitors and park staff would be unaware of the effects.
- Moderate: Changes in park operations would be readily apparent. Visitors and park staff would be aware of the effects and would likely be able to express an opinion about the changes.
- Major: Changes in park operations would be readily apparent and severely adverse or exceptionally beneficial. Visitors and park staff would be aware of the effects and would likely be able to express a strong opinion about the changes.
- Short-term Duration: Occurs only during the implementation of the alternative.
- Long-term Duration: Occurs after the implementation of the alternative.

IMPACTS OF NO ACTION ALTERNATIVE (ALTERNATIVE A)

Analysis - Under the no action alternative, access to the Chopawamsic Backcountry Area would continue to be provided by Breckenridge Road. Prince William Forest Park and Quantico staff would continue to remove and replace locks on the access gate and continue to coordinate park and Quantico personnel and visitor access. The park law enforcement staff would monitor the area daily. Permit processing would continue to be required for all Chopawamsic Backcountry Area visitors or for those wishing to access the family cemeteries in this area of the park. Since these are the procedures that are currently implemented by park staff, this would have no impact on park operations.

As discussed under the impact discussion for visitor use and experience, there are two cemeteries that are accessible along Breckenridge Road. These are accessed with permission from Prince William Forest Park under a procedure that is currently used for this area of the park. Therefore, no impact on park management and operations would occur.

Cumulative Impacts – Since the no action alternative would have no impact on park management and operations, it would not contribute to cumulative impacts.

Conclusion - The no action alternative would have no impact on park management and operations. There would be no cumulative impacts.

IMPACTS OF ALTERNATIVE B (PREFERRED)

Analysis - Alternative B would result in short-term minor adverse impacts during the construction phase of the project due to the management of the construction activities. Post construction, this alternative would be expected to increase visitor use and increased park law enforcement staff monitoring of the area would be necessary. As a result, increased park law enforcement staff monitoring of the area would be necessary, resulting in long-term minor adverse impacts on park management and operations.

Since the new access point would no longer be shared with Quantico, the coordination with Quantico and the replacement of locks at the Breckenridge Road gate would no longer be necessary for most Chopawamsic Backcountry Area visitors. The resulting impacts on park management and operations would be long-term beneficial.

As discussed under the impact discussion for visitor use and experience, there are two cemeteries that are accessible along Breckenridge Road. Under the preferred alternative, Breckenridge Road would be closed to public access, but those wishing to visit the cemeteries would obtain access from Prince William Forest Park under a procedure that is currently used for this area of the park. Therefore, no impact on park management and operations would occur.

Cumulative Impacts - Past, and future foreseeable projects that would impact park management and operations include the past roadway rehabilitation project and the park Access Entrance on VA 234. The past roadway rehabilitation project within Prince William Forest Park resulted in long-term beneficial impacts on park management and operations due to the improved roadways and parking facilities. The future park Access Entrance on VA 234 would be expected to have a long-term beneficial impact on park management and operations due to the appropriately located access point. The combined effects of the preferred alternative along with the cumulative impacts from the past and future foreseeable projects would result in long-term minor adverse impacts to park operations and management. The overall contribution of this alternative to the cumulative impacts on park operations and management would be negligible.

Conclusion – The preferred alternative would have short and long-term minor adverse and long-term beneficial impacts on park management and operations due to the increased efficiency provided by the new entrance, the additional law enforcement monitoring that would be required and the staff involvement during the construction phase of the project. Cumulative impacts would be long-term, minor, and adverse, with the project contributing a negligible increment.

IMPACTS OF ALTERNATIVE C

Analysis – Alternative C would provide unrestricted access to the Chopawamsic Backcountry Area of Prince William Forest Park. Similar to the preferred alternative, short-term minor adverse impacts would occur during construction due to the management of the construction activities. Post construction, this alternative would potentially increase criminal activity, dumping, unauthorized camping and other unwanted activities as unrestricted visitor access would be permitted in this area. As a result, increased park law enforcement staff monitoring of the area would be necessary, resulting in long-term moderate adverse impacts on park management and operations.

Since the new access point would no longer be shared with Quantico, the coordination with Quantico and the replacement of locks at the Breckenridge Road gate would no longer be necessary for most Chopawamsic Backcountry Area visitors. The resulting impacts on park management and operations would be long-term beneficial.

As discussed under the impact discussion for visitor use and experience, there are two cemeteries that are accessible along Breckenridge Road. Under Alternative C, Breckenridge Road would be closed to public access, but those wishing to visit the cemeteries would obtain access from Prince William Forest Park under a procedure that is currently used for this area of the park. Therefore, no impact on park management and operations would occur.

Cumulative Impacts - Past, and future foreseeable projects that would impact park management and operations include the past roadway rehabilitation project and the park Access Entrance on VA 234. The past roadway rehabilitation project within Prince William Forest Park resulted in long-term beneficial impacts on park management and operations due to the improved roadways and parking facilities. The future park Access Entrance on VA 234 would be expected to have a long-term beneficial impact on park management and operations due to the appropriately located access point. The combined effects of the preferred alternative along with the cumulative impacts from the past and future foreseeable projects would result in long-term minor adverse impacts to park operations and management. The overall contribution of this alternative to the cumulative impacts on park operations and management would be negligible.

Conclusion – Alternative C would have short-term minor adverse, long-term moderate adverse and long-term beneficial impacts on park management and operations due to the open public access and the increased efficiency provided by the new entrance, the additional law enforcement monitoring that would be required and the staff involvement during the construction phase of the project. Cumulative impacts would be long-term, minor, and adverse, with the project contributing a negligible increment.

CONSULTATION AND COORDINATION

Coordination with local and federal agencies was conducted during the NEPA process to identify issues and/or concerns related to natural and cultural resources within Prince William Forest park.

NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION

In accordance with Section 106 of the National Historic Preservation Act, Prince William Forest Park sent a letter to the Virginia Department of Historic Resources on April 23, 2010 to make them aware of their intention to use the EA to complete Section 106 consultation. Included in this correspondence was a copy of the Draft Archeological Survey Report prepared by Berger for the 1.8 acre area. A copy of this EA would be provided to continue and complete the consultation. The final consultation letter from the Virginia Department of Historic Resources would be included with the Finding of No Significant Impact (FONSI).

ENDANGERED SPECIES ACT SECTION 7 CONSULTATION

In accordance with Section 7 of the Endangered Species Act, Prince William Forest Park provided information on potential impacts to federal and state listed species to USFWS, VDCR, and VDACS on April 26, 2010. Follow up phone calls with USFWS were conducted by Prince William Forest Park in September 2011. Copies of the coordination letters are provided in Appendix A. To date, no response has been received from USFWS, VDCR, or VDACS.

COASTAL ZONE MANAGEMENT ACT

Since Prince William County is located within the Virginia Coastal Zone Management Area, coordination with the VA DEQ under the Coastal Zone Management Act was initiated by phone on September 13, 2011. The VA DEQ indicated that a Coastal Zone consistency determination should be prepared and included in this EA. A copy of the Coastal Zone consistency determination prepared for this project is included in Appendix A.

LIST OF PREPARERS

NATIONAL PARK SERVICE

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18100 park Headquarters Road
Triangle, VA 22172

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George Liffert, Former Acting Superintendent
Paul Petersen, Resource Management
Colette Carmouche, Museum Technician
Eric Kelley, Park Biologist

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NATIONAL CAPITAL REGION

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Shannon Stewart, Biologist
Jennifer Miller, Environmental Scientist
Nicole Clune, P.E., Environmental Planner
Grant Bartee, P.E.
William Schindler, P.E.

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Appendix A

Agency Consultation Letters



IN REPLY REFER TO:

United States Department of the Interior

NATIONAL PARK SERVICE
Prince William Forest Park
18100 Park Headquarters Road
Triangle, VA 22172

H30 (PRWI)

April 26, 2010

Ms. Rene Hypes,
Environmental Review Coordinator
Virginia Natural Heritage Program
217 Governor Street, Third Floor
Richmond, VA 23219

COPY

Reference: New access point into Prince William Forest Park Chopawamsic Backcountry area, along US Route 619.
Subject: Compliance with Section 7 of the Endanger Species Act, National Environmental Policy Act, and Chapter 39 section 3 of the Code of Virginia: Endangered Plant and Insect Species Act.

Dear Ms. Hypes:

The National Park Service (NPS) is beginning to study different alternatives for a new access point into the Prince William Forest Park (PRWI) Chopawamsic Backcountry Area, along US Route 619.

We have begun the National Environmental Policy Act (NEPA) process for this project and we are drafting an Environmental Assessment for the work. In accordance with Section 7 of the Endangered Species Act and 50 CFR 402 Subpart B, the NPS is notifying your office in advance of the park's intention to use the NEPA process to meet its management obligations. The park extends this notification to the Virginia Department of the Natural Heritage and Virginia Department of Agriculture and Consumer Services for informal consultation.

The park has worked closely with the Virginia Department of Natural Heritage (VADNH) to inventory and monitor the federally threatened species, *Isotria medeoloides* or small whorled pogonia, a plant that occurs in PRWI. In 2009, Prince William Forest Park received a final draft of an *Isotria* Management Plan. This plan, developed by the VADNH, takes into consideration multiple surveys of *Isotria medeoloides* conducted from 1983 through 2007. Suitability modeling and surveys have identified approximately 3000 acres of land within PRWI as potential *Isotria medeoloides* habitat, and

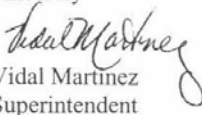
subsequently these lands have been surveyed for species presence and absence. Currently, there are 19 known locations of the plant in the park, ranging from single individuals to colonies of up to 28 plants. (See VA Natural Heritage Technical Report 09 - 12, and Management Plan for Small Whorled Pogonia (*Isotria medeoloides*) Colonies in Prince William Forest Park, Virginia - author Kevin Heffernan).

Additionally, the VADNH has produced a number of Natural Heritage Inventory reports regarding the rare and unique natural resources in the park. These include an inventory and assessment of eastern hemlock (*Tsuga Canadensis*), assessments of oligiotropic seepage swamps, and an assessment of a state listed rare sedge, *Carex vestita* (See Natural Heritage Technical Reports 95-24, 97-6, and 99-08).

The park is conducting this project in cooperation with the United States Department of the Navy, Quantico Marine Base, in accordance with a federal land exchange agreement. The park has agreed to initiate a new access point into park owned lands south of US Route 619, known as the Chopawamsic Backcountry Area. The new access will ensure stronger security measures for United States Navy, Quantico Marine Base lands adjacent to the park. In the spring of 2007, PRWI contracted Bill Brumback, botanist with the New England Wildflower Society, to conduct a field survey for *Isotria medeoloides* in and around the area of interest for the new access point. *Isotria medeoloides*, nor suitable habitat, was found within or surrounding the immediate area of potential impact. Currently, no known individuals or colonies of *Isotria medeoloides* are present in the Chopawamsic Backcountry Area, and the nearest known colony is over 1 mile northeast of the new access point. The project site is also neither on nor adjacent to any Natural Heritage Areas defined by the Virginia Department of Natural Heritage.

We look forward to working with your organization, and other consulting parties, and the public as we proceed with the environmental planning process for this project. If you believe more details are needed for your assessment, we would be happy to arrange a meeting with you at your convenience. Please contact me at (703) 221-2366 (email Vidal_Martinez@nps.gov), or Paul Petersen, Acting Chief of Resource Management at (703) 221-3329 (email Paul_E_Petersen@nps.gov).

Sincerely


Vidal Martinez
Superintendent

Cc:
Todd P. Haymore, VDAC Commissioner



IN REPLY REFER TO:

United States Department of the Interior

NATIONAL PARK SERVICE
Prince William Forest Park
18100 Park Headquarters Road
Triangle, VA 22172

H30(PRWI)

April 26, 2010

Mr. Tylan Dean,
Assistant Supervisor
Endangered Species & Federal Activities
US Fish & Wildlife Services Ecological Services
Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

COPY

Reference: New access point into Prince William Forest Park Chopawamsic Backcountry area, along US Route 619.
Subject: Compliance with Section 7 of the Endangered Species Act and National Environmental Policy Act

Dear Mr. Dean:

The National Park Service (NPS) is beginning to study different alternatives for a new access point into the Prince William Forest Park (PRWI) Chopawamsic Backcountry Area, along US Route 619.

We have begun the National Environmental Policy Act (NEPA) process for this project and we are drafting an Environmental Assessment for the work. In accordance with Section 7 of the Endangered Species Act and 50 CFR 402 Subpart B, the NPS is notifying your office in advance of the park's intention to use the NEPA process to meet its management obligations.

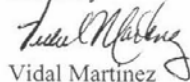
The park has worked closely with the Virginia Department of Natural Heritage (VADNH) to inventory and monitor the federally threatened species, *Isotria medeoloides* or small whorled pogonia, a plant that occurs in PRWI. Currently, park managers along with other specialists are reviewing a Draft *Isotria* Management Plan. This plan, developed by the VADNH, takes into consideration multiple surveys of *Isotria medeoloides* conducted from 1983 through 2007. Suitability modeling and surveys have identified approximately 3000 acres of land within PRWI as potential *Isotria medeoloides* habitat, and subsequently these lands have been surveyed for species

presence and absence. Currently, there are 19 known locations of the plant in the park, ranging from single individuals to colonies of up to 28 plants.

The park is conducting this project in cooperation with the United States Department of the Navy, Quantico Marine Base, in accordance with a federal land exchange agreement. The park has agreed to initiate a new access point into park owned lands south of US Route 619, known as the Chopawamsic Backcountry Area. The new access will ensure stronger security measures for United States Navy, Quantico Marine Base lands adjacent to the park. In the spring of 2007, PRWI contracted Bill Brumback, botanist with the New England Wildflower Society, to conduct a field survey for *Isotria medeoloides* in and around the area of interest for the new access point. Included with this correspondence is a final report from Mr. Brumback's survey. The results showed that *Isotria medeoloides*, nor suitable habitat, was found within or surrounding the immediate area of potential impact. Currently, no known individuals or colonies of *Isotria medeoloides* are present in the Chopawamsic Backcountry Area, and the nearest known colony is over 1 mile northeast of the new access point.

We look forward to working with your organization, and other consulting parties, and the public as we proceed with the environmental planning process for this project. If you believe more details are needed for your assessment, we would be happy to arrange a meeting with you at your convenience. Please contact me at (703) 221-2366 (email Vidal_Martinez@nps.gov), or Paul Petersen, Acting Chief of Resource Management at (703) 221-3329 (email Paul_E_Petersen@nps.gov).

Sincerely



Vidal Martinez
Superintendent



IN REPLY REFER TO:

United States Department of the Interior

NATIONAL PARK SERVICE

Prince William Forest Park
18100 Park Headquarters Road
Triangle, VA 22172

H30(PRWI)

April 23, 2010

Ms. Kathleen Kilpatrick,
State Historic Preservation Officer
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221

ATTN: *Ethel Eaton*
Reference: New access point into Prince William Forest Park Chopawamsic
Backcountry area, along US Route 619.
Subject: Compliance with Section 106 of the National Historic Preservation Act
and National Environmental Policy Act

Dear Ms Kilpatrick:

The National Park Service (NPS) is beginning to study different alternatives for a new access point into the Prince William Forest Park (PRWI) Chopawamsic Backcountry Area, along US Route 619.

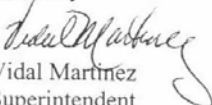
We have begun the National Environmental Policy Act (NEPA) process for this project and are beginning preparation for drafting an environmental assessment. In accordance with 36 CFR 800.8 © of the Advisory Council on Historic Preservation regulations, I am notifying your office in advance of the park's intention to use the NEPA process to meet its obligations under Section 106 of the National Historic Preservation Act.

Included with this letter is a draft report of an Archaeological Survey conducted at the work site. The report includes the project background, description of the project area, archaeological field investigation process, and results. Page 21 of the report concludes that no archaeological site is defined in the project location and recommends no further archaeological work is necessary.

We look forward to working with your organization, and other consulting parties, and the public as we proceed with the environmental planning process for this project. If you

believe more details are needed for your assessment, we would be happy to arrange a meeting with you at your convenience. Please contact me at (703) 221-2366 (email Vidal_Martinez@nps.gov), or Paul Petersen, Acting Chief of Resource Management at (703) 221-3329 (email Paul_E_Petersen@nps.gov).

Sincerely


Vidal Martinez
Superintendent

Coastal Zone Management Act (CZMA) Consistency Determination

This document provides the Commonwealth of Virginia with the National Park Service Consistency Determination under CZMA section 307(c)(1) [or (2)] and 15 CFR Part 930, subpart C, for the proposed new entrance to the Chopawamsic Backcountry Area in Prince William Forest Park. The information in this Consistency Determination is provided pursuant to 15 CFR §930.39. This activity includes:

Prince William Forest Park (the Park) an administrative unit of the National Park Service (NPS), in coordination with the United States Department of the Navy, Quantico Marine Base (Quantico), is proposing to construct a new entrance to the Chopawamsic Backcountry Area. The project area is located in Prince William County, Virginia. The location of the park within the region is shown in Figure 1. Figure 2 indicates the location of the project area within Prince William Forest Park. The need to create an alternate access point for the Chopawamsic Backcountry Area was identified as part of the federal land exchange agreement between the NPS and Quantico, and is specified in the Draft Recreation Plan for the Breckenridge Reservoir. The NPS was directed to provide an alternative access point into the area so that the current shared access road (Breckenridge Road) could be limited to Quantico staff or visitors, providing increased security at the Marine Base.

The project includes a new gravel public entrance road from State Route 619 (Joplin Road), an approximately 0.5 acre gravel parking lot and vault toilet system as well as the clean up of Bobcat Ridge Road within the Chopawamsic Backcountry Area. The project would also incorporate up-to-date wayside exhibits and new signage.



Figure 1: Region
Environmental Assessment
Proposed Chopawamsic Access



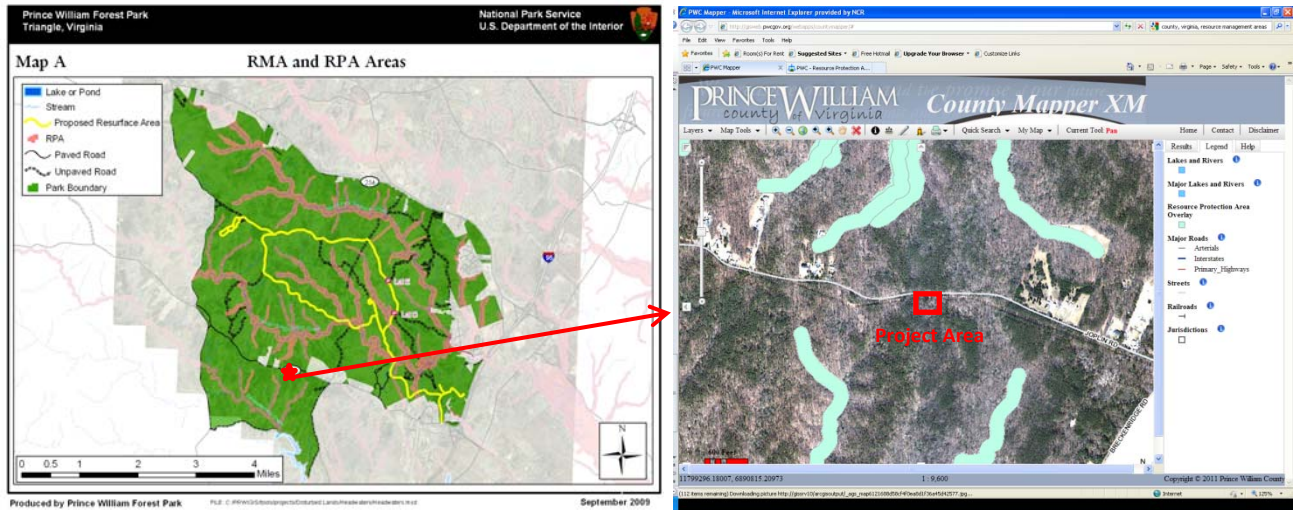
Figure 2: Project Location
Environmental Assessment
Proposed Chopawamsic Access

For a more detailed project description see the New Entrance to the Chopawamsic Backcountry Area EA (parent document), the Purpose and Needs section and the Alternatives section.

The National Park Service has determined that the construction of a new entrance in the Chopawamsic Backcountry Area affects the land or water uses or natural resources of Virginia in the following manner:

- a. Fisheries Management – The project area is adjacent to state Route 619 (Joplin Road) and a legacy fire road, the Bobcat Ridge Road, both of which are situated on ridgelines. There are no perennial or intermittent streams within 500 meters of the proposed entrance site. No Tributyltin based paint products, herbicides, or pesticides are to be used for this project. Therefore the park is confident that there are no effects on fisheries management.
- b. Subaqueous Lands Management – There are no subaqueous lands at the proposed entrance site. A wetlands determination was conducted and hydric soil, hydrophytic vegetation, and wetland hydrology were absent from the site (see EA/AE Appendix B, Wetlands Determination)
- c. Wetlands Management – A wetlands determination was conducted and hydric soil, hydrophytic vegetation, and wetland hydrology were absent from the site (see EA/AE Appendix B, Wetlands Determination)
- d. Dunes Management – Prince William Forest Park lies along the confluence of the eastern piedmont and the Atlantic coastal plain. The habitat of the proposed entrance area is a mixed deciduous hardwood forest (see EA/AE Environmental Consequences, Vegetation). No dunes are present.
- e. Non-point Source Pollution Control – Impacts on soil erosion is discussed in detail as an impact topic in the EA/AE. The park has an established Soil Erosion and Sedimentation plan for project implementation. The plan contains mitigation measures to minimize impacts on soil movement including the installation of silt fencing and restriction of vehicular or construction traffic during or after precipitation events.
- f. Point Source Pollution Control – Prince William Forest Park has implemented an Environmental Management System, which includes an Emergency Operations Plan. This plan addresses hazardous chemical spills, the primary contributor to point source pollution. The document has been attached as a supplement to this CZMA consistency determination. In the event of a chemical spill during the construction of the new parking lot or vaulted toilet, the appended procedures will be initiated and completed.
- g. Shoreline Sanitation – This project does include the installation of a vaulted pit toilet. The desired design for the toilet will be a single room above-ground bathroom structure with a below-ground septic vault (See EA/AE Appendix D, Conceptual Design). The vault will be evacuated/pumped-out on a monthly or bi-monthly basis, depending on the seasonal fluctuation and use. The nearest intermittent stream is approximately 500 meters from the planned vaulted toilet site, and the nearest water body, the Breckenridge Reservoir, is approximately 2000 meters away. The habitat surrounding the planned vaulted toilet site is heavily forested and flat, therefore leaks to the vault system would be localized and fairly stationary. The NPS will conduct regular inspections of their toilet vault as per Standard Operating Procedures for all septic units in the Prince William Forest Park.
- h. Air Pollution Control – The proposed parking could remove as many as 189 trees, with a total of 6,630 square feet of basal area. However, Prince William Forest Park mitigates tree removal by fulfilling an annual goal of planting a minimum of 200 trees within the Park's boundaries. The project will have minor short-term impacts of air pollution due to the use of construction equipment at the site. The Park's construction equipment are regularly inspected and meets Virginia air quality standards.

i. Coastal Lands Management –



Prince William Forest Park is situated in Prince William County, Virginia. All land within the county is identified as Resource Management Areas (RMA's). Resource Protection Areas (RPA's) are defined in the two maps above, Map A and the Prince William County Mapper XM screen shot. The Project site is denoted in red on the left by a star, and on the right map by a red bounding box. As previously stated, the proposed project is situated adjacent to state route 619 (Joplin Road), which is a ridgeline and the divider between the Chopawamsic and Quantico Creek watersheds. The closest stream is approximately 500 meters in distance, and the site is obviously not in a RPA. The site is within a RMA and will be assessed by Prince William County for impacts and mitigations as outlined by the Chesapeake Bay Preservation Act. Developing is permitted within RMA's in Prince William County in accordance with the County's Comprehensive Plan.

Based upon the following information, data, and analysis, the National Park Service finds that the construction of a new entrance to the Chopawamsic Backcountry Area is consistent to the maximum extent practicable with the enforceable policies of the Virginia Coastal Zone Management Program.

For further information, comprehensive data, and analysis of the proposed actions, please see the compliance document '*New Entrance to Chopawamsic Backcountry Area EA/AE*'.

Pursuant to 15 CFR Section 930.41, the Virginia Coastal Zone Management Program has 60 days from the receipt of this letter in which to concur with or object to this Consistency Determination, or to request an extension under 15 CFR section 930.41(b). Virginia's concurrence will be presumed if its response is not received by the National Park Service on the 60th day from receipt of this determination. The State's response should be sent to:

Prince William Forest Park
c/o: George Liffert
18100 Park Headquarters Road
Triangle, VA 22172

George.Liffert@nps.gov
703-221-2947

Hazardous Chemical Spill

Prince William Forest Park

Responding to large hazardous chemical releases (over 5 gallons) and treating persons injured as a direct result from a hazardous chemical release involves advanced technical training and equipment. PRWI is not equipped to handle large or extremely hazardous chemical releases. As with any emergency situation – **PERSONAL SAFETY is the TOP priority**. Do not risk injury to yourself or others in attempts to save property or equipment.

NON-INJURY CHEMICAL RELEASE. If you suspect a hazardous chemical release at your work site, or if an actual release has occurred, the following guidelines should be initiated:

	IMMEDIATELY NOTIFY YOUR SUPERVISOR, the PARK SAFETY OFFICER, and the on-duty LE Ranger.
1.	Assess the Situation:
	Look at the potential overall effects of the chemical release: <ul style="list-style-type: none">• How much chemical has been spilled?• How recent is the spill?• Is the chemical likely to spread quickly?• How will the weather or other environmental factors affect the spread of the contaminant?• Are water sources nearby?
	<ul style="list-style-type: none">• Perform a quick initial size up to determine if additional resources may be needed.
	<ul style="list-style-type: none">• If there is a chance you are contaminated, notify others of that possibility before you contaminate them, as well.
2.	Identify the Hazard:
	If the chemical is known:
	<ul style="list-style-type: none">• Inform responding units of the identity and quantity of chemical spilled.
	<ul style="list-style-type: none">• Locate a copy of the Material Safety Data Sheet (MSDS) for the chemical from the Vehicle Shop.

	<ul style="list-style-type: none"> Read and follow the precautions on the MSDS sheet.
	<ul style="list-style-type: none"> If there is no available MSDS sheet, use the yellow Emergency Response Guide to look up the common name in the blue section of the book. That information will lead you to other sections in the book that will describe precautions to take.
	If the chemical is unknown:
	<ul style="list-style-type: none"> If able to do so from a distance, with binoculars identify the exact chemical involved in the spill using the four digit UN/NA Numbers on the container's label.
	<ul style="list-style-type: none"> If no identification label exists, contact employees familiar with the area who may know the identity of the product.
	<ul style="list-style-type: none"> REMEMBER: NPS Policy prohibits employees from entering areas where hazardous substances have been discharged.
	<ul style="list-style-type: none"> REMEMBER: OSHA mandates that employees entering areas where hazardous substances are spilled receive a minimum of 24 hours of emergency spill responder training.
3.	Secure the Scene
	If the chemical is known:
	<ul style="list-style-type: none"> Prepare any spill containment/clean-up equipment that you have available and apply as trained. Emergency spill kits are located in the shed next to gas pumps in maintenance.
	<ul style="list-style-type: none"> If not trained in spill response, notify park employees who are trained in emergency spill response: Rocky Schroeder.
	<ul style="list-style-type: none"> Establish a safety zone around the spill area to prevent untrained or non-essential personnel from entering the area
	<ul style="list-style-type: none"> If fire is involved or you suspect (or know) that chemical to be extremely hazardous, notify 911 and Park Dispatch and evacuate the area.
	<ul style="list-style-type: none">
	<ul style="list-style-type: none"> Under no circumstances should NPS employees enter areas where the hazardous substance is Immediately Dangerous to Life and Health (IDLH)
	If the chemical is unknown:
	<ul style="list-style-type: none"> Assume the substance is hazardous
	<ul style="list-style-type: none"> Assume the substance is flammable
	<ul style="list-style-type: none"> Predetermine and escape route
	<ul style="list-style-type: none"> Keep flammables away from the area
	<ul style="list-style-type: none"> Do not come in contact with the substance

	<ul style="list-style-type: none"> • Ensure all bystanders are upwind and uphill of the spill.
4.	Report the Spill/Obtain Help
	<ul style="list-style-type: none"> • Notify a Protection Park Ranger Call #210
	<ul style="list-style-type: none"> • Report known information to the local HAZ-MAT response teams (911)
	<ul style="list-style-type: none"> • Complete the accompanying spill report form
	<ul style="list-style-type: none"> • HAZWOPPER-trained personnel should determine if the National Response Center should be contacted (1-800-424-8802)

	Protection Park Ranger Response
	<ul style="list-style-type: none"> • Ensure area is evacuated and closed off
	<ul style="list-style-type: none"> • Ensure all bystanders are upwind and uphill of the spill.
	<ul style="list-style-type: none"> • Interview reporting persons
	<ul style="list-style-type: none"> • Interview witnesses and take statements
	<ul style="list-style-type: none"> • If possible, identify potentially responsible parties
	<ul style="list-style-type: none"> • Complete case incident report

CHEMICAL EMERGENCY INVOLVING AN INJURY: If someone has become injured or ill due to a hazardous chemical, the following guidelines should be used:

	<ul style="list-style-type: none"> • If able to do so without risk or injury to yourself or others, immediately remove the person from the affected area, and call 911.
	<ul style="list-style-type: none"> • Administer appropriate and available first aid to the affected person(s) only to your trained level.
	<ul style="list-style-type: none"> • In addition to the emergency responses in the blocks above, notify your Supervisor and Park Safety Officer as soon as possible.

Appendix B

Wetland Determination

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: PRWI Chopowamsac City/County: Prince William Sampling Date: 10/20/2010
 Applicant/Owner: National Park Service State: VA Sampling Point: remarks
 Investigator(s): Paul Petersen, Kim Sawyer Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): flat terrace Local relief (concave, convex, none): _____ Slope (%): 0 - 3 %
 Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____
 Soil Map Unit Name: Quantico Sandy Loam NWI classification: not classified
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ☒ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks: -77.397104 38.562610 Decimal Degrees, NAD 83 datum		

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
<u>Primary Indicators (minimum of one is required; check all that apply)</u>			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15) (LRR U)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present?	Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
Water Table Present?	Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	
Saturation Present? (includes capillary fringe)	Yes _____ No <input checked="" type="checkbox"/>	Depth (inches): _____	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Park natural resource staff repeatedly visited the site during different seasons from 2007 through the current day. At no point have any of the aforementioned indicators been present.			

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot sizes: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Quercus falcata</u>	5	yes	FACU
2. <u>Quercus stellata</u>	2	no	UPL
3. <u>Fagus grandifolia</u>	15	yes	FACU
4. <u>Liquidambar styraciflua</u>	2	no	FAC
5. <u>Acer rubrum</u>	25	yes	FAC
6. <u>Ilex opaca</u>	15	no	FACU
7. <u>Juniperus virginiana</u>	2	no	FACU
_____ = Total Cover			
Sapling Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Nyssa sylvatica</u>	3	no	FAC
2. <u>Quercus alba</u>	2	yes	FACU
3. <u>Asimina triloba</u>	3	no	FACU
4. <u>Liriodendron tulipifera</u>	10	yes	FACU
5. <u>Sassafras albidum</u>	1	no	FACU
6. <u>Diospyros virginiana</u>	1	no	FAC
7. <u>Cornus florida</u>	2	no	FACU
_____ = Total Cover			
Shrub Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Smilax rotundifolia</u>	3	no	FAC
2. <u>Rosa multiflora</u>	2	no	FACU
3. <u>Aralia spinosa</u>	1	no	FAC
4. <u>Berberis thunbergii</u>	1	no	FACU
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
_____ = Total Cover			
Herb Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Sorghastrum nutans</u>	1	no	FACU
2. <u>Lonicera japonica</u>	2	no	FAC
3. <u>Microstegium vimineum</u>	3	yes	FAC
4. <u>Lycopodium complanatum</u>	15	yes	FACU
5. <u>Toxicodendron radicans</u>	3	no	FAC
6. <u>Polystichum acrostichoides</u>	10	yes	FACU
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
12. _____	_____	_____	_____
_____ = Total Cover			
Woody Vine Stratum (_____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
_____ = Total Cover			

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: .25 (A/B)

Prevalence Index worksheet:

Total % Cover of: _____ Multiply by: _____

OBL species 0 x 1 = _____

FACW species 0 x 2 = _____

FAC species 42 x 3 = 126

FACU species 48 x 4 = 192

UPL species 2 x 5 = 10

Column Totals: 92 (A) 328 (B)

Prevalence Index = B/A = 3.6

Hydrophytic Vegetation Indicators:

_____ Dominance Test is >50%

_____ Prevalence Index is ≤3.0¹

_____ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present.

Definitions of Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size. Includes woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes _____ No ✓











































Remarks: (If observed, list morphological adaptations below).

Sampling Point:

[illegible]

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Indicators for Problematic Hydric Soils³:

- | | | |
|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
|  Histosol (A1) |  Polyvalue Below Surface (S8) (LRR S, T, U) |  1 cm Muck (A9) (LRR O) |
|  Histic Epipedon (A2) |  Thin Dark Surface (S9) (LRR S, T, U) |  2 cm Muck (A10) (LRR S) |
|  Black Histic (A3) |  Loamy Mucky Mineral (F1) (LRR O) |  Reduced Vertic (F18) (outside MLRA 150A,B) |
|  Hydrogen Sulfide (A4) |  Loamy Gleyed Matrix (F2) |  Piedmont Floodplain Soils (F19) (LRR P, S, T) |
|  Stratified Layers (A5) |  Depleted Matrix (F3) |  Anomalous Bright Loamy Soils (F20) |
|  Organic Bodies (A6) (LRR P, T, U) |  Redox Dark Surface (F6) |  (MLRA 153B) |
|  5 cm Mucky Mineral (A7) (LRR P, T, U) |  Depleted Dark Surface (F7) |  Red Parent Material (TF2) |
|  Muck Presence (A8) (LRR U) |  Redox Depressions (F8) |  Very Shallow Dark Surface (TF12) (LRR T, U) |
|  1 cm Muck (A9) (LRR P, T) |  Marl (F10) (LRR U) |  Other (Explain in Remarks) |
|  Depleted Below Dark Surface (A11) |  Depleted Ochric (F11) (MLRA 151) | |
|  Thick Dark Surface (A12) |  Iron-Manganese Masses (F12) (LRR O, P, T) | |
|  Coast Prairie Redox (A16) (MLRA 150A) |  Umbric Surface (F13) (LRR P, T, U) | ³ Indicators of hydrophytic vegetation and wetland hydrology must be present. |
|  Sandy Mucky Mineral (S1) (LRR O, S) |  Delta Ochric (F17) (MLRA 151) | |
|  Sandy Gleyed Matrix (S4) |  Reduced Vertic (F18) (MLRA 150A, 150B) | |
|  Sandy Redox (S5) |  Piedmont Floodplain Soils (F19) (MLRA 149A) | |
|  Stripped Matrix (S6) |  Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) | |
|  Dark Surface (S7) (LRR P, S, T, U) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present.

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Soil is consistent of the Quantico Series, specifically the Quantico Sandy Loam. The Quantico series consists of very deep and well drained soils formed in stratified marine and fluvial sediments of the northern coastal plain. Permeability is moderate. Slope ranges from about 0 to 25 percent. Mean annual precipitation is about 40 inches and mean annual air temperature is about 53 degrees F.

Solum thickness ranges from 30 to more than 60 inches. Depth to bedrock is more than 60 inches. Substratum is stratified coastal plain sediments, dominantly of feldspathic sands. Rock fragments of rounded to subrounded quartz gravel range from 1 to 15 percent in the solum and substratum. Reaction is very strongly acid or strongly acid; unless limed.

The A horizon has hue of 7.5YR to 2.5Y, value of 2 to 5 and chroma of 0 to 4. Value of 4 or less with chroma of 3 or less are limited to thin A horizons. The A horizon is sandy loam, sandy clay loam, clay loam or loam.

The E horizon has hue of 10YR to 2.5Y, value of 4 to 6 and chroma of 3 or 4. It is loam or sandy loam.

The Bt horizon has hue of 5YR to 10YR, value of 4 to 6 and chroma of 4 to 8. Low chroma parent material mottling is common in some pedons. Texture is clay loam to clay.

The C horizon is multicolored in shades of brown, yellow, red and white. Texture is sandy loam to sandy clay.

Quantico soils are on medium to broad drainage divides of the older coastal plain terraces. Elevations generally range

Appendix C

Draft Impairment Determination

APPENDIX C

DRAFT IMPAIRMENT DETERMINATION

New Entrance to Chopawamsic Backcountry Area

The Prohibition on Impairment of park Resources and Values

NPS Management Policies 2006, Section 1.4.4, explains the prohibition on impairment of park resources and values:

While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them.

What is Impairment?

NPS *Management Policies 2006*, Section 1.4.5, *What Constitutes Impairment of park Resources and Values*, and Section 1.4.6, *What Constitutes park Resources and Values*, provide an explanation of impairment.

Impairment is an impact that, in the professional judgment of the responsible National park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values.

The NPS has discretion to allow impacts on park resources and values when necessary and appropriate to fulfill the purposes of a park (NPS 2006c sec. 1.4.3). However, the NPS cannot allow an adverse impact that would constitute impairment of the affected resources and values (NPS 2006c sec 1.4.3).

Section 1.4.5 of *Management Policies 2006* states:

An impact to any park resource or value may, but does not necessarily, constitute impairment. An impact would be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or
- Identified as a goal in the park's general management plan or other relevant NPS planning documents as being of significance.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values and it cannot be further mitigated.

Per Section 1.4.6 of *Management Policies 2006*, park resources and values that may be impaired include:

- the park's scenery, natural and historic objects, and wildlife, and the processes and condition that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structure, and objects; museum collections; and native plants and animals;
- appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;
- the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- any additional attributes encompassed by the specific values and purposes for which the park was established.

Impairment may result from NPS activities in managing the park, visitor activities, or activities undertaken by concessionaires, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park, but this would not be a violation of the Organic Act unless the NPS was in some way responsible for the action.

How is an Impairment Determination Made?

Section 1.4.7 of *Management Policies 2006* states, "[i]n making a determination of whether there would be an impairment, an NPS decision maker must use his or her professional judgment. This means that the decision-maker must consider any environmental assessments or environmental impact statements required by the National Environmental Policy Act of 1969 (NEPA); consultations required under Section 106 of the National Historic Preservation Act (NHPA); relevant scientific and scholarly studies; advice or insights offered by subject matter experts and others who have relevant knowledge or experience; and the results of civic engagement and public involvement activities relating to the decision.

Management Policies 2006 further define "professional judgment" as "a decision or opinion that is shaped by study and analysis and full consideration of all the relevant facts, and that takes into account the decision-maker's education, training, and experience; advice or insights offered by subject matter experts and others who have relevant knowledge and experience; good science and scholarship; and, whenever appropriate, the results of civic engagement and public involvement activities relation to the decision.

Impairment Determination for the Preferred Alternative

This determination on impairment has been prepared for the preferred alternative described on page 19 and 20 of this EA. An impairment determination is made for all resource impact topics analyzed for the preferred alternative. An impairment determination is not made for visitor use and experience and park management and operations because impairment findings relate back to park resources and values, and

these impact areas are not generally considered to be park resources or values according to the Organic Act, and cannot be impaired in the same way that an action can impair park resources and values.

The preferred alternative will result in short and long-term negligible to moderate adverse impacts on some of the park's resources that are considered in the impairment analysis which includes vegetation, soils and cultural landscapes.

As described in the Prince William Forest Park Master Plan, Prince William Forest Park was intended "to provide a suitable playground for the peoples of metropolitan Washington and Northern Virginia (NPS, 1959)" that would provide campsites for the experienced camper, and areas within the park for outdoor recreational activities such as hiking, picnicking, swimming and fishing. The park's mission is to provide a natural and scenic environment for a healthful, interpretive, and spiritual type of outdoor recreation, and to preserve the necessary park and open space to meet the demands of the growing Capital City (NPS, 1959).

Vegetation

Part of the mission of Prince William Forest Park is to provide a natural environment and protect and preserve the park's natural resources, which includes the largest contiguous piedmont forest system in the National Park Service. Under the preferred alternative, vegetation removal would be required for the construction of the gravel parking area, access road and vault toilet. The project would impact a maximum of 189 trees (6,630 square feet in basal area) and remove 403 cubic yards of topsoil. The vegetation within the 0.5 acre impact area contains species that are widespread in the park; no locally rare species are present (NPS, 2011c).

While the preferred alternative will impact up to 189 trees within the piedmont forest in Prince William Forest Park, the resulting impacts would only be moderate in intensity, indicating only a small portion of the forest system would be impacted. The park would be able to continue to provide a natural and scenic environment for outdoor recreation and would protect the piedmont forest, as a significant natural resource. Since the park would continue to meet the park mission and fulfill the park purpose under the enabling legislation, the preferred alternative would not result in impairment.

Soils

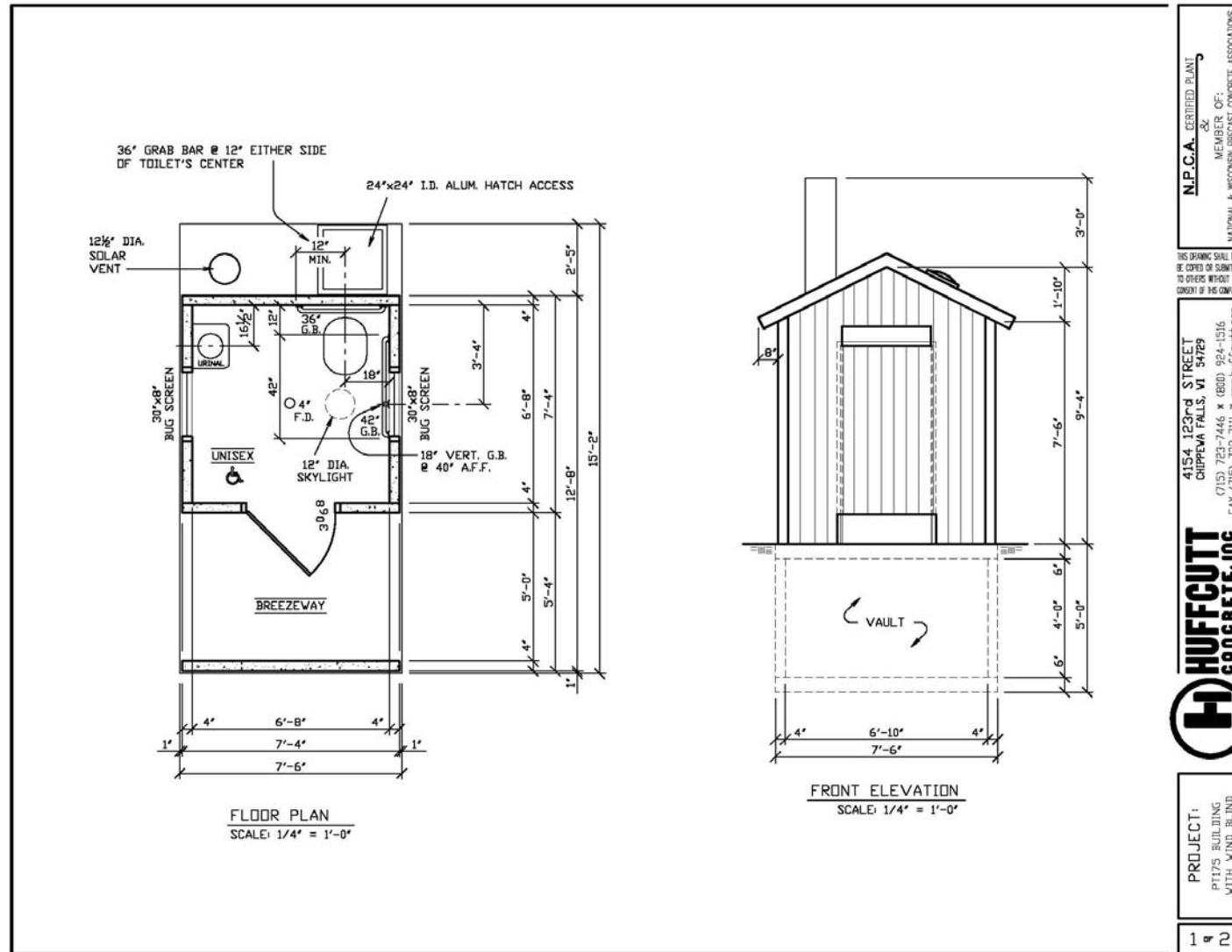
Part of the mission of Prince William Forest Park is to protect and preserve the park's natural resources, which includes stabilized soils that support natural vegetation and wildlife habitat within the park. Construction activities, increased visitor use and the conversion of native soil areas to a gravel parking lot would have a long-term minor adverse impact on the soils. Mitigation measures will be in place to limit the impact to the project areas and to prevent sedimentation in Quantico Creek and ultimately the Chesapeake Bay. Since the Selected Alternative would not inhibit the park's ability to protect natural resources, including stabilized and productive soils, the alternative will not result in impairment.

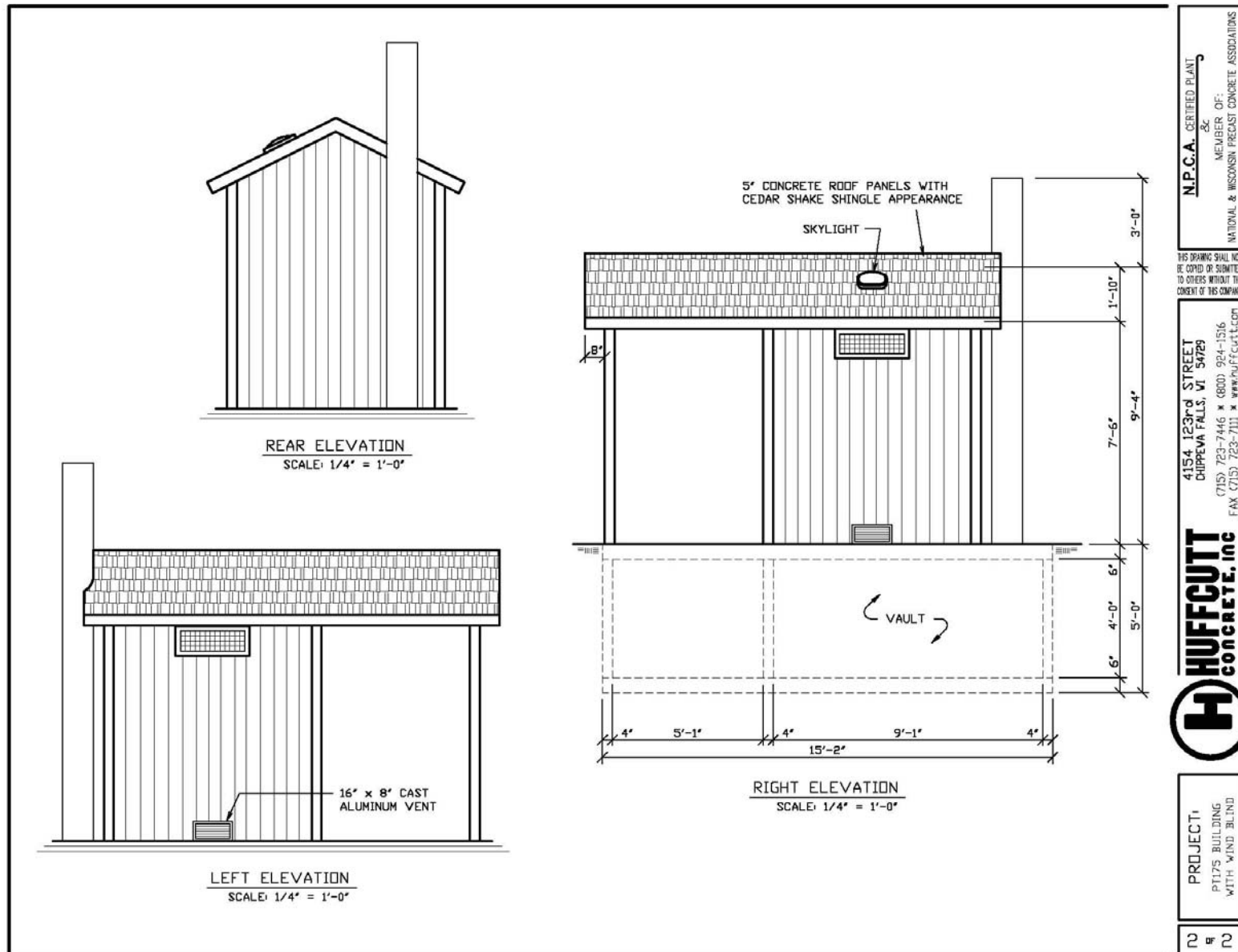
Cultural Landscapes

Under the preferred alternative, the potential cultural landscape in the vicinity of Bobcat Ridge Road and the new parking lot area would be impacted. As a result of the project, visitor use of the area would be expected to increase, which would allow more visitors to experience the cultural significance of the area. While adverse impacts to cultural landscapes would occur under the preferred alternative, they are limited to minor intensity, and long-term beneficial impacts would also result, which would allow the park to continue to meet the park mission to preserve and protect cultural resources and fulfill the park purpose under the enabling legislation. Therefore, the preferred alternative would not result in impairment of cultural landscapes.

Appendix D

Conceptual Drawings for Restroom Facility





Appendix E
Draft *Isotria medeoloides* Survey Report

DRAFT Survey for *Isotria medeoloides* (small whorled pogonia) in Chopawamsic Backcountry Area, Prince William Forest Park, Triangle VA.

William E. Brumback, Conservation Director, New England Wild Flower Society.

Background:

The terrestrial orchid, *Isotria medeoloides* (small whorled pogonia) ranges from Ontario, Canada in the north, east to Maine, southward to Georgia and west to Indiana and Illinois. The majority of populations of this species are in New Hampshire and Maine. This plant species is often difficult to find on the landscape, in part because of its relatively small, nondescript habit and in part because of its ability to remain dormant below ground for a number of years before re-emerging. Habitat for this species has been described as having one or more of the following attributes (The Nature Conservancy, 1983, Eaves 2004, Brumback, personal observation.)

- Shaded woods, often a mixture of deciduous and evergreen trees, usually in light shade. Recent research in the northeast (Brumback et al, in prep.) has shown that increased light resulting from partial canopy removal has benefited declining populations.
- A temporary (sometimes vernal) water source nearby.
- Sloping terrain, usually a gentle, not steep, slope.
- Shallow soils or those with a fragipan layer. Fragipan soils have a dense sublayer that precludes percolation of groundwater, creating lateral moisture movement resulting in fast runoff.
- Relatively light leaf litter. Although some plants in the northeast emerge through dense leaf litter, dense leaf litter could theoretically inhibit germination of seed.

The species is known to exist in several areas of the Prince William Forest Park. Using GIS, Eaves (2004) developed a habitat model for this species in the Park. Her model combined various data layers within the Park including soil type, canopy character, slope, and aspect within the habitat parameters provided by the existing literature. She states,

“To sum up, *I. Medeoloides* [sic] is generally found in mixed deciduous forests in low nutrient, acidic sandy loam soils with a fragipan layer. It prefers flat to gentle slopes less than 30 degrees, and remains at base to mid-slope levels where moisture is more available. Additionally, it prefers north to northeast aspect slopes in Virginia. Canopy breaks such as downed trees or streams resulting in more available sunlight benefit the plant, although a profuse groundcover layer does not.” (Eaves , 2004).

Current Project:

The Chopawamsic Back Country area of Prince William Forest Park had not been previously surveyed for *Isotria medeoloides*. Typically surveys for this orchid species occur in late May, June, and early July. In the northeast, this species emerges in late May, and flowers in early June. Non-flowering plants also emerge during this period, but more may emerge through July. It is common to find new plants during July and August surveys, partly because the small plants are easier to see at this time after spring ephemeral species have gone dormant. The survey described in this report took place from July 16 –July 21, well after blooming has passed, but well within the normal time for locating this plant. On July 16, Paul Petersen, Park Biologist, and I visited one site for *Isotria medeoloides* that contained over 20 plants

in 2007 (true?). The plants are located in a stream bottom (within 10 -20 yards of the stream) marked by high tree canopy and slight leaf litter. We located some, but not all, of the plants that had been seen by Park staff earlier in 2007. We did find at least two new stems that had emerged since the site was surveyed in June 2007. Based on these observations, it seemed likely that stems of *Isotria medeoloides* would still be visible during these July surveys of the Chopawamsic Backcountry Area.

While drought can play a role in the survival of emerging stems, another major factor affecting the disappearance of stems after emergence is deer. On a previous visit to collect seed in the Park for a national seed banking effort (Brumback, 2005) a number of stems that had held seed pods had disappeared before seed was ripe, and it seemed likely that predation by deer was the cause. Herbivory by deer is obvious throughout the Park.

Purpose of the Study: The purpose of this project was to locate the terrestrial orchid species, *Isotria medeoloides* (small whorled pogonia) in four areas of the Chopawamsic Backcountry Area of Prince William Forest Park. These areas had not been surveyed previously for the presence of *Isotria medeoloides*. These areas included:

Area 1. 200 yards on either side of an old logging road between Rt. 619 and the Chopawamsic Trail. (Figure 1 – #1 on map)

Area 2. The Chopawamsic Trail itself and 50 yards around all campsites along the trail. (Figure 1 – brown line, Figure 2 – orange line, Figure 3 – dotted line.)

Area 3. – Predicted suitable habitat in the area circumscribed by the Chopawamsic Trail. (Figure 3- highlighted yellow sections, Figure 5 – pink sections).

Area 4 – a logging road off RT.619 – (Figure 1 – # 3 on map)

Note – Area 4 (#3 on map) had not been previously designated as an area of high potential for *Isotria medeoloides*. After consultation with Park staff, it was excluded from this study.

Study Timetable: Monday, July 16 – Saturday July 21 – William E. Brumback and Park Staff:

Day 1 – July 16 – Introduction to survey areas with Paul Petersen (Biologist), obtained maps, viewed current sites of *Isotria medeoloides* in the Park to ascertain condition of plants and suitable habitat parameters.

Day 2 – July 17 –Area 1 - Surveyed west side of logging road in Area 1 (Figure 1 – # 1) with Allison Carlstrom (Park Service temporary staff)

Day 3- July 18 – Surveyed the Chopawamsic Trail itself and 50 yards around all campsites along the trail (Figure 2, Figure 3) with Rehanon Nehus (Park Service temporary staff).

Day 4 – July 19 – Surveyed habitat directly adjacent to the stream running through the area enclosed by the Chopawamsic Trail as well as areas of apparently suitable habitat 50 yards on either side of stream

(Figure 2 and Figure 3- blue line, Figure 4, blue squares) with Gavin Richard (Park Service temporary staff).

Day 5 – July 20 – Area 1 – Surveyed east side of logging road in Area 1 with Allison Carlstrom (Park Service temporary staff). (Figure 1 – Area 1)

Day 6. – July 21 – Surveyed four areas of predicted suitable habitat within the area enclosed by the Chopawamsic Trail. (Figure 3 and Figure 5.)

Survey Results

Please note that all Figures, with the exception of Figure 4, were provided by Paul Petersen, Biologist, and Allison Carlstrom, Map Technician, Prince William Forest Park.

1). Area 1 - 200 yards on both sides of an old logging road running between Rt. 619 and the Chopawamsic Trail. (See Figure 1 – #1 on map). William Brumback and Allison Carlstrom, surveyors.

The two-day survey (July 17 and July 20) of this area yielded no *Isotria medeoloides* plants. The survey was accomplished using a Trimble GPS unit in real time. The logging road and a 200 yard perimeter were programmed into the GPS unit by Allison Carlstrom. Our survey procedure consisted of walking side-by-side approximately 20 meters apart, perpendicular to the logging road, on compass bearings set from the trail to an identifiable tree. Each surveyor then criss-crossed his own 20-meter area searching for *Isotria* until the target tree was reached. Once this tree was reached, the same compass bearing was used to target the next target tree, and that area was then searched. This procedure was repeated until the 200 yard perimeter was reached on the GPS unit. We then moved approximately 30- 40 yards and searched back towards the road using the same procedure on the reverse compass bearing. Using this method we were able to thoroughly scour the area, but we did not find any plants of *Isotria medeoloides*.

Most of Area 1 contains little apparently suitable habitat for *Isotria medeoloides*. Much of the west side is near Rt. 619, is often disturbed, and is replete with non- native invasive plant species. There are a few scattered areas of potentially suitable habitat, particularly towards the south end. In addition there is a small creek that weaves in and out of the 200 yd perimeter edge on the west side that appears to contain suitable habitat. On the east side of the logging road, there is very little suitable habitat. The most likely habitat is at the south end near the intersection of the old logging road with the Chopawamsic trail.

2). The Chopawamsic Trail itself and 50 yards around all campsites along the trail. (Figure 1- brown line, Figure 2- orange line, Figure 3 – dotted line.). - William Brumback and Rehanon Nehu

We began our survey by entering the Chopawamsic Trail from the parking lot which is reached through the access road to the east of the Trail. Beginning at the Trail parking lot and moving counter clockwise around the trail, we surveyed 10 yards on either side of the trail, the campsites themselves including the access paths to the campsites, and 50 yards around each campsite. We did not locate any *Isotria medeoloides* during this survey. Figure 4. shows the campsites as blue circles with “C#” captions and a

blue triangle for the parking lot. The text associated with Figure 4. also gives the GPS points (using Garmin 12 GPS in NAD27central with coordinates in UTM).

Campsite 10 (C#10). - Some good habitat within 50 yards south of the campsite. The relatively common orchid species, *Liparis liliifolia*, is found in several places near the campsite. This area was searched again as part of the search of predicted habitat (see below).

Campsite 9 (C#9). - Much of this area is dense shade which is unlikely to support the species. Sections of the campsite and the access road are dense stands of *Kalmia latifolia*, and *Isotria medeoloides* is not likely to be found in the dense shade of this species.

Campsite 8 (C#8). – No remarkable habitat in the vicinity of the campsite, but some relatively large stands of *Medeola virginiana* can be found here.

Campsite 7. – Could not be located – missing.

Campsite 6 (C#6). – Appears to be suitable habitat in the area around the campsite although no plants of *Isotria* were located. There is less leaf litter here than at some other campsites.

Campsite 5 (C#5). – Potential habitat here. Campsite is up high within some steep slopes leading to a stream and a ditch.

Campsite 4 (C#4) – Not much suitable habitat. Much of this site is wet meadow.

Campsite 3 (C#3) – No apparent habitat. The campsite is located atop a small hill with very steep sides. There is potential habitat along the trail leading to the campsite and also near a stream off the trail. *Cynoglossum virginianum* occurs in abundance near the streamside indicating a fairly rich area.

Campsite 2 (C#2) – *Isotria* not likely to exist here. A large twin-trunk oak dominated this campsite. Much of the surrounding area is young, regenerating woodland, which produces too dense shade for *Isotria*. There is abundant evidence of fire in this area.

Campsite # 1 (C#1??) – This campsite has been missing for some time. We may have located the campsite, but the general location on Figure 3, given to us by Park Staff as the previous location does not match the location we marked (Figure 4.)

3. Stream Survey within the area enclosed by the Chopawamsic Trail. – William Brumback and Gavin Richard. (Figures 1,2, and 3 – blue line)

Because *Isotria medeoloides* has an affinity for habitats along streams at least one other site in the Prince William Forest Park as well as other parts of its range, we surveyed the entire length of a stream running through the area enclosed by the Chopawamsic Trail. This stream is illustrated in Figures 1, 2, and 3 as a blue line running northeast to southwest. We surveyed the habitat directly adjacent to the stream as well as areas of apparently suitable habitat within 50 yards on either side of stream.

We accessed the stream by walking south on the logging road through Area 1 south until we reached the Chopawamsic Trail (Figure 1). At the trail junction we then walked southeastwardly on the Chopawamsic Trail past Campground # 8 (Figure 3) until we reached the stream. From this point, we followed the stream southwesterly, checking suitable habitat away from the stream when accessible, until we reached the Chopawamsic Trail at the southern end of the stream.

We found no *Isotria medeoloides* along the stream or in adjacent habitat. Most of the area surrounding the stream, however, is often very steep and does not provide much immediate suitable habitat. Moreover, much of the area is densely shaded with deep leaf litter, two factors that do not typically accompany the presence of the orchid. There are, however, small pockets of habitat that look appropriate, and two locations along the stream which might be worth further searches (Figure 4.) At Stream 1 (Str#1 - solid blue square on Figure 4) a tributary creek coming from the north intersects with the stream. There is a flat area of potential habitat not far up this creek which we searched to no avail. Another small area of potential habitat exists at Stream 2 (Str#2 - solid blue square on Figure 4.) This tributary creek enters the stream from the southeast. On the creek, there is little suitable habitat immediately adjacent to the stream, but a small area of potentially good habitat exists approximately 50 yards up the creek.

4. Predicted suitable habitat in the interior of the area outlined by the Chopawamsic Trail. (Figures 3 and 5 - highlighted sections).

Previous researchers (Eaves 2004) have used various ecological parameters at known sites of *Isotria medeoloides* in the Park to derive predictive models of suitable habitat for this species. Within the area enclosed by the Chopawamsic Trail, there are four areas that have especially high correlations within the model of predicted habitat for *Isotria*. These areas, averaging about 18 acres each, are illustrated in Figure 3 and Figure 5.

Coordinates to the center of these areas were provided by Paul Petersen, Biologist, Prince William Forest Park. Using these coordinates, the highlighted areas were searched for the presence of *Isotria medeoloides*, but no plants were found. All four of the areas were predicted to have suitable habitat, but when “ground truthed,” some areas had more suitable habitat than others. The survey of these four habitat areas, undertaken by William Brumback, began at CH#3 adjacent to Campsite # 10 (Figure 3) and continued counterclockwise to CH#1. CH#4 was reached by bushwhacking from CH#1 using GPS. No *Isotria medeoloides* was located in any of the four highlighted areas.

Survey results:

CH#3 - This area is located near Campsite # 10. It consists mostly of dense woods with thick leaf litter. There are a few areas of good habitat mostly in the western and southern portions near CH#2.

CH#2 – Very good potential for *Isotria medeoloides* in this area. Lots of relatively open area. Good habitat near a small ravine (large trees with high canopy, relatively light leaf litter in many places, and adequate overall light) in the south and west portions of this area and also perhaps beyond the borders highlighted in yellow. Lightly sloping area.

CH#1 – Fairly heavy leaf litter, but large trees spaced out so that a good amount of light is reaching the forest floor. Most of this area is on a large sloping knoll, and it is not clear if enough moisture is present to support *Isotria*. In general there are pockets of apparently suitable habitat, but, overall, the area is not as suitable as CH#2.

CH#4 – Bushwhacked to this area directly from CH#1 using GPS. There was not much apparent habitat for *Isotria medeoloides* located along the way to CH#4. CH#4, itself has fairly heavy leaf litter over much of the site and is heavily shaded. There is, however, good habitat here, but too much leaf litter occurred in many places. .

Ranking of predicted habitat sites (from best potential to least):

CH#2

CH#4

CH#1

CH#3

Overall Conclusions from the study.

While no *Isotria medeoloides* was found during these surveys, there are a number of areas within the Chopawamsic Backcountry Area that have appropriate habitat and merit further searches. These areas should be searched in late- May June for the presence of *Isotria medeoloides*. Special attention should be paid to the creek area outside of the 200 yard boundary at the western edge of Area 1, and the predicted habitat areas CH#2 and CH#4.

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