National Park Service
U.S. Department of the Interior

PRINCE WILLIAM FOREST PARK
VIRGINIA

Environmental Assessment
Establishment of Multiple Use Trails at Taylor Farm and South Orenda Roads
January 2006

I. EXECUTIVE SUMMARY

Prince William Forest Park is proposing to establish two multiple use trail circuits. The first proposed circuit will be created by connecting the Pine Grove Parking Lot to Scenic Drive at Parking Lot D by using the existing North and South Orenda fire roads. Two short spurs through undisturbed areas will be constructed in order to provide access; one at the Pine Grove Parking Lot and the other near the connecting bridge between North and South Orenda roads. The second proposed circuit will be created by connecting Scenic Drive at Burma Road to Scenic Drive near Liming Lane by using the existing Taylor Farm Fire Road. This will involve construction of a boardwalk through approximately 120 meters of undisturbed flood plain. The construction of these proposed multiple use trail circuits will allow Prince William Forest Park to provide additional recreation opportunities for off-road bicycling. This will enhance the visitor experience and satisfaction. The construction of these circuits will improve the quality of the cycling experience by providing circuits without the current limitation of dead-end or one-way routes. Establishing these proposed circuits will provide visitor access to desirable destinations, reduce visitor use conflicts, and enhance recreational opportunities.

Four alternatives are considered in detail in this Environmental Assessment.

Alternative 1 is the no action alternative.

Alternative 2 proposes to establish a bicycle circuit by restoring Taylor Farm Road to provide multiple use access and connecting it to Scenic Drive near Liming Lane. This link will require the construction of a 120 meter boardwalk through an undisturbed floodplain. Additional site specific improvements are necessary on Taylor Farm Road.

Alternative 3 proposes to establish a bicycle circuit by connecting Pine Grove Parking Lot to South Orenda Road and extending the end of South Orenda Road to meet the footbridge over Quantico Creek. This will require the construction of two short spurs through undisturbed areas and site specific improvements to North and South Orenda roads.

Alternative 4 proposes to establish bicycle circuits at both the Taylor Farm and South Orenda Road sites. The Taylor Farm Road expansion would follow the specifications of Alternative 2. The South Orenda Road connection would follow the specifications of Alternative 3.

Alternative 4 is the preferred alternative and the environmentally preferable alternative. While Alternative 1 does not involve any new trail construction, it also does not include site specific improvements that will improve the condition and drainage of the existing fire roads, and also does not address the problem of bicyclists riding on the single track hiking trails. Alternative 4 addresses both of these issues and will result in improved on-site conditions.

Alternatives Considered but Eliminated from Detailed Study

1. The establishment of a bicycle circuit in a previously undisturbed area was considered but eliminated from further consideration, due to the significant resource impacts that construction would produce.

2. The use of geo-synthetic materials was considered but eliminated from further consideration, due to the high-cost nature of this material.

Figure 1- Vicinity Map

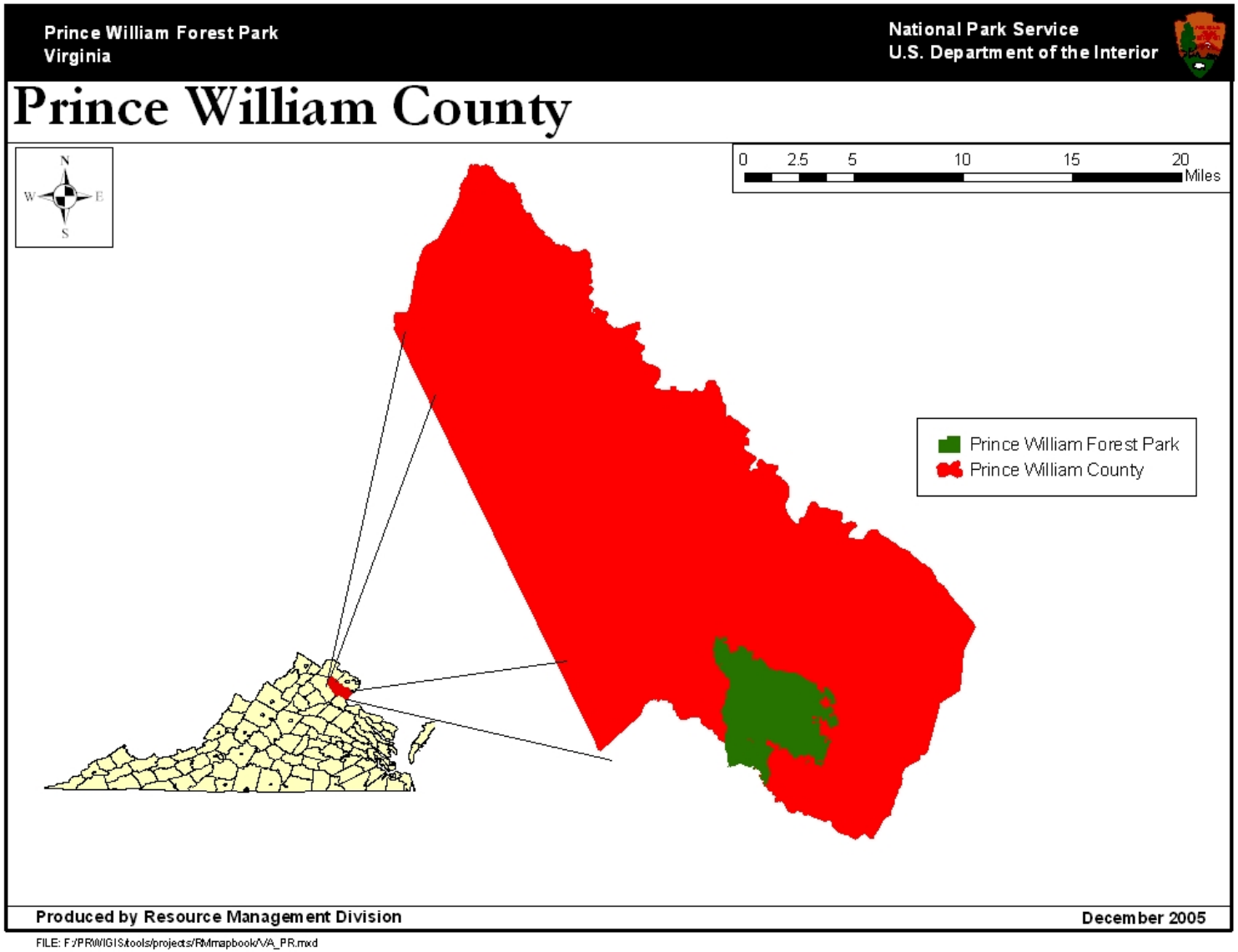

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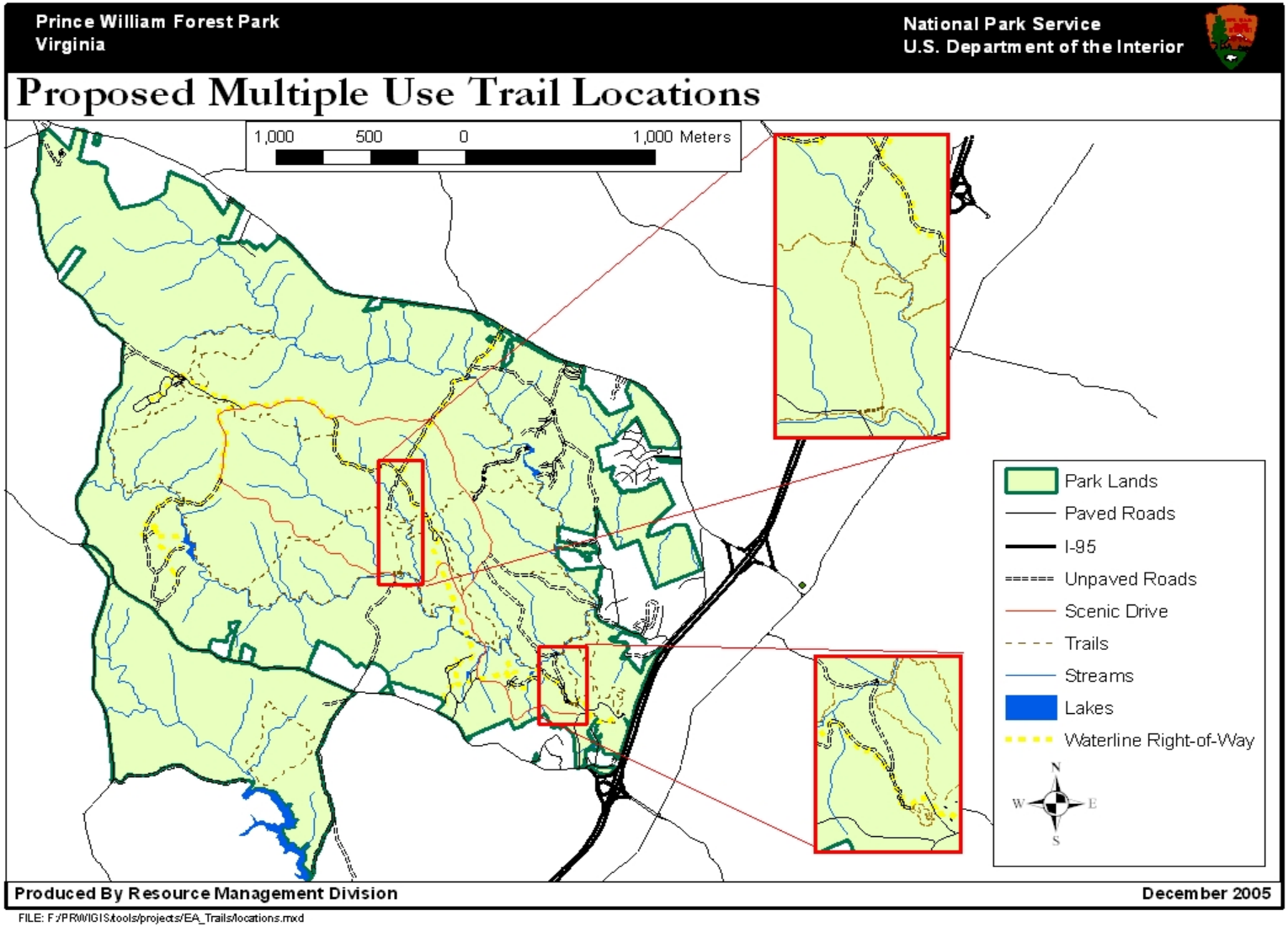
Figure 2 – Location of Project within the Park



FILE: F:/PRWGIS/tools/projects/EA_Trails/locations.mxd

Figure 3 – Photographs of Proposed Multiple Use Trail Locations

II. PURPOSE AND NEED FOR ACTION

A. INTRODUCTION

1. Project Description

Prince William Forest Park proposes to construct two multiple use trail circuits by means of extending current trails. Taylor Farm Road will be connected to Scenic Drive by the construction of a 120 meter bicycle-accessible boardwalk. Approximately 0.5 miles of Taylor Farm Road will be site specifically improved. This will result in several potential circuit bike circuits. South Orenda Road, North Orenda Road and Pine Grove Parking Lot will be connected to create a bike circuit with Scenic Drive. This will require site specific improvements to North Orenda, South Orenda, the existing waterline right-of-way, and the construction of a two short trail spurs.

2. Map of Project Area

See Figure 2.

B. BACKGROUND AND NEED

Prior to the 1700's, the area that is now Prince William Forest Park was forested by deciduous trees. By the early part of the 20th century, much of that land had been farmed or mined. In 1933, the Chopawamsic Recreation Demonstration Area was created, one of 46 recreation demonstration projects in 25 states. The Civilian Conservation Corps (CCC) constructed five cabin camps, numerous roads and lakes, and miles of trails to provide recreational opportunities. Management of the recreation area was turned over to The National Park Service (NPS) in 1936 through Executive Order 7496, and, in 1948, its name was changed to Prince William Forest Park (Public Law 736). Today, the mission of Prince William Forest Park is to preserve, protect, and interpret the natural and cultural resources, while providing recreational opportunities for the public in accordance with the Organic Act of 1916.

The first proposed bicycle circuit would utilize Taylor Farm Road, a 0.9 mile unpaved fire road. Taylor Farm Road originates on Scenic Drive between Parking Lots E and F and progresses south, concluding at the South Valley Trail junction. Taylor Farm Road is no less than 140 years old and can be found on area maps dating back to 1862. The second proposed bicycle circuit would utilize South Orenda Road, a 0.5 mile unpaved fire road. South Orenda Road originates at the Cabin Camp 3 parking lot and proceeds north. At the Cabin Camp 3 Lake the road veers east and continues to the Pine Grove Trail Observation Deck. South Orenda then continues northwest until its conclusion just south of the bridge at North Orenda Road. South Orenda Road is at least 60 years old and can be located on park maps dating to 1937. Prior to the construction of the Pine Grove Forest Trail; South Orenda Road began near the present intersection of Park Entrance Road and Scenic Drive.

This project will address the following issues:

<u>The reduction in the quality of the visitor use experience due to lack of appropriate recreational opportunities.</u>

A trail circuit is one or more trails that allow a user to begin and end their experience at the same location without the need to back-track. Prince William Forest Park currently offers several hiking circuits, but no such recreational opportunity for bicyclists.

The reduction of resource impacts to single-use hiking trails

The park currently offers cyclists trails which are dead-end or one-way use only. Visitors have been observed attempting to establish circuits or using single-track hiking trails illegally, creating resource and visitor use impacts and conflicts.

C. OBJECTIVES

The objectives of this project are as follows:

1. To enhance visitor use experiences through the establishment of approved off-road bicycle circuits
2. To promote public recreational use within the park
3. To reduce resource damage caused by illegal use of single-track hiking trails and to reduce visitor-use conflicts.
4. Improve the drainage conditions on existing fire roads

The objectives were developed based upon the issues discussed in section II.B of this document, and follow established National Park Service (NPS) and park management objectives.

Section 8.2 of the 2001 Management Policies (USDI, National Park Service, 2000) states that the NPS will "provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the superlative natural and cultural resources found in the parks," and that such activities should "…be sustained without causing unacceptable impacts to park resources or values." Section 8.2.2 states "The Service will monitor new or changing patterns of use or trends in recreational activities, and assess their potential impacts on park resources."

Prince William Forest Park's General Management Plan (USDI, National Park Service, 1999) discusses the park's goals of providing recreational opportunities that are consistent with the protection of park resources.

In compliance with the Government Performance Results Act (1993), Prince William Forest Park developed Performance Management Goals. The objectives of this project meet the following goals:

1. Goal Category I: Preserve Park Resources

Ia4A. By September 30, 2008, 20.86 miles (100%) of streams managed by Prince William Forest Park will meet water quality standards. The park annually conducts water quality monitoring using the protocols and standards of the Izaak Walton League of America's "Save Our Stream" program and the Commonwealth of Virginia's *E. coli* testing specifications. The installation of water bars and modification of the current drainage condition will allow Prince William Forest Park to reduce the amount of erosion and sediment loading, thus improving water quality. Currently, the park is in compliance and will continue to maintain this goal.

2. Goal Category II: Provide for the Public Use and Enjoyment and Visitor Experience of Prince William Forest Park

IIa1A. By September 30, 2008, 90% of visitors to Prince William Forest Park will be satisfied with appropriate park facilities, services, and recreational opportunities.

IIa2B. By September 20, 2008, the number of visitor accidents/incidents at Prince William Forest Park will be no higher than its baseline number of 7 (FY2000-FY2003 annual average).

Prince William Forest Park has also defined four Mission Goals, as follows:

1. Prince William Forest Park staff provides leadership in the conservation and preservation of natural and cultural resources.

2. Prince William Forest Park offers recreational opportunities that are compatible with the natural and cultural environment and their safe use.

3. Prince William Forest Park provides educational public information services that give visitors an opportunity to form a resource stewardship and conservation ethic.

4. Prince William Forest Park values and invests in its employees, volunteers and visitors and is committed to a workplace and park that is safe, healthy, sustainable and protective of the environment.

The project objectives are directly tied to these four goals.

D. POLICY

In additional to the NPS and park policies discussed in section II.C., this project is subject to the following laws and regulations:

The National Park Service Organic Act (1916) mandates that the basic purpose of each national park unit is "…to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations."

The National Environmental Policy Act (1969, as amended) regulates disturbance of the environment by requiring all federal agencies to carefully consider the range of alternatives and impacts for a proposed project that may affect the human environment.

The National Park Service Director's Order 12: Conservation Planning and Environmental Impact Analysis, and Decision-Making (2001) provides guidance to National Park Service units on preparing compliance documents in accordance with the National Environmental Policy Act.

The Endangered Species Act (1978, as amended) regulates impacts on rare, threatened, or endangered species by requiring all federal agencies to consult with the United States Fish and Wildlife Service to determine the potential impacts to federally listed species that may result during a proposed project.

The Archeological and Historic Preservation Act of 1974 authorizes Federal agencies to protect historical and archeological data that might be lost as a result of construction of irrigation projects, a dam, or other Federal activity.

Section 106 of the National Historic Preservation Act (1966), requires that every Federal agency "take into account" the effects of its proposed actions on areas that are listed in or eligible for the National Register of

Historic Places, and provide the Advisory Council on Historic Preservation an opportunity to comment on the proposed actions.

The Virginia Coastal Resources Management Program (VCP), authorized by Virginia Executive Order Number Thirteen (86), and continued by subsequent Executive Orders, the most recent being Executive Order 23 (02), requires that "federal activities which are reasonably likely to affect any land or water use or natural resources of Virginia's designated coastal resources management area must be consistent with the [nine] enforceable policies of the Virginia Coastal Resources Management Program."

In accordance with the above laws, policies, and regulations, Prince William Forest Park has initiated the appropriate level of consultation and coordination to fulfill all obligations.

III. ALTERNATIVES

A. PROCESS USED TO FORMULATE THE ALTERNATIVES

Alternative for the Multiple Use Areas project were developed within the defined project objectives, and were based upon National Park Service and Prince William Forest Park guidelines and management objective.

B. ALTERNATIVES CONSIDERED IN DETAIL

1. Alternative 1 – No Action

Under this alternative, the area would remain in its current condition. Individuals will continue to use only the paved and unpaved roads for cycling (as shown in Figure 3.). It is likely that trails may continue to be created illegally by cyclists or they may attempt to create circuits, and continue to illegally use single-track hiking trails. Numerous trails created haphazardly may negatively affect the natural and cultural resources throughout the park. This may continue to create and foster unacceptable visitor use conflicts.

2. Alternative 2 – Establish a Multiple Use Trail at Taylor Farm

Under this alternative the park will establish a multiple use trail by connecting the southern end of Taylor Farm Road to Scenic Drive. This link would require constructing a 120 meter boardwalk through an undisturbed floodplain. A boardwalk will result in minimal impacts to the area and is the most cost-effective solution to crossing the floodplain. Additional site specific improvements would also be necessary on Taylor Farm Road. These improvements include filling in tire ruts, improving drainage conditions, installing water bars, and graveling some sites with bluestone.

Tasks associated with this alternative include:

1. Surveying this new section of trail for state or federally listed rare, threatened, or endangered plant species and archaeological resources.

2. The construction of a 120 meter boardwalk through the undisturbed flood plain. The boardwalk structure will have 4' x 6" x 6" recycled lumber piers as a foundation (2'6" of the pier will be buried for support.) Treated lumber stringers will rest on the piers and run parallel with the center-line of the boardwalk. These stringers will support the 5' x 2" x 6" treated lumber decking that will be laid perpendicular to the center-line and screwed to the stringers. (A handrail will not be necessary as the total height of the boardwalk will not exceed 2'.)

3. Rehabilitating Taylor Farm Road through tree trimming, hazard tree removal, the installation of drainage devices (such as water bars, check dams, culverts etc.), and adding fill to eroded areas.

4. The installation of proper signage to ensure appropriate use of trails prior to the Taylor Farm Road and South Valley Trail junction.

5. Map the new section of trail that runs from the end of Taylor Farm Road to Scenic Drive (approximately a half mile).

6. The new section of trail will need to be blazed.

3. Alternative 3 – Establish Multiple Use Area at South Orenda

Under this alternative, a multiple use trail would be created by connecting Pine Grove Parking Lot to South Orenda Road and by extending the end of South Orenda Road to meet the bridge over Quantico Creek. This would require the construction of two short trail spurs and site specific improvements to South Orenda.

Tasks associated with this alternative include:

1. Surveying this new section of trail for state or federally listed rare, threatened, or endangered plant species and archaeological resources.

2. The construction of a 20 meter extension to connect the Pine Grove Parking Lot to the existing waterline right-of-way.

3. Re-vegetation of a 15’ x 5’ plot at water line right-or-way and South Orenda Road junction.

4. The installation of proper signage to ensure that bicyclists exit the water line right-of-way and begin on South Orenda Road. The installation of proper signage to ensure that bicyclists dismount and escort their bikes across the foot bridge, over Quantico Creek, to prevent conflicts with hikers, and for safety purposes.

5. Rehabilitating South Orenda Road through tree trimming, hazard tree removal, the installation of drainage devices (such as water bars, check dams, culverts etc.), and the addition of fill to eroded areas.

6. The construction of a 5 meter extension to connect the end of South Orenda Road to the bridge over Quantico Creek.

7. The rehabilitation of a portion of the old road bed at the bottom of South Orenda Road to prevent bicyclists from riding through Quantico creek.

8. Mapping the two new sections of trail off the water line right-of-way and at the end of South Orenda Road (approximately 25 meters.)

9. Blazing the new sections of trail.

4. Alternative 4 – Establish a Multiple Use Trails at Taylor Farm and South Orenda

Under this alternative, multiple use trails would be established at Taylor Farm Road and South Orenda Road. Actions would include the 120 meter boardwalk construction, the construction of a 20 meter section of trail off the Pine Grove Parking Lot, the construction of a 5 meter section of trail to the Quantico Creek Bridge, and site enhancements on the existing fire roads.

Tasks associated with this alternative include:

1. Surveying this new section of trail for state or federally listed rare, threatened, or endangered plant species.

2. The construction of a 120 meter boardwalk through the undisturbed flood plain. The boardwalk structure will have 4' x 6" x 6" recycled lumber piers as a foundation (2'6" of the pier will be buried for support.) Treated lumber stringers will rest on the piers and run parallel with the center-line of the boardwalk. These stringers will support the 5' x 2" x 6" treated lumber decking that will be laid perpendicular to the center-line and screwed to the stringers.

3. The construction of a 5 meter extension to connect the end of South Orenda Road to the bridge at Quantico Creek.

4. The construction of a 20 meter extension to connect Pine Grove Parking Lot to the existing waterline right-of-way.

5. Re-vegetation of a 15' x 5' plot at the water line right-or-way and South Orenda Road junction.

6. Rehabilitating Taylor Farm Road and South Orenda Road through tree trimming, hazard tree removal, the installation of drainage devices (such as water bars, check dams, culverts etc.), and the addition of fill to eroded areas. Rehabilitating South Orenda Road through hazard tree removal, the installation of drainage devices (such as water bars, check dams, culverts etc.), and the addition of fill to eroded areas.

7. The rehabilitation of a portion of the old road bed at the bottom of South Orenda Road to prevent bicyclists from riding through Quantico Creek.

8. The installation of proper signage to ensure appropriate use of trails prior to the Taylor Farm Road and South Valley Trail junction. The installation of proper signage to ensure that bicyclists exit the water line right-of-way and begin on South Orenda Road. The installation of proper signage to ensure bicyclists walk their bikes across the footbridge over Quantico Creek to prevent conflicts with hikers

9. The new section of Taylor Farm trail/ boardwalk and the new sections of trail off the water line right-of-way and at the end of South Orenda Road will need to be blazed

10. Map the new section of trail that runs from the end of Taylor Farm Road to Scenic Drive (approximately a half mile) and the two new sections of trail off the water line right-of-way and at the end of South Orenda Road (approximately 25 meters).

Alternative 4 is the Preferred Alternative as well as the Environmentally Desirable Alternative.

C. COMPARISON OF ALTERNATIVES

Table 1 provides a comparison of how each of the four alternatives meets the stated project objectives

Table #1 – Comparison of the Alternatives

Objective	Alternative #1	Alternative #2	Alternative #3	Alternative #4
To enhance visitor use experience through the establishment of bicycle use circuits	Does not meet this objective. Current situations would require bikers to turn at the end of multiple use areas.	Meets this objective. Would result in the creation of one bicycle circuit using multiple use trails and the Scenic Drive.	Meets this objective. Would result in the creation of one bicycle circuit using multiple use trails and the Scenic Drive.	Meets this objective. Would result in the creation of two bicycle circuits using multiple use trails and the Scenic Drive.
To promote public recreational use within the park	Meets this objective. Will have no impact on current recreational use.	Meets this objective. Will expand current recreational opportunities.	Meets this objective. Will expand current recreational opportunities.	Meets this objective. Will expand current recreational opportunities.
To protect single-use hiking trails against resource damage caused unnecessary by bicyclists seeking to ride circuits without having to back-track	Does not meet this objective. The threat for negative hiker-biker interactions and resource damage will persist on single track trails.	Meets this objective. Will provide a bicycle accessible circuit that mitigates safety threats and resource damage.	Meets this objective. Will provide a bicycle accessible circuit that mitigates safety threats and resource damage.	Meets this objective. Will provide bicycle accessible circuits that mitigate safety threats and resource damage.
Improve drainage conditions on existing park fire roads so they are better equipped to offer bicycle and vehicle access	Does not meet this objective. Will not result in the rehabilitation or improvement of current multiple use trail conditions.	Meets this objective. Site specific improvements will be conducted on all existing and specifically planned multiple use trails.	Meets this objective. Site specific improvements will be conducted on all existing and specifically planned multiple use trails.	Meets this objective. Site specific improvements will be conducted on all existing and specifically planned multiple use trails.

D. ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

1. Establish a New Bicycle Accessible Circuit

The establishment of a bicycle circuit in previously undisturbed areas was considered but eliminated. The construction of new bicycle circuits would significantly impact natural and cultural resources of undisturbed areas. The road sites at Taylor Farm and South Orenda have been in existence for multiple generations, and the impacts of long term-use have already altered the natural state of both sites. It is more cost effective, efficient, and environmentally preferable to incorporate them into the proposed circuits rather than construct bicycle use trails in previously undisturbed areas.

2. Use of Geo-synthetic Material

The use of geo-synthetic material was considered but eliminated. This material was considered but eliminated from detailed study because of the high cost of such material.

Figure 8 – Alternative 4 Proposed Actions at Taylor Farm and South Orenda road sites

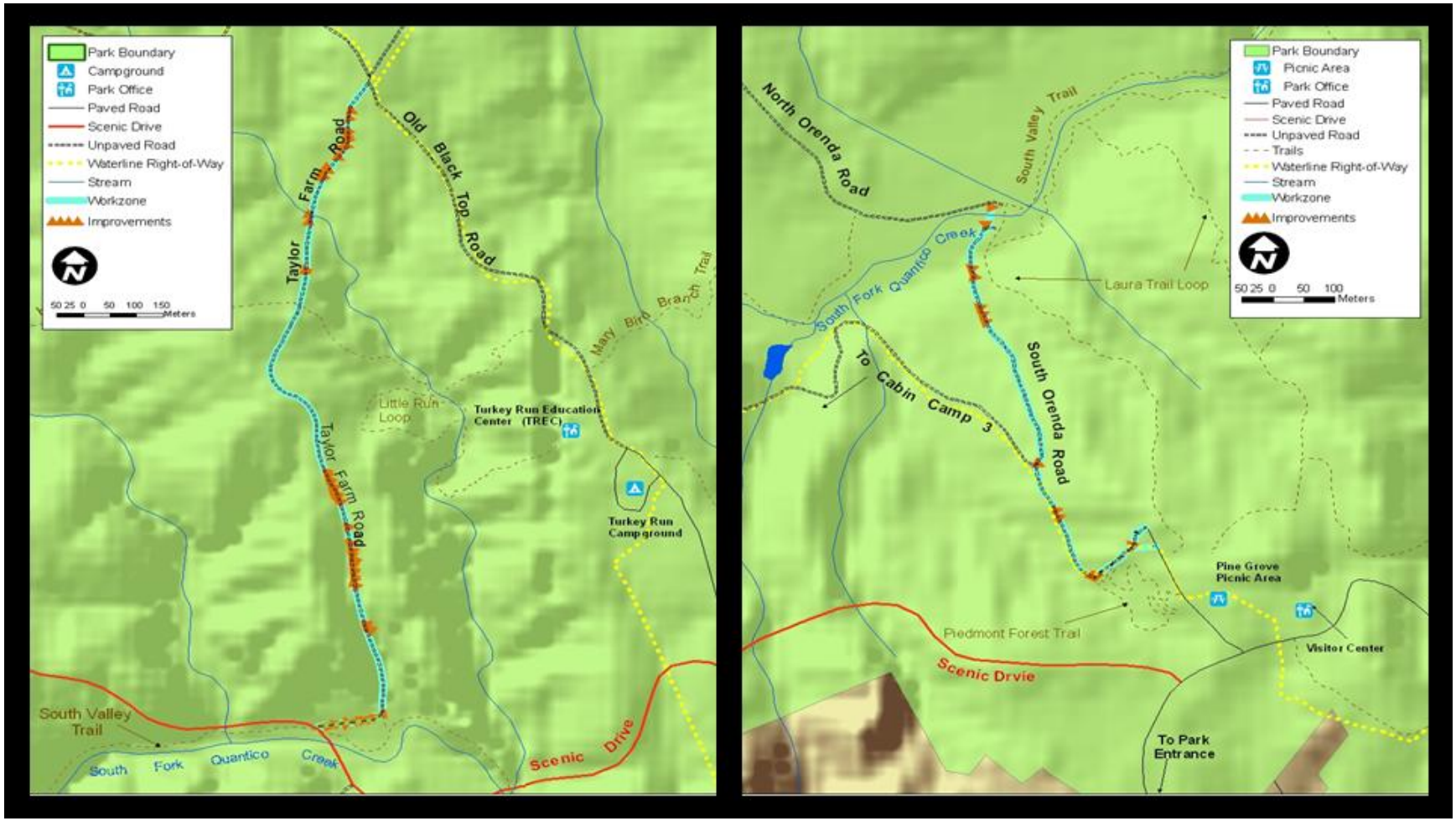


Figure 4 – Alternative 1 - No Action at South Orenda Road

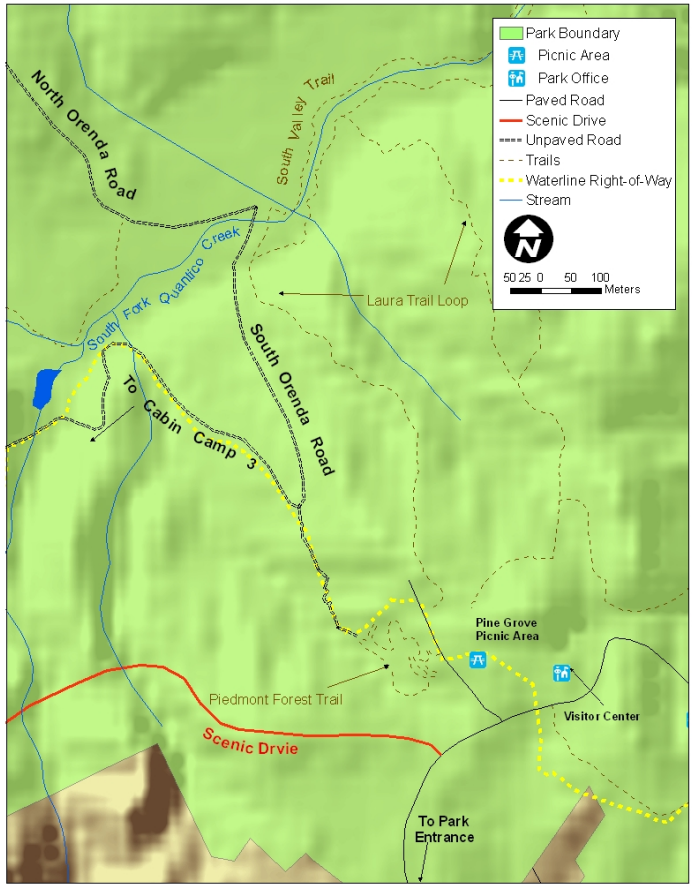


Figure 5 – Alternative 1 - No Action at Taylor Farm Road

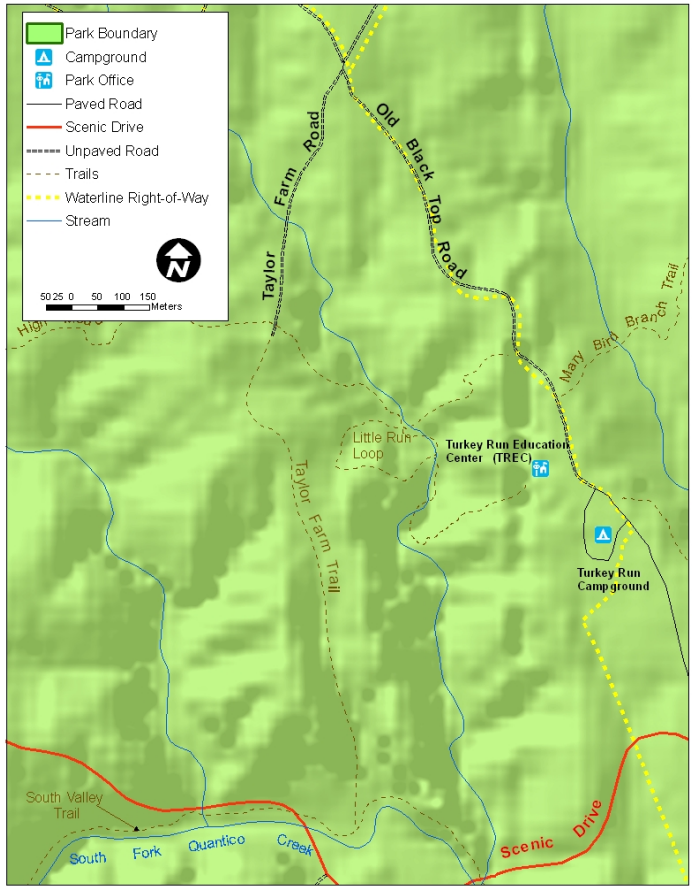


Figure 6 – Alternative 2 - Proposed Actions at Taylor Farm Road

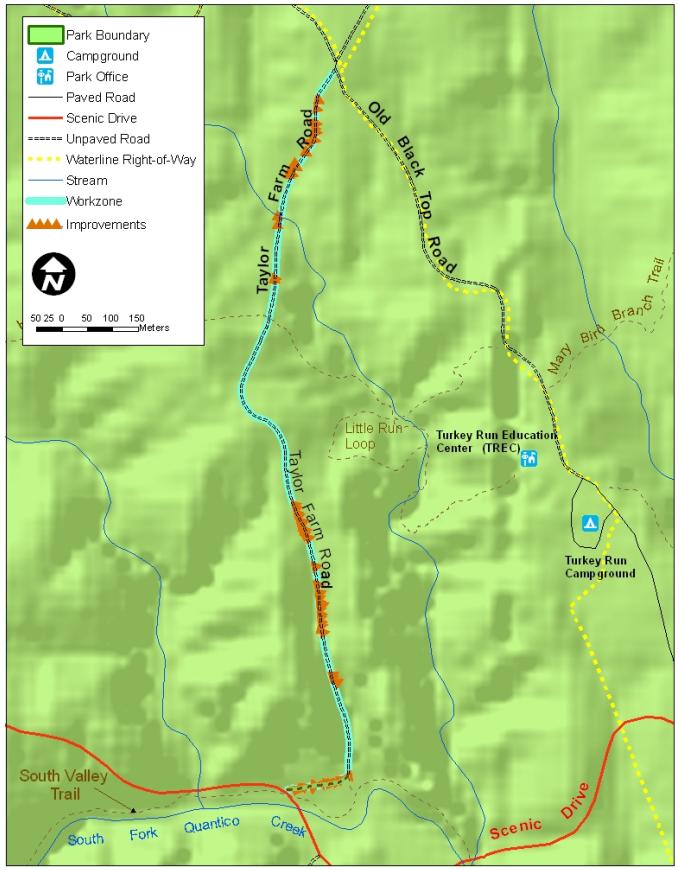
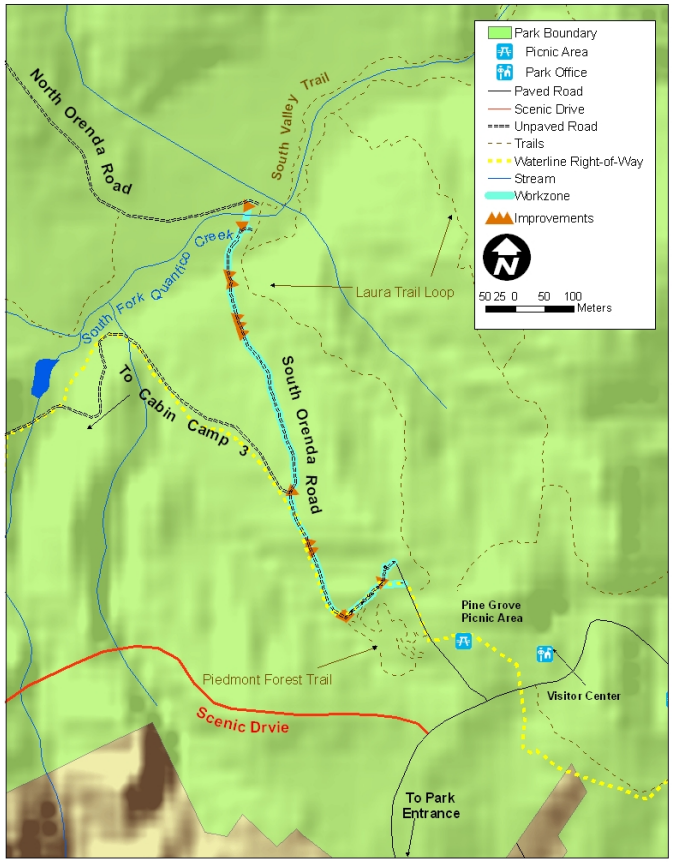


Figure 7 – Alternative 3 - Proposed Actions at South Orenda Road



IV. DESCRIPTION OF THE ENVIRONMENT

Prince William Forest Park consists of approximately 15,000 acres of mixed hardwood forest within a major portion of the Quantico Creek watershed and the lower portion of the Chopawamsic Creek watershed. Quantico Creek is noted for its excellent water quality and has been used as a reference stream by several federal, state, and local agencies. The park's relatively large size and the fact that it protects a significant portion of mature eastern deciduous forest make it a significant natural resource. In addition, because the park includes two physiographic provinces and lies in the transition zone between northern and southern climates, it exhibits a wide range of habitat and vegetative communities. Despite its history of human activity, the recovery of the area has led to its recognition as one of the least impacted watersheds in the Commonwealth of Virginia.

Most of the park lies within the Piedmont Physiographic Province. Typical of the Piedmont, the park is a lowland plateau with rolling hills and stream cut valleys. Elevations range from about 10 feet up to 400 feet above sea level. About one fourth of the park lies in the Coastal Plain Physiographic Province, which is of flatter relief and contributes significantly to the geological diversity of the park. The Coastal Plain consists of stratified marine sediments of sand, silt, clay and gravel. The older Piedmont consists largely of granite, gneiss and mica schist. The park also has large mineral deposits, primarily pyrite and associated minerals. The largest concentration of pyrite is found at the confluence of the two main branches of Quantico Creek.

The dominant forest species in the park are white oak, red maple, black gum, tulip-poplar, and American beech, along with occasional large stands of Virginia pine. Some uncommon or rare tree species present include butternut, big-tooth aspen, black walnut, sweet bay magnolia, and eastern hemlock, as well as floodplain species like American sycamore. The park also includes one seepage swamp area in which poison sumac has been observed. Several of these species are at their distributional limits in the park. Under-story species include dogwood, redbud, mountain laurel, and American holly. Ferns, mosses, vines and wildflowers form the groundcover. Cardinal flower and Hercules club are common in the park, but uncommon elsewhere. The small whorled pogonia (*Isotria medeoloides*), a federally listed threatened plant species, is considered one of the rarest orchids in the United States and has been identified in the park. Velvety sedge, *Carex vestita*, a state rare wildflower, Lemmer's pinion moth, *Lithophane lemmeri*, a state rare moth, and the Sedge sprite, *Nehalennia irene*, a state rare damselfly, have also been found in the park (Roble, 2002). Several state Watch List species including Bush's sedge (*Carex bushii*), butternut (*Juglans cinerea*), wild American ginseng (*Panax quinquefolius*), the Diana fritillary (*Speyeria diana*), and the flightless tiger beetle (*Cicindela unipunctata*) have been observed in Prince William Forest Park. The first documented observation of a timber rattlesnake (*Crotalus horridus horridus*) in Prince William County was recorded in the park in 1992.

The park's dense forests and varied topography provide diverse habitat for wildlife species. White-tailed deer, wild turkey, fox and beaver populations thrive within the park. Small mammals, reptiles and amphibians are abundant. American black bear have been observed both in the park and in the surrounding environs. Owls and hawks, pileated woodpeckers, warblers,

bluebirds and other songbirds are known to inhabit the park. Bald eagles, although not known to nest in the park, have been observed passing through the area.

Prince William Forest Park is located in Prince William County, Virginia, one of the fifty fastest growing counties in the United States (U.S. Census Bureau 2004). As land development increases around the park, the value of the park and its resources is also increasing. Approximately 225,000 visitors enter the park annually and engage in passive forms of recreation including hiking, biking, and camping. An increase in the number and frequency of recreational biking has been observed in the park. In response, the Friends of Prince William Forest Park have twice sponsored an annual event, the Chopawamsic Cycle Challenge. Both the success of the event and the increase in visitor requests for more bike accessible areas demonstrates the necessity for establishing additional bicycle use areas.

Table #2 – Rare, Threatened, and Endangered Species in Prince William Forest Park

Species	**Federal Status**	**Global Rank / State Rank**
Small Whorled Pogonia (*Isotria medeoloides*)	Threatened	G2; S2
Lemmer's pinion moth (*Lithophane lemmeri*)	N/A	G3/G4; S1/S3
Sedge sprite (*Nehalennia irene*)	N/A	G5; S1
Bush's sedge (*Carex bushii*)	N/A	G4; S3
Velvety sedge (*Carex vestita*)	N/A	G5; S2
Butternut (*Juglans cinerea*)	N/A	G3/G4; S3
American ginseng (*Panax quinquefolius*)	N/A	G3/G4; S3/S4
Diana fritillary (*Speyeria diana*)	N/A	G3; S3
Flightless tiger beetle (*Cicindela unipunctata*)	N/A	G4; S3

V. MITIGATION AND MONITORING

A. MITIGATION

Impacts to wetlands, waterways, and flood plains will be minimized as follows:

> No construction vehicles or heavy equipment will be used in water bodies, wetlands or flood plains. Work will be conducted using hand tools.
>
> No wetland areas or water bodies will be disturbed during construction of the bicycle use areas. Recycled plastic lumber will be used to construct the elevated boardwalk in the flood plain at the Taylor Farm Road site.
>
> No materials will be stockpiled on site, and all excess material will be removed daily.
>
> Virginia storm-water and sediment controls will be implemented.

B. MONITORING

NPS staff will continue to monitor this area for erosion, sedimentation, and overall degradation through visual site inspections and data collection as part of the Water Quality Monitoring Program.

VI. CONSULTATION AND COORDINATION

A. PUBLIC INVOLVEMENT AND NOTIFICATION

This Environmental Assessment will be made available for public review for a period of 30 days from February 4, 2006 through March 4, 2006, in compliance with the National Environmental Policy Act. Copies are available at the park, through a link on the park's website (http://www.nps.gov/prwi), and through the National Park Service's Planning, Environment, and Public Comment website at the following address:

http://parkplanning.nps.gov/parkHome.cfm?parkId=197

The public is invited to submit comments and concerns which will be addressed in the Final EA.

B. LIST OF AGENCIES AND INDIVIDUALS CONSULTED

1. Davis, Eric, Endangered Species Biologist, United States Fish and Wildlife Service, Virginia Field Office

2. National Park Service, National Capital Region, Cultural Resources Management Program, Washington D.C.

3. Virginia Department of Historic Resources, Richmond, Virginia

4. Virginia Department of Environmental Quality, Office of Environmental Impact Review.

C. COMMENTS, CONCERNS, ISSUES

To be addressed in the final Environmental Assessment.

VII. PREPARERS

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VIII. REVIEWERS

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George Liffert, Assistant Superintendent, Prince William Forest Park, National Park Service, Triangle, Virginia

Jennifer Lee, Chief, Resource Management, Prince William Forest Park, National Park Service, Triangle, Virginia

IX. REFERENCES

Bedell, J. 2004. "Few Know That Such A Place Exists": Land and People in the Prince William Forest Park, Volume II: Archeological Data. Louis Berger and Associates, Washington D.C. Final Report. May 2004.

Bradley, T.R., J.E. Dodge, and G.G. Meyer. 2005. Prince William Forest Park 2003-2004 Floristic Survey. George Mason University. Fairfax, Virginia. Final Report. March 2005.

Davis, Eric 2005, Personal communication with Jennifer Lee, December 2005, United States Fish and Wildlife Service.

Felton, V. 2004. Trail Solutions: IMBA's Guide to Building Sweet Single-track. Boulder, CO: International Mountain Bicycle Association.

Roble, S.M. 2001. Natural Heritage Resources of Virginia: Rare Animal Species. Natural Heritage Technical Report 01-16. Virginia Department of Conservation and Recreation, Division of Natural Heritage, Richmond, VA. 33 pages.

United States Department of Commerce. United States Census Bureau. Table CO-EST2004-09: Population Estimates for the 100 Fastest Growing U.S. Counties with 10,000 or more Population in 2004. April 2005.

United States Department of the Interior. National Park Service. Director's Order #12 and Handbook: Conservation Planning, Environmental Impact Analysis, and Decision Making. January 2001.

United States Department of the Interior. National Park Service. Draft Environmental Assessment, 2003 Gypsy Moth Suppression Project. Prince William Forest Park. March 2003.

United States Department of the Interior. National Park Service. Draft Environmental Assessment, Land Exchange Between Prince William County Service Authority & Prince William Forest Park. Prince William Forest Park. July 2002.

United States Department of the Interior. National Park Service. Final Environmental Assessment, For Construction of a New Multi-purpose Trail in the Entrance of Denali National Park. Denali National Park. April 2004.

United States Department of the Interior. National Park Service. General Management Plan. Prince William Forest Park. February 1999.

United States Department of the Interior. National Park Service. Management Policies 2001. December 2000.

United States Department of the Interior. National Park Service. Resource Management Plan. Prince William Forest Park. February 1995.

United States Department of the Interior. U.S. Fish and Wildlife Service. 1992. Small Whorled Pogonia (*Isotria medeoloides*) Recovery Plan, First Revision. Technical/Agency Draft. Newton Corner, Massachusetts. 68 pp.

United States Department of Transportation. Wetland Trail Design and Construction. December 2005. http://www.fhwa.dot.gov

Ware, D.M.E., and B.D. Saunders. 2004. Searches for the Small Whorled Pogonia, *Isotria medeoloides*, in Prince William Forest Park. Triangle, Virginia, June/July 2003. College of William and Mary. Williamsburg, Virginia. Final Report. May 2004.

X. ENVIRONMENTAL IMPACTS

Numerous ecological, aesthetic, economic, visitor-use, and safety concerns have been considered in assessing the potential environmental impacts of the alternatives. There are no anticipated impacts to populations of state and/or federally listed threatened or endangered species. Table 3 provides a summary of the impacts of the considered alternatives. Only those resources affected by the alternatives will be discussed in detail.

Table 3: Summary of Possible Environmental Impacts of the Considered Alternatives.

RESOURCE TOPIC	ALTERNATIVE #1 – NO ACTION	ALTERNATIVE #2 – CREATE TAYLOR FARM ROAD MULTIPLE USE TRAIL	ALTERNATIVE #3 – CREATE SOUTH ORENDA ROAD MULTIPLE USE TRAIL	ALTERNATIVE #4 – CREATE MULTIPLE USE TRAILS, AT TAYLOR FARM ROAD AND SOUTH ORENDA ROAD
Air Quality	No impact.	Negligible impact. Use of gasoline powered equipment will be restricted on days with an Air Quality Index of orange, red, or purple.	Negligible impact. Use of gasoline powered equipment will be restricted on days with an Air Quality Index of orange, red, or purple.	Negligible impact. Use of gasoline powered equipment will be restricted on days with an Air Quality Index of orange, red, or purple.
Archaeological Resources	Potential impact. If bicyclists create “social trails” to satisfy the need for bike circuits they may damage archaeological resources.	No impact. No known archaeological resources exist in the area(s) of the proposed action (Bedell. 2004).	No impact. No known archaeological resources exist in the area(s) of the proposed action (Bedell. 2004).	No impact. No known archaeological resources exist in the area(s) of the proposed action (Bedell. 2004).

Cultural Resources and Historic Properties	Potential impact. If bicyclists create “social trails” to satisfy the need for bike circuits they may damage CR and/or historic properties.	No impact. No known cultural resources or historic properties are known to exist in the area(s) of the proposed action. (Bedell. 2004)	No impact. No known cultural resources or historic properties are known to exist in the area(s) of the proposed action. (Bedell. 2004)	No impact. No known cultural resources or historic properties are known to exist in the area(s) of the proposed action. (Bedell. 2004)
Energy Resources	No impact.	Negligible impact. The proposed action shall have no measurable impact on average daily energy consumption or other energy resources.	Negligible impact. The proposed action shall have no measurable impact on average daily energy consumption or other energy resources.	Negligible impact. The proposed action shall have no measurable impact on average daily energy consumption or other energy resources.
Exotic Species Introduction	Minor impact. Continued biking in single track areas will continually disturb ground, resulting in a higher likelihood of invasive species introduction.	Minor impact. Ground disturbance will increase the potential for the colonization by invasive species; however, any ground that is disturbed will be rehabbed and reclaimed.	Minor impact. Ground disturbance will increase the potential for the colonization by invasive species; however, any ground that is disturbed will be rehabbed and reclaimed.	Minor impact. Ground disturbance will increase the potential for the colonization by invasive species; however, any ground that is disturbed will be rehabbed and reclaimed.
Federally Listed Threatened and Endangered Species and Their Habitats	No impact.	No impact. No known federally listed threatened or endangered species or potential habitat exists in the area(s) of the proposed action. (Bradley 2005, Ware 2004)	No impact. No known federally listed threatened or endangered species or potential habitat exists in the area(s) of the proposed action. (Bradley 2005, Ware 2004)	No impact. No known federally listed threatened or endangered species or potential habitat exists in the area(s) of the proposed action. (Bradley 2005, Ware 2004)

Fish and Fish Habitat	Potential impact. Continued biking in inappropriate areas will increase the potential for erodible soils. The erosion of these soils with increase sediment loads in the streams, impacting fish and habitat.	No impact. The proposed action shall have no measurable impact on fish or their respective habitat. Construction will occur no less than 28 meters from the stream, with silt fencing installed during the construction period.	No impact. The proposed action shall have no measurable impact on fish or their respective habitat. Construction will occur no less than 10 meters from the stream, with silt fencing installed during the construction period.	No impact. The proposed action shall have no measurable impact on fish or their respective habitat. Construction will occur no less than 10 meters from the stream, with silt fencing installed during the construction period.
Flood Plains and Wetlands	Minor impact. Continued biking in single track areas within floodplains and wetlands will adversely impact these important resources, resulting in degradation of the local environs.	Minor impact. Some construction and 240 square meters of ground disturbance will occur within the 100-year floodplain of the area(s) of proposed action. The flood plain is designated as a PFO1A temporary wetland by the National Wetland Inventory (palustrine, forested, broad leafed deciduous temporary).	Negligible impact. 40 square meters of ground disturbance will occur within the 100-year floodplain of the area(s) of proposed action.	Minor impact. Some construction and 280 meters of ground disturbance will occur within the 100-year floodplain of the area(s) of proposed action. The flood plain is designated as a PFO1A temporary wetland by the National Wetland Inventory (palustrine, forested, broad leafed deciduous temporary).
Geo-hazards	No impact.	No impact. No known geo-hazards exist in the area(s) of the proposed action.	No impact. No known geo-hazards exist in the area(s) of the proposed action.	No impact. No known geo-hazards exist in the area(s) of the proposed action.

Geological Resources	Minor impact. Continued biking in single track areas will continually disturb ground, resulting in an increased base of erodible soils.	Minor impact. Ground disturbance of 240 square meters will result in an increased base of erodible soils.	Negligible impact. Ground disturbance of 50 square meters will result in an increased base of erodible soils.	Minor impact. Ground disturbance of 290 square meters will result in an increased base of erodible soils.
Land Use	Minor impact. Continued biking in single track areas will result in negative impacts to the local environs.	Minor impact. The proposed action will result in two changes from current land use; from undisturbed area to a bicycle use only boardwalk (0.07 miles), from a single track trail to a multiple use trail (0.61 miles).	Minor impact. The proposed action will result in two changes from current land use; from undisturbed area to a multiple use trail (0.02 miles), from a right-of-way to a multiple use trail (0.07 miles).	Minor impact. The proposed action will result in four changes from current land use, to be recognized as the combination of Alternatives 2 and 3.
Long Term Management	Minor impact. Continued biking in single track areas will result in failure to provide adequate and safe recreational opportunities.	Positive impact. The proposed action will allow the park to provide safe and adequate recreational opportunities.	Positive impact. The proposed action will allow the park to provide safe and adequate recreational opportunities.	Positive impact. The proposed action will allow the park to provide safe and adequate recreational opportunities.
Marine or Estuarine Resources	No impact.	No impact. No tidal marine or estuarine resources exist in the area(s) of the proposed action.	No impact. No tidal marine or estuarine resources exist in the area(s) of the proposed action.	No impact. No tidal marine or estuarine resources exist in the area(s) of the proposed action.

Minority or low income populations	No impact.	No impact. The proposed action shall have no effect on minority or low income populations.	No impact. The proposed action shall have no effect on minority or low income populations.	No impact. The proposed action shall have no effect on minority or low income populations.
Noise	No impact.	Negligible impact. Use of power tools will be restricted during quiet hours and will occur only at closed sites.	Negligible impact. Use of power tools will be restricted during quiet hours and will occur only at closed sites.	Negligible impact. Use of power tools will be restricted during quiet hours and will occur only at closed sites.
Other Agency or Tribal Lands	No impact.	No impact. No lands belonging to another agency or federally recognized tribes have been identified within the area(s) of proposed action.	No impact. No lands belonging to another agency or federally recognized tribes have been identified within the area(s) of proposed action.	No impact. No lands belonging to another agency or federally recognized tribes have been identified within the area(s) of proposed action.
Other Environmental Resources	No impact.	No impact. No additional unaddressed environmental resources are known to occur in the area(s) of the proposed action.	No impact. No additional unaddressed environmental resources are known to occur in the area(s) of the proposed action.	No impact. No additional unaddressed environmental resources are known to occur in the area(s) of the proposed action.
Park Infrastructure	No impact.	Positive impact. Construction of the multiple use area(s) will result in an additional 0.68 miles of multiple use trail mileage.	Positive impact. Construction of the multiple use area(s) will result in an additional 0.58 miles of accessible multiple use trail mileage.	Positive impact. Construction of the multiple use area(s) will result in an additional 1.26 miles of accessible multiple use trail mileage.

Rare or Unusual Vegetation	No impact.	No impact. No known rare or unusual vegetation exists in the area(s) of the proposed actions. (Bradley 2005)	No impact. No known rare or unusual vegetation exists in the area(s) of the proposed actions. (Bradley 2005)	No impact. No known rare or unusual vegetation exists in the area(s) of the proposed actions. (Bradley 2005)
Recreational Resources	Negligible impact. Current recreational opportunities will remain unchanged, though visitors may become unhappy with current bicycle access.	Positive impact. Development of multiple use trails will provide for additional opportunities for park visitors.	Positive impact. Development of multiple use trails will provide for additional opportunities for park visitors.	Positive impact. Development of multiple use trails will provide for additional opportunities for park visitors.
Safety	Minor impact. Continued biking in single track areas may threaten the safety of park visitors and employees.	Positive impact. Development of multiple use trails will reduce the probability of bikers on single track trails, resulting in fewer incidents.	Positive impact. Development of multiple use trails will reduce the probability of bikers on single track trails, resulting in fewer incidents.	Positive impact. Development of multiple use trails will reduce the probability of bikers on single track trails, resulting in fewer incidents.
Scenic Value	No impact.	Negligible impact. Construction of the trail will result in temporary degradation of the natural landscape.	Negligible impact. Construction of the trail will result in temporary degradation of the natural landscape.	Negligible impact. Construction of the trail will result in temporary degradation of the natural landscape.
Socio-economics	No impact.	No impact. The proposed action shall have no effects on the socio-economics of the park or surround community.	No impact. The proposed action shall have no effects on the socio-economics of the park or surround community.	No impact. The proposed action shall have no effects on the socio-economics of the park or surround community.

State Listed Rare, Threatened, Endangered, and Watch-Listed Species and Their Habitats	No impact.	No impact. No known state listed rare, threatened, endangered, watch-listed species, or their habitats exist in the area(s) of the proposed action.	No impact. No known state listed rare, threatened, endangered, watch-listed species, or their habitats exist in the area(s) of the proposed action.	No impact. No known state listed rare, threatened, endangered, watch-listed species, or their habitats exist in the area(s) of the proposed action.
Stream-flow Characteristics	No impact.	No impact. The proposed action shall have no effects on the stream channels within the area(s) proposed.	No impact. The proposed action shall have no effects on the stream channels within the area(s) proposed.	No impact. The proposed action shall have no effects on the stream channels within the area(s) proposed.
Unique ecosystems	No impact.	No impact. No designated ecosystems or heritage sites occur within the area(s) of the proposed action.	No impact. No designated ecosystems or heritage sites occur within the area(s) of the proposed action.	No impact. No designated ecosystems or heritage sites occur within the area(s) of the proposed action.
Urban Quality	No impact.	No impact. The proposed action(s) shall have no cumulative impact on the urban quality of the park.	No impact. The proposed action(s) shall have no cumulative impact on the urban quality of the park.	No impact. The proposed action(s) shall have no cumulative impact on the urban quality of the park.
Vegetation and Habitat	No impact.	Negligible impact. The proposed action will involve the removal of 240 square meters of vegetated land and habitat.	Negligible impact. The proposed action will involve the removal of 50 square meters of vegetated land and habitat.	Negligible impact. The proposed action will involve the removal of 290 square meters of vegetated land and habitat.

Visitor Experience	Minor impact. Continued biking on single track trails will increase the likelihood of negative biker-hiker incidents.	Positive impact. Construction of the multiple-use trail will decrease the probability of negative biker-hiker interactions, as well as meet the requests of many park visitors.	Positive impact. Construction of the multiple-use trail will decrease the probability of negative biker-hiker interactions, as well as meet the requests of many park visitors.	Positive impact. Construction of the multiple use trails will decrease the probability of negative biker-hiker interactions, as well as meet the requests of many park visitors.
Water Quality	Minor impact. Continued biking in single track areas will continually disturb ground, resulting in an increase of sediment and runoff	Negligible impact. Potential increase in sediment runoff during rainfall events throughout construction of trail.	Negligible impact. Potential increase in sediment runoff during rainfall events throughout construction of trail.	Negligible impact. Potential increase in sediment runoff during rainfall events throughout construction of trail.
Wildlife and Wildlife Habitat	No impact.	Negligible impact. The proposed action will involve the removal of 240 square meters of habitat, and a potential of local avoidance during trail construction.	Negligible impact. The proposed action will involve the removal of 50 square meters of habitat, and a potential of local avoidance during trail construction.	Negligible impact. The proposed action will involve the removal of 290 square meters of habitat, and a potential of local avoidance during construction.

ISSUES ELIMINATED FROM FURTHER CONSIDERATION

ENERGY RESOURCES

Though a temporary increase in energy use may occur, it is not believed that this project will result in a significant increase in annual energy usage.

ENVIRONMENTAL JUSTICE

President Clinton signed Executive Order 11988, entitled “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”, February 11, 1994. This Executive Order directs federal agencies to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations in the United States." There will be slight increases in traffic and noise associated with the proposed construction Alternatives. Although some uses of the park may be temporarily impeded during construction, it is believed that the multiple use areas will expand usage of the park and increase the satisfaction of park visitors. Therefore, it is concluded that no disproportionately environmental effects on minority and/or low-income populations will result from this action. Additional, it is concluded that the socio-economic composition of the surrounding areas will not be affected by the trail construction.

GEO-HAZARDS

Prince William Forest Park lies within the fall line of the Piedmont and Coastal Plain physiographic provinces. Approximately two-thirds of the park is in the Piedmont and one-third in the Coastal Plain. No known geo-hazards exist in the area of the proposed bike trail and boardwalk.

MARINE OR ESTUARINE RESOURCES

Though one-third of the park lies within the Coastal Plain physiographic province and the park possesses an elevation as low as ten feet above sea-level, no known marine or estuarine resources or coastal waterways occur within Prince William Forest Park.

OTHER AGENCY OR TRIBAL LANDS

Lands belonging to the Department of Navy are located next to Prince William Forest Park. No lands belonging to another agency or to a federally recognized tribe will be involved in the actions proposed above.

OTHER ENVIRONMENTAL RESOURCES

No additional environmental resources, such as geothermal sites or paleontological artifacts, are known to exist within the park.

B. ISSUES AND ENVIRONMENTAL CONSEQUENCES

This section contains an evaluation of environmental impacts of the alternative. The analysis assumes that the mitigation identified in the *Mitigation and Monitoring* section of this environmental assessment would be implemented under any of the action alternatives. Cumulative impacts were analyzed to add up the incremental impacts to the environment resulting from adding the proposed actions to other past, present, and reasonably foreseeable future actions. The cumulative impacts relate primarily to: (1) the re-routing of South Valley Trail, (2) the implementation of hazardous fuels reduction to reduce woody debris in developed areas to reduce the probability of wildland fires that might endanger park and community resources, (3) the treatment of gypsy moth infestation, (4) the installation of a municipal water delivery system (waterline) within the park, (5) a proposed new access point into the park along the Route 234 corridor.

1. AIR QUALITY

Affected Environment

The Clean Air Act requires Federal land managers to protect air quality and NPS Management Policies (2001) addresses the need to analyze air quality during park planning. A non-attainment designation indicates that a particular area does not meet or contribute to ambient air quality in a nearby area that does not meet the national primary or secondary ambient air quality standard for specified pollutants. Prince William Forest Park, situated in Prince William County, is located within an ozone non-attainment area, and a state volatile organic compounds and nitrogen oxides emission control area.

Direct and Indirect Effects

The use of gasoline-powered equipment may temporarily reduce local air quality. Equipment use will be restricted on days with an Air Quality Index of orange, red, or purple. Long term air quality will not change as a result of this project.

Cumulative Effects

The park's air quality is generally threatened by the urban development of the surrounding area, auto emissions, and local Interstate traffic. Within the park, several past projects have affected air quality, including the use of gasoline powered equipment for the re-routing of South Valley Trail and the reducing of Hazardous Fuel Loads. The installation of a new waterline throughout the park has affected local air quality for an extended period with the use of heavy construction equipment, though the effects will not be permanent or long term. The proposed creation of an access point from the northern section of the park may result in a long-term reduction of local air quality from increased use of motor vehicles in the park if this is selected as the preferred alternative. However, this reduction will result in a negligible contribution to the air quality of the surrounding region.

Conclusion

A reduction in air quality due to the use of gasoline powered equipment in this project will be temporary. The overall net impact to air quality will be negligible compared to the effects of outside sources. Park air quality will not be significantly impacted, nor will actions result in a violation of the requirements of the Clean Air Act.

2. ARCHAEOLOGICAL RESOURCES

Affected Environment

An archaeological survey of Prince William Forest Park was completed in May 2004 by The Louis Berger Group, Inc (LBG). LBG conducted necessary background research, surface inspections, and subsurface testing to determine potential for intact archaeological deposits. The survey resulted in the discovery of more than 60 archaeological sites and 17,835 archaeological artifacts. While archaeological artifacts have been found in the generally vicinity of the proposed project sites, none have been found within the contained project area.

Direct and Indirect Effects

The construction of the proposed boardwalk and multiple use trails will not affect any known archaeological resources. Should any currently unidentified archaeological resources be found during the course of this project, all work will immediately cease and the park superintendent and the park resource manager will be notified.

Cumulative Effects

The park's archaeological resources are generally threatened by artifact collectors and accidental discovery by visitor activity. Within the park, no recent projects have resulted in the discovery of or impacting of archaeological resources. The waterline construction has not and is not expected to impact archaeological resources. The proposed access point in the northern section of the park is also not expected to affect these resources as it will follow areas examined within the Louis Berger Group survey and the waterline archaeological investigation. All known archaeological sites within the general vicinity of the project areas will remain intact and undisturbed.

Conclusion

Archaeological resources will not be impacted as a result of this project, and the mandates of the NHPA will be followed accordingly.

3. CULTURAL RESOURCES AND HISTORIC PROPERTIES

Affected Environment

An archaeological survey of Prince William Forest Park was completed in May 2004 by The Louis Berger Group, Inc (LBG). LBG conducted necessary background research, surface inspections, and subsurface testing to determine the extent of historic and pre-historic human activity within the park. The survey resulted in the discovery of more than 60 historic and pre-

historic sites, ranging from Native American encampments of the Early Archaic period (~7000 BCE) to the Prince William County Poor House built in 1795 to homes built by former park residents in the early 1900's. Two mining operations also existed with the park boundary, one for pyrite and the other for gold. Today, footprints are the known remnants of the historic and pre-historic sites prior to the park's creation. In the 1930's, the park's lands were selected for conversion from a rural setting to a recreational landscape. The Civilian Conservation Corps constructed five cabin camps and fours dams for use by the youth of Washington D.C. Those camps were then used by the Office of Strategic Services, when the Army occupied the park from 1942 to 1945. Park visitor continue to enjoy these cabins today.

Direct and Indirect Effects

The construction of the proposed boardwalk and multiple use trails will not affect any known cultural resources or historic properties. Should any currently unidentified cultural resources or historic properties be found during the course of this project, all work will immediately cease and the park superintendent and the park resource manager will be notified. The condition of two historic road beds will be improved by the proposed actions.

Cumulative Effects

The park's cultural resources and historic properties are generally threatened by visitor use and natural events. Within the park, no recent projects have resulted in the discovery of or impacts to cultural resources or historic properties. The waterline construction has not and is not expected to impact cultural resources. The proposed access point in the northern section of the park is not expected to affect these resources as well, as it will follow areas examined within the Louis Berger Group survey and the water archaeological investigation. All known historic and pre-historic sites within the general vicinity of the project areas will remain intact and undisturbed.

Conclusion

Cultural resources and historic properties will not be impacted as a result of this project, and the mandates of the NHPA will be followed accordingly.

4. EXOTIC SPECIES INTRODUCTION

Affected Environment

The park provides habitat for many species of plants and animals. Most of these organisms are integral components of the ecosystem and are protected to preserve biodiversity and overall community health. Protection efforts are hampered by the presence and spread of nonnative species. A combination of high visitation from across the US and abundant habitat puts Prince William Forest Park at a high risk for infestation of non-native insects, such as the gypsy moth and subsequent defoliation. The park has treated gypsy moth infestation in the past with the application of *Bacillus thuringiensis* variety *kurstaki* (B.t.k.).

The proliferation of nonnative plants is the primary mechanism through which vegetative habitat is lost. Exotic plants found at the park include: Tree of Heaven (*Ailanthus altissima*), multiflora rose (*Rosa multiflora*), Chinese wisteria (*Wisteria sinensis*), Chinese Lespedeza (*Lespedeza cuneata*), Japanese stiltgrass (*Microstegium vimineum*), Japanese knotweed (*Polygonum cuspidatum*) and Common Mullein (*Verbascum thapsus*). Some of these species can be found in great abundance in recently disturbed areas of the park. Control measures consist of manual, mechanical, and chemical methods. Resource management staff, in conjunction with the National Capital Region Exotic Plant Management Team, continues to work towards controlling the spread of exotic vegetation and preserving habitat for endemic species. There are no non-native or exotic species proposed to be used as part of this project. Any site specific rehabilitation will use native species and/or stock.

Direct and Indirect Effects

This project will result in a temporary increase in the probability of invasive plant colonization by creating prime habitat in the resulting ground disturbances. However, inaction will result in long-term, perhaps permanent, impacts by exotic plants in the ground disturbances caused by continued biking on single track trails.

Cumulative Effects

Exotic plants generally threaten the park through construction-related and natural ground disturbances. Within the park, past activities that have resulted in possible exotic plant colonization include the South Valley Trail re-route and treatment for Gypsy moths. The waterline construction will likely have a moderate impact to park resources, because it is likely that Japanese stiltgrass will colonize the disturbed rights-of-way. The proposed access in the northern section of the park may result in an increase probability of exotic plant colonization, through the increase usage of the park. However, this project is not expected to significantly increase the likelihood of invasive species colonization.

Conclusion

The introduction and colonization by exotic species will be mitigated by the proposed activity.

5. FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES AND HABITAT

Affected Environment

Prince William Forest Park has one plant species that is classified as federally threatened, *Isotria medeoloides*, the Small Whorled Pogonia (SWP). *Isotria medeoloides* is a member of the orchid family that flowers from mid-May in the south to mid-June in the northern portion of its range. *I. medeoloides* occurs in both in fairly young forests and in maturing stands of mixed-deciduous or mixed-deciduous/coniferous forests. Potential habitat includes dry, rocky, wooded slopes to moist slopes or slope bases crossed by vernal streams. The NPS has surveyed all suitable habitats within the park boundary and identified the location of existing populations.

Direct and Indirect Effects

There will be no direct or indirect effects on federally listed or endangered species (floristic, Dr. Ware, VA DCR-DNH).

Cumulative Effects

No past project has impacted the *Isotria* colonies. No future projects are anticipated to impact these colonies. There will be no cumulative impact on federally listed or endangered species.

Conclusion

Persistence of the park's only threatened species, *Isotria medeoloides*, will not be impaired by any of the Alternatives.

6. FISH AND FISH HABITAT

Affected Environment

Prince William Forest Park provides several habitat types for fish species including lakes, larger creeks, and small tributaries. Quantico Creek and South Fork Quantico Creek are both temperate freshwater streams. The species present in the streams of the park include American eel, common shiner, white sucker, creek chub sucker, northern hogsucker, brown bullhead, chain pickerel, sunfish, yellow perch, smallmouth bass, rainbow trout, brown trout, and channel cat. All fish populations are naturally reproducing or remnants from previous stocking. There are currently no fish stocking programs conducted by the Virginia Department of Game and Inland Fisheries or the National Park Service. Local fishermen use the park's streams for cold and warm water fisheries.

Direct and Indirect Effects

None of the Alternatives will cause direct or indirect effects on fish or fish habitat. To control erosion during construction, the park will employee the use of silt fencing and water bars.

Cumulative Effects

The waterline project generates a brief increase in turbidity in the streams at stream crossings. The impacts to fish or fish habitat are temporary at these stream crossings. The proposed access road in the northern portion of the park may increase the amount of impermeable surfaces. This may result in additional sediment reaching the waterways, potentially impacting fish or fish habitat. None of the proposed actions will impact fish resources.

Conclusion

Fish or fish habitat will not be significantly impacted by any of the Alternatives**.**

7. FLOOD PLAINS AND WETLANDS

Affected Environment

An integral part of the park's ecosystem is the Quantico Creek watershed and the lower portion of the Chopawamsic Creek watershed. The north branch of Quantico Creek and southern branch of Quantico Creek, which flow southeast and join near the eastern boundary, are the main streams in the park. These two streams receive more than 90% of the runoff waters; an intricate network of smaller streams drains the rest of the park. In addition, the park has numerous vernal pools and a seepage swamp area. Within the park are five man-made lakes or ponds that are used for recreation and provide wildlife habitat. The water quality of the creeks in Prince William Forest Park is considered good, and it is used as a reference, comparison, or benchmark, for good water quality in scientific studies.

Direct and Indirect Effects

No Action Alternative- Continued biking in single track areas within floodplains and wetlands will adversely impact these important resources, resulting in degradation of the local environs.

Taylor Farm Road Alternative- The construction of a boardwalk and rehabilitation of the trail will result in disturbance of 240 m^2 within the 100-year floodplain of South Fork, Quantico Creek. This would increase the potential for run-off and sedimentation and cause a minor impact to the floodplain. The National Wetlands Inventory (NWI) map classifies this area as a Palustrine Forested Broad Leafed Deciduous Temporary (PFO1A). Seasonal surveys of the area have not shown it to contain standing water except when the stream floods during very heavy rainstorms.

South Orenda Road Alternative- Construction of a bicycle trail in this area will result in a 40 m^2 of ground disturbance within the 100-year floodplain of South Fork, Quantico Creek. This would increase the potential for run-off and sedimentation and cause a negligible impact to the floodplain.

Multiple Use Trails Alternative- The construction of multiple bicycle areas within the park would disturb 280 m^2 within the 100-year floodplain of South Fork, Quantico Creek. The potential for run-off and sedimentation would increase and cause a minor impact to the floodplain (see Taylor Farm alternative).

Cumulative Effects

The waterline project has disturbed approximately 0.41 acres of wetlands during the construction period. The wetlands will be returned to their former shape and function immediately following completion of construction activities in the affected area. The proposed construction of a Rt. 234 entrance may potentially impact 0.052 acres of wetland. The incremental impacts of each of the alternatives will not contribute to a significant cumulative impact on the floodplain or wetlands.

Conclusion

Floodplains and wetlands will not be significantly impacted by any of the Alternatives.

8. GEOLOGICAL RESOURCES

Affected Environment

The fall line between the Piedmont and Coastal Plains physiographic provinces, which bisects the park, provides outstanding opportunities for the in-depth study of geology. Approximately two-thirds of the park is in the Piedmont and one-third in the Coastal Plain. The topography is undulating, with narrow ridge tops and relatively steep-sided valleys. The park is underlain by late Precambrian to early Paleozoic rocks, which are overlain in the eastern part of the park by unconsolidated Cretaceous period deposits. The soils of the park are sandy, relatively infertile, and easily disturbed. The steep terrain and poor quality soils combine to create severe erosion problems. In addition to its geological diversity, the park has large mineral deposits, in particular pyrite and associated minerals. The largest concentration of pyrite is at the confluence of the main branches of Quantico Creek, and the water's interaction with exposed mineral formations has formed unusual compounds and crystalline formations.

Direct and Indirect Effects

No Action Alternative - Continued biking in single track areas will disturb the ground, resulting in erosion.

Taylor Farm Road Alternative- Ground disturbance of 240 square meters will cause a minor, but temporary, increase in erosion, and sediment control measures will be employed.

South Orenda Road Alternative- Ground disturbance of 50 square meters will result in a negligible increase in erosion.

Multiple Bicycle Use Areas Alternative- Ground disturbance of 290 square meters will cause a minor, but temporary, increase in erosion, and sediment control measures will be employed.

Cumulative Effects

The waterline project area is confined to the Piedmont portion of the park. Soil erosion caused by construction is controlled with appropriate erosion and sediment control devices such as silt fence, check dams, and berms. The cumulative effects may result in minor impact to geologic resources.

Conclusion

The proposed actions will not significantly impact geological resources.

9. LAND USE

Affected Environment

Prince William Forest Park is under the jurisdiction and management of NPS, which offers a variety of activities. At present, Prince William Forest Park consists of approximately 15,000 acres of mixed hardwood forest; containing a major portion of the Quantico Creek watershed and the lower portion of the Chopawamsic Creek watershed. The park's relatively large size and the fact that it protects a significant portion of mature eastern deciduous forest make it a significant

natural resource. In addition to the natural resources, the park contains five Civilian Conservation Corps era cabin camping areas, a 100 site family campground, a group tent campground, the Travel Trailer Village, a primitive backcountry camping area, two picnic areas, each with a pavilion, an education center, visitor center, and 40 miles of hiking trails and biking trails.

Direct and Indirect Effects

The project will result in four changes of current land use status. The proposed actions will result in changes from undisturbed area to a bicycle use only boardwalk (0.07 miles), from a single track trail to a multiple use trail (0.61 miles), from undisturbed area to a multiple use trail (0.02 miles), from a right-of-way to a multiple use trail (0.07 miles).

Cumulative Effects

Within the park, the re-routing of the South Valley Trail resulted in a land use change of 1.0 miles from undisturbed to single track trail, however, that was mitigated by reclaiming 1.0 miles of trail and 0.75 miles of an access road. The waterline has resulted in a land use change of approximately 12.42 miles from road- and right-of-way edge lands to utility right-of-way. The proposed access from the northern section of the park may result in a land use change of approximately 0.75 miles of access for bikes, pedestrians, and/or vehicles. This project will not incur a significant amount of change in land use, nor will it contribute substantially to the overall changes in land use.

Conclusion

Land usage will not significantly impacted by this project.

10. LONG TERM MANAGEMENT

Affected Environment

The NPS provides various visitor service amenities and facilities including one 100-site campground, a group tent campground, a designated backcountry campground, two picnic areas, five cabin camps, many miles of single track and multiple use trails, and seasonal interpretive programs. The NPS has a contract with a concessionaire to provide a recreational vehicle campground with water, electrical, and sewer services, the Travel Trailer Village.

Direct and Indirect Effects

The proposed project will positively impact park management by providing safe, enhanced, desired, and adequate recreational opportunities.

Cumulative Effects

Past park projects have resulted in positive impacts to long-term management. The re-routing of South Valley Trail reopened access to one of the park's most used trails. The hazard fuel reduction project has eliminated accumulated fuel loads from developed areas. The waterline construction has eliminated the park's reliance on outdated water systems, springs, and ground water wells. The proposed northern access route may increase use of park resources. Increased recreational opportunity benefits park management.

Conclusion

Long term management will not impacted by this project.

11. NOISE

Affected Environment

Prince William Forest Park is bordered by 3 major roads; Interstate 95, and State Routes 234 and 619. It is also adjacent to Quantico Marine Corps Base. Occasional interruptions occur due to training activities on the base, including artillery and aircraft noises. Airspace over the park is within the flight path for Washington-Dulles International Airport. While the forest provides a buffer against most noise allowing for natural quiet, there are still impacts from the aforementioned human environment. As most recreational activities in the park are passive in nature, no impacts are expected from present or future use.

Direct and Indirect Effects

No permanent increase in noise levels is associated with any of the Alternatives. There will be a temporary increase in ambient noise levels during the construction phase. These shall be mitigated by OSHA regulations regarding sound attenuation.

Cumulative Effects

A temporary increase in ambient noise occurred during the construction phase of the rerouting of South Valley Trail. The installation of the waterline temporarily affected noise levels. Chainsaw noise associated with hazard fuel reduction also created temporary impact. The proposed Rt. 234 entrance road may disturb the natural quiet. None of the Alternatives will result in a permanent cumulative impact.

Conclusion

The natural quiet of the park will not be impacted.

12. PARK INFRASTRUCTURE

Affected Environment

The park's infrastructure includes 37 miles of trials, 21 miles of bicycle accessible areas, 25 miles of streams, five lakes, one 100-site campground, one group tent campground, an RV concession operated campground, a designated backcountry campground, two picnic pavilions, and five cabin camps.

Direct and Indirect Effects

The construction of the multiple use trails will expand the amount of bicycle accessible areas by approximately 0.76 miles, resulting in a positive expansion of park infrastructure.

Cumulative Effects

Within the park past projects have altered the existing infrastructure. The South Valley Trail re-route resulted in a net loss of 0.75 miles of unneeded access road. The waterline construction has eliminated the park's need to rely on ground water wells and springs. The proposed northern access route may expand the amount of paved road or multiple use trails by approximately 1.75 miles. This project will not substantially alter the park's infrastructure.

Conclusion

Park infrastructure will not be significantly impacted by this project.

13. RARE OR UNUSUAL VEGETATION

Affected Environment

The park occurs at the transition zone between northern and southern climates, in which lie two physiographical provinces, the Coastal Plain and the Piedmont. A floristic survey was completed by Dr. Ted Bradley and John Dodge, in March 2005. Many uncommon or rare tree species were found within the park, including Eastern hemlock, bitternut, big-tooth aspen, sweet bay magnolia, and table mountain pine. Many of the other vascular flora in the park are also uncommon, rare, or at their distributional limits. Included are the aquatic golden club, colicroot, the bunchflower, and marsh-bellflower.

Direct and Indirect Effects

The construction of the boardwalk and the multiple use trails will not impact any known rare or unusual vegetation. Should any uncommon vegetation be discovered in the course of this project, all work will cease immediately, and the park superintendent and the resource manager will be notified.

Cumulative Effects

Rare and unusual vegetation of the park is generally impacted by off-trail use and herbivorous browsing. Within the park, no projects have resulted in the discovery of or the impact to rare or unusual vegetation and habitat. The waterline construction has not impacted rare or unusual vegetation. The proposed access point in the northern section of the park is not expected to impact these resources, as the area has been specifically surveyed for the park's comprehensive floristic survey.

Conclusion

Rare and unusual vegetation will not be impacted.

14. RECREATIONAL RESOURCES

Affected Environment

Prince William Forest Park was originally created as the Chopawamsic Recreation Demonstration Area to serve as a natural and recreational landscape for the urban Washington D.C. area. Quickly incorporated into the National Park Service, Prince William Forest Park is the largest natural area in the District of Columbia metropolitan area, and the third largest National Park Service unit in Virginia. Park visitors participate primarily in passive forms of recreation, such as driving the nine-mile Scenic Drive, hiking, biking, and camping. Recreation resources include 37 miles of trials, 25 miles of streams, five lakes, one 100-site campground, a group tent campground, an RV concession operated campground, a designated backcountry campground, two picnic areas, and five cabin camps.

Direct and Indirect Effects

The construction of the boardwalk and multiple use trails will result in temporary local closures and inconveniences of recreational opportunities. However, overall recreational resources will be improved, with the additional and convenient access for bicycles. In all, the following actions will take place: 0.02 miles of new multiple use trail created, 0.07 miles of right-of-way to converted multiple use, 0.07 miles of new boardwalk constructed for bicycle access only, 0.49 miles of current multiple use remaining status quo, and 0.61 miles of single track trail converted to multiple use.

Cumulative Effects

The recreational resources of the park are generally impacted by temporary construction projects. Within the park, the closure and re-routing of South Valley Trail has led to extended but temporary impacts to the availability of recreational resources. The waterline construction has resulted in extended but temporary closures of single track and multiple-use trails. The proposed access point in the northern section of the park may result in temporary restricted access to recreational resources; however, the restrictions will be short-term. Overall current recreational resources will be improved with this project.

Conclusion

Park recreational resources will be improved.

15. SAFETY

Affected Environment

Prince William Forest Park has between 40-60 persons on staff at any point during the year, and receives approximately 225,000 visitors annually.

Direct and Indirect Effects

Under Alternatives 2, 3, and 4, there will be safety concerns relative to construction of the multiple use trails. This may include, but not be limited to, the use of heavy construction equipment (forklifts, front-end loaders, etc.) rigging, welding, painting and vehicular traffic. All activities shall take place in assigned and defined areas and in accordance with OSHA, park, and best management safety practices. However, the No Action Alternative will result in continued threats to employees and visitors by individuals illegally biking on single-use trails

Cumulative Effects

Visitor safety is generally affected by unsafe activities and incidents. All past, current, and proposed projects at the park have been and will be conducted in conformance with best management safety practices and in accordance with existing laws, policies, and regulations. Though this project may result in temporary threats, as addressed above, to the safety of employees and visitors, long-term threats will be mitigated.

Conclusion

All safety standards will be adhered to throughout this project to reduce any potential safety risks to park visitors and employees. Work zones will clearly be identified.

16. SCENIC VALUE

Affected Environment

Prince William Forest Park is composed of approximately 15,000 acres of Piedmont forest located within the Quantico Creek watershed. Prince William Forest Park is the third largest NPS unit within Virginia, and the largest protected open space in the Washington Metropolitan Region. Its proximity to the Metro area makes it a unique resource so close to the nation's capital. Park neighbors and visitors are attracted by the dense stands of hardwoods and the diverse communities they support. In addition, the park is becoming an increasingly popular destination for viewing fall foliage.

Direct and Indirect Effects

The construction of the proposed multiple use trails will result in a temporary degradation to the scenic value of the localized areas. However, all disturbances will be restored in such a manner as to return the area to a natural state.

Cumulative Effects

The scenic value of the park is generally impacted by construction activities, development of private land within the park congressionally authorized boundary, and trail degradation resulting from inappropriate use. Past projects have resulted in positive impacts upon the scenic value. Hazard fuel reduction has eliminated accumulated fuel loads, the South Valley Trail re-route was established as an environmentally preferred route, and treatment of gypsy moth infestations has negated forest defoliation. The waterline construction has produced temporary degradations to the scenic value along approximately 12.42 miles of roadways and right-of-way corridors. However, all areas will be restored to a state comparable to existing right-of-way corridors. The proposed access from the northern section of the park may affect 0.75 miles of access road and 1.0 miles of existing trails and fire roads. This project will not contribute to a degradation of scenic value.

Conclusion

Scenic value will not be impacted by this project.

17. STATE LISTED RARE, THREATENED, ENDANGERED, OR WATCH-LISTED SPECIES AND HABITATS

Affected Environment

Several state recognized species have been observed and are known to occur within the park. They include Velvety sedge, *Carex vestita*, a state rare wildflower, Lemmer's pinion moth, *Lithophane lemmeri*, a state rare moth, and the Sedge sprite, *Nehalennia irene*, a state listed rare damselfly. State Watch List species including Bush's sedge (*Carex bushii*), butternut (*Juglans*

cinerea), wild American ginseng (*Panax quinquefolius*), the Diana fritillary (*Speyeria diana*), and the flightless tiger beetle (*Cicindela unipunctata*) have also been known to occur in the park.

Direct and Indirect Effects

The construction of multiple-use trails will not have an effect on the existence or occurrence of these species.

Cumulative Effects

The state recognized species within the park are generally threatened by local extinction and basic visitor use impacts. Within the park, no past project has been known to impact these resources. The waterline construction has not resulted in the destruction of these species or their habitat. The proposed access from the northern section of the park is not expected to produce impacts on state recognized species.

Conclusion

State listed rare, threatened, endangered, or watch-listed species will not be impacted by this project.

18. STREAMFLOW CHARACTERISTICS

Affected Environment

Prince William Forest Park contains a majority of the Quantico Creek watershed and a lower portion of the Chopawamsic Creek watershed. The Quantico Creek watershed consists of South Fork Quantico Creek, North Fork Quantico Creek, and numerous tributaries. The Chopawamsic Creek watershed consists of North, Middle, and South Branch Chopawamsic Creeks. The park contains 5 man-made lakes or ponds that are used for recreation and provide for wildlife habitat.

Direct and Indirect Effects

The construction of the multiple use trails will not impact the stream channels or flow characteristics.

Cumulative Effects

Streamflow characteristics are generally impacted by urbanization and construction activities. Past projects have not impacted to stream flow characteristics. The re-routing of South Valley Trail removed a footbridge that restricted streamflow in South Fork Quantico Creek. The hazard fuel reduction project has not resulted in any known impacts. The waterline construction has resulted one long-term impact to streamflow. At Burma Road and Quantico Creek, the construction of a bridge has eliminated access to the flood plain for a localized area, thus channelizing the stream. However, this bridge has also eliminated an in-stream crossing. One moderate impact occurred to South Fork Quantico Creek where directional drilling was

ineffective and failed. An open cut was made to install the waterline at this crossing near Parking Lot A. It has since been restored. The proposed northern access route may impact streamflow characteristics depending on the preferred alternative chosen. This project will not significantly alter streamflow characteristic.

Conclusion

Streamflow characteristic will not be impacted by this project.

19. UNIQUE ECOSYSTEMS

Affected Environment

The park possesses an uncommon and diverse combination of ecosystems because of its geographical location. The park is situated at the transition zone between the northern and southern climates, and at the intersection of two physiographical provinces, the Coastal Plain and the Piedmont. A comprehensive floristic survey was completed by Dr. Ted Bradley and John Dodge, in March 2005. Many uncommon or rare tree species were found within the park, including Eastern hemlock, bitternut, big-tooth aspen, sweet bay magnolia, and table mountain pine. Many of the other vascular flora in the park are also uncommon, rare, or at their distributional limits. Included are the aquatic golden club, colicroot, bunchflower, and marsh-bellflower. Two oligotrophic saturated forest (seepage swamps) locations exist within the park.

Direct and Indirect Effects

No known unique ecosystems are known to occur within the project areas and no impact on these ecosystems is expected.

Cumulative Effects

Unique ecosystems are generally impacted by urbanization and construction activities. Within the park past projects have not produced impacts upon these ecosystems. The waterline construction has not resulted in the degradation of these resources. The proposed northern access route is not expected to result in the degradation of unique ecosystems.

Conclusion

Unique ecosystems will not be impacted by this project.

20. VEGETATION AND HABITAT

Affected Environment

Prince William Forest Park contains 15,000 acres of mesic hardwood forest, consisting mainly of oak-mixed hardwood. Small stands of Virginia pine mark old home sites and areas that were cleared over 65 years ago. The forest canopy is primarily composed of oak species, Virginia

pine, tulip poplar, beech, red maple, and hickory. The canopy is closed, with occasional gaps caused by individual tree mortality. The sub-canopy is generally dense. The shrub and herbaceous layers are generally open, with occasional dense pockets.

Direct and Indirect Effects

The construction of these multiple use trails will result in the removal of shrub and herbaceous layer vegetation from 290 square meters of undisturbed vegetation, and an undetermined amount in the removal of edge vegetation.

Cumulative Effects

Park vegetation is generally impacted by disease, parasites, and inappropriate use. Past projects have not resulted in unacceptable impacts to vegetation. Gypsy moth treatments negated forest defoliation caused by an invasive species, and the re-routing of South Valley trail reclaimed 1.75 miles of road and trail, while clearing only 1.0 miles of undisturbed vegetation. The waterline construction has impacted 12.42 miles of vegetation along roadsides and existing right-of-way corridors. The proposed northern access route would occur in existing access corridors and previous and recently disturbed areas and would result in negligible impacts. This project will not significantly impact the park's vegetation.

Conclusion

Vegetation and habitat will not be impacted by this project.

21. VISITOR EXPERIENCE

Affected Environment

Prince William Forest Park receives approximately 225,000 visitors annually. Visitation peaks during the spring, summer, and fall seasons when people are drawn to the park for recreational opportunities.

Direct and Indirect Effects

The construction of the multiple-use trails may lead to temporary closures of select single-track and multiple use trails throughout the duration of the project. Though this may lead to temporary inconveniences, the end result will improve the visitor experience by providing desired access for a requested use.

Cumulative Effects

The visitor experience is generally impacted by short-term construction activities and temporary closures. Previous projects have resulted in temporary and short-term closure, such as the re-routing of the South Valley Trail. The waterline construction resulted in rolling trail closures of a short-term nature. The proposed northern access route may result in additional opportunities for

visitors to experience the park. This project will not have a significant negative impact upon the visitor experience within the park.

Conclusion

The visitor experience within the park will be improved by this project.

22. WATER QUALITY

Affected Environment

Prince William Forest Park contains a majority of the Quantico Creek watershed and a lower portion of the Chopawamsic Creek watershed. The park also contains numerous vernal pools and a seepage swamp. The Quantico Creek watershed consists of South Fork Quantico Creek, Quantico Creek, and numerous tributaries. The park contains 5 man-made lakes or ponds that are used for recreation and provide for wildlife habitat. The water quality of the creeks in Prince William Forest Park is considered good, and the park is used as a reference, comparison, or benchmark for good water quality in scientific studies in the metropolitan area.

Direct and Indirect Effects

This project may result in a temporary increase of runoff and sediment into the park waterways. All requirements for storm-water and sediment management will be taken to reduce potential impacts. Significant areas of soil disturbance are not expected to occur for this project. Long-term or permanent degradation will not impact water quality.

Cumulative Effects

The park water quality is generally threatened by urbanization and an increased nutrient load from the use of fertilizers within the Quantico Creek watershed. Within the park past projects have not resulted in impacts to water quality. Gypsy moth treatments and hazard fuel reduction projects have not resulted in impacts upon the park's good-to-excellent water quality. The re-routing of South Valley Trail resulted in a positive impact by eliminating a footbridge that frequently washed out and led to bank instability. The waterline construction may have impacted the park's water quality. It is unknown if these impacts will be long-term or permanent. The proposed northern access route may result in a localized permanent reduction in stream health, dependent upon the alternative chosen. This project will not substantially impact stream health or water quality.

Conclusion

Water quality will not be significantly impacted by this project.

23. WILDLIFE AND WILDLIFE HABITAT

Affected Environment

Prince William Forest Park is home to a diverse group of organisms including approximately 30 species of fish, 36 species of amphibians, 41 species of reptiles, 105 species of birds, and 37 species of mammals. White-tailed deer, wild turkey, fox and beaver populations thrive within the park. Small mammals, reptiles and amphibians are abundant. American black bears, coyotes, and bobcats have been observed both in the park and in the surrounding environs, but population size and distribution are unknown. Owls and hawks, pileated woodpeckers, warblers, bluebirds and other songbirds are known to inhabit the park. Bald eagles, although not known to nest in the park, have been observed passing through the area. Insects and other invertebrates have not been thoroughly inventoried in the park.

Direct and Indirect Effects

No Action Alternative- Wildlife will continue to utilize the existing trails as a potential travel corridor or other habitat use.

Taylor Farm Rd. Alternative- Construction of a boardwalk and rehabilitation of the trail may cause a temporary local wildlife disturbance. Increased visitor use of the area may contribute to long-term disturbance. A boardwalk may permanently alter local habitat and may adversely affect the scale-dependent habitat requirements of some wildlife species.

South Orenda Rd. Alternative- Construction may cause local wildlife disturbance. Increased visitor use of the area may contribute to long-term wildlife disturbance.

Multiple bicycle trail Alternative- Construction may contribute to local wildlife disturbance. Increased visitor use of the area may cause long-term disturbance. A boardwalk may permanently alter the local wildlife habitat patterns. This may affect the scale-dependent habitat requirements of some wildlife species.

Cumulative Effects

Wildlife is generally impacted by human-wildlife conflicts and local extinction. Within the park, nearly all projects, of any extended length, result in localized disturbance to wildlife. The treatment for gypsy moths mitigated existing impacts to park wildlife. The hazard fuel reduction project has reduced habitat in the form of woody debris. The waterline construction has resulted in a short-term disturbance to wildlife. It is believed that wildlife will resume using these important corridors, once restored. The proposed access from the northern section of the park may result in disturbances of localized wildlife populations. This project will not significantly impact wildlife or wildlife habitat.

Conclusion

Significant impacts to wildlife will not occur from this project.