



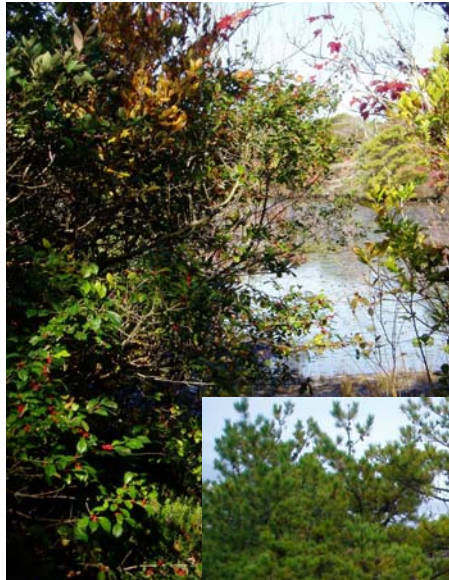
# Environmental Assessment

## Province Lands

### Bike Trail Renovations

### Cape Cod National Seashore

December 2006



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**ENVIRONMENTAL ASSESSMENT**  
**PROVINCE LANDS BIKE TRAIL RENOVATIONS**

**December 2006**

**CAPE COD NATIONAL SEASHORE**

Barnstable County • Massachusetts

National Park Service • United States Department of the Interior

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## **EXECUTIVE SUMMARY**

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The National Park Service proposes to renovate approximately 7.34 miles of the Province Lands Bike Trail at the Cape Cod National Seashore in Provincetown, Barnstable County, Massachusetts. It is expected that renovation would occur in phases as funding allows.

This proposed action would help protect resource areas and enhance the visitor experience and safety. The following specific concerns were instrumental in the development of this proposed project:

- Substandard design of the bike trail including steep grades, sharp curves, limited sight distances at path intersections, lack of signage and narrow width.
- High accident rate; more than half the accidents in the Cape Cod National Seashore in a typical year are on the bike trail.
- A desire for increased protection of adjacent resource areas including dunes, wetlands and rare plants.
- Reduce maintenance needs and costs.

For planning purposes, the bike trail was subdivided into the following five segments based on the immediacy of the need for renovation:

- Segment 1 is 0.80 miles long, beginning at the intersection of the Bennett Pond Spur and the main Loop Trail and running to the intersection of the main Loop Trail and the Herring Cove Beach Spur.
- Segment 2 is the 1.1-mile long Herring Cove Beach Spur.
- Segment 3 is 1.05 miles long, along the main Loop Trail between the intersection with the Herring Cove Beach Spur and the northern underpass of Province Lands Road.
- Segment 4 is 1.02 miles long, along the main Loop Trail beginning after the northern underpass of Province Lands Road and ending just before the Race Point Beach parking lot.
- Segment 5 is 3.5 miles long, beginning at the northern Race Point Road crossing and ending at the limit of the Bennett Pond Spur.

This environmental assessment analyzes the impacts of four alternatives on the human environment in accordance with the National Environmental Policy Act of 1969. These include a No Action Alternative, the National Park Service's Preferred Alternative and two additional action alternatives.

Under the Preferred Alternative, the bike trail would remain predominantly within its current alignment. Two sections of the trail, one within Segment 1 and the second around

the underpass of Province Lands Road where Segment 3 transitions to Segment 4, would be reconfigured to improve safety on the trail in winding, steep areas with a history of reported accidents. The bike trail would be widened to a typical and consistent width of 10 feet and resurfaced. New signs, a centerline and other pavement markings would be added. Beach grass and other native vegetation would be planted and sand fence would be installed in places that sand drifts across the bike trail. In the future, Cape Cod National Seashore intends to place wayside exhibits at key locations along the trail.

The proposed action would have negligible, if any, impacts on air quality, soundscapes, water quality, land use, socioeconomics, energy resources, geology, marine and estuarine resources, lightscapes, Indian Trust resources, floodplains, scenic resources, prime and unique farmlands, and park operations. No adverse effect to cultural resources including National Register eligible or listed cultural resources would occur.

The proposed action would impact wetlands, coastal upland ecosystems and dune ecosystems in the project area, but these impacts would not be significant. Under the Preferred Alternative, minor, short-term, direct adverse impacts to less than 0.14 acres of wetlands within a foot of the existing trail could occur during construction from unintentional contact with these resources. No long-term, direct, adverse impacts to wetlands would occur as the trail would not be widened in locations where wetlands border the trail on both sides. Minor, long-term, direct, adverse impacts would occur to upland ecosystems and dune ecosystems along the bike trail alignment from the loss of habitat and increase in impervious area. This would include up to 1.70 acres of upland ecosystems and 2.63 acres of dune ecosystems. Additional minor, short-term and long-term, direct, adverse and beneficial impacts to dune ecosystems would occur which are dependant upon the selection of realignment options:

- Segment 1 Realignment Options - 0.7 acres to 1.34 acres.
- Segment 3 Realignment Options - 0.54 acres to 1.23 acres.

For these realignments, the adverse impacts to habitat are partially offset by restoration of the trail which would be abandoned. Moderate, long-term, direct beneficial impacts to visitor and staff use, safety and experience are anticipated from a safer bike trail.

There will be a 30-day comment period on the environmental assessment, which is available for review online at <http://parkplanning.nps.gov> and at local libraries.

Our practice is to make comments, including names, home addresses, home phone numbers and email addresses of respondents available for public review. Individual respondents may request that we withhold their names and/or home addresses, etc., but if you wish us to consider withholding this information you must state this prominently at the beginning of your comments. In addition, you must present a rationale for withholding this information. This rationale must demonstrate that disclosure would constitute a clearly unwarranted invasion of privacy. Unsupported assertions will not meet this burden. In the absence of exceptional, documentable circumstances, this information will be released. We will always make submissions from organizations or businesses, and from individuals identifying themselves as representatives of or officials of organizations or businesses, available for public inspection in their entirety.

Comments may be submitted electronically via the project website or in writing to:

Superintendent, Cape Cod National Seashore  
Attn: Province Lands Bicycle Trail Renovation Project  
99 Marconi Station Site Road  
Wellfleet, Massachusetts 02667

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# **1 INTRODUCTION**

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## **1.1 PURPOSE AND NEED**

The conditions of the existing Province Lands Bike Trail at the Cape Cod National Seashore (CCNS) in Provincetown, Massachusetts present unnecessary hazards and costs to staff and visitors. The National Park Service (NPS) would like to rectify these conditions while continuing to provide recreation services to our visitors. The location of the Province Lands within the CCNS is shown in Figure 1-1.

The NPS is proposing to renovate approximately 7.34 miles of the existing bike trail. It is expected that renovation would occur in phases as funding allows. The project is intended to improve rider safety, enhance the users experience and facilitate maintenance by meeting the following objectives:

- 1) Repave those segments of the trail that are in disrepair.
- 2) Increase dune stabilization to minimize sand migration onto the bike trail by adding natural vegetation and/or sand fences.
- 3) Correct existing safety deficiencies where appropriate, including the elimination of steep grades, sharp curves, limited sight distance at path intersections and insufficient signage.
- 4) Widen the bike trail from 8 feet to 10 feet.
- 5) Minimize project impacts to the human and natural environment when implementing the renovation.

The proposed renovation is in direct response to regular and noticeable occurrences of visitor accidents and injuries sustained while using the bike trail, and attributed to facility design characteristics and maintenance issues. The proposed action is intended to provide improvements that would reduce the incidence of accidents and injuries by modifying steep portions of the bike trail to more moderate slopes and widening the bike trail to provide more appropriate lateral clearance, and includes elements that would contribute to dune stabilization and reduce the drifting of sand that impairs safe travel and braking control. In the future, Cape Cod National Seashore intends to place wayside exhibits at key locations along the trail.

This environmental assessment (EA) analyzes the potential environmental impacts that would result from the implementation of the proposed action and is also being used to comply with Section 106 of the National Historic Preservation Act. This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the regulations of the Council on Environmental Quality (CEQ) for implementing NEPA (40 Code of Federal Regulation (CFR) 1500-1508), the NPS's Director's Order # 12 (Conservation Planning, Environmental Impact Analysis, and Decision-making), Section 106 of the National Historic Preservation Act of 1966 as amended, and implementing regulations, 36 CFR 800.

## **1.2 BACKGROUND**

An essential part of the planning process is understanding the purpose and significance of the bike trail and the National Seashore. Cape Cod is a slender spit of land curving some 60 miles out into the Atlantic Ocean. It has long been recognized as an extraordinary and diverse resource.

On August 7, 1961, President John F. Kennedy signed into law the legislation that established the CCNS (Public Law 87-126). The purposes of the CCNS, as interpreted in the most recent (1998) General Management Plan (GMP), are to:

- 1) Preserve the nationally significant and special cultural and natural features, distinctive patterns of human activity, and ambience that characterize the Outer Cape, along with the associated scenic, cultural, historic, scientific, and recreational values.
- 2) Provide opportunities for current and future generations to experience, enjoy, and understand these features and values.

The Province Lands Bike Trail, completed in 1967, was the first bike trail in the National Park System (Killian, 1973). According to conversations with NPS staff at the CCNS, the Province Lands Bike Trail is “heavily used.” Bicycling is the number two activity in the CCNS, after swimming.

The 1998 GMP serves to guide CCNS policy and decision making. Of particular relevance to this project are the management policies applying to developed, nonmotorized corridor subzones. The plan states the following:

“The nonmotorized corridor subzone includes paved or improved trails and sand roads for bicycling and walking. Trails typically pass through natural settings such as dunes, forests, and marshes and often provide access to specific natural or historic areas within the seashore. Public attractions are easily accessible and usually close to the trails. Parking areas are available. Limited support facilities such as comfort stations may be provided at trailheads. Resource modifications are evident but harmonize with the natural environment.”

This project is intended to improve safety and enhance the visitor experience. Table 1-1 compares how the goals of this project are anticipated to affect the qualitative characteristics of the nonmotorized corridor subzone.

## **1.3 SCOPING AND ISSUE IDENTIFICATION**

Scoping is an effort to involve agencies and the general public in determining issues to be addressed in this EA. Scoping is used to determine important issues to be given detailed analysis in the EA and eliminate issues not requiring detailed analysis; allocate assignments among the interdisciplinary team members and/or other participating agencies; identify related projects and associated documents; identify permits, surveys, consultations, etc., required by other agencies; and create a schedule that allows adequate time to prepare and distribute the EA for public review and comment before a final decision is made.



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**Table 1-1 Comparison of Project Goals to CCNS Nonmotorized Corridor  
Subzone Characteristics**

<b>Zone Characteristics</b>	<b>Subzone Quality</b>	<b>Affect of Proposed Project Goals on Subzone Quality</b>
Challenge and Adventure of Experience	Low to Moderate	The proposed improvements would help to moderate highly challenging segments of the trail and allow bikers of all abilities a more complete user experience.
Dependence on Roads, Trails or other Facilities	High	No Affect – The overall extent and access to the trail would not change.
Visitor Encounter Expectations	Low to Moderate	The proposed informational wayside exhibits would enhance the visitor experience by providing insight into the subject view or resource.
NPS Staff Encounter Expectations	Low to Moderate	No Affect – No additional facilities or staff encounter opportunities are proposed.
Highest Standard for Trail Corridor	Paved up to 10 feet wide	The proposed improvements would increase the extent of trails with a 10-foot path width. A 10-foot width would not be achieved where increased width would encroach on wetland resources.
Management Action for Resource Protection and Safety	Moderate to High	The trail would not be widened into wetland areas. New signs and pavement markings would be added to improve visitor and resource safety. The primary project goal is to improve trail safety.
Tolerance for Resource Degradation	Low	The trail would not be widened into wetland areas. Potential impacts to existing natural resources have been identified and evaluated. Obsolete trails would be restored.
Opportunity for Solitude	Moderate	No Affect – No additional access points or activities are proposed.
Noise Level	Moderate	No Affect – With the exception of construction activities, no additional visitor usage or motorized activities are proposed.

Staff of the CCNS conducted internal scoping for this proposed action. This interdisciplinary process defined the purpose and need, identified potential actions to address the need, determined the likely issues and impact topics, and identified the relationship of the proposed action to other planning efforts at the CCNS.

The NPS notified the Massachusetts state historic preservation officer (SHPO) and associated American Indian tribes of the project by letters dated October 5, 2004 to obtain early input to the proposed action (see Appendix A).

A press release informing the public about the public meetings being held on this project was issued by the CCNS. Two public meetings were held in Provincetown to present the project and receive public comments. These are documented in Appendix B. The first

meeting was held at Provincetown Town Hall on August 11, 2005 and was attended by two citizens. The second meeting was held at the town hall on September 21, 2005 and was attended by five citizens, including one from the first meeting.

Comments focused on certain aspects of the project design including the proposed realignment of two sections and the elimination of several steep slopes on the existing trail. Commenters noted that the steep slopes and curves on the existing trail are part of the character of the trail and should be retained. It is important to note, however, that improving the safety of the trail for all levels of cycling ability is one of the principal goals of the project.

Additional comments were made on potential impacts to wetlands and it was noted that the project design would minimize wetland impacts by avoiding direct impacts to wetland resources. In locations where wetlands border the trail on both sides there would be no widening of the path and in two areas the path would be realigned away from existing wetlands.

Other agencies, organizations and the public will have an additional opportunity to review and comment on this EA during a 30-day comment period.

#### **1.4 IMPACT TOPICS ADDRESSED IN THIS DOCUMENT**

The CEQ's NEPA regulations and NPS Director's Order 12 (Conservation Planning, Environmental Impact Analysis, and Decision-making) were used as the basis for selecting impact topics for further evaluation. Selections were made after assessing the issues raised during project planning meetings and by observing the potentially affected resources at the project site.

It was recognized that a widening and regrading of the trail might be necessary for desired safety improvements for park visitors. This could result in impacts to natural resources immediately adjacent to the existing trail. Other issues, for example cultural resources, were evaluated to a level appropriate to determine their need for inclusion.

The issues identified as a result of this scoping and analyzed in this EA generally fall into the following three categories:

- 1) Natural resources, including wetlands, coastal upland ecosystems, dune ecosystems and protected species of concern.
- 2) Visitor and staff safety.
- 3) Visitor use and experience.

The rationale for their inclusion in the EA is presented below. Several topics considered and dismissed from the detailed EA analysis are discussed in Section 1.5. Each of these impact areas and their related consequences are described and discussed in Section 4.0 of this report.

#### 1.4.1 Soils

Wetland soils were evaluated as part of the wetland delineation and evaluation efforts. The Natural Resources Conservation Service (NRCS) soil survey of Barnstable County, Massachusetts (March 1993) was also reviewed for overall soil distributions on the site. Loose sand and loamy sand are dominant in most substrates of the Province Lands.

The dunes were at one time covered by topsoil; however, most topsoil has been lost due to heavy deforestation by early settlers of the region. The shifting nature of the dunes in the Province Lands has historically caused transportation problems on both roadways and bike trails. Due to the problems on the bike trail caused by the shifting soil of the dune areas and the rare nature of the topsoil in the forested areas, effect on soils was selected as an impact topic for more detailed study and is integrated into the wetland, upland and dune analyses.

#### 1.4.2. Wetland Resources

The NPS often groups the varied habitats present in the CCNS into four basic ecosystem types, three of which are present within the proposed project area: ponds and freshwater wetlands; coastal uplands; and beaches, barrier islands, spits and dunes. Potential impacts to ponds and fresh water wetland ecosystems are evaluated through the wetland assessment described below. The fourth ecosystem type, estuaries and salt marshes, is not present within the project corridor, the area within 200 feet of the bike trail.

An assessment of wetland functions and values was conducted in October 2004 to provide the basis for the evaluation of potential impacts resulting from the renovation of the bike trail. Wetland areas found within the project corridor are comprised of palustrine wetlands with forested, scrub-shrub, unconsolidated bottom and emergent cover types. A total of 28 wetland areas totaling 16.71 acres were delineated within 100 feet on either side of the bike trail. Based upon the prevalence of wetland resources in proximity to the bike trail and potential improvement areas, wetland resources was selected as an impact topic for more detailed study.

#### 1.4.3 Coastal Upland Ecosystems

The “Beech Forest” in the Province Lands is a coastal upland habitat and a rare example on the outer Cape of a mature forest community. Ponds and dense forested habitat dominate this area. Since expansion of the bike trail beyond its existing layout may affect these habitats, potential coastal upland ecosystem and wildlife habitat impacts were selected as impact topics for more detailed study.

#### 1.4.4 Dune Ecosystems

Most of the Province Lands Bike Trail traverses the dynamic and expansive dune system of the Province Lands. There are active efforts to stabilize the dunes with native grass plantings. According to the NPS, much of the dunes were once covered by a foot of topsoil and forested, but early settlers cleared nearly all of the forest from the Province Lands area. Since expansion of the bike trail beyond its existing layout may affect these habitats, potential dune ecosystem and wildlife habitat impacts were selected as impact topics for more detailed study.

#### 1.4.5 State Protected Species

Letters of consultation were sent to the United States Fish and Wildlife Service (USFWS) and the Massachusetts Division of Fisheries and Wildlife Natural Heritage and Endangered Species Program (NHESP) to determine what, if any, protected habitats and species exist within the proposed project area. NPS staff members were also consulted to determine what records they had of protected species occurring near the existing bike trail.

The USFWS replied in a September 17, 2004 letter (Amaral 2004; see Appendix A) that no protected species or critical habitats under their jurisdiction are known to occur in the project area. Therefore, the proposed action would not impact federally protected species or critical habitat, and federally protected species and habitats were dismissed as an impact topic for more detailed study.

In a letter dated October 20, 2004 (French 2004; see Appendix A), the NHESP identified several protected habitats and species within the vicinity of the bike trail. While the proposed project is a renovation of an existing bike trail, the potential widening of the trail and construction activities have the potential of impacting adjacent habitat that may contain state protected natural resources. Due to this potential, state protected species and habitat within the vicinity of the bike trail were selected as impact topics for more detailed study.

#### 1.4.6 Visitor and Staff Safety

For the 7 years between 2000 and 2006, an average of 19 accidents have occurred each year on the Province Lands Bike Trail. Maintaining safe conditions is a priority on the trail and the primary goal of the proposed action. The numerous hazards present on the trail have been long established, and are even noted on the current brochure for bike trails in the CCNS (NPS not dated). Since the largest user groups are families with small children and organized groups, special care must be taken to ensure visitor safety. Staff safety issues include the ability to safely patrol the bike trail, assist visitors who are experiencing difficulties, and safely perform routine maintenance tasks. While the long-term effects of the bike trail renovation are expected to be very positive, there may be potential short-term effects on visitor and staff safety during construction activities. For these reasons, both positive and negative effects on visitor and staff safety were selected as impact topics for more detailed study.

#### 1.4.7 Visitor Use and Experience

There may be short-term effects to visitor use and experience during construction activities on the trail due to sections of the trail being closed and the presence of construction equipment. Visitor characteristics, visitor use of the trail, and overall visitor experience have been taken into consideration in the design of this project.

However, it is anticipated that the use of the trail and experience of park visitors would be enhanced in the long term by the renovation of the bike trail. As with visitor and staff safety, both positive and negative effects on visitor use and experience were selected for more detailed study in this assessment.

## **1.5 IMPACT TOPICS DISMISSED FROM FURTHER ANALYSIS**

The following impact topics were also considered, but deemed not to have any significant or long-term impacts relative to the proposed bike trail improvement project.

### 1.5.1 Cultural Resources

Federal agency actions must comply with the National Historic Preservation Act (NHPA) of 1966, as amended. The intent of the NHPA is to integrate consideration of historic preservation issues into the early stages of project planning by a federal agency. Accordingly, under Section 106 of NHPA, the head of any federal agency having direct or indirect jurisdiction over a proposed federal or federally-financed undertaking is required, before the expenditure of any federal funds on that undertaking, to account for its effects on properties (districts, sites, buildings, structures, and objects) included or eligible for inclusion in the National Register of Historic Places. To focus attention on management requirements within these property types, the NPS Management Policies categorizes cultural resources as archeological resources, cultural landscapes, structures, museum objects, and ethnographic resources (per NPS Director's Order 28. These categories are defined in Director's Order 28 as:

- Archeological resources: any material remains or physical evidence of past human life or activities which are of archeological interest, including the record of the effects of human activities on the environment. They are capable of revealing scientific or humanistic information through archeological research.
- Cultural landscape: a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values.
- Structures: a constructed work, usually immovable by nature or design, consciously created to serve some human activity.
- Museum objects: a material thing possessing functional, aesthetic, cultural, symbolic, and/or scientific value, usually movable by nature or design. Museum objects include prehistoric and historic objects, artifacts, works of art, archival material, and natural history specimens that are part of a museum collection.
- Ethnographic resources: a site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it.

#### Archeological Resources

In order to determine the presence or absence of archaeological resources within the area of potential effect of proposed improvements to the bike trail, two archaeological surveys were performed. The first survey, documented in the February 2005 *Archaeological Requirements Report* (TAMS Consultants, Inc. 2005), determined that portions of the project area have the potential to yield archaeological resources. The second survey, documented in the January 2006 *Intensive (Locational) Archaeological Survey*, (Doucette 2006), involved subsurface testing in those areas determined to have archaeological

potential and determined that no such resources meeting the eligibility criteria for the National Register are present.

Therefore, given the absence of any archaeological resources in areas that would be impacted by proposed bike trail improvements, archaeological resources is dismissed as an impact topic for more detailed study.

#### Cultural Landscapes

The bicycle trail meanders through the viewshed of the "Dune Shacks of the Peaked Hill Bars Historic District" in the park. The Dune Shacks have been determined an eligible historic district. However, because proposed improvements to the bike trail would result in a trail very similar to the present one, negligible impacts to cultural landscapes are anticipated. Therefore, cultural landscapes is dismissed as an impact topic.

#### Historic Structures

There are no historic structures in the immediate vicinity of the bike trail. Proposed improvements to the bike trail would result in a path very similar to the present one, leaving an essentially unchanged landscape. In addition, construction would be temporary and limited. Therefore, impacts to historic structures in the general vicinity are not expected and historic structures is dismissed as an impact topic for more detailed study.

#### Museum Objects

There are no museum objects located in the vicinity of planned improvements to the bike trail. Therefore, museum objects is dismissed as an impact topic for more detailed study.

#### Ethnographic Resources

Consultation with the Wampanoag Tribe of Gay Head-Aquinnah concerning the bike trail renovation project was initiated on October 5, 2004. The NPS also consulted with the Wampanoag Tribe on August 2, 2005 regarding archeological surveys of the bike trail. No ethnographic resources have been identified; therefore, ethnographic resources is dismissed an impact topic needing further analysis in this EA. The Wampanoag Tribe will receive a copy of the EA.

#### Section 106 Summary

After applying the Advisory Council on Historic Preservation regulations for the protection of historic properties (36 CFR Part 800), the NPS finds that there would be no historic properties affected in the implementation of the proposed undertaking to renovate the Province Lands Bike Trail. A copy of this environmental assessment with the finding of no historic properties affected will be sent to the Massachusetts Historical Commission.

#### 1.5.2 Air Quality

The Clean Air Act of 1973, as amended and associated NPS policies requires the NPS to protect air quality in parks. CCNS is classified as a Class II area per the Clean Air Act of 1973. The CCNS is within a non-attainment area (including but not limited to the entire

Commonwealth of Massachusetts) for ozone. The primary local source of air pollution is emissions from vehicles entering, exiting, and idling in the parking lot. No motorized vehicles are allowed on the Province Lands Bike Trail. As the parking lot capacity would not change, no increase in the emission levels is expected. Air contaminant levels during construction would be minimal and temporary and would be limited to minor amounts of fugitive dust and emissions from construction vehicles. Therefore, air quality is dismissed as an impact topic for more detailed study.

#### 1.5.3 Soundscapes

In accordance with NPS Management Policies and NPS Director's Order 47 (Soundscape Preservation and Noise Management), an important part of the NPS mission is preservation of natural soundscapes associated with parks. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in park units, together with the physical capacity for transmitting natural sounds. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among the NPS units, as well as potentially throughout each park unit, being generally greater in developed areas and less in undeveloped areas. Given that the Province Lands Bike Trail has been established for human use and is generally occupied by park visitors, some level of human generated noise is expected. These levels are generally unobtrusive and do not generate adverse effects on wildlife and visitor enjoyment. Hauling material, operating equipment and other construction activities could result in dissonant, human-caused sounds. Any dissonant sounds associated with construction, however, would be temporary and negligible. Since construction would be temporary and limited, adverse impacts are not expected and soundscapes is dismissed as an impact topic for more detailed study.

#### 1.5.4 Water Quality

The proposed project consists of an upgrade to an existing facility located over the Cape Cod sole-source aquifer. The function of the Province Lands Bike Trail as a non-motorized recreational trail would not change, effectively limiting or excluding any increase in potential pollutant impacts related to trail use. During the construction phase, erosion and spill control measures would be required to reduce or eliminate the potential for temporary impacts. Since construction would be temporary and limited, adverse impacts are not expected and water quality is dismissed as an impact topic for more detailed study.

#### 1.5.5 Land Use

The proposed project consists of an upgrade to an existing facility and would not extend outside of existing park boundaries or closer to adjacent land uses. There would be no changes in local or regional land use that would result from the project. Therefore, impacts are not expected and land use is dismissed as an impact topic for more detailed study.

#### 1.5.6 Socioeconomics

The CCNS has a significant positive influence on the local economy, with regional and statewide contributions. The quality of the visitor experience has contributed to its status

as a tourist destination that attracts out-of-state visitors to the area and to Massachusetts in general. Visitors to the CCNS have a large fiscal impact on the surrounding communities.

The proposed upgrade of the Province Lands Bike Trail would neither change local and regional land use nor impact local businesses or other agencies. The upgrade could provide a negligible beneficial impact to local economies; i.e., minimal increases in employment opportunities for the construction workforce and revenues for local businesses and government generated from construction activities and workers. However, any increase would be temporary, lasting only as long as the construction. The primary goal of the proposed project as a safety improvement is intended to reduce injuries to visitors and as such has an economic benefit, but this benefit is difficult to project and quantify from an economic perspective. Therefore, socioeconomics is dismissed as an impact topic for more detailed study.

#### 1.5.7 Energy Resources

Use of the Province Lands Bike Trail is restricted to non-motorized transport, and as such does not contribute to the depletion of energy resources. Construction activities associated with the potential project would result in a one-time temporary use of energy resources to power equipment and construction vehicles, and to generate construction materials. The proposed project would have no effect on energy requirements, energy resources, and energy conservation potential; therefore, energy resources is dismissed as an impact topic for more detailed study.

#### 1.5.8 Geology

This project would not affect the geological resources of the CCNS. The project would not involve the excavation or removal of geologic features or subsurface components. Therefore, geological resources is dismissed as an impact topic for more detailed study.

#### 1.5.9 Marine and Estuarine Resources

No marine and estuarine resources exist within 200 feet of the Province Lands Bike Trail. Impacts are not expected and, therefore, marine and estuarine resources is dismissed as an impact topic for more detailed study.

#### 1.5.10 Federal Protected Species

As discussed in Section 1.4.5, the USFWS indicated in a September 17, 2004 letter (Amaral 2004) that no protected species or critical habitats under their jurisdiction are known to occur in the project area. Therefore, the proposed action would not impact federally protected species or critical habitat, and federally protected species and habitats is dismissed as an impact topic for more detailed study.

#### 1.5.11 Lightscapes

In accordance with NPS Management Policies, the NPS strives to preserve natural ambient landscapes, which are natural resources and values that exist in the absence of human caused light. Since most of the activities associated with the trail improvements



work would occur during daylight hours and there would be no installation of outdoor lighting, lightscapes would not be affected by the proposed action. Therefore, lightscapes is dismissed as an impact topic for more detailed study.

#### 1.5.12 Indian Trust Resources

Secretarial Order 3175 requires that any anticipated impacts to Indian trust resources from a proposed project or action by Department of the Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaskan Native tribes. There are no Indian trust resources in the CCNS. The lands comprising the National Seashore are not held in trust by the Secretary of the Interior for the benefit of Indians due to their status as Indians. Therefore, potential impact to Indian trust resources is dismissed as an impact topic for more detailed study.

#### 1.5.13 Floodplains

Executive Order 11988 (Floodplain Management) requires examination of impacts to floodplains and potential risks involved in placing facilities within floodplains. NPS Management Policies Director's Order 2 (Planning Guidelines) and Director's Order 12 provide guidelines for proposed actions in floodplains. Although some construction work would occur in floodplains, the impacts would be minor and short-term and would not impact the configuration and flood storage capacity of the floodplain. The proposed action would result in only negligible, long-term adverse impacts to floodplains. Therefore, floodplains is dismissed as an impact topic for more detailed study.

#### 1.5.14 Scenic Resources

In an evaluation of scenic quality, both the visual character and visual quality of a viewshed are considered. A viewshed comprises the limits of the visual environment associated with the action. During construction, negligible, short-term, adverse impacts would result from the presence of construction equipment, and possibly fugitive dust along the existing developed bike trail corridor. No new permanent man-made features would be added to the landscape; consequently, there would be no new visual intrusions on the existing scenic quality. Since any disturbance would be temporary, scenic resources is dismissed as an impact topic for more detailed study.

#### 1.5.15 Prime and Unique Farmlands

None of the soils mapped on the project site are regulated under the Federal Farmland Protection Policy Act (7 CFR Part 658 of July 5, 1984, as superseded by the Farmland Protection Policy Act Final Rule of June 17, 1994). Additionally, none of the soils are prime farmland soils, unique farmland soils, farmland soils of statewide importance, or identified as hydric soils by the Natural Resource Conservation Service. Soils in the project area are not identified as having any federal designation. None of the alternatives would affect agricultural lands or prime or unique farmlands soils as defined by the Natural Resource Conservation Service; therefore, these resources are dismissed as an impact topic for further study.

#### 1.5.16 Park Operations

Parking lots throughout the CCNS are open 6 A.M. to midnight, daily, year-round. The Province Lands Visitor Center is open from 9 A.M. to 5 P.M. daily, early-May through late-October. Uninterrupted and efficient park operations at the CCNS are vital to meeting the NPS mission. Implementation of the proposed action would not cause interruptions nor interfere with efficient park operations; therefore, this topic is dismissed as an impact topic for further study.

## **2 ALTERNATIVES CONSIDERED**

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For purposes of prioritization and reference, the bike trail was subdivided into the following five segments, numbered in accordance with the immediacy of the need for renovation (Figure 2-1).

- Segment 1 is 0.80 miles long, beginning at the intersection of the Bennett Pond Spur and the main Loop Trail and running to the intersection of the main Loop Trail and the Herring Cove Beach Spur.
- Segment 2 is the 1.1-mile long Herring Cove Beach Spur.
- Segment 3 is 1.05 miles long, along the main Loop Trail between the intersection with the Herring Cove Beach Spur and the northern underpass of Province Lands Road.
- Segment 4 is 1.02 miles long, along the main trail beginning after the northern underpass of Province Lands Road and ending just before the Race Point Beach parking lot.
- Segment 5 is 3.5 miles long, beginning at the northern Race Point Road crossing and ending at the limit of the Bennett Pond Spur.

In the future, Cape Cod National Seashore intends to place wayside exhibits at key locations along the trail. These flat panels, mounted on a low bases would be angled to refer to a particular scene and would focus on what bicyclists would see. This 'captioning' of the scenery, such as dunes, saltmarshes, the lighthouse, ponds, and beech forest, would help visitors make intellectual and emotional connections with the resource. Exhibit locations and the number of exhibits would be determined as the trail rehabilitation project proceeds and the exhibits would be on their own funding track. The sites for the wayside exhibits would be selected with careful consideration to environmental resources and the landscape.

### **2.1 ALTERNATIVE A – NO ACTION**

Under this alternative, there would be no renovation of the existing bike trail. Routine maintenance efforts, such as sweeping the trail of accumulated drifting sand, and removing leaves and branches from the trail, would continue. Safety issues associated with the current alignment of the trail would not be addressed. This option would not meet the primary project goal.

### **2.2 ALTERNATIVE B – REPAIR ONLY**

This alternative would address only the issues associated with the repairs needed on the bike trail in the current alignment. This alternative would involve primarily repaving, which would improve public use and safety in those sections of the trail that are in disrepair. In the future, wayside exhibits would be constructed. Alternative B would not address identified safety concerns due to steep grades, sharp turns and sand drifting on the trail.

### **2.3 ALTERNATIVE C – REPAIR AND 10-FOOT WIDENING**

The entire bike trail, with the exception of where it passes alongside wetland areas, would be widened to a typical width of 10 feet and resurfaced. Figure 2-2 shows typical cross-section details of the proposed trail widening. There would be no expansion of the bike trail into wetland areas. A minimum 10-foot bike trail width would be achieved in most areas of the trail. Wood retaining walls, slope stabilization plantings, stair construction and minor realignments would be constructed where needed. New signs, a centerline and other pavement markings would also be added. Beach grass and other native vegetation would be planted and sand fence would be installed in places where sand drifts across the bike trail. In the future, wayside exhibits would be constructed.

Alternative C would address some of the safety and maintenance concerns associated with the narrow trail and drifting sand; however, it would not address the safety concerns related to steep grades and sharp turns on the trail as it is currently aligned.

### **2.4 ALTERNATIVE D – REALIGNMENT, REPAIR AND 10-FOOT WIDENING**

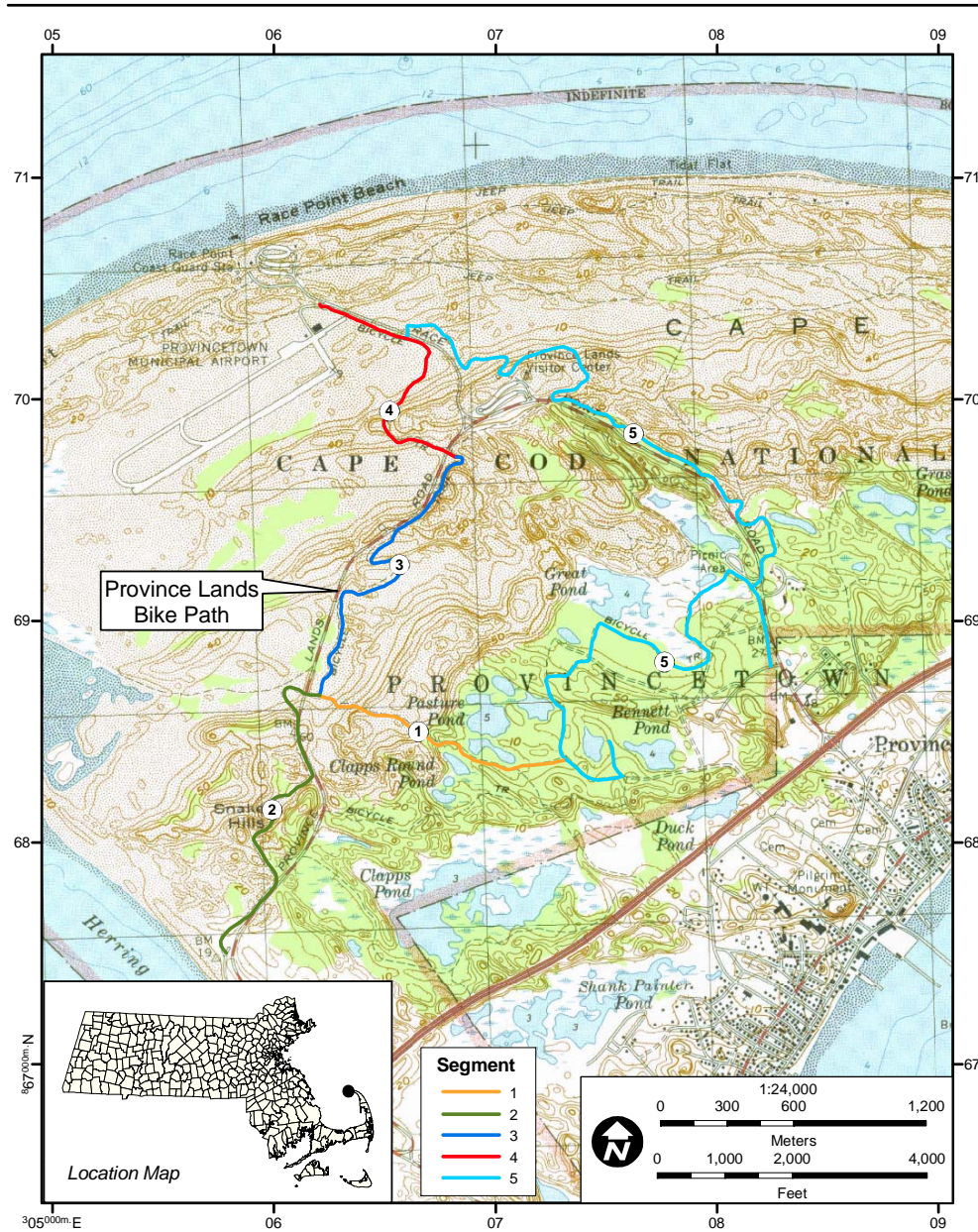
Alternative D is the Preferred Alternative.

As in Alternative C, the entire bike trail, with the exception of where it passes alongside wetland areas, would be widened to a typical width of 10 feet and resurfaced. A minimum 10-foot width would be achieved in most areas. There would be no expansion of the bike trail into wetland areas. Wood retaining walls, slope stabilization plantings, stair construction and minor realignments would be constructed where needed. New signs, a centerline and other pavement markings would also be added. Beach grass and other native vegetation would be planted and sand fence would be installed in places where sand drifts across the bike trail. In the future, wayside exhibits would be constructed.

The NPS anticipates that the majority of the bike trail would remain within its current alignment. However, it is proposed that two sections of the trail be reconfigured and realigned to address known safety hazards. The locations of both trail realignments are in areas with a history of reported accidents (Minnerath 2005).

One realignment, Alternative D.1, is in Segment 1 in a hilly dune habitat to the west of the Beech Forest area. This segment of trail is currently hazardous due to sharp turns and a steep grade. Here the bike trail can be reconfigured from the existing alignment, which has a steep slope (8-12%  $\pm$ ) with tight curves, to a safer grade and line. There are three options being considered for this realignment, which are shown in Figure 2-3. Each option generally consists of lengthening the trail with additional curves in a broader “S” formation and then restoring the existing trail to a natural state. A temporary construction turnout would be necessary during the period of construction.

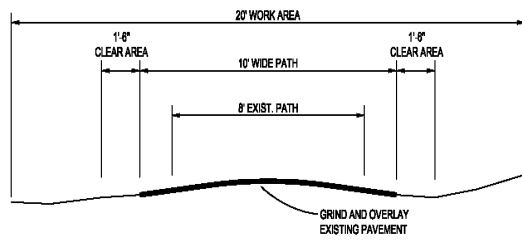
The second realignment, Alternative D.2, is in the area where Segment 3 transitions to Segment 4. This alignment has been designed to improve a problematic road crossing that has a tight turn and steep slope approaching a low overhead clearance through an existing underpass of Province Lands Road. There are four options being considered for this realignment which are shown in Figure 2-4. Each option eliminates use of the underpass to cross Province Lands Road and includes restoration of the existing trail to a natural state. Three options cross to the south and one option, D.2.4, crosses to the north of the



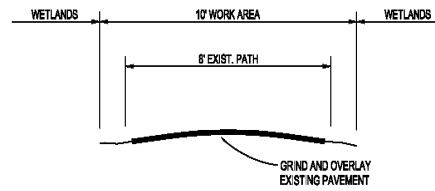
**Figure 2-1**  
**Site Locus Map**  
**Province Lands Bike Path**  
**Cape Cod National Seashore**

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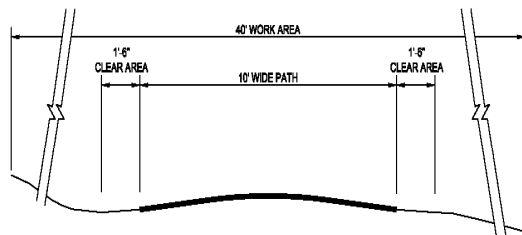
*Figure 2-2 Cross Sectional Detail of Widening (Alternatives C and D)*



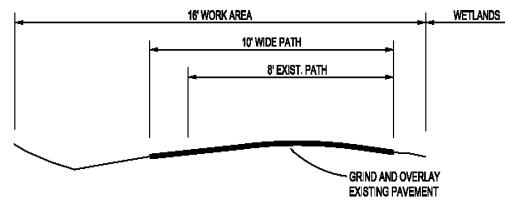
PROPOSED PATH SECTION  
THROUGH NON-WETLANDS  
PRIORITIES 1-5  
NOT TO SCALE



PROPOSED PATH SECTION  
BETWEEN WETLANDS  
PRIORITIES 1-5  
NOT TO SCALE



PROPOSED PATH SECTION NEW  
ALIGNMENT AREAS  
PRIORITIES 1-5  
NOT TO SCALE

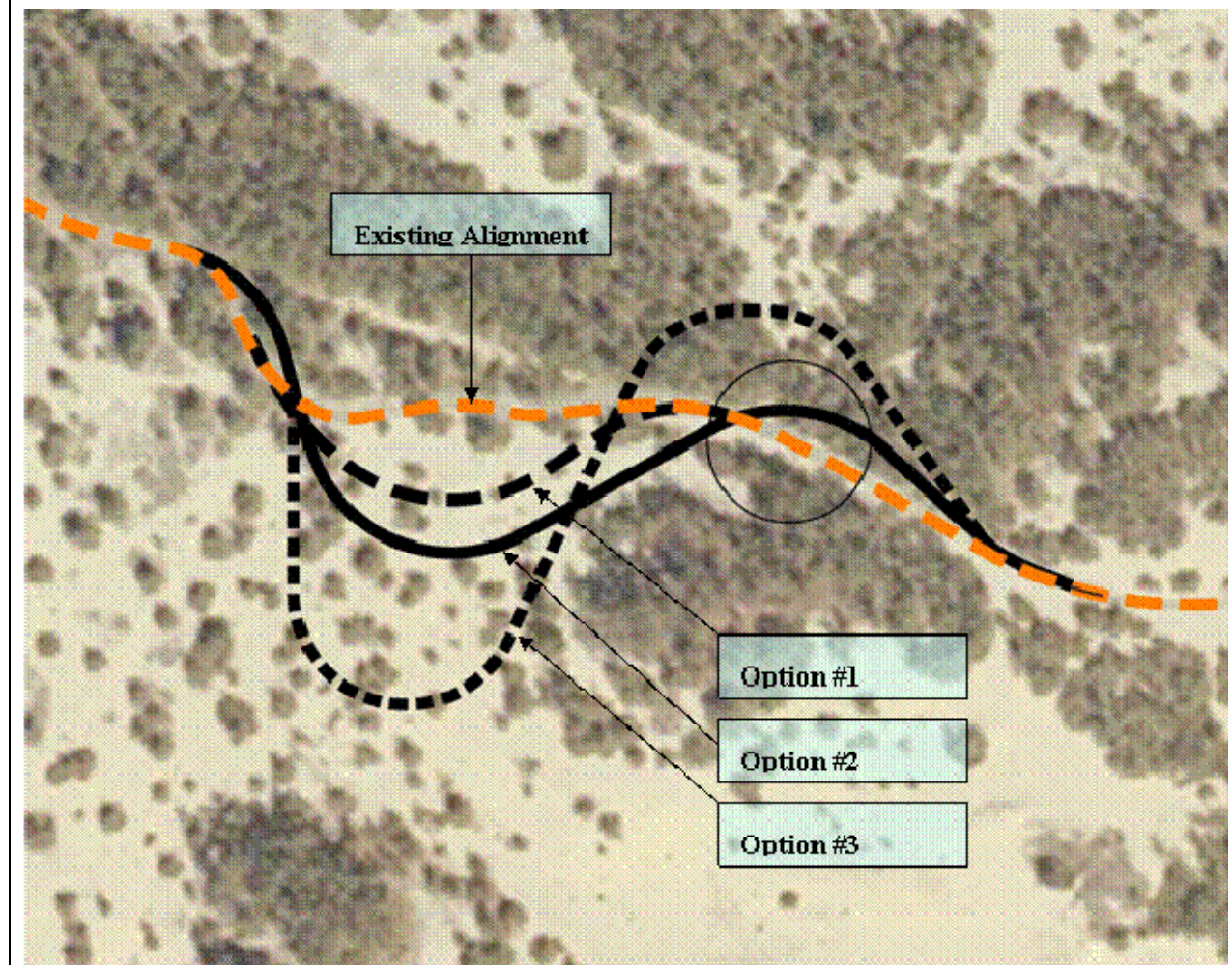


PROPOSED PATH SECTION  
ABUTTING WETLANDS  
PRIORITIES 1-5  
NOT TO SCALE

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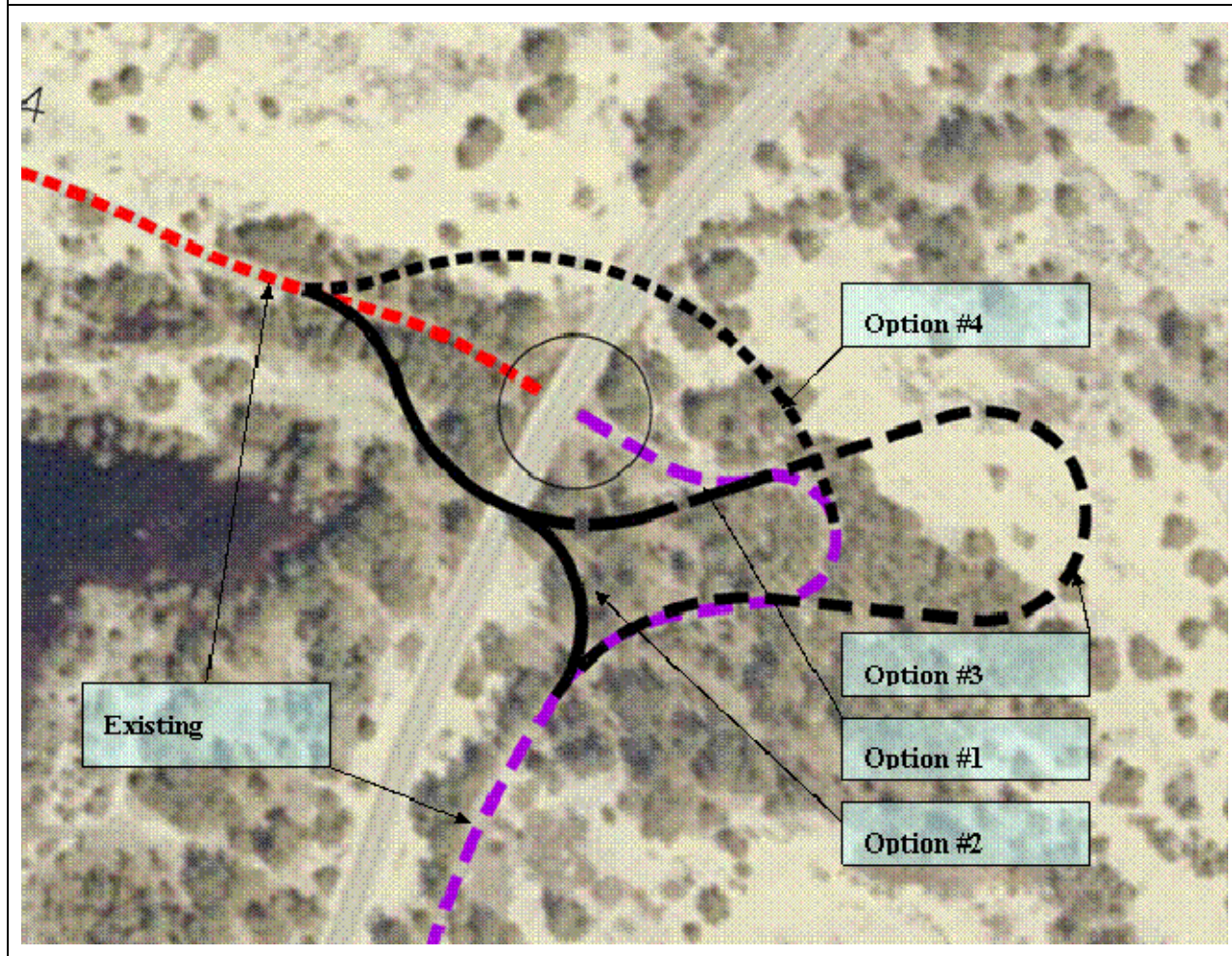
*Figure 2-3 Options for Realignment of Segment 1 Under Alternative D.1*



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*Figure 2-4 Options for Realignment of Crossing at Segments 4 and 5 Under Alternative D.2*



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existing underpass. One option, D.2.1, maintains the tight turn, but eliminates the slope and underpass. Option D.2.2 essentially avoids the whole area by a more southerly crossing before the turn. Option D.2.3 eliminates the tight turn by lengthening the segment in a broader turn and then like D.2.1, avoids the slope and underpass. The final option, D.2.4 eliminates the turn and underpass with a broad arching path to the north from the tip of the turn. A temporary construction turnout would be necessary during the period of construction.

## **2.5 CONSIDERATION OF ALTERNATIVE TRAIL WIDTH**

A future American Association of State Highway and Transportation Officials (AASHTO) standard may recommend a width of 12 feet for a paved bike trail. However, the CCNS's General Management Plan's highest standard for the width of a nonmotorized corridor subzone within the park is a paved surface up to 10 feet wide. A 12-foot wide bike trail would exceed this standard. Widening the trail to 12 feet would also result in a higher overall impact area for the project, with uncertain incremental benefits to public use and safety. For these reasons, the alternative of meeting the potential, future AASHTO 12-foot standard was dismissed from further analysis.

## **2.6 ENVIRONMENTALLY PREFERRED ALTERNATIVE**

According to NPS Director's Order 12, an Environmentally Preferred Alternative should be considered in all environmental documents. The guidelines of the CEQ provide that the Environmentally Preferred Alternative is the alternative that will promote the national environmental policy as expressed in Section 101(b) of the NEPA. The NEPA states that an Environmentally Preferred Alternative should meet the following standards:

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generation.
2. Ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings.
3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety or other undesirable and unintended consequences.
4. Preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.
5. Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities.
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

The Province Lands Bike Trail provides park visitors an accessible and low impact way to enjoy the unique environments of the Province Lands. The restoration and improvement of the existing trail would ensure that future generations would continue to

benefit from the same opportunity. Improving safety and usability of the trail would promote the values of Standards 2 and 3. By maintaining and improving an existing bike trail, the project would minimize the large scale impacts associated with new bike trail construction and would support continued future use of a free and accessible recreational opportunity in an area rich with natural and cultural resources.

As a result, it was determined that Alternative D, the Preferred Alternative, is also the Environmentally Preferred Alternative. Alternative D would best address Standards 2 and 3 by attaining the highest level of safety and usability improvements upon completion. Alternatives B and C would result in safety improvements, but not to the same extent as Alternative D, which corrects alignment issues in two locations with a history of reported accidents. Alternative A would not meet Standards 1, 2 or 3 since it would allow safety hazards, usability issues, and trail disrepair to continue for present and future generations.

## **2.7 MITIGATION MEASURES**

Mitigation measures are specific actions designed to minimize, reduce or eliminate adverse impacts of the alternatives considered. The following mitigation measures would be implemented under each alternative and are assumed in the analysis of effects.

### 2.7.1 No Action Alternative

There would be no adverse environmental impacts resulting from implementation of the No Action Alternative (Alternative A). No mitigation measures are necessary.

### 2.7.2 Action Alternatives

Under each of the three action alternatives (Alternatives B, C and D), minor, short-term, direct, adverse impacts to wetlands would be minimized through a construction period sedimentation and erosion control program to include the installation of silt fence and staked haybales near wetlands along the bike trail. The sedimentation and erosion control program would minimize the potential for sedimentation impacts to existing wetlands and would be instituted as part of a comprehensive storm water pollution prevention plan to be implemented through the National Pollution Discharge Elimination System (NPDES) construction stormwater discharge permit. Temporary sedimentation and erosion controls would be removed when the sites are stabilized at the end of construction.

Appendix 2 of the NPS Procedural Manual 77-1 (NPS 1998) designates best management practices (BMPs) and conditions for NPS actions that may have adverse impacts on wetlands. The following BMPs and conditions would be applicable to the proposed action:

- Effects on hydrology: Action must have only negligible effects on site hydrology, including flow, circulation, velocities, hydroperiods, water level fluctuations, and so on.
- Water quality protection and certification: Action is conducted so as to avoid degrading water quality to the maximum extent practicable. Measures must be employed to prevent or control spills of fuels, lubricants, or other contaminants from entering the waterway or wetland. Action is consistent with state water quality standards and Clean Water Act Section 401 certification requirements.

- Erosion and siltation controls: Appropriate erosion and siltation controls must be maintained during construction. All exposed soil or fill material must be permanently stabilized with native vegetation at the earliest practicable date. Temporary sedimentation and erosion controls, such as silt fence and haybales, would be removed when the site is stabilized at the end of construction.
- Effects on fauna: Action must have only negligible effects on normal movement, migration, reproduction, or health of aquatic or terrestrial fauna, including at low flow conditions.
- Proper maintenance: Structure or fill must be properly maintained so as to avoid adverse impacts on aquatic environments or public safety.
- Heavy equipment use: Heavy equipment use in wetlands must be avoided if at all possible. Heavy equipment used in wetlands must be placed on mats, or other measures must be taken to minimize soil and plant root disturbance and to preserve preconstruction elevations.
- Stockpiling material: Whenever possible, excavated material must be placed on an upland site. However, when this is not feasible, temporary stockpiling of excavated material in wetlands must be placed on filter cloth, mats, or some other semi-permeable surface, or comparable measures must be taken to ensure that underlying wetland habitat is protected. The material must be stabilized with straw bales, filter cloth, or other appropriate means to prevent reentry into the waterway or wetland.
- Removal of stockpiles and other temporary disturbances during construction: Temporary stockpiles in wetlands must be removed in their entirety as soon as practicable. Wetland areas temporarily disturbed by stockpiling or other activities during construction must be returned to their pre-existing elevations, and soil, hydrology, and native vegetation communities must be restored as soon as practicable.
- Topsoil storage and reuse: Re-vegetation of disturbed soil areas should be facilitated by salvaging and storing existing topsoil and reusing it in restoration efforts in accordance with NPS policies and guidance. Topsoil storage must be for as short a time as possible to prevent loss of seed and root viability, loss of organic matter, and degradation of the soil microbial community.
- Native plants: Where plantings or seeding are required, native plant material must be obtained and used in accordance with NPS policies and guidance. Management techniques must be implemented to foster rapid development of target native plant communities and to eliminate invasion by exotic or other undesirable species.
- Coastal zone management: Action must be consistent, to the maximum extent practicable, with state coastal zone management programs. Coastal zone management approval would be secured before a finding of no significant impact is prepared.

- Endangered species: Action must not jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, including degradation of critical habitat (see NPS Management Policies (1988) and guidance on threatened and endangered species). Endangered species approval would be secured before a finding of no significant impact is prepared.

Additional BMPs may be appropriate depending on local conditions or special circumstances.

Construction activities and heavy equipment would be limited to the trail surface to the extent possible and staging and turn around areas for equipment would be clearly designated in non-wetland areas. If construction equipment or construction activities extend beyond the trail corridor, additional mitigation (e.g., use of smaller vehicles or tracked or balloon tired vehicles, or placement of mats) would be employed to minimize soil and plant disturbance and to preserve preconstruction elevations.

The dry sand or sandy loam soils that comprise the non-breeding habitat of the Eastern spadefoot toad are widely distributed throughout the project area. Potential measures to protect the species' non-breeding habitat would be limited to restricting construction activities to designated construction areas. Potential breeding habitats of the spadefoot toad, comprising dune slack wetlands and other seasonally flooded wetlands, would be delineated prior to construction. Mitigation measures to protect these areas would include the installation of trenched silt fence upslope from the delineated breeding habitat to minimize sedimentation and other construction-related disturbance. To avoid impacts to breeding Eastern spadefoot toads, their egg masses, and metamorphs, there would be no construction within 100 meters of any standing water between April 15 and August 30.

Protected plant populations and pink lady's slipper (*Cypripedium acaule*) populations identified close to the trail would be avoided and, as appropriate, special mitigation measures would be implemented to protect the plants. These plant populations would be identified and marked prior to construction.

The use of fill material would be limited to the maximum extent possible. Fill material needed for construction would be obtained from the project area if possible. If fill material cannot be obtained from the project area, the material would be obtained from a designated area within the park or from a NPS-approved, weed-free source from outside the park. All areas of exposed fill would be planted with native vegetation and monitored for the presence of invasive species.

With implementation of mitigation measures, the resulting impacts would be short-term, and negligible or minor, as discussed in Chapter 3.

## **2.8 COMPARATIVE SUMMARY OF THE ALTERNATIVES**

Table 2-1 provides a comparative summary of the alternatives considered and Table 2-2 provides a summary of the environmental consequences associated with each alternative.



**Table 2-1 Comparative Summary of Alternatives Considered**

<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<i>No Action</i>	<i>Trail Repair Only</i>	<i>Repair and Widening of the Trail to 10 Feet</i>	<i>Realignment, Repair and Widening of the Trail</i>
No repairs or improvements to the trail would be conducted. Routine maintenance activities would continue.	Repairs would be made as needed to sections of the trail. The width of the trail would not be altered. Routine maintenance activities would continue.	Repairs would be made as needed to sections of the trail and the trail would be expanded from approximately 8 feet to 10 feet wide. The trail would not be widened into wetland resource areas. Dune grass plantings would be done in certain areas to stabilize sand dunes and reduce drifting sand on the bike trail. Routine maintenance activities would continue.	Current alignments on certain segments of the trail that pose safety concerns would be realigned. Repairs would be made as needed to sections of the trail and the trail would be expanded from approximately 8 feet to 10 feet wide. The trail would not be widened into wetland resource areas. Dune grass plantings would be done in certain areas to stabilize sand dunes and reduce drifting sand on the bike trail. Routine maintenance activities would continue.
This alternative does not meet the project goals. Needed repairs would not be done and the safety and usability of the trail would not be improved. The trail would not meet standards for bike trail width.	This alternative does not fully address the project goals. Repairs would be done to improve the condition of the existing trail and the cost of future maintenance. However, safety and usability issues associated with narrow, steep and winding portions of the trail would not be improved. The trail would not meet standards for bike trail width.	The project goals are addressed, but not fully met by this alternative. Repairs would be done to improve the condition of the existing trail and the cost of future maintenance. Safety concerns associated with the overall trail narrowness would be addressed and a minimum 10-foot bike trail width would be achieved in most areas.	This alternative fully meets the project goals. Repairs would be done to improve the condition of the existing trail and the cost of future maintenance. Safety concerns associated with the overall trail narrowness would be addressed and a minimum 10-foot bike trail width would be achieved in most areas. The safety and usability issues

**Table 2-1 Comparative Summary of Alternatives Considered**

<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
<i>No Action</i>	<i>Trail Repair Only</i>	<i>Repair and Widening of the Trail to 10 Feet</i>	<i>Realignment, Repair and Widening of the Trail</i>
		Safety and usability issues associated with steep and poorly aligned trail segments would not be remedied.	associated with steep and poorly aligned trail segments would be addressed.

**Table 2-2 Summary of Environmental Consequences**

<b>Impact Topics</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
	<i>No Action</i>	<i>Trail Repair Only</i>	<i>Repair and Widening of the Trail to 10 Feet</i>	<i>Realignment, Repair and Widening of the Trail</i>
<i>Natural Resources</i>	No impacts would occur.	There is potential for minor, short-term, direct, adverse impacts to wetland resources within a foot of the trail during the renovation of the existing path. The total area for this is 0.14 acres of wetland impact.	<p>There is potential for minor, short-term, direct, adverse impacts to wetland resources within a foot of the trail during the renovation of the existing path. The total area for this is 0.14 acres of wetland impact.</p> <p>There is potential for minor, long-term, direct, adverse impacts affecting up to 4.48 acres of ecosystems distributed along 7.3 miles of bike trail. This includes 1.75 acres of upland ecosystems and 2.73 acres of dune ecosystems.</p>	<p>There is potential for minor, short-term, direct, adverse impacts to wetland resources within a foot of the trail during the renovation of the existing path. The total area for this is 0.14 acres of wetland impact.</p> <p>There is potential for minor, long-term, direct, adverse impacts affecting up to 4.33 acres of ecosystems distributed along 7.3 miles of bike trail. This includes 1.70 acres of upland ecosystems and 2.63 acres of dune ecosystems.</p> <p>Additional minor, short-term and long-term, direct, adverse and beneficial impacts to dune ecosystems would occur from implementation of two realignment options:</p> <p style="padding-left: 40px;">Segment 1 Realignment Options - 0.7 acres to 1.34 acres.</p> <p style="padding-left: 40px;">Segment 3&amp;4 Realignment Options - 0.54 acres to 1.23 acres.</p>

**Table 2-2 Summary of Environmental Consequences**

<b>Impact Topics</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
	<i>No Action</i>	<i>Trail Repair Only</i>	<i>Repair and Widening of the Trail to 10 Feet</i>	<i>Realignment, Repair and Widening of the Trail</i>
<i>Visitor and Staff Safety</i>	Minor, long-term direct, adverse impacts to visitor and staff safety resulting from the continued existence of unsafe conditions and deteriorated segments of the bike trail.	Minor, long-term, beneficial, direct impacts to visitor and staff safety would occur.  Long-term safety issues associated with poorly aligned trail sections in Segments 1 and 3 would continue to be a hazard.	Moderate, long-term, direct and beneficial impacts to visitor and staff safety would occur. A wider trail would allow visitors and staff more room to safely navigate the often steep and winding bike trail.  Long-term safety issues associated with poorly aligned trail sections in Segments 1 and 3 would continue to be a hazard.	Moderate, long-term, direct and beneficial impacts to visitor and staff use and safety would occur.
<i>Visitor Use and Experience</i>	Minor, long-term direct, adverse impacts to visitor use and experience resulting from the continued existence of unsafe conditions and deteriorated segments of the bike trail.	Minor, long-term, direct and beneficial impact to visitor use and experience resulting from the repair of deteriorating pavement along the bike trail.  Hazardous trail alignment in segments 1 and 3 would still detract from bike trail use and experience.	Moderate, long-term, direct and beneficial impact to visitor use and experience resulting from widening and the repair of deteriorating pavement along the bike trail.  Hazardous trail alignment in segments 1 and 3 would still detract from bike trail use and experience.	Moderate, long-term direct and beneficial impacts to visitor use and experience are anticipated resulting from widening and the repair of deteriorating pavement along the bike trail. Additional minor, long-term, direct and beneficial impacts would result from correction of two hazardous alignments of the bike trail and adding a vista turnout on one of them would improve the visitor's overall riding experience.

**Table 2-2 Summary of Environmental Consequences**

<b>Impact Topics</b>	<b>Alternative A</b>	<b>Alternative B</b>	<b>Alternative C</b>	<b>Alternative D</b>
	<i>No Action</i>	<i>Trail Repair Only</i>	<i>Repair and Widening of the Trail to 10 Feet</i>	<i>Realignment, Repair and Widening of the Trail</i>
<i>State Protected Species</i>	No impacts would occur.	No long-term impacts to habitat of state listed species of special concern. Minor, short-term, direct, adverse impacts to habitat of the Eastern spadefoot toad would result from construction period activities along the bike trail.	Minor, short-term and long-term, direct, adverse impacts to habitat of the Eastern spadefoot toad would result along the bike trail.	<p>Minor, short-term and long-term, direct, adverse impacts to habitat of the Eastern spadefoot toad would result along the bike trail from the widening. Additional minor, short-term, direct, adverse impacts to Eastern spadefoot toad breeding habitat from construction activities would occur if the wetland near the segment 3 realignment is determined to be a dune slack wetland habitat.</p> <p>Minor, short-term and long-term, direct, adverse impacts would occur if other protected species are discovered within the project areas of the realignments.</p>

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### **3      AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

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This section describes the affected environment and the potential direct and indirect impacts associated with each alternative of the proposed action. It is organized by impact topics, which refine the issues and concerns into distinct topics for discussion and analysis.

This section also describes methods utilized to perform the analysis of the environmental consequences associated with each alternative of the proposed action. This approach allows a standardized comparison between the alternatives based on their impact to the environment. The NEPA requires consideration of context, intensity, and duration of impacts, indirect impacts, cumulative effects, and measures to mitigate for such impacts. In addition, NPS policy also requires that “impairment” of park resources be evaluated in all environmental documents.

#### **3.1      EVALUATION OF IMPACTS**

Each alternative was evaluated for its potential to produce environmental impacts. Impacts can be described as having several distinct attributes. The following definitions were used to characterize and evaluate the effects of the impacts associated with project alternatives:

- Context or area affected by the proposed action: Local, parkwide or regional. For this environmental assessment, local impacts would occur within the general vicinity of the Province Lands Bike Trail, while parkwide impacts would affect a greater portion of the park and regional impacts would extend outside the limits of the park.
- Intensity of the effect: Impact intensity is the degree to which a resource would be beneficially or adversely affected. Intensity is rated as negligible, minor, moderate or major. The criteria that were used to rate the intensity of the impacts for each resource topic are presented later in this section.
- Duration: Duration is short term or long term. Short-term impacts would occur only during construction. Long-term impacts would persist beyond the construction period.
- Direct and indirect impacts: A direct effect is caused by an action and occurs at the same time and place. An indirect effect is caused by an action, but is later in time or farther removed in distance, but still reasonably foreseeable.

Table 3-1 provides a framework for establishing whether an impact would be negligible, minor, moderate, or major. Because definitions of intensity vary by impact topic, intensity definitions are provided separately for each impact topic analyzed in this environmental assessment. The evaluation criteria include both quantitative and qualitative analyses, as appropriate to each resource.

**Table 3-1 Impact Intensity Definitions**

Resource	Intensity Definitions
Wetlands, Upland Ecosystems, and Dune Ecosystems	<p><b>Negligible:</b> The impact on biological communities, natural processes, species, soils, or wetland values and functions would be either non-detectable or if detected, would have effects that would be considered slight and localized.</p> <p><b>Minor:</b> The impact is detectable and could affect the abundance or distribution of individuals in a localized area but would not affect the viability of the local population or overall community size, structure, or composition. Changes to natural processes, soil characteristics, or wetland values or functions would be measurable, although the changes would be limited and affect only a localized area.</p> <p><b>Moderate:</b> The impact is clearly detectable and could have appreciable effect on the resource. This would include impacts that affect the abundance or distribution of local populations but would not affect the viability of the regional population. Changes to community size, structure, or composition, ecological processes, wetland values and functions, or soil characteristics could be substantial and occur over a larger area.</p> <p><b>Major:</b> The impact is severely adverse or exceptionally beneficial. Impacts would have a substantial, highly noticeable, or widespread influence, affecting the abundance or distribution of a local or regional population to the extent that the population would not be likely to recover (adverse) or would return to a sustainable level (beneficial). Community size, structure, or composition, ecological processes, wetland values and functions, or soil characteristics would be highly altered and landscape level changes could be expected.</p>
State Listed Species of Special Concern	<p><b>Negligible:</b> The action could result in a change to a population or individuals of a species or designated critical habitat, but the change would be so small that it would not be of any measurable or perceptible consequence and would be well within natural variability.</p> <p><b>Minor:</b> The action could result in a change to a population or individuals of a species or designated critical habitat. The change would be measurable, but small and localized and of little consequence. Mitigation measures, if needed to offset the adverse effects, would be simple and successful.</p> <p><b>Moderate:</b> Impacts on special-status species, their habitats, or the natural processes sustaining them would be detectable and occur over a large area. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.</p> <p><b>Major:</b> The action would result in a noticeable effect to viability of a population or individuals of a species or resource or designated critical habitat. Impacts on a special-status species, critical habitat, or the natural processes sustaining them would be detectable, both in and out of the NRA. Loss of habitat might affect the viability of at least some special-status species. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed.</p>



Visitor Use, Experience, and Safety	<p><b>Negligible:</b> Visitors would not be affected or there would be no noticeable change in visitor experience or safety.</p> <p><b>Minor:</b> Changes in visitor experience or safety would be detectable, although the changes would be slight. The changes would affect a relatively small number of visitors, be very localized in area, or have barely perceptible consequences to the majority of visitors.</p> <p><b>Moderate:</b> – Changes in visitor experience or safety would be readily apparent and would affect a relatively large number of visitors.</p> <p><b>Major:</b> Changes in visitor experience or safety would be severely adverse or exceptionally beneficial, highly noticeable, and would affect relatively large numbers of visitors.</p>
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### 3.2 EVALUATION OF IMPAIRMENT OF PARK RESOURCES OR VALUES

NPS Management Policies provide guidance on addressing impairment of park resources. Impairment is an impact that:

“...in the professional judgment of the responsible NPS manager, would harm the integrity of park resources or values, including those that would otherwise be present for the enjoyment of those resources or values. Whether an impact meets this definition depends on the particular resources that would be affected, the severity, duration, and timing of the impact, the direct and indirect effects of the impact, and the cumulative effects of the impact in question with other impacts.”

Any park resource can be impaired, but an impact would be more likely to result in impairment if it affects a resource or value whose conservation is:

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

An impact would be less likely to result in impairment if it is an unavoidable result, which cannot reasonably be mitigated, of an action necessary to preserve or restore the integrity of vital park resources.

Visitor use and experience, and visitor and staff safety are not considered park resources for which the CCNS was established to protect. Therefore, impairment findings are not included as part of the impact analysis for these topics.

### 3.3 EVALUATION OF CUMULATIVE IMPACTS

The CEQ regulations, which implement the NEPA, require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are

defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative impacts are considered for all alternatives, including the no action alternative.

Cumulative impacts were determined by combining the impacts of the alternatives with other past, present and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing or reasonably foreseeable future projects at the CCNS and, if applicable, the surrounding region.

Projects and programs considered for this analysis were identified through consultation with the CCNS staff and published reports. Projects with similar impacts were identified and include two transportation projects in the Province Lands. Projects occurring outside the geographical vicinity of the bike trail project are not considered. Two projects in the Province Lands Bike trail project area were identified for the cumulative impact analysis.

- Repair and rehabilitate four roads and parking lots.
- Provincetown Municipal Airport Capital Improvements Plan (CIP).

#### 3.3.1 Repair and Rehabilitate Four Roads and Parking Lots

The Preferred Alternative identified in the *Value Analysis Study* for this project (NPS 2006) would result in additional impacts to coastal upland ecosystems and dune ecosystems in the project area. At this time, no design details are available. The potential area affected of coastal uplands and dune ecosystems potentially affected have not been identified and informed assumptions on the total amount of alterations to these habitats are not possible. Assumptions on potential impacts to coastal uplands and dune ecosystems are based on knowledge of the project area and the description of the individual project components.

Components of the proposed project could potentially result in short-term and long-term cumulative impacts (either adverse or beneficial) to coastal uplands and dune ecosystems. The following are possible components of the project and will be addressed in the future in a separate EA:

- Entrance to Herring Cove Beach Parking Lot – The current entrance/exit on Province Lands Road would be widened to four lanes and converted to entrance only. Province Lands Road would be widened and a left-turn lane would be constructed for access to the parking lot entrance.
- Herring Cove Beach Parking Lot Exit – Two new exit-only points would be constructed; one from the southern end of the parking lot onto Moors Road and one from the northern end of the north parking lot onto Province Lands Road.
- Route 6 Traffic Lanes – Route 6 would be reduced from four lanes to two, and the northern two lanes would be converted to a bicycle route if this were to be consistent with future actions of the town of Provincetown on Route 6 from Race Point Road to the CCNS boundary.

- Route 6 Intersection – The intersection would be redesigned to a two-lane, nonsignalized T-intersection with a stop for traffic entering onto Route 6 from Province Lands Road.
- Moors Road (Option) - Widen Moors Road, allowing two-way traffic and separating pedestrian and bicycle traffic from vehicular traffic (to be implemented only after two one-way traffic flow alternatives are tested and found to be infeasible).

### 3.3.2 Provincetown Municipal Airport CIP

An Environmental Notification Form (ENF), prepared under the provisions of the Massachusetts Environmental Policy Act for the Provincetown Municipal Airport CIP was published in the Massachusetts Environmental Monitor on May 10, 2006 (Provincetown Airport Commission 2006). The ENF described a program of safety and facility capital improvements to be made on the airport property over a period of 5 to 10 years. Components of the Provincetown Municipal Airport CIP include:

- Realigning West Entrance Taxiway and Clear Obstructions.
- Realignment and widening of the Partial Parallel Taxiway.
- Construction of a new electrical vault.
- Restoration of the “Sightseeing Shack.”
- Realignment of the Mid-Entrance Taxiway.
- Reconstruction of the Terminal Apron.
- Shifting the East End Taxiway to meet the end of runway 25.
- Expansion of Turf Apron.
- Construction of new service road to localizer equipment shelter and weather station.
- Construction of new perimeter security fence.
- Expansion of automobile parking.
- Expansion of the terminal building.

Components of the CIP would potentially result in cumulative long-term and short-term adverse direct impacts to coastal uplands, dune ecosystems and wetlands in the Province Lands area, directly adjacent to Segment 4 of the bike trail. It is noted that the CIP is in early design stages and impact assessment assumptions are based on conceptual plans only. For purposes of the cumulative impact assessment in this EA, impacts to resources identified in the ENF project narrative as certain Massachusetts Wetlands Protection Act jurisdictional wetlands (isolated land subject to flooding and bordering vegetated

wetlands) are assumed to be similar to wetland impacts identified in this EA. Areas of potential impact identified in the ENF project narrative as coastal dune are assumed to be similar to the dune ecosystem impacts identified in this EA.

### **3.4 WETLAND RESOURCES**

Wetland areas within 100-feet on either side of the existing bike trail were delineated. The delineation included wetlands and “waters of the United States” under the jurisdiction of Section 404 of the Clean Water Act, and wetlands for which NPS Director’s Order 77-1 (Wetland Protection) applies. The wetland delineation was conducted during a 2-week period beginning on October 6, 2004. The field delineation was conducted using the United States Army Corps of Engineers *Wetland Delineation Manual* (1987). In addition, the method for estimating vegetation dominance was derived from the Massachusetts Department of Environmental Protection’s *Delineating Bordering Vegetated Wetlands* (1995). Wetland boundaries were established in accordance with the *Wetland Delineation Manual*’s three technical criteria: hydric soils, hydrology and hydrophytic vegetation. The wetland boundary was flagged using pink flagging tape marked “wetland delineation” and numbered sequentially. Sample plots documenting the wetland boundary were established on both the wetland and upland side on each wetland boundary. The criteria at each sample plot were recorded for each wetland area on wetland field delineation datasheets.

Wetland areas were classified in accordance with the USFWS wetland classification system *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). Wetland areas found within the project corridor were comprised of palustrine wetlands with forested, scrub-shrub, unconsolidated bottom and emergent cover types. A total of 28 wetland areas totaling 16.71 acres were delineated within 100 feet on either side of the bike trail. The location of the wetlands is illustrated on Figure 3-1.

The characteristics of each of the delineated wetlands were documented on wetland field data forms and are summarized in Table 3-2. This table identifies the wetland acreage within 100 feet of the trail, wetland classification, jurisdiction, dominant vegetation, soil type, and hydroperiod. Photographs, field sketches, and wetland evaluation forms for each of the 28 delineated wetland areas are included in the *Wetlands Determination and Delineation Report* (NPS 2004b).

Wetland soils were evaluated during wetland delineation procedures. The NRCS *Soil Survey of Barnstable County, Massachusetts* (March 1993; see Figure 3-2) was reviewed for overall trends in soil composition along the bike trail. Loose sand and sandy loam are the dominant soil types. The movement of dunes and encroachment of sand onto roadways and the bike trail has long been an issue. Dune stabilization efforts have been in practice in the Province Lands since the early 1800s.

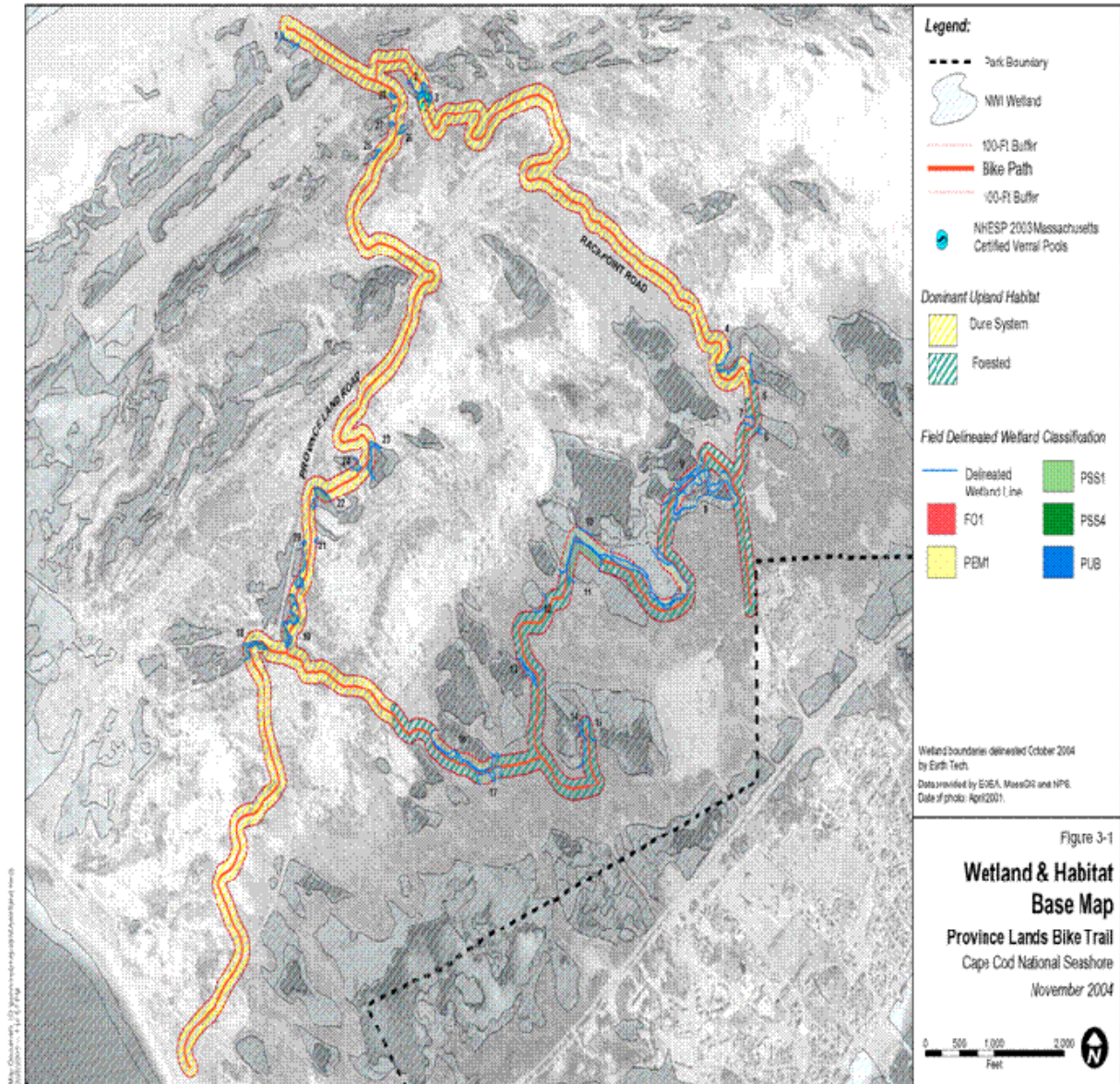
#### 3.4.1 Alternative A – No Action Alternative

No impacts to wetland resources would result since there would be no on-site project activity.

##### *Cumulative Impacts*

There would be no cumulative effects under the No Action Alternative since there would be no on-site project activity.

*Figure 3-1 Wetland and Habitat Base Map*



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**Table 3-2 Summary of Wetland Areas Delineated in the Vicinity of the Province Lands Bike Trail**

<b>Wetland Area</b>	<b>Wetland Classification(s)<sup>1</sup></b>	<b>Wetland Area Acreage<sup>2</sup></b>	<b>Wetland System Acreage<sup>2,3</sup></b>	<b>Corps Jurisdictional (Yes/No)</b>	<b>Dominant Vegetation</b>	<b>Soil Type<sup>4</sup></b>	<b>Hydroperiod</b>
1	PSS1	0.05	0.59	No	Pitch Pine, Quaking Aspen, Pussy Willow, Northern Bayberry, Meadowsweet, Poison Ivy	PeA	Saturated
2	PSS4	0.30	0.35	No	Pitch Pine, Large Cranberry	HoC	Saturated
3	PSS4	0.27	0.28	Yes	Pitch Pine, Highbush Blueberry, Large Cranberry,	HoC	Saturated
4	PSS4	0.33	3.47	Yes	Highbush Blueberry, Large Cranberry	BmA	Saturated
5	PSS4	0.11	3.43	No	Pitch Pine, Highbush Blueberry, Large Cranberry, Sphagnum Moss	BmA	Saturated
6	PFO1	0.01	2.23	Yes	Red Maple, Pitch Pine, Highbush Blueberry, Common Greenbrier	BmA	Saturated
7	PFO1	0.26	2.23	Yes	Red Maple, Highbush Blueberry	BmA	Saturated
8	PSS1 PEM1 TOTAL	1.13 0.73 1.86	73.3	Yes	Red Maple, Highbush Blueberry, Narrow-leaved Cattail	Fm	Seasonally Flooded
9	PEM1 PSS1 TOTAL	0.64 0.56 1.20	73.3	Yes	Red Maple, Swamp Azalea, Highbush Blueberry	Fm	Seasonally Flooded
10	PSS1 PEM1 TOTAL	3.70 5.20 8.90	73.3	Yes	Red Maple, Pitch Pine, Highbush Blueberry, Northern Bayberry, Swamp Azalea, Narrow-leaved Cattail, Common Greenbrier, Sphagnum Moss	Fm/BmA	Seasonally Flooded
11	PSS4	1.59	73.3	Yes	Pitch Pine, Red Maple, Highbush Blueberry, Swamp Azalea, Northern Bayberry, Sheep Laurel, Large Cranberry, Poison Ivy, Sphagnum Moss	BmA	Saturated
12	PSS4	0.43	1.22	Yes	Red Maple, Pitch Pine, Sheep Laurel, Highbush Blueberry, Swamp Azalea, Common Greenbrier	BmA	Saturated
13	PSS1 PUB TOTAL	0.16 0.33 0.49	6.52	Yes	Red Maple, Pitch Pine, Highbush Blueberry, Royal Fern, Sweet Scented Water Lily, Common Greenbrier	Fm	Seasonally Flooded

**Table 3-2 Summary of Wetland Areas Delineated in the Vicinity of the Province Lands Bike Trail**

<b>Wetland Area</b>	<b>Wetland Classification(s)<sup>1</sup></b>	<b>Wetland Area Acreage<sup>2</sup></b>	<b>Wetland System Acreage<sup>2,3</sup></b>	<b>Corps Jurisdictional (Yes/No)</b>	<b>Dominant Vegetation</b>	<b>Soil Type<sup>4</sup></b>	<b>Hydroperiod</b>
14	PSS4 PEM1 TOTAL	0.36 0.04 0.40	20.04	Yes	Pitch Pine, Red maple, Highbush Blueberry, Inkberry, Swamp Azalea, Common Greenbrier	Fm	Seasonally Flooded
15	PSS4	0.25	20.04	Yes	Pitch Pine, Highbush Blueberry, Sheep Laurel, Swamp Azalea, Large Cranberry	Fm	Seasonally Flooded
16	PSS1 PEM1 TOTAL	0.43 2.30 2.73	14.19	Yes	Red Maple, Coast Pepperbush, Highbush Blueberry, Common Greenbrier, Canada Rush, Sweet Scented Water Lily	Fm	Seasonally Flooded
17	PSS1	0.60	14.19	Yes	Red Maple, Bear Oak, Pitch Pine, Highbush Blueberry, Coast Pepperbush, Common Greenbrier	HoC	Saturated
18	PSS4	0.44	3.74	Yes	Pitch Pine, Northern Bayberry, Large Cranberry,	PeA	Saturated
19	PSS4	0.81	1.46	Yes	Pitch Pine, Large Cranberry	BmA	Saturated
20	PSS4	0.41	1.29	Yes	Pitch Pine, Sheep Laurel, Highbush Blueberry, Large Cranberry	BmA	Saturated
21	PSS4	0.05	0.10	Yes	Pitch Pine, Highbush Blueberry, Large Cranberry	BmA	Saturated
22	PSS4	0.66	2.11	Yes	Pitch Pine, Highbush Blueberry, Sheep Laurel, Leatherleaf, Large Cranberry, Sphagnum Moss	BmA	Saturated
23	PEM1 PSS4 TOTAL	0.70 0.30 1.00	2.59	Yes	Meadowsweet, Canada Rush, Wool Grass, Large Cranberry	BmA	Saturated
24	PSS4	0.14	0.69	Yes	Pitch Pine, Sheep Laurel, Highbush Blueberry, Large Cranberry	BmA	Saturated
25	PSS4	0.13	0.28	No	Pitch Pine, Highbush Blueberry, Large Cranberry	PeA	Saturated
26	PSS4	0.09	0.29	No	Pitch Pine, Highbush Blueberry, Large Cranberry	HoC	Saturated



**Table 3-2 Summary of Wetland Areas Delineated in the Vicinity of the Province Lands Bike Trail**

<b>Wetland Area</b>	<b>Wetland Classification(s)<sup>1</sup></b>	<b>Wetland Area Acreage<sup>2</sup></b>	<b>Wetland System Acreage<sup>2,3</sup></b>	<b>Corps Jurisdictional (Yes/No)</b>	<b>Dominant Vegetation</b>	<b>Soil Type<sup>4</sup></b>	<b>Hydroperiod</b>
27	PSS4	0.05	0.29	No	Pitch Pine, Highbush Blueberry, Large Cranberry	HoC	Saturated
28	PSS4	0.16	0.85	Yes	Pitch Pine, Large Cranberry	HoC	Saturated

<sup>1</sup> Wetland classifications include: Palustrine Broad-leaved Deciduous Scrub Shrub (PSS1), Palustrine Needle-leaved Evergreen Scrub Shrub (PSS4), Palustrine Persistent Emergent (PEM1), Palustrine Broad-leaved Deciduous Forested, Palustrine Unconsolidated Bottom (PUB).

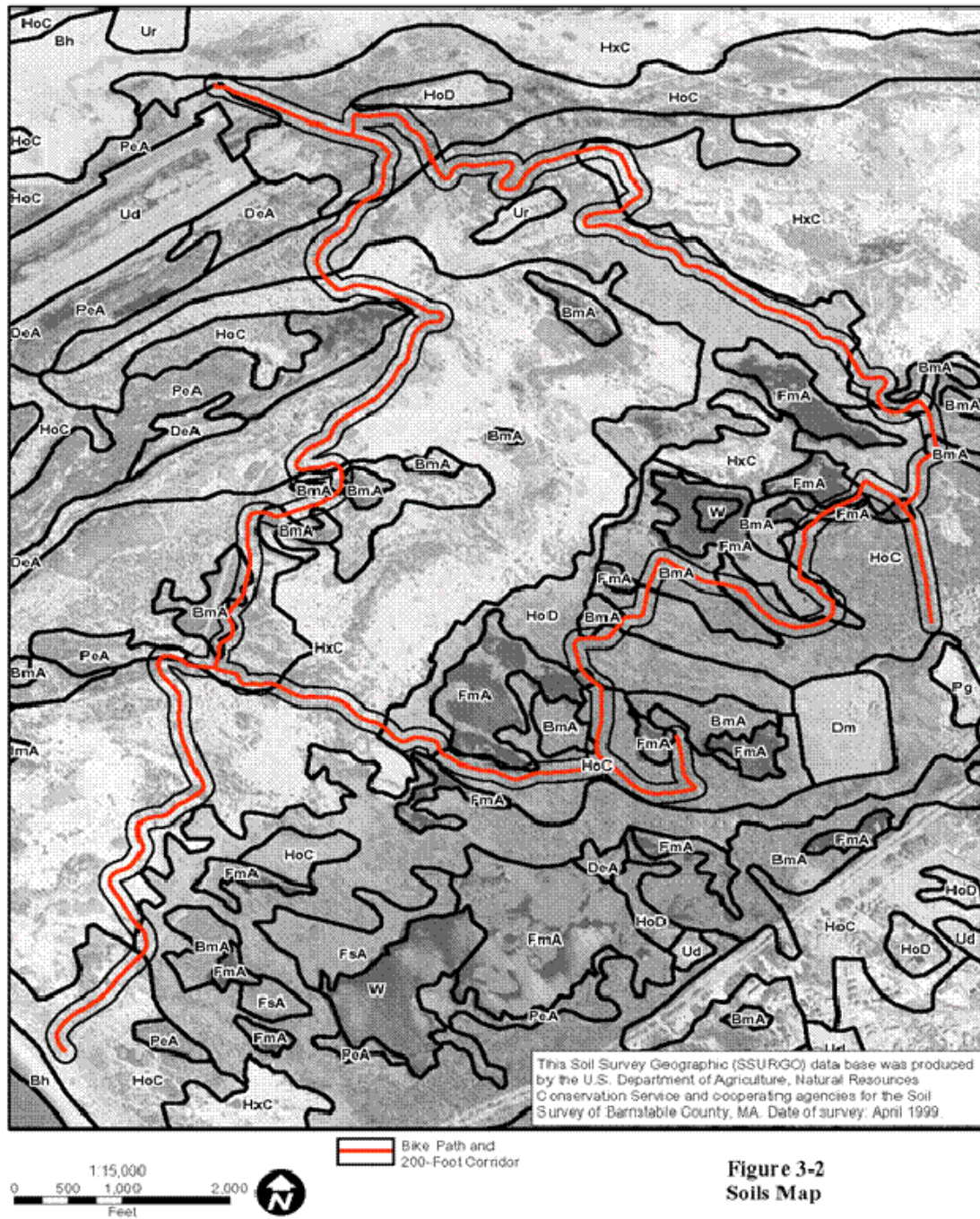
<sup>2</sup> Wetland Area Acreage represents area of wetland delineated within 100 feet on either side of bike trail. Wetland System Acreage represents the approximate total wetland acreage of which the delineated wetland area is a portion. Wetland System Acreage was estimated from NWI mapping, and refined by field observations.

<sup>3</sup> Wetland Areas 8, 9, 10 and 11 are all portions of the same 73.3-acre wetland system. Wetland Areas 14 and 15 are portions of the same 20.04-acre wetland system. Wetland Areas 16 and 17 are portions of the same 14.19-acre wetland system. Wetland Areas 26 and 27 are portions of the same 0.29-acre wetland system.

<sup>4</sup> Soil types include the following: Pipestone loamy coarse sand, 0-3% slopes (PeA), Hooksan sand, rolling (HoC), Berryland mucky loamy coarse sand, 0-2% slopes (BmA), Freetown Mucky peat, 0-1% slopes, ponded (Fm).

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*Figure 3-2 Soils Map*



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### *Conclusion*

The No Action Alternative would have no impacts on the wetland resources analyzed in this EA. Consequently, there would be no impairment of wetland resources or values as a result of the No Action Alternative.

#### 3.4.2 Alternative B – Repair Only

There would be no long-term, direct, adverse impacts to wetlands. There is an assumed potential for minor, short-term direct, adverse impacts to wetlands within a foot of the trail during the renovation of the existing path due to the likelihood that construction equipment and workers may impact the adjacent area during repair of the bike trail. This potential impact area has been estimated at 0.14 acres of wetland resources and impacts would be mitigated using standard construction techniques of sedimentation control and procedural controls on the contractors, and implementation of applicable BMPs and conditions outlined in Section 2.7.2.

### *Cumulative Impacts*

Repair of the bike trail combined with construction of the Provincetown Airport CIP project in the Province Lands would result in direct and indirect, moderate, short-term cumulative impacts on wetland resources. Total wetland ecosystem impacts resulting from the Provincetown Airport CIP projects include both short-term and long-term, direct, adverse impacts. Total short-term, direct, adverse impacts to wetland resources from the Provincetown Airport CIP comprise 0.7 acres of bordering vegetated wetlands (BVW) and 1.2 acres of isolated land subject to flooding (ILSF).

As no information is currently available to estimate the potential impacts of the four roads and parking lots project, no positive determination of potential cumulative impacts can be made at this time. Conceptual plans of potential improvements for the projects indicate that cumulative impacts to natural resources, including wetlands, upland ecosystems and coastal dune ecosystems could result. Alternative B would contribute a short-term, minor, adverse increment to overall cumulative impacts to wetlands.

### *Conclusion*

Alternative B would have only minor short-term direct adverse impacts to the wetland resources analyzed in this EA even when considered cumulatively with other projects. These impacts are related to inadvertent contact during the construction period only and are easily mitigated with common practices. Consequently, there would be no impairment of wetland resources or values as a result of the implementation of Alternative B.

#### 3.4.3 Alternative C – Repair and 10-Foot Widening

There would be no long-term impacts to wetlands resulting from Alternative C. The bike trail would not be widened where it passes through or adjacent to existing wetland resources. There is potential for minor, short-term, direct, adverse impacts to 0.14 acres of wetlands within a foot of the trail during the renovation of the existing path resulting from construction activity along the path. Such impacts would be mitigated using standard construction techniques of sedimentation control and procedural controls on the

contractors, and implementation of applicable BMPs and conditions outlined in Section 2.7.2.

#### *Cumulative Impacts*

Repair and widening of the bike trail combined with construction of the Provincetown Airport CIP project in the Province Lands would result in direct and indirect, moderate, short-term cumulative impacts on wetland resources. Total wetland ecosystem impacts resulting from the Provincetown Airport CIP projects include both short-term and long-term, direct, adverse impacts. Total short-term, direct, adverse impacts to wetland resources from the Provincetown Airport CIP comprise 0.7 acres of BVW and 1.2 acres of ILSF.

As no information is currently available to estimate the potential impacts of the four roads and parking lots project, no positive determination of potential cumulative impacts can be made at this time. Conceptual plans of potential improvements for the projects indicate that cumulative impacts to natural resources, including wetlands, upland ecosystems and coastal dune ecosystems could result. Alternative C would contribute a short-term, minor, adverse increment to overall cumulative impacts to wetlands.

#### *Conclusion*

Alternative C would have only minor short-term direct adverse impacts to the wetland resources analyzed in this EA even when considered cumulatively with other projects. These impacts are related to inadvertent contact during the construction period only and are easily mitigated with common practices. Consequently, there would be no impairment of wetland resources or values as a result of the implementation of Alternative C.

#### 3.4.4 Alternative D – Realignment, Repair and 10-Foot Widening

There would be no long-term impacts to wetlands resulting from Alternative D. The bike trail would not be widened where it passes through or adjacent to existing wetland resources. There is potential for minor, short-term, direct, adverse impacts to 0.14 acres of wetlands within a foot of the trail during the renovation of the existing path resulting from construction activity along the path and would be mitigated using standard construction techniques of sedimentation control and procedural control of contractors, and implementation of applicable BMPs and conditions outlined in Section 2.7.2.

The area for realignment D.2 is largely dune habitat, but realignment Options D.2.1, D.2.2 and D.2.3 are close to a wetland area that appears to be emergent or dune slack based upon aerial photography. This area has not been delineated for the purposes of this EA due to its distance from the existing trail. Trail realignment would avoid this wetland area, and direct or indirect impacts are not expected due to the wetland's distance from the bike trail and the implementation of BMPs.

#### *Cumulative Impacts*

Realignment, repair and widening of the bike trail combined with construction of the Provincetown Airport CIP project in the Province Lands would result in direct and indirect, moderate, short-term cumulative impacts on wetland resources. Total wetland

ecosystem impacts resulting from the Provincetown Airport CIP projects include both short-term and long-term, direct, adverse impacts. Total short-term, direct, adverse impacts to wetland resources from the Provincetown Airport CIP include 0.7 acres of BVW and 1.2 acres of ILSF.

As no information is currently available to estimate the potential impacts of the four roads and parking lots project, No positive determination of potential cumulative impacts can be made at this time. Conceptual plans of potential improvements for the projects indicate that cumulative impacts to natural resources, including wetlands, upland ecosystems and coastal dune ecosystems could result. Alternative D would contribute a short-term, minor, adverse increment to overall cumulative impacts to wetlands.

### *Conclusion*

The wetlands in the area of alignment D.2 would need to be delineated and avoided if options other than D.2.4 are pursued.

Based on available data, Alternative D would have only minor short-term direct adverse impacts to the wetland resources analyzed in this EA even when considered cumulatively with other projects. These impacts are related to inadvertent contact during the construction period only and are easily mitigated with common practices. Consequently, there would be no impairment of wetland resources or values as a result of the implementation of Alternative D.

## **3.5 COASTAL UPLAND ECOSYSTEMS**

Coastal upland ecosystems within the project area are primarily forest and coastal heathland habitats. Pitch pine (*Pinus rigida*), scrub oak (*Quercus ilicifolia*), highbush blueberry (*Vaccinium corymbosum*) and red maple (*Acer rubrum*) are the dominant plant species making up the forest habitat. Heathland habitats are found amongst the dune habitats in the Province Lands. According to the NPS, coastal heathland habitats are globally uncommon and the species that occupy them are correspondingly rare.

### 3.5.1 Alternative A – No Action Alternative

No change of impacts to any natural resources would result since there would be no on-site project activity.

#### *Cumulative Impacts*

There would be no cumulative effects under the No Action Alternative since there would be no on-site project activity.

### *Conclusion*

The No Action Alternative would have no impacts on the coastal upland resources analyzed in this EA. Consequently, there would be no impairment of coastal upland ecosystem resources or values as a result of the No Action Alternative.

### 3.5.2 Alternative B – Repair Only

There would be no long-term, direct, adverse impacts to upland ecosystems along the existing bike trail. There is an assumed potential for minor, short-term direct, adverse impacts to upland ecosystems within a foot of the trail during the renovation of the existing path due to the likelihood that construction equipment and workers may impact the adjacent area during repair of the bike trail. This potential impact area has been estimated at 0.7 acres of upland ecosystems and would be mitigated through procedural controls on the contractors, and implementation of applicable BMPs and conditions outlined in Section 2.7.2.

#### *Cumulative Impacts*

There are no upland resource areas identified in the airport CIP and insufficient data available regarding other potential projects. No positive determination of potential cumulative impacts can be made at this time. Conceptual plans of potential improvements for the projects indicate that cumulative impacts to natural resources, including upland ecosystems could result. Alternative B would contribute a short-term, minor, adverse increment to overall cumulative impacts to coastal upland ecosystems.

#### *Conclusion*

Alternative B would have only minor short-term direct adverse impacts to the upland ecosystem resources analyzed in this EA even when considered cumulatively with other projects. These impacts are related to the construction period only and are easily mitigated with common practices. Consequently, there would be no impairment of coastal upland ecosystem resources or values as a result of the implementation of Alternative B.

### 3.5.3 Alternative C – Repair and 10-Foot Widening

There would be minor, long-term, direct, adverse impacts to up to 1.75 acres of upland ecosystems along the 7.3-mile bike trail resulting from Alternative C. This would consist of a 2-foot increase in paved surface and a 1.5-foot unpaved buffer on each side of the trail. The impacts would comprise increased impervious areas and reduction of habitat. There also would be potential short-term direct adverse impacts to up to 2.45 acres of adjacent work area, which would be allowed to return to habitat at the end of construction.

#### *Cumulative Impacts*

There are no upland resource areas identified in the airport CIP and insufficient data available regarding other potential projects. No positive determination of potential cumulative impacts can be made at this time. Conceptual plans of potential improvements for the projects indicate that cumulative impacts to natural resources, including upland ecosystems could result. Alternative C would contribute a long-term, minor, adverse increment to overall cumulative impacts to coastal upland ecosystems.



### *Conclusion*

Alternative C would have only minor direct and indirect adverse impacts to the upland ecosystem resources analyzed in this EA even when considered cumulatively with other projects. These include short-term direct impacts related to the construction period – which would be mitigated through procedural controls on the contractors, and implementation of applicable BMPs and conditions outlined in Section 2.7.2 – and long-term impacts associated with the loss of resource areas immediately adjacent to the trail. Consequently, there would be no impairment of coastal upland ecosystem resources or values as a result of the implementation of Alternative C.

#### 3.5.4 Alternative D – Realignment, Repair and 10-Foot Widening

There would be minor, long-term, direct, adverse impacts to up to 1.70 acres of upland ecosystems along the 7.3-mile bike trail resulting from Alternative C. This would consist of a 2-foot increase in paved surface and a 1.5-foot unpaved buffer on each side of the trail. The impacts would comprise increased impervious areas and reduction of habitat. There also would be potential short-term direct adverse impacts to up to 2.38 acres of adjacent work area, which would be allowed to return to habitat at the end of construction.

### *Cumulative Impacts*

There are no upland resource areas identified in the airport CIP and insufficient data available regarding other potential projects. No positive determination of potential cumulative impacts can be made at this time. Conceptual plans of potential improvements for the projects indicate that cumulative impacts to natural resources, including upland ecosystems, could result. Alternative D would contribute a long-term, minor, adverse increment to overall cumulative impacts to coastal upland ecosystems.

### *Conclusion*

Alternative D would have only minor direct and indirect adverse impacts to the upland ecosystem resources analyzed in this EA even when considered cumulatively with other projects. These include short-term direct impacts related to the construction period – which would be mitigated through procedural controls on the contractors, and implementation of applicable BMPs and conditions outlined in Section 2.7.2 – and long-term impacts associated with the loss of resource areas immediately adjacent to the trail. Consequently, there would be no impairment of coastal upland ecosystem resources or values as a result of the implementation of Alternative D.

## **3.6 DUNE ECOSYSTEMS**

The dune habitats in the Province Lands were formed by the erosion of glacial material resulting in sand deposition, and subsequent building of dunes by wind action and stabilization by beach grass. Large cranberry (*Vaccinium macrocarpon*), pitch pine, and various fungi and grass species are the dominant vegetation for this habitat within the project area.

### 3.6.1 Alternative A – No Action Alternative

No change of impacts to any natural resources would result since there would be no on-site project activity.

#### *Cumulative Impacts*

There would be no cumulative effects under the No Action Alternative since there would be no on-site project activity.

#### *Conclusion*

The No Action Alternative would have no impacts on the dune ecosystem resources analyzed in this EA. Consequently, there would be no impairment of dune ecosystem resources or values as a result of the No Action Alternative.

### 3.6.2 Alternative B – Repair Only

There would be no long-term, direct, adverse impacts to dune ecosystems along the existing bike trail. There is an assumed potential for minor, short-term direct, adverse impacts to dune ecosystems within a foot of the trail during the renovation of the existing path due to the likelihood that construction equipment and workers may impact the adjacent area during repair of the bike trail. This potential impact area has been estimated at 1.1 acres of dune ecosystems and would be mitigated through procedural controls on the contractors, and implementation of applicable BMPs and conditions outlined in Section 2.7.2.

#### *Cumulative Impacts*

Repair and widening of the bike trail combined with construction of the Provincetown Airport CIP project in the Province Lands would result in direct and indirect, moderate, short-term cumulative impacts on dune ecosystem resources. Total dune ecosystem impacts resulting from the Provincetown Airport CIP project includes both short-term and long-term, direct, adverse impacts.

Total short-term, direct, adverse impacts to dune ecosystem resources from the Provincetown Airport CIP are estimated at 5.1 acres.

As no information is currently available to estimate the potential impacts of the four roads and parking lots project, no positive determination of potential cumulative impacts can be made at this time. Conceptual plans of potential improvements for the projects indicate that cumulative impacts to natural resources, including wetlands, upland ecosystems and coastal dune ecosystems could result. Alternative B would contribute a short-term, minor, adverse increment to overall cumulative impacts to dune ecosystems.

#### *Conclusion*

Alternative B would have only minor short-term direct adverse impacts to the dune ecosystem resources analyzed in this EA even when considered cumulatively with other projects. These impacts are related to the construction period only and are easily mitigated through procedural controls on the contractors, and implementation of

applicable BMPs and conditions outlined in Section 2.7.2. Consequently, there would be no impairment of dune ecosystem resources or values as a result of the implementation of Alternative B.

### 3.6.3 Alternative C – Repair and 10-Foot Widening

There would be minor, long-term, direct, adverse impacts to up to 2.73 acres of dune ecosystems along the 7.3-mile bike trail resulting from Alternative C. This would consist of a 2-foot increase in paved surface and a 1.5-foot unpaved buffer on each side of the trail. The impacts comprise increased impervious areas and reduction of habitat.

There also would be potential for minor, short-term, direct adverse impacts to up to 3.82 acres of adjacent work area, which would be allowed to return to habitat at the end of construction. This potential impact would be mitigated through procedural controls on the contractors, and implementation of applicable BMPs and conditions outlined in Section 2.7.2

Adverse impacts would be partially mitigated through dune stabilization efforts of planting native vegetation and installation of fencing.

#### *Cumulative Impacts*

Repair and widening of the bike trail combined with construction of the Provincetown Airport CIP project in the Province Lands would result in direct and indirect, moderate, short-term cumulative impacts on dune ecosystem resources. Total dune ecosystem impacts resulting from the Provincetown Airport CIP projects include both short-term and long-term, direct, adverse impacts. Total short-term, direct, adverse impacts to dune ecosystem resources from the Provincetown Airport CIP are estimated to affect 5.1 acres.

As no information is currently available to estimate the potential impacts of the four roads and parking lots project, no positive determination of potential cumulative impacts can be made at this time. Conceptual plans of potential improvements for the projects indicate that cumulative impacts to natural resources, including wetlands, upland ecosystems and coastal dune ecosystems could result. Alternative C would contribute a long-term, minor, adverse increment to overall cumulative impacts to dune ecosystems.

#### *Conclusion*

Alternative C could adversely impact up to 6.5 acres of dune ecosystem. Considered in relation to the total dune ecosystem in and around the park, these are considered only minor adverse impacts to the dune ecosystem resources analyzed in this EA even when considered cumulatively with other projects. These impacts include 3.8 acres of short-term impacts related to the construction period – which would be mitigated through procedural controls on the contractors, and implementation of applicable BMPs and conditions outlined in Section 2.7.2 – as well as long-term loss of habitat and resource value. Consequently, there would be no impairment of dune ecosystem resources or values as a result of the implementation of Alternative C.

### 3.6.4 Alternative D – Realignment, Repair and 10-Foot Widening

Excluding the realignments options, there would be minor, long-term, direct, adverse impacts to up to 2.63 acres of dune ecosystems along the 7.3-mile bike trail resulting from Alternative D. This would consist of a 2-foot increase in paved surface and a 1.5-foot unpaved buffer on each side of the trail. The impacts would comprise increased impervious areas and reduction of habitat.

There also would be potential for minor short-term direct adverse impacts to up to 3.68 acres of adjacent work area, which would be allowed to return to habitat at the end of construction. This potential impact would be mitigated through procedural controls on the contractors, and implementation of applicable BMPs and conditions outlined in Section 2.7.2

Adverse impacts would be partially mitigated through dune stabilization efforts of planting native vegetation and installation of fencing.

The realignment of a section of Segment 1, described as Alternative D.1 in Section 2, would also result in short- and long-term impacts to an additional 0.70 to 1.34 acres of dune ecosystem habitat from construction of a new trail segment. The following impact estimates apply to the three options under Alternative D.1:

- Option D.1.1 would impact 0.70 acres.
- Option D.1.2 would impact 1.06 acres.
- Option D.1.3 would impact 1.34 acres.

The realignment of a section effecting of Segment 3 and Segment 4, described as Alternative D.2 in Section 2, would also result in short- and long-term impacts to an additional 0.54 to 1.23 acres of dune ecosystem habitat from construction of a new trail segment. The following impact estimates apply to the three options under Alternative D.2:

- Option D.2.1 would impact 0.58 acres.
- Option D.2.2 would impact 0.54 acres.
- Option D.2.3 would impact 1.23 acres.
- Option D.2.4 would impact 0.63 acres.

Moderate, long-term, direct, adverse impacts would result from construction of the new, re-aligned trail segments. The impacted ecosystems in these re-aligned areas would be described as approximately 25% paved bike path 10 feet wide, approximately 7% buffer of 18 inches, and up to 68% work area which would be allowed to return to natural conditions. These losses would be partially mitigated by restoration of the existing trail sections to natural habitat. Adverse impacts also would be partially mitigated through dune stabilization efforts of planting native vegetation and installation of fencing. Minor,

long-term, direct and indirect beneficial impacts would result from restoration of the current bike trail alignment to dune ecosystem.

#### *Cumulative Impacts*

Repair, widening and realignment of the bike trail combined with construction of the Provincetown Airport CIP project in the Province Lands would result in direct and indirect, moderate, short-term cumulative impacts on dune ecosystem resources. Total dune ecosystem impacts resulting from the Provincetown Airport CIP projects include both short-term and long-term, direct, adverse impacts. Total short-term, direct, adverse impacts to dune ecosystem resources from the Provincetown Airport CIP are estimated at 5.1 acres.

As no information is currently available to estimate the potential impacts of the four roads and parking lots projects, no positive determination of potential cumulative impacts can be made at this time. Conceptual plans of potential improvements for the projects indicate that cumulative impacts to natural resources, including wetlands, upland ecosystems and coastal dune ecosystems could result. Alternative D would contribute a long-term, minor, adverse increment to overall cumulative impacts to dune ecosystems.

#### *Conclusion*

Alternative D could adversely impact 7.5 to 8.9 acres of dune ecosystem. Considered in relation to the total dune ecosystem in and around the park and with the restoration of the abandoned trail, these are considered only minor adverse impacts to the dune ecosystem resources analyzed in this EA even when considered cumulatively with other projects. These impacts include short-term impacts related to the construction period – which would be mitigated through procedural controls on the contractors, and implementation of applicable BMPs and conditions outlined in Section 2.7.2 – as well as long-term loss of habitat and resource value. Consequently, there would be no impairment of dune ecosystem resources or values as a result of the implementation of Alternative D.

### **3.7 STATE PROTECTED SPECIES OF SPECIAL CONCERN**

As discussed in Section 1.4.5, a letter of consultation was sent to the NHESP to determine what state protected habitats and species exist within the proposed project area. In a letter dated October 20, 2004 (French 2004), the NHESP identified several protected habitats and species within the vicinity of the project. Those species and habitats are listed in Table 3-3.

#### *Birds*

The least bittern (*ixobrychus exilis*) inhabits freshwater marshes where cattails and reeds predominate. It is noted on the NHESP fact sheet for the species that the primary cause of decline for the least bittern is wetland habitat destruction. (NHESP Not dated a).

#### *Reptiles and Amphibians*

On Cape Cod, the Eastern box turtle (*Terrapene Carolina Carolina*) is typically found in pine barrens and oak thickets with cranberry dominated swales. According to the NHESP

Table 3-3 State Protected Species and Habitats in the Vicinity of the Province Lands Bike Trail <sup>1</sup>			
Scientific Name	Common Name	State Status	Confirmed by NPS <sup>2</sup>
BIRDS			
<i>Ixobrychus exilis</i>	Least Bittern	E	
REPTILES			
<i>Terrapene carolina</i>	Eastern Box Turtle	SC	
AMPHIBIANS			
<i>Scaphiopus holbrookii</i>	Eastern Spadefoot	T	
MOTHS			
<i>Abagrotis nefascia benjamini</i>	Cutworm	SC	
<i>Papaipema stenocelis</i>	Chain Fern Borer	T	
<i>Papaipema sulphurata</i>	Water-Willow Stem Borer	T	
DRAGONFLIES			
<i>Anax longipes</i>	Comet Darner	SC	
PLANTS			
<i>Carex oligosperma</i>	Few-Fruited Sedge	E	
<i>Corema conradii</i>	Broom Crowberry	SC	
<i>Helianthemum dumosum</i>	Bushy Rockrose	SC	Yes
<i>Mertensia maritima</i>	Oysterleaf	E	
<i>Orontium aquaticum</i>	Golden Club	E	Yes
EXEMPLARY COMMUNITIES			
Certified Vernal Pools	#2666, 2734, 2735, 2736		
Maritime Dune Community			

<sup>1</sup> No Federally Listed Species Identified by USFWS.

<sup>2</sup> Presence in the vicinity of the bike trail confirmed by NPS staff.

E – Endangered

T – Threatened

SC – Special concern

Sources: Amaral 2004; French 2004; Smith 2006.

fact sheet, the greatest threat to the species in Massachusetts is the fragmentation and destruction of habitat. (NHESP Not dated b).

The Eastern spadefoot toad (*Scaphiopus h. holbrooki*) is a burrowing species that requires dry sand or sandy loam soil. The CCNS, and the Province Lands in particular, appear to be among the most important sites for spadefoot toads in Massachusetts (Cook, 2006). When flooded, the dune slack wetlands are the prime breeding habitat for the spadefoot in the Province Lands. A wildlife biologist with the CCNS provided further details of the spadefoot habitat within close proximity of the bike trail (Cook, 2005). During the 2003 breeding season, the segment of bike trail that parallels Province Lands Road (Segment 3) was the area most heavily used by breeding spadefoots. Breeding activities were even noted on flooded sections of the trail itself. The hydrology of the Province Lands and the breeding schedule of the Eastern spadefoot toad are hard to predict. The spadefoot may breed any time between April and the end of August, and not necessarily all in one event. They will breed the first time in a season that the conditions are appropriate at a given site. However, the hydrologies of all potential breeding sites in the Province Lands are not synchronized and sometimes not all generations breed at once.

#### *Moths and Dragonflies*

The coastal heathland cutworm (*Abagrotis nefascia benjamini*) inhabits coastal dunes, dry grasslands, and oak/pine forests. The water-willow stem borer (*Papaipema sulphurata*) and comet darner dragonfly (*Anax longipes*), and chain fern borer (*Papaipema stenocelis*) are wetland habitat species. The water-willow stem borer and chain fern borer are dependent on wetland habitats with high concentrations of water-willow (*Decodon verticillatus*) and Virginia chain fern (*Woodwardia virginica*) respectively.

#### *Plant Species*

Oysterleaf (*Mertensia maritima*), broom crowberry (*Corema conradii*), and bushy rockrose (*Helianthemum dumosum*) may be found in the upland dune and heathland habitats of the Province Lands. Golden club (*Orontium aquaticum*) are found in ponds, and few-fruited sedge (*Carex oligosperma*) is a wetland species.

NPS staff members were consulted to determine what records they had of protected species occurring near the existing bike trail. An NPS plant ecologist provided four locations where bushy rockrose (*Helianthemum dumosum*) has historically occurred. Also provided was an area where pink lady's slipper (*Cypripedium acaule*), a rare but not protected species, has been known to occur. Further information was provided in June 2005 confirming the occurrence of bushy rockrose at the location originally located in March 2005. Also, a previously unidentified occurrence of pink lady's slipper was identified along the same stretch of bike trail.

It is important to note that pink lady's slipper has no federal or state protected status in Massachusetts. The species is anecdotally rare, but locally common especially in pine and oak dominated forests, such as are found in the Province Lands.

### *Exemplary Communities*

Vernal pools and the Maritime Dune Community are two Exemplary Communities identified by NHESP as located within the immediate vicinity of the Province Lands Bike Trail (French 2004).

Vernal pools are unique wildlife habitats that typically fill with water in the autumn or winter due to rising groundwater and rainfall and remain ponded through the spring and into summer. Many of the amphibian and invertebrate species that vernal pools are known for rely on breeding habitat that is free of fish predators. The seasonal drying of vernal pools prevents fish from establishing permanent populations. Based upon a review of GIS data provided by NHESP, of the four vernal pools identified, only one is located within 100 feet of the bike trail. The location of the vernal pool is very closely associated with the delineated area of Wetland 2 on Segment 5 of the trail. Wetland 2 has been characterized as a dune slack wetland. In dune communities, dune slack wetlands and vernal pools are very similar in hydrology and function. It is possible that Wetland 2 and the certified vernal pool identified by NHESP may be the same resource area.

The Maritime Dune Community was characterized by NHESP in the draft 2001 *Classification of the Natural Communities of Massachusetts* (Swain and Kearsley, 2001), a publication which is posted on their website. According to that publication, the maritime dune community “occurs on windswept dunes, within the salt spray zone, often landward of the Beach Strand Community and grading into shrubland or woodlands on the more sheltered back dunes.” The shifting nature of the Maritime Dune Community, due to its sand based substrate, creates many different unique and valuable habitats to various forms of plant and animal life. Highlighted by NHESP are the possible occurrence of dune swale habitat communities, various bird nesting habitats, and vernal pool occurrences.

#### 3.7.1 Alternative A – No Action Alternative

No change of impacts to any natural resources would result since there would be no on-site project activity.

#### *Cumulative Impacts*

There would be no cumulative effects under the No Action Alternative since there would be no on-site project activity.

#### *Conclusion*

The No Action Alternative would have no impacts on the protected species analyzed in this EA. Consequently, there would be no impairment of protected species resources or values as a result of the No Action Alternative.

#### 3.7.2 Alternative B – Repair Only

No long-term impacts to habitat of state listed species of special concern would result from Alternative B. Minor, short-term, direct, adverse impacts to habitat of the Eastern spadefoot toad could result from construction activities along the bike trail. Suitable



Eastern spadefoot toad habitat exists along a large portion of the bike trail alignment, and toads have been observed on flooded sections of the path itself.

Minor short-term impacts to other protected species and exemplary communities would result from construction activities. Special precautions would be taken to avoid short-term direct or indirect adverse impacts to protected species along the bike trail through notifications to the construction contractor, and implementation of applicable BMPs and conditions outlined in Section 2.7.2. To avoid impacts to breeding Eastern spadefoot toads, their egg masses, and metamorphs, there would be no construction within 100 meters of any standing water between April 15 and August 30. Impacts are expected to be minor due to the limited impact area and the implementation of mitigation measures.

#### *Cumulative Impacts*

There are no protected species habitat areas identified in the airport CIP and insufficient data available regarding other potential projects. No positive determination of potential cumulative impacts can be made at this time. Conceptual plans of potential improvements for the projects indicate that cumulative impacts to natural resources, including protected species habitat, could result. Alternative B would contribute a short-term, minor, adverse increment to overall cumulative impacts to state protected species habitat.

#### *Conclusion*

Alternative B would have only minor short-term indirect adverse impacts to the protected species analyzed in this EA. These impacts are related to potential habitat infringement during the construction period only and are easily mitigated with common practices. Consequently, there would be no impairment of protected species resources or values as a result of the implementation of Alternative B.

#### 3.7.3 Alternative C – Repair and 10-Foot Widening

Minor, short- and long-term, direct and indirect, adverse impacts to habitat of the Eastern spadefoot toad would result along the bike trail. Suitable Eastern spadefoot toad habitat exists along a large portion of the bike trail alignment, and toads have been observed on flooded sections of the path itself.

Minor short-term and long-term impacts to other protected species and exemplary communities would result from construction activities, and from widening of the trail. Special precautions would be taken to avoid short-term direct or indirect adverse impacts to protected species along the bike trail through notifications to the construction contractor, and implementation of applicable BMPs and conditions outlined in Section 2.7.2. Impacts are expected to be minor due to the limited impact area and the implementation of mitigation measures.

To avoid impacts to breeding Eastern spadefoot toads, their egg masses, and metamorphs, there would be no construction within 100 meters of any standing water between April 15 and August 30. Protected plant populations and pink lady's slipper (*Cypripedium acaule*) populations identified close to the trail would be avoided and, as appropriate, special mitigation measures would be implemented to protect the plants. Widening of the bike trail would not occur where the bushy rockrose (*Helianthemum dumosum*) or pink lady's

slipper are known to occur. These plant populations would be identified and marked prior to construction.

#### *Cumulative Impacts*

There are no protected species habitat areas identified in the airport CIP and insufficient data available regarding other potential projects. No positive determination of potential cumulative impacts can be made at this time. Conceptual plans of potential improvements for the projects indicate that cumulative impacts to natural resources, including protected species habitat, could result. Alternative C would contribute short-term and long-term, minor, adverse increments to overall cumulative impacts to state protected species habitat.

#### *Conclusion*

Alternative C would have minor short and long-term adverse impacts to the protected species analyzed in this EA. These impacts are related to potential habitat infringement during the construction period, which would be easily mitigated with common practices, and loss of habitat immediately adjacent to the trail from the widening. Consequently, there would be no impairment of protected species resources or values as a result of the implementation of Alternative C.

#### 3.7.4 Alternative D – Realignment, Repair and 10-Foot Widening

Except for the Eastern spadefoot toad, no protected species have been confirmed in the area of the realignment options. However, the habitat is appropriate for several of the protected upland species identified by the NHESP. Minor, short-term and long-term, direct, adverse impacts may be possible if any of those species are within the project area. Breeding and flowering periods would be taken into consideration when planning the construction timeline. Minor, short-term, direct, adverse impacts to Eastern spadefoot toad breeding habitat from construction activities may occur if the wetland near the Alternative D.2 realignment is determined to be a dune slack wetland habitat.

Minor short-term and long-term impacts to other protected species and exemplary communities would result from construction activities, and from widening and realigning of the trail. Special precautions would be taken to avoid short-term direct or indirect adverse impacts to protected species along the bike trail through notifications to the construction contractor, and implementation of applicable BMPs and conditions outlined in Section 2.7.2. Impacts are expected to be minor due to the limited impact area and the implementation of mitigation measures.

To avoid impacts to breeding Eastern spadefoot toads, their egg masses, and metamorphs, there would be no construction within 100 meters of any standing water between April 15 and August 30. Protected plant populations and pink lady's slipper (*Cypripedium acaule*) populations identified close to the trail would be avoided and, as appropriate, special mitigation measures would be implemented to protect the plants. Widening of the bike trail would not occur where the bushy rockrose (*Helianthemum dumosum*) or pink lady's slipper are known to occur. These plant populations would be identified and marked prior to construction. Minor, long-term, direct, beneficial impacts may result in locations along

the abandoned and new bike trail alignments where habitat that could support protected species is restored.

### *Cumulative Impacts*

There are no protected species habitat areas identified in the airport CIP and insufficient data available regarding other potential projects. No positive determination of potential cumulative impacts can be made at this time. Conceptual plans of potential improvements for the projects indicate that cumulative impacts to natural resources, including protected species habitat, could result. Alternative D would contribute short-term and long-term, minor, adverse increments to overall cumulative impacts to state protected species habitat.

### *Conclusion*

Alternative D would have minor short- and long-term adverse impacts to the protected species analyzed in this EA. These impacts are related to potential habitat infringement during the construction period, which would be easily mitigated with common practices, and loss of habitat immediately adjacent to the trail from the widening. Consequently, there would be no impairment of protected species resources or values as a result of the implementation of Alternative C.

## **3.8 VISITOR AND STAFF SAFETY**

Since the largest user groups are families with small children and organized groups, special care must be taken to ensure visitor safety. Three distinct issues currently affect safe use of the bike trail:

- Changes in alignment (primarily vertical alignment).
- A substandard trail width.
- Increasing maintenance needs attributable to natural surroundings and deterioration of an aging facility.

More than half the accidents in the CCNS in a typical year occur on the bike trail (Table 3-4). The highest concentration of reported accidents since 1994 occurred on the segments 1, 2 and 3 of the bike trail (Minnerath 2005). In 2006, there were 34 serious accidents on the trail. The data in Table 3-4 comprise only accidents that were reported to the CCNS. It is impossible to know the true number of accidents. However, it is generally assumed that reported accidents are a small percentage of total accidents.

During construction, short-term safety issues include construction worker safety, following Occupational Safety and Health Administration (OSHA) guidelines, and protecting visitors and employees. Long-term concerns include maintaining the structural integrity of the renovated trail system. Staff safety issues include the ability to safely patrol the bike trail, assist visitors who are experiencing difficulties and safely perform routine maintenance tasks.

**Table 3-4 Reported Accidents on the Province Lands Bike Trail from 2000-2006**

YEAR	ACCIDENTS REPORTED
2000	12
2001	16
2002	23
2003	18
2004	17
2005	12
2006	34

Source: Minnerath 2005, and Thatcher 2006

#### 3.8.1 Alternative A – No Action Alternative

Minor, long-term direct, adverse impacts to visitor and staff safety would continue from the existence of unsafe conditions and deteriorated segments of the bike trail under the No Action Alternative.

##### *Conclusion*

The No Action Alternative would allow known hazardous conditions to continue to endanger the public and staff. Key elements of the park's mission could be affected.

#### 3.8.2 Alternative B – Repair Only

Short-term safety issues include construction worker safety, which would be mitigated by following Occupational Safety and Health Administration (OSHA) guidelines, and protecting visitors and employees during construction through the use of defined construction areas with restricted access.

Minor, long-term, beneficial, direct impacts to visitor and staff safety would result from an improved riding experience on segments of the trail that have been repaired. However, these beneficial impacts are offset by the minor, long-term, direct, adverse impact associated with the narrow and hazardous trail segments that would not be improved.

##### *Conclusion*

Alternative B would correct only a minority of the identified safety concerns. The goals of the project would not be met.

#### 3.8.3 Alternative C – Repair and 10-Foot Widening

Short-term safety issues include construction worker safety, which would be mitigated by following Occupational Safety and Health Administration (OSHA) guidelines, and

protecting visitors and employees during construction through the use of defined construction areas with restricted access.

There would be moderate, long-term, direct, beneficial impacts to visitor and staff safety. A wider trail would allow visitors and staff more room to safely navigate the often steep and winding bike trail. Long-term safety issues associated with poorly aligned trail sections in Segments 1 and 3 would continue to be a hazard to park visitors.

#### *Conclusion*

Alternative C would correct many of the identified safety concerns but retain two known hazardous areas. The goals of the project would not be fully met.

#### 3.8.4 Alternative D – Realignment, Repair and 10-Foot Widening

Short-term safety issues include construction worker safety, which would be mitigated by following Occupational Safety and Health Administration (OSHA) guidelines, and protecting visitors and employees during construction through the use of defined construction areas with restricted access.

There would be moderate, long-term beneficial impacts to visitor and staff safety under Alternative D. A wider trail would allow visitors and staff more room to navigate the often steep and winding bike trail.

#### *Conclusion*

Safety concerns identified in the project purpose and scoping activities, including issues associated with narrow trail width, poorly aligned segments, and poor pavement condition, are all addressed by Alternative D.

### **3.9 VISITOR USE AND EXPERIENCE**

#### *Visitor Characteristics*

Visitors to the Province Lands have a variety of activities and resources to enjoy including a visitor center, foot and bike trails through dune and forest communities, guided walks, and two lifeguard protected public beaches. The CCNS receives its greatest number of visitors during the late spring, summer, and early fall. The largest user groups are families with small children and organized groups.

#### *Visitor Use*

The Province Lands Bike Trail is the longest of the three bike trails maintained by the CCNS. Four parking areas allow access at different points along the trail, including Herring Cove Beach, Beech Forest, Province Lands Visitor Center, and Race Point Beach. Visitors can use the bike trail to travel to the popular recreational areas at both Herring Cove Beach and Race Point Beach.

The existing bike trail is “heavily used” according to CCNS staff and rangers. Bicycling is the second most popular activity in the CCNS after swimming.

### *Visitor Experience*

Over 7 miles of paved bike trail through dune, forest, heathland, and wetland habitats are available to Province Lands Bike Trail visitors. Difficult and hazardous sections of the trail currently detract from the visitor experience, as evidenced by the bike trail's particularly high accident rate when compared to the rest of the CCNS. For the seven years between 2000 and 2006, an average of 19 accidents have occurred each year on the bike trail (see Table 3-4). The data in Table 3-4 comprise only accidents that were reported to the CCNS. It is impossible to know the true number of accidents. However, it is generally assumed that reported accidents are a small percentage of total accidents.

It is expected that some riders enjoy the challenges of the existing trail. However, for many rider groups, notably those comprising families with young children, the existing hazards likely undermine the visitor experience.

#### 3.9.1 Alternative A – No Action Alternative

Minor, long-term indirect, adverse impacts to visitor use and experience would continue from the existence of unsafe conditions and deteriorated segments of the bike trail under the No Action Alternative.

#### *Conclusion*

The No Action Alternative would allow known hazardous conditions to continue to endanger the public and staff. Key elements of the park's mission could be affected.

#### 3.9.2 Alternative B – Repair Only

This alternative would only repair segments of the existing trail where they are needed. All permanent repairs would be limited to the footprint and alignment of the existing bike trail.

Minor, short-term negative impacts to visitor use and experience would occur from the inconvenience associated with the repair work. Minor, long-term, indirect, adverse impacts associated with the hazardous conditions known to exist on the trail would continue. Minor, long-term, beneficial, direct impacts to use and experience would result from an improved riding experience on segments of the trail that have been repaired.

#### *Conclusion*

Alternative B would correct only a minority of the identified safety concerns and would not likely effect visitor use and experience for the majority of visitors.

#### 3.9.3 Alternative C – Repair and 10-Foot Widening

Minor, short-term negative impacts to visitor use and experience would occur from the inconvenience associated with the repair work. Minor, long-term, indirect, adverse impacts associated with the hazardous conditions known to exist on the trail would continue. Minor, long-term, beneficial, direct impacts to use and experience would result from an improved riding experience on segments of the trail that have been repaired and widened.

### *Conclusion*

Alternative C would correct many of the identified safety concerns and would not likely affect visitor use and experience for the majority of visitors.

#### 3.9.4 Alternative D – Realignment, Repair and 10-Foot Widening

Minor, short-term negative impacts to visitor use and experience would occur from the inconvenience associated with the repair work. Moderate, long-term, beneficial, direct impacts to use and experience would result from an improved riding experience on segments of the trail that have been repaired and widened.

### *Conclusion*

While a minority of users expressed concern that the challenges of the identified hazardous sections are part of the character of the trail, correcting these safety concerns is identified in the project purpose and scoping activities and is assumed to benefit the greater population of visitors.

### **3.10 SUMMARY**

Alternative D would result in the greatest benefits to visitor and staff safety and visitor use and experience, with only 7 to 14 percent more overall habitat disturbance than Alternative C. Alternative C, while having slightly lower habitat impacts, would not address the significant safety issues associated with the poorly aligned segments of the trail that have a history of reported accidents. Both Alternatives C and D have associated minor, long-term direct, adverse impacts to upland habitat. Alternative B has considerably less impact than Alternatives C or D; however, it would only improve the paved surface of the existing trail, and does not address any long-term safety issues associated with poorly aligned trail segments, the overall narrowness of the path, or dune stabilization needs. Alternative A would have no direct impacts to natural resources, but would not address any of the safety and usability issues of the bike trail.

Alternative D has been determined to be the Preferred Alternative for this project. Even though this alternative has the greatest potential impacts to habitat overall (depending on the realignment options selected), the impacts are distributed over 7.3 miles of bike trail. No additional fragmentation of habitat would occur. With the exception of the realignment options, the long-term, direct, adverse impacts on upland and dune ecosystems at any one location are minor. The relatively moderate long-term impacts of the realignments would be beneficially offset by restoration of the abandoned trail. Alternative D, by addressing the widest range of safety and use concerns, also has the most positive potential impacts on the Province Lands Bike Trail use, experience and safety for visitors and staff.

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## **4 CONSULTATION AND COORDINATION**

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### **4.1 AGENCY CORRESPONDENCE**

Letters received from federal and state agencies by NPS included:

- USFWS, Section 7 Consultation, September 17, 2004 (Amaral 2004); and
- NHESP, October 20, 2004 (French 2004).

The letter from the USFWS stated that no federally-listed or proposed, threatened or endangered species or critical habitat is known to occur in the project area. Additionally, the letter states that the preparation of a biological assessment or further consultation under Section 7 of the Endangered Species Act is not required.

The letter from the NHESP listed numerous state-listed plant and animal species within the project area, as well as the presence of four certified vernal pools and the maritime dune community. The project has been designed to avoid or minimize impacts to these listed plant and animal species and the maritime dune community. No impacts to certified vernal pools would result from the project.

Under the provisions of 36 CFR 800.8 and the Servicewide Programmatic Agreement, the NPS is coordinating the Section 106 process with NEPA through the preparation of this EA. Letters stating the NPS intention to perform cultural resource investigations in the project area were sent to the Massachusetts Historical Commission and the Wampanoag Tribal Historic Preservation Officer on October 5, 2004.

Copies of all agency correspondence are included in Appendix A.

### **4.2 PUBLIC MEETINGS**

Two public meetings were held in Provincetown to present the project and receive public comments. The first meeting was held at Provincetown Town Hall on August 11, 2005 and the second meeting was held at the town hall on September 21, 2005.

At the August 11 meeting, two members of the public attended. Comments focused on certain aspects of the project design including the proposed realignment of several sections and the elimination of several steep slopes on the existing trail. One commenter noted that the steep slopes and curves on the existing trail are part of the character of the trail and should be retained. However, improving the safety of the trail is one of the principal goals of the project and the trail should be made safe for all levels of bicycling ability.

Additional comments were made on potential impacts to wetlands and it is noted that the project design would minimize wetland impacts by avoiding direct impacts to wetland resources. In two areas, the trail would be realigned away from existing wetlands and in locations where wetlands border the trail on both sides there would be no widening of the trail.

At the September 21 meeting, a total of five local residents attended, including one resident who previously attended the August 11 meeting. Several comments at this meeting were focused on minimizing changes to the character of the existing trail to retain the “challenge” of the trail for experienced riders. As noted previously, the NPS intends to improve safety conditions on the bike trail for all levels of bicycle riders and to address existing safety concerns and accident potential, and the proposed improvements are necessary to achieve this goal.

Copies of the meeting notes for each meeting are included in Appendix B.

## 5 COMPLIANCE WITH FEDERAL AND STATE ENVIRONMENTAL LAWS AND POLICIES

### 5.1 INTRODUCTION

The proposed project has been evaluated for consistency with applicable federal laws, regulations and programs. A brief description of the project's compliance with those governing items is provided in Tables 5-1 (federal programs) and 5-2 (state programs).

**Table 5-1 Consistency with Applicable Federal Laws, Regulations and Programs**

Law, Regulation or Program	Brief Description of Compliance
Presidential Executive Order 11988 – Floodplain Management	There would be only negligible, long-term adverse impacts to mapped 100-year floodplain due to fill for path widening.
Presidential Executive Order 11990 – Protection of Wetlands	The renovation actions would be implemented and managed to comply with <i>Director's Order 77-1, Wetland Protection</i> , and the related Procedural Manual 77-1 (NPS 1998), including the applicable BMPs and conditions listed in Appendix 2 of the procedural manual. Furthermore, the wetland impacts meet the Excepted Actions criteria outlined in Sections 4.2 (A)(1)(a) and (f), exempting the need to prepare a Statement of Findings.
National Historic Preservation Act of 1966 as amended (16 USC 470 et seq.)	The project would result in No Adverse Effect to National Register eligible or listed cultural resources. Section 106 Coordination with the Massachusetts SHPO is ongoing.
Clean Water Act of 1977 (Federal Water Pollution Control Act Amendments of 1972)	Temporary impacts to wetlands subject to jurisdiction under Clean Water Act Section 404 would be minimized. The project has been designed to avoid permanent impacts, by choosing not to widen or re-align the path into any wetland areas.
Endangered Species Act of 1973, as Amended (16 USC 1531 et seq.)	Correspondence with USFWS – no federal listed T&E Species habitat in Study Area
Coastal Barrier Resources Act	No new development is proposed in this initiative. A defined goal of the project is to increase protection and stabilization of the coastal dune ecosystem.
Presidential Executive Order 12898 – Environmental Justice	The proposed rehabilitation would increase availability of the trail to all levels of riders. Public meetings were held to receive input from the public. Discussions with the Wampanoag Tribal Authorities are ongoing.
Fish and Wildlife Coordination Act	The project proposes no modifications to water bodies or channels.
Magnuson-Stevens Fishery Conservation and Management Act	The project occurs on land, not within the federal waters subject to the Magnuson Act.
Migratory Bird Treaty Act	The project would occur on land owned and protected by the federal government. Long term impacts to habitat are expected to minimal.

**Table 5-2 Consistency with Applicable State Laws, Regulations and Programs**

<b>Law, Regulation or Program</b>	<b>Brief Description of Compliance</b>
Massachusetts Historical Commission Act: M.G.L. c. 9, §§ 26-27D and regulations at 950 CMR 71.00	The project would result in no adverse impacts to state register listed cultural resources. Coordination with the Massachusetts SHPO and the Wampanoag Tribal Historic Preservation Officer is ongoing.
Massachusetts Clean Waters Act: M.G.L. c. 21, §§ 26-53 and regulations at 314 CMR 3.00 (Surface Water Discharge Permit Program), 314 CMR 4.00 (Surface Water Quality Standards), 314 CMR 9.00 (Water Quality Certification)	The project would comply with the Massachusetts Stormwater Performance Standards through the implementation of a sedimentation and erosion control program during construction. The project would not result in an exceedence of any surface water quality standard.
Massachusetts Office of CZM: M.G.L. c.21A, § 4A and regulations at 301 CMR 20.00 – 26.00	The federal consistency review through the Massachusetts Office of Coastal Zone Management (MOCZM) under the Coastal Zone Management Act (CZMA), Section 307 (c) and 15 CFR Part 930, sub-part C, would be obtained after coastal zone management (CZM) review and concurrence that the project has complied with all CZM program policies. This determination is made to ensure compliance with the CZMA and to ensure that the project would not negatively affect the Massachusetts coastal zone. A CZM consistency determination is included in this section of the EA.
Massachusetts Wetlands Protection Act: M.G.L. c. 131, § 40 and regulations at 310 CMR 10.00	All proposed work has been designed to occur outside of wetland resources. A portion of the work would occur in the buffer zone of jurisdictional wetland resource areas. No long-term direct impacts to wetland resources would occur.
Massachusetts Endangered Species Act – M.G.L. c. 131A	NHESP has been consulted. State protected species in the vicinity of the project have been identified and taken into account during plan development.

## **5.2 LISTING OF REQUIRED PERMITS AND APPROVALS**

The renovation of the Province Lands Bike trail would require the following federal and state permits and approvals:

- Massachusetts NPDES General Permit for Construction Period Stormwater Discharges from the United States Environmental Protection Agency, Region 1.
- Massachusetts Programmatic General Permit Category I or II approval under Section 404 of the Clean Water Act from the United States Army Corps of Engineers.

- Coastal Zone Management Consistency Certification from the Massachusetts CZM Office.
- Orders of Conditions resulting from a Notice of Intent to work in wetland areas under the Massachusetts Wetlands Protection Act from the Provincetown Conservation Commission.

### **5.3 COASTAL ZONE MANAGEMENT CONSISTENCY**

CZM for the project is federally authorized by the CZMA as amended (16 U.S.C. 1451 et seq.). The coastal zone management program (CZMP) federal consistency review process is described in federal regulation 15 CFR 930: Federal Consistency with Approved Coastal Management Programs. The Coastal Programs Division (CPD) within the National Oceanic and Atmospheric Administration Office of Ocean and Coastal Resource Management (OCRM) is in charge of the program. The CPD is responsible for advancing national coastal management objectives and maintaining and strengthening state and territorial coastal management capabilities. It supports states through financial assistance, mediation, technical services and information, and participation in priority state, regional, and local forums. The CZMP leaves day-to-day management decisions at the state level in the 34 states and territories with federally approved coastal management programs, including Massachusetts.

The Massachusetts coastal program under 301 CMR 21.00 authorizes the Secretary of the Executive Office of Environmental Affairs to carry out the purposes of the federal CZMA, which is managed by the Massachusetts MOCZM. The Massachusetts CZMP identifies federal licenses or permits that are routinely reviewed for consistency with state coastal policies.

Sections 402 and 404 of the Clean Water Act are applicable to the project and, therefore, the project would be reviewed for consistency with state coastal policies.

In addition, the federally-approved Massachusetts CZMP lists several management principles. These policy statements are not currently enforceable through existing state statutes and regulations. They are published as guidance to proponents of activities in the coastal zone and represent the preferred policy direction of the MOCZM, which reviews all federal projects for consistency with management principles and may recommend alternatives or changes to projects in order to achieve consistency with the management principles.

A federal consistency determination is included below and describes how the project complies with the applicable regulatory policies of the MOCZM. MOCZM would review the application for consistency certification and would either concur or object to the application. Any federal permits issued for the project would be conditioned upon the consistency of the MOCZM should a license be approved for the project before a consistency determination has been made. MOCZM may object to an application if the project is not consistent with their program policies. MOCZM shall notify the applicant and the Director of OCRM of its objection. Such notification shall include:

- A statement as to how the project is inconsistent with specific elements of the Massachusetts CZM program policies.

- Alternative measures which, if adopted by the applicant agency, would permit the project to be conducted in a manner consistent with the CZM program policies.
- If the objection is based on the failure of the applicant agency to supply adequate information under these regulations, the nature of the information requested and the necessity of having such information.
- A statement informing the applicant of a right of appeal to the Secretary of Commerce in accordance with 15 CFR 930 Subpart H, as amended (301 CMR 21.09, Review Procedures).

## **5.4 CZM CONSISTENCY CERTIFICATION**

### **5.4.1 Water Quality**

*Water Quality Policy #1* - Ensure that point-source discharges in or affecting the coastal zone are consistent with federally approved state effluent limitations and water quality standards.

Temporary construction period stormwater point-source discharges would be authorized under the Massachusetts NPDES General Permit for Construction Period Stormwater Discharges. No formal engineered drainage system would be constructed as part of the project. Stormwater discharges would not be directed into surface waters or wetlands but would sheet flow off the bike trail to adjacent upland areas. No long-term point source discharges of stormwater are anticipated, therefore the project is consistent with Water Quality Policy #1.

*Water Quality Policy #2* - Ensure that nonpoint pollution controls promote the attainment of state surface water quality standards in the coastal zone.

There would be no nonpoint pollution controls associated with this project; therefore, this policy is not applicable to the project.

*Water Quality Policy #3* - Ensure that activities in or affecting the coastal zone conform to applicable state and federal requirements governing subsurface waste discharges.

There would be no subsurface waste discharges resulting from the project; therefore, this policy is not applicable.

### **5.4.2 Habitat**

*Habitat Policy #1* - Protect coastal resource areas including salt marshes, shellfish beds, dunes, beaches, barrier beaches, salt ponds, eelgrass beds, and fresh water wetlands for their important role as natural habitats.

The project would result in minimal temporary direct impacts to coastal wetland resources. Portions of the bike trail in Segment 3 along Province Lands Road would be realigned out of wetlands, reducing the total permanent impacts of the project.

*Habitat Policy #2* - Restore degraded or former wetland resources in coastal areas and ensure that activities in coastal areas do not further wetland degradation but instead take advantage of opportunities to engage in wetland restoration.

There is no restoration of degraded or former wetland resources associated with the project; therefore, this policy is not applicable.

#### 5.4.3 Protected Areas

*Protected Areas Policy #1* - Preserve, restore and enhance complexes of coastal resources of regional or statewide significance through the Areas of Critical Environmental Concern (ACECs) program.

There are no ACECs affected by the project; therefore, this policy is not applicable.

*Protected Areas Policy #2* - Protect state and locally designated scenic rivers and state classified scenic rivers in the coastal zone.

There are no state or locally designated scenic rivers or state classified scenic rivers affected by the project; therefore, this policy is not applicable.

*Protected Areas Policy #3* - Ensure that proposed developments in or near designated or registered historic districts or sites respect the preservation intent of the designation and that potential adverse effects are minimized.

The project is not considered a “development” and is not located in or near designated or registered historic districts or sites; therefore, this policy is not applicable.

#### 5.4.4 Coastal Hazards

*Coastal Hazard Policy #1* - Preserve, protect, restore, and enhance the beneficial functions of storm damage prevention and flood control provided by natural coastal landforms, such as dunes, beaches, barrier beaches, coastal banks, land subject to coastal storm flowage, salt marshes and land under the ocean.

The project would result in measures designed to stabilize dunes, particularly along Segments 1, 2 and 3 of the bike trail. Native dune vegetation would be planted along the edges of the bike trail on these segments to stabilize the dunes and minimize drifting of sand onto the bike trail. Realigned areas of the trail would result in minimal additional impacts to dunes along Segments 1, 2 and 3, but these areas have been minimized and additional areas of impact from the existing bike trail would be restored after the removal of the existing bike trail.

*Coastal Hazard Policy #2* - Ensure construction in water bodies and contiguous land areas will minimize interference with water circulation and sediment transport. Approve permits for flood or erosion control projects only when it has been determined that there will be no significant adverse effects on the project site, or adjacent or downcoast areas.

There is no construction in water bodies associated with the project. The bike trail would not be widened into adjacent wetlands or water bodies; thus, there would be no

interference with water circulation or sediment transport. The project is also not a flood or erosion control project.

*Coastal Hazard Policy #3* - Ensure that state and federally funded public works projects proposed for location within the coastal zone will:

- Not exacerbate existing hazards or damage natural buffers or other natural resources.
- Be reasonably safe from flood and erosion related damage.
- Not promote growth and development in hazard-prone or buffer areas, especially in velocity zones and ACECs.
- Not be used on Coastal Barrier Resource Units for new or substantial reconstruction of structures in a manner inconsistent with the Coastal Barrier Resource/Improvement Acts.

The project would not exacerbate existing hazards, or damage natural buffers or other natural resources related to flooding or erosion related damages. The project would also not promote growth or development in hazard prone or buffer areas. Finally, the project is not a new or substantial reconstruction of a structure on a Coastal Barrier Resource Unit. Therefore, this policy does not apply.

*Coastal Hazard Policy #4* - Prioritize public funds for acquisition of hazardous coastal areas for conservation or recreation use, and relocation of structures out of coastal high hazard areas, giving due consideration to the effects of coastal hazards at the location to the use and manageability of the area.

The project is the renovation of an existing recreational bike trail in the CCNS, and, therefore, no public funds are being used for acquisition purposes. Therefore, this policy does not apply.

#### 5.4.5 Port and Harbor Infrastructure

*Ports Policy #1* - Ensure that dredging and disposal of dredged material minimize adverse effects on water quality, physical processes, marine productivity and public health.

The project does not include dredging or disposal of dredged material; therefore, this policy does not apply.

*Ports Policy #2* - Obtain the widest possible public benefit from channel dredging, ensuring that designated ports and developed harbors are given highest priority in the allocation of federal and state dredging funds. Ensure that this dredging is consistent with marine environment policies.

The project is not a channel dredging project; therefore, this policy does not apply.



*Ports Policy #3* - Preserve and enhance the capacity of Designated Port Areas (DPAs) to accommodate water-dependent industrial uses, and prevent the exclusion of such uses from tidelands and any other DPA lands over which a state agency exerts control by virtue of ownership, regulatory authority or other legal jurisdiction.

The project is not located in a DPA; therefore, this policy does not apply.

#### 5.4.6 Public Access

*Public Access Policy #1* - Ensure that developments proposed near existing public recreation sites minimize their adverse effects.

The project is located within the boundaries of the CCNS and the bike trail is one of the most popular recreational activities within the CCNS. As a renovation of the bike trail, the project is designed to enhance the recreational qualities of the trail and would not result in adverse impacts to public access to the bike trail.

*Public Access Management Principle #1* - Improve public access to coastal recreation facilities and alleviate auto traffic and parking problems through improvements in public transportation. Link existing coastal recreation sites to each other or to nearby coastal inland facilities via trails for bicyclists, hikers, and equestrians, and via rivers for boaters.

The project is not a public transportation project. The bike trail currently provides a linkage between several coastal recreation areas within the Province Lands area of the CCNS. The proposed renovation of the bike trail would enhance safety and the visitor experience, and would be expected to improve the access between the coastal recreation sites.

*Public Access Management Principle #2* - Increase capacity of existing recreation areas by facilitating multiple use and by improving management, maintenance and public support facilities. Resolve conflicting uses whenever possible through improved management rather than through exclusion of uses.

The project would not be expected to increase the capacity of the existing bike trail – no additional parking spaces would be added along the trail. The proposed renovation of the bike trail would simplify maintenance for the CCNS staff. The safer bike trail alignment could potentially better facilitate multiple uses (bicycling, roller skating, roller blading and walking).

*Public Access Management Principle #3* - Provide technical assistance to developers of private recreational facilities and sites that increase public access to the shoreline.

The project is not a private recreational facility or site that increases public access to the shoreline; therefore, this management principle does not apply.

*Public Access Management Principle #4* - Expand existing recreation facilities and acquire and develop new public areas for coastal recreational activities. Give highest priority to expansions or new acquisitions in regions of high need or limited site availability. Assure that both transportation access and the recreational facilities are compatible with social and environmental characteristics of surrounding communities.

The project is not the expansion of an existing recreational facility or the acquisition of a public area for coastal recreation activities; therefore, this management principle does not apply.

#### 5.4.7 Energy

*Energy Policy #1* - For coastally dependent energy facilities, consider siting in alternative coastal locations. For non-coastally dependent energy facilities, consider siting in areas outside of the coastal zone. Weigh the environmental and safety impacts of locating proposed energy facilities at alternative sites.

The project is not an energy facility; therefore, this policy does not apply.

*Energy Management Principle #1* - Encourage energy conservation and the use of alternative sources such as solar and wind power in order to assist in meeting the energy needs of the Commonwealth.

The project is not an energy facility, therefore, this management principle does not apply.

#### 5.4.8 Ocean Resources

*Ocean Resources Policy #1* - Support the development of environmentally sustainable aquaculture, both for commercial and enhancement (public shellfish stocking) purposes. Ensure that the review process regulating aquaculture facility sites (and access routes to those areas) protects ecologically significant resources (salt marshes, dunes, beaches, barrier beaches and salt ponds) and minimizes adverse impacts upon the coastal and marine environment.

The project is not an aquaculture facility; therefore, this policy does not apply.

*Ocean Resources Policy #2* - Extraction of marine minerals will be considered in areas of state jurisdiction, except where prohibited by the Massachusetts Ocean Sanctuaries Act, where and when the protection of fisheries, air and marine water quality, marine resources, navigation and recreation can be assured.

The project does not include the extraction of marine minerals; therefore, this policy does not apply.

*Ocean Resources Policy #3* - Accommodate offshore sand and gravel mining needs in areas and in ways that will not adversely affect shorelines areas due to alteration of wave direction and dynamics, marine resources and navigation. Mining of sand and gravel, when and where permitted, will be primarily for the purpose of beach nourishment.

The project does not include offshore sand and gravel mining; therefore, this policy does not apply.

#### 5.4.9 Growth Management

*Growth Management Principle #1* - Encourage, through technical assistance and review of publicly funded development, compatibility of proposed development with local community character and scenic resources.

The project would not result in adverse impacts to local community character and scenic resources. The bike trail is a long-established feature of the Province Lands, and the renovation of the bike trail would not alter the visual character of the area. Provisions would be made through the project design to provide turn outs at locations along the path where bike trail visitors would be able to safely enjoy existing scenic vistas.

*Growth Management Principle #2* - Ensure that state and federally funded transportation and wastewater projects primarily serve existing developed areas, assigning highest priority to projects that meet the needs of urban and community development centers.

The project is not a state or federally funded transportation or wastewater project serving a developed area; therefore, this management principle does not apply.

*Growth Management Principle #3* - Encourage the revitalization and enhancement of existing development centers in the coastal zone through technical assistance and federal and state financial support for residential, commercial and industrial development.

The project does not include the revitalization or enhancement of an existing development center; therefore, this policy does not apply.

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## **APPENDIX A**

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Agency Correspondence

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## United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office  
70 Commercial Street, Suite 300  
Concord, New Hampshire 03301-5087



RECEIVED

2004 SEP 20 PM 3:07

CAPE COD

NATIONAL SEASHORE

September 17, 2004

Reference:	<u>Project</u>	<u>Location</u>
	Septic facilities upgrade	Provincetown, MA
	Bike trail rehabilitation	Provincetown, MA

Michael Murray  
National Park Service  
Cape Cod National Seashore  
99 Marconi Site Road  
Wellfleet, MA 02667

Dear Mr. Murray:

This responds to your recent correspondence requesting information on the presence of federally-listed and/or proposed endangered or threatened species in relation to the proposed activity(ies) referenced above.

Based on information currently available to us, no federally-listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under Section 7 of the Endangered Species Act is not required.

This concludes our review of listed species and critical habitat in the project location(s) and environs referenced above. No further Endangered Species Act coordination of this type is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your coordination. Please contact us at 603-223-2541 if we can be of further assistance.

Sincerely yours,

*Michael J. Amaral*

Michael J. Amaral  
Endangered Species Specialist  
New England Field Office

RECEIVED

OCT 08 2004

DSC-DC



## United States Department of the Interior

NATIONAL PARK SERVICE  
Cape Cod National Seashore  
99 Marconi Site Road  
Wellfleet, MA 02667  
508.349.3785  
508.349.9052 Fax

IN REPLY REFER TO:

H30

October 5, 2004

Ms. Cara Metz  
Executive Director  
Massachusetts Historical Commission  
220 Morrissey Boulevard  
Boston, MA 02125

Subject: Environmental Assessment for Rehabilitation of the Province Lands Bike Trail,  
Provincetown, Massachusetts (CACO - DSC - 68043)

Dear Ms. Metz:

Under the terms of the National Environmental Policy Act (NEPA), the National Park Service (NPS) at Cape Cod National Seashore is preparing an Environmental Assessment (EA) for the rehabilitation of the Province Lands Bike Trail in Provincetown. 36 CFR 800.8 and the Servicewide Programmatic Agreement allow the NPS to coordinate the Section 106 process with NEPA. We intend to use the EA to meet our Section 106 obligations.

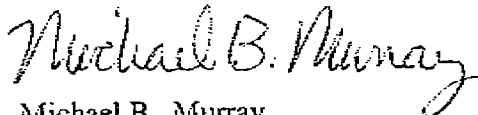
The Province Lands Bike Trail is extremely popular and attracts thousands of cyclists each year. The trail winds for seven and a half miles through the fragile Province Lands dunes, affording visitors an opportunity to experience this sensitive resource area with minimum impact. The trail was constructed over 30 years ago and it does not meet contemporary bike trail standards. The NPS anticipates that most of the bike trail will remain within its current alignment, but portions of the trail will be widened and sections of the trail may be reconfigured to lessen the steepness of the grade.

As a result, the NPS is planning to survey the area of potential impact for this proposal for cultural resources within the next year and will consult with you on the scope of work for the survey as well as make the results of this survey available for your review and comment.

As soon as the review draft of the EA is available, we will send it to you for your review and comment. We look forward to your review of this proposal and believe that it will continue to result in better cultural resources management as well as helping to ensure that cultural resources are adequately considered during preparation of the project and the accompanying EA.

If you have any questions, please contact Section 106 Coordinator William Burke, at 508-255-6135.

Sincerely,

A handwritten signature in cursive script that reads "Michael B. Murray".

Michael B. Murray  
Acting Superintendent

cc: Director, Advisory Council on Historic Preservation  
Tribal Historic Preservation Officer, Wampanoag Tribe of Gay Head - Aquinnah  
National Park Service:  
NPS-NER-USchold, Harmon  
NPS-DSC-Sikoryak  
NPS-DSC-PIFS (Project Information Files)



## United States Department of the Interior

NATIONAL PARK SERVICE  
Cape Cod National Seashore  
99 Marconi Site Road  
Wellfleet, MA 02667  
508.349.3785  
508.349.9052 Fax

IN REPLY REFER TO:

H30

October 5, 2004

Cheryl Andrews-Maltais  
Tribal Historic Preservation Officer  
Wampanoag Tribe of Gay Head-Aquinnah  
20 Black Brook Road  
Aquinnah, MA 02535

Subject: Environmental Assessment for Rehabilitation of the Province Lands Bike Trail,  
Cape Cod National Seashore

Dear Ms. Andrews-Maltais:

Under the terms of the National Environmental Policy Act (NEPA), the National Park Service (NPS) at Cape Cod National Seashore is preparing an Environmental Assessment (EA) for the rehabilitation of the Province Lands Bike Trail in Provincetown. 36 CFR 800.8 and the Servicewide Programmatic Agreement allow the NPS to coordinate the Section 106 process with NEPA. We intend to use the EA to meet our Section 106 obligations.

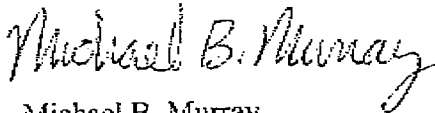
The Province Lands Bike Trail is extremely popular and attracts thousands of cyclists each year. The trail winds for seven and a half miles through the fragile Province Lands dunes, affording visitors an opportunity to experience this sensitive resource area with minimum impact. The trail was constructed over 30 years ago and it does not meet contemporary bike trail standards. The NPS anticipates that most of the bike trail will remain within its current alignment, but portions of the trail will be widened and sections of the trail may be reconfigured to lessen the steepness of the grade. As a result, the NPS is planning to survey the area of potential impact for this proposal for cultural resources within the next year and will consult with you on the scope of work for the survey, as well as make the results of this survey available for your review and comment.

As soon as the review draft of the EA is available, we will send it to you for your review and comment. We look forward to your review of this proposal and believe that it will continue to

result in better cultural resources management as well as helping to ensure that cultural resources are adequately considered during preparation of the project and the accompanying EA. The park is aware that American Indians value both natural and cultural resources and we want to ensure that the project will meet mutually held tribal and NPS goals for management of important resources in and near the park.

If you have any questions, please contact Section 106 Coordinator William Burke, at 508-255-6135.

Sincerely,

A handwritten signature in cursive script that reads "Michael B. Murray". The ink is dark and the signature is fluid, with the first and last names being more prominent than the middle initial.

Michael B. Murray  
Acting Superintendent

cc: Director, Advisory Council on Historic Preservation  
State Historic Preservation Officer, Massachusetts Historical Commission  
National Park Service:  
NPS-NER-USchold, Harmon  
NPS-DSC-Sikoryak  
NPS-DSC-PIFS (Project Information Files)



MassWildlife

Commonwealth of Massachusetts

# Division of Fisheries & Wildlife

RECEIVED  
2004 OCT 27 PM 3:15  
CAPE COD  
NATIONAL SEASHORE

Wayne F. MacCallum, Director

October 20, 2004

Michael B. Murray  
Cape Cod National Seashore  
99 Marconi Site Road  
Wellfleet, MA 02667

Re: Provincetown Bike Trail  
Provincetown, MA  
NHESP File: 04-16671

Dear Mr. Murray:

Thank you for contacting the Natural Heritage and Endangered Species Program ("NHESP") of the MA Division of Fisheries & Wildlife for information regarding state-protected rare species at the above referenced site.

Our database indicates that the following protected rare species and exemplary natural communities occur in the vicinity of your project:

Scientific name	Common Name	Taxonomic Group	State Status
<i>Terrapene carolina</i>	Eastern Box Turtle	Reptile	Special Concern
<i>Clemmys guttata</i>	Spotted Turtle	Reptile	Special Concern
<i>Anax longipes</i>	Comet Darner	Dragonfly	Special Concern
<i>Scaphiopus holbrookii</i>	Eastern Spadefoot	Amphibian	Threatened
<i>Orontium aquaticum</i>	Golden Club	Plant	Endangered
<i>Helianthemum dumosum</i>	Bushy Rockrose	Plant	Special Concern
<i>Carex oligosperma</i>	Few-Fruited Sedge	Plant	Endangered
<i>Papaipema sulphurata</i>	Water-Willow Stem Borer	Moth	Threatened
	Coastal Heathland		
<i>Abagrotis nefascia benjamini</i>	Cutworm	Moth	Special Concern
<i>Corema conradii</i>	Broom Crowberry	Plant	Special Concern
<i>Ixobrychus exilis</i>	Least Bittern	Bird	Endangered
<i>Papaipema stenocelis</i>	Chain Fern Borer	Moth	Threatened
<i>Mertensia maritima</i>	Oysterleaf	Plant	Endangered

#### Exemplary Communities

Certified Vernal Pools # 2666, 2734, 2735, 2736,  
Maritime Dune Community

[www.masswildlife.org](http://www.masswildlife.org)

Division of Fisheries and Wildlife  
Field Headquarters, One Rabbit Hill Road, Westborough, MA 01581 (508) 792-7270 Fax (508) 792-7275  
An Agency of the Department of Fisheries, Wildlife & Environmental Law Enforcement

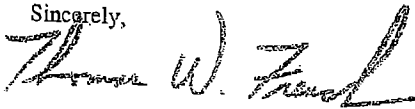


The above-listed species are protected under the Massachusetts Endangered Species Act (M.G.L. c. 131A) and its implementing regulations (321 CMR 10.00). State-listed wildlife are also protected under the state's Wetlands Protection Act (M.G.L. c. 131, s. 40) and its implementing regulations (310 CMR 10.37 and 10.59). Fact sheets for these species can be found on our website <http://www.state.ma.us/dfwele/dfw/nhesp/nhfact.htm>.

This evaluation is based on the most recent information available in the NHESP database, which is constantly being expanded and updated through ongoing research and inventory. Should your site plans change, or new rare species information become available, this evaluation may be reconsidered.

If you have any questions regarding this review, please call Joanne Theriault, Conservation Assistant, at ext. 310.

Sincerely,



Thomas W. French, Ph.D.  
Assistant Director

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## **APPENDIX B**

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### Comments and Coordination

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Project:	Province Lands Bike Path	Meeting Date / Time:	August 11, 2005 6:30 PM
Subject:	Preliminary Design	Project #:	80998
Location:	Town Hall Provincetown, Massachusetts	Recorded By:	Daniel Tuberty

ATTENDEES & ORGANIZATION:

George Price	NPS - Park Superintendent
Ben Pearson	NPS
Lauren McKean	NPS
Craig	NPS
Kiki Herold	Provincetown Resident
Peter Codinho	Provincetown Resident
Joe Freeman	Earth Tech
Scott Ridder	Earth Tech
Dan Tuberty	Earth Tech

PURPOSE:

This meeting represents the first of two community presentations of the preliminary design for the Province Lands Renovation and Upgrades. Listed below is a summary of questions and comments received during the presentation along with responses from the National Park Service and Earth Tech.

DISCUSSION AND COMMENTS:

1. Will the upgrades be for the entire path or just portions?

*Response: The proposed design includes widening of bike path with overlay and realignments for Priority Segments 1, 2 and 3. Priority segments 4 and 5 will receive spot maintenance upgrades.*

2. Will the design mean major changes to the overall configuration?

*Response: With the exception of proposed realignment in three locations the overall configuration of the bike path will remain the same.*

3. Are members of the design team bicyclists? Have any of the design team members ridden the path?

*Response: All members of the design team have varied bicycling experience and all have ridden the Province Lands Bike Path.*

4. Will the design of the park have an effect on Wetlands areas?

*Response: Proposed preliminary design minimizes impact on wetlands in the area. As part of this project wetlands along the bike path have been surveyed and delineated. In two locations the bike path will be realigned away from wetlands areas. In locations where wetlands exist on both sides of the existing path no widening will occur.*

5. Maintenance over the past couple of years has not been sufficient.

*Response: Park Service acknowledges this and stated that the volume of maintenance and limited funds are the reason. The proposed design includes measures that will reduce the volume of maintenance required in the future.*

6. Hills and curves, although somewhat dangerous, are part of the character of the bike path and the bicycling experience and should remain as they exist.

*Response: The first goal stated for proposed design for the Bike Path is to address safety issues. National Park Service records indicate a high number of accidents over the past few years including several serious injuries and one fatality. Bike riders of all ages and levels of experience use the path and safety concerns need to be met for all future public use.*

7. Sand drifts are the number one safety hazard currently along the path.

*Response: The proposed design includes measures to address sand drifts such as additional retaining walls and raised platforms along the existing path.*

8. Timber retaining walls are used as seating areas along the path and should be used for new retaining walls.

*Response: Proposed design recommends repair but not removal of existing timber retaining walls. Additional retaining walls incorporated into the design be constructed of similar timber materials.*

9. Could representatives of the community accompany the design team on a site tour of the bike Path?

*Response: Future site visits that include community participation will be organized through National Park Service project representatives.*

10. Providing a surface road crossing over Province Lands Road will be more dangerous than the low culvert.

*Response: Several accidents have occurred with riders hitting their heads on the underside of the culvert including some with serious injuries.*

11. Design team should consider not having a yellow line down the middle of the path. Use green or white instead.

*Response: Designers will review the option of removal of the line or using an alternative color. If the bike path is widened the strip may not be necessary. The color yellow is important because it is identified with safety.*

12. Could the culvert path be left and used as an optional pedestrian route?

*Response: National Park Service and the Design Team will consider this option as work progresses.*

13. Will additional signage be included particularly roadway signage at Bike Path crossings?

*Response: New signage for the bike path will be part of the project especially at roadway crossings and other areas where safety is a concern.*

14. Use caution signage at dangerous areas instead of realignments.

*Response: Signage will be included as part of the design for this project but not as a substitute for safety upgrades. The NPS and design team do not feel that signage alone will satisfy safety requirements.*

15. Bike rental requirements for safety sign offs should be required.

*Response: This is an interesting idea however it does not reduce the need for proposed design upgrades.*

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Project:	Province Lands Bike Path	Meeting Date / Time:	September 21, 2005 6:30 PM
Subject:	Preliminary Design	Project #:	80998
Location:	Town Hall Provincetown, Massachusetts	Recorded By:	Daniel Tuberty

---

ATTENDEES & ORGANIZATION:

George Price	NPS - Park Superintendent
Ben Pearson	NPS
Craig Thatcher	NPS
Joe Freeman	Earth Tech
Scott Ridder	Earth Tech
Dan Tuberty	Earth Tech

Kiki Herold	Provincetown Resident
Beth Greenfield	Provincetown Resident
Cheryl Andrews	Provincetown Resident
Bill Meadows	Provincetown Resident
Elizabeth McLeod	Provincetown Resident
David Freid	Provincetown Resident

PURPOSE:

This meeting represents the **SECOND** of two community presentations of the preliminary design for the Province Lands Renovation and Upgrades. Listed below is a summary of questions and comments received during the presentation along with responses from the National Park Service and Earth Tech.

DISCUSSION AND COMMENTS:

1. Priority Area 5, particularly through the wetlands, experiences extensive flooding during spring. Will the design address this problem?

*Response: The National Park Service is aware of this problem however this section of the bike path will only receive nominal maintenance upgrades due to funding limitations.*

2. Areas of the bike path that go through wetlands and experience flooding are rare and add to the character of the trail. Is it possible to leave this current condition in place?

*Response: The design will address flooding by relocation of the trail out of wetlands areas in priority areas 1, 2 & 3. The NPS recognizes that water represents a challenge for more experienced riders, safety considerations for all guests must be addressed.*

3. Much of the design represents improvements that go "too far" in addressing safety and maintenance issues. Could the project save money by reducing the amount of resurfacing and realignments proposed in the design and retain the character and challenge unique to the bike path?

*Response: Upgrades included in the design are necessary for safety and to help reduce the maintenance effort. Additionally, the NPS is committed to minimizing impact to the environment whenever possible.*

4. Is it possible to reduce the amount of widening proposed as part of the design?

*Response: Widening of the bike path is needed to improve sight lines and to bring the path up to current standards. However the amount of widening has already been reduced to priority areas 1, 2 & 3, except where the path goes through wetlands, due to funding limitations.*

5. The volume of traffic along the bike path is not sufficient to require widening to reduce safety.

*Response: Widening of the bike path is necessary to increase safety by increasing sight lines and providing room for all types of users. Increased width along the path will provide additional safety for two way traffic and help soften many of the sharp turns.*

6. Propose wooden bridge does not sound like a good solution for the bike path.

*Response: A wooden bridge is proposed for areas particularly in Priority 2 to protect from sand drifts. In some areas sand will continue to drift on to the path regardless of the additional vegetation and retaining walls. The solution is to raise the path over the sand and allow it to drift below. The length of bridge and material used for construction will be consistent with the character of the bike path.*

7. Will the project include additional signage to address hazardous areas along the trail?

*Response: The project currently includes signage to provide warnings to users at dangerous turns, at grade road crossings and steep slopes.*

8. Could specific areas be marked for use by more experienced riders and some marked for children similar to the system used to mark ski trails?

*Response: The NPS will consider this option however it is difficult to monitor this type of usage and it is difficult to enforce with signage. Ski trails are marked as a recommendation of skill level required and use is determined by individual discretion.*

9. Can the NPS comment on the number of accidents that occur at the bike path?

*Response: NPS has a map available for viewing that depicts number and location of all accidents that have occurred over the past few years. Safety issues are discussed at every management meeting and there is at least one accident to report on every week.*

10. Could money for the project be used for instead maintenance?

*Response: Funding for design and maintenance are provided through different sources. The NPS has no ability to increase its maintenance budget for the bike path. The project, when complete, will help offset future maintenance costs.*

11. Is it possible to provide additional signage to require cars to yield to bikes along the trail particularly where at grade road crossings occur?

*Response: Additional signage will be provided as part of this design requiring cars to yield to riders along the bike path.*

12. Are there currently any initiatives to better educate bike riders about safety issues?

*Response: The NPS has a program underway to help educate the public on bicycle safety.*

13. Is there in existence bike specific signage that depicts hazards such as sand, limited views or steep slopes?



*Response: Design Team will research signage and incorporate any bike specific signage into the project.*

14. Does the NPS have plans in the future to connect the bike path to town?

*Response: The recent transportation bill may include funds that could be used for extensions of the bike path.*

15. Is there any possibility that the NPS can increase the maintenance budget in the future?

*Response: The NPS is looking for alternate sources of funding however there is no additional funds available at this time.*

16. Is it possible for the NPS to have the bike path swept more often?

*Response: Currently the bike path is swept 2 to 3 times per season and after a big storm. The maintenance staff does not have resources to sweep the bike path more often. Additionally the NPS is looking for more long term solutions to ongoing maintenance issues.*

17. What is the schedule for construction?

*Response: Construction will take place in 2007-08.*

18. Is it possible to use interns to help maintain the path?

*Response: NPS is beginning an adopt-a-trail program to help offset maintenance efforts and to involve the community in the upkeep of the trail. These efforts are at the beginning stages of development.*

19. How does the NPS feel about the design proposal for the bike path?

*Response: The NPS would like to include more scope in the project. However, considering the amount of funding available the design represents the amount of upgrade they can revive.*

**Additional Comments:**

- The yellow stripe along the center of the path is over used. NPS should consider using a green or white line or not using one at all
- The difficulty involved in riding the existing bike path is part of its unique character.
- NPS should consider reconstruction of a loop that once extended to Race Point that no longer exists.

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