

## SECTION 5.0 ENVIRONMENTAL CONSEQUENCES

Alternatives to the various CIP projects were presented in Section 3. This section evaluates their potential to result in environmental impacts. A list of all environmental impact categories considered in this document and either evaluated or dismissed from further analysis is discussed in Section 1.0 and outlined in Table 1-1. NEPA requires consideration of context, intensity, duration of impacts, indirect (secondary) impacts, cumulative impacts, and measures to mitigate for impacts. The definitions used for these terms in this document are provided below. Additionally, NPS policy requires that “impairment of park resources” be evaluated in all environmental documents.

Consequences, including direct and indirect impacts, were assessed by impact topic for the No Action, Preferred Alternative, and other alternatives for each CIP project element.

This section describes and compares the impacts of the Preferred Alternative (Proposed Action), other alternatives, and the No Action Alternative for each of the CIP project elements. Impact categories include: Transportation, Wetlands and Buffer Zones, Floodplain, Coastal Dunes, Cultural Grasslands, Rare Species Habitat, Drainage/Stormwater Management, Visual, Section 4(f) Properties, Impairment of Park Resources, and Cumulative Impacts.

Two impact categories are discussed in aggregate terms rather than by individual project element. These categories include Impairment to Park Resources (Section 5.14) and Cumulative Impacts (Section 5.15). This approach has been suggested by NPS because of the similarity of the projects and associated impacts. These topics are addressed in the overall context of the combined CIP projects, rather than as each CIP project individually. As with the general discussion of the environmental consequences of each alternative for each CIP project, the impacts are assessed by intensity as outlined in Table 5-1 as a means of assessing cumulative impacts and the potential for impairment to the Park’s resources. Table 5-1 provides a framework for establishing whether the CIP project impacts would be negligible, minor, moderate, or major. Table 5-3 provided impacts of the preferred alternative for each project element in terms of wetland types. Table 5-5 provides a summary of impacts for each impact category for the alternatives evaluated. Impacts to Section 4(f) resources are discussed in a separate 4(f) Evaluation provided in Section 9.

### 5.1 Introduction and Methodology

#### 5.1.1 Definitions

The following definitions for context, intensity, duration of impacts, indirect impacts, cumulative effects, and mitigation measures were used to characterize and evaluate the impacts associated with project alternatives for the CIP projects. Terms not defined have the standard NEPA definitions.

*Context:* Context is the setting within which an impact is analyzed. In this FEIR/EA, the context for all areas affected by the proposed actions is within the Airport lease area and the Province Lands region of the Park, although impacts to public use, access, and safety would extend regionally outside the limits of the Park, as they would affect the general public.

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Intensity: Intensity refers to severity: negligible, minor, moderate or major. For this FEIR/EA, “negligible” is a barely perceptible and not measurable impact confined to a small area. “Minor” is measurable, localized, and would not require mitigation. “Moderate” is a clearly detectable, measurable impact that could be minimized with mitigation. “Major” is a significant impact that could not be offset by mitigation. The intensity of the project impacts is further broken down by impact topic, as outlined in Table 5.1 for discussion purposes when addressing cumulative impacts and impairment to park resources and values. This assessment methodology is developed from guidance within NPS’s Director’s Order-12 (DO-12; 1982) and the DO-Handbook and is adopted from similar projects undertaken by NPS in the vicinity of the Airport.

Duration: Duration would be either short-term or long-term. For this FEIR/EA, short-term refers to the construction period, with impacts that would last less than one year. Long-term impacts are impacts that last longer than one year.

Direct and Indirect Impacts: For the purposes of assessing the potential impacts associated with the safety/security fence, impacts to natural resource areas (freshwater wetlands and coastal dunes) have been identified as falling into one of two general categories: direct or indirect. These categories are based upon discussions with MA DEP and other regulatory agencies specific to characterizing impacts associated with the installation and maintenance of the safety/security fence.

The term Direct Impact is used in this document to identify alterations which would involve permanent fill (e.g., from fence posts), and vegetation management that would significantly alter the plant community (and the functions and values that it currently provides) within the clear areas along the fence. Vegetation management where the wetland plant community would be appreciably altered from an existing forested community (PFO) or a dense shrub community (PSS) to one that is permanently maintained as a low-growing plant community has been included as a direct impact. Other than the fence, Direct Impacts are impacts resulting from construction of the project as stated.

Indirect impacts, while modifying the vegetation communities, would not significantly alter the wetlands or dunes and would not impair the ability of these resource areas to continue to provide the same or similar functions and values as those provided by these areas prior to disturbance. An example of indirect impacts may be reducing the height of shrubby vegetation, but still maintaining a shrub swamp community. Indirect Impacts associated with the removal of vegetation have been further broken down by the estimated degree of cutting (i.e., removal of select branches vs. complete removal of canopy or shrub cover), and mitigation has been provided accordingly (see Section 7).

**Table 5-1 Impact Intensity Definitions for CIP Projects at PVC**

RESOURCE	INTENSITY DEFINITIONS
<p><b>Natural Resources</b>                      (wetlands, buffers, floodplains, coastal dunes, wildlife habitat, and grasslands)</p>	<p><b>Negligible:</b> The impact on biological communities, natural processes, species, soils, or wetlands functions and values 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 the natural processes, soil characteristics, or wetlands functions and values would be measurable, although the changes would be limited and affect only a localized area. Mitigation would not be required.</p> <p><b>Moderate:</b> The impact is clearly detectable and could have appreciable effects 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, composition, ecological processes, wetland functions and values, or soil characteristics could be substantial and occur over a larger area. Mitigation measures would offset adverse effects upon successful implementation.</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, composition, ecological processes, wetlands functions and values, or soil characteristics would be highly altered and landscape level changes would be expected.</p>
<p><b>State-Listed Rare Species and their Priority Habitat</b></p>	<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. No “Take” would occur and no permit would be required from the Massachusetts Natural Heritage and Endangered Species Program (NHESP).</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, and would not require a permit from NHESP.</p> <p><b>Moderate:</b> Impacts on state-listed rare species, their habitats, or the natural processes sustaining them would be detectable and occur over a large area. Mitigation measures would offset adverse effects.</p> <p><b>Major:</b> The action would result in noticeable effects to the viability of a population or individuals of a species, or its critical supporting habitat. Impacts on a state-listed species, critical habitat, or the natural processes sustaining them would be detectable, both in and out of the natural resource area. Loss of habitat might affect the viability of at least some state-listed rare species. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed.</p>
<p><b>Public Use and Access and Safety</b>                      (transportation, Section 4(f) properties and visual impacts)</p>	<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. Mitigation measures would offset adverse effects upon successful implementation.</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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Areas of minimal, if any, vegetation cutting and maintenance would not be considered an impact. For example, when the fence alignment would traverse existing low-growing plant communities, this area would not be included as an impact. In addition, vegetation management practices that would necessitate the cutting of Phragmites within the wetland along the fence alignment would not be considered an adverse impact. Phragmites is currently cut by the Airport in the ILS area and the plant is also cut by other agencies for mosquito control or drainage.

Proposed mitigation measures, as discussed in Section 7, include both on-site restoration of wetlands and habitat as well as on-site wetland enhancement, standard construction procedure controls and implementation of BMPs intended to mitigate for unavoidable direct and indirect adverse impacts to natural resources within the Park. Mitigation also includes past mitigation efforts provided through the Hatches Harbor Saltmarsh Restoration Project (“Hatches Harbor Project”) in accordance with the April 28, 1997 Memorandum of Understanding between NPS and the Town of Provincetown and as reiterated in the November 5, 2010 letter from NPS to FAA (See Appendices). The Hatches Harbor Project, implemented in the early 2000s, included a substantial restoration effort of salt marsh and freshwater habitat.

### **5.1.2 Methodology**

#### Wetland Buffer Zone

Project impacts to Buffer Zone (100 foot offset from delineated edge of BVW and IVW, pursuant to the Provincetown Wetland Bylaws) have been considered but are not quantified for separate projects. Impacts have been classified as Level 1 and Level 2 impacts. A Level 1 impact would convert, or maintain, existing Buffer Zone as an area managed for Airport use. A Level 2 impact would convert, or maintain, existing Buffer Zone to a naturally vegetated state (wetland or coastal dune). As discussed in Section 4, existing Buffer Zone areas at the Airport consist of pavement, managed grassland, coastal dune, or other freshwater wetland resources. Because of the location of the isolated wetlands and their proximity to one another, the Buffer Zones overlap. Except for the runway and portions of other facilities, much of the Airport operation area falls within the Buffer Zone. The Buffer Zone is shown on Figure 4.5 which includes a table of Buffer Zone impacts.

#### Cultural Grassland

Impacts to Cultural Grassland are identified as impacts to the human-created grassland that occurs at the Airport adjacent to the taxiway system and runway. These areas are mowed frequently to maintain aviation safety areas and navigational surfaces. The term Cultural Grassland is applied by the Massachusetts Division of Fisheries & Wildlife to describe a “human-created and maintained open community dominated by grasses, normally maintained by mowing.” This community often occurs at airfields and is “a grassland community that generally occurs on sand or other droughty, low-nutrient soils.” In general, the mowed grass communities observed at the Airport that meet these criteria are dominated by various grass and herbaceous species that are mowed an average of three to four times annually. The significance of identifying Cultural Grasslands in the Natural Resources Inventories is that this type of habitat may provide nesting habitat for the Vesper Sparrow and potential habitat for Broom Crowberry.

#### Visual

Visual impacts are based on the qualitative degree of visual resource change and viewer response. Visual resource change is the degree of change in a visual resource caused by the project separate from viewer response. Viewer response is a measure of the change in viewer exposure, sensitivity, cultural significance, and local values. A visual assessment of existing conditions is presented in Section 4. The methodology is adapted

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from the Federal Highway Administration's Visual Impact Assessment for Highway Projects (FHWA-HI-88-054).

### 5.1.3 Field Investigations

Since the circulation of the DEIR/EA (May 31, 2007), additional wetland delineation has been completed and was approved by the Provincetown Conservation Commission. This approval has been extended to January 2013. Impacts to wetland resources are based on wetland identification and delineation reports that are included in Appendix 1. Direct impacts to BVW, IVW, and coastal dune are discussed in Sections 3, 5, and 7.

Additional field assessments of Eastern Spadefoot Toad prime and potential breeding habitat have been completed, pursuant to guidance from NHESP and NPS. The identification of impacts to rare species habitat is based on the natural resources inventory and rare species habitat assessment reports that are included in Appendix 2.

### 5.1.4 References

The impact analyses and conclusions are based on existing literature, FAA design standards, specific site studies, professional judgments, and public and agency input. The specific site studies are provided in the Appendices. A detailed discussion of FAA and TSA standards and regulations is provided in Section 2. Public and Agency comment letters are provided in Sections 10 and 13. CCNS publications can be found at the NPS website. Several agency coordination meetings were held with NHESP, NPS, CCC, DEP, Provincetown Conservation Commission, and ACOE staff to discuss alternatives and potential impacts to Hatches Harbor, rare species, wetlands, wildlife habitat continuity, traffic, and parking. Minutes of these meetings are provided in Section 10.1.

## 5.2 Westerly Taxiway System

The Westerly Taxiway System consists of:

- West End Connector Taxiway
- Westerly End of Parallel Taxiway
- Mid Connector Taxiway

### 5.2.1 No Action

#### 5.2.1.1 Transportation and Traffic

The No Action Alternative would have moderate adverse impacts on Transportation and Traffic in terms of airport operational safety. The West End TW would continue to be within the runway approach and the TW would not have the right angle connection at the end of the runway. The parallel TW would not be reconstructed to remove pavement.

#### 5.2.1.2 Wetlands and Wetland Buffer Zones

Under the No Action Alternative there would be no impacts to wetlands because there would be no construction and wetlands would not be altered.

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#### 5.2.1.3 Floodplain

Under the No Action Alternative there would be no impacts to floodplain because there would be no construction within flood zone elevations (i.e., within wetland, low-lying coastal dune or grassland) and the floodplain would not be altered.

#### 5.2.1.4 Coastal Dunes

Under the No Action Alternative there would be no impacts to Coastal Dunes because there would be no construction and coastal dunes would not be altered for the project.

#### 5.2.1.5 Cultural Grasslands

Under the No Action Alternative there would be no impacts to Cultural Grasslands because there would be no construction within cultural grasslands.

#### 5.2.1.6 Rare Species Habitat

Under the No Action Alternative there would be no impacts to Rare Species Habitat because there would be no construction within resources used by listed species.

#### 5.2.1.7 Drainage / Stormwater Management

The drainage system would not change under the No Action Alternative. There are no impacts to the drainage system associated with the No Action alternative.

#### 5.2.1.8 Visual Environment

There would be no change to the visual environment under the No Action Alternative. The No Action Alternative will not impact visual resources.

### 5.2.2 Westerly TW System Improvements (Preferred Alternative)

The Westerly Taxiway System Improvements consist of:

- A. Relocate the West End TW out of the RW Approach with a standard right angle
- B. Re-align the Westerly End of the Parallel Taxiway and construct a run-up pad
- C. Re-align the Mid Connector TW with a standard right angle

#### 5.2.2.1 Transportation and Traffic

Construction of the Westerly TW system would have moderate beneficial impacts on Transportation and Traffic. The project would provide safety and operational improvements but would not result in an increase in capacity of the Airport. Additional flights and additional passenger enplanements would not occur as a result of the project. Therefore, there would be minor short-term adverse impacts and moderate beneficial long-term impacts on Transportation and Traffic.

#### 5.2.2.2 Wetlands and Wetland Buffer Zones

The Westerly TW System Improvements would result in a total of 28,655 SF of unavoidable impacts to Wetland I. The relocation of the West End TW will result in the unavoidable alteration of approximately 25,665 SF of Wetland I. The realignment of the westerly end of the Parallel TW will result in the unavoidable alteration of approximately 2,880 SF of Wetland I. The realignment of the mid connector TW will result in the unavoidable alteration of approximately 110 SF of Wetland I. These areas are shown on Figure 3.1 in Section 3.

As for most of the CIP project elements proposed adjacent to wetland areas, unless otherwise noted, work within the buffer zone will typically be limited to the installation of erosion control measures at the limit of work prior to construction to prevent unintended impacts from sedimentation or debris to adjacent wetlands during construction activities. Erosion control barriers (i.e., silt fencing or straw bales) will be installed immediately down gradient of the proposed activities and will serve as the limit of work. Erosion control measures will remain in place and be maintained in good condition during and immediately following all construction activities. Upon completion of these activities and once all soils have been stabilized with native vegetation, the erosion control barriers will be removed and disposed of properly.

Relocation of the West End TW will provide locations for on-site wetland restoration of approximately 64,000 SF as shown on Figures 7.1 and 7.2 in the end of Section 7. This area will also serve as a mitigation area for the other CIP projects that have direct impacts to IVW. Wetland enhancement is also proposed to mitigate for direct and indirect adverse impacts to wetland resources to satisfy federal wetland regulatory requirements. The Hatches Harbor Project will provide the necessary wetland mitigation for impacts to wetland resource areas for the CCNS. Additional information about the proposed mitigation is provided in Section 7. A Statement of Findings is provided in Section 9 to comply with NPS NEPA requirements.

In conclusion, the Preferred Alternative will have a moderate adverse direct short-term impact on wetlands until the construction of the restoration and implementation of wetland enhancement are ~~is~~ successfully completed. Mitigation measures presented will compensate for these impacts such that there will be a net long-term minor to moderate beneficial impact with no net loss of wetland resources.

#### 5.2.2.3 Floodplain

While at least a portion of the project will occur at elevations below the 100-year floodplain (10 to 11 feet above mean sea level), the project is not anticipated to have any adverse effect on the flood storage capacity relative to the ability of the low-lying areas to temporarily retain and release coastal waters during and following a flooding event at the Airport or within the surrounding CCNS lands.

Because of the flood storage capacity of the other isolated wetlands on-site there will be negligible adverse short-term impacts with construction of the Preferred Alternative. Flood storage capacity will be compensated by the proposed wetland restoration upon successful completion. The proposed project will not displace flood waters nor will it minimize the area available for flood storage. In addition, mitigation measures undertaken during the Hatches Harbor Project have resulted in greater flushing of tidal waters within the harbor and have in part allowed for alleviated attenuation of flood waters following major storm events. A Statement of Findings is provided in Section 9 to comply with NPS NEPA requirements. The Preferred Alternative will have no long-term impacts on floodplain. Proposed mitigation will compensate for the impacts such that there may be a minor beneficial increase in flood detention and storage during large storm events upon successful implementation of wetland restoration.

#### 5.2.2.4 Coastal Dunes

Realigning the westerly end of the Parallel TW will result in approximately 6,460 SF of coastal dune alteration for construction of the run-up pad, as shown on Figure 3.1. Of this, approximately 2,220 SF will be converted from coastal dune to cultural grassland and the remaining area will be converted to pavement.

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Approximately 27,500 SF of dune creation is proposed adjacent to the proposed freshwater wetland restoration area within Restoration Areas A and C as mitigation. Therefore, the Preferred Alternative will have a moderate adverse short-term impact and minor adverse long-term impact on coastal dunes because proposed mitigation for the overall CIP projects results in a minor loss of coastal dune..

#### 5.2.2.5 Cultural Grasslands

Construction of the Preferred Alternative will impact existing Cultural Grasslands associated with the existing TW safety areas. The Preferred Alternative will also have adjacent safety areas consisting of Cultural Grasslands at varying widths.

Cultural Grasslands will be re-established along the newly constructed taxiway entrances and within the abandoned paved areas adjacent to the Runway 7 end as shown on Figures 7.1 and 7.2. Overall there will be no net loss of Cultural Grassland resource at the Airport. Therefore, the Preferred Alternative will have negligible adverse short-term and no long-term impacts on Cultural Grassland.

#### 5.2.2.6 Rare Species Habitat

Construction of the Preferred Alternative would impact wetlands, coastal dune, and Cultural Grassland which are potential habitats for Eastern Box Turtle, Vesper Sparrow, and Eastern Spadefoot Toad.

Minor short-term adverse impacts to Eastern Box Turtle habitat are expected, as this species is a generalist (as discussed in Section 4) and utilizes a variety of habitat types found within the Airport. There would be negligible adverse long-term impacts. To avoid direct impacts to this species, pre-construction “turtle sweeps” within the limit of work will be conducted as part of the Turtle Protection Plan discussed in Section 7.

Wetland resource area restoration is proposed in Restoration Areas A and B in which isolated freshwater wetlands will re-create potential breeding habitat for the Eastern Spadefoot Toad. Construction activities within the wetlands will be scheduled in accordance with NHESP agency avoidance dates to avoid direct impacts to Eastern Spadefoot Toad and further mitigate any adverse construction effects. Proposed wetland enhancement measures will restore the native plant communities within these habitats over time.

Although Vesper Sparrows have not been observed at the Airport in recent years, this species has been documented at the Airport by NPS, and the grassland provides potential habitat for the Vesper Sparrow. Construction activities within Cultural Grasslands will be scheduled for the fall (i.e., after the active breeding and nesting season for this species) which will avoid direct impacts to Vesper Sparrow.

In summary, the Airport will mitigate for impacts to rare species habitat through a combination of habitat restoration, habitat enhancement, and other efforts that are discussed in detail in Section 7. Vegetation management will help to maintain natural habitat areas, such as Cultural Grassland. Strategic timing of construction activities will also help to avoid direct and indirect impacts to rare species. To the extent practicable, construction will be timed to avoid peak activity for these species. As such, adverse impacts to rare species will be minor for the short-term and negligible for the long-term because of the proposed mitigation measures.

#### 5.2.2.7 Drainage / Stormwater Management

The project involves the relocation of pavement, removal of pavement, and construction of new paved surfaces. Following construction, stormwater runoff will continue to be managed on the taxiways with infiltration through sheet flow into the grass safety areas. Runoff from the Airport's runways and taxiways has negligible contaminants because salt is not applied and engine repair does not take place.

In addition, the CIP projects will result in an overall net decrease in pavement at the Airport as shown in Table 5.2 and on Figure 5.2 at the end of this section. Erosion control measures will be in place during construction and there will be minor beneficial short-term and long-term impacts to drainage and stormwater management.

#### 5.2.2.8 Visual Environment

The project would relocate existing taxiways and would not be a new element or an expansion of an existing element in the visual environment. Therefore, there would be no impact to the Visual Environment.

### **5.3 East End TW**

#### **5.3.1 No Action**

##### 5.3.1.1 Transportation and Traffic

The No Action Alternative would have moderate adverse impacts on Transportation and Traffic in terms of Airport operations both in the short- and long-term. The East End TW would not connect with the end of the runway and planes would be required to back-taxi on the active runway.

##### 5.3.1.2 Wetlands and Wetland Buffer Zones

Under the No Action Alternative there would be no impacts to wetlands because there would be no construction and wetlands would not be altered.

##### 5.3.1.3 Floodplain

Under the No Action Alternative there would be no impacts to floodplain because there would be no construction within flood zone elevations (i.e., within wetland, low lying coastal dune or grassland).

##### 5.3.1.4 Coastal Dunes

Under the No Action Alternative there would be no impacts to coastal dunes because there would be no construction.

##### 5.3.1.5 Cultural Grasslands

Under the No Action Alternative there would be no impacts to cultural grasslands because there would be no construction.

##### 5.3.1.6 Rare Species Habitat

Under the No Action Alternative there would be no impacts to rare species habitat because there would be no construction.

##### 5.3.1.7 Drainage / Stormwater Management

The drainage system would not change under the No Action Alternative because there would be no construction.

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#### 5.3.1.8 Visual Environment

As there would be no construction under the No Action Alternative, there would be no change to the visual environment.

### 5.3.2 Relocate East End TW with Standard Right Angle (Preferred Alternative)

#### 5.3.2.1 Transportation and Traffic

Construction of the East End TW relocation would have minor adverse short-term impacts on transportation and traffic. The project would provide safety and operational improvements but would not result in an increase in capacity of the Airport. Additional flights and additional passenger enplanements would not occur as a result of the project. Therefore, there would be minor adverse short-term impacts and moderate beneficial long-term impacts on Transportation and Traffic.

#### 5.3.2.2 Wetlands and Wetland Buffer Zones

Relocating the East End TW to align with the Runway 25 end would result in direct wetland impacts of 28,300 SF within an isolated shrub swamp, Wetland B, as shown on Figure 3.2.

Relocation of the East End TW will allow for on-site wetland restoration of up to 14,000 SF within the footprint of the existing paved area (Restoration Area C), as shown on Figure 7.2 in Section 7. Additional isolated wetland restoration will be provided in Restoration Area A (Figure 7.1 and 7.3), providing for an overall on-site restoration at an approximately 1:1 ratio. However, since the Corps (as well as other regulatory authorities) is seeking greater than 1:1 mitigation, the Airport proposes additional mitigation measures that include on-site wetland enhancement to be provided at a 7.4:1 ratio. Off-site mitigation previously implemented through the Hatches Harbor Project is also proposed to mitigate for direct and indirect adverse impacts to wetland resources within the Park, such that the overall mitigation ratio is greater than 8:1. Mitigation ratios will be refined during the permitting process. Additional information about the proposed wetland restoration and mitigation plan is provided in Section 7. The Preferred Alternative will have a moderate adverse short-term impact on wetlands. Proposed on-site wetland restoration and enhancement, combined with previous mitigation completed as part of the Hatches Harbor Project are intended to mitigate for all on-site impacts such that there will be a net long-term minor to moderate beneficial impact to wetland resources upon successful wetland mitigation.

#### 5.3.2.3 Floodplain

While at least a portion of the project will occur at elevations below the 100-year floodplain elevations (10 to 11 feet above mean sea level), the project is not anticipated to have any adverse effect on the flood storage capacity relative to the ability of the low-lying areas to temporarily retain and release coastal waters during and following a flooding event at the Airport or within the surrounding CCNS lands.

Flood storage capacity of Isolated Land Subject to Flooding (ILSF) on-site will not be impaired with construction of the Preferred Alternative. Any loss of flood storage capacity will be compensated upon successful implementation of on-site wetland restoration. The proposed projects will not displace flood waters nor will it reduce the area available for flood storage because of the proposed wetland mitigation. A Statement of Findings is provided in Section 9 to comply with NPS NEPA regulations. The Preferred Alternative will have a negligible adverse short-term impact on floodplain during construction. Proposed mitigation will compensate for the impacts so that there will be no long-term impact.

#### 5.3.2.4 Coastal Dunes

Relocating the East End Taxiway will result in approximately 5,000 SF of coastal dune alteration, as shown on Figure 3.2. A total of 27,500 SF (See Figures 7.1 and 7.2 in Section 7) of dune creation is proposed adjacent to the proposed freshwater wetland restoration areas (Restoration Areas A and C) as mitigation for this project and other CIP projects with impacts to coastal dunes. Management of invasive species within other existing coastal dune habitat is also proposed (see Section 7.0). The Preferred Alternative will have a moderate adverse short-term direct impact and minor adverse long-term impact on coastal dunes because of proposed mitigation.

#### 5.3.2.5 Cultural Grasslands

Relocating the East End Taxiway will alter some of the existing Cultural Grassland within the TW safety area. The relocated East End TW will be constructed with similar safety areas which will be maintained as Cultural Grassland (see Figures 7.2 and 7.4). Overall, there will be no net loss of Cultural Grassland at the Airport, so the Preferred Alternative will have minor adverse short-term and negligible adverse long-term impacts on Cultural Grassland.

#### 5.3.2.6 Rare Species Habitat

Relocating the East End TW would involve a shift of the existing TW entrance to the southeast. This may have potential impacts to habitat for the Eastern Box Turtle, to breeding and non-breeding habitat for the Eastern Spadefoot Toad, and to a lesser degree, to Vesper Sparrow nesting habitat. Abandonment of the existing paved areas provides an opportunity for habitat creation and/or restoration as discussed in Section 7.

Impacts to Vesper Sparrow nesting habitat are not anticipated given that the grassland in this area is in close proximity to active Airport operational areas (i.e., existing human activity in these areas may deter nesting in these managed grasslands). Construction activities within Cultural Grasslands will be scheduled for the fall to avoid impacts to Vesper Sparrow.

Habitat surveys for the Eastern Spadefoot Toad indicate that while portions of Wetland B provide suitable breeding habitat for this species, the proposed taxiway entrance would be located in areas uncharacteristic of prime breeding habitat for the Eastern Spadefoot Toad. Construction activities within the wetlands will be scheduled consistent with specific NHESP agency avoidance dates which will avoid direct adverse impacts to Eastern Spadefoot Toad and their potential breeding habitat. Proposed on-site wetland restoration and enhancement will mitigate for the shift in Eastern Spadefoot Toad breeding habitat and should improve the habitat characteristics through invasive species management.

In order to avoid direct impacts to the Eastern Box Turtle, pre-construction “turtle sweeps” within the limit of work will be conducted as part of the Turtle Protection Plan discussed in Section 7. Therefore, direct adverse impacts to rare species habitat will be minor for the short-term and negligible for the long-term because of the proposed mitigation measures.

#### 5.3.2.7 Drainage / Stormwater Management

The project involves the relocation of pavement, removal of pavement, and construction of new paved surfaces. Following construction, stormwater runoff will continue to be managed on the taxiways with infiltration through sheet flow into the grass safety areas. Runoff from the Airport’s runways and taxiways has negligible contaminants because salt is not applied and engine repair does not take place. Potential contaminants include material from tire wear, but a *de minimis* amount that could not be measured.

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Overall, the CIP projects will result in a net decrease in pavement at the Airport as shown in Table 5.2 and Figure 5.2 at the end of this section. Therefore, there will be minor short-term and long-term beneficial impacts to drainage and stormwater management.

#### 5.3.2.8 Visual Environment

The project would relocate an existing taxiway and would not be a new element in the visual environment. As a result there would be no impact to the Visual Environment.

### 5.4 Terminal Apron

#### 5.4.1 No Action

The Certificate issued on the NPC/DEIR/EA by the Secretary of Energy and Environmental Affairs allowed the Airport to proceed with the reconstruction of the Terminal Apron within the same footprint prior to the completion of the FEIR. In accordance with MEPA and NHESP, the Terminal Apron project has been included in this FEIR/EA to avoid segmentation, although this project is not required to be included in this FEIR/EA under NEPA requirements. The project was allowed to go forward by NHESP and MEPA because it was deemed to have no environmental impacts.

##### 5.4.1.1 Transportation and Traffic

Under the No Action Alternative there would be minor adverse short-term and moderate adverse long-term impacts to Transportation and Traffic because pavement that is in poor condition would not be replaced. The project has been completed.

##### 5.4.1.2 Wetlands and Wetland Buffer Zones

Under the No Action Alternative there would be no impacts to wetlands because there would be no construction adjacent to wetlands and no potential for indirect impacts to adjacent wetlands. The project has been completed and wetland/buffer resources were not impacted under this footprint pavement project.

##### 5.4.1.3 Floodplain

Under the No Action Alternative there would be no impacts because the construction would be within the footprint of the existing terminal apron. The project has been completed and resources were not impacted.

##### 5.4.1.4 Coastal Dunes

Under the No Action Alternative there would be no impacts to coastal dunes because there would be no construction in or adjacent to coastal dune resources. The project has been completed and as a result of this, no resources were impacted.

##### 5.4.1.5 Cultural Grasslands

Under the No Action Alternative there would be no impacts because there would be no construction in or adjacent to Cultural Grassland. The project has been completed and resources were not impacted under this footprint pavement project.

#### 5.4.1.6 Rare Species Habitat

Under the No Action Alternative there would be no impacts because construction would not take place in or adjacent to habitat used by listed species. The project has been completed and rare species habitat was not impacted under this footprint pavement project.

#### 5.4.1.7 Drainage / Stormwater Management

Under the No Action Alternative there would be no impacts to the drainage system because the pavement would not be reconstructed. The project has been completed and the existing drainage was re-established.

#### 5.4.1.8 Visual Environment

Under the No Action Alternative there would be no impacts to the visual environment because there would not be any construction. The project has been completed and there was no change in the visual characteristic under this footprint pavement project.

### **5.4.2 Reconstruct within the Existing Footprint (Preferred Alternative)**

The Certificate issued on the NPC/DEIR by the Secretary of Energy and Environmental Affairs allowed the Airport to proceed with the reconstruction of the Terminal Apron within the same footprint prior to the completion of the FEIR.

Coordination was carried out with staff at NHESP regarding requirements under the Massachusetts Endangered Species Act (MESA). The project qualifies as an exempt project pursuant to 321 CMR 10.14(8) “the maintenance, repair or replacement, but not widening of existing paved roads, ...and paved parking areas,…” NHESP reviewed and commented on this project as part of the Notice of Intent (NOI) process under the Wetland Protection Act. The project will, however, be included in the MESA application for the Airport’s CIP projects to avoid segmentation.

Coordination was also carried out with CCNS, who signed the NOI as the landowner. The project was issued an Order of Conditions (DEP File No. 058-0440) and construction was completed in the fall of 2008. Erosion controls were implemented and the project did not impact wetland, coastal dune, or rare species habitat resources.

#### 5.4.2.1 Transportation and Traffic

Reconstruction of the Terminal Apron would have minor short-term adverse and moderate long-term beneficial impacts on Transportation and Traffic. The project would reconstruct existing pavement but would not result in an increase in capacity of the Airport. Additional flights and additional passenger enplanements would not occur as a result of the project. Therefore, there would be no increase in vehicular traffic as a result of the project. There would be minor adverse impacts during construction and moderate long-term beneficial impacts on Transportation. This project has been completed.

#### 5.4.2.2 Wetlands and Wetland Buffer Zones

The Preferred Alternative will remain within the existing pavement footprint and does not involve any work within wetlands. Erosion control was installed during construction of the project and the project is now completed. There were no impacts on wetlands and wetland buffer zones.

#### 5.4.2.3 Floodplain

The Preferred Alternative will not increase the footprint of the existing pavement within the flood zone and will not affect the floodplain. Therefore, the Preferred Alternative had negligible short-term adverse impacts and will have no long-term impacts on floodplain. This project has been completed.

#### 5.4.2.4 Coastal Dunes

The Preferred Alternative will remain within the existing pavement footprint and does not involve any work within coastal dunes. Erosion control was installed during construction of the project and this project is now completed. Accordingly, there were a no impacts on Coastal Dunes.

#### 5.4.2.5 Cultural Grasslands

The Preferred Alternative will remain within the existing pavement footprint and does not involve any work within Cultural Grassland. Erosion control was installed prior to project construction, and this project has been completed. Consequently, there were no impacts on Cultural Grasslands.

#### 5.4.2.6 Rare Species Habitat

The Preferred Alternative will remain within the existing pavement footprint and does not involve any work within habitat for rare species. Erosion control was installed prior to construction of the project and this project has been completed. As such, there were no impacts on rare species habitat.

#### 5.4.2.7 Drainage / Stormwater Management

The project involves the reconstruction of existing pavement. The stormwater drainage system for the apron is unchanged. Therefore, there were no impacts to drainage and stormwater management. This project has been completed.

#### 5.4.2.8 Visual Environment

The project is a modification to an existing facility and would not be a new visual element. Therefore, there have been no impacts to the Visual Environment since the project has been completed.

### **5.5 Easterly End of Parallel TW**

#### **5.5.1 No Action**

##### 5.5.1.1 Transportation and Traffic

The No Action Alternative would have moderate adverse impacts on Transportation and Traffic in terms of Airport operations. The parallel TW pavement, which is in poor condition, would not be reconstructed and loose pavement might damage aircraft.

##### 5.5.1.2 Wetlands and Wetland Buffer Zones

Under the No Action Alternative there would be no impacts to wetlands because there would be no construction in or adjacent to wetlands and no potential for indirect impacts to adjacent wetlands.

##### 5.5.1.3 Floodplain

Under the No Action Alternative there would be no impacts because there would be no construction in or adjacent to floodplain.

#### 5.5.1.4 Coastal Dunes

Under the No Action Alternative there would be no impacts to coastal dunes because there would be no construction in or adjacent to coastal dune resources.

#### 5.5.1.5 Cultural Grasslands

Under the No Action Alternative there would be no impacts because there would be no construction in or adjacent to Cultural Grasslands.

#### 5.5.1.6 Rare Species Habitat

Under the No Action Alternative there would be no impacts because construction would not take place in or adjacent to habitat used by listed species.

#### 5.5.1.7 Drainage / Stormwater Management

The drainage system would not change under the No Action Alternative. There are no impacts to the drainage system associated with the No Action alternative.

#### 5.5.1.8 Visual Environment

There would be no change to the visual environment under the No Action Alternative. The No Action Alternative will not impact visual resources.

### **5.5.2 Reconstruct within the Existing Footprint (Preferred Alternative)**

#### 5.5.2.1 Transportation and Traffic

Reconstruction of the Preferred Alternative would have moderate beneficial long-term impacts on Transportation and Traffic. The project would reconstruct existing pavement but would not result in an increase in capacity of the Airport. Additional flights and additional passenger enplanements would not occur as a result of the project. Therefore, there would be no increase in vehicular traffic as a result of the project with only minor adverse short-term impacts during construction and moderate beneficial long-term impacts on Transportation and Traffic due to increased safety resulting from new pavement.

#### 5.5.2.2 Wetlands and Wetland Buffer Zones

The Preferred Alternative will remain within the existing pavement footprint and does not involve any work within wetlands. Erosion controls such as haybales and silt fence will be installed prior to construction of the project to define the limit of work and prevent impacts to adjacent resources. As a result, there would be no impact on wetlands.

#### 5.5.2.3 Floodplain

Since the Preferred Alternative does not involve filling within the coastal floodplain, it will not adversely affect the floodplain. Erosion controls such as haybales and silt fence will be installed prior to construction of the project to define the limit of work and prevent impacts to adjacent resources. Therefore, the Preferred Alternative will have no short-term or long-term impact on floodplain.

#### 5.5.2.4 Coastal Dunes

The Preferred Alternative will remain within the existing pavement footprint and does not involve any work within coastal dunes. Erosion controls such as haybales and silt fence will be installed prior to construction of

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the project to define the limit of work and prevent impacts to adjacent resources. As such, there would be no impact on coastal dunes.

#### 5.5.2.5 Cultural Grasslands

The Preferred Alternative will remain within the existing pavement footprint and does not involve any work within Cultural Grassland. Erosion controls such as haybales and silt fence will be installed prior to construction of the project to define the limit of work and prevent impacts to adjacent resources. Accordingly, there would be no impact on Cultural Grasslands.

#### 5.5.2.6 Rare Species Habitat

The Preferred Alternative will remain within the existing pavement footprint and does not involve any work within habitat for rare species. Erosion controls such as haybales and silt fence and other construction phase mitigation such as time of construction and monitoring, will be implemented prior to construction of the project to define the limit of work and prevent impacts to adjacent resources and the species that use them. Therefore, there would be no impact on rare species or their habitat.

#### 5.5.2.7 Drainage / Stormwater Management

The project involves the removal of excess pavement and reconstruction of pavement. Currently stormwater runoff from the taxiway sheet flows over the grass safety areas before infiltrating into the ground. There is no sanding or deicing of the taxiway so that the stormwater flows contain minimal total suspended solids. There would be minimal potential for oil or other contaminants in the stormwater. The removal of excess pavement will improve existing conditions. There will be no impact to drainage and stormwater management.

#### 5.5.2.8 Visual Environment

The project would reconstruct existing pavement and would not be a new element in the visual environment. Therefore there would no short-term and long-term impacts to the Visual Environment.

### **5.6 TW Lighting, Lighted TW Signs, and Electric Vault**

#### **5.6.1 No Action**

##### 5.6.1.1 Transportation and Traffic

The No Action Alternative would have moderate adverse impacts on Transportation and Traffic in terms of Airport operations. The TW would continue to operate with reflectors and the electric vault would not be upgraded to meet current codes and requirements. This could adversely affect the safety conditions during bad weather operations.

##### 5.6.1.2 Wetlands and Wetland Buffer Zones

Under the No Action Alternative there would be no impacts to wetlands because there would be no construction within or adjacent to wetlands and no potential for impacts to adjacent wetlands.

#### 5.6.1.3 Floodplain

Under the No Action Alternative there would be no impacts upon the floodplain because there would be no construction in the floodplain and therefore no impacts to in the floodplain.

#### 5.6.1.4 Coastal Dunes

Under the No Action Alternative there would be no impacts to coastal dunes because there would be no construction in or adjacent to coastal dune resources.

#### 5.6.1.5 Cultural Grasslands

Under the No Action Alternative there would be no impacts to Cultural Grasslands because there would be no construction within cultural grassland.

#### 5.6.1.6 Rare Species Habitat

Under the No Action Alternative there would be no impacts to rare species habitat because there would be no construction within resources used by listed species.

#### 5.6.1.7 Drainage / Stormwater Management

There are no impacts to the drainage system associated with the No Action Alternative because there would be no construction.

#### 5.6.1.8 Visual Environment

There would be no change to the visual environment under the No Action Alternative. The No Action Alternative will not impact visual resources because there would be no construction of the TW lights and signs.

### **5.6.2 Install TW Lighting and Lighted TW Signs, and Construct New Electric Vault (Preferred Alternative)**

#### 5.6.2.1 Transportation and Traffic

Construction of the Preferred Alternative would have a moderate beneficial impact on Transportation and Traffic. The project would provide safety and operational improvements but would not result in an increase in the capacity of the Airport. Additional flights and additional passenger enplanements would not occur as a result of the project. There would be no increase in vehicular traffic as a result of the project, only negligible adverse short-term impacts during construction, and a moderate beneficial long-term impact on Transportation and Traffic.

#### 5.6.2.2 Wetlands and Wetland Buffer Zones

The Preferred Alternative does not involve any work within wetlands. Erosion controls and a limit of work will be installed prior to construction of the project. Therefore, there would be no impact on wetlands.

#### 5.6.2.3 Floodplain

The Preferred Alternative will not decrease the flood storage capacity at the Airport and as a result will not affect the floodplain. The Preferred Alternative will have no impact on floodplain.

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#### 5.6.2.4 Coastal Dunes

The Preferred Alternative does not involve any work within coastal dunes. Erosion controls and a limit of work will be installed prior to construction of the project. As such, there would be no impact on coastal dunes.

#### 5.6.2.5 Cultural Grasslands

Installing new TW edge lights, lighted TW signs, and constructing an electrical vault to upgrade the electric service will occur within Cultural Grasslands adjacent to the TW.

The installation of the electrical conduit will use a construction method referred to as cable plowing. The sandy soils at the Airport make this method feasible. The cable plow machine has a chain saw attachment on the back that is referred to as the “stinger.” The stinger trenches a space in the ground approximately 8” wide and approximately 24” deep and mechanically drops the cable in the trench once the stinger has created the space in the ground. The “plowing” and cable installation occurs simultaneously with minimal ground disturbance. The minimal land disturbance is quickly restored as illustrated in Photo 5-1 taken at Nantucket Airport.



Photo 5-1 Taxiway Lights. Nine months after installation using cable plowing at Nantucket Airport.

Accordingly, the Preferred Alternative will have negligible short-term adverse impacts and no adverse long-term impacts on Cultural Grassland.

#### 5.6.2.6 Rare Species Habitat

Installation of the edge lights is not anticipated to have any short-term or long-term adverse impacts to rare species habitat. A habitat survey was conducted for the Eastern Spadefoot Toad at the Airport, and it was determined that habitat for this species is not located along the edges of the taxiway where construction associated with the installation of the taxiway edge lights will be located. Work will occur outside of the prime breeding and nesting season for the Vesper Sparrow and will not occur in areas known to support Broom Crowberry. Procedural controls (e.g., turtle sweeps) will be implemented during construction to avoid any

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potential harm to Eastern Box Turtle should the work occur when this species may still be active. The lighting structures will result in a negligible loss of grasslands (i.e., the area immediately surrounding each light unit), the electrical cable will be buried, and the disturbed grasslands will be restored in kind.

The proposed location for the electrical vault is immediately adjacent to the existing Sightseeing Shack, in an area deemed not significant to Vesper Sparrow habitat due to its proximity to Airport operations and the overall isolation of this small area of Cultural Grassland. No Broom Crowberry has been documented within these areas. Therefore, there would be negligible short-term adverse short-term and no long-term impacts on rare species or their habitat as a result of this project.

#### 5.6.2.7 Drainage / Stormwater Management

The project does not involve any changes to paved surfaces and there will be no impact to drainage and stormwater management.

#### 5.6.2.8 Visual Environment

The project would construct an electric vault and add taxiway lights. Similar facilities are on the airfield and the project would not change the visual environment. As such, there would be no impact to the Visual Environment.

### **5.7 Sightseeing Shack Improvements**

#### **5.7.1 No Action**

##### 5.7.1.1 Transportation and Traffic

Under the No Action Alternative, the Shack would not be repaired after the electrical equipment was removed for the TW lighting and electric vault project. General aviation passengers and sightseeing passengers frequently sit on the porch of the Sightseeing Shack to talk airplanes with other aviation enthusiasts. Over time, the Sightseeing Shack will continue to deteriorate while communications and electrical equipment is being housed inside, causing an unsafe conditions for GA pilots and passengers. There would be a minor short-term adverse impact and moderate long-term adverse impact on passenger safety.

##### 5.7.1.2 Wetlands and Wetland Buffer Zones

Under the No Action Alternative there would be no impacts to wetlands because there would be no construction within or adjacent to wetlands and no potential for impacts to wetlands.

##### 5.7.1.3 Floodplain

Under the No Action Alternative there would be no impacts because there would be no construction within the flood zone and, as a result, floodplain would not be impacted.

##### 5.7.1.4 Coastal Dunes

Under the No Action Alternative there would be no impacts to coastal dunes because there would be no construction in or adjacent to coastal dune resources.

##### 5.7.1.5 Cultural Grasslands

Under the No Action Alternative there would be no impacts because there would be no construction in or adjacent to Cultural Grasslands.

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#### 5.7.1.6 Rare Species Habitat

Under the No Action Alternative there would be no impacts because construction would not take place in or adjacent to habitat used by listed species.

#### 5.7.1.7 Drainage / Stormwater Management

The drainage system would not change under the No Action Alternative. There are no impacts to the drainage system associated with the No Action Alternative.

#### 5.7.1.8 Visual Environment

There would be no change to the visual environment under the No Action Alternative, except that the Shack would not be repaired and repainted. The No Action Alternative will not impact visual resources.

### 5.7.2 Sightseeing Shack Improvements (Within Existing Footprint)

- **Replace Building**
- **Repair Building (Preferred Alternative)**

#### 5.7.2.1 Transportation and Traffic

Construction of the Preferred Alternative would have overall beneficial impacts on Transportation and Traffic because it would improve the facility that houses FAA equipment. The project would not result in an increase in capacity of the Airport. Additional flights and additional passenger enplanements would not occur as a result of the project and there would be no increase in vehicular traffic as a result of the project. There would be a negligible adverse short-term impact during construction and minor beneficial long-term impacts on Transportation and Traffic.

#### 5.7.2.2 Wetlands and Wetland Buffer Zones

The Preferred Alternative for the Sightseeing Shack does not involve any work within wetlands. Work within the buffer zone will be limited to the installation of erosion control measures at the limit of work. There would be no impact on wetlands or buffer zones as a result of implementation of the Preferred Alternative for this project element.

#### 5.7.2.3 Floodplain

While the Preferred Alternative will occur within the coastal floodplain (at or below elevation 10 feet), improvements to the Sightseeing Shack will not involve placement of fill materials or excavation within the floodplain. As a result, it will not impact the ability of the floodplain to store floodwaters or prevent flood damage during 100-year storm events. Therefore, implementation of the Preferred Alternative will have no short-term or long-term impacts on floodplain.

#### 5.7.2.4 Coastal Dunes

The Preferred Alternative does not involve any work within coastal dunes. Erosion control measures will be installed prior to construction of the project to prevent impacts to adjacent resources. As a result, there would be no impact on coastal dunes.

#### 5.7.2.5 Cultural Grasslands

The Preferred Alternative does not involve any work within significant Cultural Grasslands. Erosion control measures will be installed prior to construction of the project to prevent impacts to adjacent resources and there would be no impact on Cultural Grasslands.

#### 5.7.2.6 Rare Species Habitat

The Preferred Alternative does not involve any work within rare species habitat. Erosion control measures will be installed prior to construction of the project and there would be no impact on rare species habitat.

#### 5.7.2.7 Drainage / Stormwater Management

The project does not involve any changes to paved surfaces. Erosion control measures will be installed prior to construction of the project and, as a result, there would be no impact to drainage and stormwater management.

#### 5.7.2.8 Visual Environment

The project would repair the existing building. The project would maintain the existing footprint and scale of the building. It would not be a new element in the visual environment. Therefore, there would be no impacts to the Visual Environment.

### **5.8 Access Road to MALSF Approach Lights**

#### **5.8.1 No Action**

##### 5.8.1.1 Transportation and Traffic

The No Action Alternative would have moderate adverse impacts on Transportation and Traffic in terms of Airport operations. FAA and airport vehicles would need to continue to back down the narrow access road. This could affect driver safety.

##### 5.8.1.2 Wetlands and Wetland Buffer Zones

Under the No Action Alternative there would be no impacts to wetlands because there would be no construction and wetlands would not be altered.

##### 5.8.1.3 Floodplain

Under the No Action Alternative there would be no impacts to floodplain because there would no construction within flood zone elevations.

##### 5.8.1.4 Coastal Dunes

Under the No Action Alternative there would be no impacts to coastal dunes because there would be no construction and coastal dune resources would not be altered.

##### 5.8.1.5 Cultural Grasslands

Under the No Action Alternative there would be no impacts because there would be no construction and cultural grassland would not be altered.

##### 5.8.1.6 Rare Species Habitat

Under the No Action Alternative there would be no impacts because construction would not take place adjacent to habitat used by listed species.

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#### 5.8.1.7 Drainage / Stormwater Management

The drainage system would not change under the No Action Alternative. There are no impacts to the drainage system associated with the No Action Alternative.

#### 5.8.1.8 Visual Environment

There would be no change to the visual environment under the No Action Alternative. The No Action Alternative will not impact visual resources.

### 5.8.2 Construct Turn-Around (Preferred Alternative)

#### 5.8.2.1 Transportation and Traffic

Construction of the Preferred Alternative would have a minor adverse short-term impact during construction and a moderate beneficial long-term impact on Transportation and Traffic in terms of Airport operations. The project would provide safety and operational improvements, such as ease of maintenance, but would not result in an increase in capacity of the Airport. Additional flights and additional passenger enplanements would not occur as a result of the project.

#### 5.8.2.2 Wetlands and Wetland Buffer Zones

Construction of a turn-around area for the existing access road to the MALSF approach lights will result in the unavoidable fill of 960 SF of BVW in Wetland C/J/FK. On-site restoration is proposed at a 2.4:1 ratio in Area B as shown in Section 7. Additional offsite mitigation associated with the previously approved implemented Hatches Harbor Project has allowed for restoration of similar wetland habitat within the CCNS at a greater than 10:1 ratio.

The Preferred Alternative will have a minor adverse short-term impact on wetlands. Proposed mitigation will compensate for the impacts so that there will be only negligible direct adverse long-term impacts to wetlands resources upon successful completion of all wetland mitigation with the potential for moderate long-term direct and indirect beneficial impacts to wetland resources. A Statement of Findings is provided in Section 9 to comply with NPS NEPA requirements.

#### 5.8.2.3 Floodplain

While at least a portion of the project will occur at elevations below the 100-year floodplain (10 to 11 feet above mean sea level), the project is not anticipated to have any adverse effect on the flood storage capacity relative to the ability of the low-lying areas to temporarily retain and release coastal waters during and following a flooding event at the Airport or within the surrounding CCNS lands.

Flood storage capacity on-site will not be impaired with construction of the Preferred Alternative. The proposed projects will not displace flood waters nor will it minimize the area available for flood storage. Flood storage capacity will be compensated by the proposed wetland restoration upon successful mitigation. Mitigation associated with the Hatches Harbor Project that was previously implemented has resulted in increased flushing of the salt marsh and other tidally influenced freshwater wetlands, and has improved the attenuation of floodwaters following major storm events, while also allowing for restoration of similar floodplain habitat within the CCNS. Therefore, the Preferred Alternative will have a negligible adverse short-term impact on floodplain. Proposed mitigation will compensate for the impacts so that there will be a minor to

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moderate long-term beneficial impact to floodplain. A Statement of Findings is provided in Section 9 to comply with NPS NEPA requirements.

#### 5.8.2.4 Coastal Dunes

There are no coastal dunes within this project area and there would be no short- or long-term impacts to coastal dune resources.

#### 5.8.2.5 Cultural Grasslands

A narrow band of Cultural Grasslands would be converted to pavement and gravel as the MASLF access road is extended from the end of Runway 25. However, there would be only negligible short-term adverse impacts with no long-term impact to this resource, as the remaining portions of the RW 25 End will be removed as part of the West End TW Improvements project and converted to Cultural Grasslands. There will be no net loss of Cultural Grasslands.

#### 5.8.2.6 Rare Species Habitat

There will be no long-term impacts to rare species habitat with the implementation of the Preferred Alternative. Negligible short-term adverse impacts to Cultural Grasslands, which serve as potential habitat for Vesper Sparrow and Broom Crowberry, may occur during construction, and would be mitigated through construction timing, but there will be no long-term adverse impacts to rare species habitat as a result of implementing this project.

#### 5.8.2.7 Drainage / Stormwater Management

The project involves the construction of a pervious gravel area and a minor amount of paved area. As such, there will be only negligible short-term and long-term adverse impacts to drainage and stormwater management with implementation of the Preferred Alternative.

#### 5.8.2.8 Visual Environment

The project is a modification to an existing facility and would not be a new element in the visual environment. There would be no impact to the Visual Environment.

### **5.9 Service Access Roads to LES and AWOS**

#### **5.9.1 No Action**

##### 5.9.1.1 Transportation and Traffic

The No Action Alternative would have minor short term impacts and a moderate long-term adverse impact on Transportation and Traffic in terms of airport operations. FAA and airport vehicles would continue to access the LES and AWOS over coastal dunes. Vehicles may continue to become trapped in the sandy soils.

##### 5.9.1.2 Wetlands and Wetland Buffer Zones

Under the No Action Alternative there would be no impacts to wetlands because there would be no construction and wetlands would not be altered.

##### 5.9.1.3 Floodplain

Under the No Action Alternative there would be no impacts to floodplain because there would no construction within flood zone elevations.

#### 5.9.1.4 Coastal Dunes

Under the No Action Alternative there would be no impacts to coastal dune, except for the current need to access the sites without an access road.

#### 5.9.1.5 Cultural Grasslands

Under the No Action Alternative there would be no impacts to Cultural Grasslands because there would be no construction within Cultural Grasslands.

#### 5.9.1.6 Rare Species Habitat

Under the No Action Alternative there would be no impact to rare species habitat because there would be no construction within resources used by listed species.

#### 5.9.1.7 Drainage / Stormwater Management

The drainage system would not change under the No Action Alternative. There are no impacts to the drainage system associated with the No Action Alternative.

#### 5.9.1.8 Visual Environment

There would be no change to the Visual Environment under the No Action Alternative because roads would not be constructed. The No Action Alternative will not impact visual resources.

### **5.9.2 Construct LES Option 2 / AWOS Option 2 (Preferred Alternative)**

#### 5.9.2.1 Transportation and Traffic

Construction of the Preferred Alternative would have a negligible adverse short-term and moderate beneficial long-term impact on Transportation and Traffic. The project would provide safety and operational improvements but would not result in an increase in capacity of the Airport. Additional flights and additional passenger enplanements would not occur as a result of the project.

#### 5.9.2.2 Wetlands and Wetland Buffer Zones

Construction of the Preferred Alternative for the LES road will not impact wetlands. Construction of the Preferred Alternative for the AWOS road will result in 290 SF of unavoidable impacts to Wetland H. Wetland restoration proposed in Restoration Area C will serve to mitigate for this impact.

The Preferred Alternative will have a negligible adverse short-term impact on wetlands during construction and no long-term impact with no net loss of wetland resources. Successful implementation of all proposed on-site mitigation and enhancement as well as the previously implemented off-site mitigation within Hatches Harbor will result in moderate long-term beneficial impacts to wetlands and wetland buffer zones. A Statement of Findings is provided in Section 9 to comply with NPS NEPA requirements.

#### 5.9.2.3 Floodplain

While at least a portion of the project will occur at elevations below the 100-year floodplain (10 to 11 feet above mean sea level), the project is not anticipated to have any adverse affect on the flood storage capacity relative to the ability of the low-lying areas to temporarily retain and release coastal waters during and following a flooding event at the Airport or within the surrounding CCNS lands.

Flood storage capacity of ILSF on-site will not be impaired with construction of the Preferred Alternative. Flood storage capacity will be compensated by the proposed wetland restoration and the previously implemented Hatches Harbor Project. The proposed projects will not displace flood waters nor will they minimize the area available for flood storage because of the proposed wetland mitigation. Therefore, the Preferred Alternative will have a negligible adverse short-term impact on floodplain during construction. Proposed mitigation will compensate for the impacts so that there will be a moderate long-term beneficial impact to the coastal floodplain. A Statement of Findings is provided in Section 9 to comply with NPS NEPA requirements.

#### 5.9.2.4 Coastal Dunes

Construction of the Preferred Alternatives for the two access roadways will result in alterations to coastal dunes. Approximately 7,610 SF of coastal dune will be impacted for construction of the access road to the LES, and approximately 10,560 SF for the AWOS access road. The existing dune in this area is relatively flat and in some cases unvegetated. Approximately 27,500 SF of dune creation is proposed adjacent to the freshwater wetland restoration areas (Restoration Areas A and C) as mitigation for this and other CIP projects with impacts to coastal dunes. The Preferred Alternative will have a minor adverse short-term impact. Long-term impacts within coastal dunes will be negligible adverse. Implementation of proposed invasive species management will have minor beneficial long-term impacts on this resource upon successful implementation of proposed wetland restoration and enhancement measures.

#### 5.9.2.5 Cultural Grasslands

The Preferred Alternative does not involve any work within Cultural Grasslands and there would be no impact on Cultural Grasslands.

#### 5.9.2.6 Rare Species Habitat

The Preferred Alternatives for the Service Access Road to the LES and to the AWOS will result in alterations to coastal dunes and a small portion of Wetland H.

Coastal dune alterations may have minor short-term impacts on the habitats for the Eastern Box Turtle and for non-breeding habitat of the Eastern Spadefoot Toad, particularly in the dune areas immediately south of Wetland B.

Removal of impervious pavement from the relocation of the East End TW provides an opportunity to mitigate for rare species habitat impacts through creation of additional grassland habitat, coastal dune, and wetland (See Section 7). Wetland enhancements through invasive species management may improve the ability of this area to provide suitable native habitat.

In order to avoid direct impacts to the Eastern Box Turtle, pre-construction “turtle sweeps” within the limit of work will be conducted as part of the Turtle Protection Plan discussed in Section 7. Construction will take place in accordance with NHESP agency avoidance dates in order to avoid the active period for noted rare animal species. As such, adverse impacts to rare species habitat will be minor for the short-term and negligible for the long-term because of the proposed mitigation measures.

#### 5.9.2.7 Drainage / Stormwater Management

The project involves the construction of new paved and gravel surfaces. Following construction, stormwater runoff will continue to be managed with infiltration through sheet flow into the grass safety areas. Runoff will

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have negligible contaminants because salt is not applied and engine repair does not take place in these locations.

Overall, the CIP projects will result in a net decrease in pavement at the Airport as shown in Table 5.2 at the end of this section. Accordingly, there would be negligible short term and no long-term adverse impacts to drainage and stormwater management and potentially a minor beneficial long-term impact.

#### 5.9.2.8 Visual Environment

The project would provide service roads to existing facilities and would not be a significant new visual element. There would be no impact to the Visual Environment.

### 5.9.3 Construct LES Alternative 6 / AWOS Alternative 2

#### 5.9.3.1 Transportation and Traffic

Construction of the LES-6/AWOS-2 Alternative would require an additional security gate and require the FAA vehicle to leave and enter the Airport twice to service the AWOS and the LES. The alignment would also add a new intersection with the CCNS bike path with the associated potential for safety conflicts. Therefore, there would be moderate adverse short-term and long-term impacts to Transportation and Traffic with this alternative.

#### 5.9.3.2 Wetlands and Wetland Buffer Zones

Construction of the LES-6/AWOS-2 Alternative will result in 290 SF of unavoidable impacts to Wetland H. The LES-6/AWOS-2 Alternative will have a minor adverse short-term impact on wetlands. Wetland restoration proposed in Mitigation Areas A and C will serve to mitigate for this impact. As with the Preferred Alternative, successful implementation of all proposed on-site mitigation in conjunction with the off-site mitigation associated with the Hatches Harbor Project will result in moderate long-term beneficial impacts to wetlands and wetland buffer zones.

Proposed mitigation will compensate for the impacts so that there will be a negligible adverse long-term impact with no net loss of wetland resources, and the potential for moderate beneficial impacts to wetland resources in the long term when considering all proposed and previously implemented mitigation measures.

#### 5.9.3.3 Floodplain

While at least a portion of the project will occur at elevations below the 100-year floodplain (10 to 11 feet above mean sea level), the project is not anticipated to have any adverse affect on the flood storage capacity relative to the ability of the low-lying areas to temporarily retain and release coastal waters during and following a major flooding event at the Airport or within the surrounding CCNS lands.

Flood storage capacity on-site will not be impaired with construction of the LES-6/AWOS-2 Alternative. Flood storage capacity will be compensated by the proposed wetland restoration. The proposed projects will not displace flood waters nor will they minimize the area available for flood storage because of the proposed wetland mitigation. As a result, the LES-6/AWOS-2 Alternative will have a negligible adverse short-term impact and no adverse long-term impact on floodplain. The previously implemented Hatches Harbor Project resulted in moderate long-term beneficial impacts to the coastal floodplain for both on-site and off-site areas of coastal floodplain within the CCNS.

#### 5.9.3.4 Coastal Dunes

Construction of the LES-6/AWOS-2 Alternative for the two access roadways will result in alterations to coastal dunes. Approximately 7,610 SF of coastal dune will be impacted for construction of the access road to the LES, and approximately 10,560 SF for the AWOS access road. The existing dune in this area is relatively flat and in some cases unvegetated. Approximately 27,500 SF of dune creation is proposed adjacent to the proposed freshwater wetland restoration area within Mitigation Areas A and C as mitigation for this and other CIP projects with impacts to coastal dunes. The LES-6/AWOS-2 Alternative will have a minor adverse short-term impact and negligible adverse long-term impact on coastal dunes because of proposed mitigation. Implementation of the proposed invasive species management program would have minor beneficial long-term impacts on this coastal resource upon successful implementation of proposed mitigation.

#### 5.9.3.5 Cultural Grasslands

The LES-6/AWOS-2 Alternative does not involve any work within Cultural Grasslands. There will be no impact on Cultural Grasslands.

#### 5.9.3.6 Rare Species Habitat

The LES-6/AWOS-2 Alternative for the Service Access Road to the LES and to the AWOS will result in alterations to coastal dunes and a small portion of Wetland H.

Coastal dune alterations may have minor long-term adverse impacts on the habitats for the Eastern Box Turtle and for non-breeding habitat of the Eastern Spadefoot Toad, particularly in the dune areas immediately south of Wetland B.

Removal of impervious pavement from the relocation of the East End TW provides an opportunity to mitigate for rare species habitat impacts through creation of additional grassland habitat, coastal dune and wetland (See Section 7). Wetland enhancements through invasive species management would improve the ability of this area to provide suitable native habitat.

As with the Preferred Alternative, pre-construction “turtle sweeps” within the limit of work will be conducted in order to avoid direct impacts to the Eastern Box Turtle as discussed in Section 7. Construction will take place in accordance with NHESP agency avoidance dates in order to avoid the active period for all rare animal species identified on-site. As such, adverse impacts to rare species habitat will be minor for the short-term and negligible for the long-term because of the proposed mitigation measures.

#### 5.9.3.7 Drainage / Stormwater Management

The LES-6/AWOS-2 Alternative involves construction of new paved surfaces. This alternative would result in less pavement area than under the Preferred Alternative, but the logistical, security, and safety issues somewhat outweigh this benefit since there will be an overall net reduction in pavement at the Airport as a result of implementing all safety and security CIP projects. Following construction, stormwater runoff will be managed by allowing for infiltration through sheet flow into the grass areas adjacent to the pavement. Runoff from the Airport’s runways, taxiways, and service roadways has negligible contaminants because salt is not applied and engine repair does not take place in these locations.

Overall, the CIP projects will result in a net decrease in pavement at the Airport, as shown in Table 5.2 and Figure 5.2 at the end of this section. There would be negligible short term and no long-term adverse impacts to drainage and stormwater management.

#### 5.9.3.8 Visual Environment

The LES-6/AWOS-2 Alternative would provide a service road to existing facilities directly from Race Point Road across the bike path and would introduce a new visual element. This would constitute a negligible adverse impact to the Visual Environment.

### **5.10 Perimeter Safety and Security Fence**

#### **5.10.1 No Action**

##### 5.10.1.1 Transportation and Traffic

The No Action Alternative would have a moderate adverse long-term impact on Transportation and Traffic in terms of Airport operations. Scheduled flights might be delayed to clear the runway of wildlife. Incidents of deer strikes would not be reduced. Recreational hikers and hunters will continue to access the airfield.

##### 5.10.1.2 Wetlands and Wetland Buffer Zones

Under the No Action Alternative there would be no impacts to wetland resources since there would be no construction within wetlands. Vegetation within wetlands would not be cut and fence posts would not be installed.

##### 5.10.1.3 Floodplain

Under the No Action Alternative, there would be no impacts to Floodplain because there would be no alteration of flood zone elevations.

##### 5.10.1.4 Coastal Dunes

Under the No Action Alternative there would be no impacts to coastal dunes because there would be no construction and coastal dunes would not be altered for the project.

##### 5.10.1.5 Cultural Grasslands

Under the No Action Alternative there would be no impacts because there would be no construction adjacent to Cultural Grassland.

##### 5.10.1.6 Rare Species Habitat

Under the No Action Alternative there would be no impacts to rare species habitat because there would be no construction within resources used by listed species.

##### 5.10.1.7 Drainage / Stormwater Management

Under the No Action Alternative, there would be no impacts to drainage because there would be no construction.

##### 5.10.1.8 Visual Environment

Under the No Action Alternative, there would be no additional fence, and therefore no impacts to the Visual Environment.

## 5.10.2 Construct Fence Concept 6 (Preferred Alternative)

### 5.10.2.1 Transportation and Traffic

Construction of the Preferred Alternative would have a moderate beneficial impact on Transportation and Traffic in terms of Airport operations. The fence project would provide safety and operational improvements as discussed in Section 2.2 but would not result in an increase in capacity of the Airport. Additional flights and additional passenger enplanements would not occur as a result of the project. There would be no increase in vehicular traffic as a result of the project. The project will have a moderate beneficial long-term impact on Transportation and Traffic..

### 5.10.2.2 Wetlands and Wetland Buffer Zones

Installation of the perimeter safety/security fence would result in alterations to freshwater wetlands, both isolated wetlands (IVW) and bordering vegetated wetlands (BVW). For the Preferred Alternative, the type of impact has been further refined to distinguish between direct (permanent) and indirect (secondary) impacts as introduced in Section 5.1.1. The direct impacts to BVW and IVW for Concept 6 are based on one square foot of impact per fence post, with fence posts occurring every 10 feet, and also include the area of wetland vegetation community that is significantly altered for vegetation management. For example, converting an area of IVW or BVW to pavement, grassland, or a fence post location would be a direct impact. Additionally, vegetation management within BVW and IVW along the fence alignment that converts a forested BVW or IVW wetland to a low growing vegetation community would also be a direct impact. Cutting an area of *Phragmites* has not been included as an impact. To minimize impacts from constructing foundations for the posts, some posts will be driven to avoid the need for a footing as shown in a detail on Figure 6.7. To minimize impacts from vegetation management, the width of the clear area on both sides of the fence is 4 feet rather than the typically-required 10 feet on either side. Construction of the fence will result in approximately 1,152 SF of direct impacts to BVW. Approximately 25,648 SF of direct impacts to IVW would occur for the installation of fence posts and vegetation management. Mitigation Area B will mitigate for direct impacts to BVW, while providing BVW restoration for the direct fence impacts. In addition, previously implemented measures from the Hatches Harbor Project will contribute to the overall mitigation, compensating for impacts associated with this CIP projects. Mitigation Areas A and C will provide mitigation for the direct impacts to IVW. Additional mitigation for indirect impacts will be provided as on-site wetland enhancement, intended to enhance or restore some of the lost functions and values within freshwater wetlands that have deteriorated over time due to the presence of *Phragmites australis*, an invasive species in Massachusetts.

Indirect impacts would result from vegetation maintenance along the fence that would not significantly change the vegetation community within the wetland or its functions and values. For example, maintaining the vegetation within a scrub wetland with shorter shrubs would be an indirect impact. Proposed vegetation management will be similar to current practices as discussed in Section 7. The preferred fence alignment has been located strategically to eliminate the need for interior patrol roads by siting the fence immediately north of the existing parallel taxiway and within existing maintained areas where feasible to the south (i.e., along the tree line) to further reduce impacts to natural resources. Trees would be cut but the stumps and roots would not be grubbed. Smaller shrubs would be cut individually or a brush hog would be used. Groundcover would not be disturbed. A width of approximately 4 feet on either side of the fence (i.e., eight feet total width) would be managed to allow for maintenance and inspection. Indirect (secondary) impacts to IVW are currently estimated to be approximately 3,952 SF, and to BVW, 8,972 SF.

Vegetation management will be conducted once every two to three years and will only occur within an eight-foot wide corridor along the fence, where necessary. Certain areas within bordering and isolated wetlands are open with low-growing vegetation and little to no shrub or tree canopy. Vegetation management within these portions of wetland would be minimal due to existing conditions. As such, vegetation maintenance will not alter the vegetation composition and distribution or general functions of many of the wetlands within the fence footprint. In areas where the fence will traverse scrub-shrub or forested wetlands, vegetation will be maintained once every two to three years and will be cut (not removed) to the height of low-growing shrubs to allow for periodic maintenance of the fence and a clear line of sight along the fence. While vegetation management within these areas may result in a long-term transition from a forested wetland to a low-growing shrub wetland, these areas are anticipated to maintain many of their functions and values and will remain as wetlands.

The Preferred Alternative for the Safety/Security Fence will have moderate short-term and minor long-term impact on wetlands. Long-term direct impacts associated with the fence posts are anticipated to have negligible impacts on the wetland areas. The long-term presence of an chain-link fence and the long-term management of the vegetation communities within the eight-foot maintenance corridor would vary, depending upon the intensity of the management required, ranging from minor long-term impacts within open emergent marshes to moderate impacts to the scrub shrub and forested communities. Anticipated impacts to the functions and values of these managed wetlands would include changes to the species composition and the habitat provided to local wildlife populations, although given the relatively narrow footprint of the maintenance area, and considering the vast extent of these habitats in the vicinity of the Airport, these changes are anticipated to be negligible for the long-term. Impacts to the hydrologic regime are not anticipated. Proposed on-site mitigation will compensate for the proposed impacts so that there will be only minor adverse long-term impacts with no net loss of wetland resources on-site. Off-site mitigation associated with the Hatches Harbor Project has resulted in moderate long-term direct and indirect beneficial impacts to wetland resources within the Park.

#### 5.10.2.3 Floodplain

While at least a portion of the fence project will occur at elevations below the 100-year floodplain, the project is not anticipated to have any adverse affect on the flood storage capacity relative to the ability of the low-lying areas to temporarily retain and release coastal waters during and following a flooding event at the Airport or within the surrounding CCNS lands.

Flood storage capacity on-site will not be impaired with construction of the Preferred Alternative. Flood storage capacity will be compensated by the proposed wetland restoration upon successful restoration of on-site low-lying wetland areas within the coastal floodzone with additional beneficial mitigation provided by the Hatches Harbor Project. The proposed project will not displace flood waters nor will it minimize the area available for flood storage because of the proposed wetland mitigation. The Preferred Alternative will have a negligible adverse short-term impact on floodplain within the Park. Proposed mitigation will offset the impacts so that there will be moderate long-term beneficial impacts to the coastal floodplain upon successful implementation of mitigation. A Statement of Findings is provided in Section 9 to comply with NPS NEPA requirements.

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#### 5.10.2.4 Coastal Dunes

Installation of the perimeter safety/security fence would result in direct and indirect alterations to coastal dune. Direct impacts (8,060 SF) are based on one square foot of impact per fence post to be installed at 10-foot intervals and vegetation management that significantly changes the vegetation cover. Indirect impacts to the vegetation and topography of the dune will occur within the footprint of the four-foot wide maintenance areas on either side of the fence (eight feet wide total), and would involve tree or limb removal and pruning or brush hogging of shrubs to maintain clear areas on either side of the fence. The resultant plant community within the managed areas of coastal dunes will be a grassy or low-growing shrub community, and vegetation removal is not anticipated to result in long-term impairment or destruction of these coastal dunes. Construction of the fence will result in approximately 8,060 SF of direct impacts and 24,028 SF of indirect impacts to coastal dune. Construction of patrol roads is not proposed and no changes in the existing topography within the coastal dune are proposed. The fence will consist of a vinyl coated chain-link fabric with 2-inch mesh openings. It is not anticipated to have any adverse impacts on aeolian processes, particularly since the proposed fence is not the typical design intended for dune creation/stabilization (e.g., snow fencing). In addition, the majority of the fence is proposed among stable secondary dunes where wind-borne sands are less likely to shift and alter the topographic relief over time.

The installation of a safety/security fence may have a moderate effect on the ability of the coastal dune to provide wildlife habitat for some species. Impacts to wildlife habitat and wildlife corridors have been minimized by locating the fence as close as allowable to the airfield without becoming an airspace hazard. The standard chain link fence fabric has openings that will allow for the passage of some wildlife, such as small mammals, amphibians, and some reptiles. In addition, gaps are proposed along sections of the fence in order to reduce obstructions to passage for slightly larger animals, including Eastern Box Turtles and the Eastern Spadefoot Toad. Extensive habitat analyses have been conducted for the Eastern Spadefoot Toad in conjunction with Brad Timm, Ph.D., at the direction of NHESP to identify potential and prime habitat so that the fence design would avoid these areas. Since most fence posts will be driven, land disturbance impacts to coastal dune (i.e., Eastern Spadefoot non-breeding habitat) are anticipated to be minimal, since excavation will not be involved. In addition, vegetation maintenance involves cutting and not the removal of entire plants, so the composition of sediments and root structures will not be altered and should not impair burrowing areas for the Eastern Spadefoot Toad. Therefore, adverse impacts to rare species habitat would be minor for the short-term and negligible for the long-term because of the proposed mitigation measures. While the fence will partially enclose approximately 113 acres at the Airport, it is important to note that the area within the fence consists of airport infrastructure (paved runway and taxiways, buildings, parking areas, navigational aids, and managed safety areas). The purpose of installing the fence is to restrict large animals, such as deer and coyote, as well as non-authorized personnel from the Airport operation areas. The design mitigation measures and construction timing and phasing mitigation measures will mitigate adverse impacts to resources and the species that use these resources.

#### 5.10.2.5 Cultural Grasslands

The Preferred Alternative does not involve any work within Cultural Grasslands. There will be no impact on Cultural Grasslands.

#### 5.10.2.6 Rare Species Habitat

Installation of a Perimeter Safety/Security Fence has been designed to minimize direct and indirect alterations to potential rare species habitat for the Eastern Box Turtle and the Eastern Spadefoot Toad. No direct impacts

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will occur within the currently identified population of the Broom Crowberry. As the Preferred Alternative for the fence is not proposed to occur within managed grassland habitat, no direct impacts to Vesper Sparrow nesting habitat are anticipated.

All construction activities are proposed during the Airport's "off-season" (after Labor Day and before Memorial Day) to minimize disruptions to Airport operations as well as to avoid construction during peak wildlife activity. Rare species, such as the Eastern Box Turtle and Eastern Spadefoot Toad, are most active from mid-April to late October. As such, the installation of the fence would occur outside of these timeframes to avoid peak activity periods of these species. Incorporation of gaps in the bottom of the fence at regular intervals will minimize long-term adverse impacts due to obstruction of wildlife movement, including for Eastern Box Turtles, other reptiles or amphibians, and small mammals during more active wildlife periods, once the fence has been installed. All vegetation management will take place in the winter months (e.g., after mid-late November) when the state-listed species are not active.

As noted above, the revised fence alignment will be placed in a location that will allow for the minimization of wildlife corridor disruption, and has been located to specifically avoid direct impacts to prime Eastern Spadefoot Toad breeding habitat to the extent practicable. The installation of the safety/security fence, as currently proposed, is designed to minimize impacts to rare species habitat to the extent practicable while meeting FAA, TSA, and MassDOT safety and security mandates. Therefore, adverse impacts to rare species will be minor for the short-term and negligible for the long-term because of the proposed mitigation measures.

#### 5.10.2.7 Drainage / Stormwater Management

The project does not involve any changes to paved surfaces. Therefore, there will be no impact to drainage and stormwater management.

#### 5.10.2.8 Visual Environment

There are some existing segments of safety/security fencing at the Airport and one section adjacent to the bike path is shown in Photo 5-2. The new sections of fencing will be within the vicinity of the managed airfield which minimizes the effect on the various viewer groups. Additionally, the fence will be black coated vinyl to minimize the visual impact. It is expected that the fence will have a minor adverse impact on the visual experience of visitors to the CCNS and will not impair the values of the Park.



Photo 5-2 Safety Security Fence.

View of existing section between bike path and Runway 25 safety area.

### 5.10.3 Construct Fence Concept 4

#### 5.10.3.1 Transportation and Traffic

Construction of the Fence Concept 4 Alternative would have a moderate beneficial impact on Transportation and Traffic. The project would provide safety and operational improvements but would not result in an increase in capacity of the airport. Additional flights and additional passenger enplanements would not occur as a result of the project. There would be no increase in vehicular traffic as a result of the project and a moderate beneficial impact on Transportation and Traffic.

#### 5.10.3.2 Wetlands and Wetland Buffer Zones

Concept 4 was developed to avoid impacts to wetland areas and was located along the dune ridge to the north of the airfield, and along the base of the dune ridge to the south.

The Concept 4 alignment would impact approximately 530 SF (direct) and 47,572 SF (indirect) of BVW. The concept would impact approximately 60 SF (direct) and 5,274 SF (indirect) of IVW on the southern side of the Airport. Wetland impacts have been minimized by locating the fence outside of wetland areas to the extent possible, and by reducing the width for vegetation clearing to 4 feet.

On the northern side, the fence would avoid Wetland C and part of Wetland C/J/FK (BVW). On the south side, the alignment avoids Wetland L, K, and the series of smaller isolated wetlands within this area. This alternative significantly reduces impacts to isolated wetlands on both the north and south sides while maintaining the minimum offset for the primary surface clear zone along the runway. There would be a moderate adverse direct impact to wetlands with this concept. Proposed mitigation, as discussed above with the Preferred Alternative would off-set some of the wetland impacts.

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#### 5.10.3.3 Floodplain

The Concept 4 fence alignment has the potential to impact tidal flow and flood storage capacity since the fence is in the vicinity of the ILS and may impede normal tidal flow and flooding during storm events. As a result, there would be a moderate adverse long-term impact to floodplain.

#### 5.10.1.4 Coastal Dunes

Impacts to the coastal dunes would be minimized by following, as much as possible, the base of the dunes rather than maintaining a straight alignment that would go over the tops of the dunes. This Concept would impact 960 SF (direct) and 56,575 SF (indirect) of coastal dune. Therefore, there would be a minor short-term and negligible long-term adverse impact to coastal dunes.

#### 5.10.3.5 Cultural Grasslands

Concept 4 does not involve any work within Cultural Grasslands. There will be no impact on Cultural Grasslands.

#### 5.10.3.6 Rare Species Habitat

Concept 4 would enclose approximately 200 acres. This proposed alignment would result in habitat fragmentation on the north and south sides of the Airport, bisecting the large concentration of IVW and BVW on the northern portion of the Airport from the expansive adjacent upland areas of coastal dune seaward of the Airport. Habitat fragmentation on the south side of the Airport would be similar, although to a lesser degree, as not all of the wetland areas south of the Airport within the lease area would be isolated from the upland dune habitat. Results of the field surveys specifically intended to identify and assess breeding and non-breeding habitat for the Eastern Spadefoot Toad, indicate that the placement of the fence along the base of the dune ridge south of the Airport would likely interfere with Spadefoot migrations to the area of prime breeding habitat associated with Wetland K, as well as bisecting clusters of semi-permanent wetlands from the adjoining upland habitat, and would likely result in a “take” of this species as defined under the MESA regulations. While low wildlife tunnels would be incorporated into this fence design as well, this alternative would have a moderate short term and minor long term adverse impact on rare species habitat.

#### 5.10.3.7 Drainage / Stormwater Management

The project does not involve any changes to paved surfaces or change in drainage patterns and there will be no impact to drainage and stormwater management.

#### 5.10.3.8 Visual Environment

Visual impacts would be minimized because the fence would follow the lower elevations and blend in with vegetated areas, but the impacts would not be eliminated. As such, there would be a moderate adverse impact to the Visual Environment.

### **5.10.4 Construct Fence Concept 1**

#### 5.10.4.1 Transportation and Traffic

Construction of Fence Concept 1 would have moderate short-term and long-term beneficial impact on Transportation and Traffic. The project would provide safety and operational improvements but would not result in an increase in capacity of the Airport. Additional flights and additional passenger enplanements would not occur as a result of the project.

#### 5.10.4.2 Wetlands and Wetland Buffer Zones

The alignment would impact approximately 450 SF (direct) and 17,136 SF (indirect) of BVW. There would be 230 SF (direct) and 31,374 SF (indirect) impacts to isolated wetlands. Wetlands and wetland buffer zones are identified on Figures 4.4 and 4.5 in Section 4.

There would be moderate adverse short-term and minor long-term impacts to Wetlands and Wetland Buffer Zones, which would be off-set somewhat by the proposed mitigation, although to a lesser degree than with the Preferred Alternative for the fence project.

#### 5.10.4.3 Floodplain

The Lease line Concept 1 fence alignment has the potential to impact tidal flow and flood storage capacity since the presence of a fence in the vicinity of the ILS may impede normal tidal flow and flooding during storm events. Therefore, this alternative would have a moderate short-term and moderate long-term adverse impact on the coastal floodplain.

#### 5.10.4.4 Coastal Dunes

This concept would impact 1,440 SF (direct) and 200,872 SF (indirect) of coastal dune. The fence would maintain the alignment over the coastal dunes, regardless of topography. As discussed in Section 4, the northern dunes are less stable and more dynamic than the southern dunes, which have been stabilized by the established vegetation that includes trees and shrubs in addition to herbaceous species. Therefore, there would potentially be moderate short-term and minor long-term adverse impacts, particularly to coastal dunes to the north of the Airport, while long-term maintenance may adversely impact some of the more stable dunes to the south once larger trees or established shrubs are cut.

#### 5.10.4.5 Cultural Grasslands

Concept 1 does not involve any work within Cultural Grasslands. There will be no impact on Cultural Grasslands.

#### 5.10.4.6 Rare Species Habitat

Concept 1 would impact potential habitat for rare species. The location of known and potential rare species habitat is discussed in Section 4. Concept 1 would enclose nearly the entire 322 acres of the lease area and impact potential habitat for rare species. This proposed alignment would result in habitat fragmentation on the north and south sides of the Airport, bisecting the large concentration of IVW and BVW on the northern portion of the Airport from the seaward expanse of adjacent upland areas of coastal dune. Habitat fragmentation on the south side of the Airport would be similar, although to a lesser degree, as not all of the wetland areas south of the Airport within the lease area would be isolated from the upland dune habitat. Concept 1 fence alignment would directly impact the significant wetlands identified as prime Spadefoot Toad breeding habitat (Wetlands K and L), it is likely that this alignment would result in a “take” of rare species habitat, similar to Concept 4. Small wildlife gaps will be incorporated into the bottom of the fence in order to lessen the potential impacts to Eastern Box Turtle movements between habitat areas. Therefore, this alternative would have a moderate short-term and minor long-term adverse impact on rare species habitat.

#### 5.10.4.7 Drainage / Stormwater Management

The project does not involve any changes to paved surfaces or changes in the drainage patterns. There will be no impact to drainage and stormwater management.

#### 5.10.4.8 Visual Environment

The Concept 1 fence alignment constitutes a new visual element. Along the northern side, the fence would likely be viewed as an incompatible element in the natural environment because of the open unvegetated areas and the expectations of the viewer groups. On the southern side of the site, the fence would be within a vegetated area without long open views. This alternative would have a moderate short-term and long-term adverse impact on the Visual Environment.

### 5.11 Auto Parking

#### 5.11.1 No Action

##### 5.11.1.1 Transportation and Traffic

The No Action Alternative would have a moderate adverse impact on Transportation and Traffic because additional parking would not be constructed. During occasional peak periods, cars would continue to park along Airport Drive and idle waiting for a parking space.

##### 5.11.1.2 Wetlands and Wetland Buffer Zones

Under the No Action Alternative, the project would not be built and there would be no impacts to adjacent wetlands.

##### 5.11.1.3 Floodplain

Under the No Action Alternative, the project would not be built and there would be no impacts to Floodplain.

##### 5.11.1.4 Coastal Dunes

Under the No Action Alternative, the project would not be built and there would be no impacts to coastal dunes.

##### 5.11.1.5 Cultural Grasslands

Under the No Action Alternative, the project would not be built and there would be no impacts to adjacent Cultural Grasslands.

##### 5.11.1.6 Rare Species Habitat

Under the No Action Alternative, the project would not be built and there would be no impacts to rare species habitat.

##### 5.11.1.7 Drainage / Stormwater Management

Under the No Action Alternative, the project would not be built and there would be no improvements to the drainage. Therefore, there would be a negligible adverse impact on drainage.

##### 5.11.1.8 Visual Environment

Under the No Action Alternative, the additional parking area would not be built and there would be no impacts to the Visual Environment.

## 5.11.2 Construct Concept 4 Auto Parking (Preferred Alternative)

### 5.11.2.1 Transportation and Traffic

Concept 4 would construct 28 additional spaces for Phase 1 (for a total of 90 spaces). Only after additional parking studies have been carried out and reviewed and approved by NPS and CCC, would Phase 2 be constructed with 29 additional spaces, for a Phase 1 and 2 total of 119 spaces.

No impacts to pedestrian or bicycle movement are anticipated with this project. During construction, signage and fencing will separate the work area.

The project would address existing demand for parking and is not intended to attract more passengers. TDM measures such as taxicab sharing and on-call shuttle bus service are in place and would be improved upon if feasible. Therefore, there would be no increase in vehicular traffic as a result of the project and there would be a moderate beneficial long-term impact on Transportation and Traffic.

### 5.11.2.2 Wetlands and Wetland Buffer Zones

The Preferred Alternative for the parking lot expansion will not directly impact wetlands but would have unavoidable impacts to Buffer Zone of approximately 3,900 SF for Phase 1, and 1,900 SF for Phase 2 (for a total of 5,800 SF of Buffer Zone impacts) following the completion of both parking lot phases. Given that the existing parking lot is situated between two wetland areas (Wetland A and Wetland C), there is no location that would avoid alterations within the Buffer Zone while still addressing the project purpose. Installation of erosion and sedimentation controls prior to construction is designed to protect the adjacent wetland resources during earth moving activities and until all sediments are stabilized. Therefore, there would be negligible adverse short-term and no long-term impacts to wetland buffer resources associated with the proposed parking lot expansion.

### 5.11.2.3 Floodplain

The Preferred Alternative will not alter the ability of the flood zone to attenuate stormwater and to provide flood damage protection. As such, there will be negligible short-term and no long-term impacts on floodplain.

### 5.11.2.4 Coastal Dunes

Construction of the Preferred Alternative for the expansion of the Auto Parking lot would directly impact approximately 7,315 SF of coastal dune for Phase 1. Upon approval to construct Phase 2, an additional 5,707 SF of coastal dune would be altered. The total impact from the two phases would be approximately 13,022 SF of coastal dune. Coastal dune creation will occur within the pavement removal area within Mitigation Areas A and C as described in Section 7. Management of invasive species within other existing coastal dune habitat is also proposed. The Preferred Alternative for the parking lot expansion would have a minor adverse short-term and negligible long-term impact on coastal dunes upon successful implementation of the proposed mitigation measures.

### 5.11.2.5 Cultural Grasslands

The Preferred Alternative does not involve any work within Cultural Grasslands. There would be a no impact on Cultural Grasslands.

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#### 5.11.2.6 Rare Species Habitat

The Preferred Alternative for the improvements to the auto parking lot will result in impacts to coastal dune in an area adjacent to the existing lot. This may impact Eastern Box Turtle habitat. Based upon recently conducted habitat assessments for the Eastern Spadefoot Toad, this area may provide some non-breeding habitat for this species, although more ideal upland habitat for burrowing and foraging activities is located to the southeast near Wetland B and the bike path, as well as to the west along the north and south sides of the airfield.

This area of coastal dune is adjacent to Race Point Road and the intersection with the Airport entrance. Impacts to this area of coastal dune may have minimal impacts to wildlife and rare species habitat given the location. In order to avoid direct impacts to Eastern Box Turtle, pre-construction “turtle sweeps” within the limit of work will be conducted as part of the Turtle Protection Plan discussed in Section 7. Adverse impacts to rare species will be minor for the short-term and negligible for the long-term because of the proposed mitigation measures, including construction timing.

#### 5.11.2.7 Drainage / Stormwater Management

Construction of Phase 1 will result in 2,835 SF of additional pavement for the aisle. The parking spaces will be gravel. Currently, runoff from the paved aisles flows to the unpaved median and gravel parking spaces and infiltrates into the soil. Additional areas of infiltration swales would be constructed for Phase 1.

Phase 2 would result in an approximate 2,803 SF net increase in impervious area. The additional parking spaces will be gravel and only the driveway and aisles will be paved. The net increase in impervious surface from the 2 phases is 5,638 SF. Stormwater BMPs are proposed, as discussed below.

Bioretention was selected as the treatment system for Phase 2 of the auto parking area because it has been shown to effectively remove high levels of the typical pollutants associated with parking areas runoff, and because it also promotes infiltration after treatment to support groundwater recharge objectives.

Grass filter strips will be located between paved areas and the bioretention systems to provide pre-treatment prior to the bioretention system. These grass filter strips provide some removal of sediment and other pollutants prior to treatment and help extend the design life of the bioretention system and reduce overall maintenance requirements.

The bioretention area and infiltration swales proposed for Phase 2 of the auto parking area will provide recharge to groundwater and water quality treatment. The bioretention system is a soil filter that incorporates a shallow landscaped depression to filter stormwater runoff before either infiltrating to groundwater or sheet flowing to an adjacent wetland. The bioretention area will be sized to treat, store, and partially infiltrate the 1-inch storm event. A schematic of a bioretention system is provided on Figure 5.1.

Overall, the CIP projects will result in a net decrease in pavement at the Airport as shown in Table 5.2 at the end of this section. There will be moderate beneficial long-term impact to drainage and stormwater management.

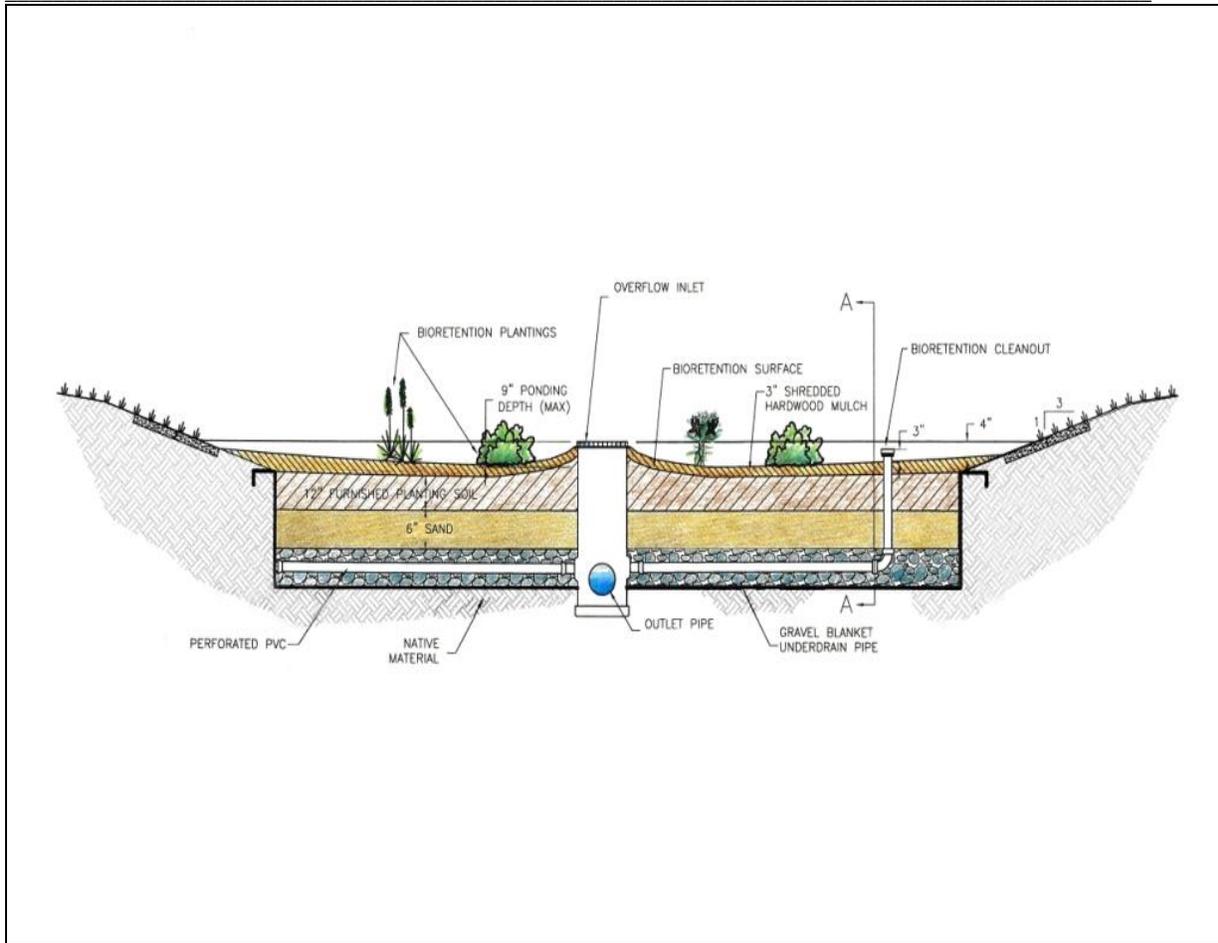


Figure 5.1 Schematic of a Bioretention System for Phase 2. (Horsley Witten Group with permission)

#### 5.11.2.8 Visual Environment

The existing parking area at the Airport is visible from the Race Point Beach parking lot and the bike path as shown in photos in Section 4. The new area of parking will be adjacent to the existing parking area and Airport Drive. There are two NPS parking areas visible from Race Point Road, the Visitors Center parking lot and the Race Point Beach parking lot. A landscaping buffer is proposed, which will screen the effect on the various viewer groups. Figure 5.3 shows a photo of the existing Airport parking lot, looking from the bike path between the Airport access road and the Race Point Beach parking lot. Figure 5.4 shows an example of a photo simulation of the Phase I and Phase 2 parking areas (along with the proposed Terminal building discussed in Section 5.12.2), showing how visual impacts can be evaluated with various landscape layouts and designs. Therefore, it is expected that both Phase 1 and Phase 2 parking area will have a minor short-term adverse and negligible adverse long-term impact on the visual experience of visitors to the CCNS or users of the Airport.



Photo 5-3 Existing view of Airport parking lot from bike path.



Photo 5-4 Photo Simulation Example Showing (Proposed auto parking lot and proposed terminal building discussed in Section 5.12 with a vegetation barrier)

### 5.11.3 Construct Concept 1 Auto Parking

#### 5.11.3.1 Transportation

Concept 1 would construct 57 additional spaces. A parking control gate had been included in this option for the NPC/Draft EA/EIR, but additional evaluation of the cost for staffing and equipment has indicated that it would be cost prohibitive.

No impacts to pedestrian or bicycle movement are anticipated with this project. During construction, signage and fencing will separate the work area.

The project would address existing demand for parking and projected future long-term parking needs. TDM measures such as taxicab sharing and on-call shuttle bus service are in place and would be improved upon if feasible. Therefore there would be a moderate beneficial impact on Transportation.

#### 5.11.3.2 Wetlands and Wetland Buffer Zones

This concept was identified as the preferred alternative in the NPC/Draft EA/EIR. Concept 1 would impact 4,650 SF of IVW. Therefore, this alternative would be deemed to have a moderate short-term and minor long-term adverse impact to wetlands. Impacts to wetlands would be offset by proposed mitigation measures. However, in the comment letter on the NPC/Draft EIR/EA, DEP SERO indicated that this project would require a Variance from the Water Quality Certification (WQC) because the wetland areas at the Airport are all Outstanding Resource Waters (ORWs), and this project would not qualify for a Variance from the WQC regulations since it is not a safety or security project.

#### 5.11.3.3 Floodplain

Concept 1 would impact floodplain, as construction would impact wetlands. As such, there would be a negligible adverse short-term and no long-term impact with proposed mitigation.

#### 5.11.3.4 Coastal Dunes

Concept 1 would impact at least 11,500 SF of coastal dunes. This would have a minor long-term and short-term adverse impact on coastal dune resources.

#### 5.11.3.5 Cultural Grasslands

Concept 1 does not involve any work within Cultural Grasslands. Therefore, there would be no impact on Cultural Grasslands.

#### 5.11.3.6 Rare Species Habitat

Concept 1 for the improvements to the auto parking lot will result in impacts to coastal dune in an area adjacent to the existing lot. This may impact Eastern Box Turtle habitat. Based upon habitat assessments for the Eastern Spadefoot Toad, this area may provide some non-breeding habitat for this species, although more ideal upland habitat for burrowing and foraging activities is located to the southeast near Wetland B and the bike path, as well as to the west along the north and south sides of the airfield.

This area of coastal dune is adjacent to Race Point Road and the intersection with the Airport entrance. Impacts to this area of coastal dune may have minimal impacts to wildlife and rare species habitat given the location. In

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order to avoid direct impacts to the Eastern Box Turtle, pre-construction “turtle sweeps” within the limit of work will be conducted as part of the Turtle Protection Plan discussed in Section 7. Therefore, adverse impacts to rare species would be minor for the short-term and negligible for the long-term because of the proposed mitigation measures.

#### 5.11.3.7 Drainage / Stormwater Management

Construction of Concept 1 would result in additional pavement for the aisle. The parking spaces will be gravel. Currently, runoff from the paved aisles flows to the unpaved median and gravel parking spaces and infiltrates into the soil. Additional areas of infiltration swales would be constructed.

Overall, the CIP projects will result in a net decrease in pavement at the Airport as shown in Table 5-2 and Figure 5.2 at the end of this section. There would be a negligible adverse short-term and negligible beneficial long-term impact to drainage.

#### 5.11.3.8 Visual Environment

There is an existing parking area at the Airport which is visible from the Race Point Beach parking lot and the bike path as shown in photos in Section 4. The new area of parking will be adjacent to the existing parking area and closer to Airport Drive. Landscaping is proposed, which will screen the effect on the various viewer groups. Therefore, there would be a negligible long-term adverse impact to the visual environment.

## 5.12 Terminal Building Expansion

### 5.12.1 No Action

#### 5.12.1.1 Transportation and Traffic

The No Action Alternative would have moderate adverse impacts on Transportation and Traffic because there would be no replacement of passenger space. The No Action Alternative would not address the inefficient and cramped conditions for the commercial airline passengers and general aviation pilots.

#### 5.12.1.2 Wetlands and Wetland Buffer Zones

Under the No Action Alternative there would be no impacts to wetlands because there would be no construction in or adjacent to wetlands and no potential for indirect impacts to adjacent wetlands.

#### 5.12.1.3 Floodplain

Under the No Action Alternative there would be no impacts because there would be no construction in flood zone elevations and therefore no impacts to floodplain.

#### 5.12.1.4 Coastal Dunes

Under the No Action Alternative there would be no impacts to coastal dunes because there would be no construction.

#### 5.12.1.5 Cultural Grasslands

Under the No Action Alternative there would be no impacts because there would be no construction in or adjacent to Cultural Grasslands.

#### 5.12.1.6 Rare Species Habitat

Under the No Action Alternative there would be no impacts because construction would not take place in or adjacent to habitat used by listed species.

#### 5.12.1.7 Drainage / Stormwater Management

Under the No Action Alternative, the drainage system would not change and there would be no impacts to stormwater management.

#### 5.12.1.8 Visual Environment

Under the No Action Alternative there would be no impacts to the visual environment because there would be no construction and the appearance of the building would not change.

### **5.12.2 Construct Vertical (Within Existing Footprint)**

#### 5.12.2.1 Transportation and Traffic

Construction of the Preferred Alternative would have a moderate short-term and long-term beneficial impact on Transportation. The project would replace non-secure passenger area lost to TSA security operations but would not result in an increase in operations at the Airport and would not require the relocation of other operations at the airfield. Additional flights and additional passenger enplanements would not occur as a result of the project.

Consequently there would be a moderate short-term and long-term beneficial impact on Transportation and Traffic.

#### 5.12.2.2 Wetlands and Wetland Buffer Zones

The Preferred Alternative does not involve any work within wetlands. There would be no impact on wetlands.

#### 5.12.2.3 Floodplain

The Preferred Alternative ~~will~~ would result in additional terminal space without a change in the existing building footprint within the floodplain, and therefore no impact on floodplain.

#### 5.12.2.4 Coastal Dunes

The Preferred Alternative does not involve any work within coastal dunes. There would be no impact on coastal dunes.

#### 5.12.2.5 Cultural Grasslands

The Preferred Alternative does not involve any work within or near Cultural Grasslands. There will be no impacts to Cultural Grasslands.

#### 5.12.2.6 Rare Species Habitat

The Preferred Alternative does not involve any work within rare species habitat. Therefore, there would be no impact on rare species habitat.

#### 5.12.2.7 Drainage / Stormwater Management

The Preferred Alternative does not involve any change to the drainage system. Therefore, there would be no impact on drainage or stormwater management.

5.12.2.8 Visual Environment

The preferred alternative would add a second floor to the building which would be visible from the Race Point Beach parking lot, the Visitor Center’s observation deck, and portions of the bike path. The Federal Highway Administration (FHWA) guidance on visual design principals was used to evaluate visual impacts. They have found that “objects that are above the observer tend to be more dominant, more detail can be seen at a position near eye level, and objects below the observer tend to blend in.” The three most observable positions from visitor areas of the CCNS would be the three selected views, i.e. the Race Point Beach parking lot, the Visitor’s Center observation deck, and the bike path. These views are elevated from the terminal and look down on the building, as shown in Photo 5-5.



Race Point Ranger Station



Old Harbor Life-Saving Station Museum



Pilgrim Monument and Provincetown Museum



Airport Terminal, Hangar, and TSA Trailer

Photo 5-5 Telescopic views of area buildings from NPS Visitors Center.

The viewscape from the Visitors Center, a NPS viewing area of the surrounding dunes and vegetation, consists of many multiple story buildings. Included in these are the Race Point Ranger Station, the old Harbor Life-Saving Station Museum, the Pilgrim Monument and Provincetown Museum, and the Race Point Light lighthouse. The Race Point Ranger Station, the old Harbor Life-Saving Station Museum, the Pilgrim

Monument and Provincetown Museum, and the Airport Terminal, Hangar, and TSA Trailer are shown from the NPS Visitors Center (telescopic views) in the following viewshed photo compilation, Photo 5-5.

The visual impact would relate to the mass, height, volume, and scale of the building. There are several measures that will be evaluated during the design process to reduce the visual impact of the building. The appearance of building height and mass could be minimized by use of building insets or projections, stepping back the upper floor, varying the height of the roofline, and adding trees and other vegetation. A combination of roof lines with varying roof heights and pitches could be used to add interest to the building and break up the mass of the building. Windows and other architectural features can be used to break up large wall masses. Sample buildings with varying roof heights and building insets and projections are shown in Figure 5.2.



Example of building with varying roof line looking from the southeast (a telescopic view from the NPS Visitor Center)



Example of terminal with building insets and projections looking from the Northwest

Figure 5.2 Examples of varying roof designs and building insets and projections

Roof color can also minimize the negligible adverse visual impact, as shown in the following examples. As taken from the FHWA guidance: “colors that occur most frequently in nature are greens, blues, and browns, and less bright colors tend to produce quiet and restful moods.” The design process will also evaluate the most appropriate colors for the building and roof to blend in with the existing landscape as approved by NPS. Two examples of the same style building with different roof colors have been illustrated in Figure 5.3 to note the impact that color could make on the perception of visibility. During the design process, background colors will be refined to aid in visual comparisons.



Example of a building with a green roof



Example of a building with a brown roof

Figure 5.3 Examples of varying roof colors.

Landscaping specific to the terminal will be incorporated into the landscaping plan for the parking lot. Landscaping for the parking lot has been proposed that will buffer the visual plane to the terminal building and parking lot from both the bike path and the Race Point Beach parking lot to the extent feasible. Native trees

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and bushes will be proposed. If determined to be more effective and desired by NPS, landscaping could be implemented outside of the Airport lease area to screen the terminal.

Conceptual building design concepts have been developed to illustrate general issues. Existing and simulated views are provided in the following photos. The existing building is shown in Photos 5-6, 5-8, and 5-10 from three different views. Photos 5-7, 5-9, and 5-11 illustrate the type of visual simulation that will be utilized during the design process. Building height has been considered and efforts to minimize the height have been done at this conceptual level of design. It is anticipated that a 6 to 12 foot increase in the height of the terminal building will be necessary. The formal design process has not been initiated since the terminal project is programmed for FY 2015 and as such a preferred specific vertical design has not been selected. The design process will be carried out in collaboration with Airport staff, the Airport Commission, and NPS staff. Specific design detail will be incorporated into the design process, including details to reduce the perception of scale, mass, and volume of the building. The design process will also evaluate the most appropriate colors for the building and roof, to blend in with the existing landscape. All of the design phases will be reviewed and approved by NPS.

By using the design principals to reduce the scale, volume, and mass perception and by proposing vegetated buffers between the building and visual points of interest, the vertical terminal option would have a minor adverse short-term and negligible adverse long-term impact on the visual environment with mitigation.



Photo 5-6 Existing view from beach parking lot.



Photo 5-7 An example of how photo simulation can be used to show the visual impact of the vertical design.



Photo 5-8 Existing view from bike path.



Photo 5-9 Example of use of photo simulation to assess visual impact.	Roof color and roof lines could be changed.
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Photo 5-10 Existing view from Visitors' Center Observation Deck.



Photo 5-11 Example of use of photo simulation with a proposed second floor added to the Terminal.

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### 5.12.3 Horizontal Alternative (Expand Footprint)

#### 5.12.3.1 Transportation and Traffic

The Horizontal Alternative would require that the TSA trailer be relocated to accommodate the access road to the airfield. It would also impact the auto parking lot by decreasing available spaces. This alternative would have a short and long-term moderate adverse impact on Transportation and Traffic.

#### 5.12.3.2 Wetlands and Wetland Buffer Zones

Approximately 560 SF of the edge of Wetland C would be impacted to accommodate the spacing requirements of the entrance road, and will have a minor adverse short-term and no long-term impact on wetlands. MA DEP has indicated that an alternative for a capacity project that avoids wetland impacts would be necessary in order to qualify for a permit under WQC, given the ORW status of the wetlands and the need for a Variance under the WQC regulations. Therefore, this alternative may not meet the DEP performance standards for a WQC.

#### 5.12.3.3 Floodplain

The Horizontal Concept would impact floodplain to the extent that it would impacts wetlands that occur within the floodplain (approximately 560 SF). Wetland mitigation would be provided and would compensate for direct adverse impacts to wetland and floodplain resources. Therefore, this alternative would have a minor adverse short-term and a negligible long-term adverse impact on floodplain upon successful completion of proposed wetland mitigation.

#### 5.12.3.4 Coastal Dunes

The building and road would be on existing developed land. There will be no impacts to coastal dune resources.

#### 5.12.3.5 Cultural Grasslands

Cultural Grasslands would not be impacted. Therefore, there would be no impact on Cultural Grasslands.

#### 5.12.3.6 Rare Species Habitat

The Horizontal Alternative does not involve any work within rare species habitat. Therefore, there would be no impact on rare species habitat.

#### 5.12.3.7 Drainage / Stormwater Management

The Horizontal Alternative would change the drainage system and increase runoff. There would be minor adverse short-term and long-term impacts on drainage and stormwater management once stormwater BMPs were constructed.

#### 5.12.3.8 Visual Environment

The horizontal expansion of the Terminal would be visible from the Race Pont Beach parking lot, the Visitor Center's observation deck, and portions of the bike path. Existing and simulated views are provided in the following photos. There would be a change in the appearance of the existing building. As shown in Photos 5-13, 5-15, and 5-17, the roof extends off the existing roof elevation.



Photo 5-12 Existing view from beach parking lot.



Photo 5-13 Photo simulation of Horizontal Option viewed from beach parking lot.



Photo 5-14 Existing view from bike path.



Photo 5-15 Photo simulation of Horizontal Option viewed from bike path.



Photo 5-16 Existing view from Visitors' Center Observation Deck.



Photo 5-17 Photo simulation of Terminal Horizontal Option viewed from Observation Deck

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The horizontal terminal option would maintain the existing building height. However, maintaining the same height might make the Airport facilities appear to be industrial buildings with matching roof lines. Incorporating design principals to reduce the appearance of the building wall lengths and roof line, along with vegetated buffers between the building and visual points of interest, the horizontal terminal option would have a minor adverse short-term and negligible adverse long-term impact on the visual environment.

### **5.13 Turf Apron**

#### **5.13.1 No Action**

##### 5.13.1.1 Transportation and Traffic

The No Action Alternative would have a moderate adverse impact on Transportation and Traffic in terms of Airport operations. During peak times, airplanes would be parked on the mid connector TW and this TW would not be available. There would be a moderate long-term adverse impact to Transportation and Traffic.

##### 5.13.1.2 Wetlands and Wetland Buffer Zones

Under the No Action Alternative there would be no impacts to wetlands because there would be no construction adjacent to or within wetlands.

##### 5.13.1.3 Floodplain

Under the No Action Alternative there would be no impacts because there would be no construction within flood zone elevations and therefore no impacts to floodplain.

##### 5.13.1.4 Coastal Dunes

Under the No Action Alternative there would be no impacts to coastal dunes because there would be no construction adjacent to or within coastal dune resources.

##### 5.13.1.5 Cultural Grasslands

Under the No Action Alternative there would be no impacts to Cultural Grasslands because there would be no construction.

##### 5.13.1.6 Rare Species Habitat

Under the No Action Alternative there would be no impacts to rare species habitat because there would be no construction within resources used by listed species.

##### 5.13.1.7 Drainage / Stormwater Management

Under the No Action Alternative, the drainage system would not change and, therefore, there would be no impact to drainage.

##### 5.13.1.8 Visual Environment

Under the No Action Alternative, there would be no change to the Visual Environment because the project would not be built.

### 5.13.2 Full Dimension

#### 5.13.2.1 Transportation and Traffic

Construction of the Full Dimension alternative would have a moderate beneficial impact on Transportation and Traffic. The project would provide turf parking for an existing demand but would not result in an increase in operations at the Airport. Additional flights and additional passenger enplanements would not occur as a result of the project. There would be a moderate long-term beneficial impact on Transportation and Traffic.

#### 5.13.2.2 Wetlands and Wetland Buffer Zones

The Full Dimension alternative minimizes wetland impacts with steepened slopes, but there would be an impact of approximately 1,250 SF in Wetland C. The comment letter on the NPC/Draft EIR/EA submitted by DEP indicated that this project, like the other capacity projects would require a Variance from the WQC regulations, but would be unlikely to qualify for a Variance. This alternative could be deemed to have moderate short-term and minor long-term adverse impacts to wetlands.

#### 5.13.2.3 Floodplain

The full dimension alternative involves impacts to wetlands, and will therefore also affect the floodplain associated with the wetland. There would be a negligible adverse short-term and no long-term impact on floodplain, with proposed on-site wetland mitigation combined with the previously implemented mitigation through the Hatches Harbor Project.

#### 5.13.2.4 Coastal Dunes

There are no coastal dunes within the project impact area and there would be no impacts to coastal dune resources with this alternative.

#### 5.13.2.5 Cultural Grasslands

Additional Turf Apron area would be constructed within an area of existing Cultural Grasslands. The project would modify the structure of the underlying soils within the area of managed grassland. The grassland vegetation will be restored. The new turf apron would be maintained as Cultural Grasslands.

Therefore, there would be a minor adverse short-term and negligible adverse long-term impact to Cultural Grasslands.

#### 5.13.2.6 Rare Species Habitat

Expansion of the turf apron will impact a portion of Cultural Grassland. Construction activities within Cultural Grasslands will be scheduled according to NHESP agency avoidance dates (i.e., outside of the active breeding and nesting period for this species) which will avoid impacts to Vesper Sparrow.

In order to avoid direct impacts to the Eastern Box Turtle, pre-construction “turtle sweeps” within the limit of work will be conducted as part of the Turtle Protection Plan discussed in Section 7. Work will be conducted in the fall.

The newly created turf apron will be managed similarly to other areas of managed Cultural Grasslands throughout the Airport operational area.

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Adverse impacts to rare species will be minor for the short-term and negligible for the long-term because of the proposed mitigation measures.

#### 5.13.2.7 Drainage / Stormwater Management

The project does not involve any changes to paved surfaces and there will be no impact to drainage and stormwater management.

#### 5.13.2.8 Visual Environment

The project would modify the structure of the underlying soils within the area of managed grassland and would not be a new element in the visual environment. The visual appearance of the turf apron will be the same as the existing managed grassland. As a result, there would be no impacts to the Visual Environment.

### 5.13.3 Reduced Dimension (Preferred Alternative)

#### 5.13.3.1 Transportation and Traffic

Construction of the Preferred Alternative would have a negligible short-term adverse impact and a moderate beneficial long-term impact on Transportation and Traffic. The project would provide turf parking for an existing demand during peak periods but would not result in an increase in operations at the Airport. Additional flights and additional passenger enplanements would not occur as a result of the project. There would be no increase in vehicular traffic as a result of the project.

#### 5.13.3.2 Wetlands and Wetland Buffer Zones

The project will not impact wetlands. There would be no impacts to wetlands.

#### 5.13.3.3 Floodplain

The Preferred Alternative would not alter the flood storage capacity of the floodplain, and would have only negligible adverse impacts during construction, with no long-term adverse impacts to this resource.

#### 5.13.3.4 Coastal Dunes

There are no coastal dunes within the project impact area. Therefore, there would be no impacts to coastal dune resources.

#### 5.13.3.5 Cultural Grasslands

Additional Turf Apron area will be constructed within an area of existing Cultural Grassland. The project would modify the structure of the underlying soils within the area of managed grassland. The grassland vegetation would be restored. The new Turf Apron would be maintained as Cultural Grassland.

As such, there would be negligible adverse short-term impacts and no long-term impacts to Cultural Grasslands.

#### 5.13.3.6 Rare Species Habitat

Expansion of the turf apron would impact a portion of Cultural Grassland that serves as potential Vesper Sparrow habitat. Construction activities within Cultural Grasslands will be scheduled consistent with NHESP agency avoidance dates which will avoid impacts to Vesper Sparrow.

In order to avoid direct impacts to the Eastern Box Turtle, pre-construction “turtle sweeps” within the limit of work will be conducted as part of the Turtle Protection Plan discussed in Section 7. Work will be conducted consistent with specific NHESP agency avoidance dates.

The newly created Turf Apron will be managed similarly to other areas of managed Cultural Grasslands throughout the airport operational area. Adverse impacts to rare species will be negligible for the short-term and no impacts for the long-term because of the proposed mitigation measures.

#### 5.13.3.7 Drainage / Stormwater Management

The project does not involve any changes to paved surfaces and will not impact drainage and stormwater management.

#### 5.13.3.8 Visual Environment

The project would modify the structure of the underlying soils within the area of managed grassland and would not be a new element in the visual environment. The visual appearance of the turf apron will be the same as the existing managed grassland and would not impact the Visual Environment.

### 5.14 Evaluation of Impairment of Park (CCNS) Resources or Values

#### Introduction

As suggested by NPS CCNS staff, Impairment of Park Resources is discussed for all the CIP project elements in aggregate rather than by individual project element. For the purposes of evaluating the potential for Impairment of Park Resources and values, impact topics include:

- Natural Resources (wetlands, wetland buffers, floodplains, coastal dunes, wildlife habitat),
- Massachusetts state-listed Rare Species and their sustaining habitat, and
- Visual Impacts.

In addition to natural resources, the NPS is the steward of many of America’s most important cultural resources. These resources are categorized as archaeological resources, cultural landscapes, ethnographic resources, historic and prehistoric structures, and museum collections. Cultural resources may also include historic designed landscapes, historic vernacular landscapes, ethnographic landscapes, and historic sites, natural resources with traditional cultural meaning and value to associated peoples and other resource users.

The Park’s Cultural Resources were not included as an impact topic for this discussion because it has been established that there are no historical or archaeological structures within the lands occupied by the Airport (See MHC letter dated April 2, 2007, and commentary from NPS staff December 15, 2008, provided in Section 10.1). Additionally, as discussed in Section 1.4, there are no Museum Objects, Ethnographic, or Cultural Resources.

#### Background

In 1961, the U.S. Congress established the Cape Cod National Seashore (CCNS) as a unit of the National Park Service (NPS), recognizing that the outer portion of Cape Cod, or Outer Cape, was “nationally significant for ecological, historical, and cultural reasons. Given the unique circumstances under which the CCNS also encompasses the Provincetown Municipal Airport, which operates within the Park under a Special Use Permit, the CCNS General Management Plan (NPS 1998; Access and Transportation section), identifies the Airport as “an important transportation facility for the Outer Cape [that] ... is part of the national aviation system.” One

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of the Goals stated in the CCNS General Management Plan is to “Provide access to public use areas that is environmentally sensitive, safe, and consistent with the desired experience and the intermodal planning initiatives; [and] ensure that the transportation system does not detract from the Cape Cod character.” Although the proposed CIP projects are primarily designed to address safety and security deficiencies at the Airport, while meeting current demands for Airport use, and will be confined to the lands specifically set aside for Airport operations, the CCNS General Management Plan recognizes that through the Airport Commission’s long-term master planning and environmental analysis, public safety upgrades could potentially affect the resources and values provided by the CCNS.

The CCNS General Management Plan requires that park resources and values to be considered when reviewing proposed projects at the Airport include “opportunities for quiet contemplation, reasonable access to NPS facilities, and the preservation of vegetation, wildlife, wetlands, dunes, views, and cultural resources.” The following provides a discussion of the proposed CIP Projects in the context of the potential for Impairment of these Park Resources and values with regard to direct and indirect impacts associated with each alternative of the proposed (preferred) action.

NPS Management Policies define Impairment of Park Resources as an impact that: “...in the professional judgment of the responsible NPS manager, would harm the integrity of the 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.”

The laws establishing the NPS and its authority give NPS management the discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute an impairment of the affected resources and values. Not all impacts would constitute impairment. As described in the NPS Management Policies, an impact would more likely constitute impairment to the extent that it would impact a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; [and, or]
- Identified as a goal in the Seashore’s General Management Plan or other park planning documents.

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

## **Natural Resources**

### **Wetland Resources**

Impacts to the Park’s wetland resources resulting from the combined Preferred Alternatives for the CIP projects affecting wetland resources at the Airport include moderate, direct, short-term impacts to wetland ecosystems in the immediate vicinity of the Airport facilities to allow for the taxiway and access road safety improvements to occur. Specifically, this would involve reconstruction and/or realignment of the taxiways, installation or modification of access roadways to Airport navigational aids, and installation of the proposed

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safety/security fence. With the exception of the safety/security fence, these projects would not be new elements at the Airport or within the CCNS. Even the safety/security fence is not a new concept to the CCNS, where the Airport, for safety reasons, has worked with the CCNS to install multiple Navigational devices that require obstacle clearing, including the airspace surrounding the airport.

Wetland impacts associated with the CIP projects would not adversely affect the natural integrity of the CCNS wetland resources or detract from the enjoyment of those resources or values. Further, these impacts will be minimized (offset) and subsequently mitigated upon successful wetland restoration, along with the previous mitigation under the Hatches Harbor Project as discussed in Section 7.0. Construction timing and implementation of applicable BMPs and other measures will further minimize impacts to the values of the wetland resources at the Airport and within the CCNS. Minor indirect, long-term impacts will occur within wetlands for the installation and maintenance of the safety/security fence as eight-foot wide swaths along the proposed fence would be managed in a low-growing plant community rather than a forested or taller scrub-shrub community. Consequently, there would be no impairment of wetland resources or values as a result of the implementation of the Preferred Alternatives when mitigation is also implemented.

#### Coastal Floodplains

The entire Airport and its immediate environs fall within the coastal floodplain (ranging from elevation 10 to 11 feet above mean sea level). CIP projects with the potential to directly affect the coastal floodplain include the reconstruction and/or realignment of the taxiways, installation of the service access roadways, and improvements to the MALSF access roadway where fill is proposed; other CIP projects would have negligible impacts to the coastal floodplain. Negligible short-term, direct, adverse impacts will occur to the coastal flood zone at the Airport and within the CCNS as a result of implementing the Airport CIP projects during construction. These impacts would not harm the integrity of the Park's resources by increasing the extent of flood prone areas or otherwise diminishing the ability of this natural resource to function to provide flood storage by temporarily retaining and slowly releasing coastal waters during and following a flooding event at the Airport or within the surrounding CCNS lands, or prevent storm damage to inland areas upon successful mitigation within the floodplain. Further, short-term impacts to the coastal floodplain will be restored upon successful wetland mitigation as described above and in Section 7.0. Therefore, implementation of the Preferred Alternatives would not impair floodplain resources within the CCNS.

#### Coastal Dune Ecosystems, Buffers, and Wildlife Habitat

The Province Lands within the CCNS, where the Airport is located, are comprised of a vast ecosystem of primary and secondary dunes. Coastal dunes within the Airport lease area range from barely elevated sandy patches situated among freshwater wetlands (e.g., interdunal swales) to tall, sparsely vegetated shifting dune ridges to the north, and to extensively vegetated dune ridges to the south. Given the proximity of the natural resources at the Airport, coastal dunes also frequently serve as natural buffers to the system of freshwater wetlands found there, and along with the wetland system, provides a unique wildlife habitat.

Minor long-term direct and indirect impacts to coastal dune ecosystems and the associated wildlife habitat would occur with the implementation of the Preferred Alternatives for the combined CIP projects (taxiway realignments, construction of service access roadways (AWOS and LES), expansion of auto parking (Phases 1 and 2), and installation of the safety/security fence). However, these impacts would not detract from the vast extent of dunes within the Province Lands at the CCNS, nor would they harm the integrity of the Park's resources or values.

The Preferred Alternative for the proposed safety/security fence would partially enclose 113 acres of the Airport lease area. The majority of the area consists of airport infrastructure (paved runway and taxiways, buildings, parking areas, navigational aids, and managed safety areas). Implementation of the combined CIP projects would result in negligible to minor, direct and indirect short-term and long-term adverse impacts to local populations of certain wildlife species whose habitat would be interrupted by the existence of a fence.

Impacts to coastal dune ecosystems at the Airport will be mitigated in part through the conversion of existing impervious surfaces and mowed grasslands to coastal dune habitat, and implementation of habitat management to control invasive species currently documented within the coastal dune ecosystem at the Airport. Mitigation efforts, including design specifications, construction timing, and implementation of applicable BMPs, will further minimize impacts to the coastal dune ecosystem at the Airport and within the CCNS. As with the wetland resources, minor indirect, long-term impacts will occur within the coastal dunes for the installation and maintenance of the safety/security fence as an eight-foot wide swath along the proposed fence would be managed in a low-growing plant community rather than a forested or taller shrub community. However, installation of the fence is an unavoidable result of a necessary action to maintain a safe and secure Airport within the CCNS, and for visitors to the CCNS that would utilize the Airport. Considered in relation to the total dune ecosystem in the Province Lands, combined with the proposed dune restoration and mitigation measures, there would be no impairment of the coastal dune ecosystem or its habitat functions and values as a result of the implementation of the Preferred Alternatives.

#### State-listed Rare Species and Their Sustaining Habitat

Implementation of the combined CIP projects at the Airport has the potential to affect the habitats of three of the four Massachusetts state-listed rare species documented at the Airport: Eastern Spadefoot Toad, Eastern Box Turtle, and Vesper Sparrow, with no adverse impacts anticipated to the fourth documented species, Broom Crowberry). The mosaic habitat of the coastal dune ecosystem interspersed with freshwater interdunal swales within the Province Lands constitutes a unique habitat that supports these species. Potential impacts to the habitat for the Eastern Spadefoot Toad have been the focus of the Massachusetts Natural Heritage and Endangered Species Program (NHESP), and prime and potential breeding habitat for this state-Threatened species has been further assessed at the Airport in the context of the Preferred Alternatives.

Minor short-term, direct, adverse impacts of potential breeding habitat for the Eastern Spadefoot Toad will occur with the taxiway improvement projects. Negligible short-term, direct adverse impacts and negligible long-term indirect adverse impacts would occur within prime breeding habitat for Eastern Spadefoot Toad for the installation and maintenance of portions of the proposed safety/security fence (see Figure 4.7). In addition, implementation of the Preferred Alternatives for the combined CIP projects would have the potential for minor, short-term and long-term, direct adverse impacts to the non-breeding habitat for this species.

Implementation of the Preferred Alternatives for the combined CIP projects would result in minor short-term, direct adverse impacts within wetlands, grasslands, and coastal dune ecosystems which serve as potential breeding and non-breeding habitat for the Eastern Box Turtle.

Negligible, short-term, direct adverse impacts will occur within managed grasslands (Cultural Grasslands) which serve as potential habitat for Vesper Sparrow (and Broom Crowberry, although none of the Preferred Alternatives would have a direct impact on the known population of this species at the Airport) with the

implementation of the taxiway realignment and relocation projects as well as the installation of the taxiway lighting and expansion of the turf apron. Moderate long-term direct beneficial impacts to this species may occur through habitat maintenance of the grasslands and a species-sensitive mowing schedule.

With the implementation of mitigation measures, the resulting impacts to these species would be considered short-term and negligible, off-set by habitat restoration (including wetland restoration), location-specific fence alignment siting, design measures for the fence (wildlife tunnels), and construction timing measures designed to protect this unique habitat.

Considered in relation to the total wetland and dune ecosystem in the Province Lands, combined with the mitigation measures proposed, impacts to state-listed rare species habitat would be considered near negligible, long-term, adverse impacts. Consequently, implementation of the CIP projects would not result in an impairment of rare species habitat resources or values.

#### Visual Impacts

The proposed CIP projects designed to improve safety standards at the Airport has the potential to impact the visual environment at the Airport. Specifically, installation of the proposed safety/security fencing and taxiway edge lighting, and expansion of the auto parking lot and the Terminal building could result in visual impacts for Park visitors. The remaining CIP projects would not be new elements or expansion of existing elements at the Airport and would not diminish the natural or cultural integrity of the CCNS, and in fact, would result in minor to moderate, long-term, direct, and beneficial impacts to visitor use, safety, and experience for those visitors patronizing the Airport as a means of accessing the Park.

The Airport may be seen by Park visitors (or viewer groups) utilizing the bike trail system near the Airport, those driving past the Airport toward Race Point Beach, or those visiting the lookout tower at the Province Lands Visitor Center (“birds eye views”), where minor, long-term, direct adverse impacts to visual aspects of the Park may be experienced by those visitors upon the implementation of the Preferred Alternatives for these CIP projects.

Visual impacts will be off-set by native landscape screening plantings proposed around the parking lot, as well as design modifications to the Terminal to ensure that it meets the local design and character of other buildings at the Park and minimizes impacts to the visual environment at the CCNS. Lighting along the taxiway does not constitute a new element at the Airport, but rather an improvement of the existing runway lighting. The taxiway lighting is an unavoidable consequence of meeting airport safety requirements.

The proposed fence will match the design of the existing segments of safety/security fencing currently visible along the bike path along Race Point Road. The new sections of fencing will be installed within the vicinity of the managed airfield, and will be black coated vinyl, which minimizes the effect on the various viewer groups. The aspects that contribute to the significance of the CCNS would not be diminished because there would be no significant change in the visual environment and no change in recreational activity for the CCNS visitors since the fence will secure the operational area of the Airport that is closed to unauthorized persons.

### 5.15 Cumulative Impacts

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 reasonable foreseeable future actions regardless of what

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agency (federal or non-federal) or person undertakes such actions” (40 CFR 1508.7). An assessment of cumulative impacts is a requirement of NEPA. Cumulative impacts are typically considered for all alternatives (preferred or other alternatives that were considered but not dismissed), including the no action alternative.

This discussion takes into account the combined CIP projects discussed above relative to their potential impacts on the following resources: Wetland Resources (wetlands, floodplains, and associated habitats), Coastal Dune Ecosystems (including buffers and associated habitats), State-listed Rare Species and associated Priority Habitats, and Public Use and Access and Safety for Park Users. The action alternatives focus primarily on the impacts of the Preferred Alternatives for the combined CIP projects in conjunction with the preferred and/or already implemented projects in the nearby vicinity of the Province Lands. A discussion of the differences in combined impacts follows, should one of the other alternatives (i.e., not selected as the preferred) be implemented. The effects of the No Action alternatives are also discussed.

#### Projects Evaluated for Cumulative Impacts

At the recommendation of NPS staff, in this FEIR/EA the discussion of cumulative impacts is presented in the context of the combined effects of the various CIP projects, as well as the impacts resulting from other projects in the vicinity of the Province Lands within the CCNS. Other 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 three transportation projects and the installation of an electrical supply in the Province Lands. Projects occurring outside the geographical vicinity of the Airport CIP projects are not considered. Likewise, the proposal for the development of a multi-use trail in conjunction with the rehabilitation of a 2-mile stretch of Moors Road in Provincetown, which is planned for the area, has not yet been fully developed, and therefore has not been considered in this analysis. Four other projects in the general vicinity of the Airport include:

1. Electrical Supply for Herring Cove Beach Facilities;
2. Province Lands Bike Trail Renovations;
3. Herring Cove Intersection Project; and
4. Certain project elements from Repair and Rehabilitate Four Roads and Parking Lots (Herring Cove).

A brief description of these four projects and their identified impacts for their Preferred Alternatives is presented upfront by way of background information. The cumulative impacts of these projects on the specific impact topics are discussed below in conjunction with the combined proposed CIP projects at the Airport. The effects on the resources are first considered for the No Action alternatives, followed by the effects of the combined Preferred Alternatives. Where more than one Build alternative has been identified for a CIP project (and not previously dismissed), a discussion of cumulative impacts follows, providing a range of impacts these non-preferred alternatives would have on the resources if implemented.

#### *1. Electrical Supply for Herring Cove Beach Facilities*

Preferred Alternative: According to the Electrical Supply for Herring Cove Beach Facilities EA (NPS 2008), the Preferred Alternative would entail the installation of a combined solar- and wind-powered electrical supply sited on the roof of the Herring Cove bathhouse with a separate land-based wind-turbine located nearby. Under the preferred alternative, there would be potential minor adverse impacts to birds and bats, including state- and federally-listed rare species. Impacts to wildlife derived from the operations of the wind turbine will be minimized through a two-phased adaptive management plan. Installation during the off-season would have

negligible impacts on public use and access, and impacts to visitor safety would be temporary (short-term) and minor. Long-term minor visual impacts from the presence of the land-based wind turbine were recognized as either adverse (interruption of the existing views) or beneficial (educational); adverse impacts would be minimized by building the turbine in scale with the existing environment.

No Action: Under the No Action alternative for this project, there would be no impacts to the natural resources (soils, vegetation, and wildlife or air quality) or to the Park's cultural resources. As the project is intended to address a recurring issue with faulty electricity that is an inconvenience to visitors using the bathhouse and restroom facilities and limiting visitor access, there is a potential for moderate to major impacts on public use of the Herring Cove facilities, which is a potential long-term adverse indirect consequence of the No Action alternative for this project.

### 2. *Province Lands Bike Trail Renovations*

Preferred Alternative: The Preferred Alternative for the Province Lands Bike Trail Renovations project (realignment, repair, and 10-foot widening of the existing bike trail system) would impact wetlands, coastal upland ecosystems, and coastal dune ecosystems in the project area. Minor short-term direct adverse impacts to wetland resources within a foot of the renovated trails during construction of the preferred alternative is 0.14 acres, with no long-term direct adverse impacts to wetlands occurring. Minor long-term, direct adverse impacts of up to 4.33 acres of upland and coastal dune ecosystems, which provide potential non-breeding habitat for a state-threatened rare species, Eastern Spadefoot Toad, distributed along the 7.3 miles of bike trail were identified. Adverse impacts would be partially off-set by restoration of portions of the existing trail which would be abandoned, and construction and timing measures designed to protect this habitat. With the implementation of mitigation measures, the resulting impacts were considered short-term and negligible or minor. Moderate, long-term direct and beneficial impacts to visitor (and staff) use, safety, and experience are anticipated from the resultant safer bike trail system. Minor, short-term and long-term, direct adverse impacts to the habitat for the Eastern Spadefoot Toad would result from the preferred alternative, with the potential for additional minor, short-term direct adverse impacts to breeding habitat for this species. Potential minor, short-term and long-term, direct adverse impacts would also occur if other protected species are discovered within the project areas of the realignments.

No Action: The No Action alternative would not result in impacts to the Park's natural resources (wetlands or coastal dune and upland ecosystems). However, minor long-term direct adverse impacts to visitor and staff safety, use and experience would result from the continued existence of unsafe conditions and deteriorated segments of the bike trail.

### 3. *Herring Cove Intersection*

Preferred alternative: The work associated with this project primarily includes reconstruction at the intersection of Route 6 and Province Lands Road, including the addition of an exit from South Herring Cove Beach onto Route 6. In addition, the sealing of the pavement on Race Point Road was included. Although within the buffer zone to Shank Painter Pond, all work occurred within the roadway and resulted in a net reduction in impervious surface and moderate, long-term, direct, and beneficial impacts to visitor safety, use and experience resulting from the improvements to the park resources for visitor enjoyment.

No Action: The No Action alternative would result in no adverse impacts to natural resources. However, minor long-term direct adverse impacts to visitor and staff safety, use and experience would result from the continued existence of the inadequate and unsafe conditions at this intersection.

4. *Repair and Rehabilitate Four Roads and Parking Lots (Herring Cove)*

Preferred Alternative: Portions of this project, which involved the repair and rehabilitation of four roads (Marconi Beach Road, Marconi Site Road, Old Dewline Road, and Moors Road) and modifications to the Herring Cove Parking Lot access, would result in impact to Park Resources. The Preferred Alternative identified in the Value Analysis Study for this project (NPS 2006) would result in minor, long-term direct adverse impacts to coastal dune ecosystems. These project elements would also result in moderate, long-term, direct, and beneficial impacts to visitor safety, use and experience resulting from the modifications to the Herring Cover Parking Lot Access. No impacts occurred within sensitive or state-listed rare plant or animal habitat, and no work was proposed within wetlands or within 100 feet of wetlands (buffer zone).

No Action: The No Action alternative would result in no impacts to natural resources. However, minor long-term direct adverse impacts to visitor and staff safety, use and experience would result from the continued existence of the existing inadequate and unsafe entrance and exists to the Herring Cove parking lot.

### **Cumulative Impact to Wetland Resources**

#### **No Action**

No impacts would occur to wetland resources if the No Action alternatives for the CIP projects were implemented. However, there is potential for minor, long-term, direct and indirect, adverse impacts to occur within wetlands and surrounding habitats if safety measures such as surfacing of deteriorating and crumbling surfaces are not completed and the water quality of adjacent wetlands were to become impacted through stormwater runoff carrying debris and contaminants from the deteriorated surfaces. When considered with the No Action alternatives for other projects in the Province Lands, the No Action alternatives would result in no additional adverse impacts to the natural resources (soils, vegetation, and wildlife, or air quality) beyond those impacts that may occur under existing conditions.

#### **Preferred Alternatives**

Impacts to the Park's natural resources resulting from the combined preferred alternatives for the CIP projects at the Airport include moderate, direct, short-term impacts to wetland ecosystems in the immediate vicinity of the Airport facilities to allow for the taxiway and access road safety improvements to occur. These impacts (1.35 acres) will be minimized (offset) through a reduction in impervious surfaces and subsequent wetland restoration, which overall would result in an increase in the amount of freshwater wetlands occurring at the Airport, when combined with the implementation of the Hatches Harbor Project over the long-term (1.70 acres) upon successful restoration of previously disturbed wetlands. In addition to the Hatches Harbor Project, additional protective measures to be implemented include construction sequencing and timing, implementation of applicable BMPs, and enhancement measures as outlined in Section 7.0. Moderate temporary wetland impacts will also occur due to temporal loss during construction and prior to full grow-in of the restored wetland areas. Additional minor to moderate indirect, long-term impacts will occur within wetlands (0.59 acres) for the installation of the safety/security fence as 8-foot wide swaths along the proposed fence would be managed in a low-growing plant community rather than a forested or taller scrub-shrub community, as well as minor to moderate temporary impacts to wetlands during construction.

Reconstruction and/or realignment of the taxiways, installation of the access roadways, and installation of the proposed safety/security fence combined with the impacts to wetland resources associated with the bike trail renovations would result in direct and indirect, moderate, short-term cumulative impacts on wetland resources. Total short-term direct adverse impacts to the wetland ecosystems are approximately 1.49 acres.

Implementation of the preferred alternatives associated with the Airport CIP projects would have only minor short-term, direct adverse impacts to the to the wetland resources analyzed in this document even when considered cumulatively with other projects in the vicinity. Proposed wetland mitigation, including the previously implemented restoration project in Hatches Harbor, would off-set the direct and indirect impacts to wetlands in less impervious surfaces and subsequently greater wetland areas within the Park upon successful wetland restoration. Consequently, there would be no cumulative adverse impact to wetland resources or values as a result of the implementation of the preferred alternatives when mitigation is also implemented.

#### Considerations of Non-Preferred Alternatives for CIP Projects – Wetland Resources

Impacts to the Park's natural resources resulting from the combined other alternatives (some of which would include the preferred alternatives) for the CIP projects at the Airport include moderate, direct, short-term adverse impacts to wetland ecosystems in the immediate vicinity of the Airport facilities to allow for the taxiway and access road safety improvements to occur. These impacts (approximately 1.35 acres, 1.33 acres of which are accounted for by the Preferred Alternatives where no other alternatives were considered) are comparable to the wetland impacts under the preferred alternative. However, there would be greater impacts associated with implementation of the horizontal alternative to the Terminal Expansion project (an additional ~560 SF) and the two fence alternatives (Concept 1 at the lease line and Concept 4) with moderate, indirect and direct adverse wetland impacts totaling an additional 3.4 acres and 1.13 acres, respectively, with additional undetermined alterations occurring within tidally influenced areas of the BVW associated with the enclosure of the MALSF system, which would occur with both non-preferred fence alternatives. Thus, cumulative impacts to the Park's natural resources would range from approximately 2.71 to 4.88 acres (not including indirect impacts resulting from enclosure of tidally-influenced wetlands). These additional wetland impacts would be partially off-set through a reduction in impervious surfaces and on-site wetland restoration and including the previously implemented restoration off-site project in Hatches Harbor, although at a slightly lower ratio than with the Preferred Alternatives. Construction timing and implementation of applicable BMPs and measures outlined in Section 7.0 would further reduce impacts. Moderate temporary adverse wetland impacts will also occur due to temporal loss during construction and prior to full grow-in of the restored wetland areas.

#### **Cumulative Impact to Floodplains**

##### No Action

No impacts would occur within floodplains if the No Action alternatives for the CIP projects were implemented. Other projects in the vicinity of the Province Lands have not reported impacts to floodplains.

##### Preferred Alternatives

Implementation of the combined CIP projects would cumulatively result in negligible to minor, short-term, direct, adverse impacts within the coastal flood zone as a result of implementing the Airport CIP projects during construction, specifically for the reconstruction and/or realignment of the taxiways, installation of the access roadways, and installation of the proposed safety/security fence (i.e., projects that would result in introduced fill material). The temporary loss of flood storage capacity will be compensated by the proposed wetland restoration and through the mitigation derived from the implementation of the Hatches Harbor Project. No long-term adverse impacts on the flood storage capacity relative to the ability of these low-lying areas to temporarily retain and release coastal waters during and following a flooding event at the Airport or within the surrounding CCNS lands are anticipated. Therefore, implementation of the Preferred Alternatives will have a negligible short-term direct adverse impact on floodplains. Proposed restoration activities will mitigate for impacts to floodplains, such that there will be negligible long-term impacts upon successful implementation of

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wetland restoration activities. Other projects in the vicinity of the Province Lands have not reported impacts to floodplains. Consequently, there would be no cumulative adverse impact to floodplain resources as a result of the implementation of the combined preferred alternatives for the projects.

#### Considerations of Non-Preferred Alternatives for CIP Projects – Floodplains

Other projects in the vicinity of the Province Lands have not reported impacts to floodplains, and therefore implementation of non-preferred alternatives for the combined CIP projects would be limited to impacts associated with the Airport. Negligible, short-term, direct, adverse impacts will occur within coastal floodplains as a result of implementing the Airport CIP projects during construction, specifically for the reconstruction and/or realignment of the of the taxiways, installation of the access roadways, and installation of the proposed safety/security fence. The only projects with identified non-preferred alternatives that could impact floodplains are the terminal expansion project, the service access roads, the fence and the auto parking project. Implementation of the auto parking Concept 1, the horizontal option for the Terminal, and the full dimension of the turf apron would result in additional wetland (and therefore floodplain) fill ranging from 0.1 to 0.15 acres. Presumably, these impacts would also result in minor, short- and long-term adverse impacts to the flood storage capacity of the coastal floodplains. These additional impacts to the flood storage capacity would be compensated by the proposed wetland restoration (upon successful implementation) and further enhanced through the Hatches Harbor restoration project, resulting in negligible long-term adverse impacts on the flood storage capacity relative to the ability of these low-lying areas to temporarily retain and release coastal waters during and following a flooding event at the Airport or within the surrounding CCNS lands. However, implementation of either non-preferred alternative for the fence (Concept 1 or Concept 4) would result in undetermined short-and long-term, direct and indirect adverse impacts within tidally-influenced areas of the wetland system due to the complete enclosure of the MASLF system.

#### **Cumulative Impact to Coastal Dune Ecosystems, Buffers, and Wildlife Habitat**

##### No Action

No impacts would occur to coastal dune ecosystems, buffers, or general wildlife habitat if the No Action alternatives for the CIP projects were implemented. When considered with the No Action alternatives for other projects in the Province Lands, the No Action alternatives would result in no adverse impacts to these resources.

##### Preferred Alternatives

Minor, long-term direct, adverse impacts to coastal dune ecosystems and the associated wildlife habitat would occur to a total of 1.05 acres through the implementation of the Preferred Alternatives for the combined CIP projects. Combined with the minor, long-term direct adverse impacts of up to 2.63 acres and minor short-term direct adverse impacts of up to 3.68 acres of dune ecosystem habitat associated with the preferred alternatives for the bike trail renovations, and the minor impacts to coastal dune and upland ecosystem habitats associated with the installation of the wind turbine at the Herring Cove facilities, cumulative long-term, direct, adverse impacts to dune ecosystem impacts resulting from these projects would be approximately 3.96 acres (including mitigation efforts to restore dune and upland ecosystems). Impacts to coastal dune ecosystems at the Airport will be mitigated in part (0.69 acres) through the conversion of existing impervious surfaces and mowed grasslands to coastal dune habitat, and implementation of habitat management to control invasive species.

The fence would partially enclose 113 acres of the Airport lease area. This may result in negligible to minor, direct and indirect short-term and long-term adverse impacts to local populations of certain wildlife species

whose habitat would be interrupted by the existence of a fence. While the preferred alternative for the fence will partially enclose approximately 113 acres at the Airport, it is important to note that the area within the fence consists of airport infrastructure (paved runway and taxiways, buildings, parking areas, navigational aids, and managed safety areas). The purpose of installing the fence is to restrict movement of large animals, such as deer and coyote, as well as non-authorized personnel from the Airport operation areas. However, the design mitigation measures and construction timing and phasing mitigation measures will reduce the impacts to resources and the species that use these resources. Mitigation efforts, including design specifications and construction timing will minimize these impacts. When considered in relation to the total dune ecosystem in the Province Lands, combined with the dune restoration and mitigation measures proposed, these would be considered only minor, long-term, adverse impacts to the dune ecosystem even when considered cumulatively with other projects.

Consequently, there would be no cumulative adverse impact to dune ecosystem resources or values as a result of the implementation of the combined preferred alternatives for the projects.

#### Considerations of Non-Preferred Alternatives for CIP Projects – Coastal Dune Ecosystems

Implementation of Non-Preferred alternatives for the following CIP projects have the potential for minor, long-term direct, adverse impacts to coastal dune ecosystems, their habitats, and their buffers. These include the service access roads to the AWOS and LES facilities, the auto parking area, and installation of a safety/security fence. In addition, potential additional long-term adverse impacts to these resources could also occur indirectly from the implementation of the horizontal expansion alternative for the terminal project, as the horizontal concept would result in a loss of existing parking, where the parking expansion would have adverse impacts to coastal dunes. A minor reduction of 0.06 acres of coastal dune ecosystem impacts would occur with the implementation of the alternative access path to the LES (LES Concept 6), as the alternative to bring the roadway off of the existing CCNS bike trail would not require paving. However, implementation of auto parking Concept 1 would result in 0.23 acres of additional impacts to this resource.

Direct and indirect impacts to coastal dune ecosystems at the Airport would increase substantially with the increased length of fencing (24,200 LF for Concept 1 and 15,400 LF for Concept 4). In addition, the proposed alternative fence Concepts 1 and 4 would fully enclose a greater amount of habitat (317 acres and 200 acres, respectively), resulting in minor to moderate, direct, and indirect long-term adverse impacts to local wildlife populations. Coastal dune impacts associated with these non-preferred CIP projects would be mitigated in part through the conversion of existing impervious surfaces to coastal dune habitat, and implementation of habitat management to control invasive species, but would result in far greater net loss of coastal dune habitat as compared to the Preferred Alternatives. These impacts, combined with the minor, long-term direct adverse impacts of up to 2.63 acres and minor short-term direct adverse impacts of up to 3.68 acres of dune ecosystem habitat associated with the preferred alternatives for the bike trail renovations, and the minor impacts to coastal dune and upland ecosystem habitats associated with the installation of the wind turbine at the Herring Cove facilities (3.96 acres combined), would result in additional cumulative long-term, direct and indirect adverse impacts to dune ecosystem impacts, considering and including mitigation efforts to restore dune and upland ecosystems. Considered in relation to the total dune ecosystem in the Province Lands, combined with the dune restoration and mitigation measures proposed, these would be considered only minor, long-term, adverse impacts to the dune ecosystem even when considered cumulatively with other projects.

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**Cumulative Impact to State-Listed Rare Species (including habitat Coastal Dunes and Wildlife Habitat)**

No Action

No impacts would occur to state-listed rare species or their habitat if the No Action alternatives for the CIP projects were implemented. Other projects in the Province Lands have not identified impacts to state-listed rare species, therefore the No Action alternatives would result in no cumulative adverse impacts to rare species.

Preferred Alternatives

Total short-term and long-term direct adverse impacts to the non-breeding habitat (coastal dune ecosystems) for the CIP projects and other projects in the vicinity of the Airport are approximately 5.38 acres. Implementation of the combined CIP projects at the Airport has the potential to affect the habitats of three of the four state-listed rare species documented at the Airport: Eastern Spadefoot Toad, Eastern Box Turtle, and Vesper Sparrow (with no adverse impacts anticipated to the fourth species, Broom Crowberry). Minor short-term, direct, adverse impacts of up to 1.3 acres of potential breeding habitat for the Eastern Spadefoot Toad will occur with the taxiway improvement projects and the AWOS access road (direct fill). Negligible, short-term, direct adverse impacts and negligible, long-term indirect adverse impacts would occur within prime breeding habitat for Eastern Spadefoot Toad for the installation and maintenance of portions of the proposed safety/security fence (see Figure 4.7), and further minimized by field adjustments prior to construction. Minor, short-term and long-term, direct adverse impacts to the non-breeding habitat for the Eastern Spadefoot Toad would result from the preferred alternatives. Adverse impacts will be partially off-set by habitat restoration (including wetland restoration), location-specific fence alignment siting, design measures (wildlife tunnels), and construction and timing measures designed to protect this habitat.

Implementation of the preferred alternatives for the combined CIP projects will result in minor short-term, direct adverse impacts of up to 3.04 acres within wetlands, grasslands, and coastal dune ecosystems which serve as potential breeding and non-breeding habitat for the Eastern Box Turtle. With the implementation of mitigation measures, the resulting impacts would be considered short-term and negligible, off-set by habitat restoration, design measures for the fence (wildlife tunnels), and construction and timing measures designed to protect this habitat.

Moderate, short-term, direct adverse impacts will occur within managed grasslands (Cultural Grasslands) which serve as habitat for Vesper Sparrow with the implementation of the taxiway realignment and relocation projects, as well as the installation of the taxiway lighting and expansion of the turf apron. A net loss of approximately 0.54 acres of grassland will result in moderate, long-term, direct, adverse impacts to this species' habitat. Moderate, long-term, direct, and beneficial impacts to this species will occur through habitat maintenance of the grasslands and a species-sensitive mowing schedule.

When considered in relation to the total wetland and dune ecosystem in the Province Lands, combined with the wetland, dune, and grassland mitigation measures proposed, impacts to State-listed rare species habitat would be considered negligible, long-term, adverse impacts even when considered cumulatively with other projects.

Other projects in the Province Lands have not identified impacts to state-listed rare species. Consequently, there would be no cumulative adverse impact to rare species habitat resources or values as a result of the implementation of the combined preferred alternatives for the projects.

#### Considerations of Non-Preferred Alternatives for CIP Projects – State Listed Rare Species

Implementation of Non-Preferred alternatives for the following CIP projects have the potential for minor, long-term direct, adverse impacts to state-listed rare species and their habitats. These include the service access roads to the LES facility (Eastern Box Turtle habitat and non-breeding habitat for Eastern Spadefoot Toad), the auto parking area (Eastern Box Turtle habitat and both breeding and non-breeding Eastern Spadefoot Toad habitats), the horizontal concept for the Terminal building (breeding habitat for Eastern Spadefoot Toad), the full dimension of the terminal apron, and alternative Concepts 1 and 4 for the installation of a safety/security fence (Eastern Box Turtle habitat and both breeding and non-breeding Eastern Spadefoot Toad habitats). A minor reduction of 0.06 acres of coastal dune ecosystem impacts that would occur with the implementation of the alternative access path to the LES (LES Concept 6) is the only impact that would be reduced with the implementation of the non-preferred CIP alternatives. Implementation of auto parking Concept 1 would result in 0.23 acres of additional impacts to Eastern Box Turtle habitat and non-breeding Eastern Spadefoot habitat, with an additional 0.11 acres of potential breeding habitat for the Eastern Spadefoot.

Direct and indirect impacts to rare species habitat at the Airport would increase substantially with the increased length of fencing, the subsequent impacts associated with creating and maintaining a perimeter roadway (Concept 1), and long-term maintenance (adverse impacts) by potentially up to an additional 1.13 to 1.56 acres of freshwater wetlands (Concept 4 and Concept 1, respectively), and up to an additional 4.8 acres of long-term adverse coastal dune habitat along the fence. If implemented, these non-preferred CIP projects have the potential to substantially increase adverse impacts to state-listed rare species within the Province Lands. These impacts would be only partially mitigated through the conversion of existing impervious surfaces to wetland and coastal dune habitat (upon successful implementation), as well as implementation of habitat management to control invasive species.

#### **Cumulative Impact to Public Use and Access and Safety (transportation and Section 4(f) properties and visual impacts)**

##### No Action

The No Action alternative would result in continued minor to moderate short-term and long-term, adverse impacts to the safety and welfare of visitor use, safety, and experience for those visitors patronizing the Airport as a means of accessing the Park. Visitors will also continue to experience minor, long-term, direct, and indirect adverse impacts associated with the inconveniences of the crowded parking lot and terminal space for Park visitors who are Airport patrons. However, there would be no impacts to the visual experience of Park visitors.

When considered in combination with other projects in the Province Lands, existing impacts, due to unsafe and inconvenient conditions at the Airport, would continue to contribute to the minor to moderate short-term direct and indirect adverse impacts on Park visitors and Park staff with respect to their safety and park experience. In addition, the No Action alternative would continue to contribute to the potential moderate to major long-term adverse direct and indirect adverse impacts with respect to the public use of facilities (both safety and Park experience) within the Province Lands.

##### Preferred Alternatives

Proposed CIP projects designed to improve safety standards at the Provincetown Municipal Airport will result in minor to moderate, long-term, direct, and beneficial impacts to visitor use, safety, and experience for those visitors patronizing the Airport as a means of accessing the Park. Visitors may also experience minor, long-

term, direct, and beneficial impacts from the capacity-related CIP projects, which may alleviate certain inconveniences of crowded parking lot and terminal space for Park visitors who are Airport patrons. Minor, long-term, direct adverse impacts to visual aspects of the Park may be experienced by visitors utilizing the bike trail system near the Airport or those visiting the lookout tower at the Province Lands Visitor Center, where implementation of the preferred alternatives for the proposed parking lot and terminal expansion projects will result in minor changes to the views. Visual impacts will be off-set by native landscape screening plantings proposed around the parking lot and design modifications to the terminal to ensure that it meets the local design and character of other buildings at the Park and minimizes impacts to the visual environment at the Park.

Consequently, there would be no cumulative adverse impact to Public Use and Access and Safety as a result of the implementation of the combined preferred alternatives for the projects.

Considerations of Non-Preferred Alternatives for CIP Projects – Public Use and Access and Safety

Implementation of non-preferred alternatives considered for the proposed CIP projects, specifically the service access roads for the AWOS and the LES facilities and installation of the perimeter safety/security fence, and expansion to the terminal, auto parking area, and the turf apron, would also improve safety standards, and contribute to the minor to moderate, long-term, direct, and beneficial impacts to visitor use and experience for those visitors to the Province Lands, although the non-preferred alternative to the proposed LES would not be considered as safe for Airport operations. The horizontal expansion of the Airport terminal would result in negligible, long-term, direct, adverse impacts to the visual environment at the Airport.

<b>Table 5-2 Changes in Impervious Surface</b>		
<b>Projects with Pavement Elements</b>	<b>Net Change</b>	<b>Stormwater Management</b>
1. Westerly TW System Improvements	-1,294	Infiltration Grass filter
2. Relocate East End TW	+2,814	Infiltration Grass filter
3. Reconstruct Terminal Apron	0	Closed system with filters; Sediment outlet trap
4. Reconstruct Easterly End of Parallel TW	-44,226	Infiltration Grass filter
5. Construct Electric Vault	+381	Infiltration Grass filter
6. Improve Access Road to MALSF	+1,000	Infiltration Grass filter
7. Construct AWOS and LES Service Access Roads	+5,500	Infiltration Grass filter
8a. Expand Auto Parking (Phase 1)	+2,830	Infiltration Grass filter
8b. Expand Auto Parking (Phase 2)	+5,070	Bioretention
<b>Total Net Change in Pavement</b>	<b>-27,925 SF</b>	
<i>Source: consultant calculations</i>		

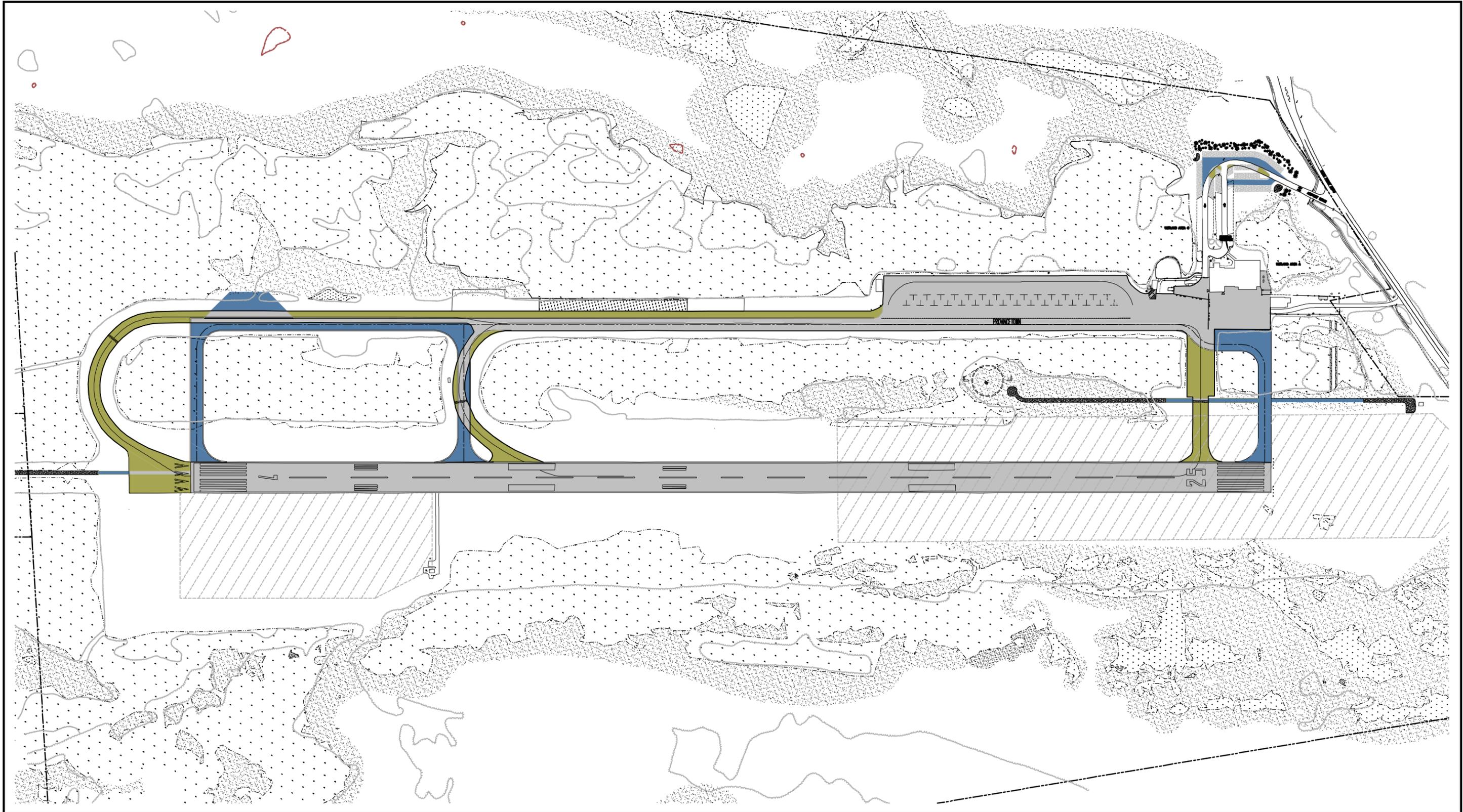
**Table 5-3 Summary Of Impacts And Proposed Mitigation Measures For Preferred Alternatives For CIP Projects**

PROPOSED ALTERATION					PROPOSED MITIGATION		
Project	Type of Resource Area	Area of Proposed Alteration (SF)	Species Habitat	Description of Proposed Alteration	Description of Proposed Mitigation	Area of Proposed Mitigation (SF)	
(1) Westerly TW System Improvements	IVW	28,655 (Wetland I)	EBT, ES(B)	Fill	On-site wetland restoration	Areas A & C	
	Coastal Dune	6,460	EBT, ES(N)		On-site dune creation	Areas A & C	
	Cultural Grassland	No Net Loss	EBT, VS		On-site cultural grassland creation/restoration	No Net Loss	
(2) Relocate East End TW	IVW	28,300 (Wetland B)	EBT, ES(B)	Fill	On-site wetland restoration	Areas A & C	
	Coastal Dune	5,000	EBT, ES(N)		On-site dune creation	Areas A & C	
	Cultural Grassland	No Net Loss	EBT, VS		On-site cultural grassland creation/restoration	No Net Loss	
(3) Reconstruct Terminal Apron	--	--		--	--	--	
(4) Reconstruct Easterly End of Partial Parallel TW	--	--		--	--	--	
(5) Install TW Lighting and Construct Electric Vault	Cultural Grassland	No Net Loss	EBT, VS	--	On-site cultural grassland restoration	--	
(6) Repair Sightseeing Shack	--	--		--	--	--	
(7) Improve Access Road to Approach Lights (MALSF)	BVW	960 (Wetland C/J/FK)		Fill	On-site wetland restoration	Area B	
(8) Construct Service Access Roads LES Road	Coastal Dune	7,610	EBT, ES(N)	Fill	On-site dune creation	Areas A & C	
(8) Construct Service Access Roads AWOS Road	IVW	290 (Wetland H)	EBT	Fill	On-site wetland restoration	Areas A & C	
	Coastal Dune	10,560	EBT, ES(N)	Fill	On-site dune creation	Areas A & C	
(9) Install Perimeter Fence (REVISED alternative) "Concept 6"	BVW	1,152 (direct) <sup>1</sup> 8,972 (indirect/secondary) (Wetland C/J/FK)	(EBT)	Direct Impact consists of Fill for Fence Post Installation and maintenance. Indirect/Secondary Impact consists of Vegetation Maintenance <sup>1</sup> .	On-site wetland restoration	Area B	
	IVW	25,648 (direct) 3,952 (indirect/secondary)	EBT, ES(B)		On-site wetland restoration	Areas A & C	
	Coastal Dune	8,060 (direct) 24,028 (indirect/secondary)	EBT, ES(N)		Fill	On-site wetland enhancement	Wetland H & I
(10a) Expand Auto Parking (Phase 1)	Coastal Dune	7,315	EBT, ES(N)	Fill	On-site dune creation	Areas A & C	
(10b) Auto Parking (Phase 2) "Concept 4"	Coastal Dune	5,707	EBT, ES(N)	Fill			
(11) Expand Terminal Building (Vertical Expansion)	--	--		--	--	--	
(12) Expand Turf Apron	Cultural Grassland	No Net Loss	EBT, VS	--	On-site cultural grassland restoration		
<b>TOTAL DIRECT ALTERATION:</b> (SF)	IVW	82,893		<b>TOTAL ON-SITE MITIGATION:</b> (SF)	On-site IVW restoration	<b>Net Change in Area (SF)</b> 78,000	<b>-4,893 (~1:1)</b>
					On-site wetland enhancement	616,350	<b>(~7.4:1)</b>
	BVW	2,112			On-site BVW restoration	5,000	<b>+2,888 (~2.4:1)</b>
	Coastal Dune	50,712 (includes Parking Phases 1 & 2)			On-site Dune creation	27,500	<b>-23,212 (~0.5:1)</b>
							<b>-7,212 (~0.9:1)</b>
Cultural Grassland	No Net Loss		On-site Cultural Grassland restoration No Net Loss	On-site cultural grassland creation/restoration	<b>No Net Loss</b>		

<sup>1</sup> Direct fence impacts have been calculated based upon direct fill for the fence posts and conversion of forested and dense shrub areas to low growing communities as a result of vegetation management. Indirect/secondary impacts are based upon areas where either 1) vegetation is already open and/or low-growing and will not require vegetation management, or else 2) consists of a monoculture of *Phragmites*.

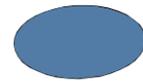
EBT = Eastern Box Turtle Habitat  
 ES(B) = Eastern Spadefoot Toad Breeding Habitat  
 ES(N) = Eastern Spadefoot Toad Non-Breeding Habitat  
 VS = Vesper Sparrow Habitat



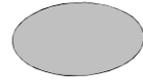


Prepared By:

**JACOBS**



NEW IMPERVIOUS  
PAVEMENT AREA



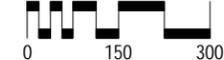
EXISTING IMPERVIOUS  
REMAINING



IMPERVIOUS AREA  
TO BE REMOVED



Approx. Scale: 1"=300'



Provincetown Municipal Airport  
Capital Improvements Plan

AIRPORT PAVEMENT PLAN

Figure 5.4



## SECTION 6.0 PROJECT DESCRIPTION (Preferred Alternative)

### 6.1 CIP Project Construction and Permitting Schedule

This section describes the proposed project elements, the unavoidable impacts, and proposed mitigation. Mitigation is described in more detail in Section 7. The impacts associated with each project are summarized in Table 5-3 in Section 5.

The Provincetown Municipal Airport Commission proposes a Capital Improvements Plan (CIP) of safety and facility improvements for the Airport. Implementation of the CIP will fulfill the mission of the Airport to operate a safe, secure, and reliable non-hub primary service airport receiving scheduled airline passenger service.

#### Construction Phasing

The CIP projects would be constructed over the period of the next ten years. Table 6-1 provides the construction phasing for the projects.

CIP Project Element	Construction Year
1. Reconstruct Terminal Apron ( <i>Completed</i> )	Fall 2008
2. Westerly Taxiway System Improvements	2013
3. Reconstruct Easterly End of Partial Parallel TW	
4. Relocate East End TW	
5. Install TW Lighting and Construct Electric Vault	
6. Sightseeing Shack Improvements	2017
7. Improve Access Road to Approach Lights (MALSF)	
8. Construct Service Access Roads to AWOS and LES	2017
9. Install Perimeter Safety/Security Fence	2015
10. Expand Auto Parking	2014
11. Expand Terminal Building	2016
12. Expand Turf Apron	2015

*Source: Airport Management Review and Consultant Estimations*

#### Environmental Permitting Phasing

Permitting for the projects would be structured to allow individual projects, or groups of projects, to go forward as funding is available as shown in Table 6-2. All of the CIP project elements have been discussed in this document to provide the environmental resource agencies an understanding of the overall potential for impacts and to avoid the segmentation of project review.

Section 8 discusses all the permits and environmental reviews that pertain to the projects. Once the NEPA/MEPA process is completed and the DRI process has been initiated, other permit applications will be submitted as described and summarized in Table 6-2.

<b>Table 6-2 Permitting Requirements &amp; Phasing</b>	
<b>CIP Project Element</b>	<b>Expected Permitting Structure</b>
Reconstruct Terminal Apron ( <i>Completed</i> )	Order of Conditions ( <i>Issued</i> )
Westerly Taxiway System Improvements Reconstruct Easterly End of Partial Parallel TW Relocate East End TW Install TW Lighting and Construct Electric Vault Sightseeing Shack Improvements	Order of Conditions; Individual WQC (or part of Variance); Section 404 ACOE permit; No Take under MESA Conditions; DRI Construction Phase 1
Improve Access Road to Approach Lights (MALSF)	Order of Conditions, Individual WQC (or part of Variance); Section 404 ACOE permit; No Take with MESA Conditions; DRI Construction Phase 3
Construct Service Access Roads to AWOS and LES	Order of Conditions; WQC Variance; Section 404 ACOE permit; No Take with MESA Conditions; DRI Construction Phase 3
Install Perimeter Fence	WPA Variance/ Provincetown Conservation Commission NOI; WQC Variance; Section 404 ACOE permit; No Take with MESA Conditions; DRI Construction Phase 2
Expand Auto Parking	Order of Conditions; No Take with Conditions; DRI Construction Phase 2
Expand Terminal Building	Request for Determination of Applicability (RDA); DRI Construction Phase 3
Expand Turf Apron	Order of Conditions; No Take with Conditions; DRI Construction Phase 2
<i>Source: Consultant Evaluation</i>	

**Footprint Reconstruction Projects Review and Permitting Process**

The Terminal Apron Reconstruction was issued an Order of Conditions by the Provincetown Conservation Commission (PCC). The project was also reviewed by the NHESP as part of the Notice of Intent process. Since the project did not involve wetland alteration, a WQC review was not required. The Terminal Apron project was completed in 2008.

Although the reconstruction of the easterly end of the parallel taxiway has been allowed by MEPA to go forward ahead of the completion of the MEPA process, the project will be completed as part of the westerly taxiway system improvements. As requested by NHESP, these two projects will be included in the submission for MESA review to avoid segmentation.

**Wetlands Protection Act and Provincetown Wetlands Protection Bylaw Permitting Process**

A Notice of Intent will be submitted to the PCC for all project elements that will alter wetland resources or occur within the Buffer Zone to wetland resources. The Commission will be asked to issue an Order of Conditions for the elements that meet the performance standards of the WPA and local bylaw regulations.

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The fence project and the improvements to the MALSF access road combined would directly (permanently) alter a total of 2,460 SF of Bordering Vegetated Wetland (BVW).

### **Section 401 Clean Water Act Water Quality Certification Permitting Process**

Wetland resources within the entire CCNS are classified as Outstanding Resource Waters (ORWs). Any alteration to wetlands requires, at a minimum, an Individual Water Quality Certification (WQC). Pursuant to 314 CMR 9.06(3)(c), some of the projects would be classified as “Maintenance, repair, replacement, or reconstruction, but not substantial enlargement of lawfully located structures or facilities including buildings, roads, railways, utilities and coastal engineering structures.”

### **Section 404 Clean Water Act Corps of Engineers Permitting Process**

An application for an individual Section 404 permit will be submitted. Permit review by the Corps of Engineers will be concurrent with the WQC (Section 401 of the Clean Water Act) review to minimize duplication of submissions.

The ACOE requires that the applicant provide compensatory mitigation through an aquatic resource restoration, establishment, enhancement and/or preservation activity. This compensatory mitigation may be provided at or adjacent the impact site (i.e., on-site mitigation) or at another location, usually within the same watershed as the permitted impact (i.e., off-site mitigation). The Airport will implement a program of on-site restoration, replication, and enhancement at the Airport and will retain responsibility for the implementation, monitoring, and success of the mitigation project.

### **Massachusetts Endangered Species Act**

The Airport is mapped by the Massachusetts Natural Heritage and Endangered Species Program (NHESP) as Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife for four State-listed rare species: Eastern Box Turtle, Eastern Spadefoot Toad, Vesper Sparrow, and Broom Crowberry.

“Take,” as defined by NHESP in reference to animals, means to “harass, harm, pursue, hunt, shoot, hound, kill, trap, capture, collect, process, disrupt the nesting, breeding, feeding or migratory activity or attempt to engage in any such conduct, or to assist such conduct, and in reference to plants, means to collect, pick, kill, transplant, cut or process or attempt to engage or to assist in any such conduct. Disruption of nesting, breeding, feeding or migratory activity may result from, but is not limited to, the modification, degradation or destruction of Habitat” (321 CMR 10.02).

As part of the review of the NPC/Draft EA/EIR, NHESP indicated that the proposed improvement projects might result in a “Take” of the Eastern Spadefoot Toad, and the Eastern Box Turtle if construction avoidance methods were not developed. The NHESP also indicated that, with certain construction conditions, a “Take” may be avoided for the Vesper Sparrow and the Eastern Spadefoot Toad. NHESP emphasized that the Airport should try to avoid a “Take,” if possible.

Since the NPC/Draft EIR/EA, the Project Team has met with NHESP twice (see minutes provided in Section 10.1) to discuss ways to minimize impacts to all listed species. Additional design alternatives,

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construction phase measures, and operational mitigation measures have been developed to avoid a “Take” of any listed species at the Airport as a result of the CIP projects. This FEIR/EA reflects those measures. A MESA Project Review Checklist will be submitted to NHESP for their review and determination.

### **CCC DRI Process**

A Public Hearing was held on June 27, 2007, which officially started the CCC DRI process, to gather information for a joint DRI/MEPA review. Several pre-application meetings have been held with Cape Cod Commission (CCC) staff to discuss the appropriate regulatory review process with the Commission. Minutes of these meetings are provided in Appendix 7.

While the Airport is able to comply with the majority of the Minimum Performance Standards (MPSs) found in the CCC Regional Policy Plan (RPP), effective April 29, 2000, the requirement to meet current FAA, MassDOT Aeronautics, and TSA safety and security design standards for a primary commercial service airport will not allow the Airport to comply with all of the MPSs. It is not possible to meet all MPSs of the RPP because the Airport infrastructure projects would be non-compliant with federal and state safety and security standards for primary commercial service airports. The inability to comply with the MPSs is directly related to the environmental setting of the Airport. A summary table in Appendix 7 lists the MPSs and the status of the CIP project compliance.

The Airport functions as a public facility servicing the local and regional community. As such, the Airport will submit a Hardship Exemption/Project of Community Benefit request. This FEIR/EA includes information required by the CCC for a Development of Regional Impact (DRI) Application and is a supplement to the DRI application package. After the FEIR/EA is issued a MEPA Certificate by the Secretary, the CCC will hold Public Hearings on the DRI application.

All the proposed projects will be included in the DRI application so that total net impacts/improvements can be assessed together. Since the funding and final design process for airport projects is somewhat unique, the CCC will be asked to issue a decision that will allow construction to be phased over a period of time. Various CIP projects would then be constructed over a number of years, as funding is available. The application will be structured so that the CCC can allow projects to go forward with phased construction. A suggested permit structure that has 3 Design/Construction Phases is provided below:

- Construction Phase 1 would include: Westerly Taxiway System Improvements; Reconstruction of the Easterly End of the Parallel TW; the Relocation of the East End TW; Installation of the TW Lighting and Construction of the Electric Vault and the Sightseeing Shack Improvements; Improvements to the Access Road to Approach Lights (MALSF); and construction of the Service Access Roads to AWOS and LES.
- Construction Phase 2 would include: Installation of the Safety/Security Fence; Expansion of the Auto Parking; and Expansion of the Turf Apron.
- Construction Phase 3 would include: Terminal Building Expansion.

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## Description of Proposed CIP Projects

The projects are described below, which does not necessarily reflect the order in which the projects would be constructed:

1. Westerly Taxiway System Improvements
2. Relocate East End TW
3. Reconstruct Terminal Apron
4. Reconstruct Easterly End of Partial Parallel TW
5. Install TW Lighting and Construct Electric Vault
6. Sightseeing Shack Improvements
7. Improve Access Road to Approach Lights (MALSF)
8. Construct Service Access Roads to AWOS and LES
9. Install Perimeter Fence
10. Expand Auto Parking
11. Expand Terminal Building
12. Expand Turf Apron

### 6.2 Westerly Taxiway System Improvements

The project to improve the westerly taxiway system would: 1) relocate the West End taxiway, 2) realign and reconstruct the westerly end of the parallel taxiway with a run-up pad, 3) and realign the Mid Connector taxiway as shown on Figure 6.1. Although not an official airport designation, the parallel taxiway is referred to in this document as having an easterly end and a westerly end to discuss environmental impacts.

Approximately 28,655 SF of isolated wetlands would be altered. Approximately 6,460 SF of coastal dune will be altered for the run-up pad. Removal of the pavement for the existing West End TW and the Mid Connector TW provides an opportunity to restore approximately 64,000 SF of isolated wetland, as shown on Figure 7.1 and 7.3 in Section 7 and referred to as Restoration Area A. Wetland restoration in this area will serve as mitigation for several CIP projects.

There will be a net decrease in impervious area as a result of the construction of a uniform 40-foot wide parallel TW. Pavement will be removed between the West End TW and the paved GA Apron. This net decrease will be used to offset the increase in impervious area as a result of other project elements. A table with an overall plan of the Airport pavement is provided in Section 5 to explain the net changes in pavement. Currently, stormwater runoff from the taxiways sheet flows over the grass safety areas before infiltrating into the ground. There is no sanding or deicing of the taxiways so that the stormwater flows contain minimal total suspended solids. There would be minimal potential for oil or other contaminants in the stormwater. The grass safety areas will be reestablished adjacent to the realigned TWs.

### 6.3 Relocate East End TW

The relocation of the East End connector TW would shift the TW approximately 200 feet to the east so that it connects at the end of Runway 25, as shown on Figure 6.2. This will eliminate the need to back taxi on the runway, which currently conflicts with flight operations.

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Approximately 28,300 SF of isolated wetlands within Wetland B would be altered. Approximately 5,000 SF of coastal dune will be altered. Removal of the pavement for the existing East End TW provides an opportunity to restore up to 14,000 SF of isolated wetland, as shown on Figure 7.2 and 7.4 in Section 7 and referred to as Restoration Area B. The remaining wetland mitigation needed for this project would be provided in Restoration Area A.

Currently, stormwater runoff from the taxiway sheet flows over the grass safety areas before infiltrating into the ground. There is no sanding or deicing operations on the East End taxiway so that the stormwater flows contain minimal total suspended solids. There would be minimal potential for oil or other contaminants in the stormwater. The grass safety areas will be reestablished adjacent to the realigned TWs.

#### **6.4 Reconstruct Terminal Apron**

The Certificate issued on the NPC/DEIR by the Secretary of Energy and Environmental Affairs allowed the Airport to proceed with the reconstruction of the Terminal Apron within the same footprint prior to the completion of the FEIR/EA. The Terminal Apron pavement is approximately 20,000 SF. The location of the Terminal Apron can be seen on Figure 1-2.

A Notice of Intent (NOI) was submitted to the Provincetown Conservation Commission. The project was issued an Order of Conditions (DEP File No. 058-0440) and construction was completed in the fall of 2008.

Coordination was carried out with staff at NHESP for this project. Although NHESP had the opportunity to review and comment as part of the NOI process under the joint WPA/MESA review, the project will be included in the overall MESA Project Review submission for the Airport's CIP projects to avoid segmentation.

The existing closed drainage system, described in Section 4, has been maintained. This system collects drainage from the area of the terminal which is used for the infrequent and limited deicing operations, and mobile fueling. The system has been fitted with a filtration system to intercept petroleum-based pollutants from the runoff before discharge. To improve existing conditions, as required by the stormwater regulations, an existing outlet was retrofitted with an outlet sediment trap. A draft Spill Prevention Control and Countermeasure Plan (SPCCP) has been developed for the Airport and is included in the Appendices.

#### **6.5 Reconstruct Easterly End of Parallel TW**

Although not an official airport designation, the parallel TW is referred to as having an easterly section and westerly section in this document to reflect the construction phasing of the CIP projects. The width of the TW is currently 60 feet. As part of the reconstruction and the westerly TW improvements, the width would be reduced to 40 feet. The TW can be seen on Figures 1-2, 6.1, and 6.13.

## **6.6 Install Taxiway Edge Lights and Construct Electric Vault**

The taxiway edge lights and signs would be constructed 10 feet off the edge of pavement for all of the taxiways as shown in Figures 6.3 and 6.4. Lighted TW signs would be installed to identify the locations of each TW. Lighted signs are installed when edge lights are installed. The electric cable for the lights and TW signage would be installed with the cable plowing method. The plowed area would be restored. The new electric vault would be a 10 by 20 foot structure, approximately 10 feet high and similar in appearance to the existing utility buildings for the localizer and the glide slope equipment. An approximately four foot wide gravel area would be constructed around the vault to meet access and spacing requirements included in the electric code for high voltage structures. There will be a paved walkway to the service door and parking for two vehicles. The vault will be located adjacent to the Sightseeing Shack and will not impact wetlands. This area was field checked during preparation of the Final EIR/EA to confirm that it will not impact wetlands. There would be a temporary minor impact to Cultural Grasslands for the installation of the electric cable. The area will be restored.

## **6.7 Sightseeing Shack Improvements**

The Sightseeing Shack would be repaired as needed after the electrical equipment is removed as part of the TW edge lights project. The project would remain within the existing footprint for the building and surrounding access area. The location of the Sightseeing Shack can be found on Figure 1-2.

## **6.8 Improve Access Road to MALSF Approach Lights**

To provide for a vehicle turn-around area, the embankment for the existing 10 foot wide gravel service road would be widened at the westerly end. Figure 6.5 provides a plan view of the proposed improvements. The area would be 30 feet wide and 30 feet long to allow the required maintenance vans to turn around. In compliance with FAA requirements, the first 300 feet of the service road off the runway will be paved.

This project would alter approximately 960 SF of BVW in Wetland C/J/FK. Restoration for this project and the fence project is proposed in Restoration Area C, as shown on Figures 7.1 and 7.3 in Section 7.

There would be 3,000 SF of new impervious area to provide for the 10 foot wide, 300 foot long paved access from the end of Runway 7. The remaining length of road will be gravel.

## **6.9 Construct Service Access Roads to the Localizer Equipment Shelter and to the Weather Station**

The service access roads would provide vehicle access from the East End TW outside the active runway operating area. Figure 6.6 provides a plan view of this area. The access roads would be paved for a width of 10 feet with one-foot grass shoulders on each side and a turn-around area.

Construction of the Preferred Alternative (Alternative 2) for the access road to the Weather Station (AWOS) would impact 290 SF of Wetland H. Construction of the Preferred Alternative (Alternative 2) for the access road to the Localizer (LES) would not impact wetlands. The preferred alternatives are

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shown on Figure 6.6. Wetland mitigation for this access road project would be included in Wetland Restoration Areas A or B, as discussed in Section 7.1.

There would be 6,000 SF of new impervious area for the two roads. The net reduction in pavement at the Airport is discussed in Section 5. Runoff would sheet flow to the sides and over the grass shoulder before infiltrating into the soil, similar to the existing service access road to the glide slope antenna equipment shelter. It is unlikely that the runoff would contain any contaminants.

#### **6.10 Install Perimeter Safety/Security Fence**

A 9 foot high perimeter safety/security fence would be constructed along the preferred alignment (Concept 6) shown on Figures 6.7, 6.8 and 6.9. The proposed alignment for the safety/security fence includes a four foot wide maintained area on both sides of the fence. This area would be maintained with a brush hog but would not be graded or grubbed. The clear area would allow deer to run along the outside of the fence (rather than jump the fence onto the active airfield if alarmed) and would allow for inspection of the fence.

Gaps would be incorporated into the bottom of the fence at regular intervals to facilitate movement of turtles, toads and other small animals as shown in the detail in Figure 6.7. NHESP has provided initial guidance on the location and inspection of the proposed gaps in the fence to facilitate movement of small wildlife. The gaps would be located approximately every 100 feet and inspected at least once a year in the spring as part of the Airport's operational mitigation plan. Since the graded patrol road has been eliminated, NHESP will include in their determination required mitigation relative to access to, location of, and methods of maintaining the gaps.

Approximately 25,648 SF of isolated vegetated wetland (IVW), 1,152 SF of BVW, and 8,060 SF of coastal dune would be directly altered for construction of the fence. Approximately 3,952 SF of IVW, 8,972 SF of BVW, and 24,028 SF of coastal dune would be indirectly impacted for vegetation management.

#### **6.11 Expand Auto Parking**

Concept 4 would construct 28 additional spaces for Phase 1 as shown in Figure 6.10. After additional parking studies and subsequent review and approval by NPS and CCC, Phase 2 would construct 29 additional spaces if needed. Building the project in phases will address the immediate existing need for additional parking and the issue of cars parking along Airport Drive.

The aisles would be paved and parking spaces would be packed gravel. Infiltration swales will be constructed for Phase 1. A bioretention system would be constructed as part of Phase 2 to provide treatment of runoff in accordance with current WPA regulations.

Landscaping will use native plants similar to those listed in the NPS *Site and Building Design and Rehabilitation Handbook*, September 2005 developed for the Highlands Center at CCNS.

As an adjunct element to Phase 1, efforts to reduce demand by improving awareness of the shuttle system, encouraging the use of taxis, and working with NPS to explore the use of remote lots for long

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term parking may possibly reduce or delay the need to build the second phase. The phases would be permitted separately with the Provincetown Conservation Commission so Phase 1 could go forward, but with an understanding of the entire project.

## 6.12 Expand Terminal Building

The proposed expansion of the Terminal Building would add a second floor above the existing building. The building would be approximately 6-12 feet higher than the existing building. Conceptual views of the Preferred Alternative can be seen on Figures 6.11 and 6.12. Exterior building materials for the selected design would match the existing Terminal Building.

Modifications to the existing first floor include converting the existing conference room into a pilot briefing room, and adding a vertical circulation for access to the new second floor. The vertical circulation includes a new staircase adjacent to the rental car counter area, a new elevator between the two restrooms, and a modification of the women's restroom to accommodate the new elevator.

The new second floor would accommodate Airport staff offices and storage, a conference room, and a pre-security waiting area. The existing airport staff offices on the first floor would be used as airport support and storage space.

### Sustainable Design Considerations

Construction of the Terminal addition would provide opportunities for incorporating sustainable design alternatives into the project. Detailed evaluation of sustainable design measures would be considered to make the Terminal building as “green” as possible. Water conservation measures could include the use of low flow fixtures and faucets with sensors.

Water usage could be further reduced through the use of drought tolerant native landscape plant materials. It may be possible to capture and reuse roof runoff for landscape irrigation (i.e. rain barrels).

The size and location of the building may enable the use of renewable energy technologies. Solar and wind power would have to blend with the visual environment of the CCNS, however. Optimization of natural daylight, use of passive solar gain, and natural cooling will be considered in the design of the addition.

Energy efficient HVAC and lighting systems, appliances, and other equipment, and solar preheating of air would be considered. The existing heating system could be used to establish an energy use baseline from which the system(s) could be monitored for energy conservation measures. The existing HVAC system could be evaluated to determine whether a new, more energy efficient system is needed or if there are cost effective measures that could be taken to make the existing HVAC system more energy efficient. Existing lighting systems could be replaced with new more energy efficient lighting systems. New energy efficient lighting systems will be specified in new construction work. New appliance(s) and other equipment needs will be specified as energy efficient appliances (Energy Star compliant, etc.) where possible.

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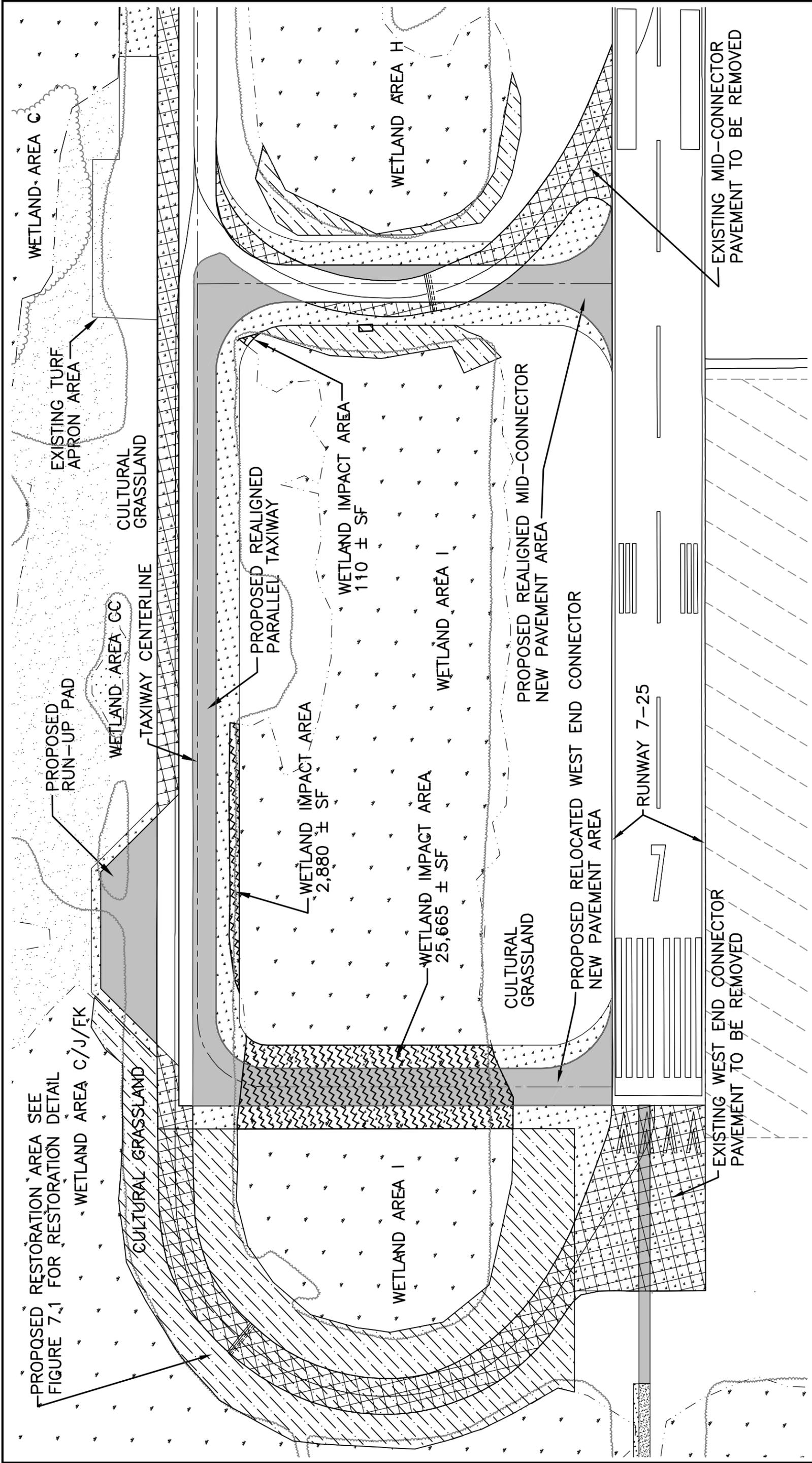
Building supplies and materials that are non-toxic, made from recycled materials, and made with low embodied energy could be specified.

The Airport Commission has worked closely with the Town's Recycling and Reusable Energy Committee. The Airport has multiple recycling receptacles, which have been successfully used to lower solid waste disposal. Since the Airport is at such a remote location and such a small generator of recyclables, it is not included on a commercial pick-up route. However, the Airport staff take the paper and plastic recyclables to the Town sorting facility themselves. This recycling is anticipated to continue to reduce solid waste at the facility.

### **6.13 Expand Turf Apron**

The construction of additional turf apron would be located between the two existing areas for turf apron parking adjacent to the parallel TW as shown on Figure 6.13.

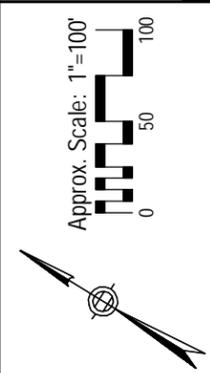
The dimension of the apron area has been reduced to avoid wetland impacts. The reduced dimension would accommodate light single-engine GA aircraft. Approximately 16,780 SF of existing managed grassland will be reconstructed to support the weight of the planes. The area will be maintained as managed grassland.



Prepared By:

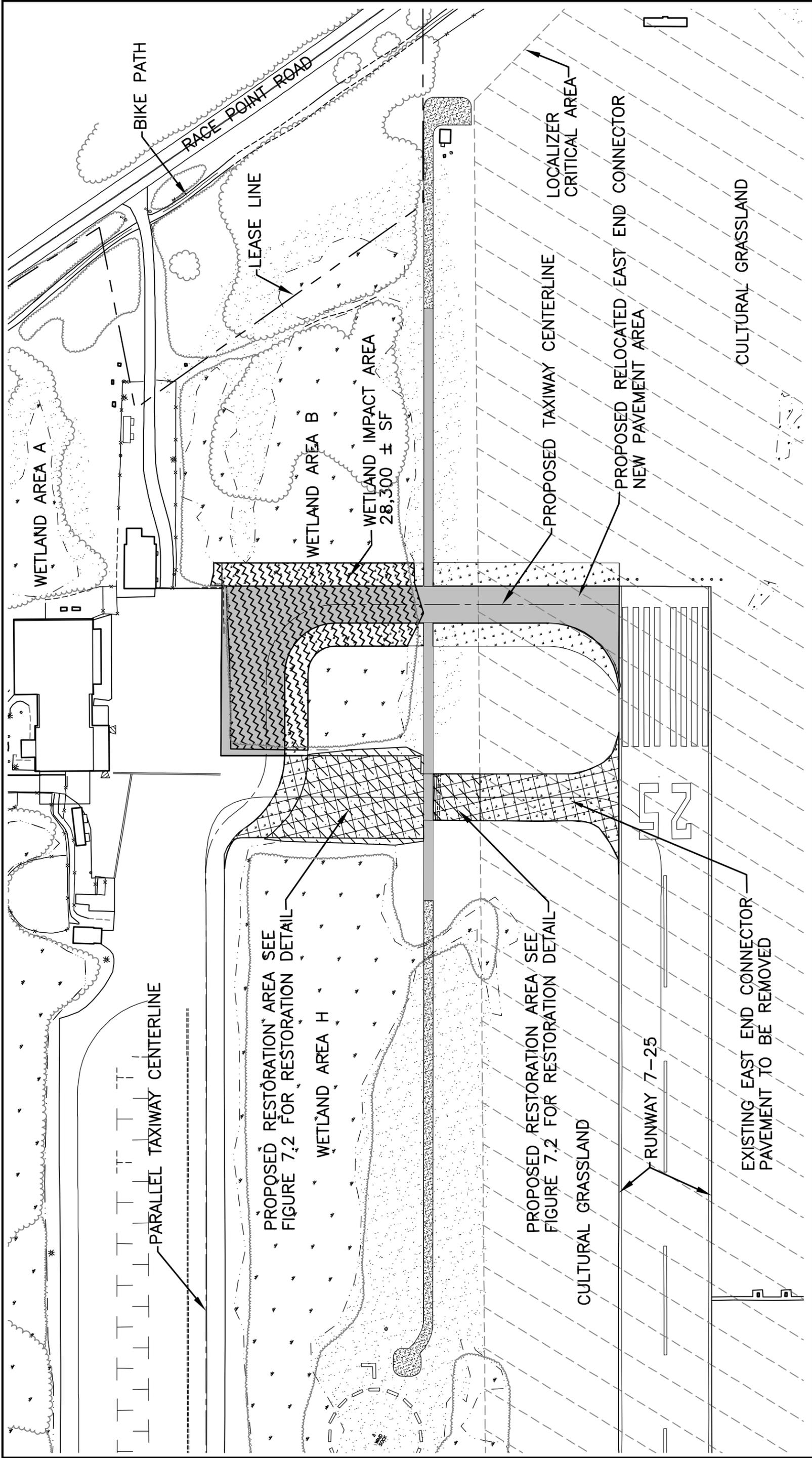


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-  EXISTING WETLAND AREA
-  EXISTING DUNE AREA
-  EXISTING TREELINE EXISTING BRUSHLINE
-  PROPOSED IMPERVIOUS PAVED AREA
-  PROPOSED CULTURAL GRASSLAND
-  PROPOSED PERVIOUS GRAVEL AREA
-  PROPOSED WETLAND IMPACT AREA
-  PROPOSED RESTORATION AREA



Provincetown Municipal Airport  
 Capital Improvements Plan  
**WESTERLY TAXIWAY SYSTEM IMPROVEMENTS**  
 Figure 6.1



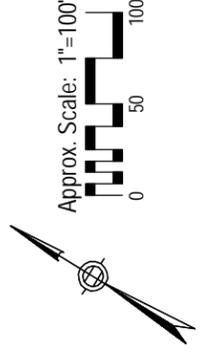


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- 
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EXISTING WETLAND AREA
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PROPOSED IMPERVIOUS PAVED AREA
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PROPOSED PERVIOUS GRAVEL AREA
- 
PROPOSED RESTORATION AREA
- 
PROPOSED WETLAND IMPACT AREA
- 
PROPOSED CULTURAL GRASSLAND

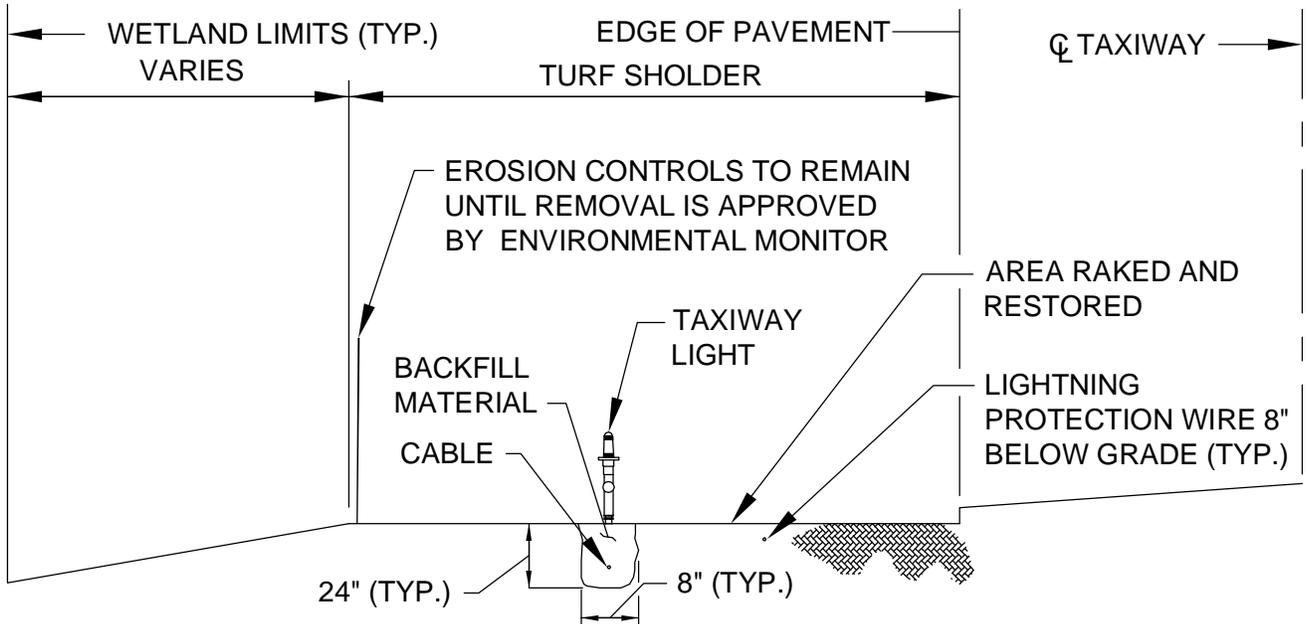
Provincetown Municipal Airport  
Capital Improvements Plan



EAST END TAXIWAY IMPROVEMENTS

Figure 6.2





**RESTORED AREA DETAIL**  
NOT TO SCALE

Prepared By:

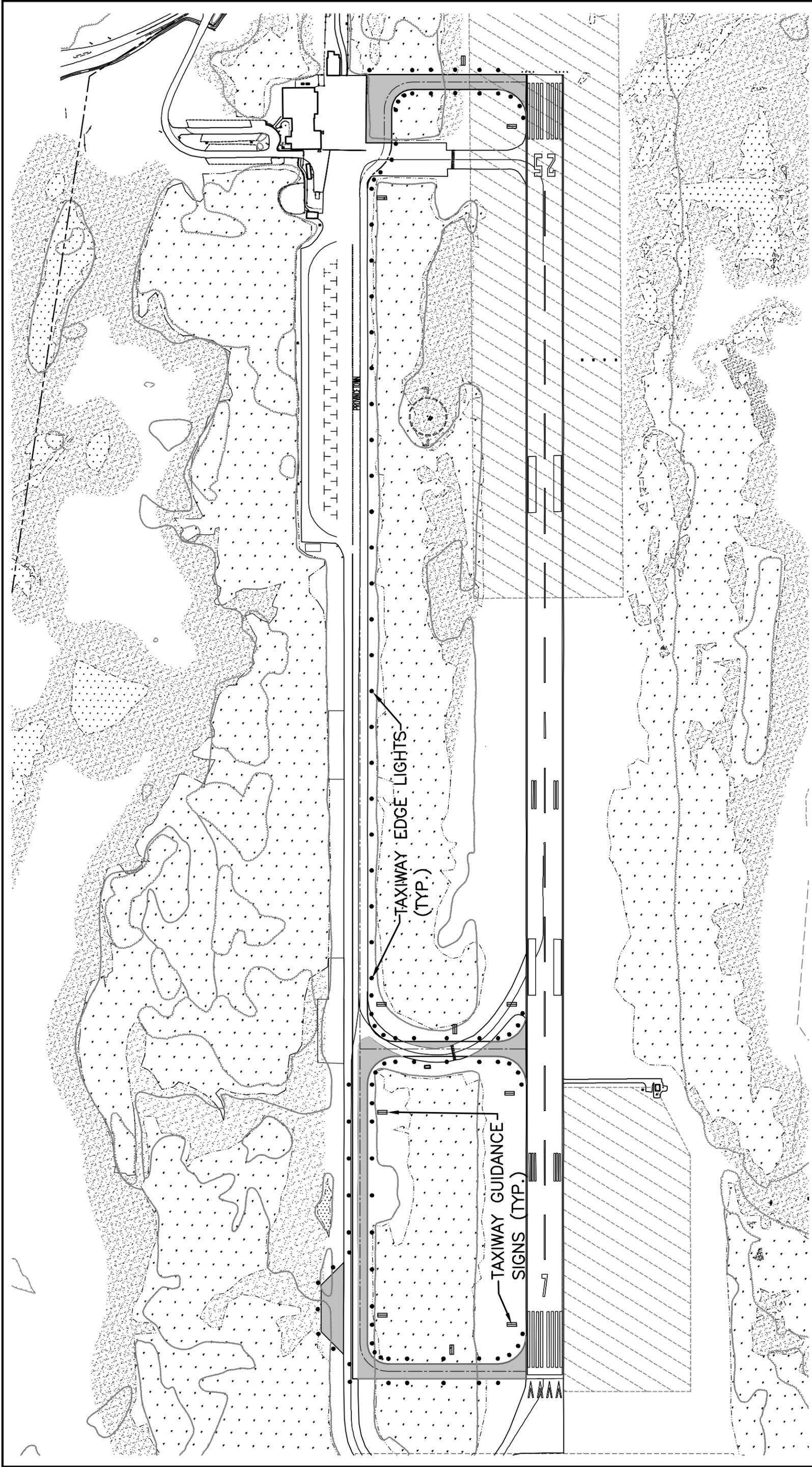


Provincetown Municipal Airport  
Capital Improvements Plan

TAXIWAY EDGE LIGHTS CROSS SECTION

Figure 6.3





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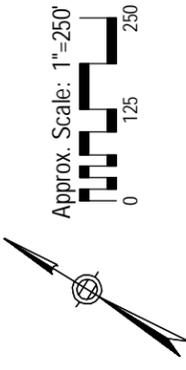
**JACOBS**

- 
EXISTING DUNE AREA
- 
EXISTING WETLAND AREA
- 
PROPOSED IMPERVIOUS PAVED AREA
- 
EXISTING FREELINE  
EXISTING BRUSHLINE
- 
PROPOSED PERVIOUS GRAVEL AREA
- 
PROPOSED TAXIWAY EDGE LIGHT
- 
PROPOSED TAXIWAY GUIDANCE SIGN

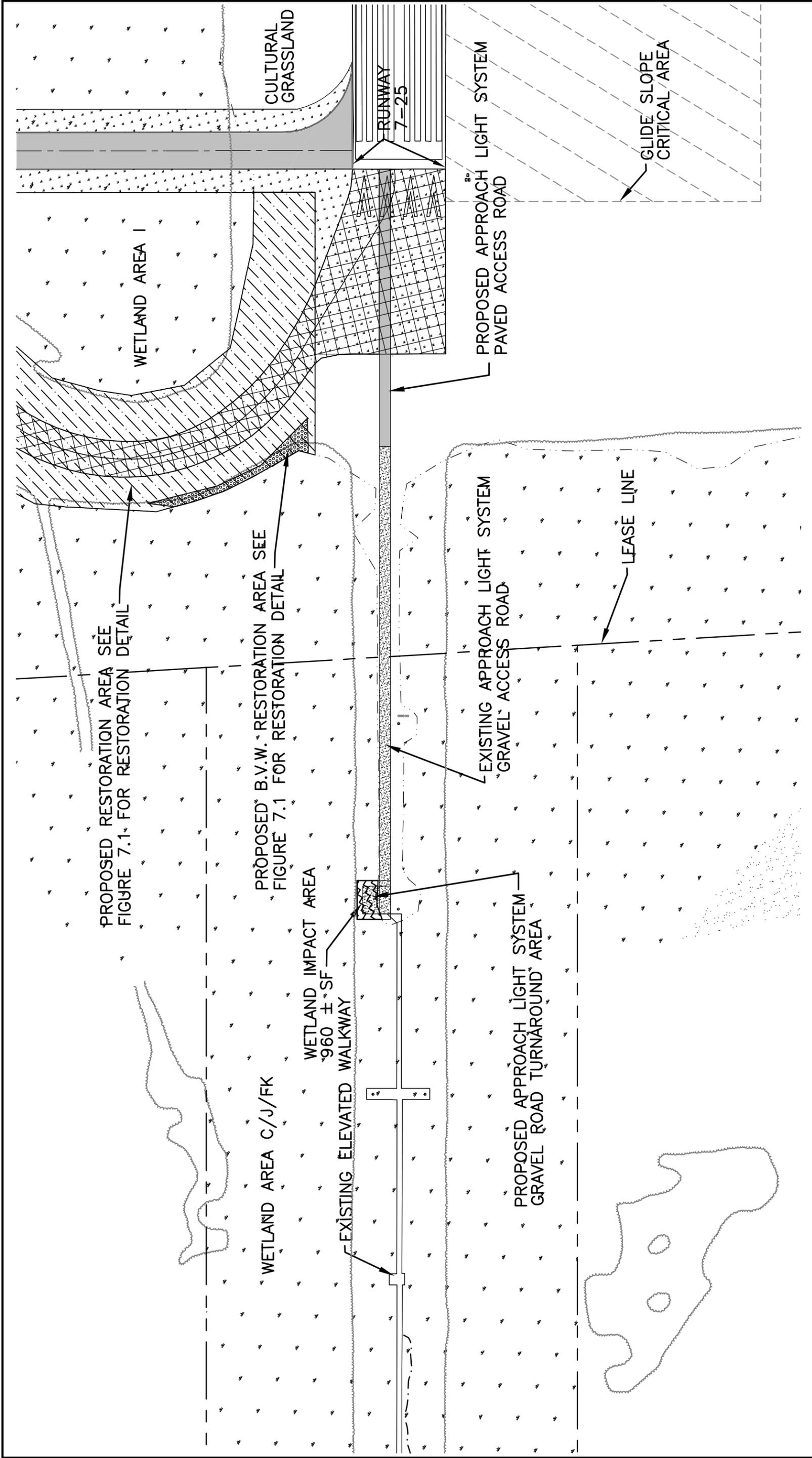
Provincetown Municipal Airport  
Capital Improvements Plan

**TAXIWAY LIGHTING PLAN**

Figure 6.4



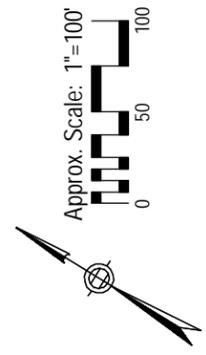




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**JACOBS**

-  EXISTING IMPERVIOUS AREA TO BE REMOVED
-  EXISTING WETLAND AREA
-  EXISTING DUNE AREA
-  EXISTING TREELINE EXISTING BRUSHLINE
-  PROPOSED IMPERVIOUS PAVED AREA
-  PROPOSED CULTURAL GRASSLAND
-  PROPOSED PERVIOUS GRAVEL AREA
-  PROPOSED WETLAND IMPACT AREA
-  PROPOSED RESTORATION AREA

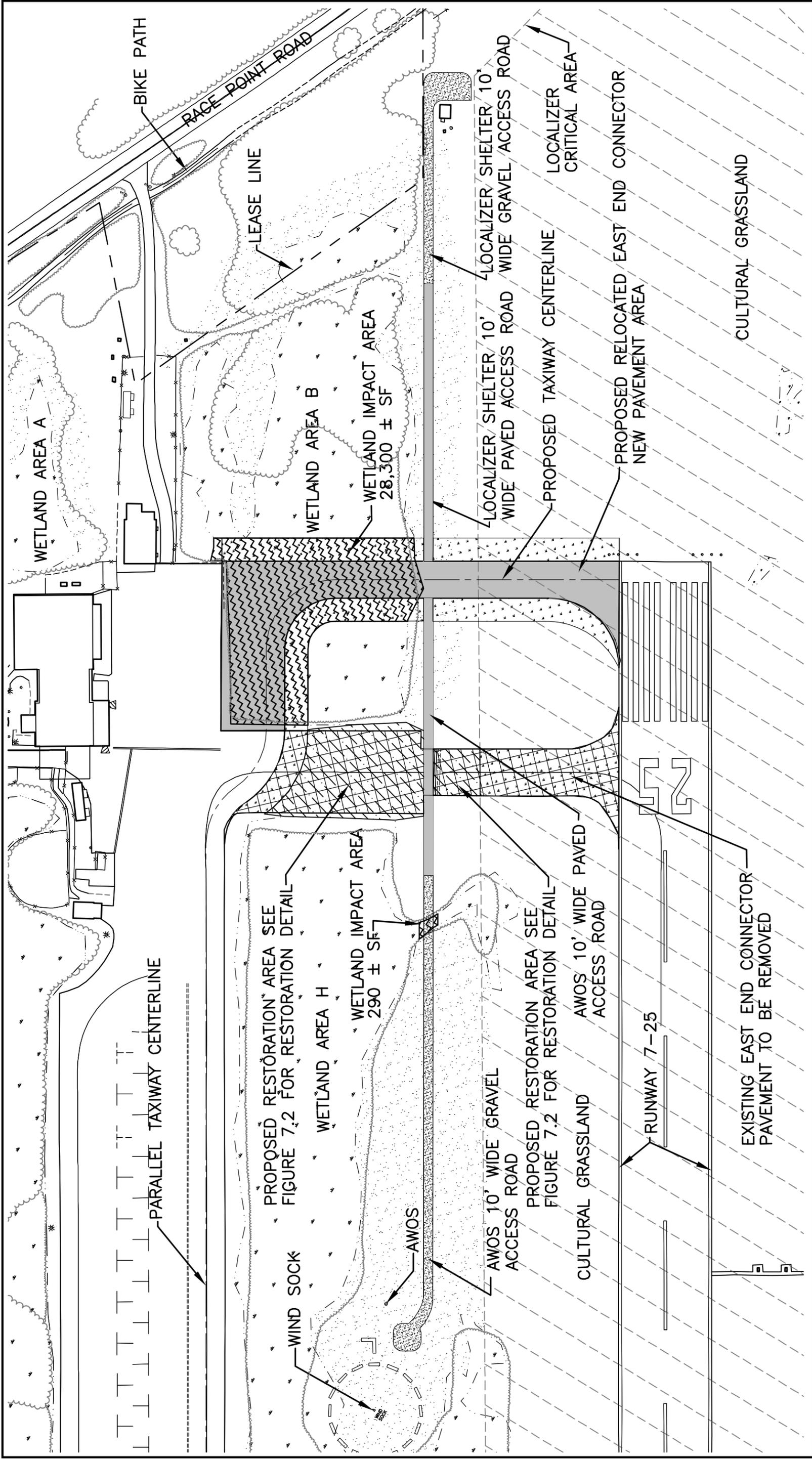


Provincetown Municipal Airport  
Capital Improvements Plan

APPROACH LIGHTS ACCESS ROAD PLAN

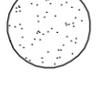
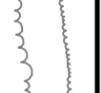
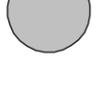
Figure 6.5





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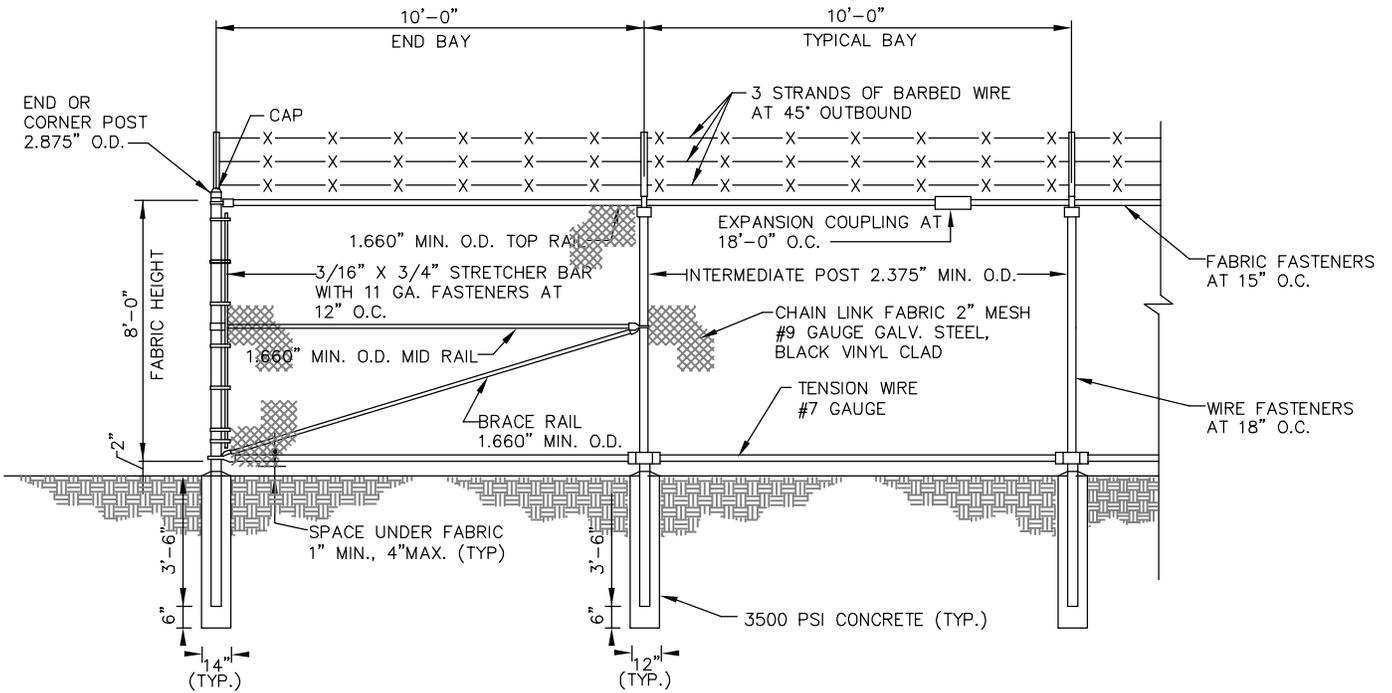


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-  EXISTING WETLAND AREA
-  EXISTING DUNE AREA
-  EXISTING TRESTLE EXISTING BRUSHLINE
-  PROPOSED IMPERVIOUS PAVED AREA
-  PROPOSED CULTURAL GRASSLAND
-  PROPOSED PERVIOUS GRAVEL AREA
-  PROPOSED WETLAND IMPACT AREA
-  PROPOSED RESTORATION AREA

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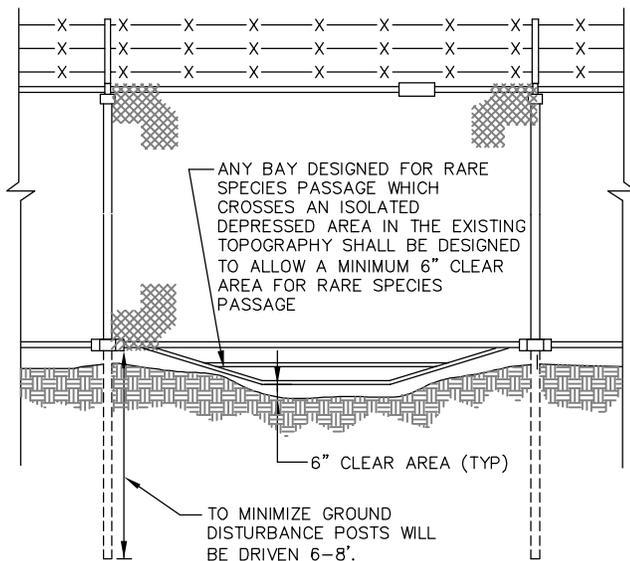




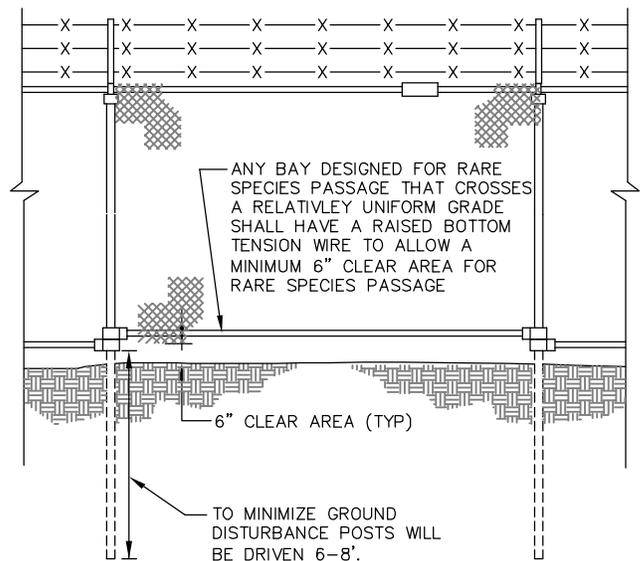



**TYPICAL 8' SECURITY FENCE DETAIL**

NOT TO SCALE



**MITIGATING CONDITION A**



**MITIGATING CONDITION B**

**SECURITY FENCE ENVIRONMENTAL MITIGATION DETAILS**

NOT TO SCALE

Prepared By:

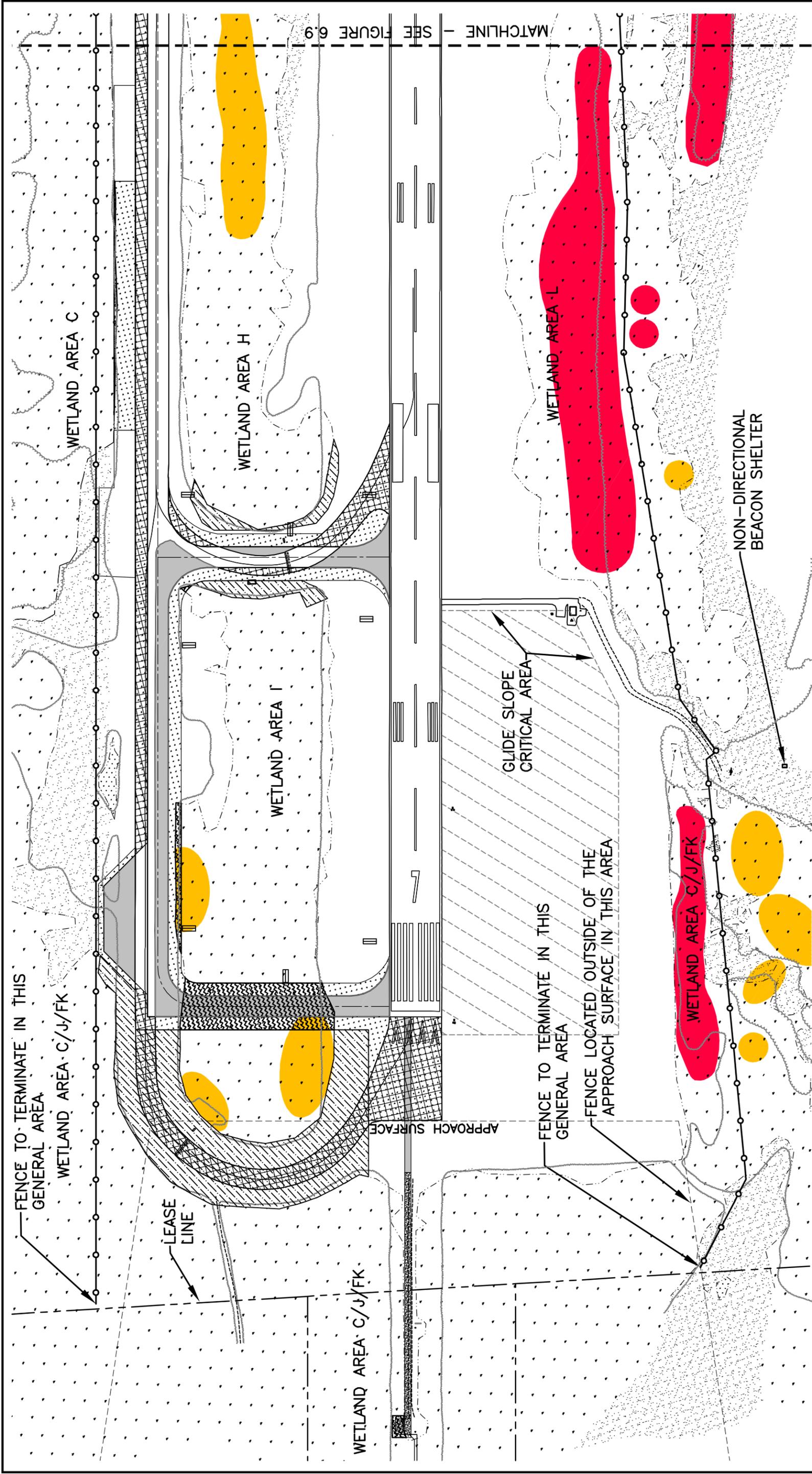
**JACOBS**

Provincetown Municipal Airport  
Capital Improvements Plan

FENCE DETAILS

Figure 6.7





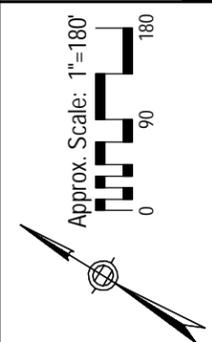
Prepared By:

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- EXISTING IMPERVIOUS AREA TO BE REMOVED
- EXISTING DUNE AREA
- EXISTING TREELINE
- EXISTING WETLAND AREA
- EXISTING CULTURAL GRASSLAND
- EXISTING WETLAND IMPACT AREA
- EXISTING BRUSHLINE

- PROPOSED IMPERVIOUS PAVED AREA
- PROPOSED PERVIOUS GRAVEL AREA
- PROPOSED RESTORATION AREA
- PROPOSED WETLAND IMPACT AREA
- PROPOSED CULTURAL GRASSLAND
- PROPOSED WETLAND IMPACT AREA

- POTENTIAL SPADEFOOT BREEDING AREA
- PRIME SPADEFOOT BREEDING AREA
- PROPOSED RESTORATION AREA
- PROPOSED SECURITY FENCE

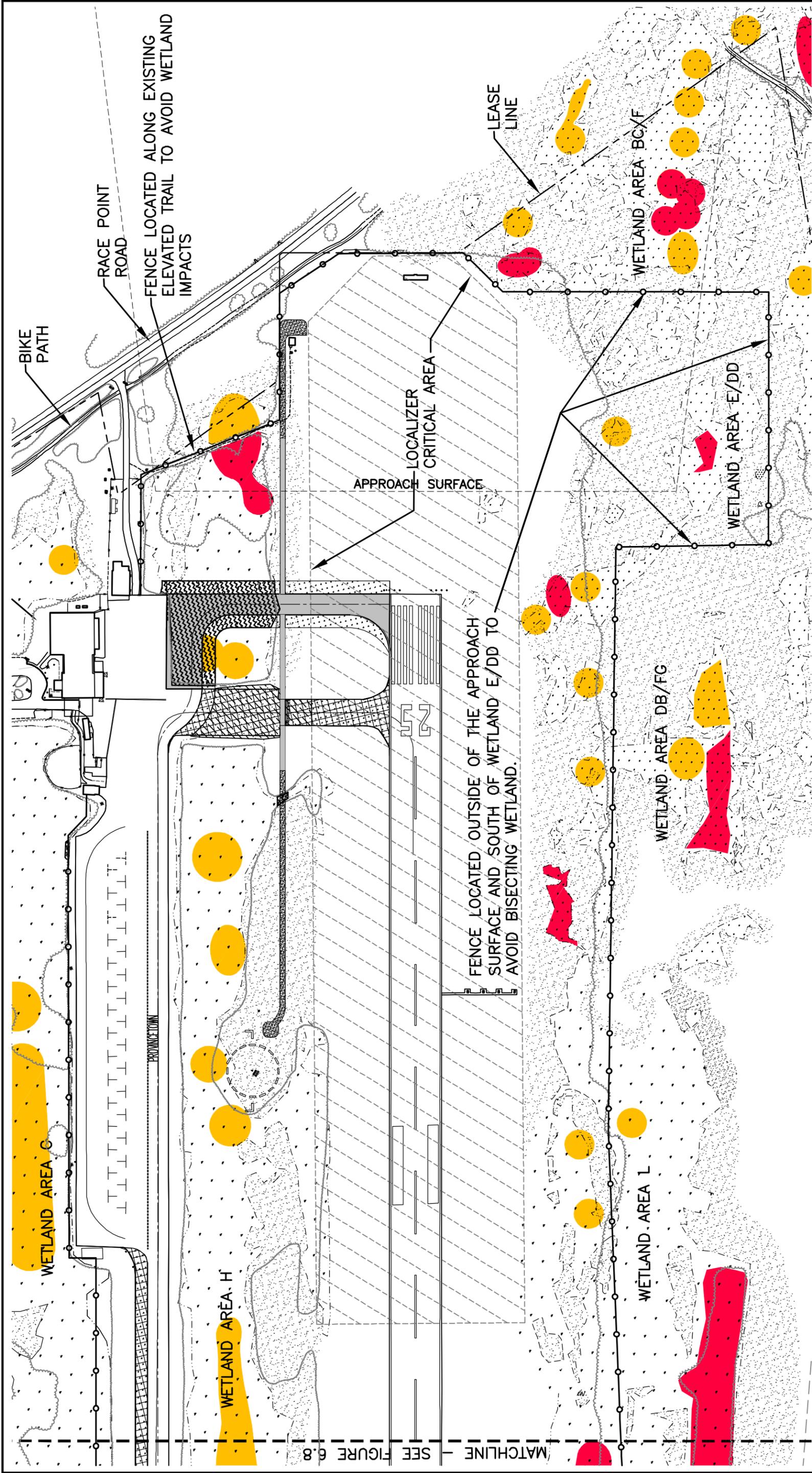


Provincetown Municipal Airport  
Capital Improvements Plan

FENCE PLAN - WEST END

Figure 6.8





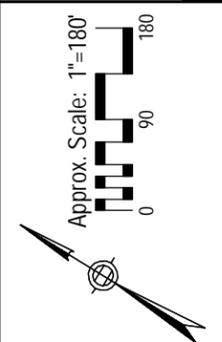
Prepared By:

**JACOBS**

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- EXISTING DUNE AREA
- EXISTING TREELINE
- EXISTING WETLAND AREA
- EXISTING CULTURAL GRASSLAND
- EXISTING BRUSHLINE

- PROPOSED IMPERVIOUS PAVED AREA
- PROPOSED PERVIOUS GRAVEL AREA
- PROPOSED RESTORATION AREA
- POTENTIAL SPADEFOOT BREEDING AREA
- PROPOSED WETLAND IMPACT AREA

- PRIME SPADEFOOT BREEDING AREA
- PROPOSED SECURITY FENCE

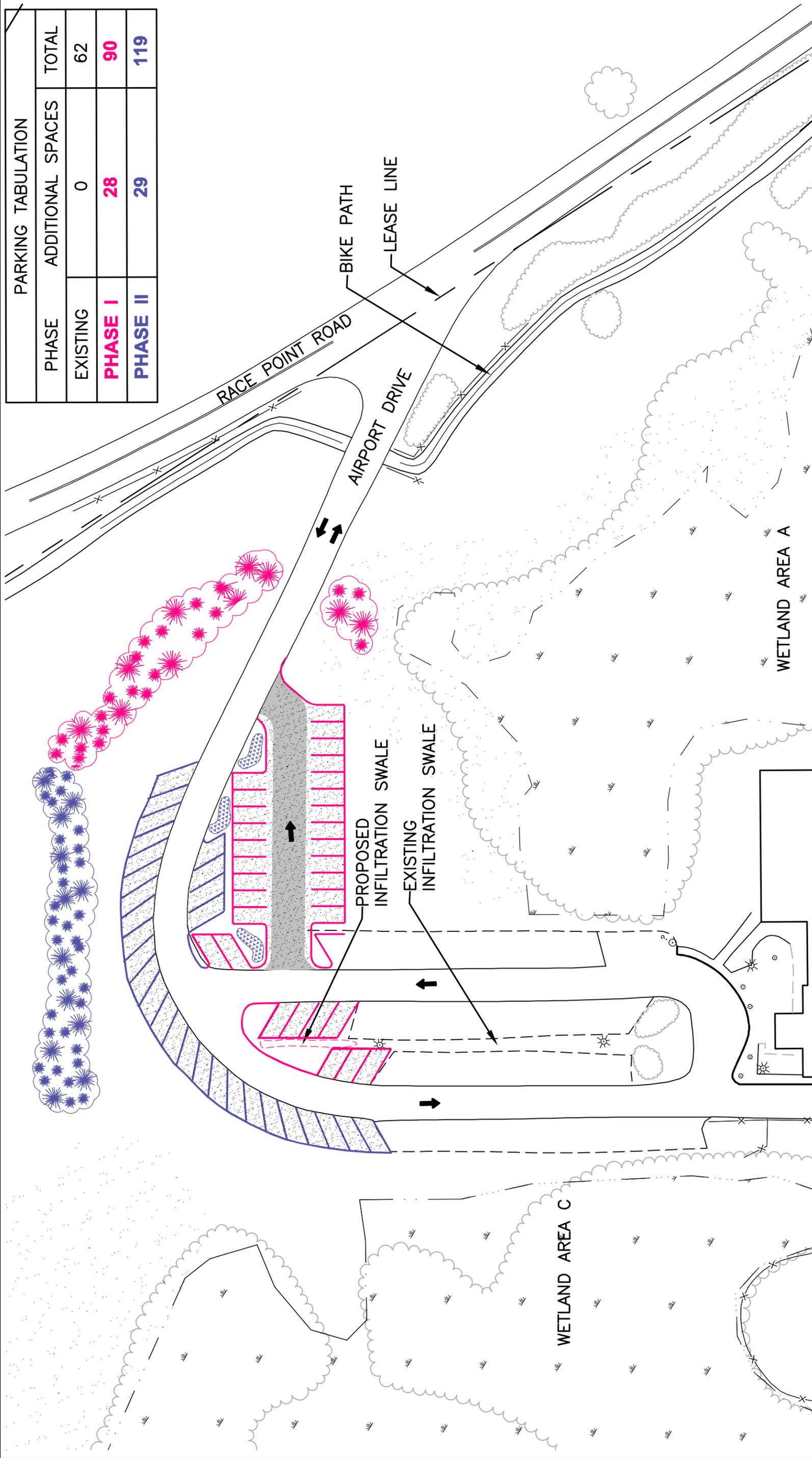


Provincetown Municipal Airport  
Capital Improvements Plan

FENCE PLAN - EAST END

Figure 6.9





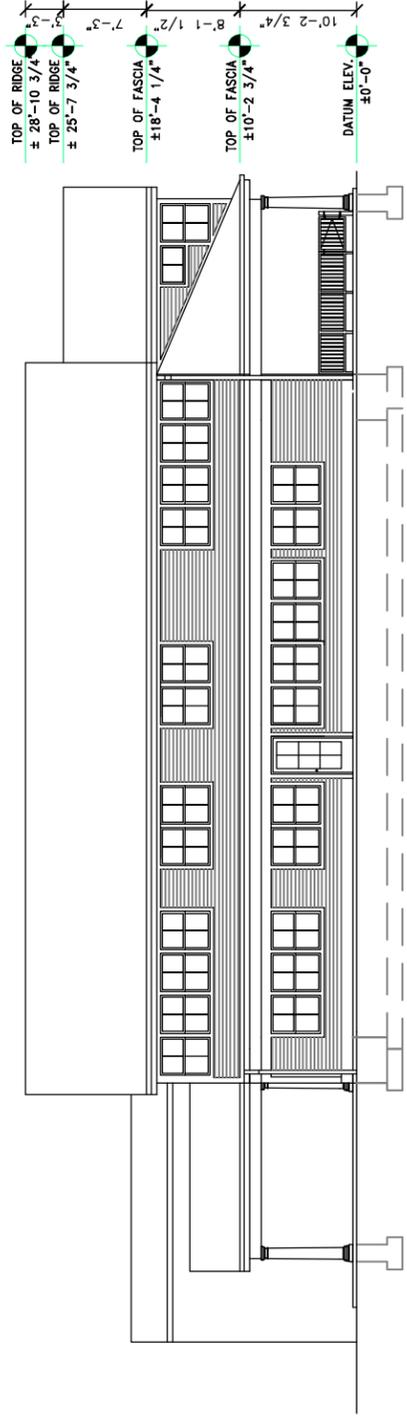
PARKING TABULATION		
PHASE	ADDITIONAL SPACES	TOTAL
EXISTING	0	62
<b>PHASE I</b>	<b>28</b>	<b>90</b>
<b>PHASE II</b>	<b>29</b>	<b>119</b>

- EXISTING IMPERVIOUS AREA TO BE REMOVED
- EXISTING WETLAND AREA
- EXISTING DUNE AREA
- EXISTING TREELINE / EXISTING BRUSHLINE
- PROPOSED IMPERVIOUS PAVED AREA
- PROPOSED CULTURAL GRASSLAND
- PROPOSED PERVIOUS GRAVEL AREA
- PROPOSED WETLAND IMPACT AREA
- PROPOSED NATURAL LANDSCAPE BUFFER AREA
- PROPOSED BIORETENTION AREA

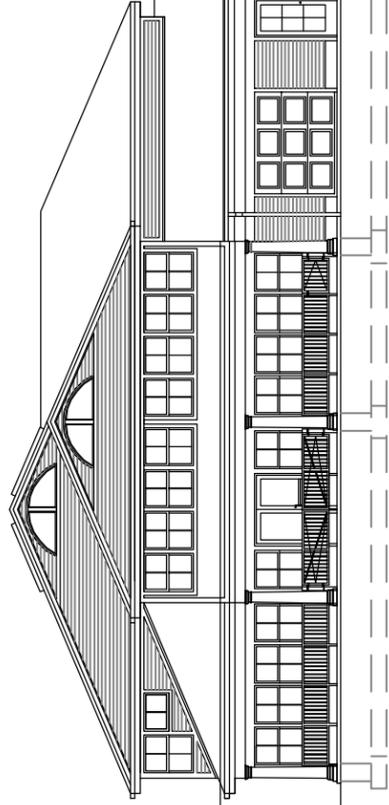
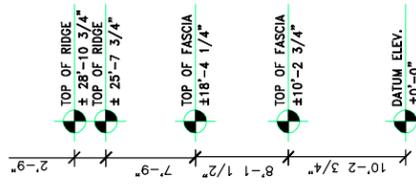
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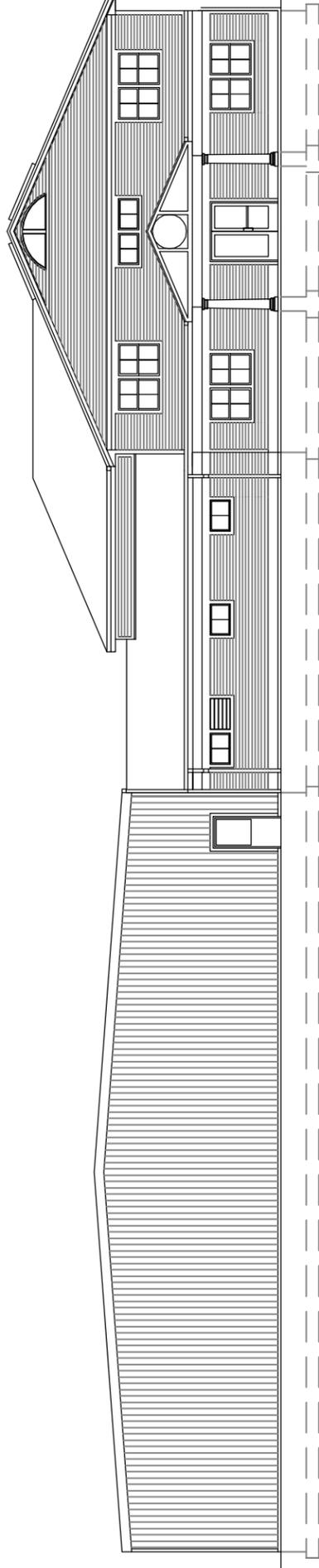
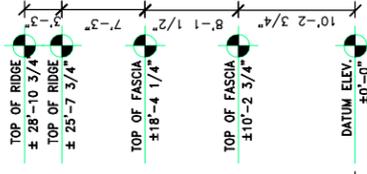
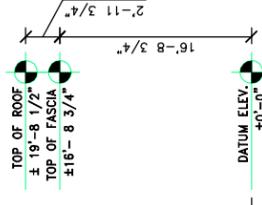
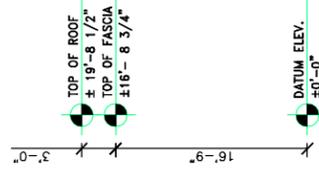




VERTICAL CONCEPT 2  
WEST ELEVATION



VERTICAL CONCEPT 2  
SOUTH ELEVATION



VERTICAL CONCEPT 2  
ENTRY - NORTH ELEVATION

Prepared By:

**JACOBS**

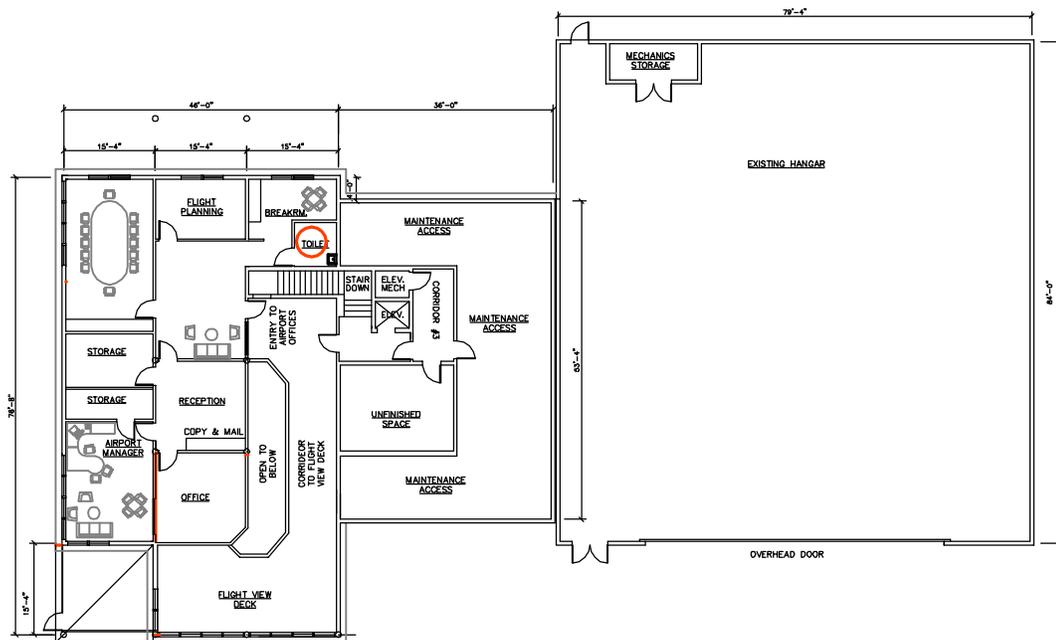
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Provincetown Municipal Airport  
Capital Improvements Plan

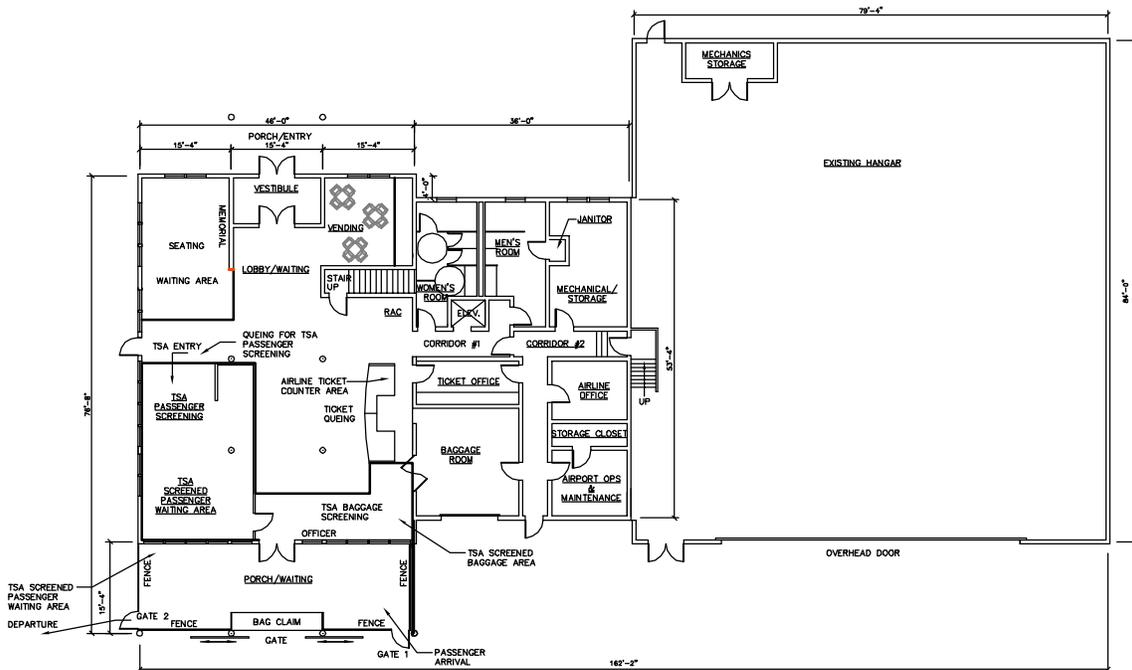
AIRPORT TERMINAL BUILDING  
VERTICAL CONCEPT 2 ELEVATIONS

Figure 6.11





VERTICAL BUILD OUT PLAN -CONCEPT 2  
UPPER LEVEL



VERTICAL BUILD OUT PLAN -CONCEPT 2  
MAIN LEVEL

Prepared By:



Approx. Scale: 1/32"=1'

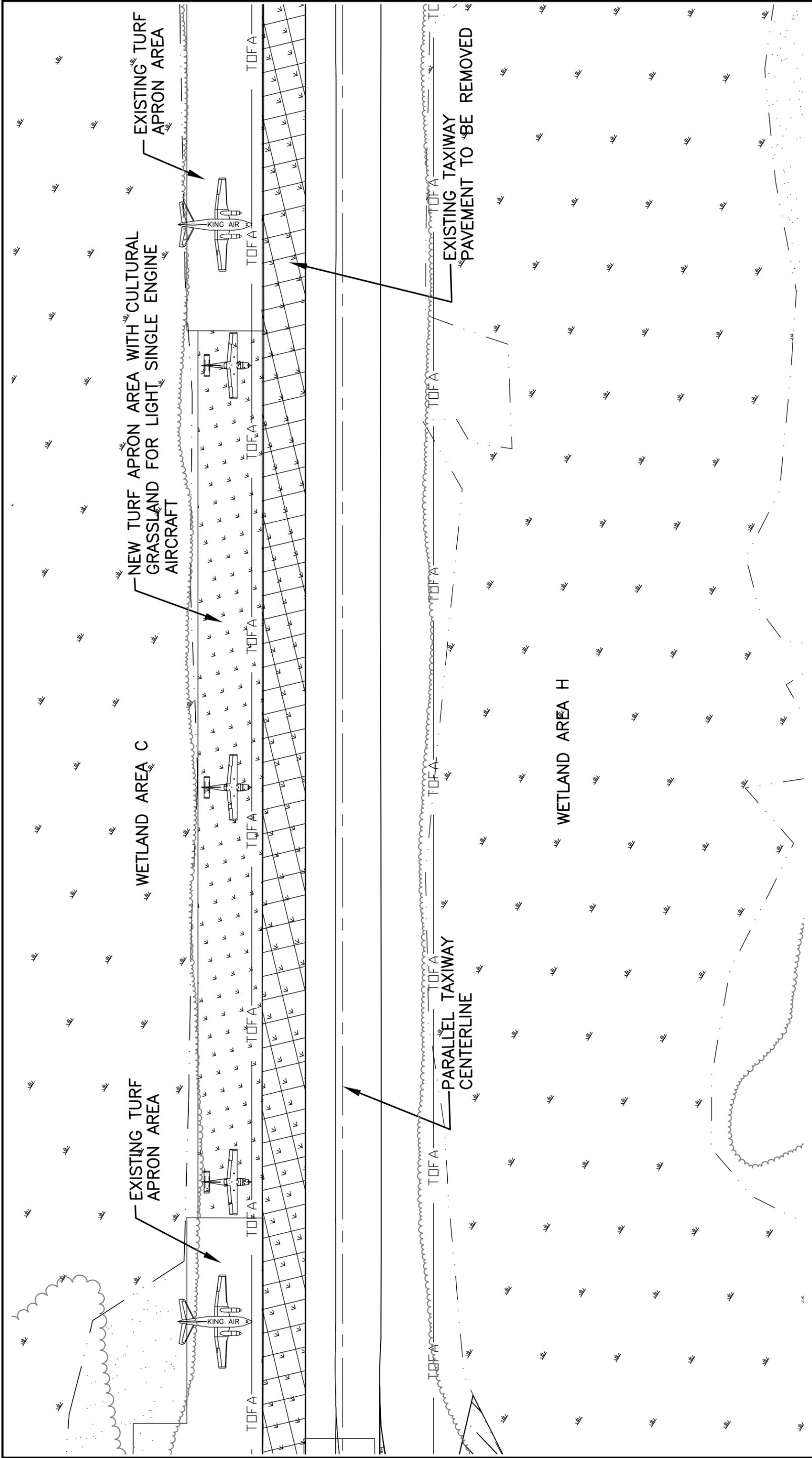


Provincetown Municipal Airport  
Capital Improvements Plan

AIRPORT TERMINAL BUILDING  
VERTICAL CONCEPT 2 PLAN VIEWS

Figure 6.12





Prepared By:



-  EXISTING IMPERVIOUS AREA TO BE REMOVED
-  EXISTING DUNE AREA
-  EXISTING WETLAND AREA
-  EXISTING TREELINE
-  EXISTING BRUSHLINE

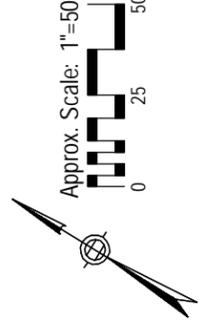
-  PROPOSED IMPERVIOUS PAVED AREA
-  PROPOSED PERVIOUS GRAVEL AREA
-  PROPOSED CULTURAL GRASSLAND
-  PROPOSED WETLAND IMPACT AREA

-  PROPOSED RESTORATION AREA

Provincetown Municipal Airport  
Capital Improvements Plan

TURF APRON PLAN

Figure 6.13





## **SECTION 7.0      MITIGATION PLANS**

As noted in previous sections, impacts to freshwater and coastal resource areas would occur with the implementation of the CIP projects. These include impacts to freshwater isolated and bordering vegetated wetlands, impacts to coastal dunes, and potential impacts to rare species habitat. The following section discusses proposed mitigation measures, which include both on-site restoration of wetlands as well as on-site wetland enhancements, creation of coastal dune habitat, implementation of invasive species management plans, standard construction procedure controls, and implementation of BMPs, intended to mitigate for unavoidable direct and indirect adverse impacts to natural resources at the Airport and within the Park. Mitigation also includes past mitigation efforts provided through the Hatches Harbor Saltmarsh Restoration Project (“Hatches Harbor Project”) in accordance with the April 28, 1997 Memorandum of Understanding between NPS and the Town of Provincetown and as reiterated in the November 5, 2010 letter from NPS to FAA. The Hatches Harbor Project, implemented in the early 2000s, included a substantial restoration effort of salt marsh and freshwater wetland habitat.

It should be noted that the terms wetland mitigation, restoration, replacement, and replication are used interchangeably in this document. It is recognized that these terms have different regulatory significance for DEP, ACOE, NPS, and the CCC. The specific permit applications to DEP, ACOE, and CCC will use the required terms.

The following mitigation plans are intended to address the various regulatory requirements as well as address impacts to Park resources.

### **7.1      Wetland Mitigation Plan**

#### **Wetland Restoration and Enhancement Overview**

As discussed in Sections 5.0 and 6.0, several of the CIP projects, including the Westerly Taxiway System Improvements, the East End Taxiway Improvements, improvements to the access roadway for the MALSF approach lights, construction of the service road to the AWOS, and installation of the Perimeter Safety/Security Fence, will result in unavoidable alterations to freshwater wetlands (isolated and/or bordering vegetated wetlands) from both direct alteration to wetlands and from indirect (secondary) alterations associated with the long-term maintenance along the fence (see Table 5-3 for a summary of resource impacts). The majority of alterations involving direct fill of wetlands will generally occur within isolated wetlands (PEM, PSS), while alterations resulting from the cutting and long-term maintenance of vegetation will occur in both isolated and bordering vegetated wetlands (PEM, PSS and PFO). Wetland impacts have been avoided and minimized to the extent practicable in accordance with the Wetlands Protection Act Regulations, the regulations under the Provincetown Wetlands Protection Bylaw, as well as the regulations for Water Quality Certification (WQC), and ACOE Compensatory Mitigation guidance, as discussed in Sections 3.0 and 5.0.

The Airport proposes to mitigate for unavoidable alterations to wetlands by providing a combination of on-site wetland restoration and wetland enhancement. On-site wetland restoration will be provided in areas where existing impervious surfaces and fill will be removed. Relocation of the West End TW

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and East End TW and subsequent reduction of the existing paved areas for the parallel TW and Runway 7 would allow for wetland restoration within the footprint of existing developed and paved areas. Mitigation would create a total of approximately 78,000 SF of restored isolated wetlands (shrub swamp) at the Airport in two locations (Mitigation Areas A and C). Mitigation Area A (64,000 SF of restored freshwater wetland) would be located within the curved footprint of the existing West End TW adjacent to portions of Wetland C/J/FK and contiguous with Wetland I (see Figure 7.1), while Mitigation Area C (14,000 SF of restored freshwater wetland) would be located within the footprint of the existing East End TW, south of the terminal apron and contiguous with Wetland H, as shown on Figure 7.2. A third mitigation area (Mitigation Area B) would be located adjacent to the access road to the approach lights and southwest of the (abandoned) West End TW. Mitigation Area B would be contiguous with Wetland C/J/FK and would create approximately 5,000 SF of restored BVW. Each of these areas is highly suitable for wetland restoration due to their proximity to existing wetlands and the existing shallow groundwater table.

On-site wetland enhancement will involve the management of *Phragmites australis*, an invasive species in Massachusetts. Enhancement activities would occur within discrete isolated wetlands where no work is otherwise proposed. Enhancement is designed to improve the ability of these wetlands to provide functions and values similar to those wetlands not currently impacted by invasive species at this site. Opportunities for freshwater wetland enhancement have been identified within 616,350 SF (approximately 14.1 ac) of wetland areas currently supporting *Phragmites* populations of varying density.

#### ACOE Requirements

Wetland mitigation is proposed at greater than 1:1 ratios on-site in order to address the recommendations of the various permitting agencies. For instance, the ACOE recommends in their “*New England District Compensatory Mitigation Guidance*” (Draft, December 2009) that compensatory mitigation for direct impacts to scrub-shrub wetlands and forested wetlands (waters of the U.S.) be provided at 2:1 and 3:1 ratios, respectively. Enhancement (or rehabilitation) of these types of wetland areas is recommended at ratios between 3:1 and 10:1. Given the existing site constraints, on-site wetland restoration for isolated and bordering freshwater wetlands, made possible through the removal of impervious surfaces, will be provided at an approximately 1:1 ratio for direct fill projects. At the suggestion of ACOE staff during an interagency on-site meeting in April 2010, additional mitigation is proposed in the form of on-site wetland enhancement in order to approach the recommended 2:1 to 3:1 mitigation ratios for direct freshwater wetland impacts, as well as to mitigate indirect (secondary) impacts associated with the proposed fence. Preliminary discussions with other stakeholder regulatory agencies indicate that this practice would be appropriate to mitigate for lost wetlands functions and values associated with proposed projects at this site and to address the various mitigation requirements of the regulatory agencies. Freshwater wetland enhancement is proposed at a 7:1 ratio, to be provided in two discrete freshwater wetland areas (Wetlands H and I), also at the suggestion of ACOE staff during an interagency on-site meeting in April 2010. A summary of all proposed mitigation for the CIP projects is provided below.

#### NPS/CCNS Requirements

NPS frequently requires additional off-site mitigation to address wetland protection procedures and fully address the objectives of the CCNS management plan. As stated in the NPS letter of November

5, 2010, CCNS staff has acknowledged the Airport's past financial participation (funding 20 percent of the restoration efforts) in the Hatches Harbor Saltmarsh Restoration Project and has determined that this "can be applied as off-site mitigation for activities covered in the current Capital Improvements Plan." Therefore the requirement for additional off-site mitigation will be met by the Hatches Harbor Restoration Project.

#### CCC Requirements

In addition to direct wetland mitigation efforts, the CCC recognizes measures to restore altered or degraded inland and coastal wetlands, as well as alternative mitigation measures to meet the Minimum Performance Standards (MPS) under their 2009 Regional Policy Plan (RPP). These measures include construction of artificial wetlands for stormwater treatment, and implementation of wetland enhancement through management of invasive species. These additional mitigation measures are included in the mitigation for the CIP projects, including the incorporation of a bioretention system for the auto parking area and management of invasive species within certain areas of natural resources.

Wetland restoration proposed at the Airport is described in the following text and shown on Figures 7.1 and 7.2 in this section. Mitigation ratios are based upon regulatory guidance and comments received from various resource agencies during the preparation of the FEIR/EA. Table 5-3 in Section 5 summarizes the direct resource impacts and the mitigation ratios.

#### **Wetland Mitigation Methodology**

The following mitigation plan for wetland mitigation has been developed based on the Massachusetts Inland Wetland Replication Guidelines (March 2002) prepared by the Massachusetts DEP, as well as the performance standards for wetland replacement in accordance with the Massachusetts Wetlands Protection Act Regulations at 310 CMR 10.55(4)(b)(1 through 7), the Town of Provincetown Wetlands Bylaw (Chapter 12 of the General By-Laws of Provincetown), and the April 2008 federal Compensatory Mitigation Rule, as well as the more recently issued draft proposed Revision of New England District Compensatory Mitigation Guidance prepared by ACOE.

Wetland restoration activities will generally involve removal of existing pavement and gravel sub-base, excavation to appropriate sub-grade to intercept existing hydrology, planting of native wetland vegetation and over-seeding with a native seed mixture to stabilize disturbed soils, and implementation of monitoring plans to ensure the successful establishment of a wetland plant community. A qualified wetland scientist with experience in wetland creation or restoration will oversee all aspects of the wetland restoration efforts. Draft details of these activities are provided below.

### Site Preparation, Excavation, and Grading of Mitigation Areas

Prior to the commencement of any mitigation activities, a sedimentation and erosion control barrier, such as staked siltation fencing will be installed along the wetland boundary to protect the adjacent areas during earth-moving activities and to serve as a limit of work. Following installation of this sedimentation barrier, impervious surfaces (asphalt and gravel sub-base) will be broken apart with heavy equipment, removed, and transported off-site to a suitable disposal facility or else re-used on-site as a sub-base for new impervious surfaces.

Approximately 54,000 SF of impervious surfaces would be removed from the existing West End TW and approximately 26,640 SF from the existing East End TW (with an overall net reduction of approximately 28,000 SF of pavement for all CIP projects), along with removal of areas of grassland that are located immediately adjacent to the wetland areas adjacent to the West End and East End TWs. Successful wetland restoration will require sufficient hydrologic conditions. Specifically, groundwater should be close enough to the surface such that saturated soils exist within one foot of the final elevation during the growing season. These elevations should provide from 4 to 12 or more inches of standing water during the winter and spring, as observed within other seasonally flooded wetland areas at the Airport. As such, the hydrology of the proposed restoration areas will be established to mimic that of the impacted wetlands. The approximate elevations of the adjacent wetlands, Wetlands I and H, are 3.5 to 3.9 feet and 3.8 to 4.6 feet, respectively. Spot elevations along the existing West End Taxiway range from 6.1 to 6.4 feet. Spot elevations along the existing East End Taxiway range from 6.8 to 7.4 feet. The locations selected for the restoration areas are desirable because it is anticipated that these areas will not need to be lowered substantially once the existing pavement and gravel sub-base are removed. Six (6) monitoring wells have been installed to observe groundwater elevations within the existing wetland areas, sited as close as possible to the proposed restoration areas (Mitigation Areas A and C). To date, depth to groundwater measurements have been recorded on two separate dates (September 21, 2007, and April 3, 2008). No appreciable difference in groundwater depth was observed among all six wells, which ranged from elevation 2.6 to 3.2 feet (with no significant storm events preceding the data collection). This suggests that removal of existing impervious materials alone would result in sufficient hydrological conditions within the mitigation areas. Additional depth to groundwater measurements will be taken as necessary, to allow for proper design of the restoration areas, and all restoration activities will be closely tied to on-the-ground survey to ensure that appropriate elevations are reached within the restoration areas in accordance with the design. Figure 7.3 provides a schematic cross section for Wetland Restoration Areas A, B, and C.

It is anticipated that the original soil profile may be intact beneath the impervious surfaces and grassy areas to be removed, and that only minor grading within the restoration areas would be necessary to obtain elevations that would provide suitable hydrology to support a wetland plant community. As such, care will be taken to avoid removal of any original soil materials encountered beneath the impervious surfaces. The rough-graded restoration areas will be allowed to settle for a minimum of 48 hours prior to introducing plants.

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## Introduction of Wetland Vegetation in Mitigation Areas

Following removal of fill materials, shrubs and herbaceous groundcover will be planted within the restoration areas. All construction other than paving operations will be conducted during the Airport's off season, approximately after the first week of September (Labor Day) and prior to April 15th to minimize disruption to rare species during their most active times of year. However, paving will need to be conducted through May because the asphalt plants typically don't open until the middle of April, making it necessary to be able to pave through May. Restoration activities would occur either during the beginning or the latter part of the growing season for Barnstable County (April 26 to October 23; USDA, 2002), depending on construction timing.

As much as practicable, vegetation within Wetlands I, H, and C/J/FK will be salvaged for re-use in the mitigation areas. This would involve removing large patches of the "lost wetland" with a front-end loader or other suitable machine and introducing these vegetation patches into the mitigation areas, allowing for intact and relatively contiguous patches of established vegetation within the mitigation areas and for greater success in the establishment of the mitigation area plant communities. It is estimated that a portion of the vegetation within impacted areas of Wetland I (approximately 28,000 SF) could be salvaged for reintroduction within Mitigation Area A (or possibly other mitigation areas as appropriate). However, Wetlands C/J/FK and Wetland B currently support *Phragmites* populations of varying densities and may not be suitable for transplantation within the mitigation areas. At this time, it is estimated that up to 75 percent of the vegetation to be impacted could be re-used in the restoration areas to help establish dense native plant communities within the restoration areas. However, salvaging vegetation from these lost areas will need to be field-determined. A more precise estimate of the amount of vegetation within lost areas to be salvaged will be provided during the permitting phase.

Ideally, site preparation for the mitigation areas would occur prior to construction of the new taxiways and MALSF turnaround, such that all impervious surfaces and grassy areas would be removed from the restoration areas and the areas would be excavated to the appropriate grade, at which point salvaged vegetation from the lost areas would be excavated and placed directly into the prepared restoration area(s), minimizing the temporal loss of wetlands during construction. If this construction sequencing proves to be impractical, the smallest possible lag time between construction of the new taxiway entrances and the creation of the mitigation areas is desirable (within a week or two). Under this construction scenario, vegetation from the lost areas would be excavated and stockpiled nearby for later re-introduction within the mitigation area(s). Salvaged plant materials would be covered and maintained (watered) in good condition until the restoration areas have been prepared.

Immediately following the introduction of salvaged vegetation, additional native plant materials possessing native genotypes (i.e., local genetic stock) will be obtained from local nurseries and planted in the mitigation areas to augment the salvaged vegetation. Using local nursery stock will minimize the possibility that plant genotypes from other regions are imported to the area. Augmentation with nursery stock will allow for the immediate establishment of a relatively dense plant community throughout the mitigation area, discouraging encroachment by non-native species. Shrub and herbaceous species obtained from local nurseries will be representative of the existing vegetation communities within the isolated wetlands. Tree species will not be incorporated in the restoration areas because the proposed mitigation areas (as well as the lost areas) occur within

obstacle-free areas and need to be maintained by the Airport as low-growing shrub swamp communities.

Proposed shrub species obtained from nursery stock may include arrowwood, highbush blueberry, winterberry, red chokeberry, inkberry, bayberry, meadowsweet, steplebush, American cranberry, and Virginia rose, or acceptable equivalent species. Shrubs will be planted in clusters of two to three, placed five to six feet on center, while herbaceous species will be planted in masses, 18 to 24 inches on center. It is anticipated that several hundred nursery-grown shrubs and herbaceous plants will be needed to achieve the desired plant density within the mitigation areas. The planting distribution of American cranberry will depend upon the hydroperiod of each area. In shallow ephemeral wetlands, cranberry will be planted at the lowest elevations of the wetland. In deeper, more permanent wetlands, cranberry will be planted along the periphery. The elevation of the restoration plantings will be similar to the existing plant distribution observed within the wetlands at the Airport.

Table 7-1 provides a draft list of planting specifications. Proposed plantings are designed to provide a densely vegetated shrub swamp community. Details of the planting specifications will be refined during the final design and permitting phase and in consultation with various regulatory agencies and ecological experts at NPS.

In addition to nursery-grown shrubs and herbaceous species, a wetland seed mix will be used to stabilize soils within the mitigation areas. A commercially available or custom seed mix that contains native grasses and wildflower species similar to those observed within the existing wetland areas will be used. Species contained within the seed mix may include: switchgrass (*Panicum virgatum*), Virginia wild rye (*Elymus virginicus*), creeping red fescue (*Festuca rubra*), fox sedge (*Carex vulpinoidea*), creeping bentgrass (*Agrostis stolonifera*), soft rush (*Juncus effusus*), New England aster (*Aster novae-angliae*), grass-leaved goldenrod (*Euthamia graminifolia*), nodding bur marigold (*Bidens cernua*), green bulrush (*Scirpus atrovirens*), Joe-Pye weed (*Eupatorium maculatum*), boneset (*Eupatorium perfoliatum*), and blue vervain (*Verbena hastata*).

It is anticipated that removal of existing paved areas will expose the underlying seed bank and rootstock which would contain additional species tolerant of the local ecological conditions. The presence of the underlying seed bank is anticipated to further lend to the successful generation of a wetland plant community within the restored wetland areas. However, certain invasive species, specifically purple loosestrife (*Lythrum salicaria*) and *Phragmites*, are known to have exceptionally long seed dormancy capabilities, more so than most native species. Thus, exposing the seed bank may allow for the germination and establishment of non-native species over native, slower-growing vegetation. As part of the long-term monitoring of the restoration areas, particular attention will be paid to managing emerging non-native species to bolster the success of desired native species.

Species	Specifications
Arrowwood ( <i>Viburnum dentatum</i> )	Planted in clusters of 2-3, 5-6 feet on center
Highbush Blueberry ( <i>Vaccinium corymbosum</i> )	Planted in clusters of 2-3, 5-6 feet on center
Meadowsweet ( <i>Spiraea latifolia</i> )	Planted in clusters of 2-3, 5-6 feet on center
Bayberry ( <i>Myrica pensylvanica</i> )	Planted in clusters of 2-3, 5-6 feet on center

Inkberry ( <i>Ilex glabra</i> )	Planted in clusters of 2-3, 5-6 feet on center
Winterberry ( <i>Ilex verticillata</i> )	Planted in clusters of 2-3, 5-6 feet on center
Cinnamon Fern ( <i>Osmunda cinnamomea</i> )	Planted 18-24” on center in masses
Sensitive Fern ( <i>Onoclea sensibilis</i> )	Planted 18-24” on center in masses
American Cranberry ( <i>Vaccinium macrocarpon</i> )	Planted in large masses, 6-12” on center
Native Seed Mix	Apply as directed
<i>Source: Summary of Wetland Resource Areas, HWG, April 2007.</i>	

Upon completion of the restoration area plantings, siltation fencing will be placed along the upgradient side of the restoration areas.

As noted above, efforts will be made to plant the mitigation areas near the beginning or the end of the growing season to reduce the dependency on maintenance (e.g., watering) during the anticipated two to three week grow-in period and to ensure greater plant survival.

**Wetland Monitoring Program**

A qualified wetland scientist with experience in wetland mitigation will be engaged to ensure compliance with the mitigation plan and to make field adjustments when appropriate. This individual will oversee all aspects of the wetland restoration activities including installation of sedimentation control barriers, removal of impervious surfaces and excavation of sub-base materials, excavation of salvaged plant materials, installation of monitoring wells, revegetation, and implementation of a monitoring plan.

During and immediately following the creation of the mitigation areas, monitoring will occur on a weekly basis to ensure the initial establishment of introduced plantings. Following the grow-in period and in accordance with the regulatory guidance, wetland mitigation areas will be monitored twice annually for a minimum of five growing seasons to determine the relative success of the restored wetlands. Semi-annual site inspections conducted during late spring and late summer will include an assessment of the relative health and integrity of the salvaged vegetation and introduced nursery stock, and percent cover of vegetation, percent cover of wetland species. The monitoring will be in compliance with the performance standards under 310 CMR 10.55(4)(b)(1 through 7), the ACOE Compensatory Mitigation Guidance, and the Guidance for the New England District Mitigation Plan Checklist.

In addition to the overall assessment of the monitoring areas, additional data regarding the vegetation will be collected within study plots distributed randomly throughout the mitigation areas to provide data to determine the relative success of the wetland plant communities using scientifically recognized statistical methods. The intent of vegetation sampling is to quantify results in a statistically relevant fashion. Data collected from the study plots will be compared to test plots within nearby undisturbed reference wetlands or else collected within the impacted areas prior to restoration activities as baseline data. Specific measures will be taken during construction and monitoring of wetland restoration areas to discourage establishment of invasive species within the newly disturbed soils, as described in Section 7.3. The monitoring plan will be reviewed by various regulatory agencies and approved during the permitting phase of the CIP projects.

Written reports detailing the findings of each monitoring event will be submitted on an annual basis for five years to the Provincetown Conservation Commission, DEP, ACOE, and the CCC. Monitoring reports will provide details on the assessment of the wetland restoration areas, including any remedial actions recommended or taken during a given year. Photographic documentation will be incorporated within the monitoring reports. DEP, ACOE, and the CCC have established criteria for compliance, and adaptive management measures will be implemented as necessary to ensure the long-term success of the mitigation areas.

## **7.2 Coastal Dune and Cultural Grassland Mitigation Plan**

Several of the CIP projects will result in unavoidable alterations to coastal dunes, including the Westerly TW system improvements, relocation of the East End TW, construction of the access roads to the LES and AWOS, installation of the perimeter fence, and expansion of the auto parking area. Impacts to Cultural Grasslands will occur with the implementation of the Westerly TW system improvements and relocation of the East End TW, as well as installation of the TW lighting and expansion of the turf apron. A discussion of the mitigation measures designed to address these impacts follows.

Unavoidable loss to coastal dune habitats will be mitigated through the creation of additional dune habitat within grass and/or paved areas to be removed. The creation of dune areas in two proposed locations would provide on-site dune mitigation (see Tables 5-3 and 5-4). The details will be refined during the final design and reviewed during the permitting phase of the CIP projects.

Mitigation for direct impacts to coastal dune is proposed as dune creation in two locations along the West End TW adjacent to Wetland C/J/FK, and within a third area established within a portion of the footprint of the abandoned East End TW, south of Wetlands H and B. A total of approximately 27,500 SF of dune will be created in these areas, at a ratio of approximately 0.6:1 to mitigate for direct impacts to coastal dunes (see Figures 7.1 and 7.2). Additional measures for coastal dune enhancement in the form of invasive species management are proposed on-site as described in Section 7.3.

### **Coastal Dune Mitigation Methodology**

Coastal Dunes will be created by placing sands in areas formerly occupied by impervious surfaces or grasslands followed by revegetation with pioneer species such as American beachgrass (*Ammophila breviligulata*) to stabilize the sand. Dune habitat will be created with on-site sands (from areas of proposed projects) compatible with existing aeolian sediments at the Airport. If additional material is needed, the contract documents will require that the source of the sand be compatible with existing sediments at the Airport and the source will be certified that it does not contain archaeological resources or non-native plant seeds.

Randomly spaced mounds of sand will be placed at elevations one to three feet above the existing grade, representative of the existing sporadic dune habitat encountered among the coastal interdunal swales at the Airport and within the airfield. The alignment and orientation of the created dunes will also be consistent with the configuration of the existing dune systems that currently run in a series of bands from east to west. In locations where dunes will be created immediately adjacent to restored

wetland (Mitigation Areas A and B), the dune area will be created prior to the creation of the wetland mitigation area and a row of siltation fencing will be placed at the toe of the newly created dune area to protect the wetland from sedimentation.

Following the placement of sands, these areas will be planted primarily with American beachgrass and supplemented with additional herbaceous material and low-growing shrubs as observed within undisturbed dune areas interspersed among the isolated wetlands at the Airport. When feasible, vegetation within the existing dune habitat to be impacted will be salvaged and transferred to the created dune habitat. Proposed species to be planted along the lower elevations of the created dunes include switchgrass, beach pea (*Lathyrus japonicus*), beach heather, Virginia rose, and bayberry, or other acceptable equivalents. This assemblage of species will provide wildlife habitat values. Table 7-2 provides a draft list of species and planting specifications for creation of a coastal dune community.

Species	Planting Specifications
American Beachgrass ( <i>Ammophila breviligulata</i> )	1-2 culms, planted 12-18" on center
Beach Heather( <i>Hudsonia tomentosa</i> )	1 gal.-24" on center, in clusters
Switch Grass ( <i>Panicum virgatum</i> )	1 gal.-24" on center
Beach Pea ( <i>Lathyrus japonicus</i> )	1 gal.-24-30" on center
Virginia Rose ( <i>Rosa virginiana</i> )	1 gal.-12"-18" on center
Bayberry ( <i>Myrica pensylvanica</i> )	1 gal., 3-5 ft on center in clusters
<i>Source: Summary of Wetland Resource Areas, HWG, April 2007.</i>	

As with the wetland mitigation areas, a qualified professional will oversee all phases of the dune creation to ensure that all dune creation activities are carried out in accordance with the permitted mitigation plan. This individual will have experience in coastal geomorphology or in dune creation, and will make site-specific adjustments during construction to ensure that the resultant coastal dune will function as designed upon full grow-in. A monitoring plan will be developed and implemented to ensure the successful establishment of the created dune communities. Similar to the monitoring plan for wetland mitigation areas, the monitoring plan for the created dune areas will entail annual monitoring and reporting as required by the various regulatory agencies, and will include provisions for identifying any deficiencies and implementation of any corrective measures to ensure the successful establishment of dune habitat.

**Cultural Grassland Mitigation Methodology**

Areas of Cultural Grassland restoration are shown on Figures 7.1, and 7.2, as well as on Figure 7.4.

Following successful re-establishment of the created grasslands there will be no net loss of this habitat. Creation of Cultural Grassland will generally involve the removal and proper disposal of existing paved surfaces and any gravel sub-base at an off-site facility. Mitigation will include the introduction of a native seed mix, such as the "New England Coastal Salt Tolerant Grass Mix," or a similar custom seed mix that contains a variety of native grasses that will tolerate coastal conditions. This custom seed mix is commercially available and includes native species similar to those found within the existing Cultural Grasslands at the Airport: Big Bluestem (*Andropogon gerardii*), Canada

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Wild Rye (*Elymus canadensis*), Sand Lovegrass (*Eragrostis trichodes*), Creeping Red Fescue (*Festuca rubra*), Switchgrass (*Panicum virgatum*), and Indian Grass (*Sorghastrum nutans*). The seed mix will be applied at the recommended application rate of 35 lbs/acre (1,250 SF/lb) and will be lightly raked in and covered with a light mulching of straw to conserve moisture during germination.

### 7.3 Invasive Species Integrated Management Plan and Resource Enhancement

Resource enhancement will consist of invasive species management of common reed (*Phragmites australis*), spotted knapweed (*Centaurea biebersteinii*), and purple loosestrife (*Lythrum salicaria*). Each of these invasive plants has caused significant degradation to a myriad of natural communities throughout the country and has cost millions of dollars to manage and/or eradicate. Below is a brief description of each of these species, their growth habits, location at the Airport observed by field biologists, and suggested methods of management based upon studies conducted by research scientists and land managers throughout the U.S. and worldwide. The most appropriate and preferred method of control for each species that ensures greater success in management of these species has been identified and will be treated in compliance with NPS policies on land management and other regulatory agency requirements.

The enhancement plan is in addition to the invasive species management that is required within areas of wetland restoration. Wetland enhancement activities will involve implementation of the preferred management method, overplanting with native species, and long-term monitoring to track the successful regeneration of native plant communities within wetland areas currently supporting populations of *Phragmites*. Figure 7.5 depicts the surveyed locations of existing *Phragmites* populations within the inner airfield. Enhancement activities are proposed within Wetlands H and I.

#### Common Reed

Common reed, or *Phragmites*, is the predominant and most conspicuous invasive species at the Airport. It is located in many of the freshwater wetlands, at the base of the dune ridge, and within the brackish areas of Hatches Harbor. This tall grass colonizes wetlands and the upper reaches of salt marshes, and is tolerant of a wide range of freshwater and brackish conditions. This species produces a copious seed bank, but spreads predominantly through its extensive root and rhizome (underground stem) system which forms dense mats. This species has flourished within the Hatches Harbor salt marsh system, and is currently being managed within the tidal areas through the efforts of the Hatches Harbor Wetlands Restoration Program. However, this species has also spread within some of the isolated freshwater wetland areas at the Airport, most notably within Wetlands H, I, and B, Wetlands AE and AF among the dunes along the northern lease line, within Wetlands CM and CP in the western corner of the lease line, and within other wetlands to a lesser degree.

Although *Phragmites* provides some wildlife value for a limited number of species, once this non-native genotype has become established at a site, it causes the rapid decline of most other native species found in a given area, drastically reducing wildlife habitat value. This change has been most noticeable in the Hatches Harbor area, where native species were in severe decline due to the infestation of *Phragmites*. It is noted in the literature that areas “invaded by *Phragmites* have excellent potential for recovery” (Marks, 1993), provided that long-term management and monitoring occur.

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Evaluation of Management Techniques for Phragmites

Management techniques for common reed include mechanical and/or chemical measures.

Mechanical Control: Mechanical control methods at the Airport will include: 1) cutting to a height of six inches on an annual basis following flower tassel (typically in late July or August) when the plant is supplying most of its nutrients to the rhizomes (underground stems), with care taken to remove and dispose of the cuttings; (currently used in ILS) and 2) flushing with tidal waters, increasing the salinity, and creating a hostile environment for this species (currently used in Hatches Harbor).

Chemical Control: Chemical control has been shown to be very effective in the management of *Phragmites*. One of the more common herbicides used for control of smaller populations of *Phragmites* is glyphosate. This herbicide is applied after tasseling, again, typically in late July or August. The use of glyphosate along with a surfactant (e.g., Rodeo®) allows this herbicide to stick to and be absorbed by the plant. NPS exotic species staff suggests that Rodeo® is much more effective for *Phragmites* control if applied in September, rather than July and August. The “cut-and-drip” (i.e., stem injection) method for controlling *Phragmites* is considered highly effective in managing this species. Likewise, direct hand spraying of the cut stems with hand-held bottles has been demonstrated to be effective in controlling monotypic stands of this species. Herbicide application is most effective when coupled with mechanical controls. Cutting or mowing of stalks two to three weeks following herbicide application and subsequent removal of mowed materials stimulates growth of previously suppressed (native) plants.

*Proposed Management Techniques for Phragmites*

The Airport proposes an extensive on-site integrated control program to address the populations of *Phragmites* present within Wetland H and I. These areas will be managed using the “cut and drip” method suggested above in September to control the spread of this species within the specified project areas.

## **Purple Loosestrife**

Purple Loosestrife is an opportunistic and aggressive non-native species. Purple loosestrife has been observed in small quantities within Wetland AL, Wetland C, Wetland I, and Wetland C/J/FK, with individuals noted in other more outlying isolated wetland areas at the Airport as well. As with many other invasives, this plant out-competes local native vegetation, reduces native species diversity and wildlife habitat values, and can eliminate food sources, habitat, and cover for waterfowl and other wildlife throughout wetlands. A single mature plant alone has the ability to produce over one million long-lived seeds annually, and is capable of spreading vegetatively through rhizomes.

Evaluation of Management Techniques for Purple Loosestrife

Mechanical Techniques: Managing purple loosestrife depends largely on early detection of this species. Wetland areas where a purple loosestrife population is detected within the first year or two can be managed mechanically through hand pulling or excavation of the entire plant, including the root crown. All parts of the plant must be removed and properly disposed of, since all fragments are able to re-sprout vegetatively. However, it has been shown that more mature populations of purple loosestrife cannot be manually removed, due to the extensive root and rhizome structure. Some land

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managers have found that larger, more mature populations can be controlled through extensive plowing.

Chemical Techniques: It has been documented that smaller, well-developed populations of purple loosestrife have been successfully managed through the applications of glyphosate. The herbicide management technique can be done during August, when seedlings and parent plants can both be sprayed. Large, dense populations (e.g., monocultures) of purple loosestrife can be sprayed by air or boat and must be combined with a high-intensity management plan which will monitor the treated area, and include provisions for re-application of herbicides as necessary.

Biological Techniques: Some success in managing purple loosestrife populations has been achieved through the introduction of leaf-eating beetles (*Galerucella calmariensis* and *G. pusilla*), whose sole food is purple loosestrife. However, this management technique is only successful with large dense areas of purple loosestrife, since smaller populations of purple loosestrife are unable to support a viable population of the leaf-eating beetles. Given the relatively limited extent of this invasive species at the Airport, biological control of this species is not warranted here.

*Proposed Management Techniques for Purple Loosestrife*

Mechanical removal of this species has been identified as the preferred management technique. Scattered individuals and small patches of purple loosestrife have been observed in 2005-2007 in Wetlands AL, C, I, and C/J/FK, and possibly within other more outlying isolated wetlands at the Airport. However, the time elapsed between these observations and the implementation of an invasive species management plan may have allowed these plants to spread. A reconnaissance survey will be conducted prior to treatment to confirm the locations. The use of mechanical measures, such as pulling is proposed in specified project areas. As with management of *Phragmites* within the wetland areas, methods for managing purple loosestrife will be incorporated in the full mitigation plan during permitting.

**Spotted Knapweed**

Spotted knapweed is an aggressive species known for its infestation of croplands and grazing areas. This species produces nearly 1,000 seeds throughout its lifetime, and these seeds may persist in the seedbank for a period of up to five years. Identified as a “likely invasive” species in Massachusetts, spotted knapweed is found at the Airport along the dunes near the northern tip of the Airport lease line and within the dunes surrounding the entrance driveway and parking lot areas. Additional infestations of this species were observed along the bike path adjacent to the northeastern portion of the lease line.

*Evaluation of Management Techniques for Spotted Knapweed*

Management of spotted knapweed is recommended when there is evidence that this species has established and is expanding in population size. As with other invasive species, potential management techniques for spotted knapweed include both mechanical and chemical measures. Research has shown that areas that have experienced infestations by spotted knapweed and have been treated by these measures eventually recovered and returned to the original native groundcover.

Mechanical Techniques: Mechanical control methods for spotted knapweed include two possible techniques. The first involves removal of this species through digging, a management method that has proven to be very effective in areas with densities of less than 10 plants per square meter. Proper disposal of the excavated plants is essential. This management method would be most appropriate within the coastal dunes along the bike path and adjacent to the Airport parking area. In addition, management of this species could be successful if done in an aggressive manner along the dune ridge at the northern tip of the lease line. The second management method would involve mowing of larger, dense populations of spotted knapweed during the months of April and May, preceding germination, and ultimately reducing the plant populations' ability to successfully produce a seed crop.

Chemical Techniques: The literature indicates two herbicides have been used with varying degrees of success for managing spotted knapweed. These include Picloram and 2,4-D chemicals. Picloram, while successful in preventing germination of seeds within the soil, remains active in the soil for a period of up to four years, and its effects on other, native species are unknown. The herbicide known as 2,4-D is considered only a temporary method of control, since it does not prevent germination of the seeds already in the soil.

*Proposed Methods of Control for Spotted Knapweed*

Given the location of spotted knapweed at the Airport, the preferred method of control for those populations along the parking area and bike path within the project areas would be mechanical and without the use of herbicides. The Airport will develop a plan for managing this species as part of the suite of mitigation specific to impacts within coastal dunes during final design and permitting.

**Revegetation and Monitoring Plan**

Following the implementation of a management plan for each of these invasive species, native vegetation will be allowed to re-colonize the area via natural succession. The native communities will be supplemented with additional plantings to facilitate their success and rapid re-colonization. For instance, exposed areas within the coastal dunes that are currently infested with spotted knotweed would be revegetated with American beachgrass, and overplanting with low-growing shrubs such as bayberry. Likewise, supplemental plantings of cranberry or other native shrubs, coupled with overseeding with a native seed mix, could be utilized to stabilize the soils within wetland areas upon successful controlled management of non-native plants. Permanent plots will be established and recorded for each targeted population to monitor the relative and overall success of the management techniques, along with the long-term stability of the rehabilitated areas in accordance with mitigation plan and permitting requirements.

**7.4 Vegetation Management Plan**

Critical areas for aviation are managed at the Airport with a schedule for mowing and brush hog cutting as shown on Figure 7.6. At present, grass areas adjacent to the paved surfaces of the runway, taxiways, along the glide slope area and approach areas at the runway ends, and along an approximately 400-foot wide swath of *Phragmites* along the MALSF lights are mowed as needed, typically three to four times annually. Beyond the grass areas, woody vegetation between the taxiways

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and runway and to the south of the runway is mowed with a brush hog every one to three years to maintain the object-free zone around the critical areas.

The mowing plan was reviewed as requested by NHESP to see if there were any grassland areas outside of the Airport's critical areas that could be mowed on a less-frequent schedule to enhance grassland bird habitat. Given the unique location of the Provincetown Municipal Airport and the small percentage of grassland at the Airport, the mowing schedule under proposed conditions is similar to the current schedule (Figure 7.6) although some of the areas will have shifted slightly.

## 7.5 Construction Management Plan

All construction other than paving operations will be conducted during the Airport's off season, approximately after the first week of September (Labor Day) and prior to April 15th to minimize disruption to rare species during their most active times of year. However, paving will need to be conducted through May because the asphalt plants typically don't open until the middle of April, making it necessary to be able to pave through May.

A Final Construction Management Plan for Environmental Compliance will be developed during the permitting phase that will include specifics on construction timing and methodology, as well as additional measures designed to protect the natural resources at the Airport prior to, during, and immediately following construction. Elements to be included within the Construction Management Plan would include the following:

- Construction timing;
- Turtle Protection Plan / Rare Species Protection Plan;
- Pre-construction habitat "sweeps" for listed species;
- Construction Methods such as the use of hand equipment, driving of the fence posts with an air compressor and elimination of the concrete footing for the posts, the use of wetland mats ("swamp mats"), designated construction access, stockpile locations, erosion control; and an
- Environmental Monitor schedule for overseeing construction activities.

A Preliminary Construction Management Plan to be developed further during the permitting phase is provided in this Section. Additionally, an outline of special design and construction conditions developed in conjunction with NHESP, specific to the construction of the safety/security fence, is also attached.

## 7.6 Summary of Proposed Mitigation

As discussed in the previous sections, proposed on-site mitigation for the Provincetown Airport CIP projects include in-kind wetland restoration and enhancement as proposed in order to address the various regulatory requirements for loss of wetland resource areas. Coastal dunes will be mitigated by an invasive species management program, and habitats will be mitigated by construction management and timing. As noted, site constraints limit the potential for on-site mitigation such that these are confined to areas of existing pavement that will be removed for the taxiway projects (see Table 5-2). The presence of invasive species will provide opportunities for on-site wetland restoration and wetland enhancement.

Therefore, the following proposed mitigation has been developed in compliance with several regulations, performance standards, and guidance documents that relate to wetlands, including the Massachusetts Wetlands Protection Act, the Provincetown Wetland Bylaw, Section 401 (Water Quality Certification) and Section 404 (Individual Permit) of the Clean Water Act, and Performance Standards under the CCC.

*Draft Mitigation Summary for the Provincetown Airport CIP Projects*

***Wetlands***

- Restoration of IVW – 78,000 SF;
- Creation of BVW – 5,000 SF; and
- Enhancement within IVW – 616,350 SF.

***Coastal dunes***

- Creation of coastal dunes – 27,500 SF; and
- Invasive Species Management (in coastal dunes).

***Cultural Grasslands***

- In-kind restoration of Cultural Grasslands – no net loss.

***Rare species protection***

- Implementation of stormwater management practices;
- Construction management and timing; and
- Long-term vegetation management (to benefit rare species habitat).

***Off site Mitigation***

- Off site mitigation provided by the Hatches Harbor Saltmarsh Restoration Project.

**Preliminary Construction Management Plan for Environmental Compliance  
(CMP)**

**Prepared for  
Provincetown Municipal Airport**

**Prepared Pursuant to MEPA DEIR/NPC Certificate No. 13789**

**Introduction**

In compliance with the Secretary's Certificate on the NPC/Draft EIR/EA for the above referenced project, a preliminary CMP has been prepared and included in the FEIR/EA. The projects are currently at the preliminary design phase. The purpose of a CMP is to control and mitigate construction impacts on the environment. Typically a CMP is a requirement included in the contract bid documents and is completed by the selected contractor. A Contractor has not been chosen and it is not possible to produce a detailed CMP.

This document sets out general performance standards and outlines the elements of the CMP. The various elements of the CMP will be refined as project design and permitting go forward. A final CMP will be a requirement of the contract(s) for the CIP projects.

**CMP OUTLINE**

The following sections will be included in the CMP

1. Project Phasing and Construction Conditions
2. Erosion and Sedimentation Control Plan
3. Safety Security Fence Special Construction Methods
4. Turtle Protection Plan
5. Contingency Plans
6. Monitoring / Agency Coordination
7. List of Project Permits

**1. Project Phasing and Construction Conditions**

The CIP projects will be constructed in phases as outline in the following table. All construction other than paving operations will be conducted during the Airport's off season, approximately after the first week of September (Labor Day) and prior to April 15th to minimize disruption to rare species during their most active times of year. However, paving will need to be conducted through May because the asphalt plants typically don't open until the middle of April, making it necessary to be able to pave

through May. Construction that will take place within sensitive areas will be subject to special construction timing and methods discussed below.

Construction Phasing	
CIP Project Element	Construction Year
Reconstruct Terminal Apron	2008--Completed
Westerly Taxiway System Improvements	2013
Reconstruct Easterly End of Partial Parallel TW	
Relocate East End TW	
Install TW Edge Lights and Construct Electric Vault	
Sightseeing Shack Improvements	
Improve Access Road to Approach Lights (MALSF)	2017
Construct Service Access Roads to AWOS and LES	2017
Install Perimeter Fence	2015
Expand Auto Parking	2014
Expand Terminal Building	2016
Expand Turf Apron	2015

*Fill Requirements*

Much of the pavement and base material currently on the site will be reused on site. Any material not used will be removed from the site and disposed of in accordance with all state and federal regulations. The contractor will be required to document the disposal of the material. Exact amounts of construction material required will be determined during final design. Pavement mix will likely be brought in from a batch plant in Dennis. Sand will likely be obtained from Truro and the source of base material is off Cape.

*Truck Trips*

A construction traffic route will be established. It is anticipated that trucks will travel Route 6 to the intersection with Race Point Road. No construction truck traffic will impact downtown Provincetown. It is anticipated that at a maximum, there will be approximately 36 truck trips (round trip) a day. Most trucking operations will take place in the “off season”. Weekday operations will be between 7 AM and 5 PM. Work on the weekends is not anticipated.

*Construction Staging and Access*

Access to the site will be from either Airport Drive or the employee parking area access drive. These access locations will be checked during the day and will be broom cleaned if material is being tracked onto Race Point Road.

All stockpiles will be within the construction area. Equipment, construction trailers, and vehicles will be located within the employee parking area or within the construction area. No parking will be allowed on Race Point Road. The limit of work will be identified with high visibility fencing or hay bales.

*Dust and Noise Control*

Construction equipment using internal combustion engines will be muffled with the equipment manufacturer's muffler or with one providing similar sound suppression.

A water truck will be available to control dust.

**2. Erosion Sedimentation (E/S) Controls**

The selected Contractor will be required to prepare a specific Storm Water Drainage Protection and Erosion-Sedimentation Control Plan for each project element. The plans will include storm drain inlet protection measures, spill prevention and control, housekeeping practices, and wetland protection measures. The plan will be reviewed and approved by the Resident Engineer after consultation with the Environmental Monitor and permitting agencies.

All finished graded slopes will be protected from erosion using erosion matting and hydro seeding with an approved native seed mix. Storm drain inlets will be protected from sedimentation. Silt fencing and wood chip bags will be used to retain sediment and protect wetland areas. Hay bales that could introduce invasive species will not be used.

**3. Safety Security Fence Special Construction Methods**

An operational mitigation plan will be developed for the safety/security fence to repair any blocked wildlife gaps due to shifting sands or vegetation.

**4. Rare Species Protection Plan**

A Turtle Protection Plan for construction will be developed in final detail in response to permit requirements and will be included in the contract documents for the specific project elements.

Construction will take place in accordance with NHESP agency avoidance dates. Clearing and construction of the fence will take place during late fall and through the winter, weather permitting.

The following outline indicates the general measures that could be carried out.

- Environmental Monitor
- Worker training on turtle identification and relocation protocol
- Protocol for turtle relocation out of construction zone
- Installation of erosion control / turtle barriers to define construction zone
- Pre-construction turtle survey and removal of individuals out of construction zone
- Daily worksite inspection of barrier and area around parked construction vehicles
- Timing of Construction.

**5. Contingencies**

A Spill Control Plan will be developed and materials will be on-site to address any incidents. An erosion control plan will be implemented and material will be on-site to repair and maintain erosion controls.

**6. Monitoring / Agency Coordination**

Contact List; To be completed

Reporting Schedule: To be completed

*Airfield Operations Management*

The Airport Manager will be in charge of overall construction activities to maintain safe airfield operations.

*Resident Engineer*

The Resident Engineer will be the contact person and will coordinate all activities associated with the project and environmental compliance.

*Environmental Monitor*

In compliance with permit requirements, an Environmental Monitor will be on-site

**7. List of Project Permits**

Permitting Requirements & Phasing	
CIP Project Element	Expected Permitting Structure
Reconstruct Terminal Apron ( <i>Completed</i> )	Order of Conditions ( <i>Issued</i> )
Westerly Taxiway System Improvements Reconstruct Easterly End of Partial Parallel TW Relocate East End TW Install TW Lighting and Construct Electric Vault Sightseeing Shack Improvements	Order of Conditions; Individual WQC (or part of Variance); Section 404 ACOE permit; No Take under MESA Conditions; DRI Construction Phase 1
Improve Access Road to Approach Lights (MALSF)	Order of Conditions, Individual WQC (or part of Variance); Section 404 ACOE permit; No Take with MESA Conditions; DRI Construction Phase 3
Construct Service Access Roads to AWOS and LES	Order of Conditions; WQC Variance; Section 404 ACOE permit; No Take with MESA Conditions; DRI Construction Phase 3
Install Perimeter Fence	WPA Variance/ Provincetown Conservation Commission NOI; WQC Variance; Section 404 ACOE permit; No Take with MESA Conditions; DRI Construction Phase 2
Expand Auto Parking	Order of Conditions; No Take with Conditions; DRI Construction Phase 2
Expand Terminal Building	Request for Determination of Applicability (RDA); DRI Construction Phase 3
Expand Turf Apron	Order of Conditions; No Take with Conditions; DRI Construction Phase 2
<i>Source: Consultant Evaluation</i>	

### **Installation of Safety Security Fencing Preliminary Outline of Special Design and Construction Conditions**

The following is a preliminary discussion of construction conditions that would be incorporated into the Contract Documents and Specifications for Installation of Safety Security Fencing.

#### **Design Phase Details**

The chain-link metal fabric and posts will be black polyvinylchloride (PVC) coated steel. The fabric height will be 8 feet, topped with 3 strands of barbed wire for total height of 9 feet. The posts are placed 10 feet apart to form 10 foot bays.

A typical fence design detail is shown in Figure 6.7 (taken from the EIR/EA/DRI document) and includes a 3 foot deep concrete footing with a 1 to 4 inch space between the bottom tension wire and the ground.

Special design details for the fence located within sensitive areas such as wetland or coastal dune areas have been developed. Figure 6.7 also illustrates the detail for the bottom tension wire to provide rare species passage and fence posts that are driven to depth with no excavation for a concrete footing.

The number and location of these rare species passages will be identified on the construction plans after consultation with permitting agencies

#### **Construction Phase Details**

During active construction there will be an Environmental Monitor (EM) on site.

Prior to the start of construction, all construction crews will be provided with environment awareness training that will include Box Turtle and Spadefoot identification and management procedures as outlined in the Species Protection Plans. The training will also include Best Management Measures that must be used to protect wetlands and the fragile coastal dune ground surface.

The fence alignment will be surveyed and marked in the field. The limits of clearing will also be marked in the field. Clearing for the fence alignment will be done only with hand equipment or small equipment approved by the EM and Resident Engineer (RE). If possible clearing will be done during winter months on frozen ground. Grubbing will not be allowed; stock piling of wood chips will not be allowed. All vehicles will be equipped with low ground pressure tires. If ground conditions are not suitable for machinery, hand clearing will be done as determined by the RE. Brush mats or swamp mats will be used to protect the surface. Removal of clearing waste will be done in a way that does not disturb the ground surface. No material can be buried.

determined by the RE. Brush mats or swamp mats will be used to protect the surface. Removal of clearing waste will be done in a way that does not disturb the ground surface. No material can be buried.

Access routes for the fence will be identified on the plans. No other access will be allowed unless approved by the RE and EM. Equipment and vehicles will be removed from the fence alignment overnight and checked for leaks at the start of the day. All equipment used during construction of the fence will be placed on pads or within containers to contain any spills or leaks. For example, a small compressor used to drive the fence posts could be placed in a child's swimming pool for containment.

To minimize impacts within wetlands and coastal dune areas, fence posts will be driven to a minimum of 6 feet. Only hand held and small equipment will be allowed in these areas. A typical pneumatic post driver is shown in the attached photo. All equipment will be lightweight, have wide tires or other features to provide low ground pressure. Swamp mats will also be used to support any equipment such as air compressors.

Where excavation for a footing is specified, such as areas near the terminal, fuel storage, parking etc., excavated soils will be placed on a tarp or within a container, and not directly on the ground. Any soil not used for backfill will be carried away and not spread on the existing ground.

#### **Fence Operational Mitigation Plan**

A plan will be developed that shows the locations of the rare species passage bays. The bays will also be permanently marked in the field (permanent tag at the top of the fence bay) for easy location.

The gaps will be inspected annually in the early spring. A schedule for inspection (and repair if necessary) of the rare species passage bays will be developed after consultation with resource agencies.

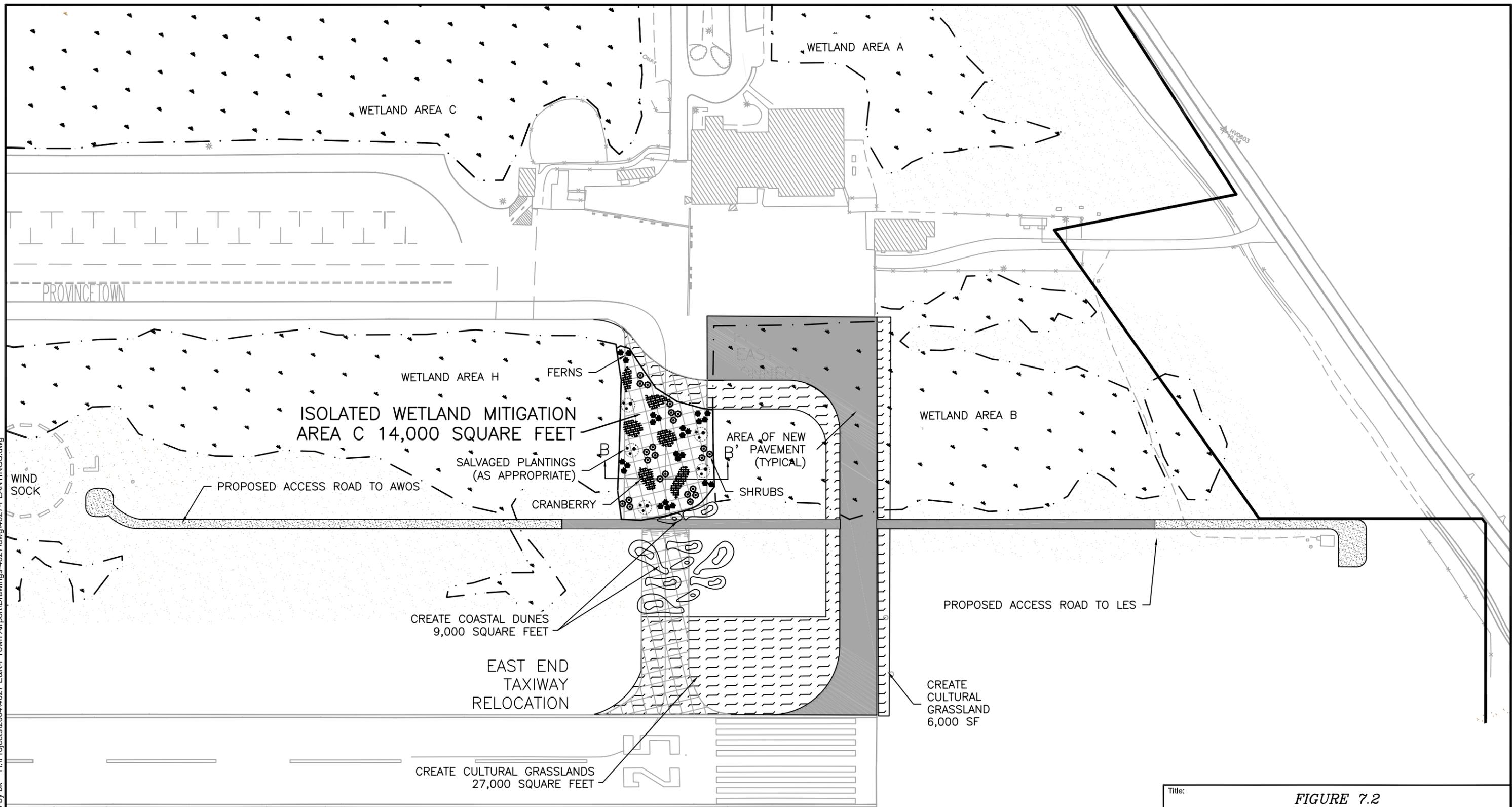
The clear area on either side of the fence will be cut with a brush hog every 1 to 3 years as necessary.



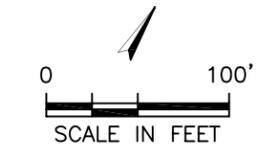




last modified: 08/17/10 printed: 08/19/10 by bk H:\Projects\2004\4027 E&K-PTown Airport\Drawings\4027.dwg\4027-PLANTINGS.dwg



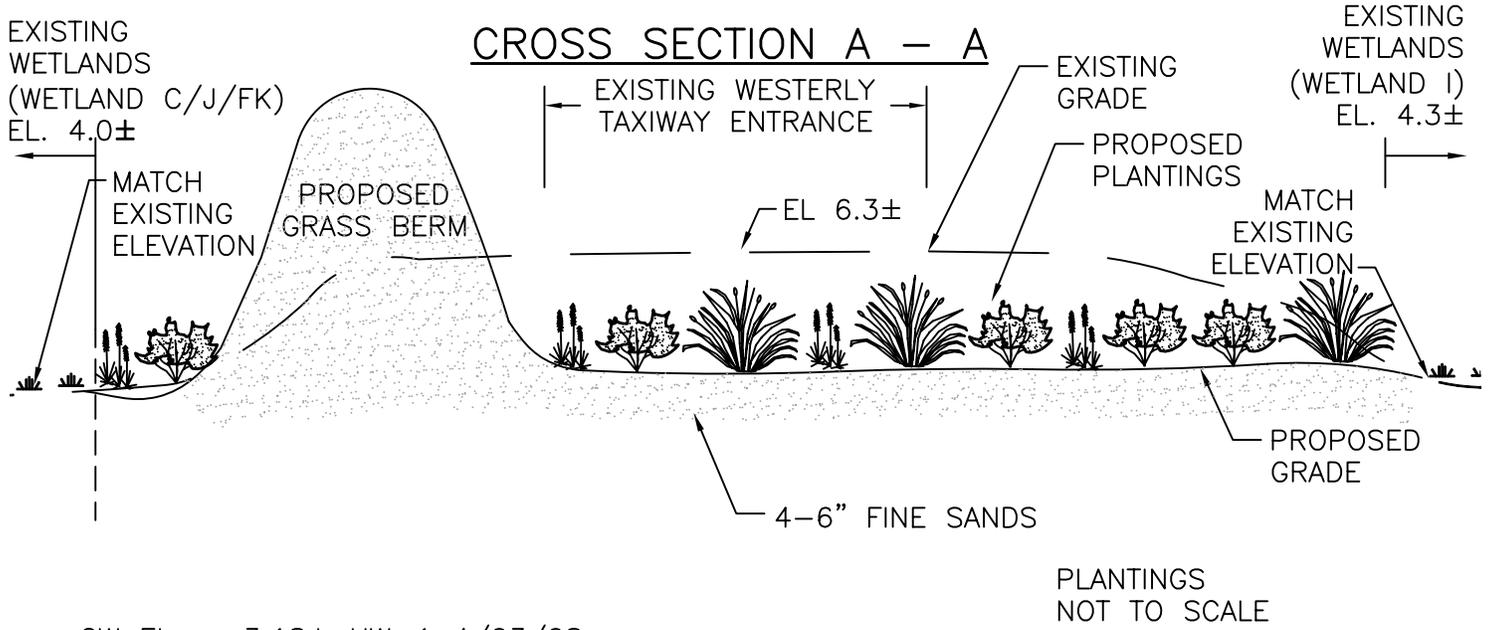
LEGEND	
	CULTURAL GRASSLANDS
	IMPERVIOUS AREA TO BE REMOVED
	NEW IMPERVIOUS AREA
	NEW GRAVEL AREA
	COASTAL DUNES
	RESTORED WETLANDS



Title: <b>FIGURE 7.2</b>				
Project: <b>PROVINCETOWN MUNICIPAL AIRPORT CAPITAL IMPROVEMENTS PLAN EAST END MITIGATION</b>				
Date: 8/17/2010	Rev:	Design By:	Drawn By: ERK	Checked By: AMB
Prepared For: Provincetown Municipal Airport Race Point Road Provincetown, Massachusetts Phone: (508) 487-0741 Fax: (508) 487-4110			Design By: <b>Horsley Witten Group Environmental Services</b> 90 Route 6A Sandwich, MA 02563 508-833-6600 voice 508-833-3150 fax	

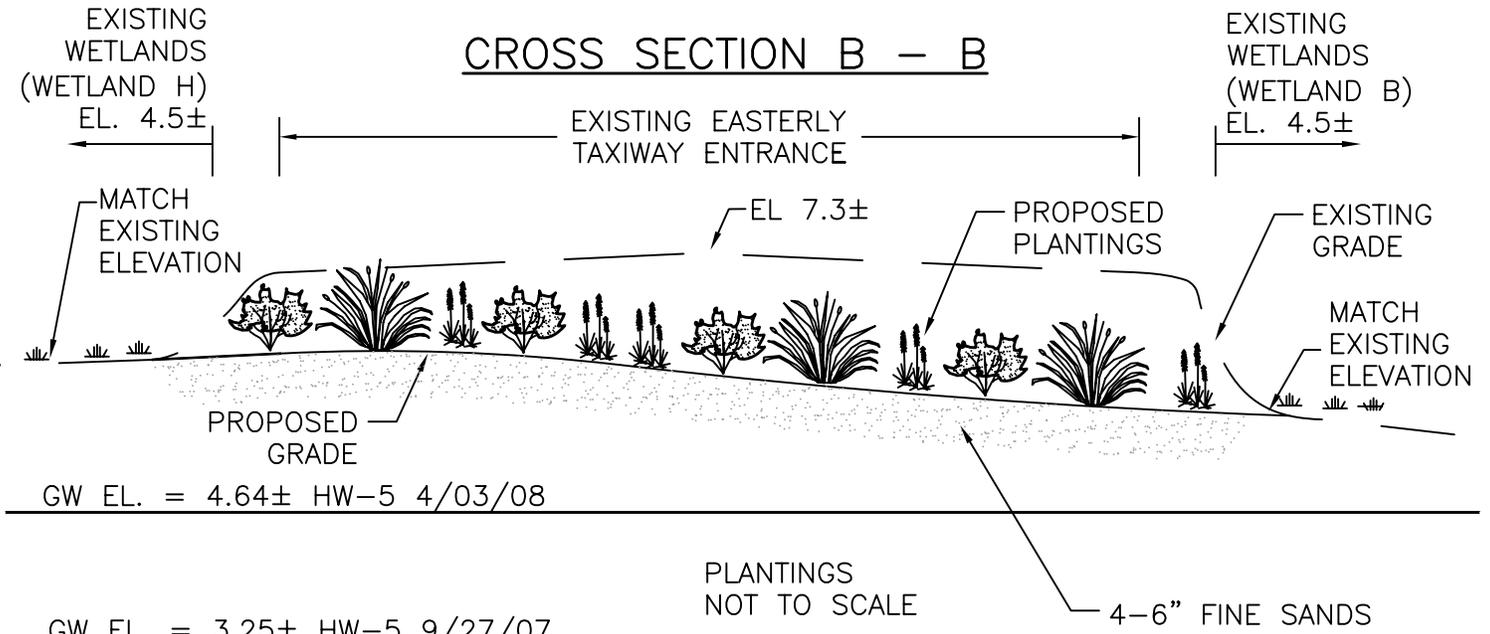






GW EL. = 3.18± HW-1 4/03/08

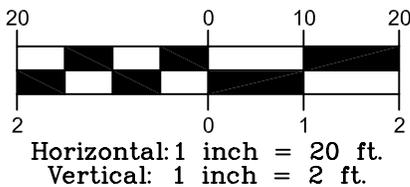
GW EL. = 2.57± HW-1 9/21/07



GW EL. = 4.64± HW-5 4/03/08

GW EL. = 3.25± HW-5 9/27/07

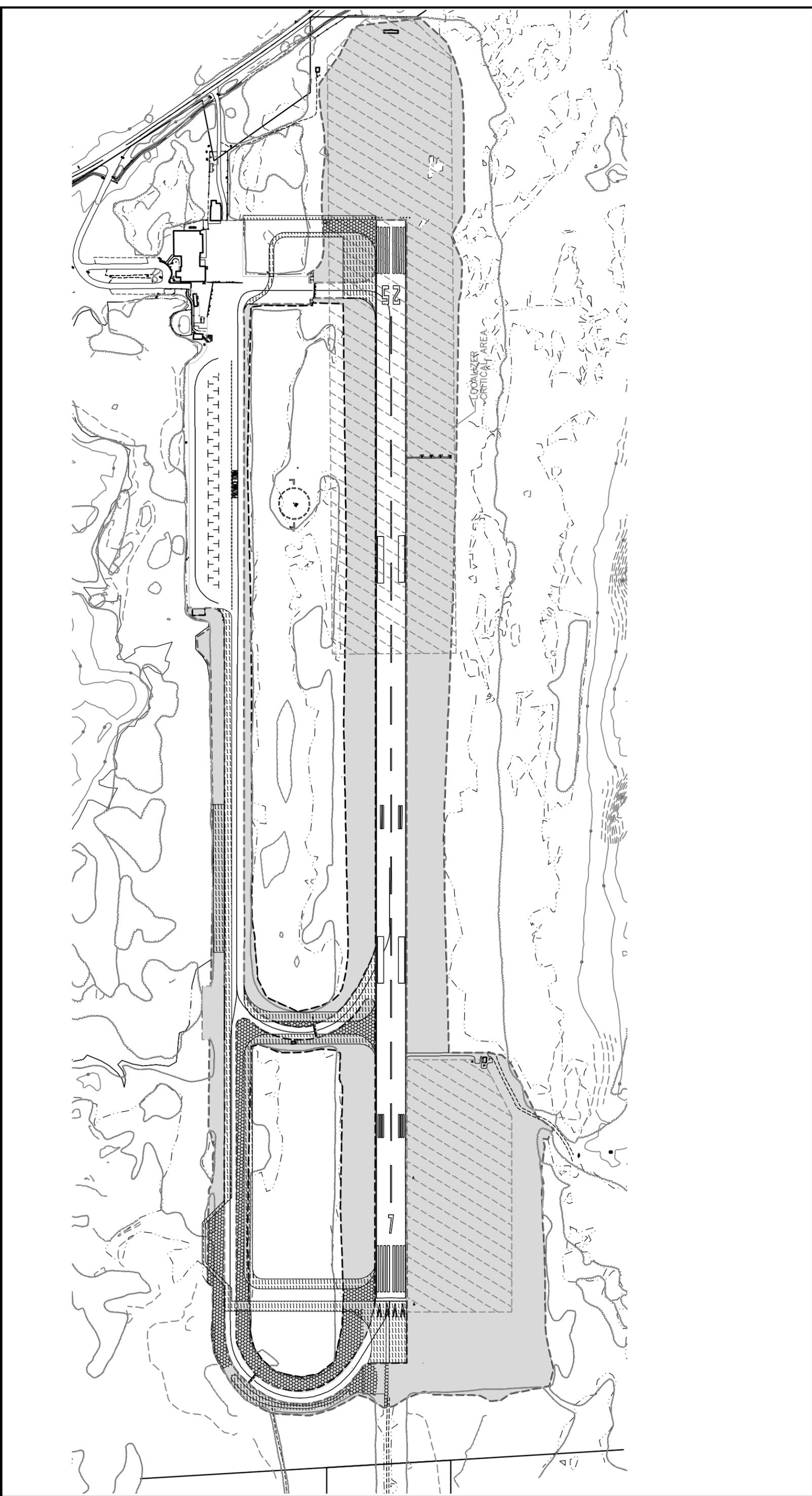
#### GRAPHIC SCALE



Title: <b>FIGURE 7.3</b>				
Project: <b>PROVINCETOWN MUNICIPAL AIRPORT CAPITAL IMPROVEMENTS PLAN PROVINCETOWN, MASSACHUSETTS</b>				
Date: 8/17/2010	Rev:	Design By:	Drawn By: ERK	Checked By: AMB
Prepared For: Provincetown Municipal Airport Race Point Road Provincetown, Massachusetts Phone: (508) 487-0741 Fax: (508) 487-4110		Design By: <b>Horsley Witten Group Environmental Services</b> 90 Route 6A Sandwich, MA 02563 508-833-6600 voice 508-833-3150 fax		



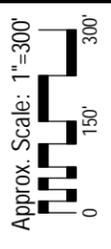




Provincetown Municipal Airport  
Capital Improvements Plan

**GRASSLAND IMPACT AND RESTORATION PLAN**

Figure 7.4

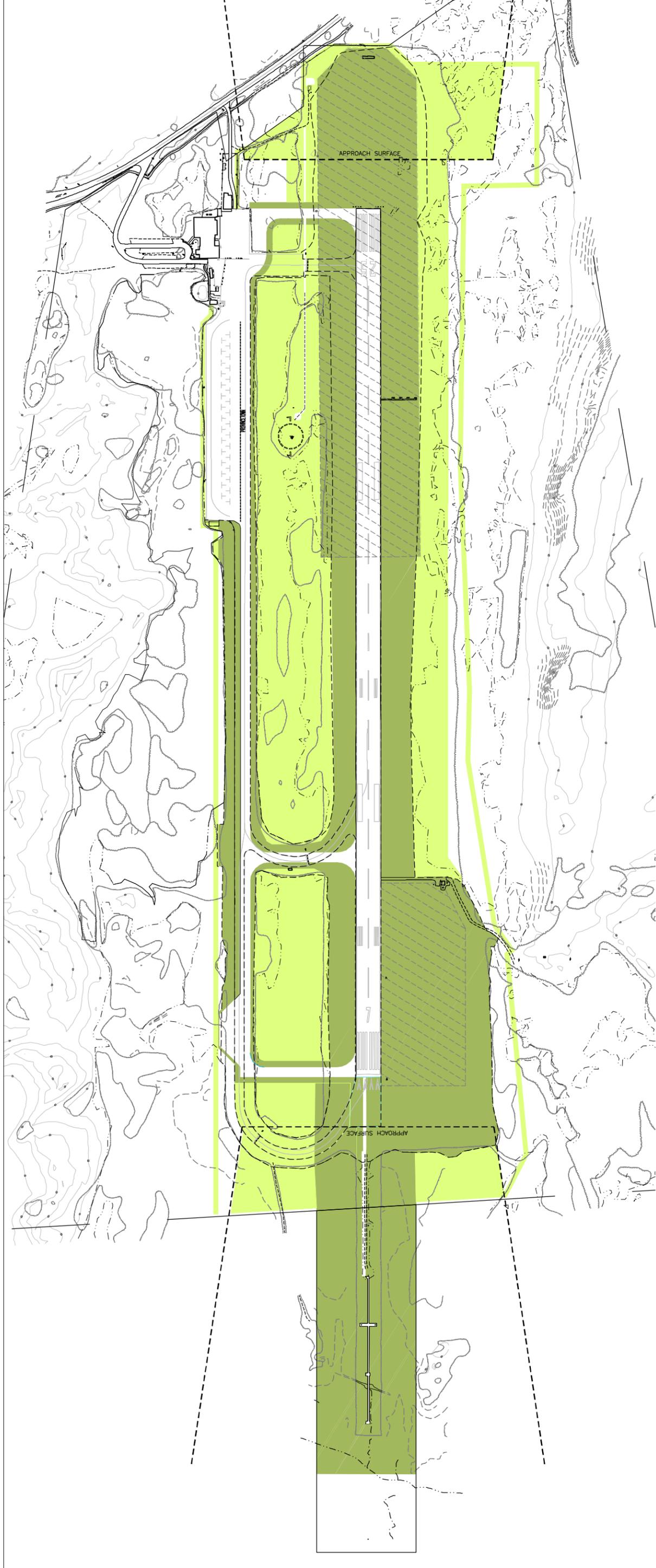


NOTE: RESTORATION AREAS CAN BE SEEN AT A LARGER SCALE ON FIGURES 7.1 THRU 7.4

-  EXISTING CULTURAL GRASSLAND
-  GRASSLAND RESTORATION AREA
-  GRASSLAND IMPACT AREA
-  EXISTING WETLAND LIMITS
-  EXISTING GRASSLAND LIMITS
-  EXISTING BRUSHLINE







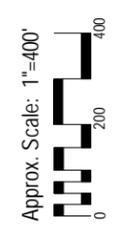
VEGETATION MANAGEMENT PLAN

VEGETATION MANAGEMENT SCHEDULES

- SCHEDULE 1  
"UNRESTRICTED" MOWING SCHEDULE FOR GRASS AND PHRAGMITES
- SCHEDULE 2  
BRUSH HOG AREA EVERY 1-3 YEARS AFTER SEPTEMBER 15.

Prepared By:

- Legend:
- EXISTING GRASSLAND LIMITS
  - EXISTING WETLAND LIMITS
  - SAFETY SECURITY FENCE
  - EXISTING TREE LINE
  - EXISTING BRUSHLINE





## **SECTION 8.0 STATUTORY AND REGULATORY STANDARDS AND COMPLIANCE**

### **8.1 National Park Service Special Use Permit**

The Airport pre-dates the CCNS, which was created by Public Law 87-126 in 1961. As part of the land acquisition for the CCNS, the Commonwealth of Massachusetts authorized the Deed of Conveyance for the Province Lands in 1962. The deed restriction in the conveyance title recognizes the pre-existing lease between the Commonwealth of Massachusetts and the Town of Provincetown for the Airport facilities and access roads. After that lease expired a Special Use Permit was used to authorize operations of the Airport within the National Park Service lands. In the past, twenty-year Special Use Permits have been issued and reissued between the NPS and the Provincetown Airport Commission to establish policies, procedures and other terms under which Airport operations and improvements are carried out. The NPS has directed this form of agreement change to a Memorandum of Agreement for the purposes of coordinating airport operations. The Provincetown Airport Commission is currently working cooperatively toward finalizing this Memorandum of Agreement. The use of NPS land requires that NEPA be met when analyzing and reviewing potential changes to the Airport.

### **8.2 NEPA / MEPA Process**

A combined Environmental Impact Report (EIR) and Environmental Assessment (EA) document has been prepared to meet the requirements of the Massachusetts Environmental Policy Act (MEPA) and the National Environmental Policy Act (NEPA). The Draft document was distributed on May 31, 2007.

The FAA National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions (Order 5050.4B) and FAA Environmental Impacts: Policies and Procedures (Order 1050.1E) provide the instructions for FAA compliance with NEPA. Additionally, the NPS DO-12 Handbook and Director's Order have been reviewed so that the FEIR/EA would satisfy both FAA and NPS NEPA requirements. The NPS comments on the DEA/EIR and subsequent coordination meetings have been considered in the preparation of the final document.

The MEPA Scope and comments on the NPC/Draft EIR/EA have guided the evaluation on the state level pursuant to the Massachusetts Environmental Policy Act (MEPA).

This FEIR/EA is also part of the DRI submission pursuant to the Cape Cod Commission regulations, as discussed in Section 8.13.

### **8.3 Coastal Zone Management Program Federal Consistency Review**

The Coastal Zone Management Act of 1972 established a program that gives coastal states funding to implement plans to manage coastal resources. Although the Massachusetts Coastal Zone Management Office (MCZM) is not a permitting agency it has the authority to review federal actions within the

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coastal zone for consistency with CZM policies. The Coastal Zone is defined to include all of Barnstable County but excludes federal lands (301 CMR 21.05).

A separate CZM Consistency Review letter was submitted for the Terminal Apron Reconstruction Project in February of 2008. The CZM office concurred that the project was consistent with CZM policies as shown on the letter dated April 2, 2008, included in Section 10.1

A CZM Consistency Review letter has been submitted for the remaining CIP projects to MA CZM along with the FEIR/EA. A copy of the submission is included in Section 9.7.

#### **8.4 Americans with Disabilities Act**

The Americans with Disabilities Act of 1990 (ADA) guarantees equal opportunity for individuals with disabilities in public accommodations, employment, transportation, state and local government services and telecommunications. The Rehabilitation Act of 1973, the Air Carrier Access Act of 1986, and the Architectural Barriers Act of 1968 also relate to individuals covered by the ADA. The US Department of Transportation has issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. FAA Advisory Circular 150/5360-14 implements the objectives set forth in the ADA as well as the Architectural Barriers Act.

The existing parking lot and terminal building are in compliance with access requirements for individuals with disabilities. The proposed parking area and terminal building project elements of the CIP will be in full compliance with the ADA and other related statutes.

#### **8.5 Clean Air Act**

The Clean Air Act regulates air emissions from area, stationary, and mobile sources. The Act has been amended several times, most recently in 1990. This law authorizes the U.S. Environmental Protection Agency to establish National Ambient Air Quality Standards (NAAQS).

The amendments establish three categories of areas in which air quality is better than ambient air quality standards. According to information from the NPS, the CCNS is designated a Class II area.

Non-attainment areas are areas which do not meet national ambient air quality standards. For projects within non-attainment areas or maintenance areas, Federal agencies must complete a determination for conformity with the State Implementation Plan (SIP).

The process for assessing the air quality impact of FAA proposed actions is discussed in Air Quality Procedures for Civilian Airports and Air Force Bases, April 1997, and FAA Order 1050.1. The proposed CIP projects are not located within a non-attainment area and will not exceed 180,000 GA annual operations or more than 1.3 million passengers. Therefore, a NAAQS Assessment is not required.

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## 8.6 DOT Act Section 4(f)

Section 4(f) of the Department of Transportation Act of 1966 (recodified as 49 USC Section 303(c)) states that land from a publicly owned park, recreation area, wildlife or waterfowl refuge, or land of a historic site can be used for a transportation project only if:

- there is no prudent and feasible alternative that would avoid using the resource, and
- the project includes all possible planning to minimize impacts.

A use may be direct (physical) or indirect (constructive). A direct use occurs when there is an actual physical taking of a Section 4(f) property. A constructive use occurs when adverse indirect impacts would substantially impair the use of the resource. Typically, the most common constructive use resulting from an airport project relates to visual and noise impacts.

After coordination with the National Park Service (October 31, 2007 comment letter on NPC/Draft EA/EIR), FAA has determined that the projects will be evaluated for Section 4(f). A Section 4(f) Evaluation is included in Section 9 of the FEIR/EA.

## 8.7 Executive Order 11988 Floodplain Management

Executive Order 11988 requires federal actions to avoid or minimize impacts to the 100 year floodplain. While at least a portion of each CIP project will occur at elevations below the 100-year floodplain, 10 to 11 feet above mean sea level, none of the CIP projects are anticipated to have any adverse affect on the flood storage capacity relative to the ability of these low-lying areas to temporarily retain and release coastal waters during and following a flooding event at the Airport or within the surrounding CCNS lands.

Project alternatives have been considered that will avoid adverse effects and incompatible development in the floodplains. The proposed projects will not displace flood waters nor will they minimize the area available for flood storage because of the proposed wetland mitigation. A Statement of Findings is provided in Section 9.

## 8.8 Executive Order 11990 Protection of Wetlands

Executive Order 11990 requires federal actions to avoid or minimize impacts to wetlands. Wetland impacts associated with the proposed projects have been avoided and minimized to the extent possible. Mitigation is proposed for unavoidable impacts.

Environmentally preferred alternatives have been selected for CIP projects so as to minimize the destruction, loss, and/or degradation of wetlands and other resource areas. The selected alternatives include all practicable measures to minimize harm to wetlands and also incorporate substantial mitigation in order to restore and enhance the natural and beneficial values of the wetlands encountered within the Airport. See Section 7.0 for details on mitigation plans. Furthermore, all projects will be carried out in accordance with the Massachusetts Wetlands Protection Act regulations minimum performance standards, Provincetown Wetlands Bylaw, the Federal Clean Water Act (33 U.S.C. 1251, et seq.), and the minimum performance standards under the CCC RPP to the fullest extent practicable.

A Statement of Findings is provided in Section 9

### **8.9 Executive Order 12898 Environmental Justice**

Executive Order 12898 requires federal actions to address Environmental Justice in Minority Populations and Low-Income Populations. The MassGIS Environmental Justice (EJ) data layer indicates two EJ areas in downtown Provincetown. The proposed CIP projects will not impact minority or low-income populations.

### **8.10 Federal Endangered Species Act of 1973, as amended**

Consultation has been carried out with the U.S. Fish and Wildlife Service (FWS) regarding federal listed endangered species. The New England Field Office indicated that beaches north and west of the project are known to support Federally-Threatened piping plovers. At the time, the FWS was not able to make a determination as to whether the projects would adversely affect piping plovers. The FWS requested copies of all environmental documents and the NPC/Draft EIR/EA was sent to the FWS NERO. No comment on the Draft was received. The FEIR/EA was sent to the FWS. The NPS has indicated that they treat all State-listed species (as listed by NHESP) the same as any Federally-Threatened or Endangered species, and, in addition to minimizing impacts, will seek to further their protection along with promoting their recovery and security on a Federal level. Coordination will continue with NPS and NHESP regarding protection of listed species.

### **8.11 National Historic Preservation Act of 1966 and Archeological Resources Protection Act of 1979**

Section 106 of the National Historic Preservation Act (NHPA) requires Federal agencies to consider the effects of their undertaking on properties on or eligible for inclusion in the National Register of Historic Places.

The Archaeological Resources Protection Act (ARPA) prohibits unauthorized excavation of archaeological resources on Federal or Indian lands.

FAA compliance responsibilities pursuant to these Acts include consultation, determination of action as an undertaking, determination of area of potential effect, evaluation and findings.

Initial written consultation was carried out with the Massachusetts Historical Commission (MHC), State Historic Preservation Officer, and the Tribal Historic Preservation Officer of the Wampanoag Tribe of Gay head (Aquinnah) in January of 2005 during the preparation of the 2005 Master Plan. Additional written consultation was completed with MHC in March and April of 2007 during preparation of the NPC/Draft EIR/EA. NPS commented on Section 106 issues in their comment letter on the NPC/Draft EIR/EA. The CCNS concurs with MHC that no historic structures are present in the immediate area of potential effect. The CCNS park archaeologist has determined that no archaeological testing is necessary for the fence or taxiway lights project. Agency correspondence is included in Section 10. NPS comments letters are provided in Section 13.

Additional coordination was carried out with MHC (by phone to confirm their April 2, 2007 determination), the Wampanoag Tribe of Gay Head (Aquinnah) (written) and the Mashpee Wampanoag Tribe (written) prior to completion of the FEIR/EA. This FEIR/EA includes all comment letters received. No comment letters were received from either of the Tribal Historic Preservation Officers. As indicated in Section 11, MHC and the two tribes will receive copies of the FEIR/EA.

### **8.12 US ACOE Section 404 Permit**

The CIP project is subject to review by the U.S. Army Corps of Engineers (ACOE) pursuant to Section 404 of the Clean Water Act. After a site visit to review wetland boundaries, the ACOE determined it has jurisdiction based on the presence of “waters of the United States” and/or “navigable waters of the United States”. The Jurisdictional Determination is included in Section 10.1.

An application for an individual Section 404 permit will be submitted. Coordination has been carried out with the Corps regarding the location, type, and amount of mitigation and will be further refined throughout the permitting process. The project, and associated mitigation and monitoring requirements, will comply with the Corps mitigation policy. A discussion of the permitting requirements is provided in Section 6.1.

### **8.13 Cape Cod Commission DRI Process**

The CIP, as a project requiring an EIR, is categorically deemed to be a DRI under the Cape Cod Commission Act, Section 12(i), and is subject to review by the CCC. Such projects are reviewed for consistency with performance standards contained in the CCC’s Regional Policy Plan. Prior to the submission of the NPC/Draft EIR/EA, the Airport Commission initiated a joint MEPA/CCC review.

The CCC held a hearing on June 27, 2007 to gather information for the joint CCC/MEPA review. A DRI application was submitted to the CCC at the time of the submission of the FEIR/EA. After the FEIR/EA is issued a Certificate by MEPA, CCC will hold a Public Hearing on the DRI application.

### **8.14 DEP Section 401 Water Quality Certificate**

Pursuant to the Federal Clean Water Act, any project that would impact wetlands requires a Water Quality Certificate to ensure that the project is in compliance with state water quality standards and regulations. The Water Quality Certificate is issued by DEP. The Airport is located within the CCNS, and as such all waters (and wetlands) in and adjacent to the CCNS are designated Outstanding Resource Waters (ORWs) pursuant to 314 CMR 4.06, Cape Cod Coastal Drainage Area.

An application for an individual Section 401 permit or a Variance will be submitted. A detailed discussion of the permitting requirements is provided in Section 6.1.

### **8.15 MA Wetlands Protection Act and Provincetown Bylaw**

An Abbreviated Notice of Resource Area Delineation (ANRAD) was filed with the Provincetown Conservation Commission. The ANRAD was amended after additional delineation. The delineated wetland boundaries were reviewed in the field and the boundaries were approved by the Commission,

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as shown on figures in this document. The ANRAD was granted a 3 year extension in January 2010 and is still valid.

Notice of Intent filings will be submitted for individual projects, or groups of projects, depending on the project design and construction schedules. An Order of Conditions was issued for the Terminal Apron Reconstruction Project. Section 6 discusses the permitting phasing for the projects.

Additional discussion of the permitting process is provided in Section 6.1.

### **8.16 MA Endangered Species Act**

The CIP projects are located within areas mapped as both Priority Habitat of Rare Species and Estimated Habitat of Rare Wildlife and Certified Vernal Pools as designated by the NHESP. The CIP projects will require review under the Massachusetts Endangered Species Act. Consultation has been initiated with staff at NHESP and will continue. A request for MESA Project Review will be submitted when the FEIR/EA is submitted. If NHESP issues a determination of No Take, with conditions, the process will be complete.

Additional discussion of the permitting process is provided in Section 6.1.

### **8.17 Executive Order 385 and CCC Regional Policy Plan**

State Executive Order 385 Planning for Growth, encourages economic development that is consistent with the goals of protecting environmental quality and preserving environmental resources. Executive Order 385 requires state agency actions to consider local and regional growth management plans. The CIP projects will be reviewed as a DRI for compliance with the CCC RPP.

### **8.18 National Pollution Discharge Elimination System (NPDES)**

The NPDES Storm Water Program requires operators of large and small construction sites to obtain authorization to discharge stormwater under an NPDES construction storm water permit. This program is administered jointly by the Environmental Protection Agency (EPA) and the Massachusetts DEP. A Notice of Intent will be filed with the U.S. Environmental Protection Agency for an NPDES Construction Management General Permit 72 hours prior to the start of construction. The contractor will be required to prepare a Stormwater Pollution Prevention Plan and adhere to the plan to control stormwater and prevent the movement of sediment from the construction site.

Operation of the Airport is subject to the NPDES Stormwater Multi-Sector General Permit. According to the NPDES Program, airports are listed under Category vii – “Transportation facilities with Standard Industrial Codes 40, 41, 42, 43, 44, 45, and 5171, which have Cleaning Operations or Airport Deicing Operations.” The Airport is Sector S, Air Transportation Facilities, and its Standard Industrial Code is 4580, “airports, flying fields, and surfaces.” Those areas of the Airport that discharge to “waters of the United States” are subject to NPDES jurisdiction. For Provincetown Municipal Airport, this means those areas that are tributary to the wetlands onsite.

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In compliance with the NPDES Program, the Airport developed a SWPPP in October 2000, revised in July 2002. The SWPPP describes the drainage system at the Airport, identifies potential pollution sources that might enter the drainage network and impact downstream receiving waters, and lists BMPs for decreasing impacts.



## **SECTION 9.0      FINDINGS**

This section contains the following Findings.

- 9.1      MA Department of Transportation Aeronautics Division Draft Section 61 Findings
- 9.2      MA Department of Environmental Protection Draft Section 61 Findings
- 9.3      MA Natural Heritage and Endangered Species Program Draft Section 61 Findings
- 9.4      Section 4(f) Evaluation
- 9.5      Statement of Findings, E.O. 11990 Protection of Wetlands
- 9.6      Statement of Findings, E.O. 11988 Floodplain Management
- 9.7      CZM Federal Consistency Certification



**9.1    MassDOT    Aeronautics    Draft    Section    61    Findings**



Massachusetts Department of Transportation  
Aeronautics Division

Section 61 Finding (MGL Chapter 30, Section 61)

Project: Capital Improvements Plan (CIP)  
Project Location: Provincetown Municipal Airport  
Project Proponent: Provincetown Airport Commission  
EEA Number: 13789

This Section 61 Findings for the proposed CIP projects has been prepared pursuant to Massachusetts General Laws, Chapter 30, Section 61 and 301 CMR 11.07. As a state agency, the Massachusetts Department of Transportation Aeronautics Division (MassDOT) is required to review, evaluate and determine the environmental impacts of its actions and issue a Finding. The MassDOT action is to fund a percentage of the construction and mitigation costs.

The Findings are based on the information presented in the FEIR/EA (EEA #13789) which outlines the measures that will be implemented by the Provincetown Municipal Airport Commission to minimize the unavoidable environmental impacts associated with the projects.

### **CIP Project Summary**

The Provincetown Municipal Airport Commission proposes a Capital Improvements Plan (CIP) of safety and facility improvements at Provincetown Municipal Airport (Airport). The purpose of the CIP project elements is to enhance Airport safety and security and enhance the efficiency of the Airport to more fully meet the current and anticipated demand. The CIP projects are needed because certain airfield facilities do not meet current FAA safety and security standards and the Airport's current parking and terminal facilities can not efficiently meet current and projected demand. Implementation of the CIP will fulfill the mission of the Airport to operate a safe, secure, and reliable primary service airport receiving scheduled airline passenger service. The projects are listed below.

### **Proposed CIP Projects**

- Westerly Taxiway System Improvements
- Relocate East End TW
- Reconstruct Easterly End of Partial Parallel TW
- Reconstruct Terminal Apron
- Install TW Edge Lights and Construct Electric Vault
- Rehabilitate or Replace Sightseeing Shack
- Improve Access Road to Approach Lights (MALSF)
- Construct Service Access Roads to AWOS and LES
- Install Perimeter Fence
- Expand Turf Apron

- Expand Auto Parking
- Expand Terminal Building

## **MEPA History**

A MEPA Certificate on the Environmental Notification Norm (ENF) was issued for the project on May 26, 2006. A MEPA Certificate on the NPC/Draft Environmental Impact Report/Environmental Assessment (DEIR/EA) was issued on July 18, 2007. A Certificate on the FEIR/EA was issued on February 17, 2012 stating that the FEIR/EA adequately and properly complied with MEPA and its implementing regulations.

## **Summary of Impacts**

The CIP projects will have unavoidable impacts to wetland, coastal dune, cultural grasslands and species habitat. Impacts have been minimized through design alternatives, construction timing and methods, and long-term operational mitigation measures. A summary of impacts for each element of the CIP is presented in Table 1.

## **Mitigation Measures**

Measures have been incorporated in the design phase, construction phase mitigation, and operational phase.

### Design Phase Mitigation

- Wetland Restoration
- Coastal Dune Restoration
- Cultural Grassland Restoration
- Stormwater Management
- Landscaping and Building Design

### Construction Phase Mitigation

- Construction Management Plan
- Turtle Protection Plan

### Operational Mitigation

- Vegetation Management Plan
- Invasive Species Management Plan
- Operational Mitigation Plan
- Stormwater Management Plan
- TDM Measures

## **Mitigation Implementation Schedule**

Mitigation measures (summarized in Table 2) and outlined in detail in the FEIR document and permits will be incorporated into all contract documents to insure implementation. The Airport Commission will be the responsible party for implementation of the mitigation measures.

**Table 1 Summary Of Impacts And Proposed Mitigation Measures For Preferred Alternatives For CIP Projects**

PROPOSED ALTERATION					PROPOSED MITIGATION		
Project	Type of Resource Area	Area of Proposed Alteration (SF)	Species Habitat	Description of Proposed Alteration	Description of Proposed Mitigation	Area of Proposed Mitigation (SF)	
(1) Westerly TW System Improvements	IVW	28,655 (Wetland I)	EBT, ES(B)	Fill	On-site wetland restoration	Areas A & C	
	Coastal Dune	6,460	EBT, ES(N)		On-site dune creation	Areas A & C	
	Cultural Grassland	No Net Loss	EBT, VS		On-site cultural grassland creation/restoration	No Net Loss	
(2) Relocate East End TW	IVW	28,300 (Wetland B)	EBT, ES(B)	Fill	On-site wetland restoration	Areas A & C	
	Coastal Dune	5,000	EBT, ES(N)		On-site dune creation	Areas A & C	
	Cultural Grassland	No Net Loss	EBT, VS		On-site cultural grassland creation/restoration	No Net Loss	
(3) Reconstruct Terminal Apron	--	--		--	--	--	
(4) Reconstruct Easterly End of Partial Parallel TW	--	--		--	--	--	
(5) Install TW Lighting and Construct Electric Vault	Cultural Grassland	No Net Loss	EBT, VS	--	On-site cultural grassland restoration	--	
(6) Repair Sightseeing Shack	--	--		--	--	--	
(7) Improve Access Road to Approach Lights (MALSF)	BVW	960 (Wetland C/J/FK)		Fill	On-site wetland restoration	Area B	
(8) Construct Service Access Roads LES Road	Coastal Dune	7,610	EBT, ES(N)	Fill	On-site dune creation	Areas A & C	
(8) Construct Service Access Roads AWOS Road	IVW	290 (Wetland H)	EBT	Fill	On-site wetland restoration	Areas A & C	
	Coastal Dune	10,560	EBT, ES(N)	Fill	On-site dune creation	Areas A & C	
(9) Install Perimeter Fence (REVISED alternative) "Concept 6"	BVW	1,152 (direct) <sup>1</sup> 8,972 (indirect/secondary) (Wetland C/J/FK)	(EBT)	Direct Impact consists of Fill for Fence Post Installation and maintenance. Indirect/Secondary Impact consists of Vegetation Maintenance <sup>1</sup> .	On-site wetland restoration	Area B	
	IVW	25,648 (direct) 3,952 (indirect/secondary)	EBT, ES(B)		On-site wetland restoration	Areas A & C	
	Coastal Dune	8,060 (direct) 24,028 (indirect/secondary)	EBT, ES(N)		Fill	On-site wetland enhancement	Wetland H & I
(10a) Expand Auto Parking (Phase 1)	Coastal Dune	7,315	EBT, ES(N)	Fill	On-site dune creation	Areas A & C	
(10b) Auto Parking (Phase 2) "Concept 4"	Coastal Dune	5,707	EBT, ES(N)	Fill			
(11) Expand Terminal Building (Vertical Expansion)	--	--		--	--	--	
(12) Expand Turf Apron	Cultural Grassland	No Net Loss	EBT, VS	--	On-site cultural grassland restoration		
TOTAL DIRECT ALTERATION: (SF)	IVW	32,893		TOTAL ON-SITE MITIGATION: (SF)	On-site IVW restoration	Net Change in Area (SF)	
						78,000	-4,893 (~-1:1)
	On-site wetland enhancement	616,350			(-7.4:1)		
	On-site BVW restoration	5,000			+2,888 (~-2.4:1)		
Coastal Dune	50,712 (includes Parking Phases 1 & 2)		On-site Dune creation	27,500	-23,212 (~-0.5:1)		
Cultural Grassland	No Net Loss		On-site Cultural Grassland restoration No Net Loss	On-site cultural grassland creation/restoration	-7,212 (~-0.9:1)	No Net Loss	

<sup>1</sup> Direct fence impacts have been calculated based upon direct fill for the fence posts and conversion of forested and dense shrub areas to low growing communities as a result of vegetation management. Indirect/secondary impacts are based upon areas where either 1) vegetation is already open and/or low-growing and will not require vegetation management, or else 2) consists of a monoculture of *Phragmites*.

EBT = Eastern Box Turtle Habitat  
 ES(B) = Eastern Spadefoot Toad Breeding Habitat  
 ES(N) = Eastern Spadefoot Toad Non-Breeding Habitat  
 VS = Vesper Sparrow Habitat

Table 2 Schedule of Implementation of Mitigation		
Issues	Mitigation	Implementation Schedule
Auto Parking	TDM Measures	Currently, During Project Construction, and Operation
Wetlands	Design Modifications; Implement Wetland Restoration Plan	During Design and Construction
Coastal Dunes	Design Modifications; Implement Wetland Restoration Plan	During Design and Construction
Cultural Grasslands	Design Modifications; Implement Coastal Dune Restoration Plan	During Design and Construction
Invasive Species Management	Implement Invasive Species Management Plan	During Design and Construction
Stormwater Management	Implement Stormwater Management Design for Auto Parking	During Design and Construction
Rare Species Habitat	Implement Resource Mitigation Plans; Implement Construction Management Plan and Turtle Protection Plan Implement Operational Mitigation, VMP, and Invasive Species Plans	During Design, Construction, and Operational Phases
Visual	Finalize and Implement Landscape Plan	During Design and Construction
Hazardous Materials	Dispose of all construction materials in accordance with all regulations.	As Needed
Construction Impacts	Implement Construction Management Plan	Construction Phase

*Source: FEIR/EA/DRI,EEA No. 13789, 2009*

### Findings

The Massachusetts Department of Transportation Aeronautics Division finds that with implementation by the Airport Commission of the mitigation measures described above, all practicable means and measures will have been taken to avoid or minimize adverse impacts to the environment relating to the proposed Provincetown Municipal Airport CIP projects. These proposed measures will be included as conditions of the funding provided by MassDOT.

Print Name: \_\_\_\_\_ Date \_\_\_\_\_

Title: \_\_\_\_\_ Mass DOT Aeronautics Division



## 9.2 MA DEP Draft Section 61 Findings



Massachusetts Department of Environmental Protection

Section 61 Findings (MGL Chapter 30, Section 61)

Project: Capital Improvements Plan (CIP)  
Project Location: Provincetown Municipal Airport  
Project Proponent: Provincetown Airport Commission  
EEA Number: 13789

This Section 61 Findings for the proposed CIP projects has been prepared pursuant to Massachusetts General Laws, Chapter 30, Section 61 and 301 CMR 11.07. As a state agency, the Massachusetts Department of Environmental Protection (DEP) is required to review, evaluate and determine the environmental impacts of its actions and issue a Finding. The DEP action is to review the project for impacts to wetlands and determine if the project is in compliance with the Massachusetts Wetland Protection Act and Section 401 of the Clean Water Act.

The Findings are based on the information presented in the FEIR/EA (EEA #13789) which outlines the measures that will be implemented by the Provincetown Municipal Airport Commission to minimize the unavoidable environmental impacts associated with the projects.

### **CIP Project Summary**

The Provincetown Municipal Airport Commission proposes a Capital Improvements Plan (CIP) of safety and facility improvements at Provincetown Municipal Airport (Airport). The purpose of the CIP project elements is to enhance Airport safety and security and enhance the efficiency of the Airport to more fully meet the current and anticipated demand. The CIP projects are needed because certain airfield facilities do not meet current FAA safety and security standards and the Airport's current parking and terminal facilities can not efficiently meet current and projected demand. Implementation of the CIP will fulfill the mission of the Airport to operate a safe, secure, and reliable primary service airport receiving scheduled airline passenger service. The projects are listed below.

### **Proposed CIP Projects**

- Westerly Taxiway System Improvements
- Relocate East End TW
- Reconstruct Easterly End of Partial Parallel TW
- Reconstruct Terminal Apron
- Install TW Edge Lights and Construct Electric Vault
- Rehabilitate or Replace Sightseeing Shack
- Improve Access Road to Approach Lights (MALSF)
- Construct Service Access Roads to AWOS and LES
- Install Perimeter Fence
- Expand Turf Apron

- Expand Auto Parking
- Expand Terminal Building

### **MEPA History**

A MEPA Certificate on the Environmental Notification Norm (ENF) was issued for the project on May 26, 2006. A MEPA Certificate on the NPC/Draft Environmental Impact Report/Environmental Assessment (DEIR/EA) was issued on July 18, 2007. A Certificate on the FEIR/EA was issued on February 17, 2012 stating that the FEIR/EA adequately and properly complied with MEPA and its implementing regulations.

### **Summary of Impacts**

The CIP projects will have unavoidable impacts to wetland, coastal dune, cultural grasslands and species habitat. Impacts have been minimized through design alternatives, construction timing and methods, and long-term operational mitigation measures. A summary of impacts for each element of the CIP is presented in Table 1.

### **Mitigation Measures**

Measures have been incorporated (Table 2) in the design phase, construction phase mitigation, and operational phase to avoid, minimize, and mitigate impacts to natural resources and specifically to rare species and rare species habitat. All proposed measures are listed in Table 2. However, this Finding relates only those measures relevant to wetlands and water quality.

#### Design Phase Mitigation

- Wetland Restoration
- Coastal Dune Restoration
- Cultural Grassland Restoration
- Stormwater Management
- Landscaping and Building Design

#### Construction Phase Mitigation

- Turtle Protection Plan
- Construction Management Plan

#### Operational Mitigation

- Vegetation Management Plan
- Invasive Species Management Plan
- Safety/Security Fence Wildlife Mitigation Plan
- Stormwater Management Plan
- TDM Measures

**Table 1 Summary Of Impacts And Proposed Mitigation Measures For Preferred Alternatives For CIP Projects**

PROPOSED ALTERATION					PROPOSED MITIGATION		
Project	Type of Resource Area	Area of Proposed Alteration (SF)	Species Habitat	Description of Proposed Alteration	Description of Proposed Mitigation	Area of Proposed Mitigation (SF)	
(1) Westery TW System Improvements	IVW	28,655 (Wetland I)	EBT, ES(B)	Fill	On-site wetland restoration	Areas A & C	
	Coastal Dune	6,460	EBT, ES(N)		On-site dune creation	Areas A & C	
	Cultural Grassland	No Net Loss	EBT, VS		On-site cultural grassland creation/restoration	No Net Loss	
(2) Relocate East End TW	IVW	28,300 (Wetland B)	EBT, ES(B)	Fill	On-site wetland restoration	Areas A & C	
	Coastal Dune	5,000	EBT, ES(N)		On-site dune creation	Areas A & C	
	Cultural Grassland	No Net Loss	EBT, VS		On-site cultural grassland creation/restoration	No Net Loss	
(3) Reconstruct Terminal Apron	--	--		--	--	--	
(4) Reconstruct Easterly End of Partial Parallel TW	--	--		--	--	--	
(5) Install TW Lighting and Construct Electric Vault	Cultural Grassland	No Net Loss	EBT, VS	--	On-site cultural grassland restoration	--	
(6) Repair Sightseeing Shack	--	--		--	--	--	
(7) Improve Access Road to Approach Lights (MALSF)	BVW	960 (Wetland C/J/FK)		Fill	On-site wetland restoration	Area B	
(8) Construct Service Access Roads LES Road	Coastal Dune	7,610	EBT, ES(N)	Fill	On-site dune creation	Areas A & C	
(8) Construct Service Access Roads AWOS Road	IVW	290 (Wetland H)	EBT	Fill	On-site wetland restoration	Areas A & C	
	Coastal Dune	10,560	EBT, ES(N)	Fill	On-site dune creation	Areas A & C	
(9) Install Perimeter Fence (REVISED alternative) "Concept 6"	BVW	1,152 (direct) <sup>1</sup> 8,972 (indirect/secondary) (Wetland C/J/FK)	(EBT)	Direct Impact consists of Fill for Fence Post Installation and maintenance. Indirect/Secondary impact consists of Vegetation Maintenance <sup>1</sup>	On-site wetland restoration	Area B	
	IVW	25,648 (direct) 3,952 (indirect/secondary)	EBT, ES(B)		On-site wetland restoration	Areas A & C	
	Coastal Dune	8,060 (direct) 24,028 (indirect/secondary)	EBT, ES(N)		Fill	On-site wetland enhancement	Wetland H & I
(10a) Expand Auto Parking (Phase 1)	Coastal Dune	7,315	EBT, ES(N)	Fill	On-site dune creation	Areas A & C	
(10b) Auto Parking (Phase 2) "Concept 4"	Coastal Dune	5,707	EBT, ES(N)	Fill			
(11) Expand Terminal Building (Vertical Expansion)	--	--		--	--	--	
(12) Expand Turf Apron	Cultural Grassland	No Net Loss	EBT, VS	--	On-site cultural grassland restoration		
TOTAL DIRECT ALTERATION: (SF)	IVW	82,893		TOTAL ON-SITE MITIGATION: (SF)	On-site IVW restoration	Net Change in Area (SF)	
						78,000	-4,893 (-1:1)
	On-site wetland enhancement	616,350	(-7.4:1)				
	On-site BVW restoration	5,000	+2,888 (-2.4:1)				
	On-site Dune creation	27,500	-23,212 (-0.5:1)				
On-site Cultural Grassland restoration	No Net Loss	-7,212 (-0.9:1)					
					On-site cultural grassland creation/restoration	No Net Loss	

<sup>1</sup> Direct fence impacts have been calculated based upon direct fill for the fence posts and conversion of forested and dense shrub areas to low growing communities as a result of vegetation management. Indirect/secondary impacts are based upon areas where either 1) vegetation is already open and/or low-growing and will not require vegetation management, or else 2) consists of a monoculture of *Phragmites*.

EBT = Eastern Box Turtle Habitat  
 ES(B) = Eastern Spadefoot Toad Breeding Habitat  
 ES(N) = Eastern Spadefoot Toad Non-Breeding Habitat  
 VS = Vesper Sparrow Habitat

## Mitigation Implementation Schedule

Mitigation measures (summarized in Table2) and outlined in detail in the FEIR document and permits will be incorporated into all contract documents to insure implementation. The Airport Commission will be the responsible party for implementation of the mitigation measures.

Table 2 Schedule of Implementation of Mitigation		
Issues	Mitigation	Implementation Schedule
Auto Parking	TDM Measures	Currently, During Project Construction, and Operation
Wetlands	Design Modifications; Implement Wetland Restoration Plan	During Design and Construction
Coastal Dunes	Design Modifications; Implement Wetland Restoration Plan	During Design and Construction
Cultural Grasslands	Design Modifications; Implement Coastal Dune Restoration Plan	During Design and Construction
Invasive Species Management	Implement Invasive Species Management Plan	During Design and Construction
Stormwater Management	Implement Stormwater Management Design for Auto Parking	During Design and Construction
Rare Species Habitat	Implement Resource Mitigation Plans; Implement Construction Management Plan and Turtle Protection Plan Implement Operational Mitigation, VMP, and Invasive Species Plans	During Design, Construction, and Operational Phases
Visual	Finalize and Implement Landscape Plan	During Design and Construction
Hazardous Materials	Dispose of all construction materials in accordance with all regulations.	As Needed
Construction Impacts	Implement Construction Management Plan	Construction Phase

*Source: FEIR/EA/DRI, EEA No. 13789, 2009*

## Findings

The Massachusetts Department of Environmental Protection finds that with implementation by the Airport Commission of the mitigation measures described above, all practicable means and measures will have been taken to avoid or minimize adverse impacts to the environment relating to the proposed Provincetown Municipal Airport CIP projects. These proposed measures will be included as conditions in the permits/variances issued by DEP. This Finding is limited to the subject matter jurisdiction of the permits sought from the DEP.

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Print Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Title: \_\_\_\_\_ MassDEP



### 9.3 MA NHESP Draft Section 61 Findings



Massachusetts Natural Heritage and Endangered Species Program  
Section 61 Finding (MGL Chapter 30, Section 61)

Project: Capital Improvements Plan (CIP)  
Project Location: Provincetown Municipal Airport  
Project Proponent: Provincetown Airport Commission  
EEA Number: 13789

This Section 61 Findings for the proposed CIP projects has been prepared pursuant to Massachusetts General Laws, Chapter 30, Section 61 and 301 CMR 11.07. As a state agency, the Massachusetts Natural Heritage and Endangered Species Program (NHESP) is required to review, evaluate and determine the environmental impacts of its actions and issue a Finding. The NHESP action is to review the project for impacts to rare species and determine if the project is in compliance with the Massachusetts Endangered Species Act (MESA).

The Findings are based on the information presented in the FEIR/EA (EEA #13789) which outlines the measures that will be implemented by the Provincetown Municipal Airport Commission to minimize the unavoidable environmental impacts associated with the projects.

### **CIP Project Summary**

The Provincetown Municipal Airport Commission proposes a Capital Improvements Plan (CIP) of safety and facility improvements at Provincetown Municipal Airport (Airport). The purpose of the CIP project elements is to enhance Airport safety and security and enhance the efficiency of the Airport to more fully meet the current and anticipated demand. The CIP projects are needed because certain airfield facilities do not meet current FAA safety and security standards and the Airport's current parking and terminal facilities can not efficiently meet current and projected demand. Implementation of the CIP will fulfill the mission of the Airport to operate a safe, secure, and reliable primary service airport receiving scheduled airline passenger service. The projects are listed below.

### **Proposed CIP Projects**

- Westerly Taxiway System Improvements
- Relocate East End TW
- Reconstruct Easterly End of Partial Parallel TW
- Reconstruct Terminal Apron
- Install TW Edge Lights and Construct Electric Vault
- Rehabilitate or Replace Sightseeing Shack
- Improve Access Road to Approach Lights (MALSF)
- Construct Service Access Roads to AWOS and LES
- Install Perimeter Fence
- Expand Turf Apron
- Expand Auto Parking
- Expand Terminal Building

## **MEPA History**

A MEPA Certificate on the Environmental Notification Norm (ENF) was issued for the project on May 26, 2006. A MEPA Certificate on the NPC/Draft Environmental Impact Report/Environmental Assessment (DEIR/EA) was issued on July 18, 2007. A Certificate on the FEIR/EA was issued on February 17, 2012 stating that the FEIR adequately and properly complied with MEPA and its implementing regulations.

## **Summary of Impacts**

The CIP projects will have unavoidable impacts to wetland, coastal dune, cultural grasslands and species habitat. Impacts have been minimized through design alternatives, construction timing and methods, and long-term operational mitigation measures. A summary of impacts for each element of the CIP is presented in Table 1.

## **Mitigation Measures**

Measures have been incorporated in the design phase, construction phase mitigation, and operational phase to avoid, minimize, and mitigate impacts to natural resources and specifically to rare species and rare species habitat. All proposed measures are listed in Table 2. However, this Finding discusses only those measures relevant to rare species.

### Design Phase Mitigation

- Wetland Restoration
- Coastal Dune Restoration
- Cultural Grassland Restoration
- Stormwater Management
- Landscaping and Building Design

### Construction Phase Mitigation

- Turtle Protection Plan,
- Construction Management Plan

### Operational Mitigation

- Vegetation Management Plan
- Invasive Species Management Plan
- Safety/Security Fence Wildlife Mitigation Plan
- Stormwater Management Plan
- TDM Measures

**Table 1 Summary Of Impacts And Proposed Mitigation Measures For Preferred Alternatives For CIP Projects**

PROPOSED ALTERATION					PROPOSED MITIGATION		
Project	Type of Resource Area	Area of Proposed Alteration (SF)	Species Habitat	Description of Proposed Alteration	Description of Proposed Mitigation	Area of Proposed Mitigation (SF)	
(1) Westerly TW System Improvements	IVW	28,655 (Wetland I)	EBT, ES(B)	Fill	On-site wetland restoration	Areas A & C	
	Coastal Dune	6,460	EBT, ES(N)		On-site dune creation	Areas A & C	
	Cultural Grassland	No Net Loss	EBT, VS		On-site cultural grassland creation/restoration	No Net Loss	
(2) Relocate East End TW	IVW	28,300 (Wetland B)	EBT, ES(B)	Fill	On-site wetland restoration	Areas A & C	
	Coastal Dune	5,000	EBT, ES(N)		On-site dune creation	Areas A & C	
	Cultural Grassland	No Net Loss	EBT, VS		On-site cultural grassland creation/restoration	No Net Loss	
(3) Reconstruct Terminal Apron	--	--		--	--	--	
(4) Reconstruct Easterly End of Partial Parallel TW	--	--		--	--	--	
(5) Install TW Lighting and Construct Electric Vault	Cultural Grassland	No Net Loss	EBT, VS	--	On-site cultural grassland restoration	--	
(6) Repair Sightseeing Shack	--	--		--	--	--	
(7) Improve Access Road to Approach Lights (MALSF)	BVW	960 (Wetland C/J/FK)		Fill	On-site wetland restoration	Area B	
(8) Construct Service Access Roads LES Road	Coastal Dune	7,610	EBT, ES(N)	Fill	On-site dune creation	Areas A & C	
(8) Construct Service Access Roads AWOS Road	IVW	290 (Wetland H)	EBT	Fill	On-site wetland restoration	Areas A & C	
	Coastal Dune	10,560	EBT, ES(N)	Fill	On-site dune creation	Areas A & C	
(9) Install Perimeter Fence (REVISED alternative) "Concept 6"	BVW	1,152 (direct) <sup>1</sup> 8,972 (indirect/secondary) (Wetland C/J/FK)	(EBT)	Direct Impact consists of Fill for Fence Post Installation and maintenance. Indirect/Secondary Impact consists of Vegetation Maintenance <sup>1</sup>	On-site wetland restoration	Area B	
	IVW	25,648 (direct) 3,952 (indirect/secondary)	EBT, ES(B)		On-site wetland restoration	Areas A & C	
	Coastal Dune	8,060 (direct) 24,028 (indirect/secondary)	EBT, ES(N)		Fill	On-site wetland enhancement	Wetland H & I
(10a) Expand Auto Parking (Phase 1)	Coastal Dune	7,315	EBT, ES(N)	Fill	On-site dune creation	Areas A & C	
(10b) Auto Parking (Phase 2) "Concept 4"	Coastal Dune	5,707	EBT, ES(N)	Fill			
(11) Expand Terminal Building (Vertical Expansion)	--	--		--	--	--	
(12) Expand Turf Apron	Cultural Grassland	No Net Loss	EBT, VS	--	On-site cultural grassland restoration		
<b>TOTAL DIRECT ALTERATION: (SF)</b>	IVW	82,893		<b>TOTAL ON-SITE MITIGATION: (SF)</b>	On-site IVW restoration	<b>Net Change in Area (SF)</b>	
						78,000	-4,893 (~-1:1)
	BVW	2,112			On-site wetland enhancement	616,350	(-7.4:1)
					On-site BVW restoration	5,000	+2,888 (~-2.4:1)
Coastal Dune	50,712 (includes Parking Phases 1 & 2)		On-site Dune creation	27,500	-23,212 (~-0.5:1)		
Cultural Grassland	No Net Loss		On-site Cultural Grassland restoration No Net Loss	On-site cultural grassland creation/restoration	No Net Loss		

<sup>1</sup> Direct fence impacts have been calculated based upon direct fill for the fence posts and conversion of forested and dense shrub areas to low growing communities as a result of vegetation management. Indirect/secondary impacts are based upon areas where either 1) vegetation is already open and/or low-growing and will not require vegetation management, or else 2) consists of a monoculture of *Phragmites*.

EBT = Eastern Box Turtle Habitat  
 ES(B) = Eastern Spadefoot Toad Breeding Habitat  
 ES(N) = Eastern Spadefoot Toad Non-Breeding Habitat  
 VS = Vesper Sparrow Habitat

## Mitigation Implementation Schedule

Mitigation measures outlined in detail in the FEIR/EA document and permits will be incorporated into all contract documents to insure implementation. The Airport Commission will be the responsible party for implementation of the mitigation measures.

Issues	Mitigation	Implementation Schedule
Auto Parking	TDM Measures	Currently, During Project Construction, and Operation
Wetlands	Design Modifications; Implement Wetland Restoration Plan	During Design and Construction
Coastal Dunes	Design Modifications; Implement Wetland Restoration Plan	During Design and Construction
Cultural Grasslands	Design Modifications; Implement Coastal Dune Restoration Plan	During Design and Construction
Invasive Species Management	Implement Invasive Species Management Plan	During Design and Construction
Stormwater Management	Implement Stormwater Management Design for Auto Parking	During Design and Construction
Rare Species Habitat	Implement Resource Mitigation Plans; Implement Construction Management Plan and Turtle Protection Plan Implement Operational Mitigation, VMP, and Invasive Species Plans	During Design, Construction, and Operational Phases
Visual	Finalize and Implement Landscape Plan	During Design and Construction
Hazardous Materials	Dispose of all construction materials in accordance with all regulations.	As Needed
Construction Impacts	Implement Construction Management Plan	Construction Phase

*Source: FEIR/EA/DRI,EEA No. 13789, 2009*

## Findings

The Massachusetts Natural Heritage and Endangered Species Program finds that with implementation by the Airport Commission of the mitigation measures described above, all practicable means and measures will have been taken to avoid or minimize adverse impacts to the environment relating to the proposed Provincetown Municipal Airport CIP projects. These proposed measures will be included as conditions in the Conditional No Take determination issued by NHESP. This Finding is limited to the subject matter jurisdiction of the MESA.

Print Name: \_\_\_\_\_ Date: \_\_\_\_\_

Title: \_\_\_\_\_ Mass NHESP

## 9.4 Section 4(f) Evaluation



## Section 4(f) Evaluation

Submitted pursuant to 49 USC 303(c)

### Capital Improvements Plan Provincetown Municipal Airport

#### 1. Introduction

The Provincetown Municipal Airport (Airport) is within the Cape Cod National Seashore (CCNS) sited on approximately 322 acres of federally owned land administered by the National Park Service (NPS). The Provincetown Municipal Airport Commission proposes a Capital Improvements Plan (CIP) of safety and facility improvements at the Airport.

This Section 4(f) Evaluation is based on, and incorporates by reference, the 2010 Final Environmental Impact Report /Environmental Assessment/Section 4(f) (FEIR/EA) and presents potential effects to parklands as a result of the proposed project. This Evaluation demonstrates that there is no prudent and feasible alternative that would avoid using the land, and that all possible planning to minimize harm has been incorporated into the project design.

Title 49, USC Section 1653, 4(f) of the Department of Transportation Act of 1966 [now codified at 49 USC Section 303(c)] states that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly-owned land of a public park, recreational area, or wildlife and waterfowl refuge of national, state, or local significance or land of an historic site of national, state, or local significance as determined by the official having jurisdiction over the site only if:

- (1) there is no prudent and feasible alternative that would avoid using that land, and
- (2) the program or project includes all possible planning to minimize harm resulting from the use.

As a modal administration within the U.S. DOT, the Federal Aviation Administration (FAA) is responsible for Section 4(f) determinations for airport actions. The FAA's Office of Airports (ARP) is responsible for reviewing and deciding on projects the airport sponsors propose for public-use airports.

In general, a Section 4(f) "use" occurs with a Department of Transportation (DOT) project or program when 1) Section 4(f) land is permanently incorporated into a transportation facility; 2) when there is a temporary occupancy of Section 4(f) land that is adverse in terms of section 4(f) preservationist purposes as determined by specified criteria (*23 CFR Section 771.135(p)(7)*); and 3) when Section 4(f) land is not incorporated into the transportation project, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired (constructive use) *23 CFR Section 771.135(p)(1 and 2)*.

This Section 4(f) Evaluation has been prepared in accordance with the Airports Desk Reference Chapter 7, October 2007 and FAA NEPA Implementing Instructions for Airport Actions. Consistent with FAA Order 1050.1E the term Section 4(f) will be used in this document. Consultation has been initiated with the Department of the Interior, National Park Service, Cape Cod National Seashore (CCNS), and is ongoing for the project.

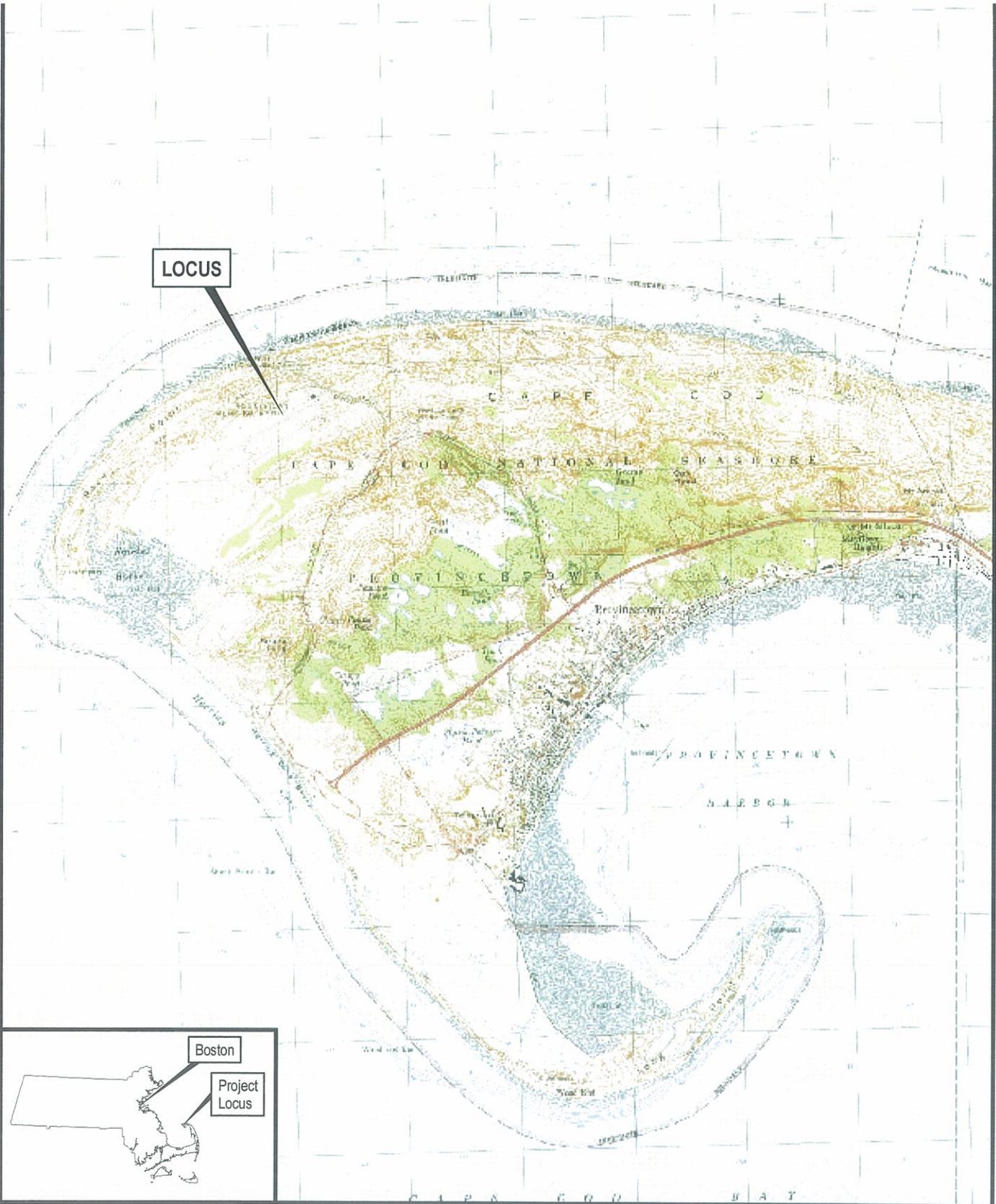
## **2. Description of 4(f) Property**

The Cape Cod National Seashore (CCNS) consists of approximately 44,000 acres, which includes lands under the ownership of NPS as well as land under state, town and private ownership. The CCNS includes natural and cultural resources with a history of economic and recreational activities. The Airport is sited on approximately 322 acres of federally owned land administered by the NPS within the CCNS on the northern tip of Cape Cod (**See Figure 1 USGS Locus**). Recreational activities in the vicinity of the Airport include hunting, biking, hiking, beach activities, trails for Off Road Vehicle (ORV) use, bird watching, and nature walks.

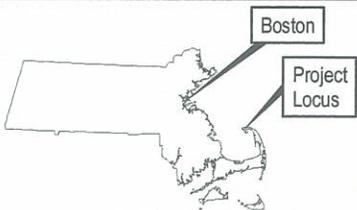
The Airport was constructed in the 1940s on land that was filled in behind a dike constructed across Hatches Harbor and pre-dates the CCNS. Since the establishment of the CCNS in 1961, the land on which the Airport is located has been under the ownership of the NPS. As part of the land acquisition for the CCNS, the Commonwealth of Massachusetts authorized the Deed of Conveyance for the Province Lands in 1962. The deed restriction in the conveyance title recognizes the pre-existing lease agreement between the Commonwealth of Massachusetts and the Town of Provincetown for the Airport facilities and access roads. A Special Use Permit exists between the NPS and the Provincetown Airport Commission to establish policies, procedures and other terms under which Airport operations and improvements are carried out. The property leased to Provincetown for airport operations is identified by the NPS in the 1998 General Management Plan for the CCNS, *Forging a Collaborative Future* as an Administration/Operations Special Use Management Subzone. The Management Plan identifies the qualitative characteristics for the management zones. The Tolerance for Resource Degradation in the Administration/Operations Special Use Zone is rated as "High."

The CCNS, in the vicinity of the Airport, consists of natural and cultural elements. Natural elements include coastal dunes, grasslands, wetlands, and the Hatches Harbor salt marsh. The vegetation cover includes grasses, shrubs, and thickets of pitch pine and scrub oak.

Nearby man-made elements include NPS buildings such as the Old Harbor Life Saving Station, the Province Lands Visitor Center and its 170-car parking lot, as well as the tiered, approximately 340-car parking lot for Race Point Beach. Paved roadways, including Race Point Road and Province Lands Road, and the NPS bike path are also man made elements within the visual environment.



LOCUS



Prepared By:

**JACOBS**

Approx. Scale in Feet  
0 4,000



**Provincetown Municipal Airport  
Capital Improvements Plan**

**LOCUS MAP**

Data compiled from the following source:  
MassGIS, Commonwealth of Mass. EOE

Figure 1.1

The vertical man-made elements within the Airport lease area include several buildings of various sizes such as the terminal building, the hangar, the maintenance equipment building, the Sightseeing Shack, and sections of existing security fence. Additional vertical elements at the Airport include the FAA instrumentation tower and light poles. The Airport area also has flat horizontal elements including the runway, the system of taxiways, managed grassland safety areas, the weather/navigation equipment within the infields and aircraft parking areas (referred to as aprons or ramps), as well as a 62 space visitor parking lot and a 20 space employee parking area.



CCNS in vicinity of Airport

Coordination has been carried out with the Massachusetts Historical Commission (MHC) regarding the historical significance of the Sightseeing Shack and other significant historic or archaeological resources within the Airport lease area. MHC determined that the CIP project is unlikely to affect significant historic or archaeological resources. CCNS has concurred with MHC that no historic structures are present in the immediate area of potential effect and the CCNS park archaeologist has determined that no archaeological testing is necessary for the fence or taxiway lights projects. This coordination is documented in the Final EIR/EA document.

### 3. Purpose and Need

The purpose of the CIP project elements is to:

- Enhance Airport safety and security.
- Enhance the efficiency of the Airport to more fully meet the current and anticipated demand.

Several of the CIP projects will provide operational safety and security improvements at the Airport that comply with current FAA, Massachusetts Department of Transportation (MassDOT) Aeronautics Division, and transportation security administration (TSA) safety and security design standards for a non-hub primary service airport. The use of these standards is mandatory for airport projects receiving Federal grant-in-aid assistance. It is the policy of the Airports Division of the FAA New England regional office that airport improvement projects must comply with the national airport design standards.

Three of the CIP projects will address existing and anticipated capacity needs. The proposed addition to the Terminal would replace the lost passenger space taken by TSA for secure waiting areas, and passenger and baggage screening, and support future passenger needs. The proposed improvements to the parking lot and the turf apron are design to address the current and projected needs at the Airport.

## **Need**

The CIP projects are needed because:

- Certain airfield facilities do not meet current safety and security standards.
- The Airport's existing parking and terminal facilities cannot efficiently meet current and projected demand.

Implementation of the CIP will fulfill the mission of the Airport to operate a safe, secure, and reliable primary service airport receiving scheduled airline passenger service.

## **4. Proposed Project**

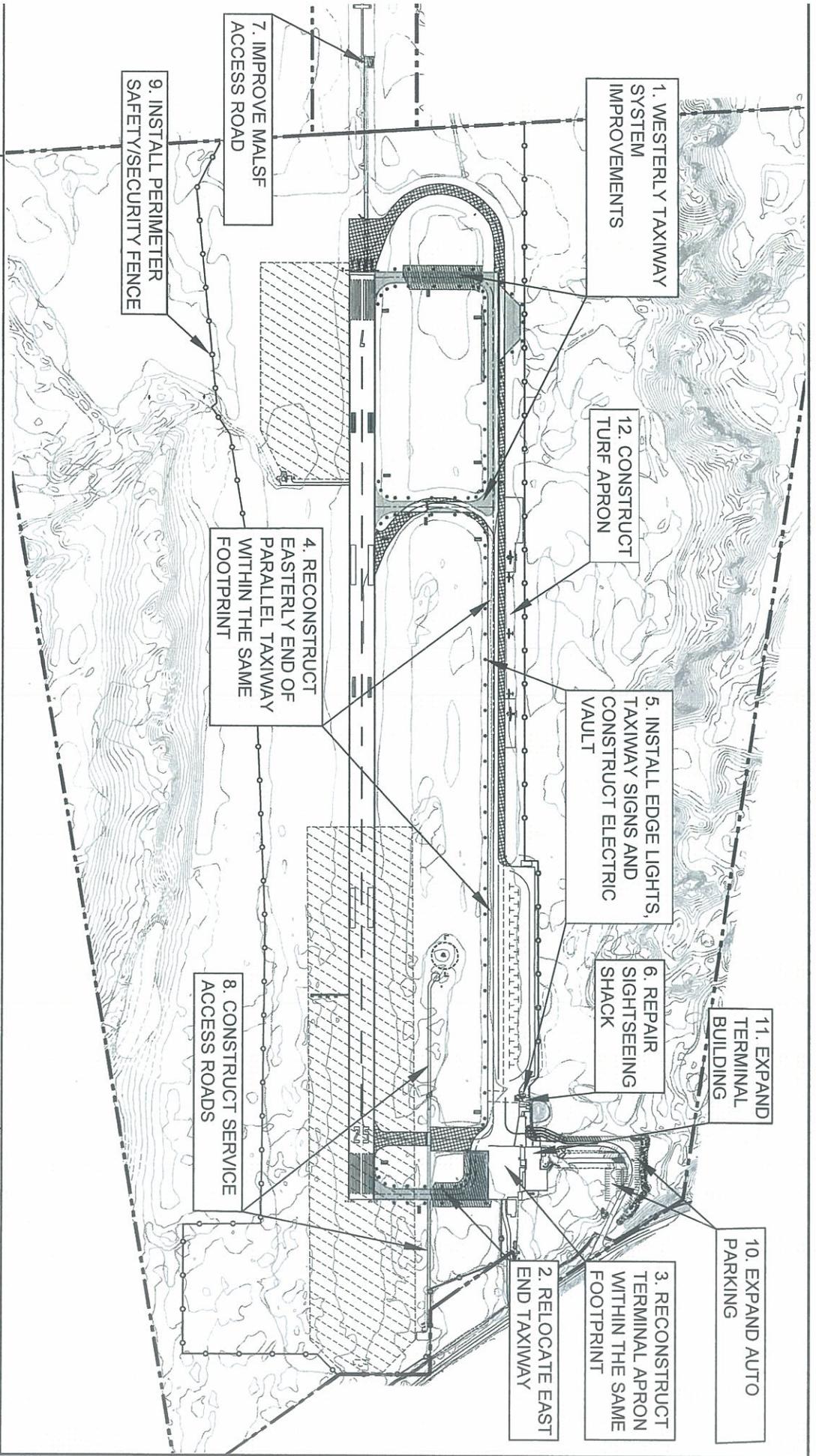
The twelve elements in the Airport CIP projects are described below and located on **Figure 2, Project Overview**.

### **4.1 Westerly Taxiway System Improvements**

The project to improve the westerly taxiway system would: 1) relocate the West End taxiway out of the FAR Part 77 approach surface to the airport and construct an L-shaped intersection with a right angle to the runway for operational safety; 2) realign and reconstruct the westerly end of the parallel taxiway with a run-up pad; and, 3) realign the Mid Connector taxiway.

The Parallel taxiway centerline shifts twenty feet to the north between the mid connector taxiway and the west runway entrance taxiway. This shift in the centerline requires the pilot to change speed and direction, which presents a hazardous situation to pilots during nighttime and low visibility conditions. The realignment also provides the opportunity to remove some pavement along the length of the parallel taxiway, which will be reconstructed with a reduced width in the west end.

EXISTING IMPERVIOUS AREA TO BE REMOVED
   
 PROPOSED IMPERVIOUS PAVED AREA
   
 GUIDE SLOPE AND LOCALIZER CRITICAL AREAS
   
 PROPOSED WETLAND IMPACT AREA
   
 PROPOSED PERIMETER FENCE
   
 EXISTING PERIMETER FENCE
   
 EXISTING LEASE LINE



#### 4.2 Relocate East End Taxiway

The relocation of the East End connector taxiway would shift the taxiway approximately 200 feet to the east so that it connects at the end of Runway 25. The East End taxiway has the standard design of a ninety-degree intersection but does not comply with the design standard to connect with the end of Runway 25. FAA design standards require entrance taxiways intersect the runway at the runway ends with a right angle to the runway for operational safety.

#### 4.3 Reconstruct Terminal Apron

The project would reconstruct the Terminal Apron within the existing footprint. The terminal apron pavement has deteriorated to fair condition. This footprint pavement project was given clearance to go forward with construction and has been completed.

#### 4.4 Reconstruct Easterly End of Partial Parallel Taxiway

The pavement is in poor condition. The width of the easterly end of the parallel taxiway is currently 60 feet. As part of the reconstruction and the westerly taxiway improvements, the width would be reduced to 40 feet.

#### 4.5 Install Taxiway Lighting, Signage, and Construct Electric Vault

The project would install taxiway edge lights and signs along the edge of the taxiways. Construction of a new electric vault is also part of this CIP element. The electric vault would consist of a 10 by 20 foot structure, approximately 10 feet high and similar in appearance, size and exterior to the existing utility buildings for the localizer and the glide slope equipment. The taxiways currently have reflectors but the lack of lighting and directional signs can be a safety hazard during inclement weather or sudden fog conditions. Improvements to the lighting system for the taxiways would require additional space for the airfield electric vault, which is currently located inside the sightseeing shack. A separate electrical vault is required to support the new lighting system, to allow adequate space that meets electrical code, and bring the system up to standards.

#### 4.6 Repair Sightseeing Shack

The Sightseeing Shack would be repaired as needed after the electrical equipment is removed as part of the taxiway edge lights project. The project would occur within the existing footprint for the building and surrounding access area.

#### 4.7 Improve Access Road to Approach Lights

To provide for a vehicle turn-around area, the embankment for the existing 10-foot wide gravel service road would be widened at the western end. The area would be 30 feet wide and 30 feet long to allow the required maintenance vehicles to turn around. In compliance with FAA requirements, the first 300 feet of the single-lane service road off the runway will be paved.

Several years of FAA service vehicle operations on the access road have confirmed the need for an improvement to the road. Because of the narrow width and lack of a turn-around area, FAA service vehicles must back up for a distance of 400 feet before being

able to turn around. Without shoulders, this maneuver has always been difficult because the drivers of the FAA utility vehicles have difficulty seeing the edge of the road, especially in poor weather. Providing a turn-around will reduce the risk of a vehicle slipping off the raised road and avoiding any potential contamination into the marsh.

#### 4.8 Construct Service Access Roads to AWOS and LES

The service access roads would provide vehicle access from the East End taxiway outside the active runway operating area. The access roads would be 10 feet wide with one-foot grass shoulders on each side and would include a turn-around area. The roads would be paved for the first 300 feet.

The purpose of constructing access roads is to comply with FAA operational standards by providing service vehicle access to the airfield equipment. The service access roads would improve maintenance access, especially in inclement weather or emergencies.

#### 4.9 Install Perimeter Fence

A nine-foot high perimeter safety security fence would be constructed. The proposed alignment for the safety/security fence includes a four-foot wide maintained area on both sides of the fence.

The purpose of the perimeter fencing is to enhance both safety and security. First, the fencing would improve safety by deterring deer and coyote, as well as hunters and hikers, from encroaching on the airfield's operational area. Additionally, for the safety and security of all users of the CCNS, the perimeter fence is proposed to separate areas designated for airport operations from airport lease areas that are currently used by the public for recreational activities. Secondly, fencing secures the Airport Operating Area (AOA), the Security Identification Display Area (SIDA), and other security areas from unauthorized access, in compliance with TSA Guidelines.

#### 4.10 Expand Auto Parking

This two-phase project would construct 28 additional spaces for Phase 1. After additional parking studies and subsequent review and approval by NPS and Cape Cod Commission (CCC), Phase 2 would construct up to 29 additional spaces, if needed.

The Airport currently provides 62 parking spaces. There is a need for additional auto parking spaces at the Airport. Current parking needs range from 62 to 126 spaces over weekday or weekends.

#### 4.11 Expand Terminal Building

The proposed expansion of the Terminal building would add a second floor above the existing building. Public use area in the terminal lobby is needed to replace the area occupied by the TSA screening areas and space for security personnel. The public space has been decreased by 61 percent due to TSA operations that were not incorporated into the design for the current building.

#### 4.12 Expand Turf Apron

The construction of additional turf apron would be located between the two existing areas for turf apron parking adjacent to the parallel taxiway.

There is inadequate paved aircraft parking space during the summer and this seasonal overflow demand is accommodated on designated turf areas alongside the taxiway. At times, the Mid Connector taxiway is shut down in order to provide overflow parking. This creates an operational safety issue, due to the hazard of using an aircraft movement area for parking airplanes. The need for parking ranges from an additional five spaces in the short-term to eight spaces to address the long-term aircraft parking needs.

### 5. Alternatives Considered

This section describes the Preferred Alternative (Proposed Action), the No Action, and reasonable alternatives (if any) for each of the proposed projects. As defined in FAA Order 5050.4B, the Proposed Action is “the solution the airport sponsor wishes to implement to solve the problem(s) it is facing.” Alternatives to the Proposed Action that would avoid the Section 4(f) property have been considered and evaluated. An explanation is provided to justify why some alternatives have been deemed “not reasonable” and were subsequently eliminated from further analyses.

#### 5.1. **Westerly Taxiway System Improvements**

The potential impacts of improving the westerly end of the TW system at the Airport have been evaluated. The sub-elements of the Westerly Taxiway System consist of the West End Connector Taxiway, the Westerly End of Parallel Taxiway, and the Mid Connector Taxiway. Two alternatives have been analyzed for environmental impacts, and two alternatives have been considered but rejected. The two alternatives analyzed are the No Action alternative and an alternative that would construct westerly TW system improvements.

##### 5.1.1 No Action

The No Action alternative would maintain the West End TW in its current location and would not address the operational safety issues at the Airport. The taxiway would continue to be located within the clear zone in the approach for Runway 7, which creates the potential for collision between a landing aircraft and a plane waiting to takeoff. Aircraft would continue to taxi onto the runway parallel to the runway end and out of visual contact with approaching aircraft. Aircraft would continue to hold short of the runway which limits their view of the runway and other aircraft.

The No Action alternative would maintain the jog in the parallel taxiway, would not replace the pavement which is over 20 years old and in poor condition, and would not address the operational safety issues at the Airport. Paved surfaces at airports must be maintained in good condition. Airfield pavement standards estimate a useful lifespan of 20 years, after which pavement is eligible for reconstruction.

While no impacts to 4(f) resources would occur with the No Action alternative, the No Action alternative would maintain the existing Mid Connector TW with the non-standard jug-handle intersection with the runway and the parallel taxiway. It would also not align properly with the proposed relocated West End TW and the proposed realigned westerly end of the parallel TW. No impacts to resources would occur with the No Action alternative because there would be no construction or change in current conditions.

#### 5.1.2. Westerly TW System Improvements (Proposed Action and Preferred Alternative)

The sub elements of the Westerly Taxiway System consist of:

- A. West End Connector Taxiway
- B. Westerly End of Parallel Taxiway
- C. Mid Connector Taxiway

The sub elements are discussed individually but will be combined as one project in terms of permitting and construction because the elements would be constructed at the same time.

#### (A.) Relocate West End Taxiway with Standard Right Angle Out of the Runway 7 Approach

The alternative to relocate the West End TW would address the operational safety issues and would be in compliance with FAA design standards. The taxiway would connect with the end of the runway at a right angle and would be located out of the approach for the runway.

#### (B.) Realign Westerly End of Parallel Taxiway

This alternative would shift the westerly end of the parallel TW to meet the existing edge of pavement of the easterly portion of the parallel TW. A run-up pad, as required by FAA design standards for new construction, would also be constructed at the end for aircraft to perform required engine and systems checks before takeoff, without blocking the taxiway. The parallel TW would be reconstructed with a consistent width of 40 feet. Since the pavement width is currently 60 feet, pavement would be removed. Cultural Grassland habitat would be restored in areas of pavement removal.

#### (C.) Realign Mid Connector TW

The alternative to realign the Mid Connector TW would provide a standard 90 degree intersection design. The aging pavement would also be reconstructed to address the hazard of loose pavement causing harm to aircraft and passengers. The project would be constructed within the existing area of pavement and managed Cultural Grassland habitat.

Collectively, the three elements of the Preferred Alternative for the Westerly TW System Improvements would result in alterations to approximately 28,655 SF of wetlands, 6,400 SF of coastal dune, rare species habitat for one or more state-listed species, as well as temporary impacts to grassland habitats. Proposed mitigation measures would restore or create these resource areas and habitats from existing paved surfaces that would be removed.

### 5.1.3 Alternatives Considered But Rejected

“Existing Footprint Alternative.” The alternative that would reconstruct the West End TW within the existing footprint was suggested by others as a way to minimize impacts to wetland and grassland habitats. This alternative would provide a standard right angle connection to the runway, but the taxiway would continue to be located within the approach to Runway 7. Likewise, the risk of collisions would not be reduced because aircraft would continue to enter parallel to the runway end, rather than perpendicular to the end of the runway.

This alternative would have unavoidable impacts to approximately 13,665 SF in Wetlands I and C/J/FK, as well as additional impacts to grassland habitat.

The alternative that would reconstruct the existing TW footprint with a standard right angle within the existing footprint has been deemed unsafe and unfeasible because it would not comply with the FAA safety and design standards and it would not address existing operational safety issues. This alternative has been dismissed from further review.

“Lights on Existing Parallel TW Alternative” It was suggested by others that installation of taxiway lights alone on the existing taxiway could address the safety issues relative to the jog in the partial parallel taxiway. Environmental impacts with this alternative would be limited to minor impacts to grassland habitat. However, pilots do not expect to encounter a jog mid-way along a parallel taxiway. Installation of edge lights would not fully eliminate the non-standard hazardous condition of maneuvering the aircraft through an unexpected turn at night or in bad weather conditions, and would not correct the operational safety issues created by the misaligned pavement. This alternative has been dismissed from further review.

## 5.2 East End TW Relocation

Two alternatives for the East End Taxiway Relocation have been analyzed, including the No Action alternative and an alternative that would relocate the East End TW to connect with the end of Runway 25.

### 5.2.1 No Action

The No Action alternative would maintain the 200-foot offset between the end of Runway 25 and East End TW. Aircraft would continue to back-taxi on the active runway, maintaining the current unsafe conditions by possibly interfering with landing aircraft. No impacts to resources would occur with the No Action alternative, as there would be no construction or change in existing conditions.

### 5.2.2 East End TW Relocation (Proposed Action and Preferred Alternative)

The alternative to relocate the East End TW to connect with the end of the runway would be in full compliance with FAA mandated design standards without impacting the terminal apron. There would be a slight curve in the East End TW centerline to avoid aircraft on the terminal apron. This configuration would not present a safety hazard because the terminal apron is well lit with overhead lighting, and planes are moving slowly as they enter the East End TW. Implementation of this alternative would result in alterations to approximately 28,300 SF of Wetland B. Proposed mitigation measures would restore or create these resource areas and habitats from existing paved surfaces that would be removed.

### 5.2.3 Alternatives Considered But Rejected

No other alternatives were identified.

## 5.3 Terminal Apron Reconstruction

Two alternatives for reconstruction of the Terminal Apron pavement were evaluated, including the No Action alternative and an alternative that would reconstruct the Terminal Apron pavement.

### 5.3.1 No Action

The No Action alternative would retain the existing pavement, and would not address the Airport safety issues associated with deteriorated pavement. As previously noted, paved surfaces at airports must be maintained in good condition and are eligible for reconstruction after 20 years. No impacts to environmental resources would occur as a result of the No Action alternative because the pavement would not be reconstructed adjacent to wetland or coastal dune resources.

### 5.3.2 Reconstruct Terminal Apron within the Existing Footprint (Proposed Action and Preferred Alternative)

The Preferred Alternative would reconstruct the terminal apron pavement within the same footprint to address Airport safety issues. As there would be no environmental impacts, and the implementation of this project element would neither preclude or constrain considerations for all other CIP elements, the Secretary of Energy and Environmental Affairs allowed the Airport to proceed with the reconstruction of the Terminal Apron within the same footprint prior to the completion of the FEIR as iterated in the MEPA Certificate issued on the NPC/DEIR.

The Airport applied for an Order of Conditions (OOC) from the Provincetown Conservation Commission. Coordination was also carried out with staff at the Massachusetts Natural Heritage & Endangered Species Program (NHESP) regarding requirements under MESA, and this project qualifies as an exempt project pursuant to 321 CMR 10.14 (8): “the maintenance, repair or replacement, but not widening of existing paved roads, ...and paved parking areas,...” NHESP reviewed and commented as part of the Notice of Intent (NOI) process under the Wetland Protection Act. The project will, however, be included in the Massachusetts Endangered Species Act

(MESA) application for the Airport's CIP projects to avoid segmentation. The project was issued an OOC (DEP File No. 058-0440), and construction was completed in fall 2008.

#### 5.3.4 Alternatives Considered But Rejected

No other alternatives were identified.

### 5.4 Easterly End of Parallel TW Reconstruction

Two alternatives were evaluated in this FEIR/EA for reconstructing the easterly end of the Parallel TW pavement, the No Action alternative and an alternative that would reconstruct the pavement.

#### 5.4.1 No Action

The No Action alternative would retain the existing pavement which is over 20 years old and in poor condition. Pavement at airports is required to be maintained in good condition. The No Action alternative would result in increasing safety concerns for pilots and their passengers. There would be no impacts to environmental resources with the No Action alternative because there would be no pavement reconstruction near wetland or other natural resources.

#### 5.4.2 Reconstruct Parallel TW within Existing Footprint (Proposed Action and Preferred Alternative)

The Preferred Alternative would reconstruct the pavement within the same footprint, but with a reduced pavement width of 40 feet. Grassland habitat would be restored in the pavement removal areas.

#### 5.4.3 Alternatives Considered But Rejected

No other alternatives were identified.

### 5.5 Taxiway Lighting and Electric Vault

Two alternatives have been analyzed for resource impacts, and two alternatives have been considered but rejected. The two alternatives analyzed are the No Action alternative and an alternative that would install edge lights and construct an electric vault adjacent to the existing Sightseeing Shack.

#### 5.5.1 No Action

Implementation of the No Action alternative would maintain the taxiway edge reflectors and not upgrade the electric equipment that would remain inside the Sightseeing Shack. There would be no environmental impacts as a result of the No Action alternative because there would be no construction or disturbance within the managed grasslands.

#### 5.5.2 Install TW Lighting and Lighted TW Signs, and Construct Electric Vault (Proposed Action and Preferred Alternative)

Install TW Lighting and Lighted TW Signs

The alternative to install TW edge lights would locate the lights 10 feet off the edge of pavement along the entire length of the taxiway as required by FAA design standards, and lighted TW signs would be installed to identify the locations of each TW. The electric cable for the lights and TW signage would be installed within the existing mowed grassland habitat using the cable plowing method which does not require trenching. The area would be restored as grassland. Construction timing and other construction mitigation measures would minimize rare species habitat impacts. Lighting is controlled by pilots remotely and would only be operational during landings and takeoffs under inclement weather conditions or at night. Disruptions to Vesper Sparrows or other species are anticipated to be minimal and would be no different than the existing lighting system for the runway.

### Construct Electric Vault

With the Preferred Alternative, the constructed Electric Vault would be located immediately adjacent to the Sightseeing Shack (Alternative 1) in an area of managed grassland, which is isolated from larger expanses of grassland habitat at the Airport. Electric equipment currently housed within the Sightseeing Shack would be upgraded to current electric codes and housed within a new vault adjacent to the Sightseeing Shack. The location of the Electric Vault under the Preferred Alternative would be close to the existing electrical service and equipment, which would minimize the distance for the new main cable connection. Environmental impacts would be minimal.

#### 5.5.3 Alternatives Considered But Rejected Alternative Construction Method for Light Installation

The trenching construction method for the cable adjacent to the TW would excavate a trench approximately eight inches wide by two feet deep to install the electric cable, and would result in more grassland disturbance compared to the cable method. This construction component alternative has been dismissed from further review.

#### Alternative Vault Locations

Two alternatives were considered for the location of the proposed Electric Vault. Alternative 2 would locate the vault behind the paved GA apron. Alternative 3 would locate the vault at the far west end of the paved GA apron. Each of these alternatives would result in environmental impacts within an area of managed cultural grassland that is contiguous with expanses of this habitat at the Airport and/or impacts to freshwater wetlands (Wetland C) in order to accommodate the conduit for the cable, which would need to avoid other underground utilities in the area. The Preferred Alternative meets the project need with fewer impacts. These alternatives have been dismissed from further review.

### 5.6 Sightseeing Shack Improvements

The two alternatives that have been evaluated are the No Action alternative and an alternative that would repair or replace the building within the existing footprint. It should

be noted that improvements to the Sightseeing Shack would be considered a Connected Action to the Installation of TW Lighting and Lighted TW Signs, and Construct Electric Vault as the improvements to the Sightseeing Shack would be tied to the relocation of the electrical equipment that is currently housed within the Sightseeing Shack.

#### 5.6.1 No Action

The No Action alternative would allow the existing structure to remain in its present condition, housing the existing electrical equipment that is not up to current electric codes. No impacts would occur to natural resources under the No Action alternative because there would no construction adjacent to natural resources and no change to the building.

#### 5.6.2 Repair or Replace Building (Proposed Action and Preferred Alternative)

Under this alternative, following the relocation of the existing electrical equipment, the Sightseeing Shack would either be repaired (Preferred Alternative), or the walls would be replaced, as necessary. No long-term environmental impacts would occur as a result of this action. The Massachusetts Historical Commission (MHC) has determined that the building is not historically significant.

#### 5.6.3 Alternatives Considered But Rejected

No other alternatives were identified.

### **5.7 Access Road to MALSF Approach Lights**

Two alternatives have been analyzed for environmental impacts, including the No Action alternative and an alternative that would construct a turn-around. Three alternatives have been considered but rejected.

#### 5.7.1 No Action

The No Action alternative would maintain the existing gravel/earthen access road with narrow embankments. As a result, vehicles accessing the MALSF for maintenance or repairs would continue to need to back up for a distance of approximately 400 feet along the narrow access road, and the associated safety issues would continue to exist. There would be no impacts to resources associated with the No Action alternative, because construction would not occur.

#### 5.7.2 Construct Turn-Around (Proposed Action and Preferred Alternative)

The Preferred Alternative would involve the construction of a turn-around area, so that vehicles would no longer have to back up the length of the narrow access road. The proposed turn-around area would be 30 feet wide and 30 feet long to provide adequate space for a vehicle to safely reverse direction. The turn-around area would alter approximately 960 SF of Wetland C/J/FK, and would be constructed along the north side of the embankment so that it would not interfere with the approach lights. The material used to construct the turn-around would be delivered to the site and would not be excavated from the adjacent wetland area. Proposed compensatory mitigation for lost wetland area would be provided nearby at a greater than 1:1 ratio from an area of

existing managed grasslands to preserve an environment that supports the natural diversity found within the CCNS. Additional mitigation measures, including construction measures, would be implemented to minimize and avoid further resource area alteration and help to protect the natural landscape of the CCNS.

While this alternative would directly alter an area of wetland, measures to mitigate possible adverse impacts of the project would include avoidance of impacts to the extent possible, resource restoration, and other construction mitigation measures. In addition, an invasive species management plan would be implemented to preserve an environment that supports the natural diversity found within the CCNS.

### 5.7.3 Alternatives Considered But Rejected

**Reduced Turn-Around Footprint with Curbing:** A smaller turn-around area with curbing installed along the length of the access roadway to alert drivers to the limits of the roadway width was considered. This alternative would reduce but not eliminate direct wetland impacts. A structure as low as a concrete curb could not be installed, as it would constitute a vertical penetration into the Runway 7 approach surface and would not be allowed under FAA regulations. This alternative has been dismissed from further review.

**Guardrail:** Installation of a guardrail along the length of the existing access roadway was also considered as an alternative, but was deemed unfeasible because of the vertical penetration into the Runway 7 approach surface. Any objects that need to be located within this object free approach area must be frangible (able to be snapped off on impact), which would defeat the function of a guardrail. In addition, the roadway embankments would need to be widened to accommodate the construction of the guardrail without losing width along the roadway, necessitating additional wetland alteration. This alternative has been dismissed from further review.

**Acquire a Utility Vehicle:** The Airport has also considered acquiring a utility vehicle for the purposes of accessing the MALSF equipment for maintenance or repair. This alternative would not result in environmental impacts. FAA personnel would need to transfer their equipment to a smaller utility vehicle. However, FAA personnel need access to all equipment in their vehicles during all weather conditions, and could not feasibly transfer all equipment to a small utility vehicle at one time. The runway is required to be shut down for certain inspection or maintenance procedures, and transferring necessary equipment that would not fit within a smaller vehicle at one time, would result in potential unnecessary delays at the Airport. This alternative has been dismissed from further review.

**Construct Shoulders (Option 1):** This alternative would widen the entire length of the MALSF access road embankments to construct two-foot shoulders on each side of the existing access road. This alternative would impact approximately 1,800 SF of Wetland C/J/FK, and would not eliminate the safety hazard of vehicles needing to back up for 400 feet. This alternative has been dismissed from further review.

## **5.8 Service Access Road to the Weather Station (AWOS)**

Two alternatives were analyzed for the Service Access Roads to the AWOS, including the No Action alternative and an alternative that would construct an access road to the AWOS behind the hold line and off the East End TW (Alternative 2). Several other alternatives have also been considered and rejected for this project element.

### **5.8.1 No Action**

The No Action alternative would retain the lack of defined access routes to the AWOS, which would prevent vehicle access to the site other than via the runway operating area. Even though there are a few circumstances when service on the AWOS requires the runway to be shutdown, most inspection and maintenance operations are carried out so that the runway can remain active. Although there would be no direct long-term adverse impacts to natural resources, vehicle access to the equipment stations results in temporary impacts to natural resources and habitat each time vehicles traverse these naturally vegetated areas.

### **5.8.2 Service Access Road to AWOS (Alternative 2)**

The Preferred Alternative would construct a 10-foot wide defined access roadway, which would be paved for the first 300 feet off the East End TW, in full compliance with FAA standards. The access road to the AWOS would alter 290 SF of Wetland H. Proposed mitigation measures, including construction timing measures and compensatory mitigation for the loss of natural resources would be proposed as part of this alternative.

### **5.8.3 Alternatives Considered But Rejected**

**Pavement Alternatives:** The alternative of constructing the roads from a porous pavement was evaluated. Porous pavement is a special type of pavement that allows rain and snowmelt to infiltrate, reducing runoff. However, these pavements require an intensive maintenance schedule and can easily become clogged with sands. Due to the sandy soils at the site and windy conditions that would blow sand onto pavement, this porous pavement has been dismissed from further review. Alternative types of pavement that would reduce any visual impacts (e.g., Natural Pave®, a sand-colored pavement, etc.) were also researched for these project elements, but use of these alternative pavement surfaces would result in unnecessary expenses since the service roads are not readily visible from public viewpoints. Use of alternative pavements has been dismissed from further review.

**Acquire Utility Vehicle:** The Airport has considered the use of an off-road utility vehicle for access to the AWOS. As with the use of a utility vehicle for the MALSF, this alternative has been deemed unfeasible because FAA personnel need access to all equipment in their vehicles and cannot feasibly transfer all the equipment to a smaller utility vehicle. Additionally, the use of a utility vehicle, while perhaps reducing the loading impacts within the coastal dunes and wetlands, would not eliminate the random access routes currently being taken by vehicles when accessing these equipment areas. This alternative has been dismissed from further review.

**AWOS Alternative 1:** Alternative 1 for the AWOS access road connects with the East End TW. The road would be approximately 800 feet long and would be paved in compliance with FAA standards. Alternative 1 would impact approximately 440 SF of Wetland H and would yield comparable impacts to coastal dunes and associated habitat as would occur under the Preferred Alternative. This alternative would align with the LES Alternative 1, but has been dismissed from further review, as a shift in the proposed alignments of both access roadways would reduce wetland impacts.

**AWOS Alternative 3:** Alternative 3 would connect with the parallel taxiway and, as with all of the alternatives for the access roadways, would be paved for 300 feet. Approximately 3,000 SF of Wetland H would be altered for this alternative. As other alignments would avoid wetland impacts to this degree, this alternative was dismissed from further review.

**AWOS Alternative 4:** This alignment has a direct connection with the active runway operating area, which would not meet FAA design standards and would not be allowed. This alternative would result in direct, permanent alterations to Wetland H (720 SF) and coastal dune and grassland habitat (3,480 SF). This alternative has been dismissed from further review.

**AWOS Alternative 5:** As with AWOS Alternative 4, this alignment has a direct connection with the active runway operating area (between the runway and the hold line of the taxiway), which would not meet FAA design standards and would not be allowed. The L-shaped configuration of this alternative alignment would result in direct, permanent alterations to 720 SF of Wetland H and 9,840 SF of cultural grassland habitat. This alternative has been dismissed from further review.

## **5.9 Perimeter Safety/Security Fence**

Seven alternatives have been designed for the construction of a Perimeter Safety/Security Fence, four of which have been carried forward and analyzed for permitting purposes. The four alternatives analyzed are the No Action alternative, and three fence alignments: Concept 6 (Final Preferred Alternative), Concept 4, and Concept 1 (Preferred Alternative in Draft EIR/EA). Three alternatives have been considered but rejected.

### **5.9.1 No Action**

While the No Action alternative would have no direct impacts to the natural resources or habitats at the Airport, the No Action alternative would not address operational safety and security, visitor safety, and wildlife safety issues. The potential for deer and other (non-avian) wildlife to continue to come into conflict with operating aircraft, jeopardizing the safety of passengers and pilots using the Airport, would remain. Unauthorized persons would continue to have undeterred access to the currently unsecured airport operating area, and recreational users (including hunters) would remain a potential threat to the health and safety of aircraft operations and those using the Airport facilities. It should also be noted that TSA and MassDOT ban the possession of firearms in aircraft operational areas.

### 5.9.2 Perimeter Safety / Security Fence Concept 6 (Proposed Action and Preferred Alternative)

Concept 6 would involve the construction of an 11,700 linear foot (LF), nine foot high, black vinyl chain link security fence with two inch openings topped with three strands of barbed wire that would traverse areas of wetlands (1,898 SF). Direct impacts to natural resources would involve alterations associated with the installation of fence posts and conversion of forested and dense shrub areas to low growing communities as a result of vegetation management within the four-foot wide clear areas on either side of the fence. Indirect (secondary) impacts are based upon areas where vegetation is already open and/or low growing and will not require vegetation management, but may experience temporary alterations due to construction. Vegetation management within areas consisting primarily of *Phragmites* is also considered an indirect impact. Vegetation on either side of the fence must be maintained so that trees and tall shrubs will not visually obstruct the fence during monitoring and maintenance of the structure or jeopardize the structural integrity of the fence., while indirect alterations would be associated with the proposed four-foot wide swaths of mowed or maintained vegetation on both sides of the fence, which are required to be clear of trees and tall shrubs that may otherwise jeopardize the integrity of the fence. These areas would be either brush hogged or trimmed, but would not be graded. The cleared areas would allow for inspection of the fence. The close proximity of the fence alignment to the taxiway would allow a majority of the fence to occur within vegetated areas that are currently maintained and would eliminate the need for the construction of patrol roads for fence maintenance. The fence would connect with the existing sections of fence adjacent to the bike path and the SRE building. Additionally, Concept 6 would eliminate fencing at the west end around the ILS.

Approximately 113 acres would be partially enclosed with the Concept 6 fence alignment. However, the western-most end around the ILS would not be enclosed, thus eliminating direct impacts within tidally-influenced portions of Wetland C/J/FK. In consultation with the Massachusetts Natural Heritage and Endangered Species Program (NHESP), the fence design would incorporate gaps along the bottom to allow for the movement of Eastern Box Turtles, minimizing impacts to the movements of this state-listed rare species as well as other small animals.

The fence would be topped with barbed wire, which would serve as a deterrent to deer jumping the fence. Although deer can jump higher than nine feet, the angled wire along the top makes it difficult for them to judge the height of the fence. Additionally, cleared areas along the fence would allow deer to run along the outside of the fence (rather than jump the fence onto the active airfield if alarmed).

### 5.9.3 Perimeter Safety / Security Fence Concept 4

Concept 4 would involve the construction of an approximately 15,400 LF fence of similar design to that of the Preferred Alternative, although this fence alignment would continue to enclose the approach light system, completely enclosing the Airport facilities. Direct and indirect alterations to wetlands would occur with Concept 4. This concept would

meet the project purpose and would not impact Airport operations or protected operational and navigational surfaces and object free areas.

#### 5.9.4 Perimeter Safety / Security Fence Concept 1

The Concept 1 alignment follows the perimeter of the Airport lease area. The length of the fence would be approximately 24,000 LF, and would result in direct (34,067 SF) and indirect (33,800 SF) alterations to wetlands, while completely enclosing approximately 317 acres of the 322 acres of the Airport lease area. This alignment would require a 10-foot wide paved or gravel access road to allow for fence maintenance. The alignment would meet the project purpose and would protect Airport operations within airport operational areas and navigational surfaces. This alternative has been carried forward because it was identified as the preferred alternative in the draft EA/EIR.

#### 5.9.5 Alternatives Considered But Rejected

The following alternatives that have been identified and dismissed.

- Concept 2: Apron Offset North; 500 Foot Primary Surface South
- Concept 3: Apron Offset North; 1,000 Foot Primary Surface South
- Concept 5: Apron Offset North; Wetland Offset South

Concept 2: Apron Offset North; 500 Foot Primary Surface South: This fence alignment would be offset approximately 320 feet from the runway centerline on the south side in compliance with the current FAA Waiver, and approximately 10 feet off the back of the aircraft aprons on the north side of the taxiway. It would enclose the ILS with a 10-foot wide area on the outside of the fence maintained to be clear of trees and shrubs, and a 10-foot wide vehicle travel path on the Airport side of the fence for security inspection patrols. The total length of the fence would be approximately 17,000 LF, enclosing approximately 104 acres. The alignment would directly and indirectly impact approximately four acres of wetlands (both bordering and isolated) and prime breeding habitat for the Eastern Spadefoot Toad with additional impacts to coastal dunes and associated habitats. In addition, Concept 2 has the potential to impact tidal flow and flood storage capacity since the portion of fence in the vicinity of the ILS may impede normal tidal flow and flooding during storm events.

Concept 2 would meet the project's purpose and need, and would be in compliance with the current FAA Waiver. Under the current Waiver, any fence alignment must be at least 63 feet beyond the edge of the FAR Part 77 Primary Surface to accommodate the 7 to 1 Transitional Surfaces that extend upward and out as an obstruction clear area. However, if this Waiver were ever to be revoked in the future, Concept 2 would have to be removed and relocated. Therefore this alternative has been deemed unfeasible for cost and environmental permitting reasons, and has been dismissed from further review.

Concept 3: Apron Offset North; 1,000 Foot Offset Primary Surface South:

This alignment would have an approximately 500-foot offset from the runway centerline on the south and approximately 10 feet off the back of the aircraft aprons on the north

side. It would enclose the ILS with a 10-foot wide area on the outside of the fence maintained to be clear of trees and shrubs, and a 10-foot wide vehicle travel path on the Airport side of the fence for security inspection patrols. This alignment would be cost effective because it would be in compliance if, in the future, the Waiver is revoked. The length of the fence would be approximately 17,900 LF, enclosing approximately 128 acres. The alignment would impact approximately 4.5 acres of wetlands and prime breeding habitat for the Eastern Spadefoot Toad and coastal dunes and Eastern Box Turtle habitat, which would likely have adverse impacts to these rare species. As with Concept 2, Concept 3 has the potential to impact tidal flow and flood storage capacity since the fence is in the vicinity of the ILS. Maintaining the fence alignment in close proximity to the taxiway would reduce direct, long-term wetland and dune impacts by eliminating the need for a portion of the perimeter roadway. Concept 3 would meet the project purpose and need, however, this alternative has been deemed unfeasible for environmental permitting reasons, and has been dismissed from further review.

Concept 5: Apron Offset North; Wetland Offset South: Concept 5 would enclose the ILS with a four-foot wide area on the outside of the fence maintained to be clear of trees and shrubs, and a 10-foot wide vehicle travel path, which would be maintained on the Airport side of the fence for security inspection patrols, except where the fence can be inspected from the GA aprons on the north. The Concept 5 alternative generally follows the same alignment on the southern side as Concept 4. On the northern side, however, the fence would be located on a minimum 10-foot offset behind the aircraft parking aprons. The length of the fence would be approximately 14,000 LF, enclosing approximately 148 acres. Concept 5 would impact approximately 1.5 acres (direct and indirect) of wetlands and, as with Concepts 2 and 3, would have the potential to impact tidal flow and flood storage capacity since the fence would be in the vicinity of the ILS. While located within wetland areas, the close proximity of the fence to the taxiway would eliminate the need for a perimeter roadway along this stretch of the fence (e.g., as with the northern segments considered in Concepts 2 and 3). It is anticipated that this alignment would only require vegetation management along the fence, minimizing wetland alterations. In addition, portions of these wetlands are currently subject to vegetation management practices to maintain airfield safety. Similar to Concept 4, Concept 5 is also located at the base of the dune ridge to the south of the runway. Certain segments of the fence would require a vehicle path would approximately 10 feet wide. In other areas where the fence traverses through currently managed airfield areas, the width of vegetation clearing would be reduced to four feet on only one side of the fence where patrol roads are not necessary, so as to minimize impacts.

This alignment provides suitable clearance along the north side of the GA aprons to accommodate spatial considerations for aircraft that are pushed by hand onto the turf aprons, access to the electric controls on the back of the GA apron light poles, and meets the purpose and need and fully complies with FAA design standards.

This proposed alignment, while reducing overall wetland impacts, would still result in habitat fragmentation on the south side of the Airport, separating the large aggregate of wetland areas from the adjacent upland areas of coastal dune. Taking the results of

Eastern Spadefoot Toad habitat surveys into consideration, the placement of the fence along the toe of the dune ridge would potentially interfere with breeding activity for this species. Thus, it was determined that Concept 5 was not the preferred alternative with respect to the natural resources at the Airport, for it requires the construction of patrol roads along certain lengths of the fence (except for north of the taxiway) for monitoring, and encloses a portion of the tidally-influenced wetlands within Hatches Harbor. As such, this alternative has been dismissed from further review.

## **5.10 Auto Parking Expansion**

Three alternatives have been analyzed for the Auto Parking Expansion: The No Action alternative, an alternative that would construct additional parking in two phases Concept 4 (Preferred Alternative), and an alternative that would construct additional parking in one phase (Concept 1 Preferred Alternative in Draft EIR/EA). Three additional alternatives have been considered but dismissed from further review. The alternatives that have been considered for the project are illustrated on Figures 3.10 through 3.13 provided at the end of this section.

### **5.10.1 No Action**

The No Action alternative would retain the existing parking area. Existing and future needs would not be met because parking would continue to be congested at peak periods, and visitors would continue to park along Airport Drive occasionally during peak periods, creating a potential safety hazard. The No Action would not impact natural resources because there would be no additional parking area constructed within coastal dune resources.

### **5.10.2 Auto Parking Concept 4, Phases 1 and 2 (Proposed Action and Preferred Alternative)**

The parking lot currently has 62 spaces. Concept 4 would construct 28 additional spaces for Phase 1 (Phase 1 total 90 spaces). Phase 2 would construct additional parking spaces (estimated at an additional 29 spaces for a total of 119) after additional parking studies have been carried out and the studies have been reviewed and approved by NPS and CCC. Expanding the parking lot in phases would address the existing and mid term planning period need for additional parking.

The Preferred Alternative would result in an initial impact of 7,315 SF of coastal dune with the potential for approximately 5,707 SF of additional dune alteration for Phase 2. Dune alterations would be mitigated as discussed in Section 7. The parking aisles would be paved and parking spaces would consist of packed gravel. Infiltration swales would be constructed for Phase 1. A bioretention system would be constructed for Phase 2 which would provide treatment of runoff in accordance with current WPA regulations. Landscaping designed to screen views of the parking would use native plants similar to those listed in the NPS Site and Building Design and Rehabilitation Handbook, September 2005 developed for the Highlands Center at CCNS.

As an adjunct element to Phase 1, efforts to reduce demand by improving awareness of the shuttle system, encouraging the use of taxis, and working with NPS to explore the

use of remote lots for long-term parking may possibly reduce or delay the need to implement Phase 2. The phases would be permitted separately with the Provincetown Conservation Commission so that each phase can be evaluated independently but with an understanding of the entire project.

#### 5.10.3 Auto Parking Concept 1

Concept 1 would construct the proposed parking lot expansion in one phase by constructing 57 additional spaces and a third aisle with parking on both sides directly adjacent and parallel to the existing two aisles, providing a total of 119 spaces. This number of spaces would meet most of the existing and projected demand. The aisle would be paved and the parking spaces would be packed gravel. Alterations to coastal dune (10,000 SF) and isolated wetlands (4,650 SF of Wetland A) would occur under Concept 1.

#### 5.10.4 Alternatives Considered But Rejected

##### Auto Parking Concept 2

Concept 2 would provide a total of 161 spaces by constructing two additional aisles parallel to the existing two aisles. This configuration would impact approximately 10,950 SF of isolated wetland within Wetland A, as well as more than 10,000 SF of coastal dune and associated habitat. The aisles would be paved and the parking spaces would be packed gravel. This alternative has been dismissed from further review because this number of spaces would exceed the existing and projected demand.

##### Auto Parking Concept 3

Concept 3 would provide a total of 116 spaces parallel to the entrance drive, and would meet most of the existing and projected demand. This configuration would impact approximately 1,125 SF of isolated wetland within Wetland A and coastal dune habitat. The aisles would be paved and the parking spaces would be packed gravel. This option puts some of the parking spaces at a long distance from the entrance to the Terminal and would be more visible from Race Point Road. The vehicle circulation is also awkward. This alternative has been dismissed from further review.

### 5.11 Terminal Building

Three alternatives for the Terminal Building expansion project element were explored, including the No Action alternative, an alternative that would construct a second floor within the existing footprint (Vertical Concept), and an alternative that would expand the 1st floor footprint (Horizontal Concept). All three alternatives are carried forward in the assessment of environmental impacts in Section 5.0. The alternatives that have been considered for the project are illustrated on Figures 3.14, 3.15, and 3.16 provided at the end of this section.

#### 5.11.1 No Action

The No Action would maintain the current conditions in the passenger terminal building. Figure 1.4 in Section 1 depicts the floor plan of the existing terminal building along with photos. The space requirements for TSA operations were not in existence when the current terminal building was designed and built. The 1,660 SF taken over by TSA

would not be replaced and the inefficient and cramped conditions for passengers and Airport staff would continue. Currently, passengers do not have enough space in the public, non-secure waiting area, and general aviation pilots do not have space for flight planning, while the conference room and various office spaces are congested and used for storage that was lost due to TSA occupation, which would continue. No impacts to the environment would occur because there would be no construction or change in the appearance or size of the building.

#### 5.11.2 Vertical Concept (within existing footprint) - (Proposed Action and Preferred Alternative)

The Vertical Concept alternative would place a second floor above the existing building and reconfigure space in the existing first floor terminal. The Vertical Concept would satisfy the need to obtain the lost space to TSA, as well as the projected 0.7% annual increase in passengers over the planning period. This concept would provide the additional terminal space needed to operate the Airport in a safe and efficient manner. This concept would provide the additional 1,660 SF of lost TSA space plus approximately 1,000 to 2,200 SF of projected demand over the 20-year period.

The Vertical Concept would have no direct impacts to natural resources and potential impacts to the visual environment would be mitigated with landscape screening as well as with design elements. Minimizing the mass and height of the building is a priority of the CCNS. In order to accommodate a second floor, the increased height of the proposed building would be as minimal as possible, while maintaining an aesthetically pleasing architecture for NPS guests. It would likely be necessary to raise the height of the building to accommodate the second floor. The Vertical Concept terminal building would be approximately 6 to 12 feet higher than the existing 20'93/4" building, resulting in a 26'93/4" to 32'93/4" building height. A maximum height would be identified during meetings between the Airport, the architect, and CCNS staff. The Airport architects will work closely with CCNS staff to ensure a collaborative effort goes into designing the terminal building expansion. CCNS staff will be a member of the terminal design client group from the scoping of the project to final design.

The Vertical Concept alternative would provide the spatial needs to satisfy the purpose and need, while satisfying CCNS request for input from pre-design to ensure minimal visual impacts to Park resources. Therefore, the Vertical Concept is the Preferred Alternative.

#### 5.11.3 Horizontal Concept (expand footprint)

The Horizontal Concept alternative would expand the building to the southwest adjacent to the existing passenger waiting area. The building height of the addition would match the height of the existing terminal building. The alternative would also include modifications to the interior of the existing terminal building.

The Horizontal Concept alternative expansion would provide an additional 900 to 1,200 SF of non-secured area, less than the needed 1,600 SF lost to TSA secure operations, and would not satisfy the purpose and need. Horizontal expansion would result in

alterations to Wetland C (560 SF). Any further expansion to the west would affect the location of the underground fuel tank. Expansion to the north would impact the existing passenger drop-off area and/or the existing parking lot. This would impact the proposed expansion of the parking area.

Additionally, the Horizontal Concept would require that the TSA trailer be relocated. After further evaluation since the NPC/DEIR/EA, it has been determined that the TSA trailer could not be located adjacent to the fuel farm due to Occupational Health and Safety Administration (OSHA) requirements. The location for the TSA trailer would likely need to be in the passenger parking lot or adjacent to the GA apron, again having an adverse impact on parking by occupying a minimum of six parking spaces. The auto parking area circulation road would need to be realigned, resulting in the loss of several additional auto parking spaces.

The Horizontal Concept would also have additional potential impacts on the visual environment, as the relocated TSA trailer would be visible from the existing CCNS bike path. In addition, TSA operations would also be located outside the secure area, which is unacceptable to TSA.

#### 5.11.4 Alternatives Considered But Rejected

No other alternatives were identified.

### 5.12 Turf Apron Expansion

The potential impacts of constructing additional turf apron to accommodate GA aircraft were analyzed with three alternatives: the No Action alternative, an alternative that would construct additional apron space for a full range of GA aircraft (Full Dimension alternative), and an alternative that would accommodate smaller GA aircraft (Reduced Dimension). The alternatives that have been considered for the project are illustrated on Figures 3.17 and 3.18 provided at the end of this section.

#### 5.12.1 No Action

The No Action would maintain the current area for turf parking of GA aircraft. There would be no impacts to natural resources because the turf area would not be reconstructed and reinforced. The need for additional parking area would not be met and it would continue to be necessary to close the Mid Connector taxiway to provide overflow aircraft parking areas during peak demand, and would not meet the purpose and need.

#### 5.12.2 Expand Apron, Full Dimension

The Full Dimension alternative would construct the turf apron outside of the Taxiway Free Area (TOFA) in compliance with FAA safety design standards, and would accommodate the full range of GA aircraft that use the turf apron at the Airport. The width of the apron would accommodate the larger GA planes. Implementation of this alternative would result in impacts to Wetland C (1,250 SF). There would be temporary impacts to cultural grassland habitat (approximately 16,800 SF) during construction, which would be restored to grasslands.

5.12.3 Expand Apron, Reduced Dimension (Proposed Action and Preferred Alternative)  
Under the Reduced Dimension alternative, additional turf apron would be constructed between the two existing areas for turf apron parking by increasing the carrying capacity of the existing grass area to support the weight of the planes. Approximately 16,780 SF of existing managed cultural grassland habitat would be temporarily impacted during construction, and would be restored to managed grassland habitat.

5.12.5 Alternatives Considered But Rejected  
No other alternatives were identified.

## **6. Impacts On 4(f) Resource from Preferred Alternative**

### **6.1 *Physical Use***

A physical use occurs when a project would require the physical taking of lands being used for park or other Section 4(f) purposes.

When the airport was originally established, the land was owned by the Commonwealth of Massachusetts and leased by the Town for a municipal airport. Since the establishment of the Cape Cod National Seashore in 1961, the land on which the Airport is located has been under the ownership of the National Park Service. As part of the land acquisition for the National Seashore, the Commonwealth of Massachusetts authorized the Deed of Conveyance for the Province Lands in 1962. The deed restriction in the conveyance title recognizes the pre-existing lease agreement between the Commonwealth of Massachusetts and the Town of Provincetown for the Airport facilities and access roads.

All CIP project elements are located within the Airport's lease area. The Special Use Permit issued by NPS authorizes Provincetown to use federal lands for airport operations and guidance equipment. The project improvements do not require any land outside the lease area.

Therefore, there would be no physical use of the 4(f) property.

### **6.2 *Constructive Use***

A constructive use does not physically use the Section 4(f) resource, but rather affects the resources indirectly. A constructive use occurs when transportation projects do not incorporate land from a Section 4(f) property but due to proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. Substantial impairment occurs when the activities, features, or attributes of the resource that contribute to the resource's significance or enjoyment are substantially diminished. Potential causes of constructive use include intrusions such as noise, air pollution, effects on cultural resources, or other effects such as visual impacts that would substantially impair the use of the resource.

There are no noise or air quality impacts associated with the project. No changes in flight paths, altitudes, or number of flights would result from the proposed project. In addition, coordination has been carried out with the Massachusetts Historical Commission (MHC) regarding the historical significance of the Sightseeing Shack and other significant historic or archaeological resources within the Airport lease area. MHC has determined that the CIP project is unlikely to affect significant historic or archaeological resources. The CCNS park archaeologist has also determined that no archaeological testing is necessary for the projects.

Each project element is discussed in terms of its potential for constructive use with respect to visual aspects of CCNS. Visual effects associated with the proposed terminal expansion, safety/security fence, and auto parking projects have been identified as a potential constructive use. Although these proposed projects would be within the lease area for the Airport, these project elements could be seen from outside the permit area designated for airport use. Measures to minimize and mitigate for impacts are discussed.

#### 6.2.1 Westerly Taxiway System Improvements

The project would relocate the existing West End Connector taxiway approximately 300 feet to the east, straighten the existing curved Mid Connector Taxiway and realign the west end of the existing parallel Taxiway. The project would not be a new element or an expansion of an existing element at the Airport. There would be no discernable change in the visual environment for the visitors to the CCNS from any viewpoint. There would be no change in the character or visual qualities of the CCNS since the project is a minor modification of the existing airfield. There would be no change in recreational activity for visitors since the project is within an existing restricted area.

Therefore there would be no constructive use of a Section 4(f) resource. Additionally, impacts to natural resources have been minimized and on-site and off-site mitigation is proposed for the unavoidable impacts to wetlands, grasslands, and coastal dunes.

#### 6.2.2 Relocate East End Taxiway

The project would relocate the existing East End taxiway approximately 200 feet to the east to meet the end of the existing runway. The project would not be a new element or an expansion of an existing element at the Airport. There would be no discernable change in the visual environment for the visitors to the CCNS from any viewpoint. There would be no change in the character or visual qualities of this area of the CCNS since the project is a modification within the existing airfield. There would be no change in recreational activity for visitors since the project is within an existing restricted area.

Therefore there would be no constructive use of a Section 4(f) resource. Additionally, impacts to natural resources have been minimized and mitigation is proposed for the unavoidable impacts to wetlands, grasslands, and coastal dunes.

### 6.2.3 Reconstruct Terminal Apron

The project would reconstruct pavement within the same footprint of the existing terminal apron. This is footprint re-pavement project.

### 6.2.4 Reconstruct Easterly End of Partial Parallel Taxiway

The project would reconstruct pavement within the same footprint of the easterly end of the parallel taxiway. This is footprint re-pavement project.

### 6.2.5 Install Taxiway Lighting, Signage, and Construct Electric Vault

The project would construct an electric vault and add taxiway lights. The lights would function in a similar manner to the runway lights, which are activated by pilots during runway use. The lights are not on at all times. There would be no discernable change in the visual environment for the visitors to the CCNS from any viewpoint since the existing runway is lighted and the existing taxiway has reflectors.

There would be no change in the character or visual qualities of the CCNS in the vicinity of the airport environs and therefore there would be no constructive use of a Section 4(f) resource.

### 6.2.6 Repair Sightseeing Shack

The project would repair the existing building. The project would maintain the existing footprint and scale of the building. It would not be a new element in the visual environment. The building is not considered historic as discussed in previously.

There would not be a constructive use because the visual appearance of the building will remain essentially the same as existing.

### 6.2.7 Improve Access Road to Approach Lights

The project is a modification to an existing access road and would not be a new element in the visual environment. There is an existing road to the existing navigational system and there would be no discernable change in the visual environment for the visitors to the CCNS from any public viewpoint since the modification is within an area of aviation navigational equipment. Impacts to natural resources have been minimized and mitigation is proposed for the unavoidable impacts to wetlands.

Therefore there would be no constructive use of a Section 4(f) resource.

### 6.2.8 Construct Service Access Roads to AWOS and LES

The project would provide service roads to existing facilities and would not be a significant new element in the visual environment. The roads would be within the active airfield. The existing facilities are currently maintained and this activity would not be unexpected to the visitors of CCNS or users of the nearby section of the bike path. Impacts to natural resources have been minimized and mitigation is proposed for the unavoidable impacts to wetlands, and coastal dunes. There would be no discernible

change in the visual environment and no change in recreational activity for the visitors to the CCNS.

Therefore there would be no constructive use of a Section 4(f) resource.

#### 6.2.9 Install Perimeter Fence

There are existing segments of safety/security fencing at the Airport and one section is adjacent to the bike path. The new sections of fencing will be within the vicinity of the managed airfield, which minimizes the effect on the various viewer groups and will be within the existing area designated for aviation use. The fence will be black-coated vinyl, which will match existing sections of fence. Safety/Security fencing is consistent with airport facilities and would not be an unusual sight in the airport environs, especially since fencing is currently adjacent to the bike path and visible from the path. The fence will secure the operational area of the Airport and minimize unauthorized entry onto the active airfield. Impacts to natural resources have been minimized and mitigation is proposed for the unavoidable impacts to wetlands, and coastal dunes. Design of the fence has incorporated wildlife openings for turtles and other small animals. There would be no change in recreational activity for the visitors to the CCNS.

Therefore, it is expected that the fence will not impair the use of the CCNS for visitors and would not be a constructive use.

#### 6.2.10 Expand Auto Parking

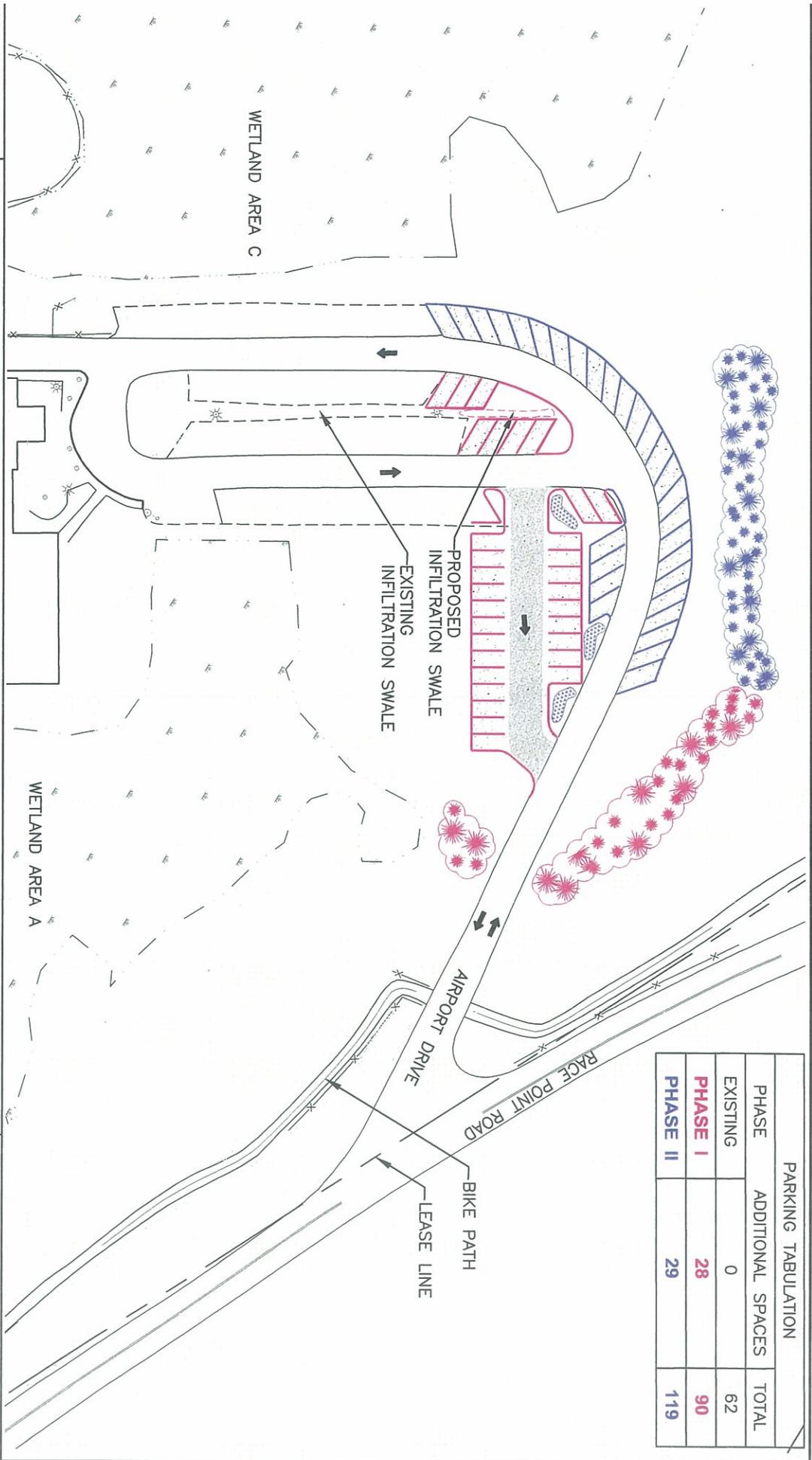
The project would expand an existing parking area at the Airport adjacent to Race Point Road in two phases. There are two NPS parking areas also within the general area: the Visitors Center parking lot and the Race Point Beach parking lot. A portion of the CCNS bike path parallels Race Point Road and crosses Airport Drive. The new area of parking will be adjacent to the existing parking area and Airport Drive. Landscaping is proposed to screen the additional parking from Race Point Road. A concept plan is shown on **Figure 3, Auto Parking Plan.**

Therefore, it is expected that the parking area, with the proposed landscaping mitigation, will result in a minor change in the visual environment but would not impair the use of the CCNS for visitors. The aspects that contribute to the significance of CCNS would not be diminished because there would be no significant change in the visual environment and no change in recreational activity for the visitors to the CCNS. Use of the ORV trail and the bike path will not be impaired.

#### 6.2.11 Expand Terminal Building

The preferred Alternative to expand the existing terminal building would add a second floor, raising the building height approximately 6 to 12 feet. The existing building is visible from the Visitor Center's observation deck, the Race Point Beach parking lot, and portions of the bike path. The proposed increase in height would be discernible from these perspectives, but would not be a significant change in the visual environment.

PARKING TABULATION		
PHASE	ADDITIONAL SPACES	TOTAL
EXISTING	0	62
<b>PHASE I</b>	<b>28</b>	<b>90</b>
<b>PHASE II</b>	<b>29</b>	<b>119</b>



Prepared By: **JACOBS**

Provincetown Municipal Airport  
Capital Improvements Plan  
**AUTO PARKING PLAN  
CONCEPT 4**

Figure 3

The existing viewscape from the NPS Visitors Center Observation Deck consists of many multiple story buildings such as the Race Point Ranger Station, the old Harbor Life-Saving Station Museum, the Pilgrim Monument, and the Race Point Lighthouse. The existing viewscape from the bike path in the vicinity of the Airport includes the Airport Drive and Race Point Road, as well as the NPS beach parking lot and portions of the Airport. The existing viewscape from the Race Point Beach parking lot includes the existing airport terminal and hangar buildings, as well as the existing parking lot at the Airport.

The Race Point Ranger Station, the old Harbor Life-Saving Station Museum, the Pilgrim Monument and Provincetown Museum, and the Airport Terminal, Hangar, and Transportation Security Administration (TSA) trailer are shown from the NPS Visitors Center (telescopic views) in the following viewshed photo compilation.



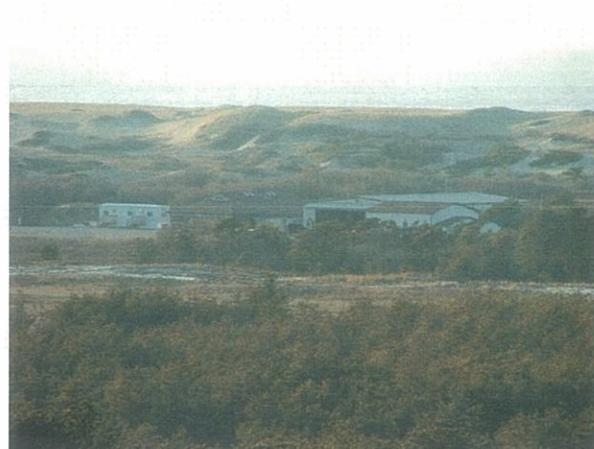
Race Point Ranger Station



Old Harbor Life-Saving Station Museum



Pilgrim Monument and Provincetown Museum



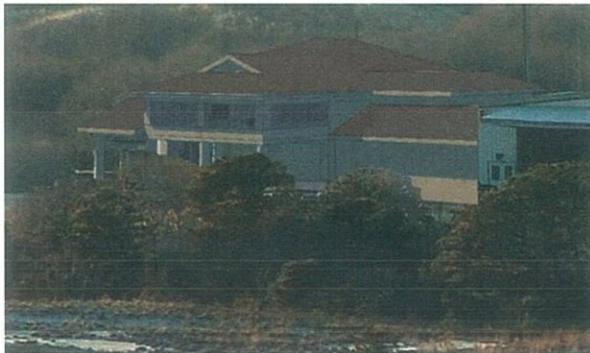
Airport Terminal, Hangar, and TSA Trailer

Telescopic views of area buildings from NPS Visitors Center.

The potential for visual impact from the project relates to the mass, height, volume, and scale of the building. There are several measures that have been evaluated at a conceptual level to minimize this impact. The appearance of building height and mass

could be minimized by use of building insets or projections, stepping back the upper floor, varying the height of the roofline, and adding trees and other vegetation. A combination of roof lines with varying roof heights and pitches could be used to add interest to the building and break up the mass of the building. Windows and other architectural features can be used to break up large wall masses. Roof color can also minimize the visual impact.

Preliminary conceptual building design concepts and photo simulations have been developed at this time for environmental review. Sample buildings with varying roof heights and building insets and projections are shown. Conceptual building design concepts have been developed to illustrate general issues. Existing and simulated views are provided in the following photos.



Example of building with varying roof line looking from the southeast (a telescopic view from the NPS Visitor Center)



Example of terminal with building insets and projections looking from the Northwest

Examples of varying roof designs and building insets and projections

Two examples of the same style building with different roof colors have been illustrated to note the impact that color could make on the perception of visibility. During the design process, background colors will be refined to aid in visual comparisons.



Example of a building with a green roof



Example of a building with a brown roof



Existing view from beach parking lot.



An example of how photo simulation can be used to show the visual impact of a design.



Existing view from bike path.



Example of use of photo simulation to assess visual impact. Roof color and roof lines could be changed.



Existing view from Visitors' Center Observation Deck.



Example of use of photo simulation.

The formal design process has not been initiated since the terminal project is programmed for FY 2016 and a preferred specific vertical design has not been selected. The design process will be carried out in collaboration with Airport staff, the Airport Commission, and NPS staff. Specific design detail will be incorporated into the design process, including details to reduce the perception of scale, mass, and volume of the building. The design process will also evaluate the most appropriate colors for the building and roof to blend in with the existing landscape. All of the design phases will be reviewed and approved by NPS.

Landscaping specific to the terminal will be incorporated into the landscaping plan for the parking lot. Landscaping for the parking lot has been proposed that will buffer the visual plane to the terminal building and parking lot from both the bike path and the Race Point Beach parking lot. Native trees and shrubs will be used.

By using the design principles to reduce the scale, volume, and mass perception, and by proposing vegetated buffers between the building and visual points of interest, the vertical terminal option would have a minor long-term impact on the visual environment. The aspects that contribute to the significance of CCNS would not be diminished by adding a second floor to the terminal building because this would not be a significantly different element within the existing visual environment that includes buildings. There would be no change in recreational activity for the visitors to the CCNS.

Therefore there would be no constructive use of a Section 4(f) resource and the resource will not be impaired.

#### 6.2.12 Expand Turf Apron

The project would modify the structure of the underlying soils within the area of managed grassland and would not be a new element in the visual environment. The visual appearance of the turf apron will be the same as the existing managed grassland. There would be no change in the visual environment and no change in recreational activity for the visitors to the CCNS.

Therefore there would be no constructive use of the resource.

## 7. **Measures to Minimize Harm**

### 7.1 Visual Mitigation Measures

The Airport Commission is committed to work with the CCNS staff to finalize design parameters for the design of the Terminal project. CCNS staff will be included in all design meetings and will review the building design plans from concept to final design.

Landscaping specific to the terminal will be incorporated into the landscaping plan for the parking lot. Landscaping for the parking lot has been proposed that will buffer the visual plane to the terminal building and parking lot from both the bike path and the

Race Point Beach parking lot. Native trees and shrubs will be used. Coordination will be carried out during the permitting and final design process so that CCNS staff will have an opportunity to comment on the specific plants in the landscape plan.

## 7.2 Natural Resources Mitigation

On-site wetland, coastal dune and cultural grassland restoration, as well as additional wetland enhancement mitigation measures are proposed. Additional measures to reduce harm are an invasive species management plan and a construction management plan. The invasive species plan will target common reed, spotted knapweed, and purple loosestrife. The construction management plan will include such things as construction timing, construction phase protections for rare species, and an environmental monitor for environmental compliance oversight

In summary, the proposed CIP projects will not have a constructive use because, with the proposed mitigation for visual impacts, the projects would not substantially impair the resource as discussed above.

## Finding

Based on the Section 4(f) evaluation, I have determined there is no prudent and feasible alternative that would avoid a physical use of the lands permitted for aviation use within the Cape Cod National Seashore (CCNS), a Section 4(f) protected resource. The project includes all possible planning to minimize harm to this resource. FAA will condition its approval of this project to fulfill its Section 4(f) responsibilities.”

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Approved

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Date



**9.5 Statement of Findings, E.O. 11990 Protection of Wetlands**



STATEMENT OF FINDINGS FOR EXECUTIVE ORDER 11990  
(Wetland Protection)

National Park Service – Cape Cod National Seashore

Pursuant To

Provincetown Municipal Airport  
Capital Improvement Program Projects  
Provincetown, Massachusetts

Recommended:

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George E. Price, Jr., Superintendent

Certification of Technical Adequacy and Servicewide Consistency:

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\_\_\_\_\_, Chief, Water Resources Division

Approved:

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\_\_\_\_\_, Regional Director



**National Park Service - Cape Cod National Seashore**  
**STATEMENT OF FINDINGS**  
**Pursuant To**  
**Wetland Protection – E.O. 11990, D.O. 77-1**  
**Provincetown Municipal Airport**

**TABLE OF CONTENTS**

1.0 INTRODUCTION .....	1
1.1 Background .....	1
2.0 PROPOSED ACTION .....	2
2.1 Airport Safety and Security Projects .....	3
2.2 Airport Capacity Projects .....	6
3.0 WETLANDS.....	8
3.1 Wetland Delineation Information.....	9
3.2 Affected Wetlands.....	9
3.3 Functions and Values of Affected Wetlands.....	10
3.4 Impacts on Wetlands Functions and Values .....	10
4.0 ALTERNATIVES CONSIDERED IN ADDITION TO PREFERRED ALTERNATIVES	11
4.1 Westerly Taxiway System Improvements.....	11
4.1.1 No Action .....	11
4.1.2 Westerly TW System Improvements (Proposed Action and Preferred Alternative)...	12
4.1.3 Environmentally Preferred Alternative .....	13
4.1.4 Alternatives Considered But Rejected.....	13
4.2 East End TW Relocation .....	14
4.2.1 No Action .....	14
4.2.2 East End TW Relocation (Proposed Action and Preferred Alternative) .....	14
4.2.3 Environmentally Preferred Alternative .....	14
4.2.4 Alternatives Considered But Rejected.....	15
4.3 Access Road to MALSF Approach Lights.....	15
4.3.1 No Action .....	15
4.3.2 Construct Turn-Around (Proposed Action and Preferred Alternative) .....	15
4.3.3 Environmentally Preferred Alternative .....	16
4.3.4 Alternatives Considered But Rejected.....	16

4.4 Service Access Road to the Weather Station (AWOS).....	17
4.4.1 No Action .....	17
4.4.2 Service Access Road to AWOS (Alternative 2).....	17
4.4.3 Environmentally Preferred Alternative .....	17
4.4.4 Alternatives Considered But Rejected.....	18
4.5 Perimeter Safety/Security Fence .....	19
4.5.1 No Action .....	19
4.5.2 Perimeter Safety / Security Fence Concept 6 (Proposed Action and Preferred Alternative) .....	19
4.5.3 Perimeter Safety / Security Fence Concept 4 .....	20
4.5.4 Perimeter Safety / Security Fence Concept 1 .....	20
4.5.5 Environmentally Preferred Alternative .....	20
4.5.6 Alternatives Considered But Rejected.....	21
5.0 SELECTED DESIGN AND LOCATION OF PREFERRED ALTERNATIVES .....	23
6.0 WETLAND COMPENSATION .....	23
6.1 Compensation Details .....	24
6.2 Restoration Process .....	25
6.3 Anticipated Schedule.....	27
6.4 Anticipated Time-Frame for Full-Functioning Restoration Areas.....	27
6.5 Monitoring and Maintenance .....	28
6.6 Funding.....	28

**NATIONAL PARK SERVICE - CAPE COD NATIONAL SEASHORE  
STATEMENT OF FINDINGS**

**Pursuant to  
Wetlands Protection – E.O. 11990, D.O. 77-1  
Provincetown Municipal Airport  
Provincetown, Massachusetts**

**1.0 INTRODUCTION**

The Provincetown Municipal Airport Commission and Federal Aviation Administration (FAA) have prepared an Environmental Assessment (EA) for the proposed Capital Improvement Program (CIP) of safety and facility improvements at the Provincetown Municipal Airport (PVC). This EA will also be used by the National Park Service (NPS) to satisfy their National Environmental Policy Act (NEPA) requirements. Executive Order 11990 (E.O. #11990): Protection of Wetlands requires the NPS and other federal agencies to evaluate the likely impacts of action in wetlands. The objectives of E.O. #11990 are to avoid, to the extent possible, the long-term and short-term adverse impacts associated with the occupancy, modification, or destruction of wetlands. NPS Director's Order #77-1: Wetland Protection and Procedural Manual #77-1 provide NPS policies and procedures for complying with E.O. #11990. This Statement of Findings (SOF) documents compliance status with these NPS wetland protection procedures, presents the rationale for undertaking projects with potential adverse impacts to wetlands, and documents the anticipated effects.

**1.1 Background**

The Airport is a primary service airport with scheduled passenger service to Logan International in Boston, Massachusetts. Located in Provincetown, Massachusetts, on the northern tip of Cape Cod, the Airport is within the Cape Cod National Seashore (CCNS) sited on approximately 322 acres of federally owned land administered by NPS (Figures 1 and 2). Constructed in the 1940s, the Airport consists of developed airside and landside areas maintained for airport facilities and operations, surrounded by undeveloped areas that consist of grasslands, coastal dunes, and freshwater wetlands.

Airside facilities include a single runway, a taxiway system, aircraft parking aprons, an approach lighting system, navigational aids, and weather instrumentation. The runway was first paved in 1948, and was most recently reconstructed in 2003, which included the construction of runway safety areas. The taxiway system provides aircraft with direct routes between the terminal areas and the runway. The taxiways at the Airport include a partial parallel taxiway and three entrance taxiways. The West End and Mid Connector taxiways are jug-handle shaped to accommodate the larger DC-3 aircraft in operation at the time of the runway construction. The aircraft parking aprons at the Airport include both paved and turf aprons. There are two paved parking aprons, one of which is adjacent to the terminal area and is used to support commercial service at the Airport. The other paved apron is used by general aviation aircraft. The two turf aprons are located to the west of the paved General Aviation apron.

Landside facilities at the Airport include a terminal building, an aircraft hangar, an aircraft rescue and firefighting/snow removal equipment garage (ARFF/SRE), ground support facilities, the sightseeing shack (former administrative building), and an auto parking area. The terminal building was reconstructed in 1998 and is a single story wooden structure that is approximately 4,800 square feet. Passenger facilities, Transportation Security Administration (TSA) screening areas, and a conference room are all located within the terminal building. Passenger facilities include vending machines, restrooms, ticketing counters, passenger queuing space and circulation and waiting areas. The single hangar at the Airport is owned by the Town of Provincetown and operated by Cape Air. The fuel farm is also owned by the Town and is leased by Cape Air. It is located to the west of the terminal building and northeast of the sightseeing shack. The ARFF/SRE garage is located on the east end of the terminal ramp next to the employee parking lot and is owned by the Town.

The Airport has an auto parking lot that provides free parking for passengers and visitors as well as a separate lot for employee vehicles. There are a total of 62 parking spaces available in the passenger/visitor lot and 20 spaces available in the employee parking area.

A segment of security fencing is located at the east end of the runway, around the terminal apron, and around the fueling station. Figures 3 and 4 illustrate the locations of all landside and airside facilities at the Airport.

## **2.0 PROPOSED ACTION**

The Airport proposes the implementation of twelve projects as a part of the CIP. The purpose of these projects is to enhance Airport safety and security and to enhance the efficiency of the Airport to more fully meet current and anticipated needs. Ten of the twelve proposed projects will provide operational safety and security improvements which will bring the Airport into compliance with current FAA, Massachusetts Department of Transportation Aeronautics Division (MassDOT), and TSA safety and security design standards for an airport of this type. Figure 5 provides an overview of all proposed CIP projects and their location relative to existing facilities and resource areas at the Airport.

The proposed CIP projects are:

1. Westerly Taxiway System Improvements (Realign West End, Mid Connector and a portion of the parallel Taxiways);
2. Relocate East End Taxiway;
3. Reconstruct Terminal Apron;
4. Reconstruct Easterly End of Partial Parallel Taxiway;
5. Install Taxiway Lighting and Construct Electric Vault;
6. Repair Sightseeing Shack;
7. Improve Access Road to Approach Light System;
8. Construct Service Access Roads to Localizer Equipment Shelter (LES) and to the Automated Weather Observation Station (AWOS);
9. Install a Perimeter Safety/Security Fence;

10. Expand Auto Parking;
11. Expand Terminal Building; and
12. Expand Turf Apron.

## **2.1 Airport Safety and Security Projects**

The purpose of nine of the twelve proposed CIP projects (i.e., CIP projects 1 through 9 as listed above) is to provide necessary operational safety and security upgrades at the Airport to comply with current FAA, TSA, and MassDOT regulations and standards. A brief description of these CIP projects, the preferred alternative for each project, and how they relate to airport safety and security standards is provided below.

### *Westerly Taxiway System Improvements*

The current configuration of the Westerly Taxiway System does not meet current FAA flight operation safety standards. The existing jug-handle shaped taxiway was constructed to accommodate DC-3 aircraft, which are no longer in operation. Current FAA design standards call for an L-shaped intersection with a right angle to the runway for operational safety. The west end taxiway currently intersects parallel to the runway, rather than at the preferred right angle, limiting aviators' view of the runway, which makes taxiing hazardous. This design is non-compliant with national design standards and is a safety issue that increases risks of runway incursions and/or collisions on the runway. The Mid Connector Taxiway is also currently a jug-handle shape that does not meet the current standard right angle intersection with the runway.

The Westerly Taxiway System Improvements involve the following elements: 1) relocate the West End taxiway, 2) realign and reconstruct the westerly end of the parallel taxiway with a run-up pad, 3) and realign the Mid Connector taxiway. These elements would result in the alteration of approximately 28,655 SF of Wetland I, with opportunities to provide on-site wetland restoration. A discussion of the proposed mitigation measures is provided in the mitigation section of this document. In addition, the Westerly Taxiway System Improvements will result in a net decrease in impervious area at the Airport.

### *Relocate East End Taxiway*

The East End Taxiway has the standard design of a ninety-degree intersection but fails to comply with the standard that requires it to connect with the end of Runway 25. Pilots are required to "back-taxi" in order to reach the end of Runway 25 prior to takeoff. This creates potential for collisions between back-taxiing aircraft and landing aircraft. This is a clear safety hazard and must be redesigned according to current standards.

The relocation of the East End Connector Taxiway would shift the Taxiway approximately 200 feet to the east so that it connects at the end of Runway 25, resulting in the alteration of approximately 28,300 SF of Wetland Area B. As with the Westerly Taxiway System Improvements, removal of the existing pavement provides an opportunity to restore wetland habitat.

### *Reconstruct Terminal Apron*

Reconstruction of the Terminal Apron within the same footprint is necessary to maintain airfield safety, as it is deteriorating and well over 20 years old. It is also eligible for the FAA's pavement rehabilitation program. In the Certificate on the DEIR/NPC, the Secretary of EOEEA allowed this project to go forward prior to completion of the FEIR/EA/Section 4(f) Evaluation. The project does not result in an increase in pavement or change in the footprint. A Notice of Intent was filed with the Provincetown Conservation Commission and the project was constructed in 2008 (DEP File No. 058-0440).

### *Reconstruct Easterly End of Partial Parallel Taxiway*

As with the reconstruction of the terminal apron, the pavement reconstruction of the easterly portion of the partial parallel taxiway is intended to replace pavement that is in poor condition within the existing footprint. In the Certificate on the DEIR/NPC, the Secretary of EOEEA allowed this project to go forward as well prior to completion of the FEIR/EA/Section 4(f) Evaluation, as funding is available, although this project will likely be completed as part of the Westerly Taxiway System Improvements.

### *Install Taxiway Lighting and Construct Electric Vault*

The installation of Taxiway Lighting and the construction of the Electric Vault are necessary to improve operational safety on the taxiways during nighttime operations, and to upgrade the reliability of the power supply to the taxiway and runway lighting systems. The current lack of taxiway edge lights and taxiway signs presents a significant operational safety hazard and the existing electric vault is not compliant with electrical code standards and is currently housed within the existing Sightseeing Shack.

The taxiway edge lights and lighted signs would be constructed 10 feet off the edge of the pavement within cultural grasslands that are currently mowed as part of Airport operations. The new electric vault would be a 10 by 10 foot structure, approximately 10 feet high, and similar in appearance to the existing utility buildings for the localizer and the glide slope equipment. An approximately four-foot wide gravel area would be constructed around the vault with a paved walkway to the service door and parking for two vehicles. The vault will be located adjacent to the Sightseeing Shack.

### *Repair Sightseeing Shack*

The Sightseeing Shack Improvements will repair the building once the electrical equipment is removed as part of the taxiway lighting improvements. This would involve the repair of the Sightseeing Shack walls to maintain the safety and integrity of the existing Sightseeing Shack. The structure would remain within the existing footprint for the building and surrounding access area. Although it is not a historic structure, is the intent of the Airport Commission to maintain a building in the same location of similar size and with similar architecture, including a front porch.

### *Improve Access Road to Approach Light System*

The current design of the Access Road to the MALSF Approach Lights is non-compliant with FAA standards and presents hazards to FAA service vehicles. At present, vehicles are required to back up 400 feet on a narrow gravel embankment prior to turning around and exiting the unpaved access path. This is a difficult maneuver, especially due to the lack of shoulders on the path. The edge is difficult to discern, particularly during inclement conditions, and at least one vehicle has gone off the road onto the side slope in the recent past and required a crane to extricate it. FAA design standards for access roads to FAA owned and operated facilities have specific pavement requirements for the roads, including that the first 300 feet be paved when they join a runway or taxiway, as is the case at the Airport. A paved access road minimizes the hazard of small debris and other foreign material from being tracked onto the runway or taxiway, which may damage aircraft or impede operations.

Access Road improvements for the MALSF will involve the construction of a 30 foot by 30 foot vehicle turn-around area at the western end of the existing 10-foot wide gravel service road and paving of the first 300 feet of this access roadway. This project would alter approximately 960 SF of Wetland C/J/FK. Mitigation for this wetland alteration is proposed as described in the mitigation section of this document.

### *Construct Service Access Roads to Localizer Equipment Shelter and to the Automated Weather Observation Station*

The Airport is also required to construct Service Access Roads to the Localizer Equipment Shelter (LES) and to the Weather Station (AWOS). There are currently no access roadways to either structure. FAA operation standards mandate that vehicles have access to airfield equipment. The proposed Access Roads to the LES and to the AWOS would greatly improve maintenance access, especially during inclement conditions or in the case of an emergency. Construction of these access roads has previously been put aside in order to complete other improvements that were more critical at the time. Construction of the roads would enable the Airport to comply with FAA Orders.

The two 10-foot wide service access roads will be constructed opposite each other and perpendicular to the East End TW. The roadways will be banked by one-foot grass shoulders on each side and will also involve small turn-around areas. As with the access road for the MALSF, the first 300 feet of these access roadways must be paved, as they join the runway and taxiway areas. These access roadways will be constructed within coastal dune (cumulatively 7,900 SF of alteration) and a portion of the AWOS access road will traverse Wetland H (290 SF).

### *Install a Perimeter Safety/Security Fence*

The final safety and security related project that is proposed to meet current airport design and operational safety standards is the installation of the Perimeter Fence. Since the Airport operates flights that connect directly to Logan International Airport in Boston, Massachusetts, airfield security must meet the rigid standards found under TSR Part 1542 as well as TSA guidelines. The construction of the fence would also serve to deter wildlife incursions on the airfield, which

would protect aircraft operations as well as decrease wildlife mortality. The fence would almost completely enclose currently unsecured areas and minimize unauthorized access for security. In addition, hikers and other persons utilizing the CCNS for recreational purposes tend to find their way onto the airfield operational area; a perimeter fence would identify and limit access to the Airport operational area and increase the safety of all users.

Currently, the preferred alternative for the placement of the fence is “Concept 6,” which follows the treeline and managed areas of vegetation immediately abutting the airfield. For planning purposes, the projected impacts to resource areas involve the direct alteration of 1,152 SF of BVW, 25,648 SF of isolated freshwater wetlands, and 530 SF of coastal dune. Long-term maintenance of a low-growing shrub or herbaceous plant community within a four-foot wide strip on either side of the fence (i.e., an eight-foot wide strip) will indirectly impact BVW, isolated freshwater wetlands, and coastal dunes. Prior to construction, the Airport intends to conduct a pre-construction site walk with regulatory authorities and other appropriate individuals to refine the exact location of the fence. This will further ensure the protection of natural resources and rare species habitat.

## **2.2 Airport Capacity Projects**

The remaining three projects are not associated with safety and security standards, but are intended to address capacity improvements to meet current and projected demand at the Airport. These include expansion of the auto parking, expansion of the terminal building, and expansion of the turf apron. The purpose of these projects is to provide capacity improvements to meet existing and projected demand at the Airport, as indicated by information and studies compiled by the Airport and FAA. A brief discussion of each is provided below.

### *Expand Auto Parking*

The expansion of the auto parking area is proposed to meet existing and projected parking needs. The existing parking area (62 spaces) is frequently full, and drivers are unable to locate a parking place. When parking is unavailable, drivers often resort to parking along the shoulders of Airport Drive (which are comprised of coastal dunes) and, in some instances, on Race Point Road. These roads are not designed for vehicles to park along their periphery, for it creates unsafe conditions along the roadways. While the parking lot may become full anytime during the year, this condition is exacerbated during the peak summer months. Increasing the available parking would eliminate the need to park on the roadways, decrease impacts to the shoulder areas of the roadway, and would increase the overall safety of the roadways and traffic flow.

The preferred alternative for the parking lot expansion (“Concept 4”) would construct the parking lot in two phases. Phase I would involve the construction of 28 additional spaces adjacent to the existing parking lot with paved drive aisles and gravel parking spaces. Phase II specifies for the construction of an additional 29 spaces, for a total of 119 spaces at full build out. Infiltration swales would be incorporated between sections of parking spaces for Phase I, with the anticipated need for additional stormwater management measures (bioretention areas) for Phase II. In addition, the Airport will provide landscape buffers to screen the new parking areas from park visitors along Race Point Road.

Phase I is designed to address the current parking demand. Only after additional parking studies are conducted and subsequently reviewed and approved by NPS and the Cape Cod Commission (CCC), would the second phase be constructed. As an adjunct element to Phase I, efforts to reduce demand by improving awareness of the shuttle system, encouraging the use of taxis, and working with NPS to explore the use of remote lots for long term parking may possibly reduce or delay the need to build Phase II.

### *Expand Terminal Building*

A substantial amount of the Terminal Building previously designated for passenger use was displaced by TSA for mandatory passenger screening and security personnel space. The Terminal Expansion seeks to acquire additional space for passenger use and for other airport personnel while maintaining the current space that has been allotted for TSA use. The increase in public space within the Terminal will also accommodate for future increases in passenger demand.

The preferred alternative for the proposed expansion of the Terminal Building proposes a second floor above the existing building (vertical expansion) with modifications made to the first floor interior to satisfy the need to obtain the space lost to TSA use as well as the projected 0.7% annual increase in passengers over the planning period. This concept would provide the additional terminal space needed to operate the Airport in a safe and efficient manner, specifically the 1,600 SF of lost TSA space plus the 1,000 SF of projected demand over the 20-year period. This concept incorporates the necessary 2,600 SF of passenger space plus the required spatial needs to bring the building up to state and local regulatory codes. Of note, this project would not impact natural resources. Exterior building materials for the selected design would match the existing Terminal Building and will be in keeping with Technical Bulletin 96-001.

### *Expand Turf Apron*

The existing turf apron is not able to accommodate all parking aircraft outside of the taxiway object free area (TOFA) during the peak season, nor is it able to accommodate projected future aircraft parking needs. The construction of an additional turf apron would occur between the two existing turf apron parking areas adjacent to the parallel TW. Construction of this CIP project would result in the temporary alteration of approximately 16,780 SF of currently managed grassland, which will be reconstructed to support the weight of small, single-engine planes. Following construction, this area will continue to be maintained as managed grassland.

The expanded turf apron will accommodate light single-engine GA aircraft, so that these aircraft will no longer have to park on unpaved turf areas currently utilized for parking overflow or on the mid-connector taxiway, both of which present numerous safety hazards. Additional aircraft parking space will aim to eliminate overcrowding on the turf apron as well the associated risks of operational accidents.

### 3.0 WETLANDS

Vegetation community descriptions at the Airport are based upon the classification system described in the *Classification of the Natural Communities of Massachusetts* (Swain and Kearsley, 2001; hereinafter referred to as “the Classification”). The dominant types of vegetation communities encountered at the Airport include Cultural Grassland, Maritime Dune Community, Coastal Interdunal Marsh/Swale with developing areas of Sandplain Grassland and/or Sandplain Heathland, and Estuarine Intertidal Salt Marsh. Wetland areas delineated at the Airport are identified on Figure 5. Descriptions of these habitat communities and general observations within each community type are provided below.

The site’s geologic characteristics, combined with a fluctuating seasonal high groundwater table, result in seasonal saturation of the upper portion of the soil profile for significantly long periods of time during early portions of the growing season. Rainfall received during storm events also contributes to saturated soil and inundated land conditions. Inundated and/or saturated soil conditions favor the establishment of hydrophyte-dominant plant communities and the deposition of organic material, which are typical of wetland habitats.

Wetland habitats at the Airport include isolated freshwater wetlands dominated by grass and herbaceous species (Palustrine Emergent Wetlands or PEM); shrub-dominated isolated wetlands (Palustrine Scrub-Shrub Wetland or PSS); and isolated freshwater forested wetlands (Palustrine Forested Wetland or PFO) dominated by pitch pine (*Pinus rigida*). These isolated wetlands, ranging in size from a few hundred square feet to several acres in size, are associated with coastal interdunal swales and are often separated from each other by low to moderate dune ridges closer to the airfield, and extensive higher dune ridges, oriented parallel to the Airport runway, further out from the airfield. Isolated PSS wetlands also occur within the existing airfield, between the existing taxiways and the runway, and separated from paved surfaces by managed grassland communities of varying width.

The shrub-dominant interdunal wetlands (PSS), which are the predominant type of wetland habitat at the Airport, have a non-tidal, seasonally or temporarily flooded water regime. The relatively dense shrub communities include plant species such as winterberry (*Ilex verticillata*), red maple (*Acer rubrum*), meadowsweet (*Spiraea latifolia*), highbush blueberry (*Vaccinium corymbosum*), northern bayberry (*Myrica pensylvanica*), red chokeberry (*Aronia* spp.), and American cranberry (*Vaccinium macrocarpon*), which often occurs in dense mats. Herbaceous plants observed frequently among the Airport wetlands include sphagnum moss (*Sphagnum* spp.), various sedges (*Carex* spp.), rushes (*Juncus* spp.), cinnamon fern (*Osmunda cinnamomea*), royal fern (*O. regalis*), sensitive fern (*Onoclea sensibilis*), common reed (*Phragmites australis*), wide-leaf cattail (*Typha* sp.), woolgrass (*Scirpus cyperinus*), and various goldenrods (*Solidago* spp.).

Within the pitch pine-forested area between the runway and the steep coastal dune habitat to the southeast of the Airport managed areas, there is an extensive mosaic of additional interdunal forested wetland swales. Within these freshwater wetlands, pitch pine has adapted to the seasonally saturated conditions and is considered a local wetland indicator species.

In the far western reaches of the Airport, there is a larger bordering vegetated wetland system (Wetland C/J/FK) that transitions along a salinity gradient from a freshwater system (PEM-PSS-PFO) to a brackish system (primarily PEM, trending toward Estuarine Emergent Marsh or EEM) as groundwater seeps meet the tidal influence of the Hatches Harbor estuarine system. Brackish portions of this wetland system are dominated by a non-indigenous species, common reed. Efforts to control and manage this invasive plant community were implemented in the early 2000s through the Hatches Harbor Restoration Project, and areas of *Phragmites* die-back are evident from the emerging salt marsh community observed along the landward-reaches of the areas receiving restored salt water influence. One small area of this emerging salt marsh plant community was identified and delineated in the field (“SM”).

### 3.1 Wetland Delineation Information

The wetland resources at the Airport were field delineated and survey-located by wetland scientists at the Horsley Witten Group, Inc. (HW), subcontractors of the Airport. It should be noted that only those wetland areas in close proximity to the proposed project elements and/or their alternative locations have been delineated within the 322-acre Airport site, each identified with an alphabetical designation. The location of wetlands outside of the assessment areas were obtained through Massachusetts Geographic Information Services (MassGIS). An Abbreviated Notice of Resource Area Delineation (ANRAD) was submitted to the Provincetown Conservation Commission and the Massachusetts Department of Environmental Protection (DEP) by HW. A site walk was conducted with representatives from the local Conservation Commission and the Army Corps of Engineers (Corps) to review the wetland boundaries. The delineated wetland boundaries indicated on Figure 6 have been approved by the Conservation Commission to the extent of their jurisdiction (DEP File No. SE-058-0425). Additional wetland information may also be found in the “*Natural Resources Inventory and Rare Species Habitat Assessment Report*,” prepared by HW in March 2007.

### 3.2 Affected Wetlands

Portions of Wetland B, Wetland I, Wetland H, Wetland DM, Wetland BC/F, Wetland E/DD, Wetland DB/FG, Wetland L, Wetland C and Wetland C/J/FK would be affected directly and/or indirectly by the proposed CIP projects. These wetlands are characteristic of the dominant wetland habitat encountered throughout CCNS.

The West End Taxiway is situated adjacent to two scrub-shrub wetlands, specifically Wetland C/J/FK and Wetland I, and is separated from these wetlands by Cultural Grasslands. Vegetation within each of these wetland areas, as well as the grassed shoulders, is maintained for Airport safety. Wetland C/J/FK is a tidally-influenced Bordering Vegetated Wetland (BVW), and evidence of dieback due to an increase in salinity near this Taxiway End<sup>1</sup> has been observed. Wetland I is non-tidal and has a seasonally or temporarily-flooded water regime. Vegetation within Wetland I includes chokeberry, winterberry, meadowsweet, steeplebush (*Spiraea tomentosa*), highbush blueberry, American cranberry, bayberry, and poison ivy (*Toxicodendron radicans*). Relocation of the West End Taxiway will occur within a portion of Wetland I.

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<sup>1</sup> The increase in tidal flushing is associated with the Hatches Harbor Restoration project.

Vegetation within Wetland C/J/FK includes winterberry, arrowwood (*Viburnum dentatum*), meadowsweet, blue-joint (*Calamagrostis canadensis*), American cranberry, and Virginia rose (*Rosa virginiana*). Lesser amounts of purple loosestrife (*Lythrum salicaria*), wide-leaf cattail, and woolgrass are also present, along with significantly large communities of common reed to the north of the parallel Taxiway.

The East End Taxiway is adjacent to Wetland B. Plant species documented within Wetland B include American cranberry, highbush blueberry, dangleberry (*Gaylussacia frondosa*), meadowsweet, winterberry, pitch pine, willow (*Salix* spp.), various sedges and rushes, and small patches of common reed.

Concept 6 for the Perimeter Fence traverses Wetland DM, Wetland BC/F, Wetland E/DD, Wetland DB/FG, Wetland L, Wetland C/J/FK, and Wetland C.

### **3.3 Functions and Values of Affected Wetlands**

The affected freshwater wetlands discussed above contribute to the protection of groundwater supply, public and private water supplies, storm damage prevention, flood storage control, water quality, and preservation of wildlife and rare species habitat. The majority of the wetlands delineated at the Airport provide many of the same functions and values, depending on location and the type of vegetation cover. Most, if not all, of the wetland areas contribute to flood storage and flood storage control by retaining stormwater runoff and allowing for slow groundwater recharge. These wetlands also contribute to water quality by removing sediments and attenuating pollutants.

The topography, soil structure, plant community composition and structure, and hydrologic regime of the wetlands contribute to the protection of wildlife habitat by providing food, shelter, migratory, overwintering, and breeding areas for birds, mammals, reptiles, and amphibians. Some of the wetland areas, particularly those within the coastal interdunal marsh/swales, may also provide habitat for Massachusetts' state-listed rare species.

### **3.4 Impacts on Wetlands Functions and Values**

A total of 1.95 acres of wetland will be directly impacted as a result of all proposed projects.

Overall, 0.05 acres (2,112 SF) of Wetland C/J/FK will be altered as a result of the proposed improvement projects, specifically for the installation of the perimeter fence and improvements to the MALSF access road. The MALSF access road improvements will alter approximately 0.02 acres (960 SF) of Wetland C/J/FK. The perimeter fence will directly alter 0.03 acres (1,152 SF) for the installation of fence posts and long-term vegetation maintenance along the fence within Wetland C/J/FK.

A total of 1.9 acres (82,893 SF) of isolated freshwater wetlands will be altered as a result of the CIP projects. The Westerly Taxiway System Improvements will result in about 0.65 acres (28,655 SF) of alteration to Wetland I. The relocation of the East Entrance Taxiway will result

in the alteration of approximately 0.65 acres (28,300 SF) of Wetland B. The construction of the service access road to the AWOS will alter 0.01 acres (290 SF) of Wetland H. The perimeter fence will directly alter 0.58 acres (25,648 SF) of isolated wetland areas, including Wetland DM, Wetland BC/F, Wetland E/DD, Wetland DB/FG, Wetland L, and Wetland C.

All direct and indirect or temporary impacts associated with construction activities will be mitigated accordingly, so as to achieve no net loss of the functions and values of the affected wetlands as a result of the CIP projects.

Table 1 provides a comprehensive breakdown of wetland impacts incurred by the proposed improvements, on a project by project basis specific to each affected wetland. This table also provides an equally detailed breakdown of proposed mitigation for each project.

#### **4.0 ALTERNATIVES CONSIDERED IN ADDITION TO PREFERRED ALTERNATIVES**

This section describes the Preferred Alternative (Proposed Action), the No Action, and reasonable alternatives (if any) for each of the proposed projects that would occur within wetlands. As defined in FAA Order 5050.4B, the Proposed Action is “the solution the airport sponsor wishes to implement to solve the problem(s) it is facing.” Alternatives to the Proposed Action have been considered and evaluated. An explanation is provided to justify why some alternatives have been deemed “not reasonable” and were subsequently eliminated from further analyses.

Certain CIP project elements that will not occur within wetlands are not included in this discussion. Those projects elements include the reconstruction of the terminal apron, the reconstruction of the easterly end of the partial parallel taxiway, the installation of taxiway edge lighting and the construction of an electric vault, the repair of the sightseeing shack, construction of the LES access road, the auto parking expansion, the terminal building expansion (vertical concept), and turf apron expansion.

#### **4.1 Westerly Taxiway System Improvements**

The potential impacts of improving the westerly end of the TW system at the Airport have been evaluated. The sub-elements of the Westerly Taxiway System consist of the West End Connector Taxiway, the Westerly End of Parallel Taxiway, and the Mid Connector Taxiway. Two alternatives have been analyzed for environmental impacts, and two alternatives have been considered but rejected. The two alternatives analyzed are the No Action alternative and an alternative that would construct westerly TW system improvements.

##### **4.1.1 No Action**

The No Action alternative would maintain the West End TW in its current location and would not address the operational safety issues at the Airport. The taxiway would continue to be located within the clear zone in the approach for Runway 7, which creates the potential for collision between a landing aircraft and a plane waiting to takeoff. Aircraft would continue to

taxi onto the runway parallel to the runway end and out of visual contact with approaching aircraft. Aircraft would continue to hold short of the runway which limits their view of the runway and other aircraft.

The No Action alternative would maintain the jog in the parallel taxiway, would not replace the pavement which is over 20 years old and in poor condition, and would not address the operational safety issues at the Airport. Paved surfaces at airports must be maintained in good condition. Airfield pavement standards estimate a useful lifespan of 20 years, after which pavement is eligible for reconstruction.

While no impacts to environmental resources would occur with the No Action alternative, the No Action alternative would maintain the existing Mid Connector TW with the non-standard jug-handle intersection with the runway and the parallel taxiway. It would also not align properly with the proposed relocated West End TW and the proposed realigned westerly end of the parallel TW. No impacts to natural resources would occur with the No Action alternative because there would be no construction or change in current conditions.

#### **4.1.2 Westerly TW System Improvements (Proposed Action and Preferred Alternative)**

The sub elements of the Westerly Taxiway System consist of:

- A. West End Connector Taxiway
- B. Westerly End of Parallel Taxiway
- C. Mid Connector Taxiway

The sub elements are discussed individually but will be combined as one project in terms of permitting and construction because the elements would be constructed at the same time.

##### **(A.) Relocate West End Taxiway with Standard Right Angle Out of the Runway 7 Approach**

The alternative to relocate the West End TW would address the operational safety issues and would be in compliance with FAA design standards. The taxiway would connect with the end of the runway at a right angle and would be located out of the approach for the runway.

##### **(B.) Realign Westerly End of Parallel Taxiway**

This alternative would shift the westerly end of the parallel TW to meet the existing edge of pavement of the easterly portion of the parallel TW. A run-up pad, as required by FAA design standards for new construction, would also be constructed at the end for aircraft to perform required engine and systems checks before takeoff, without blocking the taxiway. The parallel TW would be reconstructed with a consistent width of 40 feet. Since the pavement width is currently 60 feet, pavement would be removed. Cultural Grassland habitat would be restored in areas of pavement removal.

### (C.) Realign Mid Connector TW

The alternative to realign the Mid Connector TW would provide a standard 90 degree intersection design. The aging pavement would also be reconstructed to address the hazard of loose pavement causing harm to aircraft and passengers. The project would be constructed within the existing area of pavement and managed Cultural Grassland habitat.

Collectively, the three elements of the Preferred Alternative for the Westerly TW System Improvements would result in alterations to approximately 28,655 SF of wetlands, 6,400 SF of coastal dune, rare species habitat for one or more state-listed species, as well as temporary impacts to grassland habitats. Proposed mitigation measures would restore or create these resource areas and habitats from existing paved surfaces that would be removed.

#### **4.1.3 Environmentally Preferred Alternative**

After review, the Westerly Taxiway System Improvements (Preferred Alternative) is the Environmentally Preferred Alternative. The Preferred Alternative would result in a net loss of pavement and includes mitigation to restore areas of wetland (and coastal dune) impacted by the project. The current state of the taxiway is a hazard to aviators and passengers, and is a risk to the safety of those traveling to and from the Airport, as Airport operation in this area involves runway activity and airplanes in flight (as opposed to ground operations such as taxiing). Constructed improvements are necessary to address the Part 77 navigable airspace safety and operational issues of the West End TW that is currently within the approach to RW 7. These improvements will restore and maintain operational safety within the Part 77 airspace. Additionally, measures to minimize adverse impacts to wetlands such as steepened slopes have been incorporated into the design, and construction period mitigation measures such as erosion control and construction timing will be implemented to reduce overall impacts. An invasive species management plan would also be implemented to preserve an environment that supports the natural diversity found within the CCNS.

Among the alternatives considered, the West End Improvements would ultimately attain the greatest balance between the human population, the operational safety needs for the Airport, and the surrounding natural environment.

#### **4.1.4 Alternatives Considered But Rejected**

*“Existing Footprint Alternative.”* The alternative that would reconstruct the West End TW within the existing footprint was suggested by others during the ENF comment period as a way to minimize impacts to wetland and grassland habitats. This alternative would provide a standard right angle connection to the runway, but the taxiway would continue to be located within the approach to Runway 7. Likewise, the risk of collisions would not be reduced because aircraft would continue to enter parallel to the runway end, rather than perpendicular to the end of the runway.

This alternative would have unavoidable impacts to approximately 13,665 SF in Wetlands I and C/J/FK, as well as additional impacts to grassland habitat. Proposed mitigation measures would

restore or create these habitats to the extent practicable from existing paved surfaces that would be removed.

The alternative that would reconstruct the existing TW footprint with a standard right angle within the existing footprint has been deemed unsafe and unfeasible because it would not comply with the FAA safety and design standards and it would not address existing operational safety issues. This alternative has been dismissed from further review.

*“Lights on Existing Parallel TW Alternative”* It was suggested in the comments on the ENF that installation of taxiway lights alone on the existing taxiway could address the safety issues relative to the jog in the partial parallel taxiway. Environmental impacts with this alternative would be limited to minor impacts to grassland habitat. However, pilots do not expect to encounter a jog mid-way along a parallel taxiway. Installation of edge lights would not fully eliminate the non-standard hazardous condition of maneuvering the aircraft through an unexpected turn at night or in bad weather conditions, and would not correct the operational safety issues created by the misaligned pavement. This alternative has been dismissed from further review.

## **4.2 East End TW Relocation**

Two alternatives for the East End Taxiway Relocation have been analyzed, including the No Action alternative and an alternative that would relocate the East End TW to connect with the end of Runway 25.

### **4.2.1 No Action**

The No Action alternative would maintain the 200-foot offset between the end of Runway 25 and East End TW. Aircraft would continue to back-taxi on the active runway, maintaining the current unsafe conditions by possibly interfering with landing aircraft. No impacts to natural resources would occur with the No Action alternative, as there would be no construction or change in existing conditions.

### **4.2.2 East End TW Relocation (Proposed Action and Preferred Alternative)**

The alternative to relocate the East End TW to connect with the end of the runway would be in full compliance with FAA mandated design standards without impacting the terminal apron. There would be a slight curve in the East End TW centerline to avoid aircraft on the terminal apron. This configuration would not present a safety hazard because the terminal apron is well lit with overhead lighting, and planes are moving slowly as they enter the East End TW. Implementation of this alternative would result in alterations to approximately 28,300 SF of Wetland B.

### **4.2.3 Environmentally Preferred Alternative**

Of the alternatives considered for the East End Taxiway, the East End TW Relocation alternative (Preferred Alternative) is the Environmentally Preferred Alternative. While this alternative

involves construction, relocating the current configuration of the taxiway will greatly reduce the significant safety hazard that the current configuration presents to aviators and passengers traveling to and from the Airport. The Preferred Alternative will address the Part 77 navigable airspace safety and operational issues of the East End TW that currently requires planes to back taxi on the active runway. As operations within the East End TW involve runway activity and airplanes in flight, the relocation of the taxiway is required to restore the necessary level of safety in this area to avoid potential undesirable and unintended consequences, while maintaining the diversity of natural resources at the Airport, to the fullest extent possible.

The preferred alternative includes mitigations to restore areas of wetland and coastal dune impacted by the relocation of the taxiway. Measures to minimize adverse impacts to wetlands and coastal dunes such as steepened slopes have been incorporated into the design, and construction period mitigation measures will be implemented such as erosion control and time of construction to reduce overall impacts. An invasive species management plan will also be implemented to preserve an environment that supports the natural diversity found within the CCNS. The East End TW Relocation would ultimately attain the greatest balance between the human population, the need to restore operational safety for the Airport, and the natural environment.

#### **4.2.4 Alternatives Considered But Rejected**

No other alternatives were identified.

### **4.3 Access Road to MALSF Approach Lights**

The potential impact of improving the access road to the MALSF approach lights was also evaluated. Two alternatives will be analyzed for environmental impacts, including the No Action alternative and an alternative that would construct a turn-around. Three alternatives have been considered but rejected.

#### **4.3.1 No Action**

The No Action alternative would maintain the existing gravel/earthen access road with narrow embankments. As a result, vehicles accessing the MALSF for maintenance or repairs would continue to need to back up for a distance of approximately 400 feet along the narrow access road, and the associated safety issues would continue to exist. There would be no direct environmental impacts associated with the No Action alternative, for construction would not occur.

#### **4.3.2 Construct Turn-Around (Proposed Action and Preferred Alternative)**

The Preferred Alternative would involve the construction of a turn-around area, so that vehicles would no longer have to back up the length of the narrow access road. The proposed turn-around area would be 30 feet wide and 30 feet long to provide adequate space for a vehicle to safely reverse direction. The turn-around area would occur within approximately 960 SF of Wetland C/J/FK, and would be constructed along the north side of the embankment so that it would not

interfere with the approach lights. The material used to construct the turn-around would be delivered to the site and would not be excavated from the adjacent wetland area. Proposed compensatory mitigation for lost wetland area would be provided nearby at a greater than 1:1 ratio from an area of existing managed grasslands to preserve an environment that supports the natural diversity found within the CCNS. Additional mitigation measures, including construction measures, would be implemented to minimize and avoid further resource area alteration and help to protect the natural landscape of the CCNS.

While this alternative would directly alter an area of wetland, measures to mitigate possible adverse impacts of the project would include avoidance of impacts to the extent possible, resource restoration, and other construction mitigation measures. In addition, an invasive species management plan would be implemented to preserve an environment that supports the natural diversity found within the CCNS.

#### **4.3.3 Environmentally Preferred Alternative**

After review, the No Action alternative has been selected as the Environmentally Preferred Alternative solely because the project does not involve operational safety improvements for aircraft operations within Part 77 navigable surfaces nor will it occur within an existing footprint. Additionally, under the No Action alternative there would be no construction and wetlands would not be altered. The safety and operational issue is ground operation-related and affects vehicles accessing the navigational lighting system.

#### **4.3.4 Alternatives Considered But Rejected**

*Reduced Turn-Around Footprint with Curbing:* A smaller turn-around area with curbing installed along the length of the access roadway to alert drivers to the limits of the roadway width was considered. This alternative would reduce but not eliminate direct wetland impacts, which would need to be mitigated. A structure as low as a concrete curb could not be installed, as it would constitute a vertical penetration into the Runway 7 approach surface and would not be allowed under FAA regulations. This alternative has been dismissed from further review.

*Guardrail:* Installation of a guardrail along the length of the existing access roadway was also considered as an alternative, but was deemed unfeasible because of the vertical penetration into the Runway 7 approach surface. Any objects that need to be located within this object free approach area must be frangible (able to be snapped off on impact), which would defeat the function of a guardrail. In addition, the roadway embankments would need to be widened to accommodate the construction of the guardrail without losing width along the roadway, necessitating additional wetland alteration, which would require mitigation. This alternative has been dismissed from further review.

*Acquire a Utility Vehicle:* The Airport has also considered acquiring a utility vehicle for the purposes of accessing the MALSF equipment for maintenance or repair. This alternative would not result in environmental impacts. FAA personnel would need to transfer their equipment to a smaller utility vehicle. However, FAA personnel need access to all equipment in their vehicles during all weather conditions, and could not feasibly transfer all equipment to a small utility

vehicle at one time. The runway is required to be shut down for certain inspection or maintenance procedures, and transferring necessary equipment that would not fit within a smaller vehicle at one time, would result in potential unnecessary delays at the Airport. This alternative has been dismissed from further review.

*Construct Shoulders (Option 1):* This alternative would widen the entire length of the MALSF access road embankments to construct two-foot shoulders on each side of the existing access road. This alternative would impact approximately 1,800 SF of Wetland C/J/FK, and would not eliminate the safety hazard of vehicles needing to back up for 400 feet. This alternative has been dismissed from further review.

#### **4.4 Service Access Road to the Weather Station (AWOS)**

Two alternatives were analyzed for the Service Access Roads to the AWOS, including the No Action alternative and an alternative that would construct an access road to the AWOS behind the hold line and off the East End TW (Alternative 2). Several alternatives have also been considered and rejected for this project element.

##### **4.4.1 No Action**

The No Action alternative would retain the lack of defined access routes to the AWOS, which would prevent vehicle access to the site other than via the runway operating area. Even though there are a few circumstances when service on the AWOS requires the runway to be shutdown, most inspection and maintenance operations are carried out while the runway is active. Although there would be no direct long-term adverse impacts to natural resources, vehicle access to the equipment stations results in temporary impacts to natural resources and habitat each time vehicles traverse these naturally vegetated areas.

##### **4.4.2 Service Access Road to AWOS (Alternative 2)**

The Preferred Alternative for this CIP project element would require the construction of a 10-foot wide defined access roadway, which would be paved for the first 300 feet off the East End TW, in full compliance with FAA standards. The access road to the AWOS would alter 290 SF of Wetland H. Proposed mitigation measures, including construction timing measures and compensatory mitigation for the loss of natural resources would be proposed as part of this alternative.

##### **4.4.3 Environmentally Preferred Alternative**

The Environmentally Preferred Alternative for this CIP project is the No Action alternative because the project does not involve operational safety improvements for aircraft operations within Part 77 navigable surfaces and will not occur within an existing footprint. The No Action alternative would not result in construction, and wetland and coastal dune resources would not be altered. The safety and operational issue pertains to vehicles accessing the weather station equipment.

Although the No Action Alternative would not involve construction within wetlands and coastal dunes, this alternative would not address the operational safety issues resulting from the lack of designated access roads to the airfield equipment. The No Action alternative would not eliminate the tracking of foreign materials onto the runway and taxiways, which presents a safety hazard to users at the Airport. The No Action alternative is not the Preferred Alternative. The Preferred Alternative for the project includes measures to minimize adverse impacts to wetlands, such as steepened slopes and a narrower road width. Construction period mitigation measures will be implemented such as erosion control and time of construction to reduce overall impacts.

#### **4.4.4 Alternatives Considered But Rejected**

*Pavement Alternatives:* The alternative of constructing the roads from a porous pavement was evaluated. Porous pavement is a special type of pavement that allows rain and snowmelt to infiltrate, reducing runoff. However, these pavements require an intensive maintenance schedule and can easily become clogged with sands. Due to the sandy soils at the site and windy conditions that would blow sand onto pavement, this porous pavement has been dismissed from further review. Alternative types of pavement that would reduce any visual impacts (e.g., Natural Pave®, a sand-colored pavement, etc.) were also researched for these project elements, but use of these alternative pavement surfaces would result in unnecessary expenses. Use of alternative pavements has been dismissed from further review.

*Acquire Utility Vehicle:* The Airport has considered the use of an off-road utility vehicle for access to the AWOS. As with the use of a utility vehicle for the MALSF, this alternative has been deemed unfeasible because FAA personnel need access to all equipment in their vehicles and cannot feasibly transfer all the equipment to a smaller utility vehicle. Additionally, the use of a utility vehicle, while perhaps reducing the loading impacts within the coastal dunes and wetlands, would not eliminate the random access routes currently being taken by vehicles when accessing these equipment areas. This alternative has been dismissed from further review.

*AWOS Alternative 1:* Alternative 1 for the AWOS access road connects with the East End TW. The road would be approximately 800 feet long and would be paved in compliance with FAA standards. Alternative 1 would impact approximately 440 SF of Wetland H and would yield comparable impacts to coastal dunes and associated habitat as would occur under the Preferred Alternative. This alternative would align with the LES Alternative 1, but has been dismissed from further review, as a shift in the proposed alignments of both access roadways would reduce wetland impacts.

*AWOS Alternative 3:* Alternative 3 would connect with the parallel taxiway and, as with all of the alternatives for the access roadways, would be paved for 300 feet. Approximately 3,000 SF of Wetland H would be altered for this alternative. As other alignments would avoid wetland impacts to this degree, this alternative was dismissed from further review.

*AWOS Alternative 4:* This alignment has a direct connection with the active runway operating area, which would not meet FAA design standards and would not be allowed. This alternative would result in direct, permanent alterations to Wetland H (720 SF) and coastal dune and grassland habitat (3,480 SF). This alternative has been dismissed from further review.

*AWOS Alternative 5:* As with AWOS Alternative 4, this alignment has a direct connection with the active runway operating area (between the runway and the hold line of the taxiway), which would not meet FAA design standards and would not be allowed. The L-shaped configuration of this alternative alignment would result in direct, permanent alterations to 720 SF of Wetland H and 9,840 SF of cultural grassland habitat. This alternative has been dismissed from further review.

## **4.5 Perimeter Safety/Security Fence**

Seven alternatives have been designed for the construction of a Perimeter Safety/Security Fence, four of which have been carried forward and analyzed for permitting purposes. The four alternatives analyzed are the No Action alternative, and three fence alignments: Concept 6 (Final Preferred Alternative), Concept 4, and Concept 1 (Preferred Alternative in Draft EIR/EA). Three alternatives have been considered but rejected.

### **4.5.1 No Action**

While the No Action alternative would have no direct impacts to the natural resources or habitats at the Airport, the No Action alternative would not address operational safety and security, visitor safety, and wildlife safety issues. The potential for deer and other (non-avian) wildlife to continue to come into conflict with operating aircraft, jeopardizing the safety of passengers and pilots using the Airport, would remain. Unauthorized persons would continue to have undeterred access to the currently unsecured airport operating area, and recreational users (including hunters) would remain a potential threat to the health and safety of aircraft operations and those using the Airport facilities. It may also be noted that TSA and MassDOT ban the possession of firearms in aircraft operational areas.

### **4.5.2 Perimeter Safety / Security Fence Concept 6 (Proposed Action and Preferred Alternative)**

Concept 6 would involve the construction of an 11,700 linear foot (LF), nine foot high, black vinyl chain link security fence with two inch openings topped with three strands of barbed wire that would traverse areas of wetlands (1,898 SF). Direct impacts to natural resources would involve alterations associated with the installation of fence posts and conversion of forested and dense shrub areas to low growing communities as a result of vegetation management within the four-foot wide swaths on either side of the fence. Indirect (secondary) impacts are based upon areas where vegetation is already open and/or low growing and will not require vegetation management, but may experience temporary alterations due to construction. Vegetation management within areas consisting primarily of *Phragmites* is also considered an indirect impact. Vegetation on either side of the fence must be maintained so that trees and tall shrubs will not visually obstruct the fence during monitoring and maintenance of the structure or jeopardize the structural integrity of the fence. These areas would be either brush hogged or trimmed, but would not be graded. The cleared areas would allow for inspection of the fence. The close proximity of the fence alignment to the taxiway would allow a majority of the fence to occur within vegetated areas that are currently maintained and would eliminate the need for the

construction of patrol roads for fence maintenance. The fence would connect with the existing sections of fence adjacent to the bike path and the SRE building. Additionally, Concept 6 would eliminate fencing at the west end around the ILS.

Approximately 113 acres would be partially enclosed with the Concept 6 fence alignment. However, as noted above, the western-most end around the ILS would not be enclosed, thus eliminating direct impacts within tidally-influenced portions of Wetland C/J/FK. In consultation with the Massachusetts Natural Heritage and Endangered Species Program (NHESP), the fence design would incorporate gaps along the bottom to allow for the movement of Eastern Box Turtles, minimizing impacts to the movements of this state-listed rare species as well as other small animals.

The fence would be topped with barbed wire, which would serve as a deterrent to deer jumping the fence. Although deer can jump higher than nine feet, the angled wire along the top makes it difficult for them to judge the height of the fence. Additionally, cleared areas along the fence would allow deer to run along the outside of the fence (rather than jump the fence onto the active airfield if alarmed).

#### **4.5.3 Perimeter Safety / Security Fence Concept 4**

Concept 4 would involve the construction of an approximately 15,400 LF fence of similar design to that of the Preferred Alternative, although this fence alignment would continue to enclose the approach light system, completely enclosing the Airport facilities. Direct and indirect alterations to wetlands would occur with Concept 4. This concept would meet the project purpose and would not impact Airport operations or protected operational and navigational surfaces and object free areas.

#### **4.5.4 Perimeter Safety / Security Fence Concept 1**

The Concept 1 alignment follows the perimeter of the Airport lease area. The length of the fence would be approximately 24,000 LF, and would result in direct (34,067 SF) and indirect (33,800 SF) alterations to wetlands, while completely enclosing approximately 317 acres of the 322 acres of the Airport lease area. This alignment would require a 10-foot wide paved or gravel access road to allow for fence maintenance. The alignment would meet the project purpose and would protect Airport operations within airport operational areas and navigational surfaces.

#### **4.5.5 Environmentally Preferred Alternative**

Of the alternatives considered for the Perimeter Safety/Security Fence, the No Action alternative has been selected as the Environmentally Preferred Alternative, as the project does not involve operational safety improvements for aircraft operations within Part 77 navigable surfaces and will not occur within an existing footprint. The No Action alternative would not involve construction and would not alter wetland resources.

Although the No Action alternative would not involve construction within wetlands, this alternative would not address the safety and security issues resulting from the lack of a perimeter

fence. This alternative would continue to risk the health and safety of those at the Airport, possibly resulting in potentially undesirable or unintended consequences, both of which are defining elements of an environmentally preferred alternative per DO-12.

The No Action alternative is not the Preferred Alternative. An extensive analysis was carried out for the safety security fence in order to identify an alternative that would address the security and safety issues while minimizing impacts to wetlands, wildlife, and other natural resources. While the Preferred Alternative would result in impacts to resource areas, significant mitigation measures have been incorporated into the design and alignment of the fence concept to minimize these impacts. Additionally, a construction management plan has been drafted to minimize impacts during construction.

#### **4.5.6 Alternatives Considered But Rejected**

This section describes the following alternatives that have been identified and dismissed.

- Concept 2: Apron Offset North; 500 Foot Primary Surface South
- Concept 3: Apron Offset North; 1,000 Foot Primary Surface South
- Concept 5: Apron Offset North; Wetland Offset South

*Concept 2: Apron Offset North; 500 Foot Primary Surface South:* This fence alignment would be offset approximately 320 feet from the runway centerline on the south side in compliance with the current FAA Waiver, and approximately 10 feet off the back of the aircraft aprons on the north side of the taxiway. It would enclose the ILS with a 10-foot wide area on the outside of the fence maintained to be clear of trees and shrubs, and a 10-foot wide vehicle travel path on the Airport side of the fence for security inspection patrols. The total length of the fence would be approximately 17,000 LF, enclosing approximately 104 acres and fragmenting wildlife habitat from the CCNS lands. The alignment would directly and indirectly impact approximately four acres of wetlands (both bordering and isolated) and prime breeding habitat for the Eastern Spadefoot Toad with additional impacts to coastal dunes and associated habitats. In addition, Concept 2 has the potential to impact tidal flow and flood storage capacity since the portion of fence in the vicinity of the ILS may impede normal tidal flow and flooding during storm events.

Concept 2 would meet the project's purpose and need, and would be in compliance with the current FAA Waiver. Under the current Waiver, any fence alignment must be at least 63 feet beyond the edge of the FAR Part 77 Primary Surface to accommodate the 7 to 1 Transitional Surfaces that extend upward and out as an obstruction clear area. However, if this Waiver were ever to be revoked in the future, Concept 2 would have to be removed and relocated. Therefore this alternative has been deemed unfeasible for cost and environmental permitting reasons, and has been dismissed from further review.

*Concept 3: Apron Offset North; 1,000 Foot Offset Primary Surface South:*

This alignment would have an approximately 500-foot offset from the runway centerline on the south and approximately 10 feet off the back of the aircraft aprons on the north side. It would enclose the ILS with a 10-foot wide area on the outside of the fence maintained to be clear of trees and shrubs, and a 10-foot wide vehicle travel path on the Airport side of the fence for security inspection patrols. This alignment would be cost effective because it would be in compliance if, in the future, the Waiver is revoked. The length of the fence would be approximately 17,900 LF, enclosing approximately 128 acres. The alignment would impact approximately 4.5 acres of wetlands and prime breeding habitat for the Eastern Spadefoot Toad and coastal dunes and Eastern Box Turtle habitat, which would likely have adverse impacts to these rare species. As with Concept 2, Concept 3 has the potential to impact tidal flow and flood storage capacity since the fence is in the vicinity of the ILS. Maintaining the fence alignment in close proximity to the taxiway would reduce direct, long-term wetland and dune impacts by eliminating the need for a portion of the perimeter roadway. Concept 3 would meet the project purpose and need, however, this alternative has been deemed unfeasible for environmental permitting reasons, and has been dismissed from further review.

*Concept 5: Apron Offset North; Wetland Offset South:* Concept 5 would enclose the ILS with a four-foot wide area on the outside of the fence maintained to be clear of trees and shrubs, and a 10-foot wide vehicle travel path, which would be maintained on the Airport side of the fence for security inspection patrols, except where the fence can be inspected from the GA aprons on the north. The Concept 5 alternative generally follows the same alignment on the southern side as Concept 4. On the northern side, however, the fence would be located on a minimum 10-foot offset behind the aircraft parking aprons. The length of the fence would be approximately 14,000 LF, encompassing 148 acres. Concept 5 would impact approximately 1.5 acres (direct and indirect) of wetlands and, as with Concepts 2 and 3, would have the potential to impact tidal flow and flood storage capacity since the fence would be in the vicinity of the ILS. While located within wetland areas, the close proximity of the fence to the taxiway would eliminate the need for a perimeter roadway along this stretch of the fence (e.g., as with the northern segments considered in Concepts 2 and 3). It is anticipated that this alignment would only require vegetation management along the fence, minimizing wetland alterations. In addition, portions of these wetlands are currently subject to vegetation management practices to maintain airfield safety. Similar to Concept 4, Concept 5 is also located at the base of the dune ridge to the south of the runway. Certain segments of the fence would require a vehicle path would approximately 10 feet wide. In other areas where the fence traverses through currently managed airfield areas, the width of vegetation clearing would be reduced to four feet on only one side of the fence where patrol roads are not necessary, so as to minimize impacts.

This alignment provides suitable clearance along the north side of the GA aprons to accommodate spatial considerations for aircraft that are pushed by hand onto the turf aprons, access to the electric controls on the back of the GA apron light poles, and meets the purpose and need and fully complies with FAA design standards.

This proposed alignment, while reducing overall wetland impacts, would still result in habitat fragmentation on the south side of the Airport, separating the large aggregate of wetland areas from the adjacent upland areas of coastal dune. Taking the results of Eastern Spadefoot Toad

habitat surveys into consideration, the placement of the fence along the toe of the dune ridge would potentially interfere with breeding activity for this species. Thus, it was determined that Concept 5 was not the preferred alternative with respect to the natural resources at the Airport, for it requires the construction of patrol roads along certain lengths of the fence (except for north of the taxiway) for monitoring, and encloses a portion of the tidally-influenced wetlands within Hatches Harbor. As such, this alternative has been dismissed from further review.

## **5.0 SELECTED DESIGN AND LOCATION OF PREFERRED ALTERNATIVES**

The unique environmental setting of the Airport, specifically the abundance and proximity of resource and habitat areas to one another and their overlapping nature, have made project design and the avoidance of natural resource areas challenging. However, the Airport has designed all project elements to avoid and minimize impacts to wetland areas to the fullest extent practicable in order to preserve and protect the functions and values of the wetlands without incurring a substantial hardship, while still addressing the FAA, TSA, and MassDOT safety and security mandates. The wetland impacts noted above are unavoidable, primarily due to the fact that the improvements to the Airport must occur within discrete locations (i.e., the taxiway realignment must occur within a certain portion of the taxiway, not in an alternative location outside the vicinity of the airfield), and are held to FAA-regulated standards.

The CIP projects contribute to the general public good and safety. The Airport will develop a comprehensive and integrated mitigation package through coordination with the NPS, the Corps, DEP, the NHESP, the regional Cape Cod Commission (CCC), and the Provincetown Conservation Commission, along with other pertinent regulatory entities in order to compensate for all direct and indirect impacts to wetlands and other protected resource areas.

## **6.0 WETLAND COMPENSATION**

Several of the CIP projects will result in unavoidable alterations to freshwater wetlands (isolated and/or bordering). These impacts have been avoided and minimized to the extent practicable as is evident in the presentation of alternatives.

Draft wetland restoration plans have been developed in compliance with several regulations, performance standards, and guidance documents that relate to wetlands, including the Massachusetts Wetlands Protection Act, the Provincetown Wetland Bylaw, Sections 401 and 404 of the Clean Water Act, and the CCC Regional Policy Plan (RPP). Given the environmental constraints at the Airport, on-site wetland mitigation for direct impacts will occur primarily as wetland restoration in areas where existing impervious surfaces and fill will be removed. Indirect impacts as well as secondary impacts associated with the cutting of vegetation and long-term maintenance of vegetation communities along the fence will be mitigated through the integrated management of discrete populations of *Phragmites australis*, an invasive species in Massachusetts.

Mitigation also includes past mitigation efforts provided through the Hatches Harbor Saltmarsh Restoration Project (“Hatches Harbor Project”) in accordance with the April 28, 1997 Memorandum of Understanding between the NPS and the Town of Provincetown and as

reiterated in the November 5, 2010, letter from NPS to FAA. The Hatches Harbor Project, implemented in the early 2000s, included a substantial restoration effort of salt marsh and freshwater wetland habitat. As such, the Airport will apply mitigation credits granted through the participation in the Hatches Harbor Salt Marsh Restoration Project. Previously, it was thought that additional off-site mitigation would be necessary in order to satisfy the NPS requirements for resource impacts. However, in accordance with the April 28, 1997 MOU between the Town and NPS, and reiterated in the recent letter from NPS (dated November 5, 2010), implementation of the Hatches Harbor Salt Marsh Restoration Project was to result in 60 to 90 acres of wetland habitat restoration, and the 1997 MOU established that the mitigation provided by the implementation of the Hatches Harbor Salt Marsh Restoration Project “*will be classified as mitigation for the wetland impacts of required present AND FUTURE airport safety improvements.*” In their November 5, 2010 letter, NPS/CCNS “*agrees that FAA’s contribution to salt marsh restoration at Hatches Harbor can be applied as off-site mitigation for activities covered in the Current Capital Improvements Plan.*”

The following mitigation plans are intended to address the various regulatory requirements as well as address impacts to Park resources. The Airport proposes on-site wetland restoration to compensate for direct wetland impacts, which reflect on-site freshwater wetland restoration ratios of approximately 1:1. Bordering vegetated wetland will be mitigated at a 2.4:1 ratio. Table 1 summarizes the direct wetland impacts and the on-site mitigation ratios.

The NPS finds that this proposed action is consistent with the policies and procedures of Director’s Order #77-1: Wetland Protection, including the “no net loss of wetlands” policy.

## **6.1 Compensation Details**

Overall, 0.05 acres of Wetland C/J/FK (BVW) will be altered as a result of the proposed improvement projects, specifically by the installation of the perimeter fence and improvements to the MALSF access road. The MALSF access road improvements will alter approximately 0.02 acres of Wetland C/J/FK. The Perimeter Fence will directly alter 0.03 acres of Wetland C/J/FK.

A total of 1.9 acres of isolated freshwater wetlands will be altered as a result of the CIP projects. The Westerly Taxiway System Improvements will result in about 0.65 acres of alteration to Wetland I. The Relocation of the East Entrance Taxiway will result in the alteration of approximately 0.65 acres of Wetland B. The construction of the Service Access Road to the AWOS will alter 0.01 acres of Wetland H. The Perimeter Fence will directly alter 0.58 acres of isolated freshwater wetlands and indirectly alter 0.09 acres of isolated freshwater wetland areas. All direct and indirect impacts will be mitigated accordingly, so as to achieve “no net loss” of the functions and values of the affected wetlands as a result of the CIP projects. Mitigation details are provided below.

### *Wetland Restoration Details*

Relocation of the West End TW and East End TW and subsequent reduction of the existing paved areas for the parallel TW and Runway 7 allows for wetland restoration within the footprint

of existing developed and paved areas. As proposed, wetland mitigation will result in a total of approximately 1.8 acres (78,000 SF) of restored isolated wetlands (shrub swamp) at the Airport in two locations (Mitigation Areas A and C), resulting in a mitigation ratio of approximately 1:1. Mitigation Area A would be located within the curved footprint of the existing West End TW adjacent to portions of Wetland C/J/FK and contiguous with Wetland I, while Mitigation Area C would be located within the footprint of the existing East End TW, south of the terminal apron and contiguous with Wetland H, as shown on Figures 7 and 8. A third location, Mitigation Area B, would be located adjacent to the access road to the approach lights, to the southwest of the (abandoned) West End TW. Mitigation Area B would be contiguous with Wetland C/J/FK and would restore approximately 0.11 acres (5,000 SF) of BVW, resulting in a net gain of 0.06 acres (2,888 SF). Each of these areas is highly suitable for wetland restoration due to their proximity to existing wetlands and the existing shallow groundwater table.

## **6.2 Restoration Process**

The wetland mitigation methodology is modeled from the Massachusetts Inland Wetland Replication Guidelines (March 2002) prepared by the Massachusetts DEP, as well as the performance standards for wetland replacement in accordance with 310 CMR 10.55(4)(b)(1 through 7), the Town of Provincetown Wetlands Bylaw (Chapter 12 of the General By-Laws of Provincetown), and the Corps' New England District Compensatory Mitigation Guidance and Mitigation Plan Checklist.

Wetland restoration activities will generally involve removal of existing pavement and gravel sub-base, excavation to appropriate sub-grade to intercept available hydrology, incorporation of native wetland vegetation and a seed mixture to stabilize disturbed soils, and implementation of monitoring plans to ensure the successful establishment of a wetland plant community. A qualified wetland scientist will oversee all aspects of the wetland restoration efforts. Details of these activities are provided below.

Prior to the commencement of any restoration activities, a sedimentation and erosion control barrier, consisting of staked siltation fencing, will be installed along the wetland boundary to protect the adjacent area during earth moving activities. Following installation of this sedimentation barrier, impervious surfaces (asphalt and gravel sub-base) will be removed and transported off-site to a suitable disposal facility.

As much as practicable, vegetation within wetland areas to be altered will be removed in large patches with a front end loader or other suitable machine and stockpiled nearby for later re-introduction within the restoration area(s). This will allow for greater success in the establishment of the plant communities within wetland restoration areas. Salvaged plant materials will be covered and maintained (watered) in good condition until the restoration areas have been prepared.

It is anticipated that the original soil profile may be intact beneath the impervious surfaces and that only minor grading would be necessary in most areas to obtain suitable hydrology to support a wetland plant community. As such, care will be taken to avoid removal of any original soil materials encountered beneath the impervious surfaces. Thus, re-grading is not anticipated.

Successful wetland restoration will require sufficient hydrologic conditions. Specifically, groundwater should be close enough to the surface such that saturated soils exist within one foot of the final elevation during the growing season. These elevations should provide 4 to 12 inches of standing water during the winter and spring, as observed within other seasonally flooded wetland areas at the Airport. Six (6) monitoring wells have been installed to observe groundwater elevations within the existing wetland areas and as close as possible to the proposed restoration areas. At present, depth to water measurements have been recorded on two separate dates. No appreciable difference in depth to water was observed across all six wells, suggesting that removal of existing impervious materials alone will result in sufficient hydrological conditions. Additional measurements may be taken as necessary prior to commencement of restoration activities.

*Planting Sequence*

Following removal of fill materials, shrubs and herbaceous groundcover will be planted within the restoration area. Salvaged vegetation will be relocated to the restoration areas. Additional native plant materials possessing native genotypes (local genetic stock) will be obtained from local nurseries to augment the salvaged vegetation. This will ensure that plant genotypes from other regions are not imported to the area. Shrub species will be representative of the existing vegetation communities within the isolated wetlands. Tree species will not be incorporated in the restoration areas because these obstacle-free areas need to be maintained by the Airport as shrub swamp communities.

Proposed shrub species may include winterberry, red chokeberry, meadowsweet, steeplesbush, American cranberry, and Virginia rose, or acceptable equivalent species. Shrubs will be planted in clusters of two to three, placed five to six feet on center. The planting distribution of American cranberry will depend upon the hydroperiod of each area. In shallow ephemeral wetlands, the cranberry will be planted at the lowest elevations of the wetland. In deeper, more permanent wetlands, the cranberry will be planted along the periphery. The elevation of the restoration plantings will be similar to the existing plant distribution observed within the wetlands at the Airport. Efforts will be made to plant near the beginning or the end of the designated growing season (Barnstable County growing season extends from April 26 to October 23) to ensure greater plant survival. Upon completion of the restoration area plantings, siltation fencing will be placed along the upgradient side of the restoration areas.

<b>Draft Plant List for Wetland Restoration</b>	
<b>Species</b>	<b>Specifications</b>
Arrowwood ( <i>Viburnum dentatum</i> )	Planted in clusters of 2-3, 5-6 feet on center
Highbush Blueberry ( <i>Vaccinium corymbosum</i> )	Planted in clusters of 2-3, 5-6 feet on center
Meadowsweet ( <i>Spiraea latifolia</i> )	Planted in clusters of 2-3, 5-6 feet on center
Bayberry ( <i>Myrica pensylvanica</i> )	Planted in clusters of 2-3, 5-6 feet on center
Inkberry ( <i>Ilex glabra</i> )	Planted in clusters of 2-3, 5-6 feet on center
Winterberry ( <i>Ilex verticillata</i> )	Planted in clusters of 2-3, 5-6 feet on center

Cinnamon Fern ( <i>Osmunda cinnamomea</i> )	Planted 18-24" on center in masses
Sensitive Fern ( <i>Onoclea sensibilis</i> )	Planted 18-24" on center in masses
American Cranberry ( <i>Vaccinium macrocarpon</i> )	Planted in large masses, 6-12" on center
Native Seed Mix	Apply as directed
<i>Source: Summary of Wetland Resource Areas, HWG, April 2007.</i>	

A wetland seed mix will be used to stabilize soils within the restoration area. It is anticipated that removal of existing paved areas will expose the underlying seed bank and rootstock which would contain additional species tolerant of the local ecological conditions. The presence of the underlying seed bank is anticipated to further lend to the successful generation of a wetland plant community within the restored wetland areas. However, certain invasive species, specifically purple loosestrife and *Phragmites*, are known to have exceptionally long seed dormancy capabilities, more so than most native species. Thus, exposing this seed bank may allow germination and establishment of non-native species over native, slower-growing vegetation. As part of the long-term monitoring of the restoration areas, particular attention will be paid to manage emerging non-native species to bolster the success of desired native species.

A commercially available native seed mix that contains native grasses and wildflower species similar to those observed within the existing wetland areas will be used. Species contained within the seed mix may include: switchgrass (*Panicum virgatum*), Virginia wild rye (*Elymus virginicus*), creeping red fescue (*Festuca rubra*), fox sedge (*Carex vulpinoidea*), creeping bentgrass (*Agrostis stolonifera*), soft rush (*Juncus effusus*), New England aster (*Aster novae-angliae*), grass-leaved goldenrod (*Euthamia graminifolia*), nodding bur marigold (*Bidens cernua*), green bulrush (*Scirpus atrovirens*), Joe-Pye weed (*Eupatorium maculatum*), boneset (*Eupatorium perfoliatum*), and blue vervain (*Verbena hastata*).

### 6.3 Anticipated Schedule

The CIP projects would be constructed over the period of the next ten years. Permitting for the projects would be structured to allow individual projects, or groups of projects to go forward as funding is available. Mitigation, in the form of restoration activities, will occur in conjunction with the implementation of projects, as they occur.

The Westerly Taxiway System Improvements, the reconstruction of the Easterly End of Partial Parallel Taxiway and the relocation of the East End Taxiway are anticipated to occur in 2010 to 2011. The improvements to the Access Road to Approach Lights (MALSF) and the construction of the Service Access Roads to AWOS and LES will be implemented in 2016. The installation of the Perimeter Fence is anticipated to occur in the year 2013. As previously mentioned, mitigation will be phased concurrently with the construction of each project.

### 6.4 Anticipated Time-Frame for Full-Functioning Restoration Areas

Wetland restoration areas are anticipated to fully function as low-growing herbaceous shrub-swamp wetlands two to five years following restoration activities (i.e., during the required monitoring

period). Proper hydrologic conditions are pre-existing, and well-established mature patches of vegetation will be salvaged from impacted wetland areas as described, to facilitate the establishment of a well-developed wetland plant community within a shorter time frame than would be anticipated if the restoration area were reliant solely upon grow-in of nursery stock and seeding.

## **6.5 Monitoring and Maintenance**

A qualified wetland scientist will oversee all aspects of the wetland restoration activities including installation of sedimentation control barriers, excavation of salvaged plant materials, removal of impervious surfaces and excavation of sub-base materials, installation of monitoring wells, soil augmentation, revegetation, and implementation of a monitoring plan. Wetland restoration areas will be monitored twice annually for five growing seasons to determine the relative success of the restored wetlands. Semi-annual site inspections conducted during late spring and late summer will include an assessment of the relative health and integrity of the salvaged vegetation and newly planted individuals, percent cover of vegetation, percent cover of wetland species, and general compliance with the performance standards under 310 CMR 10.55(4)(b)(1 through 7) and in accordance with Army Corps of Engineers (ACOE) Compensatory Mitigation Guidance. Randomly distributed vegetation study plots will be established within the wetland restoration areas to provide a consistent means of data collection used to determine the relative success of the wetland plant communities. Additional measures will be taken during construction and monitoring of wetland restoration areas to discourage establishment of invasive species within the newly disturbed soils.

Written reports detailing the findings of each monitoring event will be submitted on an annual basis for two years, to the Provincetown Conservation Commission, DEP, and the CCC, as well as other regulatory agencies overseeing the wetland restoration activities. Photographic documentation will be incorporated within the monitoring reports. Recommendations will be made for the replacement of dead or dying plants, and any additional remediation, as necessary. The monitoring program will include provisions that will ensure the implementation of any recommended actions to ensure the success of the restoration areas.

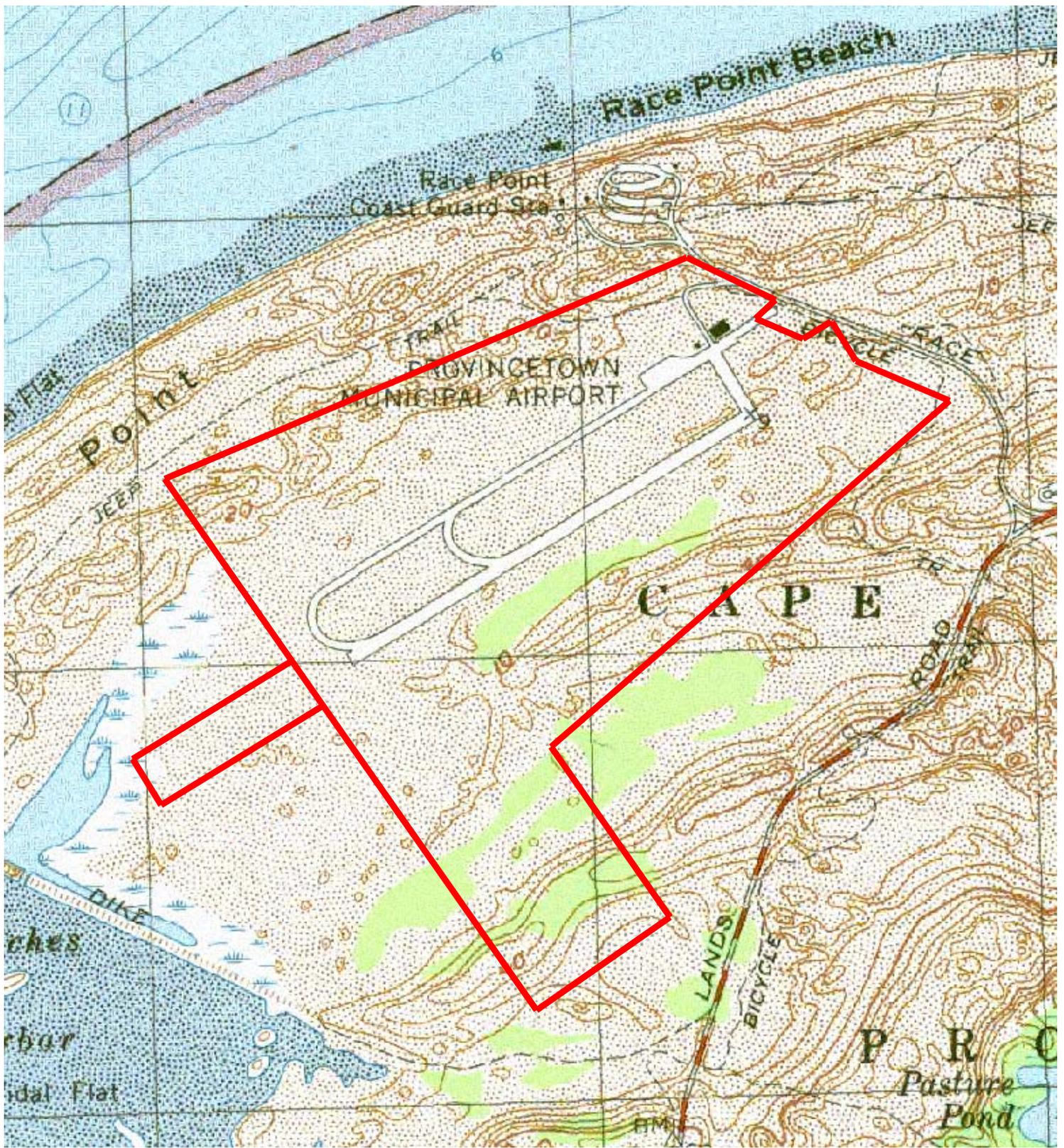
## **6.6 Funding**

The compensatory mitigation activities will be funded through FAA and MassDOT grants that will also be providing the CIP project funding.

## FIGURES

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**Legend**

 Airport Lease Line

\*Data Source: MassGIS, Commonwealth of Massachusetts EOEA

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USGS Locus  
 Provincetown Municipal Airport  
 Provincetown, MA

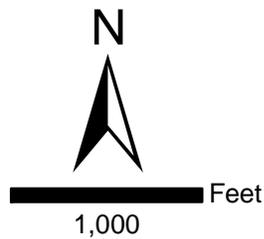
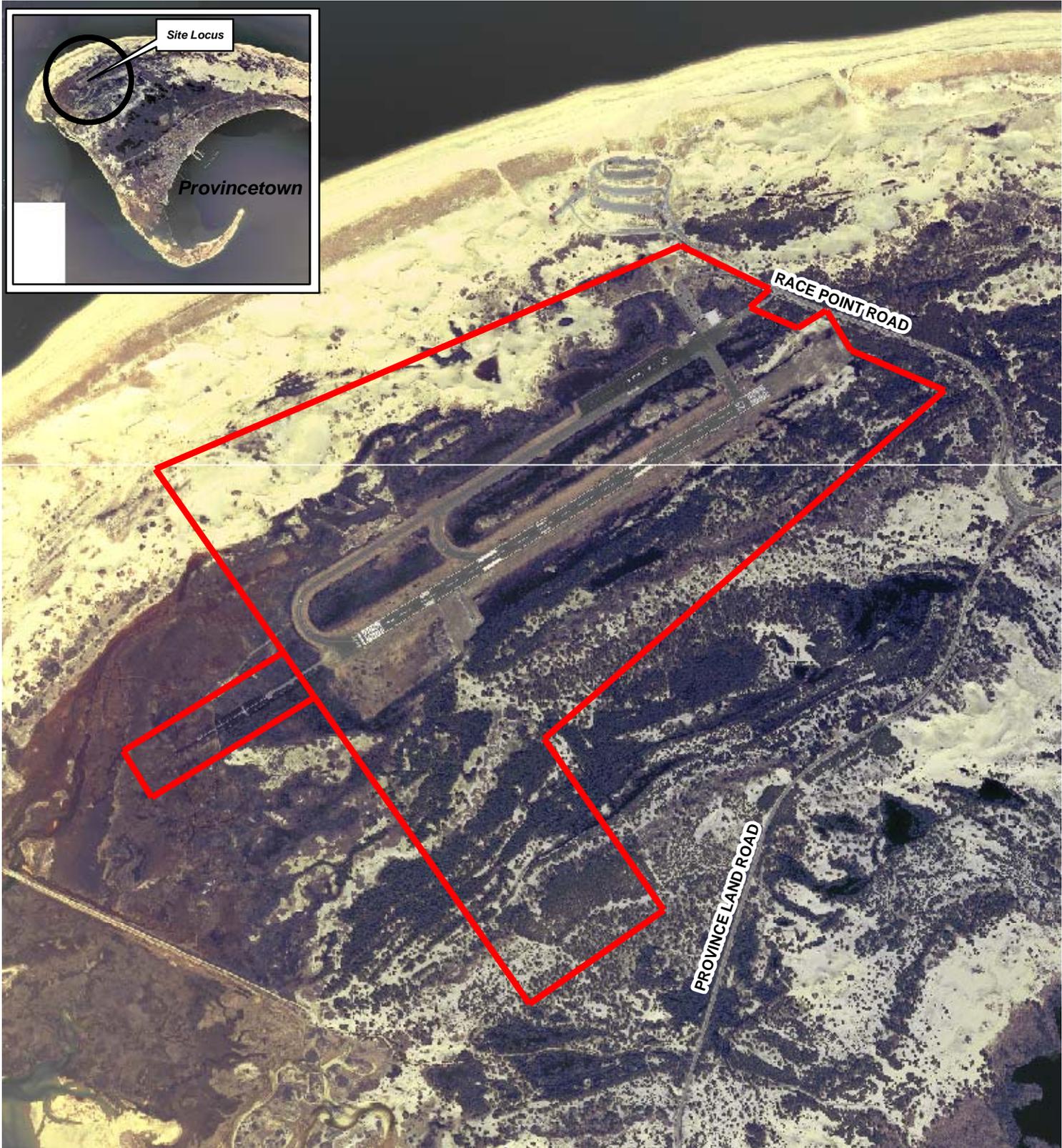


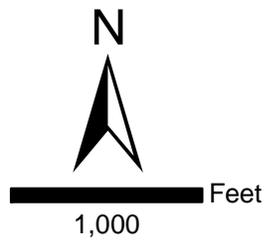
Figure 1



\*Data Source: MassGIS, Commonwealth of Massachusetts EOE

**Legend**

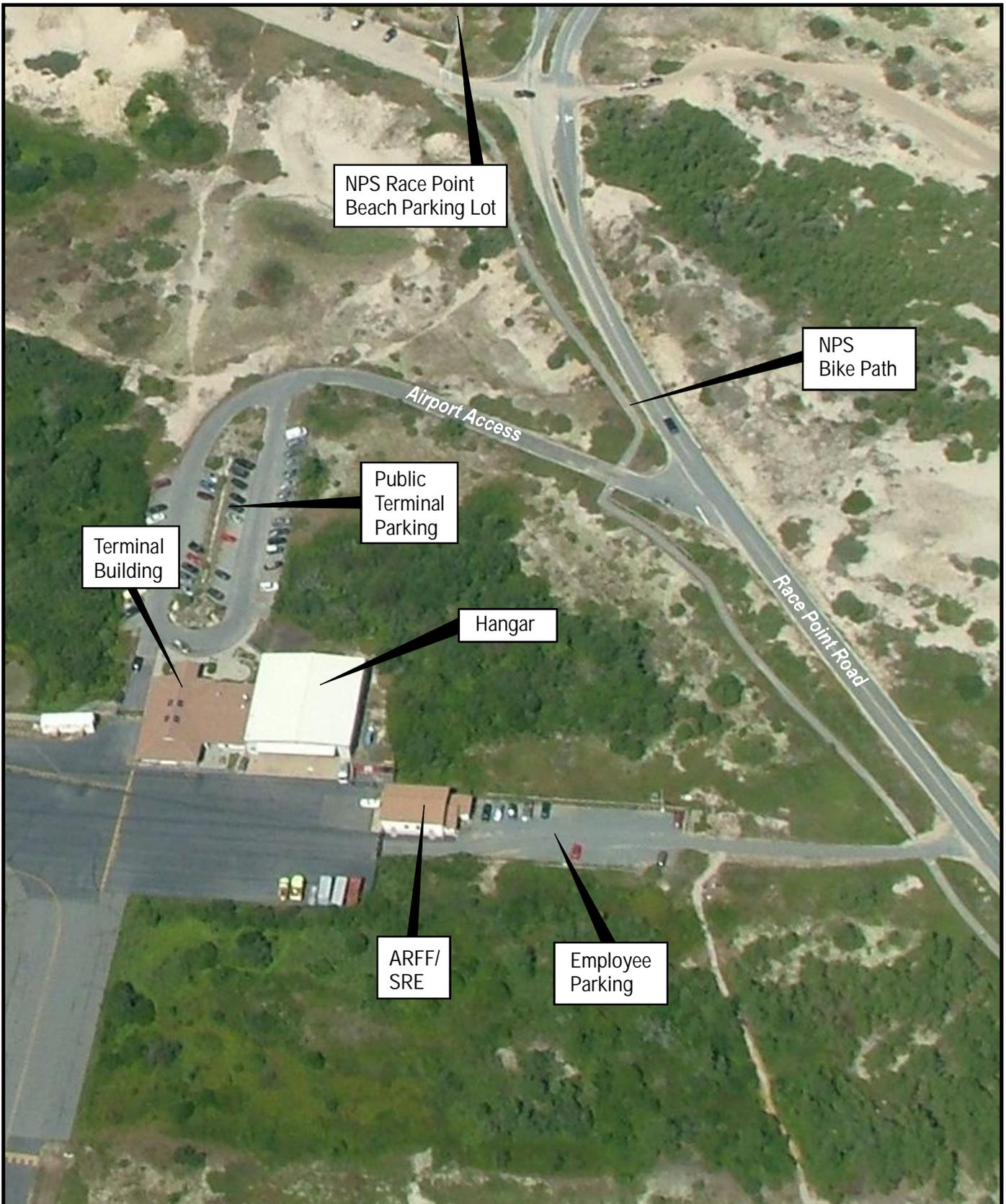
 Airport Lease Line



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[www.horsleywitten.com](http://www.horsleywitten.com)

Aerial Photo  
 Provincetown Municipal Airport  
 Provincetown, MA

Figure 2



Prepared By:

**JACOBS**

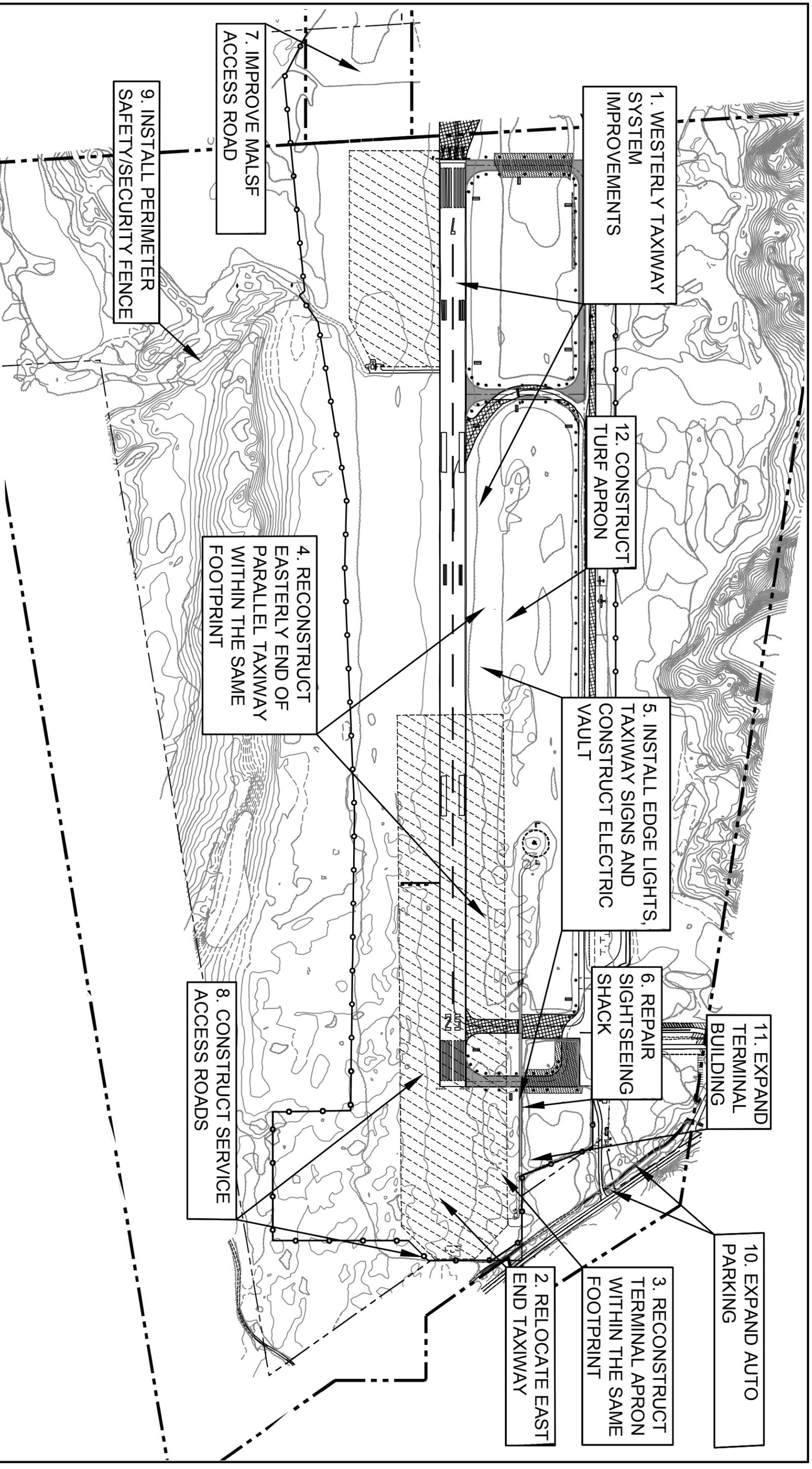
Source: Edwards and Kelcey 2005

Provincetown Municipal Airport  
Capital Improvements Plan

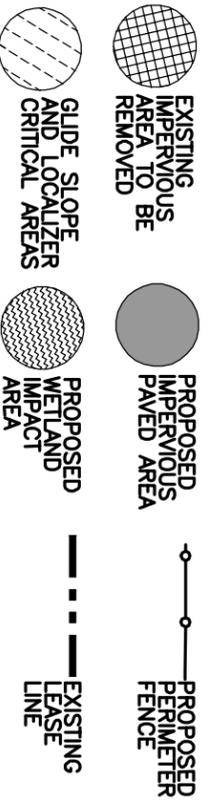
Landside Facilities

Figure 3





Prepared By:



Provincetown Municipal Airport  
Capital Improvements Plan

**PROJECT OVERVIEW**

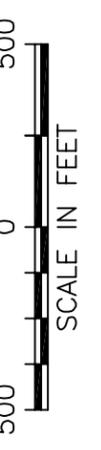
Figure 5





USGS LOCUS  
SCALE: 1" = 3500'

Title: <b>FIGURE 6</b>			
Project: <b>WETLAND RESOURCE AREA MAP</b>			
Project: <b>PROVINCETOWN MUNICIPAL AIRPORT</b>			
Project: <b>PROVINCETOWN, MASSACHUSETTS</b>			
Sheet: 1	Date: 3/31/2009	Design By: EK	Checked By: AB
Prepared For: Provincetown Municipal Airport Race Point Road, P.O. Box 657 Provincetown, Massachusetts Phone: (508) 487-0241 Fax: (508) 487-4110			
Design By: Horsey Witten Group Environmental Services 90 Route 6A Sandwich, MA 02563 508-833-6600 voice 508-833-3150 fax			

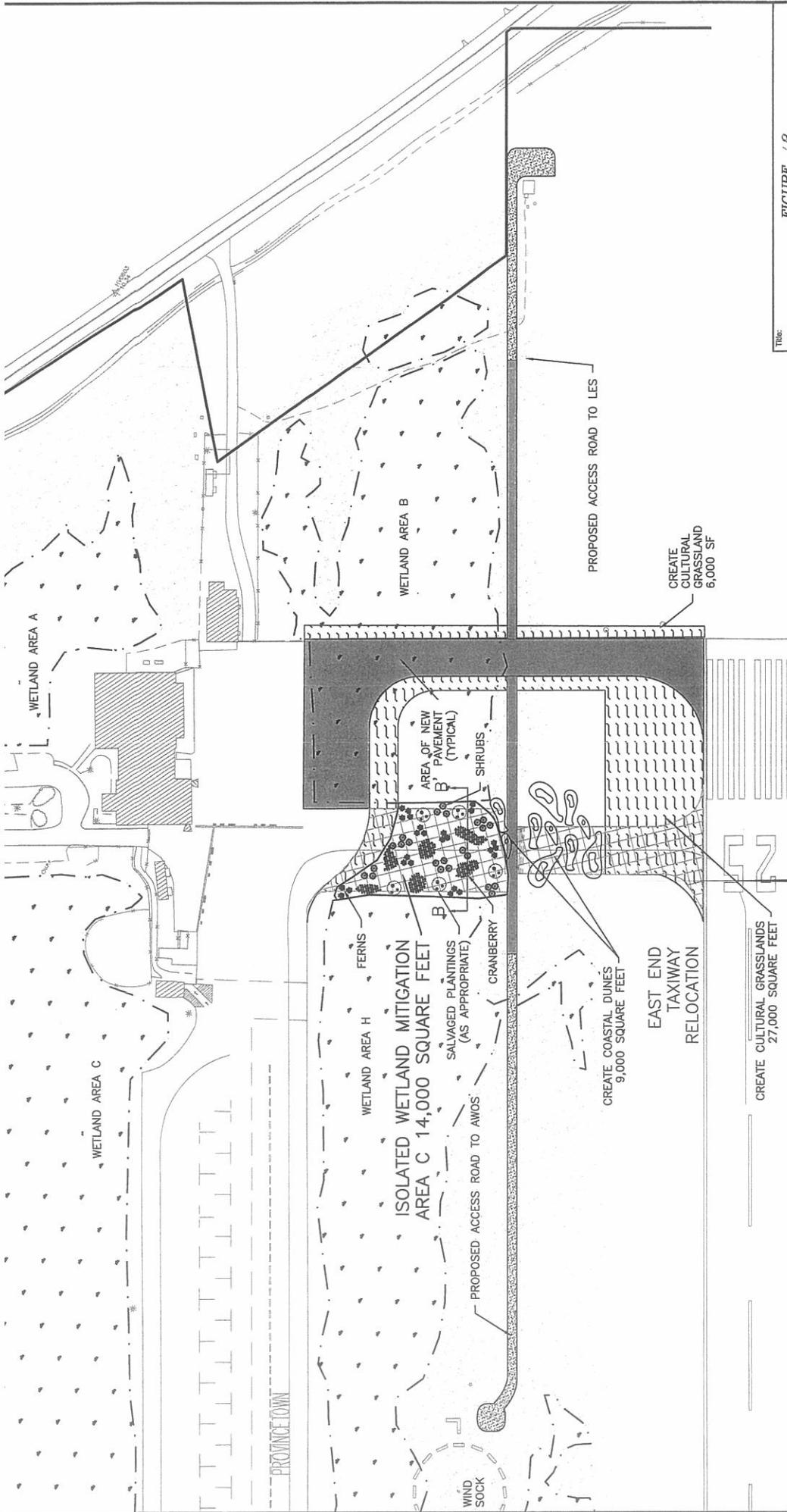


- LEGEND**
- WETLAND AREAS
  - DUNE AREAS
  - APPROXIMATE LIMIT OF MANAGED CULTURAL GRASSLAND
  - WETLAND LABEL









**FIGURE 1**

**Project: PROVINCETOWN MUNICIPAL AIRPORT  
CAPITAL IMPROVEMENTS PLAN  
EAST END MITIGATION**

Date:	8/17/2010	Drawn By:	ERK	Checked By:	AMB
Prepared For:	Provincetown Municipal Airport Race Point Road Provincetown, Massachusetts Phone: (508) 487-0741 Fax: (508) 487-4110				
Design By:	Horsley Witten Group Environmental Services 90 Route 6A Sandwich, MA 02563 508-833-6800 voice 508-833-3150 fax				



- LEGEND**
- CULTURAL GRASSLANDS
  - IMPERVIOUS AREA TO BE REMOVED
  - NEW IMPERVIOUS AREA
  - NEW GRAVEL AREA
  - COASTAL DUNES
  - RESTORED WETLANDS



## TABLES

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	<b>Table 1 Summary Of Impacts And Proposed Mitigation Measures For Preferred Alternatives For CIP Projects</b>								
	<b>PROPOSED ALTERATION</b>				<b>PROPOSED MITIGATION</b>				
<b>Project</b>	<b>Type of Resource Area</b>	<b>Area of Proposed Alteration (acres)</b>	<b>Area of Proposed Alteration (SF)</b>	<b>Description of Proposed Alteration</b>	<b>Description of Proposed Mitigation</b>	<b>Area of Proposed Mitigation</b>	<b>Net Change in Area (SF)</b>		
(1) Westerly TW System Improvements	Isolated Freshwater Wetland	0.66	28,655 (Wetland I)	Fill	On-site wetland restoration	Areas A & C			
(2) Relocate East End TW	Isolated Freshwater Wetland	0.65	28,300 (Wetland B)	Fill	On-site wetland restoration	Areas A & C			
(3) Reconstruct Terminal Apron	--		--	--	--	--	--		
(4) Reconstruct Easterly End of Partial Parallel TW	--		--	--	--	--	--		
(5) Install TW Lighting and Construct Electric Vault				--	--	--	--		
(6) Repair Sightseeing Shack	--		--	--	--	--	--		
(7) Improve Access Road to Approach Lights (MALSF)	Bordering Vegetated Wetland	0.02	960 (Wetland C/J/FK)	Fill	On-site wetland restoration	Area B			
(8) Construct Service Access Roads LES Road	--		--	--	--	--	--		
(8) Construct Service Access Roads AWOS Road	Isolated Freshwater Wetland	0.01	290 (Wetland H)	Fill	On-site wetland restoration	Areas A & C			
(9) Install Perimeter Fence (REVISED alternative) "Concept 6"	Bordering Vegetated Wetland	0.03 (direct) 0.2 (indirect) (Wetland C/J/FK)	1,152 (direct) 8,972 (indirect) (Wetland C/J/FK)	Direct Impact consists of Fill for Fence Post Installation or Vegetation Maintenance. Indirect/Secondary Impacts consists of Vegetation Maintenance within <i>Phragmites</i> or temporary construction-related impacts.	On-site wetland restoration	Area B			
	Isolated Freshwater Wetland	0.58 (direct) 0.09 (indirect)	25,648 (direct) 3,952 (indirect)		On-site wetland restoration	Areas A & C			
					On-site wetland enhancement	14.15 acres 616,350 SF (Wetland H & I)			
(10a) Expand Auto Parking (Phase 1)	--		--	--	--	--	--		
(10b) Auto Parking (Phase 2) "Concept 4"							--		
(11) Expand Terminal Building (Vertical Expansion)	--		--	--	--	--	--		
(12) Expand Turf Apron	--		--	--	--	--	--		
<b>TOTAL DIRECT ALTERATION: (SF)</b>	Isolated Freshwater Wetland	1.9	82,893	<b>TOTAL MITIGATION: (SF)</b>	On-site restoration	<b>Acres</b> 1.8	<b>SF</b> 78,000	<b>Acres</b> -0.1	<b>SF</b> -4,893 (~1:1)
					On-site wetland enhancement (indirect impacts) (Wetland H & I)	14.15	616,350		(~7.4:1)
	Bordering Vegetated Wetland	0.05	2,112		On-site restoration	0.11	5,000	+0.07	+2,888 (2.4:1)



Table 2. Summary of wetland areas delineated at the Provincetown Municipal Airport, Provincetown, Massachusetts.

WETLAND AREA	CLASSIFICATION	FUNCTIONS AND VALUES
Salt Marsh SM	EEM	Protection of Marine Fisheries, Wildlife Habitat; Storm Damage Prevention; Groundwater and Water Quality
Wetland AA	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland AB	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland AC	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland AD	PSS/PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland AE	PSS/PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland AF	PSS/PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland AG	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland AI	PSS/PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland AJ	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland AK	PSS/PEM	Flood Storage/Flood Control; Groundwater and Water Quality
Wetland AL	PFO/PSS/PEM	Flood Storage/Flood Control; Groundwater and Water Quality
Wetland AM	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland BA	PSS/PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland BB	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland BC	PSS/PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CA	PSS/PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CB	PSS/PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CC	PSS/PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CD	PSS/PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CE	PSS/PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CF	PSS/PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CG	PSS/PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CH	PSS/PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CI	PSS	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CJ	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CK	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CL	PFO/PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CM	PSS/PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CN	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CO	PSS/PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CP	PFO/PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CQ	PFO/PSS/PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CR	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CS	PFO/PSS/PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CT	PFO/PSS/PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland CU	PEM	Flood Storage/Flood Control; Groundwater and Water Quality
Wetland CV	PEM	Flood Storage/Flood Control; Groundwater and Water Quality
Wetland DA	PSS/PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland DB/FG	PSS/PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland DC	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland DD	PSS/PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland DE	PSS/PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland DF	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland DG	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland DH	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland DI	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland DJ	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland DK	PSS/PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland DL	PSS/PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland DM	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat

Table 2 (cont.)

<b>WETLAND AREA</b>	<b>CLASSIFICATION</b>	<b>FUNCTIONS AND VALUES</b>
Wetland EA	PSS	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland EB	PSS/PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland FA	PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland FB	PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland FC	PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland FD	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland FE	PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland FF	PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland FH	PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland FI	PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland FJ	PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland A	PSS/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland B	PSS/PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland C/J/FK	PSS/PEM/PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland D	PFO	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland E	PFO/PSS	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland F	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland G	PSS	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland H	PSS	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland I	PSS	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland K	PEM	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland L	PFO/PSS	Flood Storage/Flood Control; Groundwater and Water Quality; Wildlife Habitat
Wetland M	PEM	Flood Storage/Flood Control; Groundwater and Water Quality
Wetland N	PEM	Flood Storage/Flood Control; Groundwater and Water Quality

**KEY****Classification** (Cowardin, et al., 1979)

PSS Palustrine Scrub-Shrub wetland  
 PFO Palustrine Forested habitat  
 PEM Palustrine Emergent Marsh  
 EEM Estuarine Emergent Marsh

**9.6 Statement of Findings, E.O. 11988 Floodplain Management**



STATEMENT OF FINDINGS FOR EXECUTIVE ORDER 11988  
(Floodplain Management)

Provincetown Municipal Airport

Capital Improvement Program Projects  
Provincetown, Massachusetts

Recommended:

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George E. Price, Jr., Superintendent

Certification of Technical Adequacy and Servicewide Consistency:

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\_\_\_\_\_, Chief, Water Resources Division

Approved:

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\_\_\_\_\_, Regional Director

**National Park Service - Cape Cod National Seashore  
STATEMENT OF FINDINGS  
Pursuant to**

**Floodplain Management - E.O. 11988, D.O. 77-2  
Provincetown Municipal Airport**

**1. INTRODUCTION**

The Provincetown Municipal Airport Commission and the Federal Aviation Administration (FAA) have prepared an Environmental Assessment (EA) for the proposed Capital Improvement Program (CIP) of safety and facility improvements at Provincetown Municipal Airport (Airport). This EA will also be used by the National Park Service (NPS) to satisfy their National Environmental Policy Act (NEPA) requirements. Executive Order 11988 (E.O. #11988): Floodplain Management requires the NPS and other federal agencies to evaluate the likely impacts of action in floodplains.

This Statement of Findings (SOF) has been prepared in accordance with the guidelines in NPS Director's Order Number 77-2, *Floodplain Management*, and the accompanying Procedural Manual Number 77-2. The purpose of this Director's Order is to establish NPS policies, requirements, and standards for implementing Executive Order Number 11988. The objective of this Executive Order is to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.

This Statement of Findings documents compliance status with these NPS floodplain management procedures and presents the rationale for undertaking a project with potential adverse impacts to floodplains and to document the anticipated effects.

**1.1 Proposed Action**

The Airport proposes the implementation of twelve CIP projects. The purpose of these projects is to enhance Airport safety and security and to enhance the efficiency of the Airport to more fully meet current and anticipated needs. Nine of the twelve proposed projects will provide operational safety and security improvements which will bring the Airport into compliance with current Federal Aviation Administration (FAA), Massachusetts Department of Transportation - Aeronautics Division (MassDOT), and Transportation Security Administration (TSA) safety and security design standards for an airport of this type.

The proposed CIP projects include:

1. Westerly Taxiway System Improvements (Realign West End, Mid Connector and a portion of the parallel Taxiways);
2. Relocate East End Taxiway;
3. Reconstruct Terminal Apron;
4. Reconstruct Easterly End of Partial Parallel Taxiway;
5. Install Taxiway Lighting and Construct Electric Vault;
6. Repair Sightseeing Shack;
7. Improve Access Road to Approach Light System;
8. Construct Service Access Roads to Localizer Equipment Shelter (LES) and to the Automated Weather Observation Station (AWOS);
9. Install a Perimeter Safety/Security Fence;
10. Expand Auto Parking;
11. Expand Terminal Building; and
12. Expand Turf Apron.

An overview of the proposed CIP projects is provided on Figure 1.

## 1.2 Site Description

### 1.2.1 Airport Facilities

The Airport is a primary service, public use airport with scheduled passenger service to and from Logan International Airport in Boston, Massachusetts. Located in Provincetown, Massachusetts, and situated on the northern tip of Cape Cod, the Airport is confined within the bounds of the Cape Cod National Seashore (CCNS), sited on approximately 322 acres of federally-owned land administered by the NPS (Figure 2). The Airport consists of developed airside and landside areas that are maintained for airport facilities and operations, as well as undeveloped areas that consist of coastal dunes, freshwater wetlands, and grasslands.

#### *Airside Facilities*

Airside facilities include a single runway (Runway 7-25), a taxiway system, aircraft parking aprons (ramps), an approach lighting system (Medium Intensity Approach Light System with Flashing lights or MALSF), navigational aids, and an Automated Weather Observation Station (AWOS). Runway 7-25, first paved in 1948, is currently 3,500 feet long and 100 feet wide with paved runway safety areas (RSAs). The taxiway system provides aircraft with direct routes between the terminal area and the runway, and include a partial parallel taxiway and three entrance taxiways (West-End, Mid-Connector, and East End Taxiways). Aircraft parking aprons include both paved and turf aprons to accommodate both commercial service and general aviation (GA) aircraft.

The Instrument Landing System (ILS) consists of a glide slope antenna, the glide slope critical area (a flat area maintained to bounce radio signals), a localizer antenna and its critical area, and an approach lighting system (MALSF) and its critical area. The Airport also has an on-field weather instrumentation (AWOS), located between Runway 7-25 and the parallel taxiway. Figure 3 depicts the locations of the airside facilities.

#### *Landside Facilities*

Landside facilities include a terminal building, aircraft hangar, an aircraft rescue and firefighting/snow removal equipment garage (ARFF/SRE), ground support facilities, the former administration building referred to as the Sightseeing Shack, and two auto parking areas. Figure 4 depicts the location of the Airport's landside facilities.

The terminal building is an approximately 4,800 square foot (SF) single story wooden structure, which provides passenger facilities, TSA screening areas, and a conference room. The Airport has a paved/gravel parking lot which provides 62-parking spaces for passengers and visitors, and a separate, 20-space employee gravel parking area located east of the terminal area.

The single hangar, which is attached to the passenger terminal building, is a 6,000 SF steel-framed structure that houses a large central bay for aircraft storage. The ARFF/SRE garage is approximately 40 feet wide by 80 feet long located on the east end of the terminal ramp, adjacent to the employee parking lot. The garage houses the ARFF vehicle and some SRE equipment.

Constructed in approximately 1948, the Sightseeing Shack is thought to be the original administration building, although it is no longer used for passenger waiting space. Currently this structure), airfield navigational aid electrical equipment, a Remote Communications Outlet (RCO) for radio signal repeater equipment, and the airfield electric lighting vault, as well as a small bathroom (now out of service).

There is one 10,000-gallon below ground tank housed immediately east of the Sightseeing Shack. The fuel tank is a double steel-walled underground storage tank (UST) with a leak detection monitoring system.

Finally, there are small sections of security fencing located at the east end of Runway 7-25, around the terminal apron and around the fueling station.

## 1.2.2 Natural Resources

### *Wetlands*

The Cape Cod National Seashore supports a wide variety of marine and freshwater resources formed by the geological events that created Cape Cod, many of which are found within the Provincetown Municipal Airport lands. The geologic characteristics combined with a fluctuating, seasonally-high groundwater table results in seasonal saturation of the upper portion of the soil profile for significantly long periods of time during early portions of the growing season. Inundated and/or saturated soil conditions favor the establishment of hydrophyte-dominant plant communities and the deposition of organic material, which are typical of wetland habitats. Rainfall received during storm events also contributes to saturated soil and inundated land conditions.

Wetland habitats at the Airport include isolated freshwater wetlands dominated by grass and herbaceous species (Palustrine Emergent Wetlands or PEM); shrub-dominated isolated wetlands (Palustrine Scrub-Shrub Wetland or PSS); and isolated freshwater forested wetlands (Palustrine Forested Wetland or PFO), dominated by pitch pine (*Pinus rigida*). These isolated wetlands, ranging in size from a few hundred square feet to several acres in size, are associated with coastal interdunal swales, and are often separated from each other by low to moderate dune ridges closer to the airfield, and extensive higher dune ridges, oriented approximately parallel to the Airport runway, further out from the airfield. Isolated PSS wetlands also occur within the existing airfield, located between the existing taxiways and the runway, and separated from paved surfaces by managed grassland communities of varying width.

The shrub-dominant interdunal wetlands (PSS), which are the predominant type of wetland habitat at the Airport, have a non-tidal, seasonally or temporarily flooded water regime. The relatively dense shrub communities include plant species such as winterberry (*Ilex verticillata*), red maple (*Acer rubrum*), meadowsweet (*Spiraea latifolia*), highbush blueberry (*Vaccinium corymbosum*), northern bayberry (*Myrica pensylvanica*), red chokeberry (*Aronia* spp.), and American cranberry (*Vaccinium macrocarpon*), which often occurs in dense mats. Herbaceous plants observed frequently among the Airport wetlands include sphagnum moss (*Sphagnum* spp.), various sedges (*Carex* spp.), rushes (*Juncus* spp.), cinnamon fern (*Osmunda cinnamomea*), royal fern (*O. regalis*), and sensitive fern (*Onoclea sensibilis*), common reed (*Phragmites australis*), cattail (*Typha* sp.), woolgrass (*Scirpus cyperinus*), and various goldenrods (*Solidago* spp.).

Within the pitch pine-forested area between the runway and the steep coastal dune habitat to the southeast of the Airport managed areas, there is an extensive mosaic of additional interdunal forested wetland swales. Within these freshwater wetlands, pitch pine (*Pinus rigida*) has adapted to the seasonally saturated conditions and is considered a local wetland indicator species.

In the far western reaches of the Airport, there is a larger wetland system (Wetland C/J/FK) that transitions along a salinity gradient from a freshwater system (PEM-PSS-PFO) to a brackish system (primarily PEM, trending toward Estuarine Emergent Marsh or EEM) as groundwater seeps are met with the tidal influence of the Hatches Harbor estuarine system. Brackish portions of this wetland system are dominated by a non-native invasive species, common reed. Efforts to control and manage this invasive plant community were implemented in the early 2000s through the Hatches Harbor Restoration Project, and areas of *Phragmites* die-back with an emerging salt marsh community can be observed along the landward-reaches of the restored salt water regime influence. Wetland areas are identified on Figure 5.

### *Coastal Dunes*

Surrounding the wetland areas and in an approximate parallel configuration to the shoreline and the Airport runway, are a series of coastal dunes. These dune habitats range from developing mounds of sands occupied by American beachgrass (*Ammophila breviligulata*) or other grass and herbaceous species, to extensive forested dune ridges that are stabilized with mature vegetation, including trees and shrubs.

The coastal dune habitats located along the lease line to the northwest of the airfield are mapped within the boundaries of the Race Point barrier beach system. Although the barrier beach system includes both primary

and secondary dune habitats, there are no primary dunes located within the Airport lease area. Dunes north of the Airport are generally vegetated with American beachgrass and common hairgrass in open exposed areas. Occasionally, seaward-facing slopes (both primary and secondary dunes) are completely devoid of vegetation. Topography among these dunes varies widely from nearly flat to steeply sloping.

The coastal dune habitats located to the southeast of the airfield are secondary coastal dune habitats that are not within the barrier beach system. While the topography among these secondary dunes is equally varied, the more stable substrate of these areas supports a greater diversity of vegetative species, including trees and shrubs. It is in these areas that communities of Maritime Pitch Pine on Dunes and Maritime Shrubland occur to varying degrees. Coastal dune areas are indicated on Figure 5.

### *Cultural Grasslands*

Cultural Grassland habitat, at the Airport includes primarily Cultural Grassland with incipient (or developing) Sandplain Grassland, and/or Sandplain Heathland. Cultural Grasslands result from the Airport's active mowing of the airfield's operational safety areas, in compliance with FAA regulations, and occur adjacent to the taxiway and runway (See Figure 5). These areas are mowed frequently to maintain runway and taxiway safety areas as well as the clear surfaces for navigational instrumentation. Sandplain Grasslands are open communities with grasses and occasional small shrubs, which are maintained naturally by fire and salt spray, and less frequently by vegetation pruning. Sandplain Heathland is open with shrubs and low-growing trees such as scrub oak (*Quercus ilicifolia*).

## **1.3 Floodplain Characterization**

### 1.3.1 FEMA Designation

The Airport facilities are situated within a low-lying area between parallel dune ridges. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (Community Panel 255218 00001 C; July 15, 1992), this low area is within the 100-year coastal floodzone/floodplain (Figure 6). The majority of the Airport facilities are located within Zone A2, elevation 10 feet above mean sea level, while the Runway 7 end and west end taxiway entrance lie within Zone A4, elevation 11 feet above mean sea level. Thus, such, the Airport facilities and the immediate surrounding environs are located within the stillwater coastal floodplain. The extreme western tip of the runway approach lights (MALSF) is located within Velocity Zone V4 (elevation 13 feet above mean sea level), an area of 100-year coastal flood with velocity (wave action) where base flood elevations and flood hazard factors have been determined by FEMA. The surrounding elevated dune system is located within areas of minimal flooding (Zone C).

### 1.3.2 Floodplain Background

In 1930, a dike was constructed across the Hatches Harbor salt marsh in an attempt to control salt marsh mosquitoes. Due to the dike restriction, approximately half of the 200 acres of salt marsh floodplain (base flood elevation 11 feet) was isolated from tidal flow. The Airport was constructed in the 1940s on land that was filled in behind the dike. The Airport's primary facilities are approximately one to two feet below the base flood elevations. The presence of the Hatches Harbor dike has likely influenced the ebb and flow of tides at the Airport facility. As this is a coastal floodplain, rising tide levels will inundate only those low-lying areas that are able to receive floodwaters.

The Hatches Harbor Restoration Project was instituted in the 1990s by the NPS in partnership with the Town of Provincetown to restore up to 90 acres of salt marsh behind the dike. Several local, state, and federal agencies approved the salt marsh restoration plan. During the winter of 1998-99, new culverts with adjustable tide gates were installed in the dike to gradually allow tidal flow into the marsh. Prior to the installation of the new culverts, and under a 1997 agreement between NPS and the Town of Provincetown, an earthen flood protection berm was constructed to avoid tidal flooding of the Instrument Landing System (ILS) reflectance area within the Airport. The NPS is responsible for its maintenance. While a breach in this earthen berm

occurred in 2006, this has not resulted in flooding of the Airport ILS. A copy of the NPS letter dated July 20, 2007, is attached.

## **2. JUSTIFICATION FOR USE OF THE FLOODPLAIN**

### **2.1 Location of Proposed Action**

Given that the proposed CIP projects are intended to address safety and security deficiencies at the Airport, as well as to meet projected demand for Airport use, and that the Airport is located entirely within the coastal floodplain, the proposed projects must also logically occur within the coastal floodplain, in order to address the FAA, MassDOT, and TSA safety and security mandates.

### **2.2 Investigation of Alternative Sites**

Each of the twelve project elements proposed under the CIP would occur within areas at the Airport that are within the 100-year coastal floodplain, as the Airport itself is located within its entirety in the coastal floodplain. However, no work is proposed within the Velocity Zone. Given the purpose and need and the general nature of these proposed improvement projects at an existing airport facility, there is no feasible alternative location for implementing the proposed improvements at the Airport, such that the work could occur beyond the limits of the coastal floodplain. A complete alternatives analysis is provided in Section 3 of the FEIR/EA/Section 4(f), which describes the Preferred Alternative (Proposed Action), the No Action Alternative, and reasonable alternatives (if any) for each of the proposed project elements that would occur within the coastal floodplain. As defined in FAA Order 5050.4B, the Proposed Action is “*the solution the airport sponsor wishes to implement to solve the problem(s) it is facing.*” Alternatives to the Proposed Action have been considered and evaluated. Of the twelve CIP projects, only the expansion of the Airport terminal building has an alternative that can avoid any further direct work within the coastal floodplain, aside from the No Action alternatives. A vertical expansion of the terminal building was selected as the Preferred Alternative.

## **3. DESCRIPTION OF SITE-SPECIFIC FLOOD RISK**

As discussed above, due to the presence of the Hatches Harbor dike and, to a lesser degree, the earthen berm, significant flooding does not generally occur at the Airport outside of a major hurricane or coastal “nor’easter.” In accordance with Procedural Manual 77-2: Floodplain Management, the flood hazard risk for activities at this location fall within Action Class I (100-year base floodplain), as the projects include “*location or construction of administrative, residential, warehouse, and maintenance buildings; non-excepted parking lots; or other man-made features which by their nature entice or require individuals to occupy the site, are prone to flood damage, or result in impacts to natural floodplain values. Class I Actions are subject to the floodplain policies and procedures if they lie within the 100-year floodplain (the Base Floodplain).*” The Class I designation is defined as a one percent chance of flooding during one year with a 39 percent chance of flooding during fifty years.

The Town of Provincetown, which owns and operates the Airport, has an emergency preparedness plan for the entire municipality, with specific provisions for the Airport. This plan was developed in cooperation with the Massachusetts Emergency Management Agency (MEMA). The Provincetown Emergency Management Agency is charged with the responsibility to develop and implement this Comprehensive Emergency Management (CEM), which addresses preparedness and response to all risks, including man-caused emergencies and natural disasters, as well as mitigation and recovery phases of the CEM (<http://www.provincetown-ma.gov/safety.html>).

Coastal communities are subject to storm surge, flooding, and wind damage from hurricanes and strong coastal storms. Per the CEM, “*Of all emergencies/disasters that can affect Massachusetts, hurricanes provide the most lead warning time. Even at the ‘hurricane watch’ stage, the storm could be hundreds of miles away from the Massachusetts coast. MEMA assumes ‘standby status’ when a hurricane’s location is determined to be 35 North Latitude, (Cape Hatteras), unless the storm is moving unusually fast which may necessitate standby at an earlier time. When the hurricane has reached 40 North Latitude, (Long Island), MEMA assumes ‘alert’*”

*status and the decision may be made by the Governor or the local head of government to recommend evacuation of areas that the storm is likely to strike.”*

The CEM plan addresses emergency situations in which the actions of many different agencies must be coordinated. This major coordination effort differs from those emergencies handled on a daily basis by local fire, law enforcement, and medical service personnel. The CEM is structured in six parts: Part I deals with the Basic Plan; Part II deals with Emergency Response Organizations; Part III deals with Emergency Management Processes and Protective Procedures; Part IV deals with specific Hazard/Emergencies/Disasters. Part V deals with Hazardous Materials. Part VI is the Terrorism Incident Response Plan. This includes the necessary actions and procedures to be taken by Airport personnel in the event of a major storm event, such as a hurricane, as well as other emergency situation to ensure human health and safety as well as protection of property.

Loss of flood storage is generally not an issue in the coastal environment. The flood risk for the Airport facilities or the Airport personnel or visitors to the CCNS would not increase as a result of implementing proposed CIP projects. Activities that would directly impact floodplains include the taxiway projects, access roadways to the LES and AWOS, and the fence. These project elements will occur immediately adjacent to the existing Airport facilities, and will allow for abandonment and restoration of previously paved areas, and thus yielding a reduction in impervious surface within the coastal floodplain. The No Build Alternative for each of the proposed CIP projects would not result in a reduction of impervious surfaces. Moreover, proposed improvements and subsequent reduction in impervious surfaces will provide opportunities for freshwater wetland restoration, which, upon successful restoration, will mitigate for any loss of local flood storage capacity at the Airport, and potentially provide for slightly greater flood storage capacity, although the effects would be negligible in the coastal floodplain.

#### **4. DESCRIPTION OF FLOOD MITIGATION**

Cumulatively, implementation of the Preferred Alternatives would result in alterations to approximately 2.34 acres (101,915 SF) of coastal floodplain, which involves direct alterations to freshwater wetlands and coastal dune habitats, all of which also occur within the coastal floodplain. Aside from the No Action alternatives, of the twelve CIP project elements proposed at the Airport, only one project, the proposed expansion of the Airport terminal building, has an available alternative that would result in less direct impact within the coastal floodplain. The vertical expansion of the terminal building has been selected as the Preferred Alternative. All remaining projects must logically be sited within the coastal floodplain in order to meet the purpose and need of each project element.

Minor to negligible, short-term, direct, adverse impacts will occur to the coastal floodplain as a result of implementing the Preferred Alternatives for the Airport CIP projects during construction, specifically for the reconstruction and/or realignment of the of the taxiways, installation of the access roadways, and installation of the proposed safety/security fence. Flood storage capacity will be compensated by the proposed wetland mitigation areas upon successful mitigation.

Proposed mitigation measures, which involve removal of impervious surfaces and restoration or creation of natural habitats (wetland and coastal dune mitigation areas) and a slight increase in the amount of grassland habitat at the Airport, will result in a net gain of vegetated areas. Ultimately, no additional coastal floodplain will be impacted, and there will be a net reduction of approximately 0.65 acres (28,086 SF) of existing impervious surface at the Airport, which may provide some additional temporary flood storage during a major flooding event.

Mitigation also includes past mitigation efforts provided through the Hatches Harbor Saltmarsh Restoration Project (“Hatches Harbor Project”) in accordance with the April 28, 1997 Memorandum of Understanding between the NPS and the Town of Provincetown and as reiterated in the November 5, 2010, letter from NPS to FAA. The Hatches Harbor Project, implemented in the early 2000s, included a substantial restoration effort of salt marsh and freshwater wetland habitat. As such, the Airport will apply mitigation credits granted through the participation in the Hatches Harbor Salt Marsh Restoration Project. Previously, it was thought that

additional off-site mitigation would be necessary in order to satisfy the NPS requirements for resource impacts. However, in accordance with the April 28, 1997 MOU between the Town and NPS, and reiterated in the recent letter from NPS (dated November 5, 2010), implementation of the Hatches Harbor Salt Marsh Restoration Project was to result in 60 to 90 acres of wetland habitat restoration, and the 1997 MOU established that the mitigation provided by the implementation of the Hatches Harbor Salt Marsh Restoration Project “*will be classified as mitigation for the wetland impacts of required present AND FUTURE airport safety improvements.*” In their November 5, 2010 letter, NPS/CCNS “*agrees that FAA’s contribution to salt marsh restoration at Hatches Harbor can be applied as off-site mitigation for activities covered in the Current Capital Improvements Plan.*”

No long-term adverse impacts on the flood storage capacity relative to the ability of these low-lying areas to temporarily retain and release coastal waters during and following a flooding event at the Airport or within the surrounding CCNS lands are anticipated.

#### **4.1 Hazard Reduction Plans**

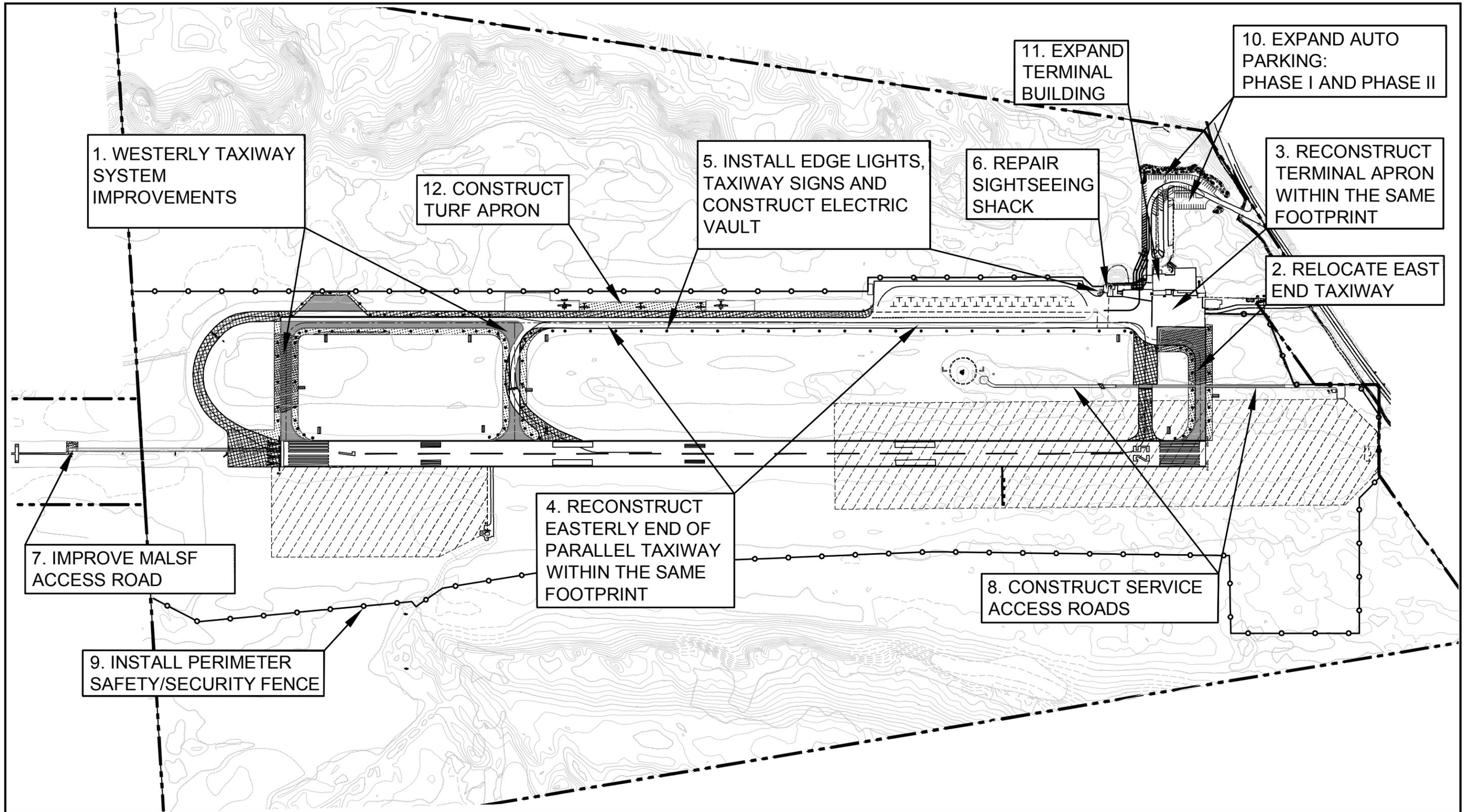
As noted above, the Town of Provincetown and consequently, the Airport, has a contingency plan (CEM) in place, outlining the necessary actions and procedures to be taken by Airport personnel in the event of a major storm. The Preferred Alternatives for the CIP projects are not anticipated to have any adverse impact on the ability of the coastal floodplain to provide continued protection from storm damage and coastal flooding, and the reduction of impervious surfaces that will occur as a result of the implementation of certain CIP preferred alternatives may contribute to these functions and values. There is no anticipated increase in the flood hazard at the Airport as a result of the proposed project.

#### **4.2 Structural Design**

Any new construction will adhere to local building codes for work within the 100-year floodplain. The existing structures and facilities are designed to be consistent with the standards and criteria of the National Flood Insurance Program (44 CFR Part 60), as well as any state and local building codes.

### **5. SUMMARY**

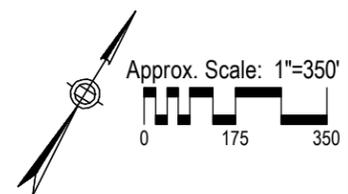
Proposed CIP projects at the Provincetown Municipal Airport are designed to address safety and security needs at the Airport and to address the efficiency of the Airport to more fully meet current and anticipated demand of its use. The Airport is situated wholly within the 100-year coastal floodplain, and as a result, all proposed projects associated with these infrastructure improvements, with the exception of the vertical expansion of the terminal building, must be logistically sited within the floodplain by design. No alternative sites outside of the coastal floodplain exist that could reduce potentially hazardous conditions at the Airport beyond those that currently exist. Mitigation and compliance with regulations and policies to prevent impacts to water quality, floodplain values, and loss of property or human life would be strictly adhered to during and following construction. Individual permits with other federal and cooperating state, regional, and local agencies would be obtained prior to construction activities. No long-term adverse impacts would occur as a result of implementing the proposed CIP projects.



Prepared By:  
**JACOBS**

-  EXISTING IMPERVIOUS AREA TO BE REMOVED
-  PROPOSED IMPERVIOUS PAVED AREA
-  PROPOSED WETLAND IMPACT AREA
-  PROPOSED PERIMETER FENCE
-  PROPOSED CULTURAL GRASSLAND
-  GLIDE SLOPE AND LOCALIZER CRITICAL AREAS
-  EXISTING LEASE LINE

GENERAL NOTE:  
SEE FIGURES IN SECTION 6 FOR  
PROJECT DETAILS.



Provincetown Municipal Airport  
Capital Improvements Plan

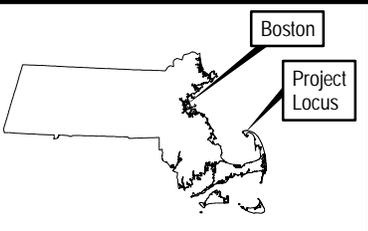
**PROJECT OVERVIEW**

Figure 1





LOCUS



Prepared By:

**JACOBS**

Approx. Scale in Feet

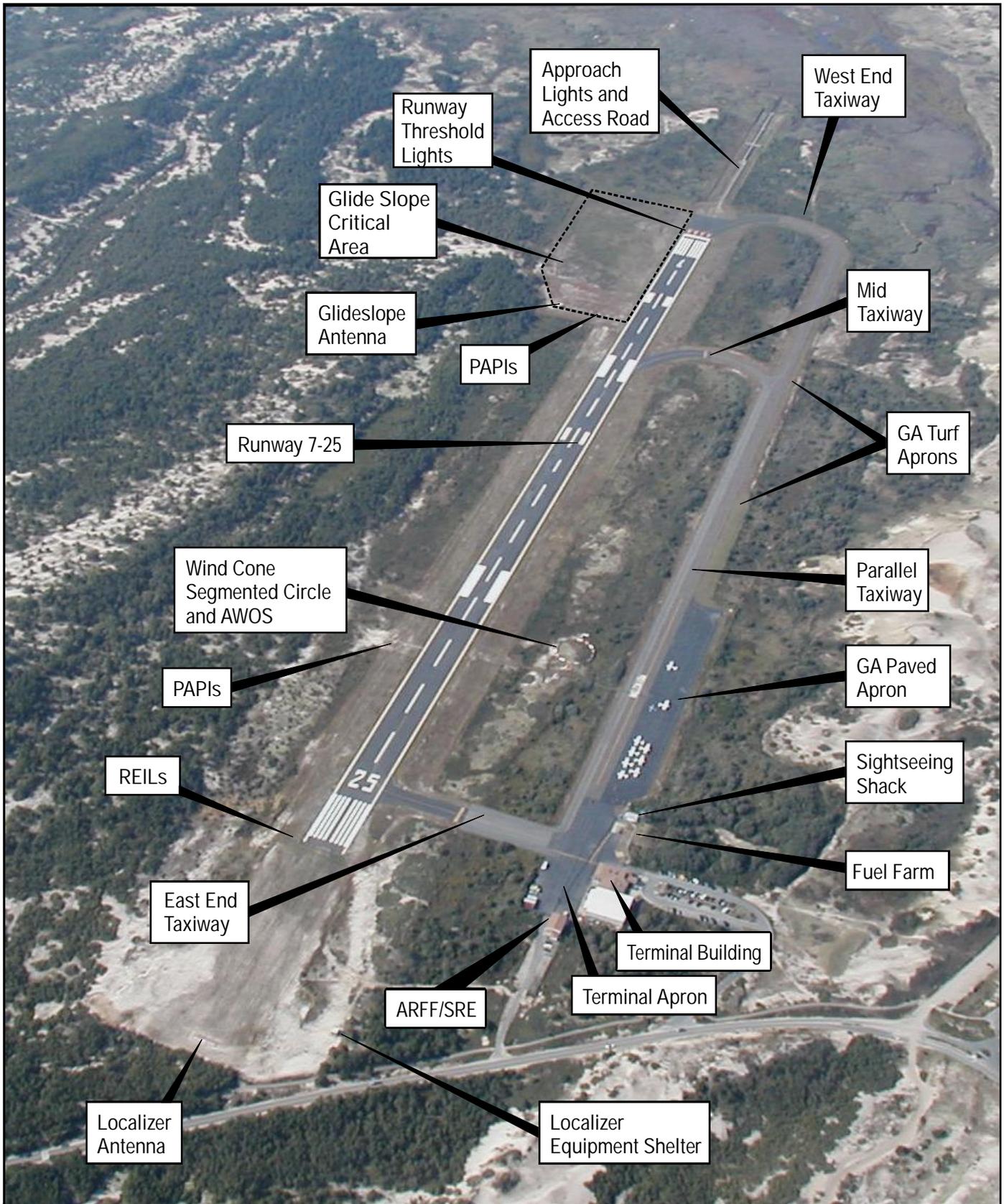


Data compiled from the following source:  
MassGIS, Commonwealth of Mass. EOEa

Provincetown Municipal Airport  
Capital Improvements Plan

LOCUS MAP

Figure 2



Prepared By:

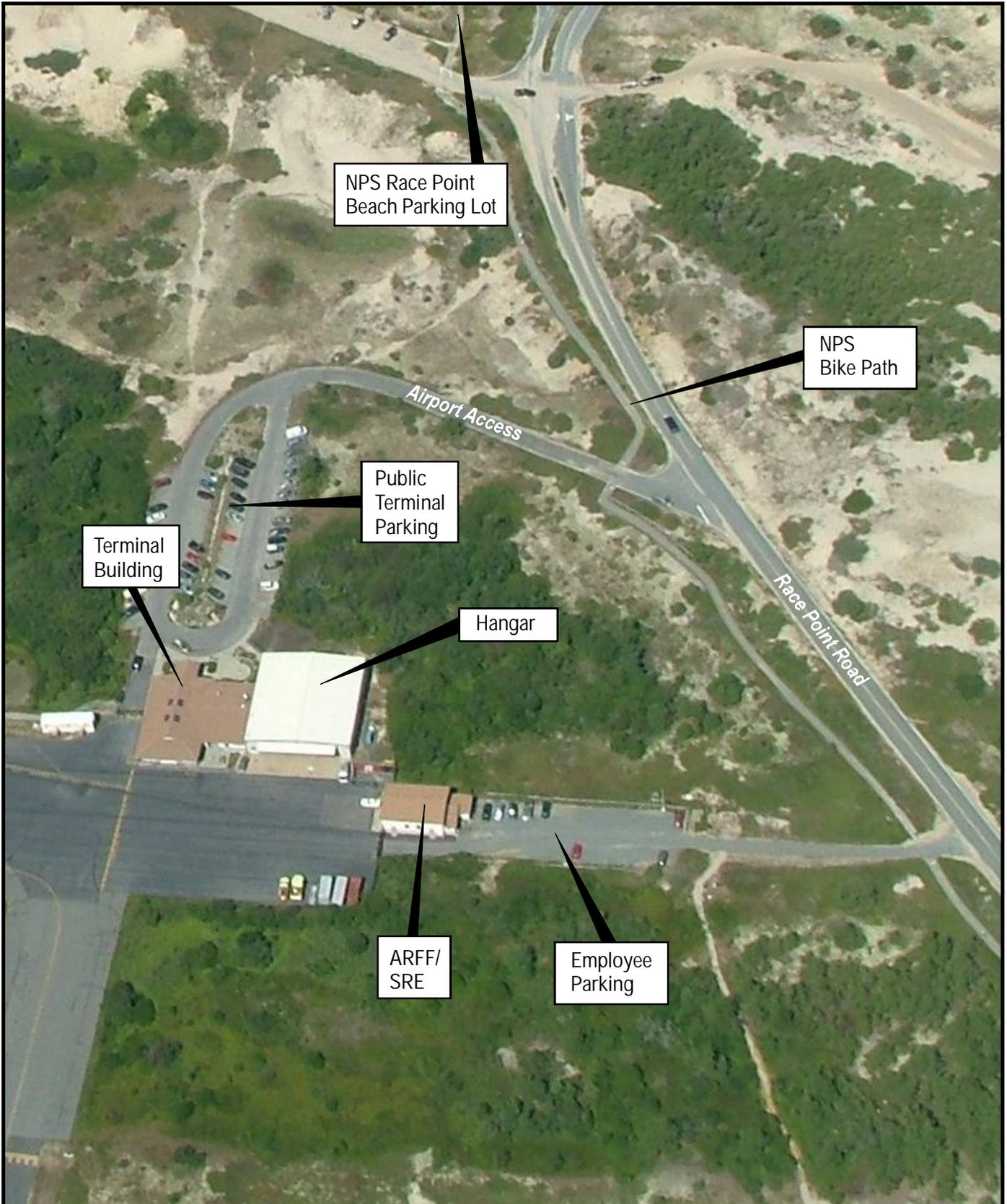


Note: See Glossary for definitions and descriptions of acronyms  
 Source: Edwards and Kelcey 2004

Provincetown Municipal Airport  
 Capital Improvements Plan

Airside Facilities

Figure 3



Prepared By:

**JACOBS**

Source: Edwards and Kelcey 2005

Provincetown Municipal Airport  
Capital Improvements Plan

Landside Facilities

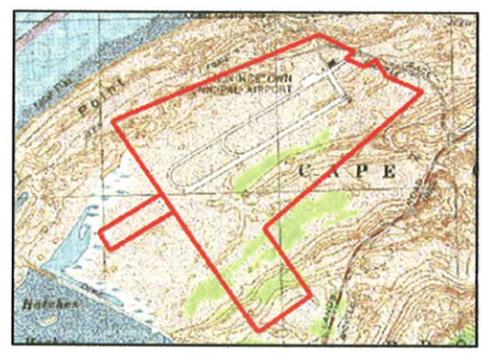
Figure 4



last modified: 12/09/09 printed: 12/10/09 by bk H:\Projects\2004\4027 E&K-PTown Airport\Drawings-4027.dwg\4027 WETLANDS 2006.dwg



- LEGEND**
- WETLAND AREAS
  - DUNE AREAS
  - APPROXIMATE LIMIT OF MANAGED CULTURAL GRASSLAND
  - WETLAND LABEL

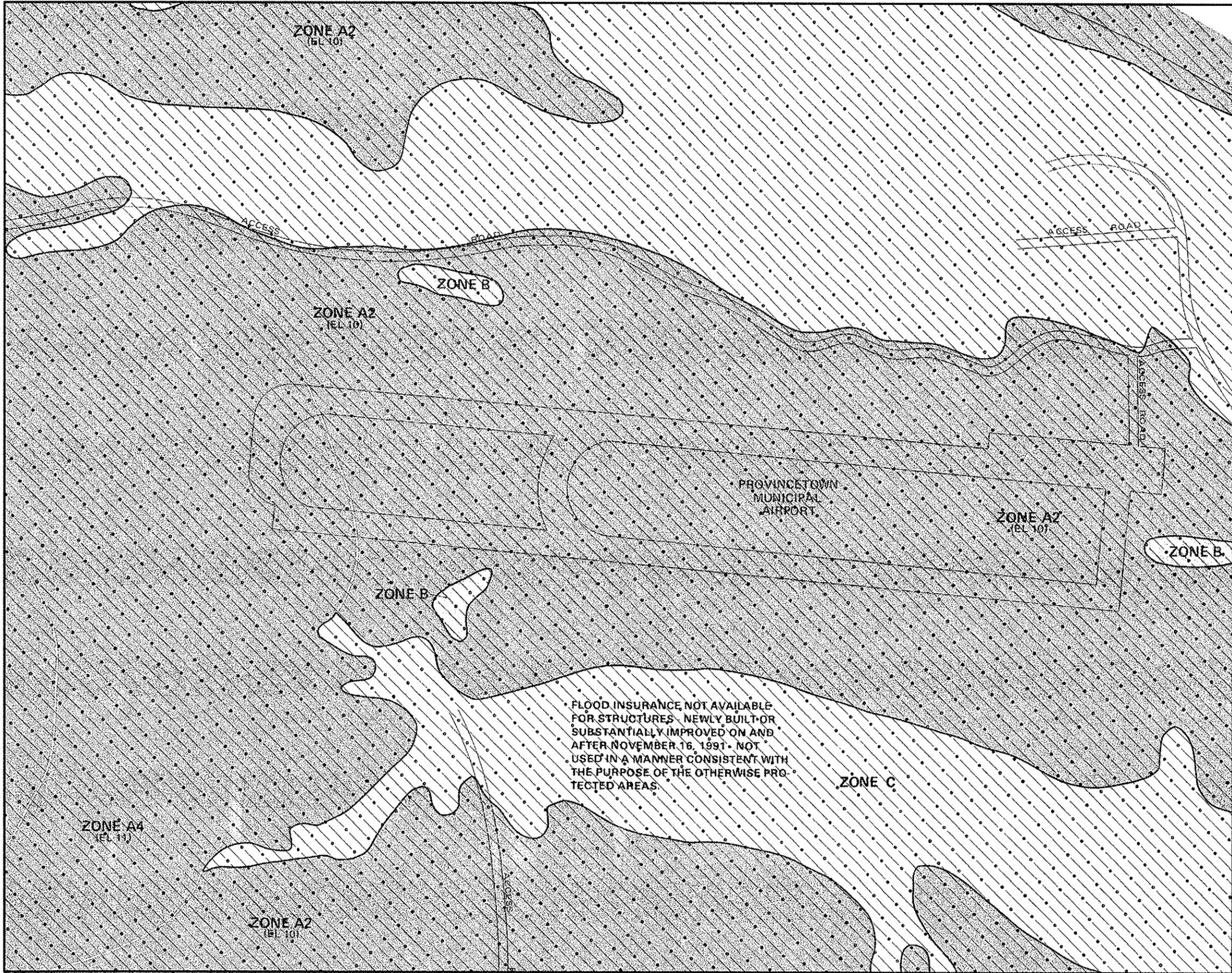


**Figure 5**

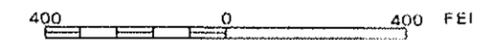
Title: <b>WETLAND RESOURCE AREA MAP</b>				
Project: <b>PROVINCETOWN MUNICIPAL AIRPORT PROVINCETOWN, MASSACHUSETTS</b>				
Sheet: 1	Date: 3/31/2009	Design By:	Drawn By: EK	Checked By: AB
Prepared For: Provincetown Municipal Airport Race Point Road, P.O. Box 657 Provincetown, Massachusetts Phone: (508) 487-0241 Fax: (508) 487-4110		Design By: <b>Horsley Witten Group Environmental Services</b> 90 Route 6A Sandwich, MA 02563 508-833-6600 voice 508-833-3150 fax		







APPROXIMATE SCALE



**NATIONAL FLOOD INSURANCE PROGRAM**

**FIRM  
FLOOD INSURANCE RATE MAP**

**TOWN OF  
PROVINCETOWN,  
MASSACHUSETTS  
BARNSTABLE COUNTY**

**PANEL 1 OF 5**  
(SEE MAP INDEX FOR PANELS NOT PRINTED)

NOTE:  
THIS MAP INCORPORATES APPROXIMATE BOUNDARIES OF  
COASTAL BARRIER RESOURCES SYSTEM UNITS AND/OR  
OTHERWISE PROTECTED AREAS ESTABLISHED UNDER THE  
COASTAL BARRIER IMPROVEMENT ACT OF 1990 (PL 101-591)

**COMMUNITY-PANEL NUMBER  
255218 0001 C**

**MAP REVISED:  
JULY 15, 1992**



**Federal Emergency Management Agency**

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

**Figure 6**





# 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:  
N1619

July 20, 2007

Provincetown Airport Commission  
Michael Leger, Chairman  
Race Point Road,  
Provincetown, MA 02657

Subject: Efficacy of flood protection berm seaward of Runway 7, Provincetown Airport,  
Provincetown, Massachusetts

Dear Commissioners:

This is to transmit water-level data collected by my staff this spring, in cooperation with Airport Manager Butch Lisenby, to assess the effects of a breach in the flood-protection berm seaward of Runway 7 on surface water levels. You will recall that under the 1997 agreement between the Town and the Seashore for the Hatches Harbor Salt Marsh Restoration Project, the NPS took responsibility for building and maintaining this berm to avoid tidal flooding of the ILS reflectance area.

The earthen berm was damaged and repaired during the construction of the catwalk associated with a general upgrade of the ILS system several years ago. Unfortunately, the contractor who installed the catwalk also removed peat that supported and stabilized the original earthen berm built by NPS. As a result, that portion of the berm that passed under the catwalk was prone to slumping and consequent overtopping and erosion by high tides.

According to Mr. Lisenby, a major breach in the berm developed last summer; our staff first observed it last fall. The issue was discussed at the annual meeting of the Hatches Harbor Review Committee meeting in February (minutes attached), where it was decided to allow the breach to remain open until the Airport and we could monitor the effects on surface water flooding near the reflectance area.

We used an automated data logger to obtain water-level data in a well at the northeast corner of the wetland just seaward of Runway 7 (Figure 1). The logger was deployed from 12 March to 19 April, and again from 8 May to 17 June 2007. The elevation (m-NAVD88) of the well-casing measuring point was determined by differential leveling from a bronze disk east of Runway 7 (northing 4658198; easting 398517; elevation= 1.695 determined by RTK GPS). Thus water level and land surface data for both deployments are presented relative to NAVD88 in Figures 2.

To summarize, the breach in the earthen berm has not resulted in flooding of the airport reflectance area. Fortunately, the situation was given an extreme test in mid-April when a severe northeast storm hit the Cape during a period of spring tides. Precipitation exceeded 2.6 inches and tide heights (recorded by the Boston NOAA tide station) reached 14 feet MLLW. Even during this extreme event, surface water from Hatches Harbor did not reach the reflectance area (Fig. 2).

We have shared and discussed these data with Mr. Lisenby, who suggests that airport management may be satisfied that the earthen berm is no longer necessary to protect the airport instrument landing system. Therefore, unless there is further discussion, NPS will not attempt to repair the berm breach.

Finally, I believe that this small collaborative project serves as an excellent example of how Seashore and Airport managers have been able to work together so well over the past ten years to achieve both flood protection for the airport and salt-marsh restoration at Hatches Harbor.

Sincerely,



George E. Price, Jr.  
Superintendent

Enclosures:

Figure 1. Relative locations of earthen berm, ILS reflectance area, and NPS observation well used to monitor surface water levels adjacent to Runway 7, Provincetown Airport.  
Figure 2. Water levels behind the breached earthen berm seaward of Provincetown Airport Runway 7, relative to elevations of the ILS reflectance area.  
Minutes of February 27, 2007, Hatches Harbor Technical Review Committee meeting

cc: Sharon Lynn, Town Manager, Provincetown  
Richard Doucette, Federal Aviation Administration  
Mathew DeSorbo, Massachusetts Aeronautics Commission  
Butch Lisenby, Provincetown Airport  
Jim Mahala, Massachusetts Department of Environmental Protection

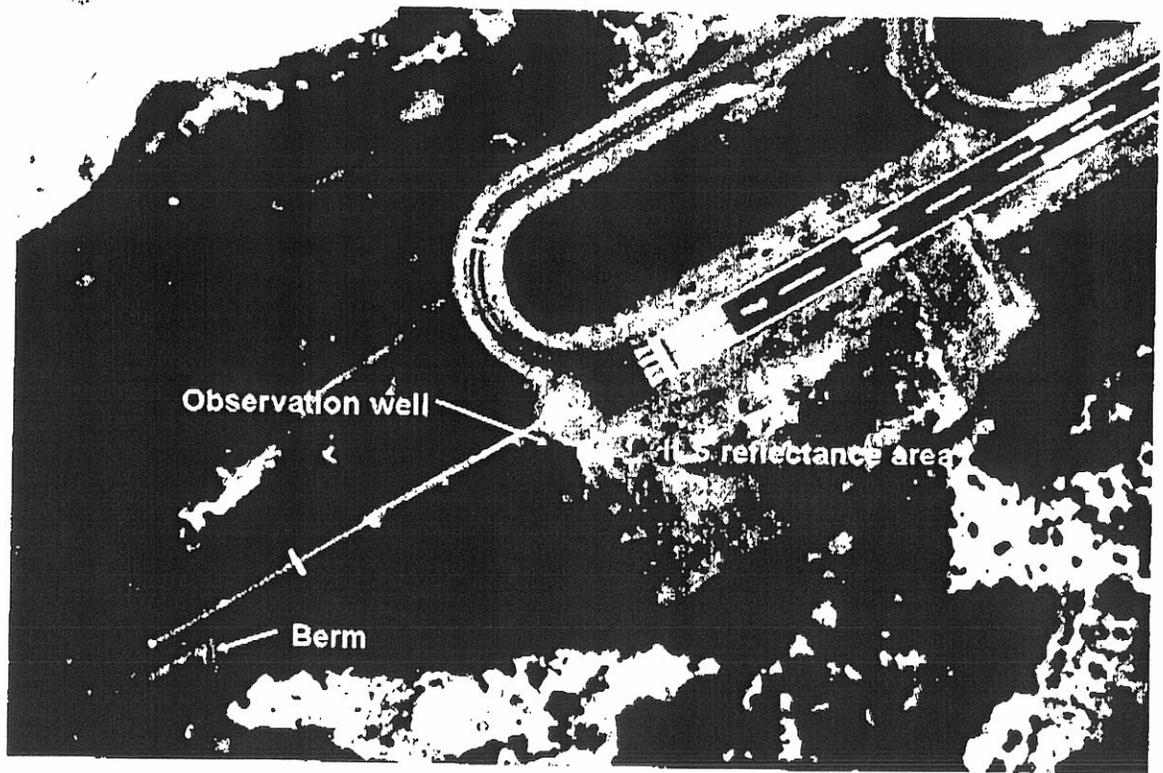


Figure 1. Relative locations of earthen berm, ILS reflectance area, and NPS observation well used to monitor surface water levels adjacent to Runway 7, Provincetown Airport.

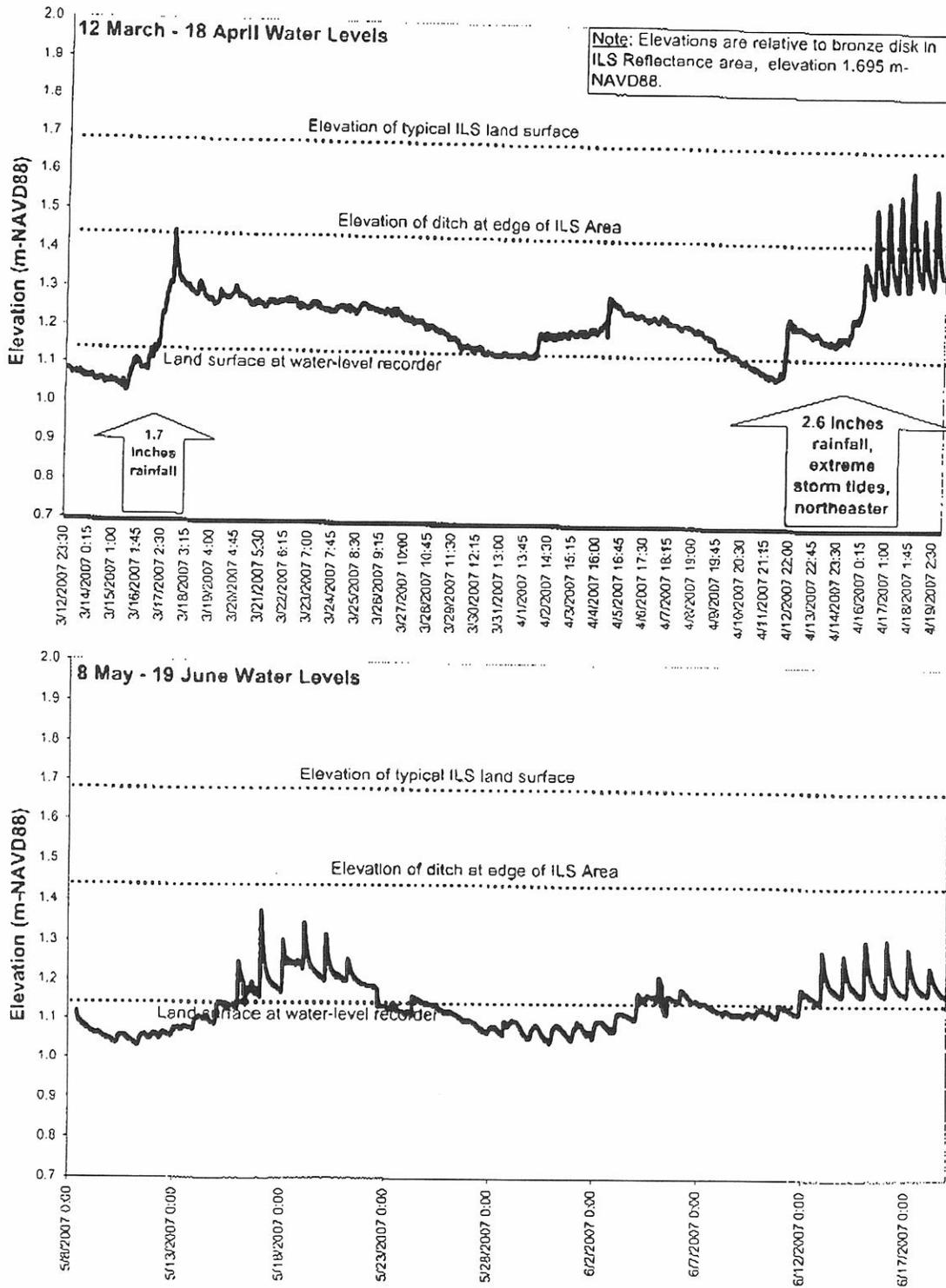


Figure 2. Water levels behind the breached earthen berm seaward of Provincetown Airport Runway 7, relative to elevations of the ILS reflectance area.

27 February 2007

Minutes of Hatches Harbor Technical Review Committee meeting

Attendees: Stephen Smith (NPS), Butch Lisenby (Provincetown Airport), Evan Gwilliam (NPS), Richard Doucette (FAA, by speaker phone), Jim Mahala (DEP), Matthew DeSorbo (MAC), Carrie Phillips (NPS), Graham Giese (Provincetown Center for Coastal Studies), Gabrielle Sakolsky (CCMCP), Dennis Minsky (Provincetown Conservation Commission), David Crary (NPS) and John Portnoy (NPS).

Cape Cod National Seashore staff Smith, Gwilliam and Portnoy presented a summary of 2006 tide-height, vegetation and nekton monitoring results. A full report on this monitoring was sent to all members prior to the meeting.

D. Minsky asked about northern harrier use of the floodplain. There are usually 1-2 pairs of these raptors using the restoration area above the dike. Two reports by Seashore cooperators are in preparation.

Smith and Crary described plans for a prescribed burn of Phragmites and salt-killed shrubs this fall seaward of the airport approach. The purpose is to clear away standing vegetation that impedes the spread of wrack and seeds of salt-marsh plants. Preferred wind direction for smoke control would be from the northwest to northeast. The Seashore will coordinate with Airport authorities to ensure that this project does not create an aviation safety hazard.

J. Portnoy reported on the condition of structures whose maintenance is the responsibility of the Seashore. The culvert aprons, which began to erode in summer 2005, were repaired with the addition of much larger stones in March 2006. The aprons now appear stable but will be monitored regularly by park staff.

The earthen berm at the airport approach breached under the catwalk, reportedly (Lisenby) last summer. Portnoy noted that during construction of the catwalk, the berm was weakened and underlying peat was removed, making the berm more prone to breaching. He also noted that this peat removal created a linear pond all along the length of the catwalk which attracts waterfowl, a safety hazard to aircraft. In this regard, the breach is beneficial in improving low-tide drainage and limiting the time that the new "pond" is flooded and attractive to ducks.

B. Lisenby stated that the FAA still maintains that the berm is needed to protect the airport approach system; however, that agency and the airport are willing to tolerate the breach at least over the short term to reassess the need for the berm. Airport authorities will notify the Seashore if tidal flooding becomes a problem at the end of Runway 7 and within the ILS reflectance area to the southwest of the runway. Portnoy offered to install a water-level recorder in the area of concern; he and Lisenby will meet soon to plan this monitoring.

As agreed at last year's TRC meeting, we hereafter switch to a biennial schedule, with the next meeting planned for winter of 2008-9. Nevertheless, the Seashore will continue to produce annual reports on the progress of the restoration project.

Respectfully submitted,

John Portnoy



**9.7 CZM Federal Consistency Certification**



December 17, 2011

Massachusetts Office of Coastal Zone Management  
251 Causeway Street, Suite 900  
Boston, MA 02114  
Attn: Project Review Coordinator

**Subject: Federal Consistency Review**  
Capital Improvements Project  
Provincetown Municipal Airport

Dear Project Review Coordinator,

As the consultant to the Provincetown Airport Commission, we request that your office review the proposed Capital Improvements Project for consistency with the Coastal Zone Management (CZM) program. A FEIR/EA has been prepared and submitted to MEPA. A copy has been sent to MA CZM and provides additional information on the projects.

### **Project Description**

The Provincetown Municipal Airport Commission proposes a Capital Improvements Plan (CIP) of safety and facility improvements at the Provincetown Municipal Airport (Airport). Implementation of the CIP will fulfill the mission of the Airport to operate a safe, secure, and reliable primary service airport receiving scheduled airline passenger service.

- 1) Westerly Taxiway System Improvements
- 2) East End TW Relocation
- 3) Terminal Apron Reconstruction
- 4) Easterly End of Parallel TW Reconstruction
- 5) TW Lighting, Lighted TW Signs, and Electric Vault Installation
- 6) Sightseeing Shack Improvements
- 7) Access Road to MALSF Approach Lights Improvements
- 8) Service Roads to LES and AWOS Construction
- 9) Perimeter Safety/Security Fence Installation
- 10) Auto Parking Expansion
- 11) Terminal Building Expansion
- 12) Turf Apron Expansion

### **Discussion of Consistency with Applicable Program Policies**

*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.*

The existing drainage system at the Airport consists of catch basins and a trench drain which have been fitted with a filtration system to intercept petroleum-based pollutants from the stormwater runoff on the Terminal Apron. The outlet has been fitted with a sediment outlet trap.

The proposed CIP projects will promote the attainment of water quality standards. The proposed drainage design for the parking lot includes BMPs such as bioretention areas and infiltration swales

and complies with the current DEP Massachusetts stormwater regulations and standards to protect water quality. There are no other point source discharges at the Airport.

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

There is limited potential for sources of non point pollution at the Airport. Salt is not applied to the runway or taxiways. Aircraft are not serviced at the Airport. Fertilizers and herbicides are not used at the Airport.

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

The Airport's septic system was updated in 1998 according to current standards. It is maintained in compliance with local and state and federal requirements.

*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 proposed CIP projects have avoided and minimized impacts to wetlands to the extent feasible. Wetland restoration is proposed and erosion controls will be incorporated into the construction plans to protect adjacent wetlands.

*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 wetland restoration.*

Mitigation for the projects included in the CIP includes restoration of wetlands onsite and will also include additional wetland mitigation identified during the permitting process.

*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.*

Natural coastal landforms will be protected or restored to the fullest extent possible. The fence alignment has been selected to minimize impacts.

*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.*

Natural coastal landforms will be protected or restored to the fullest extent possible. The fence alignment has been selected to minimize impacts.

*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, and*
- *Not promote growth and development in hazard-prone or buffer areas, especially in Velocity Zones and ACECs, and*
- *Not be used on Coastal Barrier Resource Units...*

The project will not exacerbate existing hazards and natural buffers have been protected. Flood studies indicate that the project will be safe from flooding. The CIP projects are not within a Velocity Zone, ACEC, or Coastal Barrier Resource Unit.

*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 CIP projects will serve the existing transportation system.

### **Consistency Certification**

**The proposed activity complies with the program policies of the Massachusetts approved coastal management program and will be conducted in a manner consistent with such policies.**

Sincerely,  
Jacobs Engineering



Michael Garrity  
Senior Airport Planner, Project Manager

cc: Heath Gatlin, Chairman, Provincetown Airport Commission  
Arthur "Butch" Lisenby, Airport Manager  
Michelle Ricci, FAA, Airports Division  
Katie Servis, MassDOT Aeronautics

