DRAFT ENVIRONMENTAL ASSESSMENT

Plymouth Municipal Airport
Taxiway D and Master Plan Improvements

Issued By:
Federal Aviation Administration

Prepared by:
Epsilon Associates, Inc.

In Association with:
DuBois & King, Inc.

November 2017

Epsilon
ASSOCIATES INC.

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1.0 PROPOSED ACTION

1.1 Project Location

The Plymouth Municipal Airport ("Airport") is located on approximately 785 acres in the towns of Plymouth and Carver (see Figure 1, USGS Locus Map and Figure 2, Aerial Locus Map). The Airport has operated since 1934 and now supports multiple businesses including flight schools, aircraft maintenance, aircraft sales, and corporate flight departments. Approximately half of the site is developed and consists of paved runways and taxiways, hangars, an administration building, several office buildings, and other ancillary buildings. The remainder of the site supports wetlands, upland grassland and forested habitats. Portions of South Meadow Pond and a second unnamed pond, associated with a nearby cranberry bog, are located on the southern portion of the Airport site. There are approximately 31 acres of wetlands on the Airport, as mapped by MassGIS. Approximately 352 acres of Airport property is mapped by the Massachusetts Natural Heritage and Endangered Species Program ("NHESP") as Estimated Habitat, Priority Habitat, or both; of this total, approximately 60 acres are actively managed for state-listed bird species pursuant to the Airport's NHESP-approved Grassland Management Plan.

Land uses adjacent to the Airport include residential, commercial, agricultural (cranberry bogs) and open space. The Airport, along with the aviation-related businesses and facilities, is a vital and significant regional transportation and economic asset. In addition to its many aviation-related benefits, the Airport also supports local businesses and industries, promotes tourism, as well as encourages additional business development and expansion for cities and towns throughout the South Coast Region. This fact was demonstrated in the Massachusetts Department of Transportation ("MassDOT") – Aeronautics Division's *2015 Airport Economic Impact Study Update*, which quantified the total aviation and non-aviation related impact of the Plymouth Municipal Airport at 319 jobs, with total wages of $13.69 million and a total economic output of $47.86 million in direct and indirect economic activity.

1.2 Proposed Project

The Airport finalized an Airport Master Plan Update in 2011 that evaluated aviation demand forecasts, facility requirements, airport access, airport geometry, and navigation aids over a 20-year planning horizon. As noted above, the Airport implemented the first major project from that Master Plan Update in 2015-2016 to enhance Airport safety by balancing the runways (see EEA # 14801).

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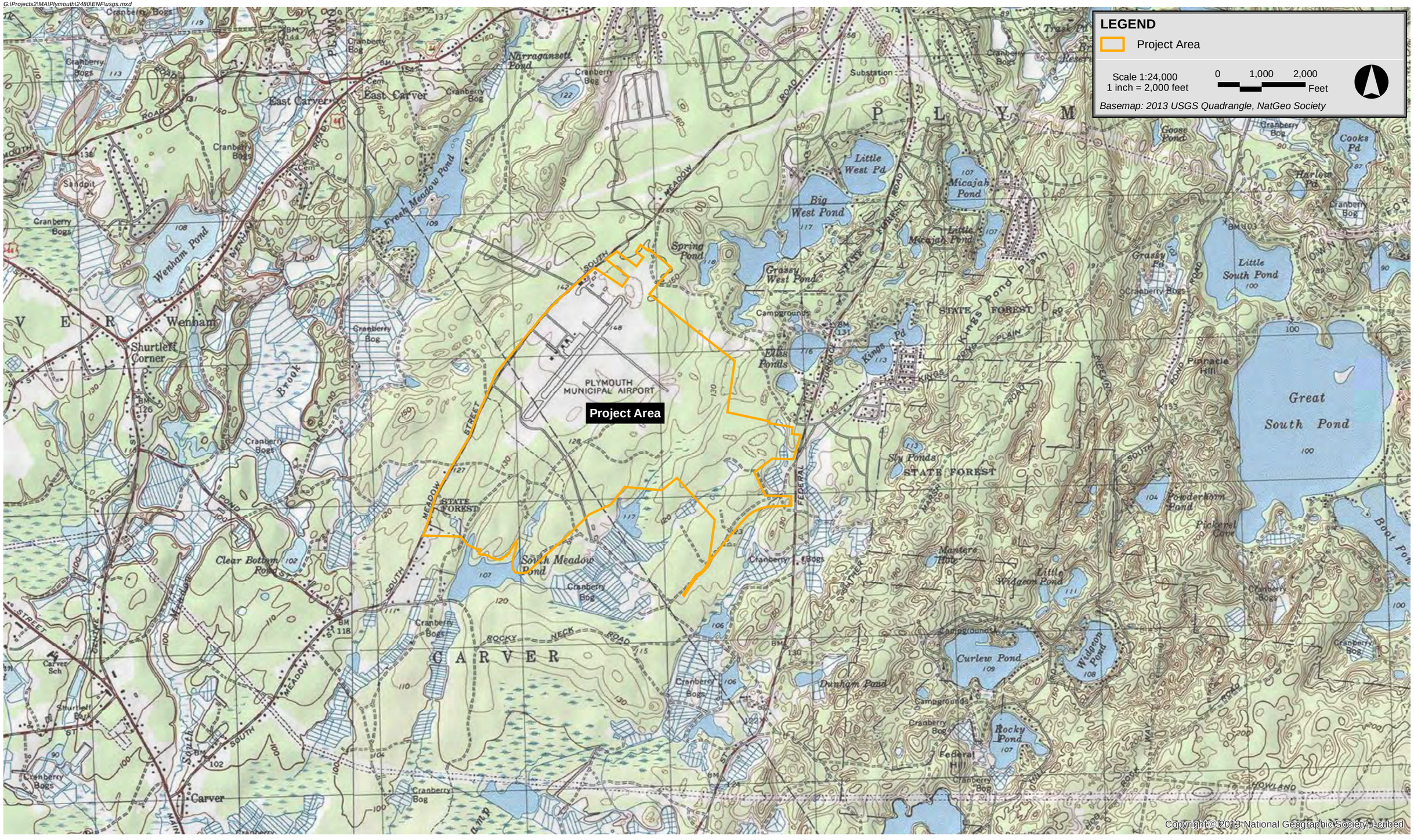

Plymouth Airport Plymouth, Massachusetts

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Figure 1-1
USGS Locus Map

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Plymouth Airport **Plymouth, Massachusetts**

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Figure 1-2
Aerial Locus Map

Subsequently, the Airport seeks to develop the next set of projects outlined within the Master Plan Update and planned for construction within the next five-year period (2018 through 2023). These important safety and infrastructure projects will serve to bring the Airport's geometry into compliance with Federal Aviation Administration ("FAA") standards and meet current forecasted demand for airport use and hangar space. Discrete projects to be implemented over the next five-year period include:

- Taxiway D Extension eastward to end of RW 24 stopway;
- Shift Taxiway S south by 15 feet and reduce the width from 40 feet to 35 feet;
- New Hangar development;
- New taxilane and apron space adjacent to Taxiway S;
- Taxiway E Extension to end of RW 24 stopway; and
- Re-designate RW 24 stopway to displaced thresholds.

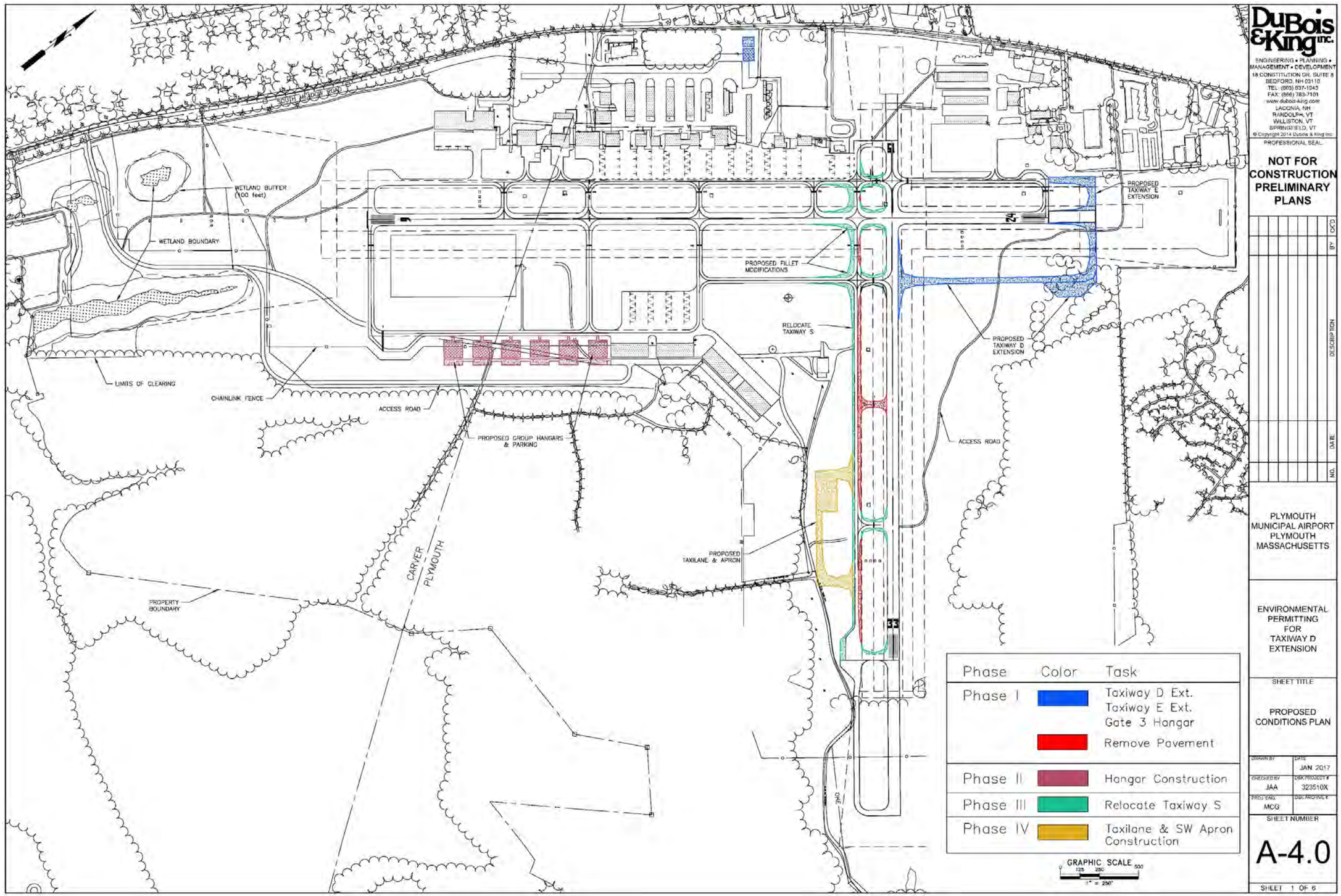
Information describing each of these Project elements is provided below. See Figure 1-3 (General Layout Plan) for an aerial showing the extent of the Airport improvement projects for the overall conceptual engineering plans of the proposed discrete actions.

1.3 National Environmental Policy Act

The National Environmental Policy Act (NEPA, Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, § 4(b), Sept. 13, 1982) provides an interdisciplinary framework to ensure that federal agency decision-makers consider all environmental effects of a project and the best measures to avoid, minimize and mitigate unavoidable impacts. To address NEPA in airport development, FAA issued Order 1050.1E, Environmental Impacts: Policies and Procedures, and FAA Order 5050.4b, National Environmental Policy Act Implementing Instructions for Airport Actions. These documents identify three project categories: Actions which are Categorically Excluded ("CatEx"); Actions requiring an Environmental Assessment ("EA"); and Actions requiring an Environmental Impact Statement ("EIS").

1.4 Need for Environmental Assessment

The projects described above would normally be considered to be CatEx per Paragraph 5-6.4e or 5-6.4f of FAA Order 1050.1F. Because each project will occur within mapped Priority Habitat for state-listed bird species as determined by NHESP (see Figure 1-4), there are "Extraordinary Circumstances" assigned to each project. The Massachusetts Endangered Species Act ("MESA") is implemented by Division of Fisheries and Wildlife ("DFW") NHESP. MESA protects rare species and their habitats by prohibiting the "Take" of any plant or animal species listed as Endangered, Threatened, or of Special Concern by the



Plymouth Airport Plymouth, Massachusetts

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Figure 1-3
Proposed Conditions Plan

DFW. The statute protects habitat as well as individual plants and animals listed by the Division as Endangered, Threatened, or Special Concern.

As part of the implementation of MESA, NHESP is responsible for reviewing projects and providing and maintaining maps that identify protected species habitat. These maps are available in a statewide paper atlas and GIS format (the "Atlas"). Shown on these maps are two types of protected species habitat. These habitat types include Priority Habitat for State Protected Species ("PH") and Estimated Habitats for Rare Wildlife ("EH"). PH includes habitats for wetland and non-wetland wildlife and plant species. EH includes habitat for wetland dependent wildlife (animal) species only and is intended for use by both the NHESP and local Conservation Commissions during the review of projects subject to the Wetlands Protection Act.

"Extraordinary Circumstances" are assigned to each project as per Environmental Order 5050.4 702a and an Environmental Assessment is required.

> *A normally categorically excluded action involving extraordinary circumstances. This is an action that is normally categorically excluded, but that the responsible FAA official deems appropriate for an EA due to an extraordinary circumstance. Here, the official would require an EA to more thoroughly analyze and understand the severity of the proposed action's environmental impacts relative to applicable extraordinary circumstance(s).*

Environmental Order 1050.1F Section 502b (3) which reads:

> *An impact on natural, ecological, or scenic resources of Federal, state, tribal, or local significance (e.g., federally listed or proposed endangered, threatened, or candidate species, or designated or proposed critical habitat under the Endangered Species Act, 16 U.S.C. §§ 1531-1544);*

Therefore, the Project falls under the category of Extraordinary Circumstances and an Environmental Assessment is required.

1.5 Detailed Descriptions of Proposed Master Plan Projects

All Projects will result in impacts to state-listed bird species habitat which will be mitigated through the preservation and management of grassland habitat on the Airport.

1.5.1 Taxiway D Extension

Taxiway D is a 1,200-foot long partial parallel taxiway that connects Taxiway K to Taxiway S and Runway 15-33. It provides access from hangars located on the south side of the Airport along the Gate 6 access road, including the Cape Cod Community College hangar.

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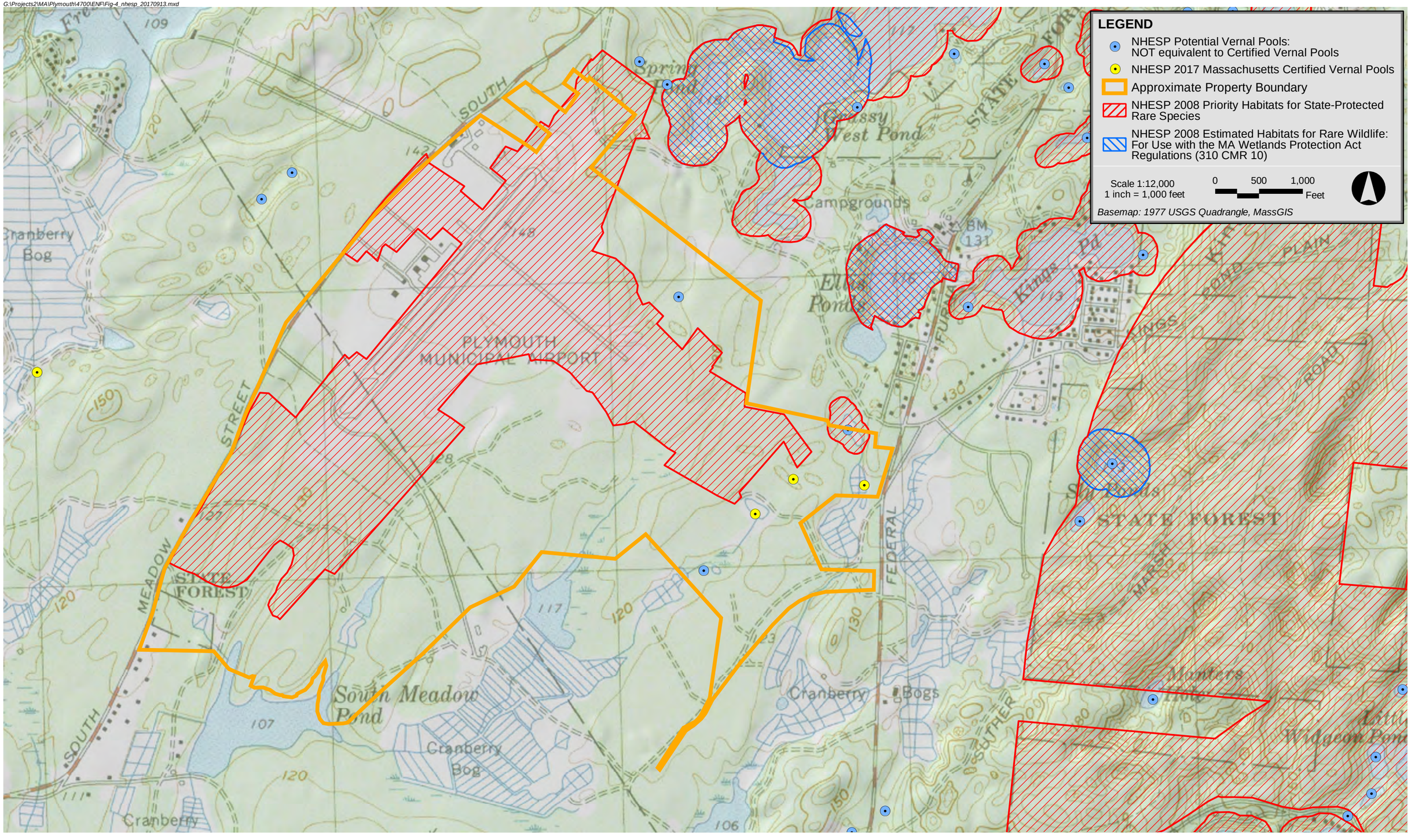

Plymouth Airport **Plymouth, Massachusetts**

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Figure 1-4
NHESP Mapping

Taxiway D will be extended by 1,270 feet to the northeast such that it aligns with the 24-end of Runway 6-24 and pilots are able to utilize the additional length of the Runway for take-off. The extension will add approximately 2.4 acres of new pavement plus 1.81 acres of other temporary land disturbance comprised of grading, yielding a total of 4.22 acres of new land disturbance within mapped Priority Habitat for state-listed bird species. Required lighting, markings and signage will also be constructed.

1.5.2 Shift Taxiway S

Taxiway S will be relocated 15 feet to the south to meet the 240-foot runway separation criterion for B-II[1] aircraft as specified in FAA Advisory Circular ("AC") 150/5300-13A. The relocation and width reduction will relocate 1.06 acres of pavement, thereby reducing the width of the Taxiway by 5-ft over the length of the taxiway. This would result in temporary disturbance of 0.48 acres of land within mapped Habitat. This relocation would align the newly constructed and extended portion of Taxiway S (2015-2016) with the existing Taxiway. The new pavement will be a result of adjusting fillets to meet the taxiway design criteria as described in AC 150/5300-13A. This work will occur within mapped state-listed bird species Habitat. See Figure 1-4.

1.5.3 New Hangar Space

106,300 square feet of new hangar space and 47,500 square feet of associated parking and apron space would be developed in two separate areas: north of the Gate 6 Access Road in an existing cleared area inside the security fence and north of Gate 3. Hangar types and sizes will be determined by the individual developer(s), similar to the existing hangar development. Any hangar needs identified after this Project will be re-evaluated to determine if additional hangar space is necessary as the forecasted demand may not meet actual demand. This work will occur within mapped state-listed bird species Habitat.

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[1] To determine which standards apply to an airport, a design aircraft is identified and an Airport Reference Code is determined. The design aircraft is generally the fastest and largest aircraft having more the 500 annual operations at an airport. The ARC relates to the speed and wingspan of the design aircraft. The ARC has two components. The first component of the ARC, depicted by a letter, is the Aircraft Approach Category, which relates to aircraft speed. The second component, depicted by a Roman numeral, is the Airplane Design Group, which relates to the airplanes wingspan. The ARC is the basis for determining the standards that must be met. The identification of the design aircraft and the determination of the ARC were made during the Airport Master Plan process.

1.5.4 New Taxilane and Apron Space

To serve future hangars along Taxiway S, a new taxilane and apron space to Taxiway S will also be developed totaling 3.0 acres of new land disturbance, of which is 1.85 acres of new pavement and 1.15acres is temporary land disturbance comprised of grading within mapped Habitat. All temporarily disturbed areas will be restored in placed upon the completion of construction.

1.5.5 Taxiway E Extension

Taxiway E will be extended by 300 feet to the northeast such that it aligns with the 24-end of Runway 6-24 and pilots are able to utilize the full additional length of the Runway. The extension will add approximately 0.55 acres of new pavement plus 0.55 acres of temporary disturbance. Required lighting, markings and signage will also be constructed. Other temporary land disturbance comprised of grading will occur, yielding a total of 1.1 acres of new land disturbance within mapped Priority Habitat for state-listed bird species.

1.5.6 Re-designate Runway 24 stopway to displaced threshold

The existing paved stopway at the ends of Runway 24 will be re-designated to identify a displaced threshold. This runway extension will require a change in pavement markings and signage. No land alterations or additional pavement will be required as a result of this change in designation and use of the stopway. This modification will allow current aircraft that use the airport an additional 300 feet to use for take-off when departing Runway 24 to the southwest.

The Runway 24 stopway was constructed in 2016 in order to provide additional stopping area in the event of an aircraft overrun. However, with the existing 300 feet of stopway/pavement length available toward the northeast, airport management has found that more pilots elect to use the northeast takeoff direction (Runway 6) more often than the southwest. This imbalance has placed more takeoffs over the more populated West Plymouth neighborhoods. It is not consistent with the Airport's goal of sharing (balancing) takeoffs in all four directions. The Airport's goal is to avoid concentrating aircraft noise over any one part of the community thus being as "fair" as possible.

The redesignation of the stopway to displaced threshold will allow departing aircraft to use the 300 foot stopway pavement on Runway 24 which will increase the takeoff distance available on that southwest runway. This runway extension will accomplish two things:

1. 1 Pilots will have <u>exactly</u> the same amount of runway when departing to the southwest as to the northeast (in the event of an emergency abort); and

2. Aircraft can obtain a higher altitude while still over airport property before they are out over the neighboring community.

This new plan will fulfill the Airport's noise abatement and safety goals. It is important to emphasize that this extension will have no additional pavement being added. This pro-active change will help with reducing aircraft noise and supports the Airport's sincere efforts to be a good neighbor The agreement to add stopways to the Project was a compromise reached by the Plymouth Airport Advisory Group and the Airport Commission to improve safety, as they improved the margin of safety at the Airport but not as greatly as extending Runway 6-24 to 5,500 feet would do to meet FAA criteria for the Airport's design aircraft.[2] The 5,500 foot unconstrained length for Runway 6-24 is supported and documented in the 2011 Master Plan Update.

1.6 Project Timeline

Following are the expected construction phases for the discrete projects described above:

Phase I: Construct taxiway D extension, Gate 3 hangar, and taxiway E extension. Pavement marking to redesignate Runway 15 end.

Phase II: Construct 6 hangars along taxilane A. The hangars will be built as necessary to meet the needs of individual developers.

Phase III: Relocate taxiway S to meet FAA required runway separation distance requirements, i.e. it will be relocated 15 feet south west to meet the required separation distance. Taxiway S will also be reduced from the existing 40 foot width to a standard 35 foot width.

Phase IV: Construction of a taxilane and apron southwest of taxiway S. Pavement marking to redesignate Runway 15 and 24 ends.

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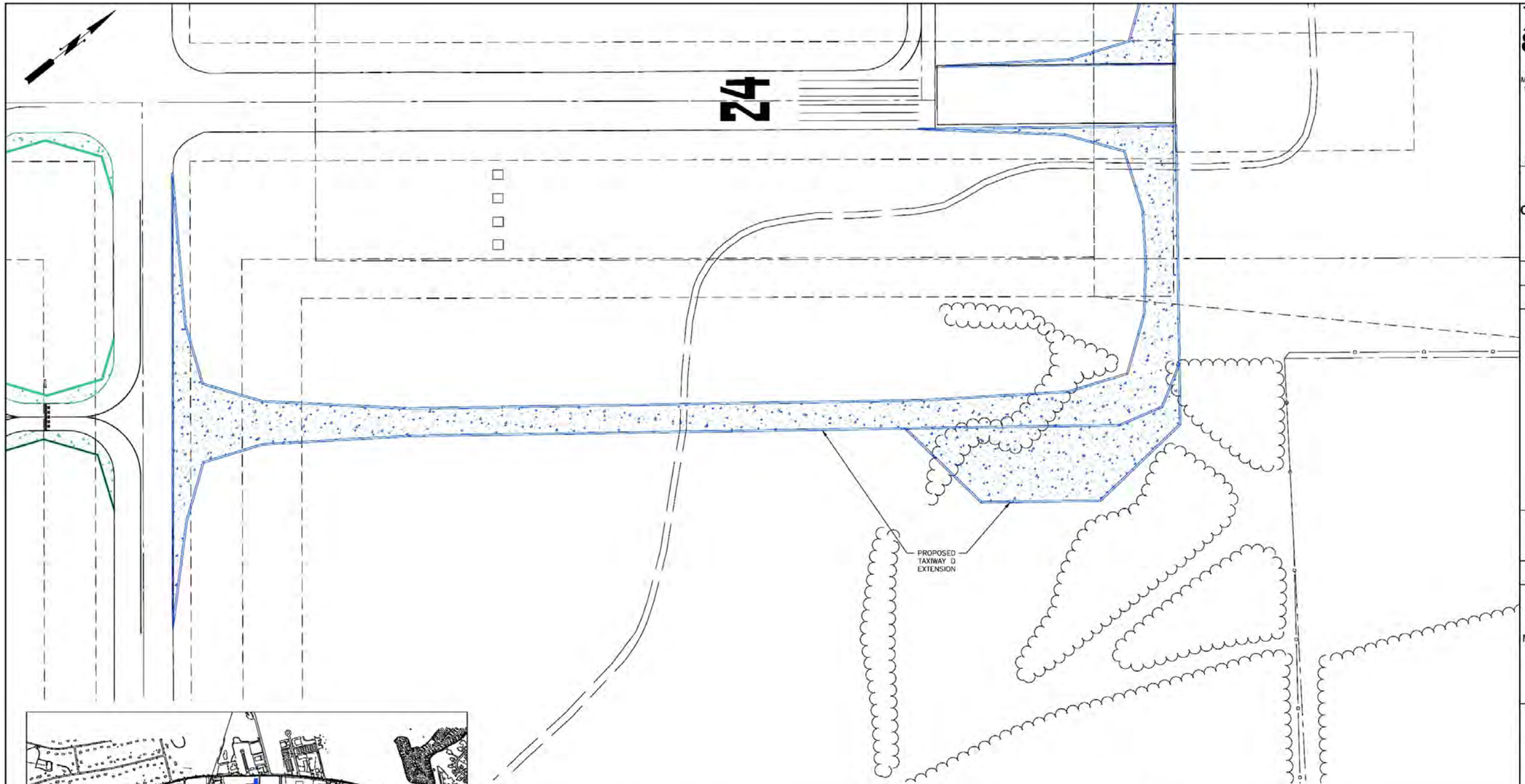
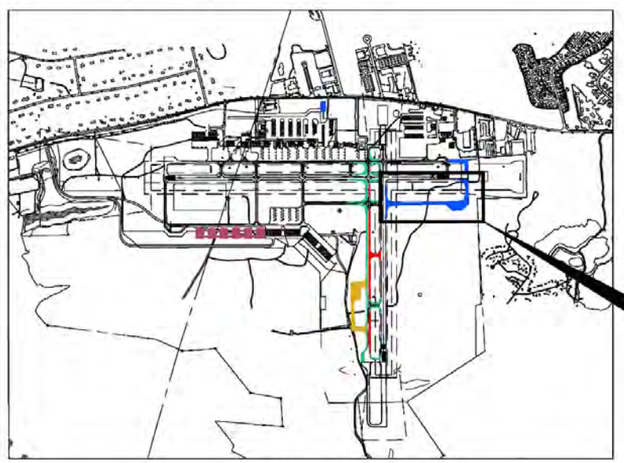
[2] Please refer to the Draft and Final EA/EIR published on August 31, 2012 and March 15, 2013 for a detailed discussion on the decision to add stopways and the resulting safety improvements.[3] Using 2007 as the base year for this model is a conservative approach. There were more aircraft operations in 2007 than in 2011, which saw a significant decline in operations due to the economic slowdown.





LOCUS MAP
SCALE: 1" = 1000'

Project Phase Impact	Permanent	Temporary
TAXIWAY D EXTENSION EASTWARD TO END OF RW 24 STOPWAY	2.41 ACRES	1.81 ACRES

Phase	Color	Task
Phase I		Taxiway D Ext. Taxiway E Ext. Gate 3 Hangar
		Remove Pavement
Phase II		Hangar Construction
Phase III		Relocate Taxiway S
Phase IV		Taxilane & SW Apron Construction

GRAPHIC SCALE
0 30 60 120

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PROFESSIONAL SEAL

NOT FOR CONSTRUCTION PRELIMINARY PLANS

NO.	DATE	DESCRIPTION	BY	CK'D

PLYMOUTH MUNICIPAL AIRPORT
PLYMOUTH
MASSACHUSETTS

ENVIRONMENTAL PERMITTING FOR TAXIWAY D EXTENSION

SHEET TITLE

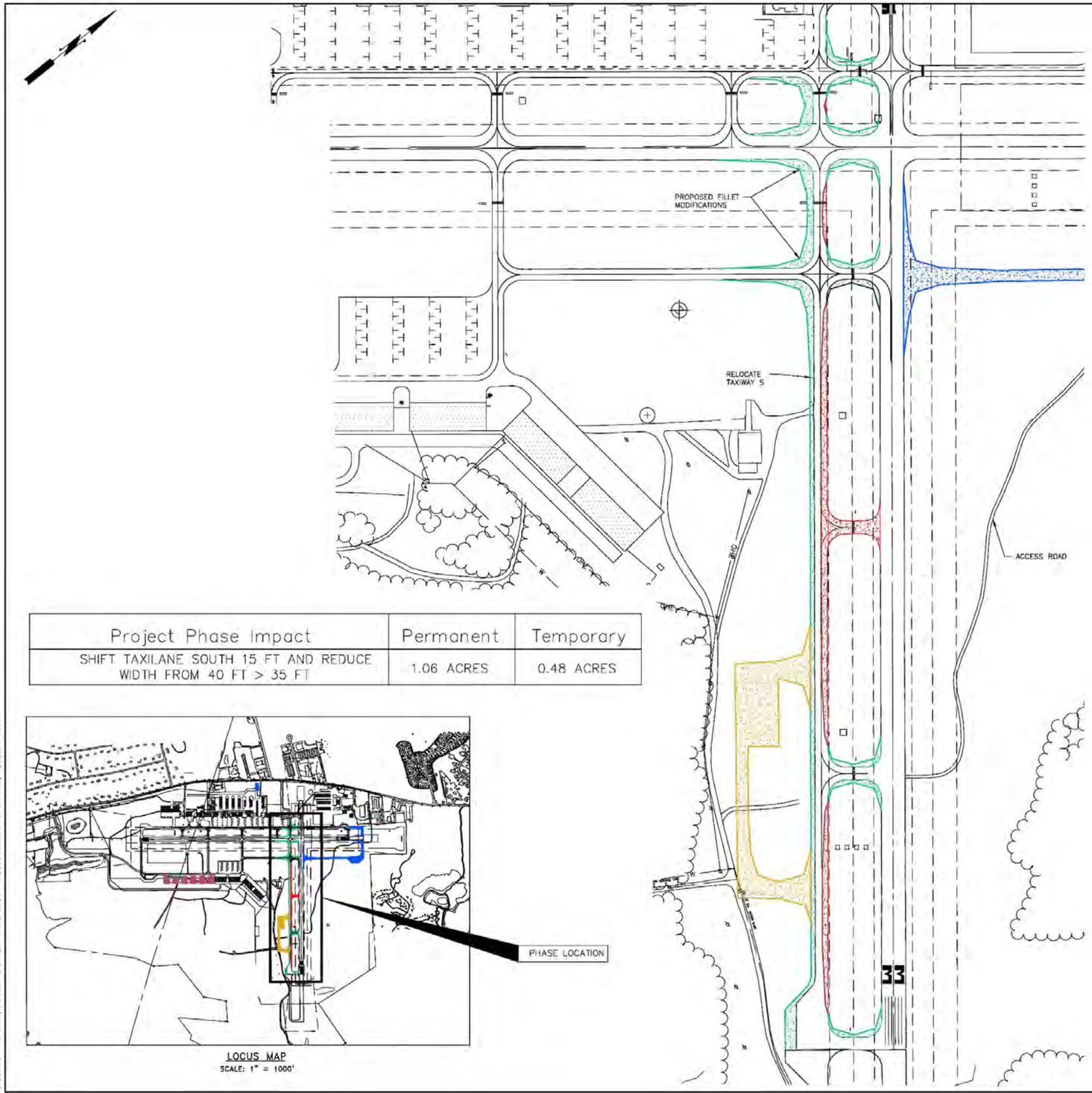
TAXIWAY D PROPOSED CONDITIONS PLAN

DRAWN BY	DATE
	JAN. 2017
CHECKED BY: JAA	D&K PROJECT #: 323510X
PROJ. ENG.: MCG	D&K ARCHIVE #

SHEET NUMBER

A-4.2

Plymouth Airport Plymouth, Massachusetts



Project Phase Impact	Permanent	Temporary
SHIFT TAXILANE SOUTH 15 FT AND REDUCE WIDTH FROM 40 FT > 35 FT	1.06 ACRES	0.48 ACRES

Phase	Color	Task
Phase I		Taxiway D Ext. Taxiway E Ext. Gate 3 Hangar
		Remove Pavement
Phase II		Hangar Construction
Phase III		Relocate Taxiway S
Phase IV		Taxilane & SW Apron Construction

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PROFESSIONAL SEAL

NOT FOR CONSTRUCTION PRELIMINARY PLANS

NO.	DATE	DESCRIPTION	BY	CK'D

PLYMOUTH MUNICIPAL AIRPORT
PLYMOUTH
MASSACHUSETTS

ENVIRONMENTAL PERMITTING FOR TAXIWAY D EXTENSION

SHEET TITLE

TAXIWAY S PROPOSED CONDITIONS PLAN

DRAWN BY	DATE
	JAN. 2017
CHECKED BY: JAA	D&K PROJECT #: 32351OX
PROJ. ENG.: MCG	D&K ARCHIVE #:

SHEET NUMBER

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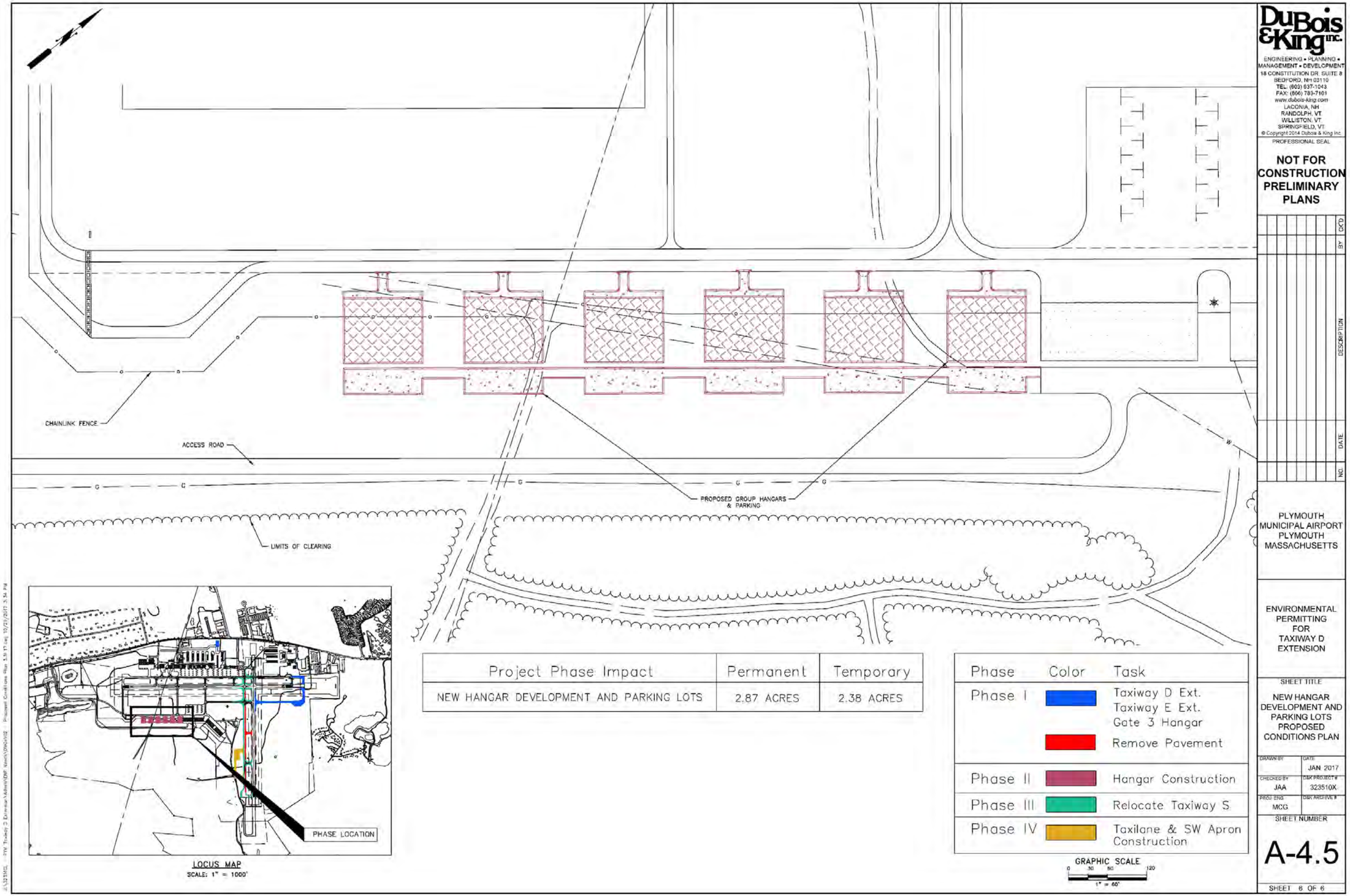
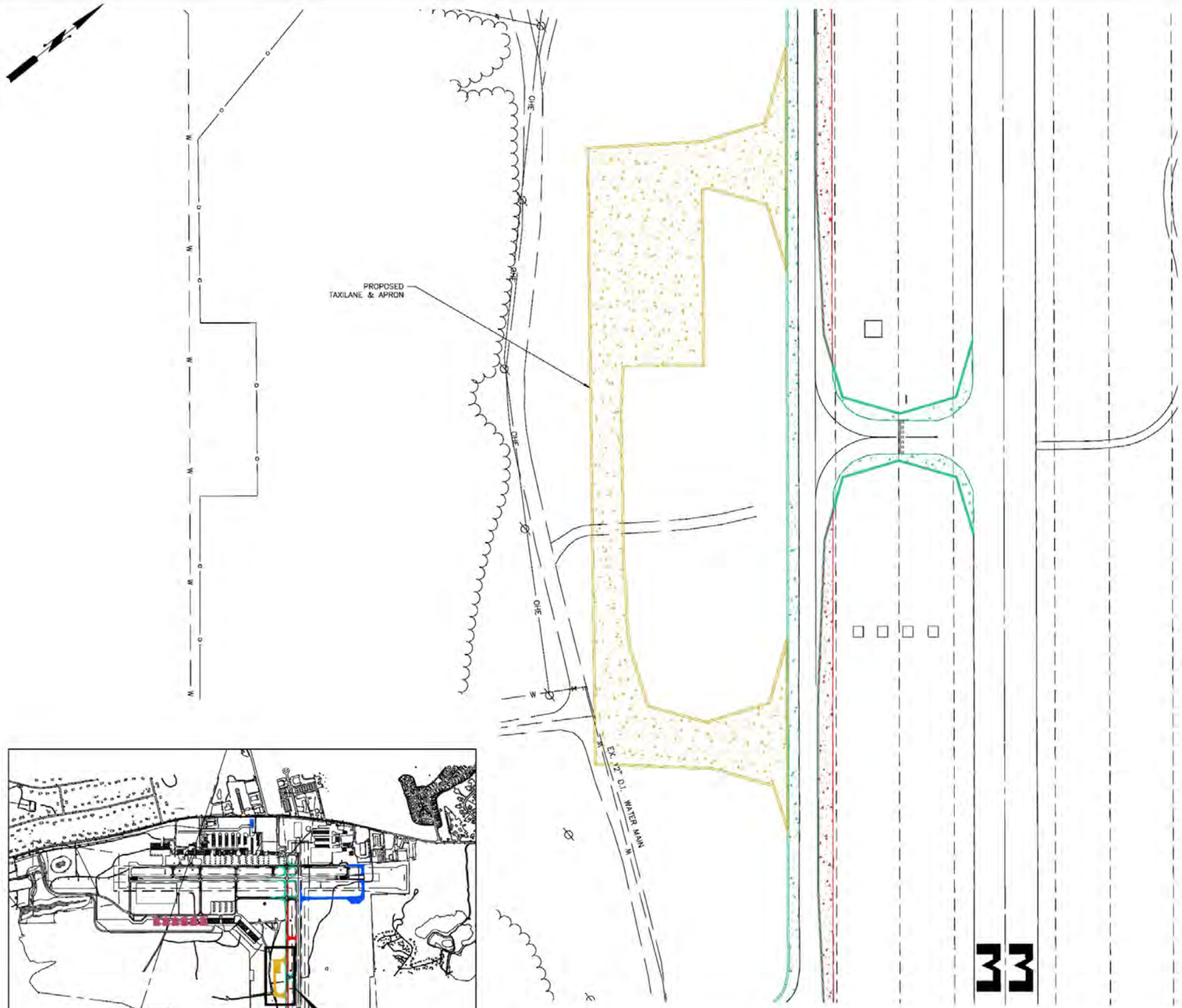
SHEET 4 OF 6



Plymouth Airport Plymouth, Massachusetts

Figure 1-7

New Hangar Space



Project Phase Impact	Permanent	Temporary
NEW TAXILANE AND APRON SPACE ADJ. TO TW S	1.84 ACRES	1.13 ACRES

Phase	Color	Task
Phase I		Taxiway D Ext. Taxiway E Ext. Gate 3 Hangar
		Remove Pavement
Phase II		Hangar Construction
Phase III		Relocate Taxiway S
Phase IV		Taxilane & SW Apron Construction

GRAPHIC SCALE
0 30 60 120
1" = 60'

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PROFESSIONAL SEAL

NOT FOR CONSTRUCTION PRELIMINARY PLANS

NO.	DATE	DESCRIPTION	BY	CK'D

PLYMOUTH MUNICIPAL AIRPORT
PLYMOUTH
MASSACHUSETTS

ENVIRONMENTAL PERMITTING FOR TAXIWAY D EXTENSION

SHEET TITLE

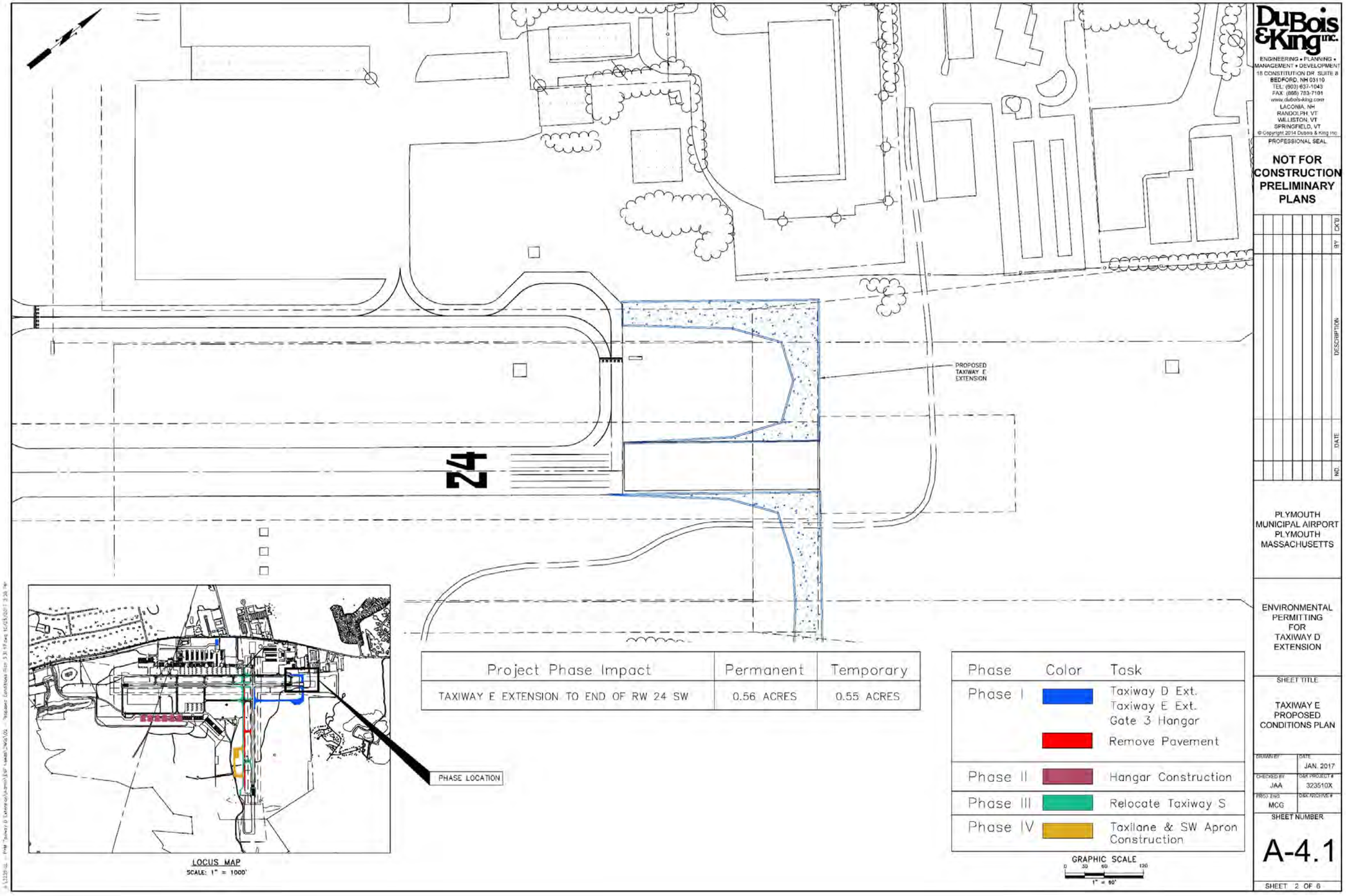
TAXILANE & APRON ADJ. TO TAXIWAY S PROPOSED CONDITIONS PLAN

DRAWN BY:	DATE: JAN. 2017
CHECKED BY: JAA	D&K PROJECT #: 323510X
PROJ. ENG.: MCG	D&K ARCHIVE #:

SHEET NUMBER

A-4.4

SHEET 5 OF 6



Project Phase Impact	Permanent	Temporary
TAXIWAY E EXTENSION TO END OF RW 24 SW	0.56 ACRES	0.55 ACRES

Phase	Color	Task
Phase I		Taxiway D Ext. Taxiway E Ext. Gate 3 Hangar
		Remove Pavement
Phase II		Hangar Construction
Phase III		Relocate Taxiway S
Phase IV		Taxilane & SW Apron Construction

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PROFESSIONAL SEAL

NOT FOR CONSTRUCTION PRELIMINARY PLANS

NO.	DATE	DESCRIPTION	BY	CK'D

PLYMOUTH MUNICIPAL AIRPORT
PLYMOUTH
MASSACHUSETTS

ENVIRONMENTAL PERMITTING FOR TAXIWAY D EXTENSION

SHEET TITLE
TAXIWAY E PROPOSED CONDITIONS PLAN

DRAWN BY	DATE
	JAN. 2017
CHECKED BY	D&K PROJECT #
JAA	323510X
PROJ. ENG	D&K ARCHIVE #
MCG	

SHEET NUMBER
A-4.1
SHEET 2 OF 6

2.0 PURPOSE AND NEED

As noted above, the Airport finalized its Master Plan in 2011 which recommended multiple projects to (1) enhance the margin of safety at a busy airport, (2) comply with FAA planning and design standards and (3) meet future airport demand.

2.1 Taxiway D Extension

Taxiway D currently is only a partial taxiway that provides access to Taxiways K and S. It does not provide access to the either end of the main airport runways for takeoff and landings. Furthermore, if Runway 6-24 is the active runway, aircraft are required to cross the active runway in order to access 24-end of the runway itself. Extending Taxiway D to reach the 24-end of the runway would eliminate this potential safety concern.

2.2 Shift Taxiway S

Taxiway S currently does not meet FAA runway separation requirements for taxiway design criteria as described in AC 150/5300-13A. The current separation is 225 feet, the FAA planning standard is a 240-foot separation. The newly constructed portion of Taxiway S meets this separation requirement. Shifting Taxiway S and reducing the width from 40 feet to 25 feet will meet the FAA planning standards and allow the taxiway to safely accommodate the Airport's design aircraft (the Hawker 850XP).

2.3 New Hangar Space

The Master Plan recognized a current and long-term deficiency in aircraft hangar space availability at the Airport throughout the 20-year planning period. Expanded hangar development areas would increase the amount of space potentially available for landside development and would permit the Airport to meet its projected future demand for aircraft hangars.

Currently the Airport has a total hangar space capacity of 392,370-square feet. This includes both group and maintenance hangars. According to the 2011 Master Plan Update, the 20-year forecasted demand for total hangar space is 334,600-square feet. This Project proposes to construct 7 new hangars totaling approximately 77,650 s.f. of new hangar space yielding 4.2 acres of total land disturbance. Since the Airport is currently at capacity, this increase in hangar space would allow the Airport flexibility in attracting new businesses.

2.4 New Taxilane and Apron Space

New apron space would serve to provide a more inexpensive location to store one's aircraft than hangar space. Currently, there are not enough tie-down spaces to meet demand. The addition of 25 tiedown spaces provided in this new apron area would enhance the Airport's ability to attract new based aircraft.

2.5 Taxiway E Extension

Taxiway E is currently on only full-length parallel taxiway for Runway 6-24. With the added length of this Runway at the 24-end with the recently constructed stopways, the taxiway no longer extends to the end of the Runway. Extending Taxiway E would enable aircraft to reach the 24-end of Runway 6-24 and utilize the full length of the runway with the displaced threshold if necessary (see below).

2.6 Re-designate Runway 24 Stopway as Displaced Thresholds

The current designation of "stopway" of the recently constructed 300-foot extensions at the 24-end allow for use of this area for emergency use for landings only and the length is not available for use in take-offs. With the existing 300 feet of stopway/pavement length available toward the northeast, airport management has found that more pilots elect to use the northeast takeoff direction (Runway 6) more often than the southwest. This imbalance has placed more takeoffs, and thus more noise, over the more populated West Plymouth neighborhoods. It is not consistent with the Airport's goal of sharing (balancing) takeoffs in all four directions. The Airport's goal is to avoid concentrating aircraft noise over any one part of the community thus being as "fair" as possible.

In 2017, Airport users requested that the Plymouth Airport Commission modify the Runway 24 stopway to displaced threshold so that the stopway could be utilized for take-off. The redesignation of the stopway to displaced threshold will allow departing aircraft to use the 300 foot stopway pavement on Runway 24 which will increase the takeoff distance available on that southwest runway. This runway extension will accomplish two things:

1. Pilots will have exactly the same amount of runway when departing to the southwest as to the northeast (in the event of an emergency abort); and

2. Aircraft can obtain a higher altitude while still over airport property before they are out over the neighboring community.

This new plan will fulfill the Airport's noise abatement and safety goals. It is important to emphasize that this extension will have no additional pavement being added. This pro-active change will help with reducing aircraft noise and supports the Airport's sincere efforts to be a good neighbor

3.0 ALTERNATIVES ANALYSIS

As part of the 2011 Master Plan Update, alternatives were evaluated for airfield development to provide sufficient facilities to accommodate the forecasted aviation demand and satisfy the subsequent facility requirements, meet applicable FAA design standards, and provide methods to meet local constraints and address community concerns. The alternatives evaluated in the Master Plan Update primarily considered three different runway configurations, associated airfield development, and facility requirements. Each alternative had slightly different airfield development and facility requirements, but each identified the project components discussed above, with the exception of the no built alternative. For the purposes of this EA, the merits of the runway configurations are not discussed further as they were extensively analyzed in the Draft and Final Environmental Assessment/ Environmental Impact Reports associated with the Plymouth Municipal Airport Safety Improvements (EEA#14801) and associated FAA Finding of No Significant Environmental Impact (FONSI). The preferred alternative for the safety project was constructed and is currently operational.

3.1 Taxiway D Extension

3.1.1 Full length extension

This alternative would create a second, full length taxiway for Runway 6-24, extending Taxiway D in both directions to a full length of 4,350 feet, impacting a total of xx square feet of mapped state-listed bird species Habitat. Access to either end of the Runway would be achieved directly from this taxiway. As Runway 6-24 already has a full-length taxiway, Taxiway E, and the 6-end can be accessed via Taxilane A, a full-length taxiway was determined to be unnecessary at this time.

3.1.2 No Build Alternative

Taxiway D would not be extended to Runway 6-24 and aircraft would be required to taxi on Runway 6-24 to reach the 24-end via Taxiway E. No modifications to the taxiway would occur and no additional impacts to mapped state-listed bird species Habitat would occur.

3.1.3 Preferred alternative Extend to meet 24-end

Taxiway D will be extended by 1,270 feet to the northeast such that it aligns with the 24-end of Runway 6-24 and pilots are able to utilize the additional length of the Runway. The extension will add approximately 105,000 square feet (2.40 acres) of new pavement plus 0.95 acres of other temporary land disturbance comprised of grading, yielding a total of 3.35 acres of new land disturbance within mapped Priority Habitat for state-listed bird species. Required lighting, markings and signage will also be constructed.

3.2 Taxiway S

3.2.1 No Build Alternative

This no-build alternative would not modify the separation distance between Runway 15-33 and Taxiway S. The current 225-feet between Runway 15-33 and Taxiway "S" does not meet current FAA safety standards for aircraft that use the Airport, therefore compliance with FAA safety design criteria would not be met. Because no land alterations would occur, there would be no impacts to habitat.

3.2.2 Preferred Alternative

This alternative would modify Taxiway S and fillets such that they meet current FAA safety standards by shifting Taxiway S 15-feet to the west so the runway-separation distance is the FAA-required 240-feet. Taxiway width would also be reduced. Fillets would be modified to add additional pavement at the curve to meet FAA standards as well. These alterations would result in a net decrease of new pavement of 0.56 acres.

3.3 New Hangar Development

3.3.1 Southwest Quadrant Development Alternative

For this alternative Runway 6-24 would be extended, with the resulting shift in airspaces, hangar development would be focused in the southwest quadrant of the Airport, i.e. to the southwest of Runway 15-33. This would limit the number of hangars that could fit along the Gate 6 access road. State-listed species Habitat impacts would be primarily due to apron and taxilanes needed to access these hangars, which would be outside of mapped Habitat. However, this layout would require extensive wetland impacts associated with the expanded hangar development in this area (10+ acres). This level of wetland alteration construction of this alternative would not be permittable under the MA Wetlands Protection Act, and would require a Variance permit directly from MassDEP. However, MassDEP would not consider hangar construction as a public safety concern and would be unlikely to issue a permit. Therefore, this was not selected as the preferred alternative since there are less impactful alternatives.

3.3.2 No Build Alternative

The No-Build Alternative would not construct any additional hangars. The Airport would not be able to accommodate the forecasted demand for aircraft storage nor be able to accommodate the forecasted increase in the annual service volumes of the Airport. For these reasons the "no build" alternative is not the preferred alternative.

3.3.3 Preferred Alternative

106,300 square feet of new hangar space and 47,500 square feet of associated parking and apron space would be developed in two separate areas: north of the Gate 6 Access Road in an existing cleared area inside the security fence and north of Gate 3; both areas are within mapped Habitat for state-listed species. No wetland impacts would result from the construction of these hangars as they would be both outside the wetlands as well as the 100-foot Buffer Zone thereto. Hangar types and sizes will be determined by the individual developer(s), similar to the existing hangar development. Any hangar needs identified after this Project will be re-evaluated to determine if additional hangar space is necessary as the forecasted demand may not meet actual demand.

3.4 New Taxilane and Apron Space

3.4.1 Southwest Quadrant Development

Similar to the hangar alternatives noted above under 3.3.1, for this alternative Runway 6-24 would be extended, with the resulting shift in airspaces, apron and taxilane development would be focused in the southwest quadrant of the Airport, i.e. to the southwest of Runway 15-33. However, this alternative layout would expand not only the hangar development previously noted, but also the associated taxilanes to access said hangars and the apron areas. State-listed species Habitat impacts would be primarily due to apron and taxilanes needed to access these hangars. This would require extensive wetland impacts associated with the expanded development in this area (10+ acres). Due to this level of wetland alteration, construction of this alternative would not be permittable, under the MA Wetlands Protection Act, and would require a Variance permit directly from MassDEP. However, MassDEP would not consider hangar construction as a public safety concern and would be unlikely to issue a permit. Therefore, this alternative was not selected as the preferred alternative since there are less impactful alternatives.

3.4.2 No Build Alternative

No new taxilane or apron space would be constructed on the Airport and demand would not be met for apron space.

3.4.3 Preferred Alternative

The amount of space required for aircraft parking is dependent upon the size of the aircraft and the type of parking provided. As it is assumed that 90-percent of the based single engine aircraft will be hangared in t-hanger units, the 58 tie-down positions provided in the Northeast and Southwest Quadrants accommodates the existing demand generated by the based aircraft. However, it should be noted that if t-hangar units are not constructed or if hangar rental rates are considered too high, then there would be a higher demand by based aircraft for tie-downs.

To meet future demand for additional apron space on the Airport, a new taxilane and apron space to Taxiway S will also be developed totaling 2.7 acres of new land disturbance, of which is 2 acres of new pavement and 0.7 is temporary land disturbance comprised of grading

3.5 Taxiway E Extension

3.5.1 No Build Alternative

Taxiway E would not be extended to meet the 24-end of Runway 6-24 and aircraft would be required to taxi on Runway 6-24 to reach the 24-end. No modifications to the taxiway would occur and no additional impacts to mapped state-listed bird species Habitat would occur.

3.5.2 Preferred Alternative

Taxiway E will be extended by 300 feet to the northeast such that it aligns with the 24-end of Runway 6-24 and pilots are able to utilize the full additional length of the Runway. The extension will add approximately 24,000 square feet (0.55 acres) of new pavement plus 0.2 acres of other temporary land disturbance comprised of grading, yielding a total of 0.75 acres of new land disturbance within mapped Priority Habitat for state-listed bird species.

3.6 Re-designate Runway 24 Stopway as Displaced Thresholds

3.6.1 No Build Alternative

The stopway would remain designated as such and pilots would not be allowed to utilize the stopway length in their take-off distance calculations. No operational modifications would occur.

3.6.2 Preferred Alternative

The Runway 24 stopway would be redesignated as displaced threshold resulting in a runway extension which will require a change in pavement markings and signage. No land alterations will occur as a result of this change in designation and use of the stopway. This modification will allow current aircraft that use the airport an additional 300 feet to use for take-off when departing Runway 24.

4.0 AFFECTED ENVIRONMENT

This section describes existing conditions on and near the Plymouth Municipal Airport. It identifies the resources may be affected by the proposed actions described above in Section 1. The environmental impact categories assessed include the following:

1. Wetlands;
2. Wildlife habitat including state-listed rare species habitat;
3. Stormwater management;
4. Noise; and
5. Construction period impacts.

Plymouth Municipal Airport was established in 1934. The original facility consisted of a round grass field, which has since been modified to have two paved runways. In 1938, Air Mail service was initiated with daily flights to Boston. In 1942, the airfield was purchased by the Department of the Navy for training and coastal defense during World War II. The Town of Plymouth purchased the Airport from the federal government in 1952.

Today, the Airport is a general aviation airport, providing local residents and businesses access to the National Air Transportation System. As a gateway to the community, the Airport offers an entrance point for business, recreation, and tourism. Many of the major businesses in the area and their customers use the Airport. Most of the aircraft using the facility are two- to twelve-seat single- and twin-engine aircraft. Total activity at the Airport is approximately 55,000 aircraft movements per year and has been steady for several years; an aircraft movement is either a takeoff or a landing.

Environmental concerns and possible hazards are an important consideration for any public use airport. This environmental overview takes as its guide the requirements of FAA Order 1050.1F. The following sections describe the existing conditions of the NEPA review factors that potentially may be affected by the proposed actions.

4.1 Air Quality

4.1.1 Criteria Pollutant Ambient Air Quality Data

Background air quality data and pollutant concentrations were determined from the closest available monitoring stations to the proposed development. All air quality pollutants are not monitored at every station, so data from multiple locations are typically necessary. The closest monitor is at Commercial Street in Brockton, roughly 17.7 miles northwest of the project location. However this site only samples for PM2.5. In 2015, this site was shut down and moved to 170 Clinton Street in Brockton. The next closest site is at 659 Globe Street in Fall River, roughly 30 miles southwest of the project. This site samples for SO2 and Ozone. The remaining pollutants were sampled at the Francis School (NO2, CO, and Lead) in East

Providence, roughly 30 miles west-southwest, and at the Johnson and Wales University Library (PM10) in Providence, roughly 37 miles west-southwest. A summary of the background air quality concentrations are presented in Table 4-1.

For short-term averages (24 hours or less), the highest of the yearly observations will be estimated to be the background concentration, with the exception of the $PM_{2.5}$ 24-hour value where the average of the 98th percentile concentrations was used, consistent with the short-term ambient air quality standards. The short-term ambient air quality standards are not to be exceeded more than once per year. For long-term averages, the highest yearly observation was used as the background concentration. Again, with $PM_{2.5}$, the annual background concentration is the average of the three years.

Table 4-1 Observed Regional Ambient Air Quality Concentrations

Pollutant	Averaging Time	2013	2014	2015	Background Concentration ($\mu g/m^3$)	NAAQS	Percent of NAAQS
SO_2 [1][6]	1-Hour [5]	162.2	35.1	25.9	74.4	196.0	38%
	3-Hour	155.4	33.0	21.7	155.4	1300.0	12%
	24-Hour	30.7	13.1	10.2	30.7	365.0	8%
	Annual	6.2	3.9	1.9	6.2	80.0	8%
PM-10	24-Hour	29	31	34	34.0	150.0	23%
	Annual	14.7	14.1	16.8	16.8	50.0	34%
PM-2.5	24-Hour [5]	16.7	12.2	18.8	15.9	35.0	45%
	Annual [5]	6.6	5.7	5.7	6.0	12.0	50%
NO_2 [3]	1-Hour [5]	71.8	69.9	79.5	73.8	188.0	39%
	Annual	14.1	13.7	14.4	14.4	100.0	14%
CO [2]	1-Hour	2337.8	1879.4	2005.5	2337.8	40000.0	6%
	8-Hour	1489.8	1375.2	1260.6	1489.8	10000.0	15%
Ozone [4]	8-Hour	153.1	117.8	137.4	153.1	147.0	104%
Lead	Rolling 3-Month	0.016	0.016	0.015	0.016	0.15	11%

Notes:
From 2013-2015 EPA's AirData Website
[1] SO_2 reported ppb. Converted to $\mu g/m3$ using factor of 1 ppm = 2.62 $\mu g/m3$.
[2] CO reported in ppm. Converted to $\mu g/m3$ using factor of 1 ppm = 1146 $\mu g/m3$.
[3] NO_2 reported in ppb. Converted to $\mu g/m3$ using factor of 1 ppm = 1.88 $\mu g/m3$.
[4] O_3 reported in ppm. Converted to $\mu g/m3$ using factor of 1 ppm = 1963 $\mu g/m3$.
[5] Background level is the average concentration of the three years.
[6] The 24-hour and Annual standards were revoked by EPA on June 22, 2010, Federal Register 75-119, p. 35520.

4.1.2 Attainment Status

Section 107 of the 1977 Clean Air Act Amendment requires that the U.S. Environmental Protection Agency ("EPA") publish a list of all geographic areas in compliance with the National Ambient Air Quality Standards ("NAAQS") and those areas not attaining the NAAQS. Areas not in NAAQS compliance are deemed non-attainment areas. Areas that have insufficient data to make a determination are deemed unclassified, and are treated as being attainment areas until proven otherwise. An area's designation is based on the data collected by the state monitoring network on a pollutant-by-pollutant basis.

Plymouth Municipal Airport is located in Plymouth County. The attainment status for each pollutant is shown in Table 4-2.

Table 4–2 Plymouth County Attainment Status

Pollutant	Status
Sulfur dioxide (SO_2) (all averaging times)	Better than national standards (Attainment)
Carbon monoxide (CO) (1- and 8-hour)	Unclassifiable/Attainment
Ozone (O_3) (1- and 8-hour)	Nonattainment (Serious for 1-hour and Moderate for 8-hour)
Particulate matter (PM10) (24-hour)	Unclassifiable
Nitrogen dioxide (NO_2) (annual)	Better than national standards (Attainment)
Particulate matter (PM2.5) (annual and 24-hour)	Unclassifiable/Attainment
Source: 40 CFR 81.322 [3]The 1-hour ozone standard is revoked effective June 15, 2005 for all areas in Massachusetts.	

4.1.3 State Implementation Plan

Massachusetts is currently designated as nonattainment for ozone. States with nonattainment areas are required to prepare plans outlining realistic methods to do so in the required timeframe, to show their intent to meet the NAAQS in a timely manner. Massachusetts has an approved State Implementation Plan for 1-hour ozone (from 2002) and an approved State Implementation Plan for 8-hour ozone (from 2008).

4.2 Coastal Resources

Plymouth Municipal Airport is not located within a designated coastal zone according to Massachusetts Coastal Zone Management mapping. No coastal barriers, significant coastal fish and wildlife habitat, or coral reef ecosystems are located on or adjacent to the Airport property.

4.3 Surrounding Land Uses

4.3.1 Town of Plymouth

The Airport is located on the western border of the Town of Plymouth, and approximately 491 of the Airport's 735 acres are located within the Town of Plymouth. Developed land surrounding the Airport includes areas adjacent to South Meadow Road and areas along Federal Furnace Road to the east (see Figure 1-1). Residentially developed land within the Town of Plymouth includes areas adjacent to South Meadow Road beneath the Runway 24 approach and adjacent to the Runway 33 approach along Federal Furnace Road to the east. The approach to Runway 15 contains some industrial development, which is considered compatible land use. The approach to Runway 33 contains open space, Myles Standish State Park, and Southers Marsh Golf Club which are considered to be compatible land uses with the Airport development and operations. As a result, the Airport has limited non-compatible land uses encroaching upon the Airport (i.e. residential). However, additional development in the immediate vicinity of the Airport and Airport approaches could increase the level of non-compatible land uses. Three of the four Airport approaches extend over the Town of Plymouth.

Existing developed land within the Town of Plymouth located to the north and east of Airport property includes cranberry bogs, office space associated with the Airport, residential development, and industrial and commercial development along South Meadow Road. Residential land uses adjacent to the Airport are zoned either Rural Residential (RR) or Residential Medium Lot (R-25). Rural Residential zoning requires a minimum lot size of 120,000 square feet or 2.75 acres, while R-25 zoning requires a minimum lot size of 25,000 square feet or 0.57acres. The area zoned R-25 is found to the east of the Airport on the approach to Runway 24. Federal Furnace Elementary School (Pre-Kindergarten to 5th grades) is located near the Airport approximately one-mile southeast of the threshold of Runway 33.

4.3.2 Town of Carver

Approximately 244 acres of the Airport are within the Town of Carver. The non-precision instrument approach to Runway 6 extends southwest over portions of the Town of Carver. Parcels of land within Town of Carver in the approach to Runway 6 primarily include land zoned as Residential Agriculture ("RA"); however, the southwestern portion of the Approach Surface includes land zoned General Business ("GB"). Large parcels of land beneath this approach service are in agricultural use as cranberry bogs. There is residential development beneath the Approach Surface with neighborhoods located off South Meadow Road. Residential Agriculture zoning allows residential development with a minimum lot size of 60,000 square feet (1.37 acres Carver Middle School, located off South Meadow Road, is approximately 1.5 miles southwest of the Airport.

4.3.3 Land Owners

Land to the east of the Airport consists of large blocks owned by commercial cranberry bog operations such as Edgewood Bogs, LLC, and the privately-owned Southers Marsh Golf Club. Further east of Southers Marsh lies the state-owned Myles Standish State Forest, 27 square miles of protected land managed by the Department of Conservation and Recreation. To the south of the Airport is the manufactured home community of South Meadow Village, and farther south is the Great Meadow Cedar Swamp, conservation land owned by the Carver Conservation Commission. There are additional commercial cranberry bog operations located to the south of the Airport. To the southwest and west of the Airport along South Meadow Road are residential properties. West of the Airport's main hangar area on South Meadow Road are the Village Links Golf Course, Plymouth Memorial Cemetery, a Tedeschi Food Shop/Dunkin Donuts, a storage facility and a sign manufacturing business, among other commercial enterprises. North of these businesses are several parcels totaling over 100 acres of undeveloped land belonging to the Plymouth Rod and Gun Club. Adjacent to this parcel to the north is another 18-acre piece of undeveloped land zoned for commercial use. On the east side of South Meadow Road adjacent to the Airport are a number of businesses, including an auto repair shop, a car dealer, and a restaurant. North of the Airport is a 30-acre parcel owned by a private land trust. Farther north is a 40-acre parcel owned by the Plymouth Department of Public Works and residential development.

4.4 Department of Transportation Act: Section 4(f)

Section 4(f) of the Department of Transportation Act of 1966 protects certain land uses from DOT projects. The Project does not involve impacts to land regulated under Section 4(f). Myles Standish State Forest is the only state-protected land near Plymouth Municipal Airport. The state forest is located in the approach to Runway 33, approximately two-thirds of a mile southeast of the Runway 33 threshold. The Town of Plymouth has local parks near the airfield, but none are located within or adjacent to the Project area. There is open space located east of the Runway 24 threshold that is designated as conservation land on Town land use plans and open space north of the Runway 15 threshold that is held for recreation. The Town of Carver owns land located southeast of the Runway 6 threshold that is marked as conservation and recreation land on the Town's Land Use Plan. These open space parcels are shown on Figure 4-1.

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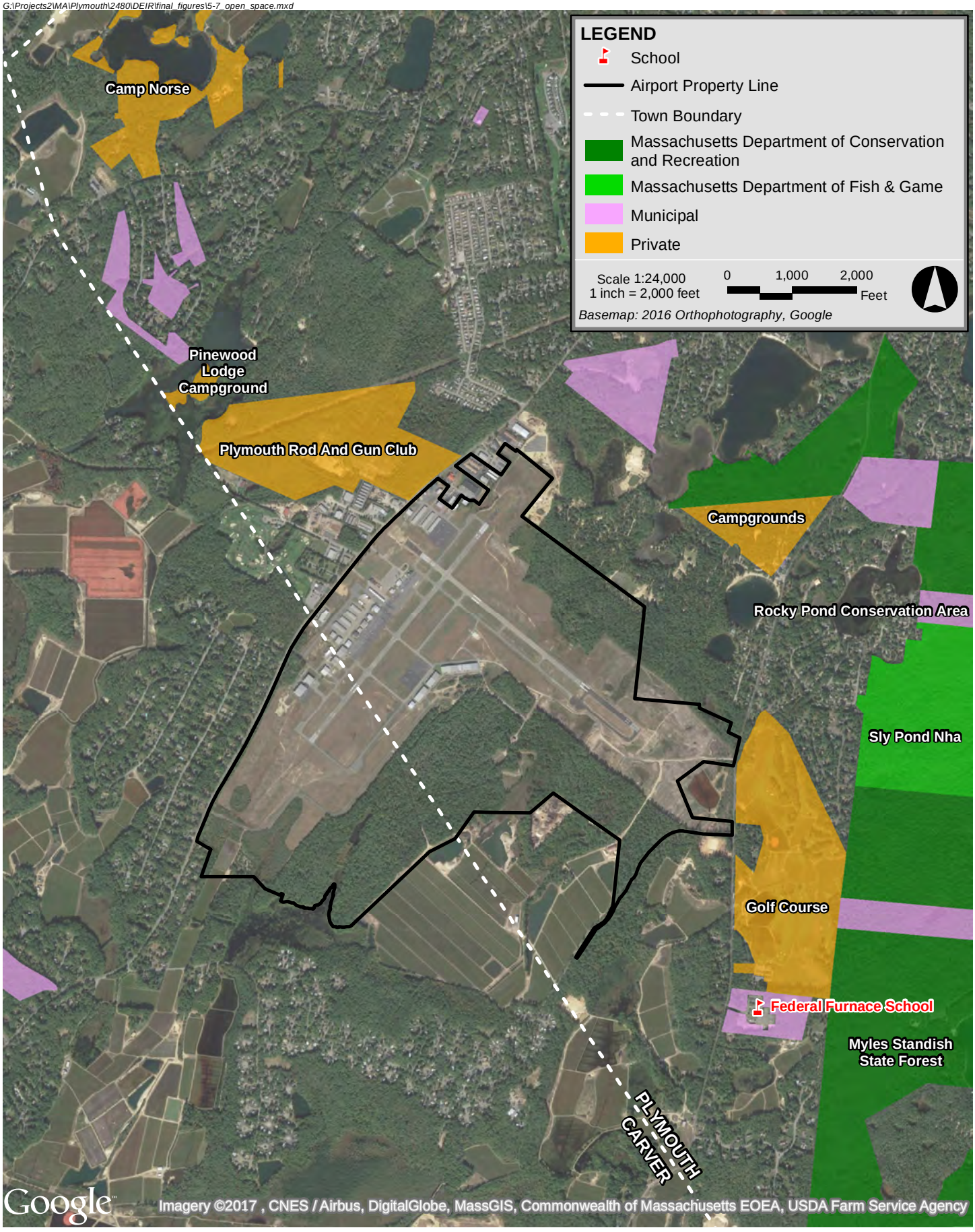

Plymouth Airport Plymouth, Massachusetts

Epsilon Associates Inc.

Figure 4-1

Protected Open Space and Schools

4.5 Farmlands

Soils that exhibit good drainage are typically considered by the U.S. Department of Agriculture Soil Conservation Service to be prime farmland. The Farmland Protection Policy Act ("FPPA") requires coordination with the local office of the Natural Resources Conservation Service ("NRCS") if the proposed project entails irreversible conversion of prime farmland to nonagricultural uses. Farmland subject to this requirement does not have to be currently used for cropland; it may also be forestland or pastureland, but not urban or built-up land. This requirement is intended to monitor the impact that federal programs or federally funded projects have on the conversion of this resource. The Farmland Protection Policy Act (7 U.S.C. 4201-4209) (PL 97-98 amended by section 1255 of the Food Security Act of 1985, PL 99-198) addresses the conversion of farmland to non-agricultural uses. In Massachusetts, Executive Order 193 (March 19, 1981) is likewise intended to avoid or minimize the conversion of farmland to non-agricultural uses. Two locations on the Airport are classified as Prime farmland however none of those areas are in, or have been in, agricultural production since the Airport started operating.

The Project area contains soils that are considered farmland of statewide importance and farmland of unique importance, including "Farmland of Statewide Importance" soils like the Deerfield series and "Farmland of Unique Importance" soils like the Tihonet series. Project areas proposed for development are not currently in agricultural use and therefore will not have any impact. A small area of farmland soils is proposed for grassland habitat mitigation and will not have any impact on the potential for future use as farmland. See Figure 4-2 for a Soils Map.

4.6 Biological Resources (Fish, Wildlife, and Plants)

Fish, wildlife, and plants at the Airport are protected under the following federal and state statute and regulations.

4.6.1 Federally Listed Species

Prior consultation with the U.S. Fish and Wildlife ("USFWS") indicated that, no federally-protected species are known to be present on the Airport. Subsequent to that consultation the USFWS issued the Final Rule on the Northern Long-Eared Bat (*Myotis septentrionalis*) ("NLEB") in the January 14, 2016 edition of the Federal Register (V. 81, No. 9, page 1900 – 1922) titled "Endangered and Threatened Wildlife and Plants; 4(d) Rule for the Northern Long-Eared Bat" (i.e., the "Final Rule"). The purpose of the Final Rule is to prohibit the intentional, or purposeful, take of NLEB throughout its range; except for specific instances to protect human health, property, or for scientific and conservation purposes. Take of NLEB is prohibited in hibernacula throughout its range, in areas affected by white nose syndrome, unless permitted by the USFWS. Incidental take of NLEB outside of hibernacula from otherwise lawful activities, other than tree clearing, is not prohibited by the Final Rule.

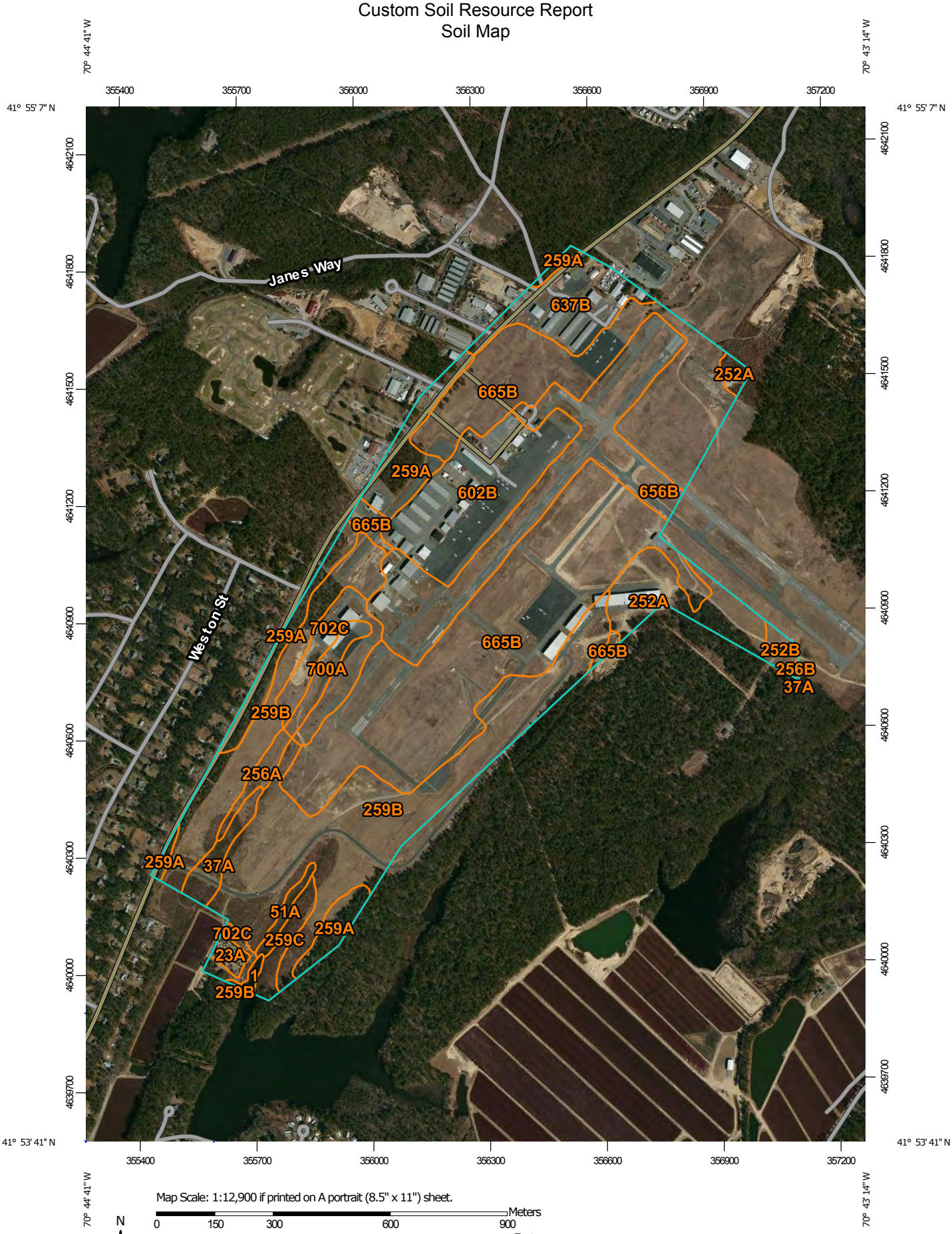

Figure 4-2
Soils Map

Incidental take of NLEB resulting from the removal of hazardous trees to protect human life and property also is not prohibited. Incidental take caused by tree removal is prohibited under two circumstances:

- tree clearing within a ¼-mile (0.4-kilometer) radius of known NLEB hibernacula; and
- cutting or destroying known occupied maternal roost trees, or any other tree within a 150-foot (45-m) radius of a known maternal roost tree during the pup season. The pup season is June 1 through July 31.

The NLEB range includes much of the eastern and north central United States, and all Canadian provinces from the Atlantic Ocean west to the southern Yukon Territory and eastern British Columbia. NLEB spend winter hibernating in caves and mines, called hibernacula. They use areas in various sized caves or mines with constant temperatures, high humidity, and no air currents. During the summer, NLEB roost singly or in colonies underneath bark, in cavities or in crevices of both live trees and dead trees (snags). Northern long-eared bats seem to be flexible in selecting roosts, choosing roost trees based on suitability to retain bark or provide cavities or crevices. T he majority of Airport property is free of forest stands and thus lacks summer tree roosting habitat.

Breeding begins in late summer or early fall when males begin to swarm near hibernacula. After copulation, females store sperm during hibernation until spring. In spring, NLEB emerge from their hibernacula, females ovulate and the stored sperm fertilizes an egg. After fertilization, pregnant females migrate to summer areas where they roost in small colonies and give birth to a single pup. Most bats within a maternity colony give birth around the same time, which may occur from late May or early June to late July, depending where the colony is located within the species' range. Young bats start flying by 18 to 21 days after birth.

The USFWS does not require private landowners to conduct surveys on their lands for hibernacula and maternity roost trees. Location information for known hibernacula and maternity roost trees is generally kept in state Natural Heritage Inventory databases, thus consultation with state Natural Heritage Inventory databases is encouraged (see discussion below).

4.6.2 State Listed Species

The Massachusetts Natural Heritage Atlas (MassGIS, 2008) (the "Atlas"), prepared by the Natural Heritage and Endangered Species Program, identifies one area of Priority Habitat (PH 1520) in the Project area as providing habitat for a total of three state-listed species (three grassland bird species), as shown on Figure 1-4 previously. The NHESP has not identified the NLEB as being present on Airport property, and the consultation process that has occurred to date (including the submittal of a MESA Project checklist for this work and past

consultations with USFWS in 2015 during the Runway Safety Improvement Project relative to the issuance of a Corps Individual Permit including VMP work) is consistent with the due diligence protocols USFWS has established in the Final Rule.

The southeastern portion of the Airport near Federal Furnace Road does contain one additional area of Priority Habitat (PH 1501) that is outside the Project area.

4.6.2.1 Grasshopper Sparrow (Massachusetts Status: Threatened)

Grasshopper sparrows (*Ammodramus savannarum*) forage, breed, and sleep on the ground in grassland, upland meadow, pasture, hayfield, and old field habitats. Nesting grasshopper sparrows may occur on agricultural lands and airports where such habitats occur. Although grasshopper sparrows may use small grasslands, open areas of over 100 acres are favored. Optimal habitat for these sparrows contains short- to medium-height bunch grasses interspersed with patches of bare ground, a shallow litter layer, scattered forbs, and few shrubs. Clumped grasses provide cover and foraging areas and are consequently favored over sod or matting grasses. Nests are built at the base of these clumped grasses. Grasshopper sparrow chicks leave the nest after nine days and follow the mother around until they fledge. Breeding season for grasshopper sparrow is generally identified by NHESP as May 1 to July 31 in southeastern Massachusetts. Shrubs, fence posts, and tall forbs are used as song perches. Habitats may become unsuitable for nesting grasshopper sparrows if shrub cover becomes too dense. Regular disturbance (during the non-breeding season) is necessary to maintain these habitat conditions. Habitat use during the non-breeding season is similar, although less restrictive, to that of the breeding season, as these sparrows may inhabit thickets, weedy lawns, vegetated landfills, fence rows, open fields, or grasslands. Once the young have fledged, the birds can move readily out of the way of any disturbance such as mowing. Grasshopper sparrows usually migrate by mid-September.

Grasshopper sparrow habitat on the Airport is generally restricted to the Cultural Grassland areas, as shown in Figure 4-3. The Airport has confirmed grasshopper sparrow habitat. The Airport manages a portion of the cultural grassland habitat as a long-term grassland habitat management area in accordance with the Grassland Habitat Management Plan and various NHESP Permits and Permit Amendments. Grassland Habitat is managed north and south of Runway 6 end and within the infield of Runway 6-24 and Taxiway D, these areas are delineated in Figure 4-3, for this species, vesper sparrow, and upland sandpiper.

4.6.2.2 Vesper Sparrow (Massachusetts Status: Threatened)

Vesper sparrows (*Pooecetes gramineus*) typically inhabit sparsely vegetated areas with patches of bare ground, low vegetation (one to eight inches), and scattered shrubs and saplings. Inhabitants of open areas, vesper sparrows reside in cultivated fields, grasslands, fallow fields, and pastures. Habitats are typically dry and well drained. Nests are placed

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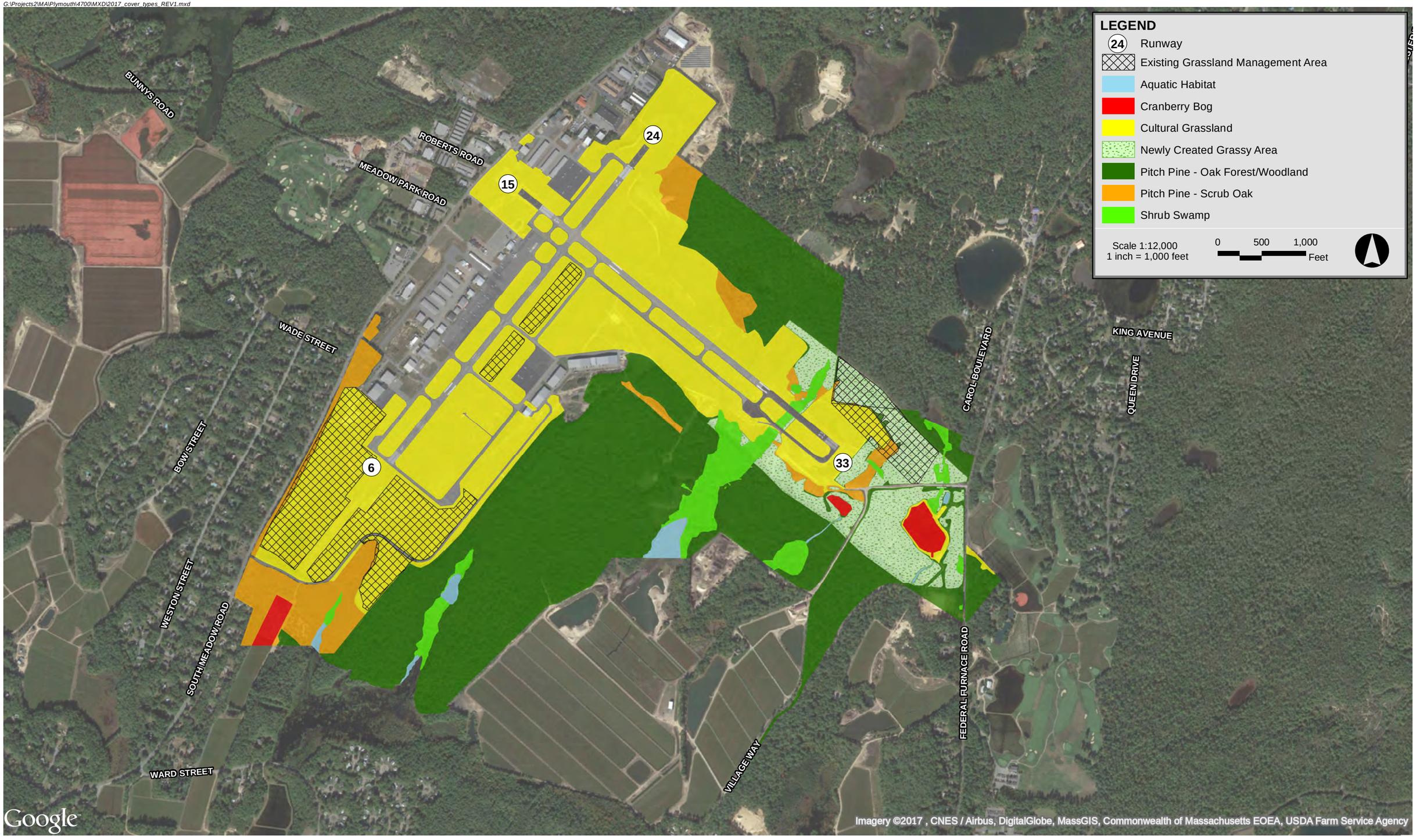

Plymouth Airport **Plymouth, Massachusetts**

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Figure 4-3
Vegetation Cover Types and Aquatic Habitat

within clumps of herbaceous cover that afford protection from predators. Vesper sparrows build bulky, loose, cup-like nests of grasses and rootlets on the ground in small depressions, often near the base of a grass clump, weed, or shrub. Vesper sparrow chicks usually fledge within 14 days but remain dependent on adults for another three weeks. Breeding season for vesper sparrow is generally May 1 to July 31 in southeastern Massachusetts. Elevated perches, such as fence posts, shrubs, or weeds, provide singing posts from which males can advertise their territories and attract mates. Territory size may range from 1.2 to 7.9 acres (New Jersey Division of Fish and Wildlife). Vesper sparrows winter in the southern to east-central U.S. south to the Gulf Coast and central Mexico and generally start to migrate south in mid-September.

Suitable vesper sparrow habitat includes those areas mapped as Cultural Grassland and identified on Figure 4-3 and within the Grassland Habitat Management Plan, also delineated on Figure 4-3.

4.6.2.3 Upland Sandpiper (Massachusetts Status: Endangered)

Native grasslands are the preferred habitat of the upland sandpipers (*Bartramia longicauda*). They typically feed in short grass areas, where they are found in migration and during winter. They typically arrive at the Airport in mid-April to early May to breed. During the breeding season, upland sandpipers often perch on fence posts or utility poles. They forage by walking quickly through the grass with jerky movements, picking up items from the ground or from low vegetation. The upland sandpiper requires taller grass for nesting. Nesting typically occurs from late May through June, with the young hatching from mid-June through July. Nests usually consist of a grass-lined depression on the ground, well concealed by over-arching grasses. Upland sandpiper chicks usually fledge by early to mid-August, 32 to 34 days after hatching. In most years, upland sandpipers form flocks and start their migration to South America from mid- to late-September.

Suitable upland sandpiper habitat includes the areas mapped as Cultural Grassland on Figure 4--3 and within the Grassland Habitat Management Plan, also delineated on Figure 4-3.

4.7 Floodplains

According to Federal Emergency Management Agency ("FEMA") mapping (see Figures 2-2 and Figure 2-3), a small portion of the Airport off the end of Runway 6 end and the Gate 6 access road and by the 33-end of Runway 15-33 is located in the 100-year floodplain.

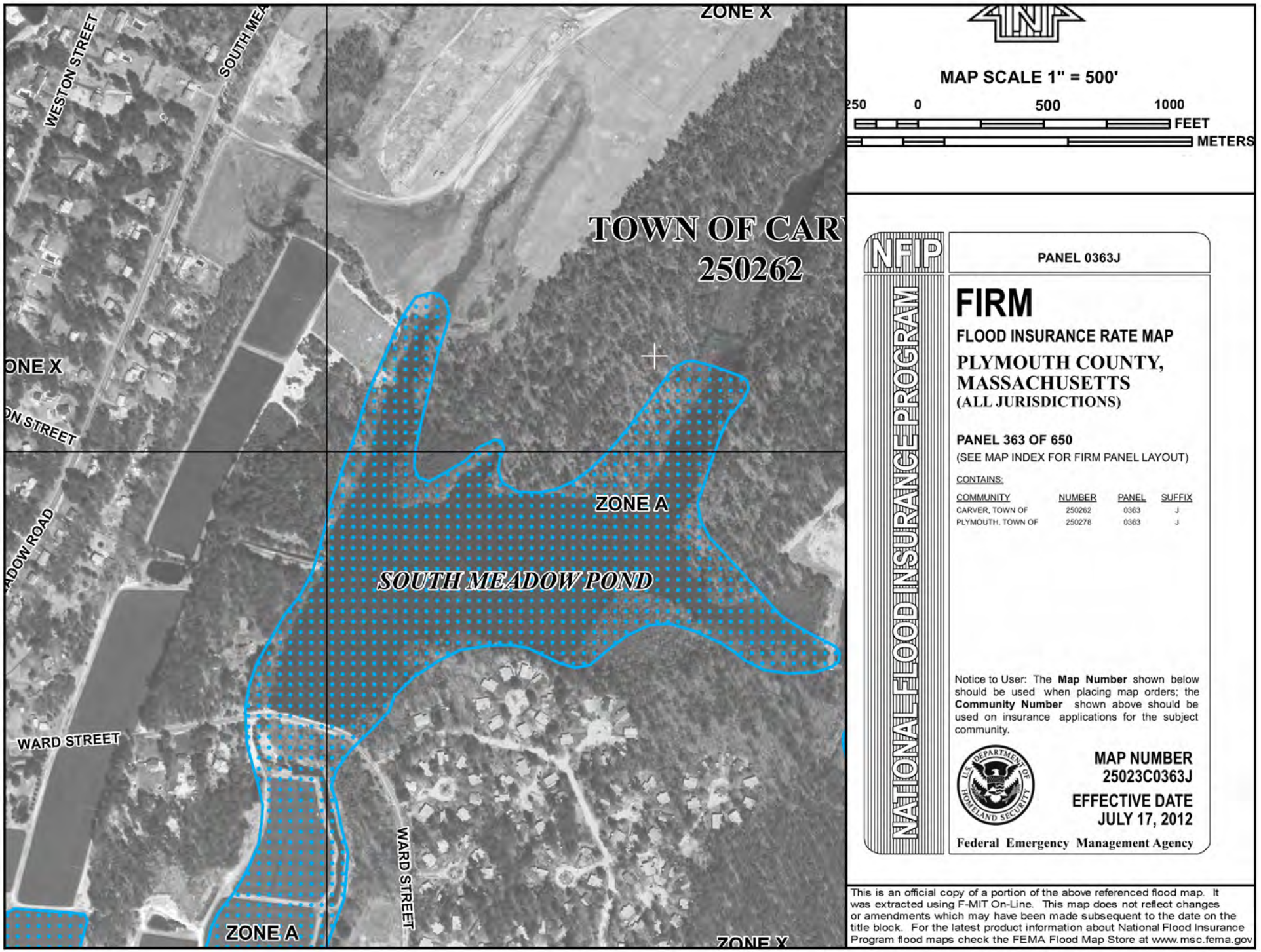


Figure 4-4

FEMA Floodplain Mapping #1 in the Vicinity of the Airport

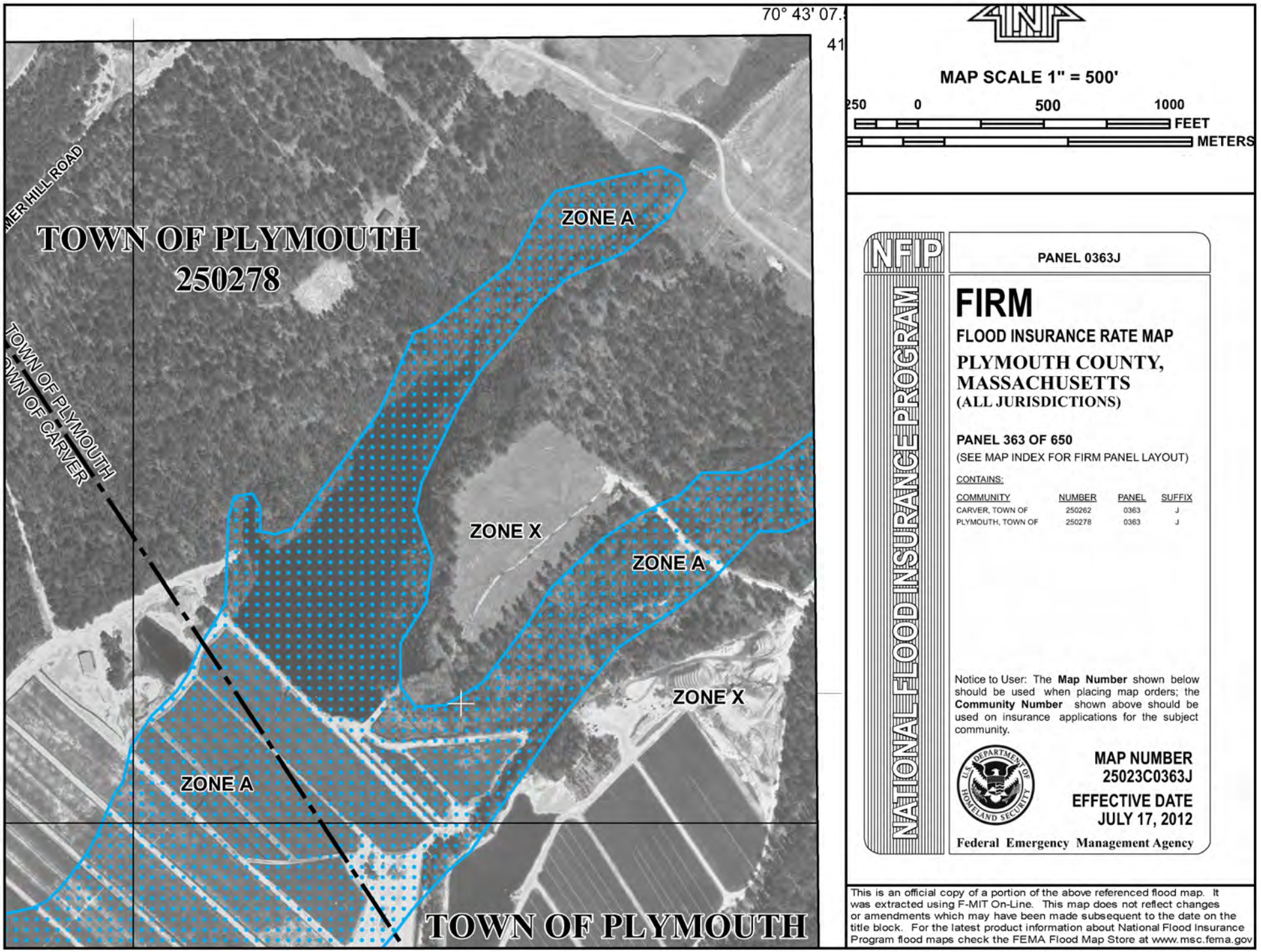


Figure 4-5

FEMA Floodplain Mapping #2 in the Vicinity of the Airport

4.8 Hazardous Materials, Pollution Prevention, and Solid Waste

To determine the potential for encountering soils contaminated from historical releases or former land development practices during excavation and grading activities associated with the runway and taxiway extensions, the MassDEP reportable release database was reviewed for spills at sites located within 300 feet of the proposed Project. There were no releases reported within 300 feet of any of the proposed projects.

Hazardous materials used for operation and maintenance of aircraft, runways, and taxiways include fuels, degreasers, and aviation lubricants and oils. The Airport has a Spill Prevention Control and Countermeasures ("SPCC") Plan that establishes procedures for handling these substances. Aircraft fuel storage and refueling areas are limited to the apron areas on the northern side of the Airport near South Meadow Road.

4.9 Historical, Architectural, Archaeological, and Cultural Resources

Section 106 of the National Historic Preservation Act (36 CFR 800 [Section 106]) requires federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation reasonable opportunity to comment on such undertakings. Projects subject to Section 106 must consult with the State Historic Preservation Officer ("SHPO") to determine if the project has the potential to affect historic properties listed on or eligible for listing on the National Register of Historic Places and what, if any, alternatives exist to avoid, minimize or mitigate the adverse effect(s) to National Register and National Register-eligible properties.

State Register Review (950 CMR 71.00) requires Massachusetts state agencies take into account the effects of their undertakings on historic properties listed in the State Register of Historic Places. Projects subject to State Register Review must consult with the Massachusetts Historical Commission ("MHC"), which in Massachusetts is also the SHPO, and consulting parties (including Native American tribes and local historical commissions) to determine if the Project has the potential to affect historic properties listed on the State Register, and what, if any, alternatives exist to avoid, minimize or mitigate the adverse effect(s) to State Register-listed properties. State Register Review may be undertaken concurrently with the Section 106 Review process.

Under a permit issued by the Massachusetts Historical Commission, in 2003, the Airport's consultant PAL, Inc. undertook a reconnaissance archaeological survey of the Airport and an intensive (locational) archaeological survey of a proposed 9,500-foot roadway connecting South Meadow Road and Federal Furnace Road (refer to herein as the "Gate 6 Access Road"). The intensive archaeological survey of the connector road did not identify any archaeological sites.

PAL's survey also determined that the areas of the central airport facility that has a low archaeological sensitivity due to disturbances of the land for "building construction, underground utility installation, and machine grading within the security/safety zone surrounding the airport runway."

A subsequent survey for the Runway 15-33 Extension Area in 2010 indicated that a no pre-contact cultural material or evidence of subsurface features was identified. Both of these findings were reported to MHC.

4.10 Noise

Noise contours were generated for the base year (2007)[3], Year 2012, Year 2017, and Year 2027 operation levels using the FAA Integrated Noise Model (INM) Version 7.0.

The FAA standards prescribe Day-Night Average Sound Level (Ldn or DNL) as the commonly accepted method for describing cumulative noise exposure and identifying aircraft noise and land use compatibility issues. The DNL noise metric is a 24-hour logarithmic average of noise levels in A-weighted decibels, as recommended by the FAA for evaluating aircraft noise impacts. Sound occurring during the night hours (defined as between 10:00 p.m. and 7:00 a.m.) is typically found more intrusive due to low levels of ambient noise. Therefore, the DNL metric adds a 10-decibel penalty for any nighttime aircraft operation. According to FAA Order 5050.4B, the 65 DNL exposure limit is used to evaluate potential adverse noise impacts to noise sensitive areas such as residential neighborhoods, educational, health or religious structures, or sites and outdoor recreational, cultural or historic sites.

The DNL generated by the INM does not delineate a strict demarcation between acceptable noise levels and unacceptable noise levels, rather the DNL contour line attempts to describe the general outline of expected noise impacts. Several simplifying assumptions have to be made while generating noise contours, such as flight tracks, aircraft types, day-night operational patterns, and arrival and departure flight profiles. Further, the DNL represents average annual conditions rather than single-event noise occurrences. Noise exposure on any given day may be greater or less than average depending on environmental factors and aircraft performance. However, the noise model does provide a useful and scientifically based method for comparing various noise levels and provides a reasonable basis for performing airport noise compatibility planning for the affected community.

A detailed noise analysis was completed in 2011 as part of the Airport Safety Improvements Project. This analysis indicated that in Year 2007, all of the 65 DNL noise contour is contained within the existing Airport property. The Airport noise footprint is expected to increase moderately over the course of the current Master Plan 20-year planning horizon

[3] Using 2007 as the base year for this model is a conservative approach. There were more aircraft operations in 2007 than in 2011, which saw a significant decline in operations due to the economic slowdown.

through a change in fleet mix of aircraft operating at the Airport and increases in aircraft operations. The increase in the noise footprint will largely be the result of increasing activity in the corporate aircraft sector and in response to forecast increases in corporate demand. Generally, acreage within the 65 DNL is anticipated to increase from approximately 84 acres in Year 2011 to approximately 240 acres by Year 2027, as shown on Figure 4-6).

Unless land acquisition occurs near the ends of Runways 24, 15, and 33, by Year 2027 approximately 18 acres within the 65 DNL contour will be located off Airport property. The majority of this area is located off the northern end of Runway 15; this land is primarily in industrial use, which is considered to be compatible with Airport operations. The Year 2027 65 DNL noise contour is mapped over a private property at the Runway 33 end. This property is an actively farmed cranberry bog that currently has no sensitive noise receptors. The increased noise contour is primarily the result of balancing use of the two runways by introducing jet aircraft on Runway 15-33.

4.11 Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks

Based on MassGIS data from the 2010 U.S. Census, there are no Environmental Justice populations proximate to the Airport. Data in this GIS layer were derived from Summary File 3 at the blockgroup level (Summary Level 150) from 2010 U.S. Census data). The Environmental Protection Agency's EJView mapping tool (http://www.epa.gov/environmentaljustice/mapping.html) identifies this area as an area of greater than 25% minority population.

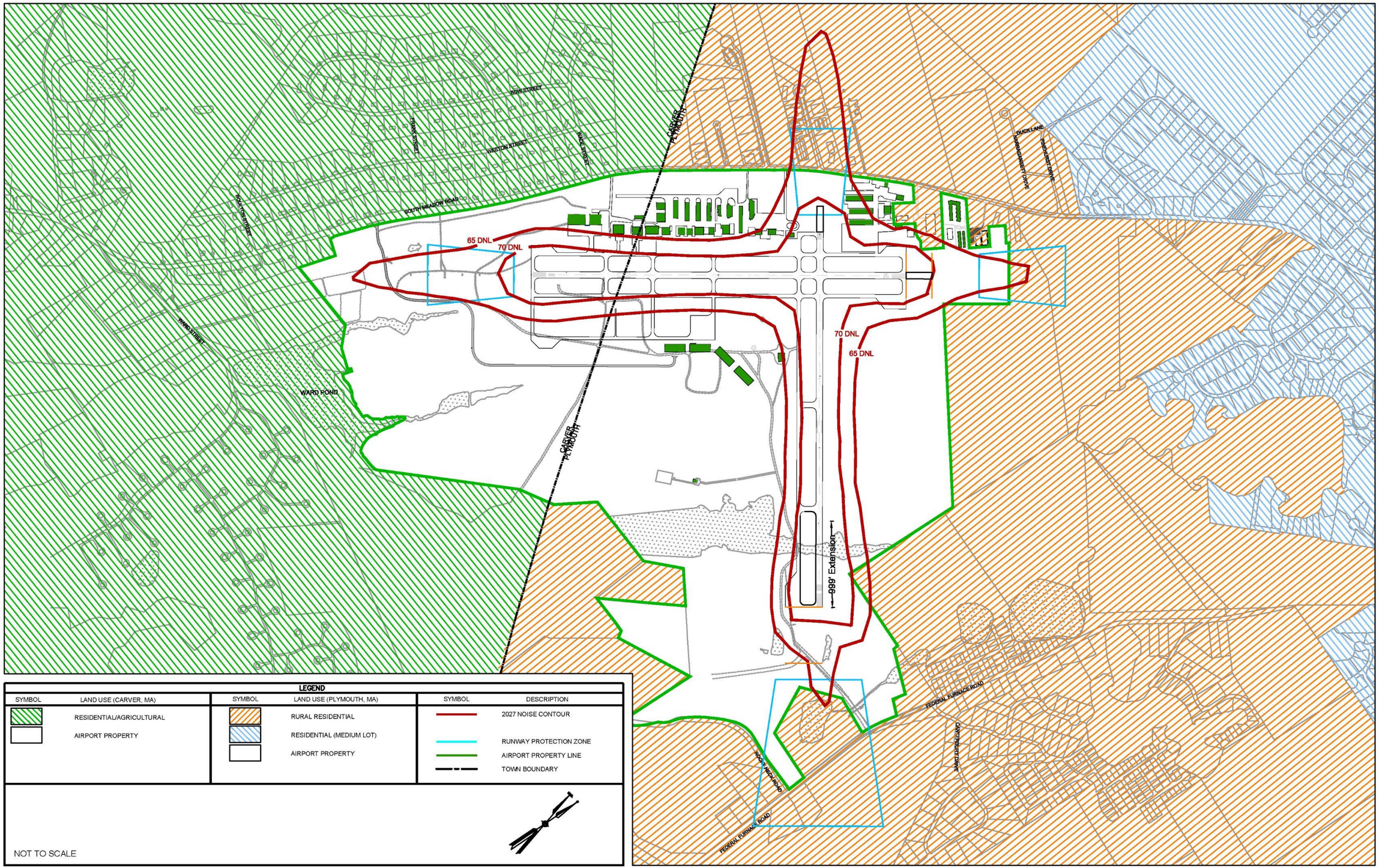
Carver Middle High School is located southwest of the Airport at 60 South Meadow Road. Federal Furnace Elementary School (Plymouth) is located southeast of the Airport at 860 Federal Furnace Road.

The proposed uses are similar to existing uses on the Airport, therefore, the proposed action will not present environmental health or safety risks not already occurring in relation to the Airport. Economic impacts of the proposed action are anticipated to be positive, with additional revenue accruing to both the Airport and the larger community.

4.12 Water Quality

4.12.1 Groundwater

Plymouth Municipal Airport is located in the Buzzards Bay watershed (10 digit Hydrologic Unit Code 0109000203). The Airport overlies the Plymouth-Carver Aquifer ("PCA"), an EPA-designated Sole Source Aquifer. A sole source aquifer is an underground water source that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas have no alternative drinking water sources that could physically, legally, and economically supply the population that depends on the aquifer for drinking water.



Plymouth Airport **Plymouth, Massachusetts**

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Figure 4-6

Future Noise Projections (2027)

Covering 199 square miles, including all or portions of six communities, the PCA is one of the largest designated aquifers in New England and the second largest in Massachusetts. Hydrologic studies indicate that groundwater in the PCA generally moves in a north to south direction from Middleborough toward Wareham, and in an east to west direction, toward Plymouth Harbor. As shown on Figure 4-7, there are no Interim Wellhead Protection Areas nor Zone II Protection areas as mapped by MassDEP on Airport property.

The Airport has implemented and maintains a Groundwater Management Plan. The Groundwater Management Plan includes procedures and policies to minimize potential impact to groundwater from Airport activities and addresses the following topics:

(1) storage, handing, and disposal of hazardous materials, (2) aircraft fueling, (3) maintenance of septic systems and stormwater systems, and (4) a groundwater monitoring program.

A Stormwater Pollution Prevention Plan has been developed in accordance with the National Pollutant Discharge Elimination System ("NPDES") Multi-Sector General Permit ("MSGP") controls maintenance activities and operations on the site that have the potential to impact stormwater.

The Airport conducts snow removal operations for measurable snowfall events. Snow removal operations at the Airport comply with MassDEP's Snow Removal Guidance (March 2001). Snow removed from runways, taxiways, and aprons is stored in upland areas. Some snow pile consolidation may occur as necessary. No chemicals or salt are used on the runways, taxiways, or aprons. Approximately 20 yards of "FAA sand" (very fine, 2 mm screen) are used annually. The Airport's Stormwater Pollution Prevention Plan prohibits the use of deicing chemicals on aircraft which are deiced by heat in hangers instead. New pavement will be treated in the same manner as existing pavement.

The Airport is served by the municipal water supply. It has its own on-site wastewater treatment plant located to the west of Runway 33. This plant was constructed in 2003 and is permitted under a Groundwater Discharge Permit from MassDEP to operate at a capacity of 25,000 gpd (Permit No. 720-0). It currently handles approximately 5,000 gpd, well below its permitted capacity. Associated with the leach field for the wastewater treatment plant are three groundwater monitoring wells that are monitored quarterly for specific conductance, pH, total nitrogen, and nitrate nitrogen. MW-3 well is located near the S-1 hangar, SHA-2 well is in the middle of the leach field, and SHA-3 well is located down gradient of the leaching field. The Airport began collecting water quality monitoring data in 2002; the data indicate that nutrient loading is highest at SHA-2, which is to be expected given its location in the leach field, but minimal to non-detectable at the other two wells.

4.12.2 Stormwater Management

Stormwater management at the Airport has evolved as stormwater regulations have changed. Following is a summary of the existing stormwater management systems for each of the proposed project sites:

4.12.2.1 Taxiway D Extension:

The project site for the Taxiway D extension is currently undeveloped land, predominantly covered with grass and weeds. The site contains no stormwater structures. Runoff flows southeast via overland flow.

4.12.2.2 Shift Taxiway S:

Taxiway S has undergone several extensions and reconstructions within the past 17 years. The taxiway was extended 850′ in 2000 and was reconstructed in 2004. The 850′ extension included the installation of catch basins with 3′ deep sumps and concrete pipe. The collection system was then directed to an oil/water separator prior to discharge. The reconstruction project did not include any further improvements to the drainage system. The drainage system for the remaining northern section of Taxiway S consists solely of drywells spaced at approximately 300′ stations.

Additional improvements to the stormwater management system were made in 2016 during the extension of Runway 15-33 and Taxiway S. The existing catch basins were removed and replaced with off-line catch basins and drywells. The collected stormwater was then passed through an oil-water-grit separator and then a subsurface groundwater recharge / infiltration system.

4.12.2.3 New Hangar Development:

Future hangar development is proposed in two locations: along South Meadow Road at the Gate 3 access; and along the Gate 6 Access Road and Taxilane A. Stormwater runoff along South Meadow Road is currently directed to a deep swale located along the north side of the Gate 4 Backtaxilane. Runoff is directed to the swale either by overland flow or through catch basins and pipe. The swale is configured to function as an infiltration basin.

The proposed hangar sites located along Taxilane A is currently flat, undeveloped land, covered with grassland. Stormwater runoff generally flows southwest via overland flow towards the cranberry bogs.

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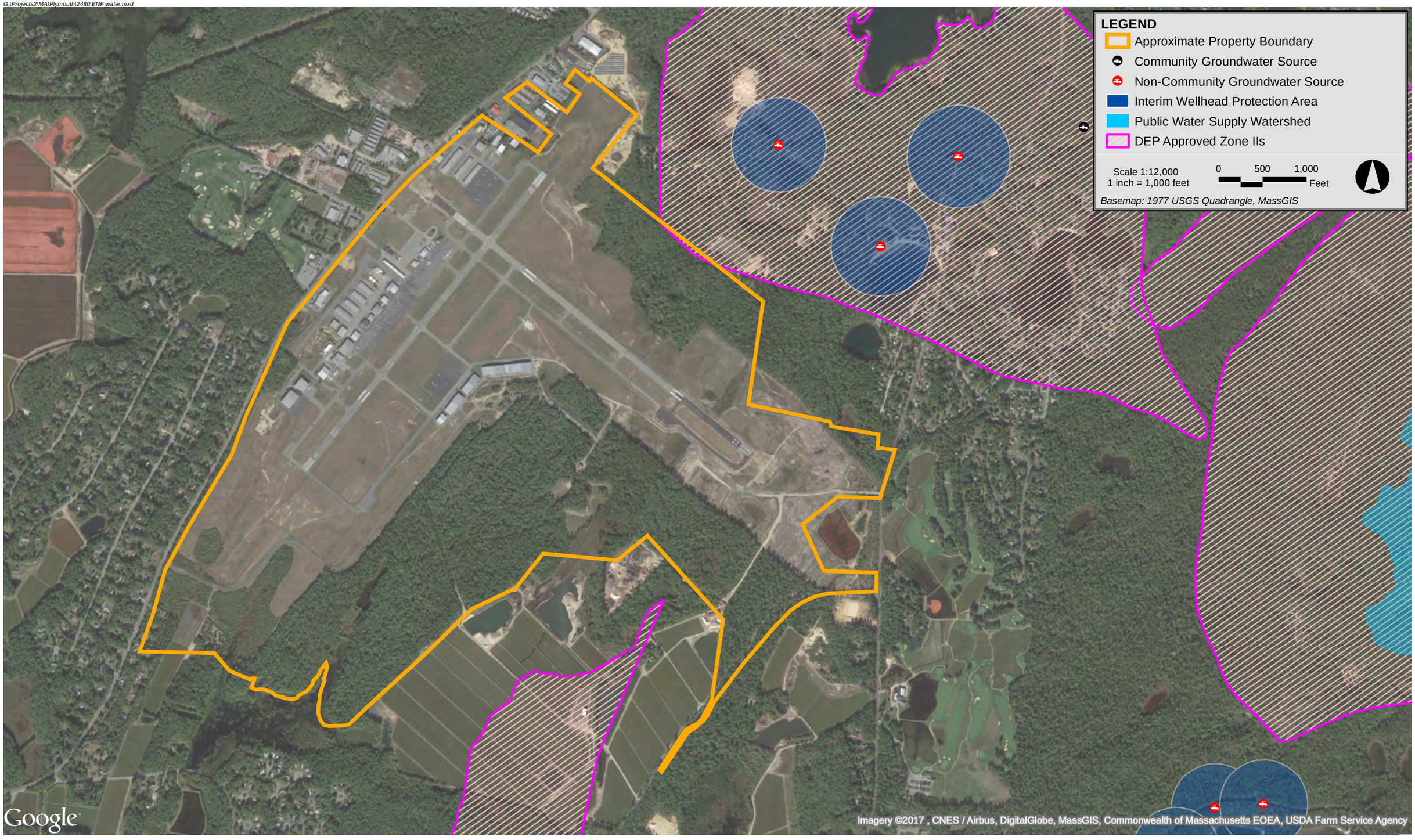

Plymouth Airport **Plymouth, Massachusetts**

Epsilon Associates, Inc.

Figure 4-7

Groundwater Resources and Interim Wellhead Protection Areas

4.12.2.4 New Taxilane and Apron Space:

The new taxilane and apron space will be located along the southwest side of Taxiway S. This area is largely flat, undeveloped and covered with this grass vegetation. There is currently no stormwater collection or treatment system in this area. Stormwater runoff generally flows southeast toward the ponds utilized for the cranberry bog operations.

4.12.2.5 Taxiway E Extension:

The proposed extension of Taxiway E will be partially located upon an existing drainage infiltration pond. Stormwater from the Airport's north ramp is collected in a subsurface drainage system and piped to the infiltration basin for treatment. The collection system consists predominantly of shallow, in-line catch basins. The infiltration basin contains two precast infiltration basins set in the bottom of the pond. The basin also receives runoff from two infield catch basins located at the intersection of Taxiway E and Runway 24.

4.13 Wetlands

Wetland resource areas are located throughout the Airport, as depicted on Figure 4-8. On-site vegetated wetlands are regulated through the Clean Water Act as waters of the United States ("waters of the U.S.") and by the Massachusetts Wetlands Protection Act as Bordering Vegetated Wetlands ("BVW"). The limits of BVW are coincident with the limits of federal jurisdictional vegetated wetlands, i.e. waters of the U.S.

Wetlands on the Airport were delineated in accordance with the U.S. Army Corps of Engineer's "*1987 Wetland Delineation Manual*" (USACE, 1987) and the "*Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0)*" (USACE, 2012) and the Massachusetts Wetlands Protection Act and implementing regulations (310 CMR 10.00); and the MassDEP handbook entitled "*Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act*" (MassDEP, 1995).

Many of the boundaries have been reviewed and approved by the Plymouth Conservation Commission and the MassDEP in accordance with the Massachusetts Wetlands Regulations. The boundaries of wetland resource areas proximate to the 33-end of Runway 15-33 were reviewed and approved by the Plymouth Conservation Commission as part of an Order of Resource Area Determination ("ORAD") issued on April 5, 2012 and by MassDEP as part of the Variance for the Runway 15-33 Safety Improvements Project (MassDEP File Number SE 057-2667) issued on July 10, 2015 and remains valid for five years from the date of issuance.

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LEGEND

- Airport Property Line

Wetland Resources

- Vernal Pool
- Isolated Vegetated Wetland Under Bylaw
- Bordering Vegetated Wetland
- Isolated Vegetated Wetland Under Bylaw & ILSF
- Land Under Water
- Bordering Land Subject to Flooding (FEMA Q3 Flood Zone A)
- Cranberry Bog
- 200-foot Riverfront Area
- 100-foot Buffer Zone

Scale 1:9,600
1 inch = 800 feet

0 400 800 Feet

Basemap: 2016 Orthophotography, Google

Proposed Runway 33 and Taxiway S Extensions

FEDERAL FURNACE ROAD

Intermittent Stream

Irrigation Pond

Perennial Stream

Commercial Cranberry Bog

Intermittent Stream

Cranberry Bog

Google

Plymouth Airport **Plymouth, Massachusetts**

Epsilon Associates Inc.

Figure 4-8

State and Local Wetland Resource Areas

The ORAD expiration date due to the Permit Extension Act of 2012[4];is extended by four years to April 5, 2019. Additional wetland resource area boundaries proximate for the 6-end in Carver were delineated by Epsilon Associates, Inc. in December 2016. These boundaries will need to be reviewed and approved by the Carver Conservation Commission for any work proposed within the buffers or wetlands themselves (see Section 5.13).

Table 4-3 presents a summary of the previously delineated wetland resource areas and their corresponding jurisdictional status under the WPA and the Town of Plymouth Wetlands Protection Bylaw as described in the afore-mentioned ORAD.

Table 4-3 Jurisdictional Status of Wetland Resource Areas Delineated and Approved in Plymouth

Wetland Series	Massachusetts Wetlands Protection Act Status	Plymouth Bylaw Status	Flag Numbers
08-1	Bordering Vegetated Wetland	Freshwater Wetland	08-1 to 08-49. S1- S7
08-1A	Bordering Vegetated Wetland	Freshwater Wetland	08-1A to 08-71A R1 to R5 (excluding 08-43A to 08-53A)
T	Non-jurisdictional	Isolated Freshwater Wetland	T-1 08-43A to 08-53A
08-1B	Bordering Vegetated Wetland	Freshwater Wetland	08-1B to 08-19B
08-1C	Inland Bank Riverfront Area Land Under Water	Inland Bank Riverfront Area Land Under Water	08-1C to 08-10C
08-1D	Isolated Land Subject To Flooding	Isolated Freshwater Wetland	08-1D to 08-16D
08-1E	Bordering Vegetated Wetland	Freshwater Wetland	08-1E to 08-28E, U1-U9
08-1EE	Bordering Vegetated Wetland	Freshwater Wetland	08-1EEto 08-16EE
08-1F	Bordering Vegetated Wetland	Freshwater Wetland	08-1F to 08-12F 08-1Fa to 08-1Fd
08-1G	Inland Bank (Intermittent Stream) Land Under Water	Inland Bank Land Under Water	08-1G to 08-6G
08-1FF	Bordering Vegetated Wetland	Freshwater Wetland	08-1FF to 08-13FF
08-1H	Bordering Vegetated Wetland	Freshwater Wetland	08-1H to O8-25(R)
2	Non-jurisdictional	Freshwater Wetland	2-1 to 2-6
3	Isolated Land Subject to Flooding	Isolated Freshwater Wetland	3-1 to 3-15
4	Inland Bank (Intermittent Stream) Land Under Water	Inland Bank Land Under Water	4-1 to 4-23
AA	Bordering Vegetated Wetland	Freshwater Wetland	AA-1 to AA-11

[4] The Permit Extension Act was created by Section 173 of Chapter 240 of the Acts of 2010 and extended by Sections 74 and 75 of Chapter 238 of the Acts of 2012.

Table 4-3 Jurisdictional Status of Wetland Resource Areas Delineated and Approved in Plymouth (Continued)

Wetland Series	Massachusetts Wetlands Protection Act Status	Plymouth Bylaw Status	Flag Numbers
V	Bordering Vegetated Wetland	Freshwater Wetland	V-1 to V-51
VR	Non-jurisdictional	Isolated Freshwater Wetland	V-35R to V-45R
W	Non-jurisdictional	Isolated Freshwater Wetland	W-1 to W-4

Table 4-4 presents a detailed summary of the more recently delineated wetlands (2016) in Carver. It is assumed that all of the delineated vegetated wetlands and streams are jurisdictional "waters of the U.S." for the purposes of Sections 401 and 404 of the U.S. Clean Water Act.

Table 4-4 Summary Description of Wetland Resource Areas Delineated in Carver (2016)

Wetland Series	Massachusetts Wetlands Protection Act Status	Carver Bylaw Status	Wetland Description
A	Isolated Land Subject To Flooding	Isolated Freshwater Wetland	Wetland series A (flags A1 to A20) is a forested/scrub-shrub wetland located south of the access road. The IVW is dominated by inkberry (*Ilex glabra*), highbush blueberry (*Vaccinium corymbosum*), and winterberry (*Ilex verticillata*).
C	Non-jurisdictional	Isolated Freshwater Wetland	Wetland series C (flags C1 to C2 and C100 to C107) is an isolated wetland located south of the access road. It is dominated by black oak (*Quercus velutina*), sheep laurel (*Kalmia angustifolia*), inkberry, and silky dogwood (*Cornus amomum*).
D	Bordering Vegetated Wetland	Freshwater Wetland	Wetland Series D (flags D-1 through D-132 open) is a predominantly forested BVW that is located south and east of the access road at the Runway 6 end. Dominant vegetation includes inkberry, greenbriar (*Smilax* sp.), highbush blueberry (*Vaccinium corymbosum*), pitch pine (*Pinus rigida*), red maple (*Acer rubrum*), and winterberry. This wetland series borders on a pond. A small upland berm/pathway separates wetlands C and D.

Table 4-4 Summary Description of Wetland Resource Areas Delineated in Carver (2016) (Continued)

Wetland Series	Massachusetts Wetlands Protection Act Status	Carver Bylaw Status	Wetland Description
E	Isolated Land Subject To Flooding	Isolated Freshwater Wetland	This IVW (flags E1 to E19) is located north of the Gate 6 access road inside the airport fence. It is dominated by inkberry, sheep laurel, winterberry and red maple. There is an approximately 18-inch concrete culvert located near flags E9 and E10, but no flow was observed at the time of the delineation.

No wetlands are in close proximity to the proposed Taxiway D extension Project, Taxiway S and fillet modifications, New Hangar Development or the Taxiway E extension. The Taxilane and Apron space are outside the 100-foot Buffer to BVW in Plymouth.

Multiple vegetated wetlands in Carver, both bordering and isolated wetlands, are proximate to the proposed grassland mitigation for impacts to rare species habitat. Please see Section 5.16 for a discussion on proposed work within and near these wetlands.

4.14 Wild and Scenic Rivers

There are no designated Wild and Scenic Rivers located on or near the Airport. The only currently designated Wild and Scenic Rivers in Massachusetts are the: Sudbury, Assabet and Concord Rivers; Taunton River; and Westfield River.

5.0 ENVIRONMENTAL CONSEQUENCES AND MITIGATION

As noted above, the Airport finalized its Master Plan in 2011 which recommended multiple projects to (1) enhance the margin of safety at a busy airport, and (2) comply with FAA planning and design standards. Proposed capital improvements include the following:

- Taxiway D Extension eastward to end of RW 24 stopway;
- Shift Taxilane S south by 15 feet and reduce the width from 40 feet to 35 feet;
- New Hangar development;
- New taxilane and apron space adjacent to Taxiway S;
- Taxiway E Extension to end of RW 24 stopway; and
- Re-designate RW 24 and RW 15 stopways to displaced thresholds.

The Airport proposes to implement these project elements over a five year period.

5.1 Air Quality

The FAA has produced guidance[5] on the necessary steps to perform an air quality analysis for airports undergoing changes as part of a federal action. Since the project is not an FHWA/FTA project, nor is it regionally significant, a Transportation Conformity determination is not necessary. Additionally, the Commonwealth of Massachusetts does not require indirect source permits, so that review is also not necessary. However, Plymouth Municipal Airport is located in a nonattainment area for 1-hour and 8-hour (1997) Ozone. Therefore, a General Conformity determination must be made.

5.1.1 General Conformity

Section 176 (c) of the Clean Air Act requires that any entity of the federal government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity must demonstrate that the action conforms to the area's commitment of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards and achieving expeditious attainment of those standards.

General conformity applies to all actions in nonattainment or maintenance areas not specifically covered by transportation conformity. To determine whether general conformity requirements apply to an action, the agency in charge must consider the nonattainment and

[5] Federal Aviation Administration (FAA) Air Quality Procedures For Civilian Airports and Air Force Bases, FAA-AEE-97-03 AL/EQ-TR-1996-0017, April 1997.

maintenance status of the area, the exemptions from and presumptions to conformity, the project's emissions, and the regional significance of the project's emissions. The conformity rule applies only to actions located in nonattainment and maintenance areas.

Some airport improvement actions are considered "exempt actions," or are considered actions "presumed to conform" due to typically low emissions. For all other actions, an estimate of net emissions must be made. If these emissions are below "de minimis" thresholds, then the project is determined to be below significance and a General Conformity determination is made.

The general conformity threshold emission levels are based on the proposed project's net annual emissions (proposed federal action emission levels minus the no action emission levels), which is the sum of direct (including construction) and indirect emissions. Similar to indirect source requirements, the conformity regulations limit the inclusion of indirect emissions to those that "are caused by the federal action, but may occur later in time and/or may be farther removed in distance from the action itself but are still reasonably foreseeable" and "the federal agency can practicably control and will maintain to control over due to a continuing program responsibility of the Federal agency." 40 C.F.R. Section 51.853 [93.152].

Non-runway pavement projects are "presumed to conform" if they are not intended to increase airport capacity. Most of these projects include apron areas for the purposes of loading passengers or cargo, refueling, or aircraft parking. The FAA has published limits on non-airfield work (in square feet) by which construction emissions would not exceed "*de minimis*" thresholds. This limit is 1,096,929 square feet of area to be presumed to conform to the NOx threshold of 50 tons per year.[6]

5.1.2 Conformity Determination

Section 176 (c) of the Clean Air Act requires that any entity of the federal government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity must demonstrate that the action conforms to the area's commitment of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards ("NAAQS") and achieving expeditious attainment of those standards.

Construction of hangars is not considered an "exempt action," nor are they considered actions "presumed to conform" due to typically low emissions. Therefore, an estimate of net emissions must be made. If these emissions are below "de minimis" thresholds, then the project is determined to be below significance and a General Conformity determination is made.

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[6] "Federal Presumed To Conform Actions Under General Conformity; Final Action," 72 Federal Register 145 (July 30, 2007), pp41565-41580

Since hangar construction is not expected to increase operations at the Airport, it is expected that there will be no net increase in emissions from aircraft, vehicular traffic, or ground support equipment.

The proposed taxiway extensions, Taxiway S relocation, fillet modifications and taxilane and apron space actions total 354,143 square feet of new impervious surface. Temporary impacts total 358,500 s.f. The total area for both of these types of actions are well below the threshold of 1,096,929 square feet. Thus it is assumed (by rule) that emissions of NOx and VOC are below the 50 ton per year "*de minimis*" thresholds; therefore, the proposed actions do not require a conformity determination, and these proposed actions are also presumed to conform with the SIP, provided that the action is not "regionally significant."

If the total of direct and indirect emissions of any pollutant from a federal action represent ten percent or more of a maintenance or non-attainment area's total emissions of that pollutant, the action is considered to be a "regionally significant" activity and conformity rules apply. If an action in a nonattainment area is below the thresholds or presumed to conform and not regionally significant, then the conformity requirements do not apply and no official reporting is required. It is unlikely that an airport or air base action that is presumed to conform would be regionally significant.

Therefore the proposed project is deemed to comply with all requirements of General Conformity.

5.1.3 Construction Period Air Quality

The proposed projects would have a potential, albeit temporary, effect on air quality resulting from construction vehicles and equipment emissions, dust from earth moving operations, and installation of fresh asphalt for the new taxiways, aircraft aprons and shifting of Taxiway S. Air quality impacts are minimal due to the relatively short duration of the proposed projects and the limited amount of earth disturbance associated with each project. In addition, air quality impacts are not expected to extend beyond the immediate vicinity of each project area and no impacts are expected following completion of the projects.

The applicable mitigation measures identified in FAA AC 1505370-10, *Standards for Specifying Construction at Airports*, will be followed during the proposed projects. In addition, FAA specifications included in FAA AC 1505370-10, Item P-156 *Temporary Air and Water Pollution, Soil Erosion, and Siltation Controls* will be included in the project contract documents to ensure that construction impacts to air quality are minimized.

To mitigate construction period air quality impacts the proposed measures include:

- Recommend contractors install an emission control device on each piece of diesel construction equipment to reduce emissions, including a diesel oxidation catalyst or diesel particulate filter;

- Recommend the use of ultra-low sulfur diesel ("ULSD") fuel, sulfur content less than 15 parts per million (ppm), in all diesel-fired construction equipment used on these projects; and

- Prohibit motor vehicle engines from idling more than five minutes, in compliance with the Massachusetts 5-minute idle law (310 CMR 7.11), unless the engine is being used to operate a lift or refrigeration unit.

Construction fugitive dust impacts are generally considered temporary. Measures that will be used to mitigate fugitive dust include:

- Use water dust suppressant spraying on exposed soils;

- Cover trucks hauling dust generating materials to and from the Site;

- Wash wheels and underbodies of construction vehicles prior to departure from the Site; and

- Routinely clean paved areas to lessen the amount of dust available to be re-suspended.

5.2 Coastal Resources

The proposed actions will not affect coastal resources.

5.3 Compatible Land Use

All of the proposed improvement projects are located on existing Airport property and are consistent with existing aviation uses. Off-site impacts are expected to be *de minimus* and consistent with ongoing activities. The proposed action will not result in community disruption, business relocations, or negative induced socioeconomic impacts.

5.4 Construction Impacts

The proposed actions will have typical impacts during the construction period. Impacts will result from grading, paving, and construction equipment generated noise and exhaust emissions. Land disturbance and soil stockpiling could result in dust emissions. Alterations to wetlands, without mitigation, could affect water quality in the wetland to be crossed.

Potential environmental impacts will be minimized and mitigated to the extent feasible using, among others, the measures listed below:

- Compliance with a Storm Water Pollution Prevention Plan ("SWPPP") prepared pursuant to the National Pollutant Discharge Elimination System ("NPDES") Construction General Permit;

- Implementation of MassDEP and EPA Best Management Practices for wetlands and groundwater protection including as necessary wetland replication;
- Equipment maintenance to minimize noise and pollutant emissions;
- Low sulfur or ultra-low sulfur diesel fuel use by contractors;
- Designated truck routing;
- Limit truck idling;
- Site housekeeping, such as water use for dust suppression and interim stabilization of land surfaces not being worked; and
- Recycling and waste reclamation where possible.

5.5 Department of Transportation Act: Section 4(f)

The proposed actions will not affect Section 4(f) lands.

5.6 Farmlands

The proposed actions will not affect farmlands.

5.7 Biological Resources (Fish, Wildlife, and Plants)

5.7.1 Federal Species

The proposed actions will not affect federally-listed fish, wildlife, or plants protected by the U.S. Endangered Species Act. Prior due diligence with the NHESP did not identify the presence of NLEB or other federal-listed species on or in the vicinity of Airport property.

5.7.2 State-listed Species

5.7.2.1 Impacts

A total of 8.74 acres of Priority Habitat for state-listed bird species will be permanently altered by the proposed projects over a period of five years, either with building construction or additional pavement.

A summary of projects and impacts to mapped Habitat is presented in Table 5-1.

Table 5-1 Summary of Potential impacts to State-Listed Species and/or Habitats

Project	Impacts (acres)	
	Permanent	Temporary
Taxiway D Extension eastward to end of RW 24 stopway;	2.41	1.81
Shift Taxilane S south by 15 feet and reduce the width from 40 feet to 35 feet;	1.06	0.48
New Hangar development and parking lots;	2.87	2.38
New taxilane and apron space adjacent to Taxiway S;	1.84	1.13
Taxiway E Extension to end of RW 24 stopway; and	0.56	0.55
Re-designate RW 24 and RW 15 stopways to displaced thresholds	0	0
TOTAL	**8.74**	**6.35**

5.7.2.2 Proposed Grassland Mitigation Areas

The Airport proposes to develop an Airport-wide Grassland Habitat Management Plan ("GHMP") in order to develop a comprehensive mitigation strategy that will not only provide a net benefit to the species of concern (upland sandpiper, grasshopper sparrow and vesper sparrow) but enable the Airport to develop Airport projects with the agreement of mitigation factors already completed. This GHMP will be submitted as part of the Conservation and Management Permit application for this Project. This measure would be in addition to the mitigation measures previously implemented pursuant to the Airport's existing Conservation and Management Permits, as amended, which remain in effect.

To compensate for the Project's unavoidable alteration of state-listed species habitat, the Airport proposes to place additional Airport property under management to improve the land's habitat functions for the state-listed species that occur on the site, as it has done for prior projects. Proposed mitigation for the loss to grassland habitat includes the conversion of forested and scrub upland areas to grassland in an area located off the end of Runway 6 in Carver, contiguous with existing mitigation areas. This conversion would require work within state and local jurisdiction buffer zones to wetlands, as well as tree cutting within the wetlands themselves. No fill or other alteration would be required. Other mitigation would also include the placement of existing grassland area under a similar management program approved in the 2014 Grassland Habitat Management Plan (relative to the Runway Safety Improvement Project). The Airport has 2.0 acres in a mitigation bank from the 2015 construction project per the existing CMP. This measure would be in addition to the mitigation measures previously implemented pursuant to the Airport's existing Conservation and Management Permits, as amended, which remain in effect.

5.8 Floodplains

Based on the FEMA Flood Insurance Rate Maps ("FIRM"), see Figures 4-2 and 4-3, no fill is proposed within 100-year floodplains.

5.9 Hazardous Materials, Pollution Prevention, and Solid Waste

The regulated sites identified above in Section 2.8 are not within the footprint or immediate vicinity of any of the proposed Projects subject to this EA.

Waste disposal during project construction will be managed separately from normal airport solid waste management operations, and will not generate solid waste during post-construction period, i.e. long-term. The proposed projects are not expected to introduce new sources of hazardous material storage or discharges, and do not require the use of hazardous materials for the long-term.

Construction will require storing, handling and using fuels, oils and other potentially hazardous materials. These materials will be managed per industry standards and applicable federal and state laws to avoid and minimize accidental releases to the environment. A detailed spill prevention and control plan will be included in the SWPPP. Elements of the plan relative to spill prevention will include, at a minimum, the following mitigation measures:

- Routine vehicle and equipment maintenance and re-fueling will occur only in designated areas, outside of ecological wetland resource areas and sensitive habitats. At each designated area, spill clean-up equipment will be stored for use in the event of an accidental spill.

- All fuel, oil, solvents, etc., will be stored in original containers, or in containers manufactured for storing such material and that are clearly labeled with contents.

- The contractor(s) will immediately clean up any and all spills of fuel, oil, or other potentially hazardous materials. Any and all reportable spills will be reported to the proper authorities (Plymouth Fire Department, Plymouth Board of Health, MassDEP, etc.).

- The SWPPP will include the contact information for hazardous materials release response including the Plymouth Fire Department, Plymouth Board of Health, and MassDEP.

5.10 Historical, Architectural, Archaeological, and Cultural Resources

The proposed actions are located in areas that have been previously reviewed by the Massachusetts Historical Commission ("MHC"). The proposed action does not involve the destruction of a State Register or Inventoried property or any other building facility.

Prior submittals to MHC include:

- 2003 Project Notification Form for Taxiway E Relocation and Gate 6 Access Road;
- 2011Intensive (Locational) Archeological Survey Report, Plymouth Municipal Airport, Runway 33 extension.

The majority of the projects will occur within the central airport facilities. According to the PAL Archaeological Reconnaissance Survey from 2003, the central airport facility has a low archaeological sensitivity due to disturbances of the land for "building construction, underground utility installation, and machine grading within the security/safety zone surrounding the airport runway." The 2011 survey found low sensitivities proximate to the Runway 15-33 extension, to which both Taxiway S and the new taxilane and apron space is proximate.

In addition, there are no significant historic above-ground resources located within or in the immediate vicinity of the project areas. As a result, no effect to significant historic or archaeological resources is anticipated.

5.11 Light Emissions and Visual Impacts

There are no special purpose laws for light impacts and visual impacts. The projects proposed within this EA are unlikely to have significant light emission or visual impacts. No additional mitigation is proposed.

5.12 Natural Resources and Energy Supply

Other than the wetland and biological impacts described on other sections, the proposed actions are not anticipated to impact other natural resources. Energy supply impacts will be limited to FAA required lighting. No additional mitigation is proposed.

5.13 Noise

Noise impacts related to the proposed action will include sounds typical of the operation of runways, taxiways and aprons, including aircraft and motor vehicle engine noise. No increases in operation or aircraft type are anticipated to result from the proposed actions. Construction noise will be generated by construction vehicles and construction equipment performing earth work, paving and delivering construction materials.

Measures to mitigate construction noise are anticipated to include:

- Requiring all construction equipment to be equipped with exhaust mufflers, and requiring mufflers to be maintained to minimize engine noise;
- Specifying site construction hours of normal daytime hours 7 AM to 5 PM to avoid early morning, evening, and night time periods to minimize disturbing the adjacent receptors; and
- Ensuring construction vehicle operators abide by the Massachusetts 5-Minute idle Law.

5.14 Socioeconomic Impacts, Environmental Justice, and Children's Environmental Health and Safety Risks

All work is proposed on Airport property to meet FAA requirements, and not to facilitate increased Airport operations or growth; thus impacts to nearby EJ communities and other potential socioeconomic impacts are not expected. The proposed Project will not modify existing Airport uses, therefore, the proposed action will not modify environmental health or safety risks from existing conditions.

5.15 Water Quality

5.15.1 Groundwater and Water Supply

The Airport will continue to implement its Groundwater Protection Plan, which includes the following commitments:

- Refueling operations are conducted only on the apron areas;
- No salt or chemicals are used on the runways or taxiways; and
- Post-construction stormwater management best management practices will be implemented as described Section 6.3.3 below.

No short- or long-term impacts on groundwater or water supply are anticipated to result from the Project. Construction period stormwater management will ensure protection of adjacent surface waters and wetlands as described below. As described in Section 4.15, the Airport overlies the Plymouth-Carver Sole Source Aquifer. The Project will be reviewed by EPA Region 1 under the Safe Water Drinking Act to ensure that it does not adversely impact the aquifer.

5.15.2 Construction Period Stormwater Management

The proposed action is not anticipated to have negative impacts on water quality. Because it will disturb more than one acre of land, it will need to be conducted in accordance with the NPDES Construction General Permit. The proponent will prepare and implement a SWPPP

pursuant to the NPDES Construction General Permit to protect the quality of receiving waters during construction. The built conditions will include stormwater best management practices to control the quality and quantity of runoff directed to receiving waters for the long-term.

In addition, construction activities will comply with the latest FAA Advisory Circular 150/5370-10B Standards for Specifying Construction on Airports.

Tree clearing, grading associated with taxiway, taxilane, and hangar construction, construction access, storage and laydown areas have the potential to cause short-term erosion and sedimentation in the vicinity of sensitive areas such as wetlands. The existing gravel maintenance access road will be used for construction access as much as possible. Sideslopes will be stabilized and re-vegetated as soon as practicable. Erosion control measures will be used throughout the construction period.

5.15.3 Post-Construction Stormwater Management

Stormwater runoff from the Project area will be managed through; 1) the Airport's existing stormwater management system, and 2) the installation of a new drainage system in each discrete project area. The stormwater management system will be designed to prevent an increase in peak stormwater runoff and to provide treatment when and where necessary. To meet this goal, management of runoff will include both temporary and permanent Best Management Practices ("BMPs") so that runoff will be appropriately managed both during and after construction. The proposed stormwater management system will be designed to comply with MassDEP's stormwater management regulations to the extent practicable. The BMPs proposed for the Project are expected to meet the goal of no increase in peak stormwater runoff and provide stormwater treatment where needed. A series of deep sump catch basins and oil water grit separators will be constructed to collect the runoff from Taxiway D and Taxiway E. The oil water and grit separators will target runoff from areas with higher pollutant loads such as the fueling station and apron adjacent to Taxiway E. The offline deep sump catch basins will provide runoff pretreatment. The water will then be conveyed to an infiltration basin to recharge groundwater, provide 80% TSS removal, and attenuate peak flows. Proposed groundwater recharge features will be designed to comply with the US Environmental Protection Agency rules and regulations for recharge over sole source aquifers.

5.16 Wetlands

The Massachusetts Wetlands Protection Act (MGL c.131 § 40) ("WPA") and implementing regulations (310 CMR 10.00) is a state statute administered locally by Conservation Commissions. The WPA requires the preparation of a Notice of Intent ("NOI") for work within a wetland resource area and/or work within 100 feet of certain wetland resource areas (i.e., the 100-foot Buffer Zone). The general performance standards for work or activities occurring within each wetland resource area are identified in the WPA regulations.

All of the proposed projects will be located more than 100 feet from vegetated wetlands. However, the required grassland mitigation necessitates the Airport to convert existing upland scrub-shrub habitat proximate to wetlands into new grassland to be managed for rare species habitat.

Tree cutting work within vegetated wetlands, regulated as waters of the U.S. and BVW, is proposed as part of the mitigation strategy for impacts to Priority Habitat for grassland birds in Carver in order to develop the open vistas preferred by the protected species. Up to 5,000 s.f. of BVW and up to 5,000 s.f. of Isolated Vegetated Wetlands may be very selectively cut in order to develop an open vista for adjoining upland grassland areas. In general, the trees will be removed from wetlands with mechanized equipment operating on swamp mats, as necessary. Felled trees in BVW will not be uprooted; this will prevent disruption to the wetland soil structure and allow stump sprouts to re-vegetate the work area. These resource areas will be allowed to re-vegetate naturally into a low growing scrub-shrub environment.

Tree clearing and grassland conversion work will likely occur in the 100 foot buffer zone to BVW and IVW. Accordingly, a NOI will be filed with the Carver Conservation Commission under the WPA and Bylaw. The NOI will provide a general overview of the Project and a more specific description of the tree clearing work proposed within the buffer. The NOI narrative will describe how the project has been designed to conform to applicable regulatory performance standards including erosion and sediment control requirements.

5.16.1 Regulatory Standards - Sections 401 and 404 of the U.S. Clean Water Act

All work in vegetated wetlands (i.e. use of swamp mats) will require authorization from the U.S. Army Corps of Engineers pursuant to Section 404 of the Clean Water Act ("CWA"), and concomitantly from the Carver Conservation Commission pursuant to the Massachusetts Wetlands Protection Act. Those approvals will condition work in vegetated wetlands to avoid and minimize vegetated wetland impacts. The details of how the proposed projects will comply with all the terms and conditions of the respective programs will be the subject of the future wetland permits to be secured in accordance with Section 401/404 of the CWA and the Massachusetts Wetlands Protection Act.

Because of the proposed action's limited wetland impact, it will not require an Individual Permit from the U.S. Army Corps of Engineers. Instead, it will be eligible for review under the Self-Verification Process through the Corps' General Permits for Massachusetts. The proposed actions are designed to comply with the terms and conditions of the General Permits.

5.16.2 Mitigation Measures

5.16.2.1 Erosion Control Measures

An erosion and sedimentation control program will minimize the risk of impacts to wetland resource areas during construction. The program will incorporate Best Management Practices

specified in guidelines developed by the MassDEP and the EPA and will comply with the requirements of the NPDES 2012 Construction General Permit. These measures will include the installation of temporary erosion and sediment controls and construction sequencing. Areas of exposed soil will be kept to a minimum, and a permanent vegetative cover will be established as soon as practicable after final grading. The following erosion and sedimentation control devices will be implemented to prevent erosion both during and after construction.

- An erosion control barrier, consisting of trenched silt fence and staked hay bales, or mulch tube will be installed along the entire limit of work.

- Gravel construction entrance aprons will be located at construct entrances to public streets to prevent the tracking of sediment on vehicle tires from transport onto adjacent streets. The roadway will be inspected frequently and cleaned of sediment as necessary by the site contractor.

- During construction, exposed will be stabilized upon completion of grading with loam, hydro-seeding, and erosion control blankets or mulch and tackifier as deemed necessary by the design Engineer.

- Catch basin inlet protection will be installed in all existing catch basins that will receive runoff from the construction zone. Catch basin inlet protection will be maintained throughout the duration of construction to prevent silt from entering the drainage system.

5.16.2.2 De-Watering Measures

Should the need for de-watering arise, groundwater will likely be pumped directly into temporary settling basins located in upland areas. These basins will act as sediment traps during construction. Alternatively, groundwater to be pumped into a filter bag or frac tank. Groundwater discharge points will be located at least 100 feet from the BVW edge and will be monitored by qualified personnel. Using these practices, suspended and settleable solids that would impair the functions of the BVW will be removed from discharges.

5.16.2.3 Soil and Construction Material Stockpile Locations

There will be no storage of soil, gravel, or construction debris within wetland resource areas. Solid waste generation during the construction period will primarily consist of construction debris. The debris will include scrap lumber (e.g. pallets and other shipping containers), waste packaging materials (plastic sheeting, cardboard), scrap cable and wire, and scrap pipe. These materials will typically be placed in large roll-off containers (or dumpsters) and removed by a contract hauler. The roll-off containers will be covered with secured tarps before the hauler exits the site.

5.17 Wild and Scenic Rivers

The proposed projects will not affect Wild and Scenic Rivers.

5.18 Secondary and Cumulative Impacts

The proposed project is not expected to result in any significant secondary or cumulative impacts.

5.18.1 Secondary Impacts

Guidelines prepared by the Council on Environmental Quality (CEQ), for implementing NEPA define secondary or indirect effects as those that are "caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable." Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. (40 CFR 1508.8).

The proposed project is not expected to cause any significant secondary impacts in any of the impact categories that have been considered. All impacts are expected to occur only at the specific locations where construction will occur. The potential for secondary impacts occurring later on or distant from the site due to on-going operations at the hangars will be minimized by the mitigation measures described herein, such as proper stormwater management, noise monitoring and other noise control programs, and light emissions control. The project will not create any significant secondary air quality impacts as it is not expected to significantly affect the amount of air traffic.

5.18.2 Cumulative Impacts

According to Council of Environmental Quality (CEQ) guidelines, cumulative impacts represent the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period or time." To determine cumulative impacts on the environment, projects occurring within the past fifteen years and expected to occur within the future five years were evaluated. Since 2002, the following construction projects have been undertaken at the Airport:

- 2003 – Installed additional perimeter fence of 2,500 linear feet and privately constructed 18,000 square foot hangar for State Police;
- 2004 – Relocated Taxiway "S," east of Runway 6/24, 2,500 linear feet;

- 2005 – Constructed Taxiways "J" and "K" and parking apron, south of Runway 6/24, 2,200 linear feet;
- 2006 – Constructed commercial building along South Meadow Road, 7,400 square feet (off airport);
- 2007 – Privately constructed hangar on south side, 18,000 square feet, and constructed commercial building along South Meadow Road 6,500 square feet (off airport);
- 2008 – Constructed perimeter road , 3,500 linear feet, and privately constructed three hangars, south side, totaling 54,000 square feet;
- 2009 – Constructed Taxiway "A," south side, 2,100 linear feet;
- 2010 – Constructed taxiway "D," south side, 1,200 linear feet;
- 2011 – Relocated Taxiway "E," 3,500 linear feet; and
- 2015-16 – Extended Runway 15-33 and Taxiway S; constructed 300-foot stopways at the ends of Runway 15 and 24; cleared obstructions in 75 acres near the Runway 15-end.

Potential construction projects that could be undertaken in the reasonably foreseeable future are those outlined in this document as well as the following:

- 2018 – Demolition and reconstruction of the terminal building.

Actual design and construction of these projects will depend on the availability of federal, state, and local funding.

The conditions described in this section will serve as a baseline for comparison of past and reasonably foreseeable future projects to assess cumulative impacts. The comparison will consider impacts associated with the environmental categories affected by the Project, previous projects, and future projects. These categories include wetlands, rare species, noise, and construction period impacts.

5.18.2.1 Wetlands

The proposed project will not result in any wetland fill. The Airport has selected the least environmentally damaging alternative. Mitigation for grassland habitat will require work within the buffer zone to wetlands however, no additional impervious surface will be added. The most recent project at the Airport resulted in unavoidable wetland resource area impacts, including permanent fill of 1.1 acres of BVW and vegetation removal in approximately 13 acres of wetland resource areas. Mitigation for the runway extension project's unavoidable impacts were provided in accordance with state and local wetlands regulations and

performance standards and the federal mitigation guidance document. Permanent wetland impacts resulting from filling were replicated at a 2:1 ratio to meet mitigation requirements under the Plymouth Wetlands Protection Bylaw and the Massachusetts Wetlands Protection Act. Federal wetland mitigation resulting from filling and secondary impacts resulted in the preservation of over 40 acres of land.

5.18.2.2 Rare Species

The Project will involve a conversion of approximately nine acres of NHESP-mapped Priority Habitat for the grasshopper sparrow, vesper sparrow, and upland sandpiper to impervious area for the construction of the hangars, taxiway extensions and taxilane and apron areas along with the Taxiway S modifications. These habitat areas are not managed habitat under the Airport's Grassland Habitat Management Plan. The terminal building will not impact mapped Habitat. To mitigate potential impacts, additional acreage will be added to the area managed under the Airport's Grassland Habitat Management Plan and an Airport-wide management plan will be developed during MESA permitting as detailed in section 5.7.2 in order to provide a net-benefit to the listed species.

5.18.2.3 Noise

These projects will not result in any modification or expansion of the noise contours. Based aircraft may increase slightly at the airport, increasing operations slightly long term. Noise impacts associated with construction will be short term and last only as long as the construction project. Impacts will be minimized through conscientious construction management and implementation of BMPs.

Construction of the reasonably foreseeable future projects, of which the majority of the projects are pavement reconstruction, would have temporary noise impacts minimized through project planning and would not create long-term adverse impacts.

5.18.2.4 Construction Period Impacts

Construction activities are generally short-term and temporary in nature and do not usually cause significant adverse environmental impacts at airports. Project construction will involve temporary increases in noise, air quality, traffic, and construction period waste. These impacts will be short term and last only as long as the construction period. Impacts will be minimized through conscientious construction management and implementation of BMPs and stormwater controls. Project construction will not have long-term adverse impacts.

Past construction projects at the Airport have not created long-term adverse impacts. Construction of the reasonably foreseeable future projects would be temporary in nature. Temporary impacts will be minimized through project planning, and are not expected to create long-term adverse impacts.

5.18.2.5 Summary

This cumulative impacts section addresses impacts of reasonably foreseeable future project in combination with past and present actions at the Airport. Cumulative impacts expected to occur are not significant because of the types of projects, the built environment in which they occur, and the mitigation measures previously undertaken, proposed as part of this Project, and expected for future projects.

6.0 AGENCIES, ORGANIZATIONS AND PERSONS CONSULTED

Federal Aviation Administration, Richard Doucette (Environmental Program Manager);

Massachusetts Department of Transportation – Aeronautics Division, Nathan Rawding (Environmental Analyst III);

Plymouth Municipal Airport, Thomas Maher (Airport Manager);

United States Fish and Wildlife Service, protected species database;

Massachusetts Natural Heritage and Endangered Species Program, Natural Heritage Atlas and Eve Schluter (Chief, Regulatory Review);

MassGIS [Massachusetts Geographic Information System];

Massachusetts State Historic Preservation Officer, Brona Simon;

Tribal Historic Preservation Officer(s); and

Carver Conservation Commission Agent, Ms. Brooke Munroe

APPENDIX A

NHESP Determination

MASSWILDLIFE

DIVISION OF
FISHERIES & WILDLIFE

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Jack Buckley, *Director*

October 10, 2017

Thomas Maher
Plymouth Municipal Airport
246 South Meadow Road
Plymouth, MA 02360

RE: Applicant: Plymouth Airport Commission
Project Location: Plymouth Municipal Airport
Project Description: Taxiway D and Master Plan Improvement Projects
NHESP File No.: 17-36673

Dear Mr. Maher:

Thank you for submitting the MESA Review Checklist and required materials to the Natural Heritage and Endangered Species Program (NHESP) of the MA Division of Fisheries & Wildlife for review pursuant to the Massachusetts Endangered Species Act (MESA) (MGL c.131A) and it's implementing regulations (321 CMR 10.00) for review of the above referenced project.

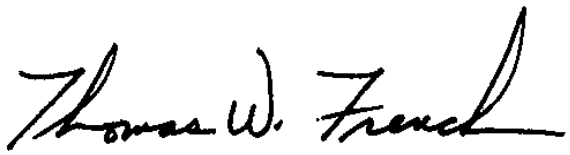
Based on a review of the information that was provided and the information that is currently contained in our database, the NHESP has determined that the proposed projects occur within the mapped habitat of the Upland Sandpiper (*Bartramia longicauda*; "Endangered"), Grasshopper Sparrow (*Ammodramus savannarum*; "Threatened"), and the Vesper Sparrow (*Poocetes graminueus*; "Threatened"). These species are listed pursuant to the provisions of the Massachusetts Endangered Species Act (M.G.L. c. 131A) and its implementing regulations (321 CMR 10.00).

As you are aware, portions of the grasslands at Plymouth Airport are currently managed to maintain habitat for state-listed grassland bird species in accordance with the provisions of two MESA Conservation & Management Permits (Permit #005-049.DFW & #014-240.DFW). The NHESP has determined that the proposed Taxiway D and Master Plan improvements **will result in a Take of the Grasshopper Sparrow (*Ammodramus savannarum*), Upland Sandpiper (*Bartramia longicauda*), and the Vesper Sparrow (*Poocetes graminueus*)** (321 CMR 10.02). The proposed projects will result in harassment of individual birds, the possible loss of nests and unfledged chicks, as well as the loss of grassland habitat. A project resulting in a Take of state-listed species may only be permitted if it meets the standards for issuance of a Conservation & Management Permit (CMP)(321 CMR 10.23). In order for a project to be considered for a CMP, the project proponent must (1) avoid and minimize impacts to state-listed species to the greatest extent practical, (2) demonstrate that an insignificant portion of the local population will be impacted or that no viable alternative exists, and (3) develop and implement a conservation plan that provides a long-term net benefit to the conservation of the local population of the impacted species.

This Determination is a final decision of the Division of Fisheries and Wildlife pursuant to 321 CMR 10.18. Any person aggrieved by this decision shall have the right to an adjudicatory hearing at the Division pursuant to M.G.L. c. 30A, s.11 in accordance with the procedures for informal hearings set forth in 801 CMR 1.02 and 1.03. Any notice of claim for an adjudicatory hearing shall be made in writing, accompanied by a filing fee in the amount of $500.00 and the information specified in 321 CMR10.25(3). The notice of claim shall be sent to the Division's Director, Jack Buckley, by certified mail, hand delivered or postmarked within 21 days of the date of the Division's Determination.

No soil or vegetation disturbance, work, clearing, grading or other activities related to the subject filing shall be conducted anywhere on this project site until the MESA permitting process is completed. We look forward to continued careful coordination and consultation during the permitting process. If you have any questions regarding this review please contact Eve Schlüter, Ph.D., Chief of Review, at (508) 389-6346 or eve.schluter@state.ma.us.

Sincerely,



Thomas W. French, Ph.D.
Assistant Director

cc: Alyssa Jacobs, Epsilon Associates

APPENDIX B

FINDING OF NO SIGNIFICANT IMPACT ("FONSI")

[Reserved]