Final Environmental Assessment
Site Safety and Efficiency Improvements Project

Hoyle, Tanner Project Number: 304903

Prepared for:
Jet Aviation
L.G. Hanscom Field
Bedford, Massachusetts

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This environmental assessment becomes a Federal document when evaluated, signed, and dated by the Responsible FAA Official.

Responsible FAA Official

4/4/2014
Date

L.G. Hanscom Field

Final Environmental Assessment

Site Safety and Efficiency Improvements Project

Hoyle, Tanner Project Number: 304903

April 2014

1 INTRODUCTION 3
1.1 Project Overview 3
1.2 Project Location 3
1.3 National Environmental Policy Act (NEPA) 6
1.4 Environmental Assessment Requirement 6
1.5 Federal, State And Local Agency Jurisdiction 6

2 PURPOSE AND NEED 7
2.1 Overview 7
2.2 Purpose And Need 7
2.3 Background And Public Involvement 7

3 PROPOSED ACTION AND ALTERNATIVES 9
3.1 Proposed Action 9
3.2 Sustainable Design 9
3.3 Alternatives 10
3.3.1 *No Action – No Improvements to Existing Conditions* 10
3.3.2 *Alternative 1 – Original configuration of ramp and hangar* 10
3.3.3 *Alternative 2 – Revised configuration of ramp and hangar* 10
3.3.4 *Alternative 3 - Avoidance of Direct Wetland Impacts – Proposed Action* 13
3.4 Alternatives Reviewed But Eliminated From Detailed Analysis 13

4 AFFECTED ENVIRONMENT 15
4.1 Project Location And Existing Conditions 15
4.2 Operations And Future Forecasting 15
4.3.1 Air Quality 17
4.3.2 Biotic Resources 18
4.3.3 Construction 19
4.3.4 Section 4(f) 20
4.3.6 Energy Supplies, Natural Resources, And Sustainable Design 22
4.3.7 Hazardous Materials 22
4.3.8 Historic And Archaeological 23
4.3.9 Induced Socioeconomic 24
4.3.10 Light Emissions And Visual Effects 24
4.3.11 Noise 25
4.3.12 Water Quality 26
4.3.13 Surface Water and Wetlands 27
4.4 Secondary And Cumulative Impacts 29
4.5 Not Affected 29

5 ENVIRONMENTAL CONSEQUENCES 31
5.1 Environmental Consequences Evaluation Process 31
5.2 Air Quality 31
5.3 Biotic Resources 32
5.4 Construction 33
5.5 Section 4(F) 33
5.6 Federal- And State-Listed Endangered And Threatened Species 33
5.7 Energy Supply, Natural Resources And Sustainable Development 33
5.8 Hazardous Materials 34
5.9 Historic And Archaeological 34
5.10 Induced Socioeconomic 38
5.11 Light Emissions And Visual Effects 38
5.12 Noise 39

5.13 Water Quality 39
5.14 Surface Water And Wetlands 40
5.15 Secondary And Cumulative Impact Analysis 41

6 MITIGATION 42

7 LIST OF AGENCIES CONTACTED, PERSONS CONSULTED, EA PREPARERS, AND DISTRIBUTION LIST 45

8 REFERENCES 49

List of Figures

Figure 1. Project Location Map 4
Figure 2. Existing Site Conditions 5
Figure 3. Alternative 1 11
Figure 4. Alternative 2 12
Figure 5. Alternative 3 Proposed Action 14
Figure 6. Wetland Resources 21

List of Tables

Table 1-1. Agency Coordination and Permitting 6
Table 3-1. Alternatives Matrix 13
Table 4-1. 2005 ESPR Forecasts of General Aviation Activity 16
Table 4-2. Hanscom Field Annual Estimated Operations 16
Table 5-1. Potential Aircraft at Jet Aviation as New or Replacement 31
Table 5-2. Wetland Impacts by Alternative 41

APPENDICES

A. Order of Resource Area Delineation (ORAD), Town of Lincoln, MA
B. Comment Analysis and Response to Comments
C. Comparison of Predicted Maximum Air Concentrations in 2020 High Growth Scenario at Ten Community Receptors to Air Quality Standards
D. Memorandum: Hanscom Field Air Quality Assessment for East Ramp, 2008
E. Massachusetts Historical Commission Building Inventory Form B
F. Federal- and State-listed Species Correspondence and Supplemental Information
G. Correspondence from Massachusetts Historical Commission and Lincoln Historical Commission
H. Potential Vernal Pool Photos
I. Correspondence from National Park Service, Minute Man National Historical Park
J. FAA Section 106 Finding of No Adverse Effect, December 5, 2013
K. MHC Request for Additional Documentation
L. FAA Response to MHC Request for Additional Documentation
M. FAA Finding of No Significant Impact (FONSI)

1 INTRODUCTION

1.1 Project Overview

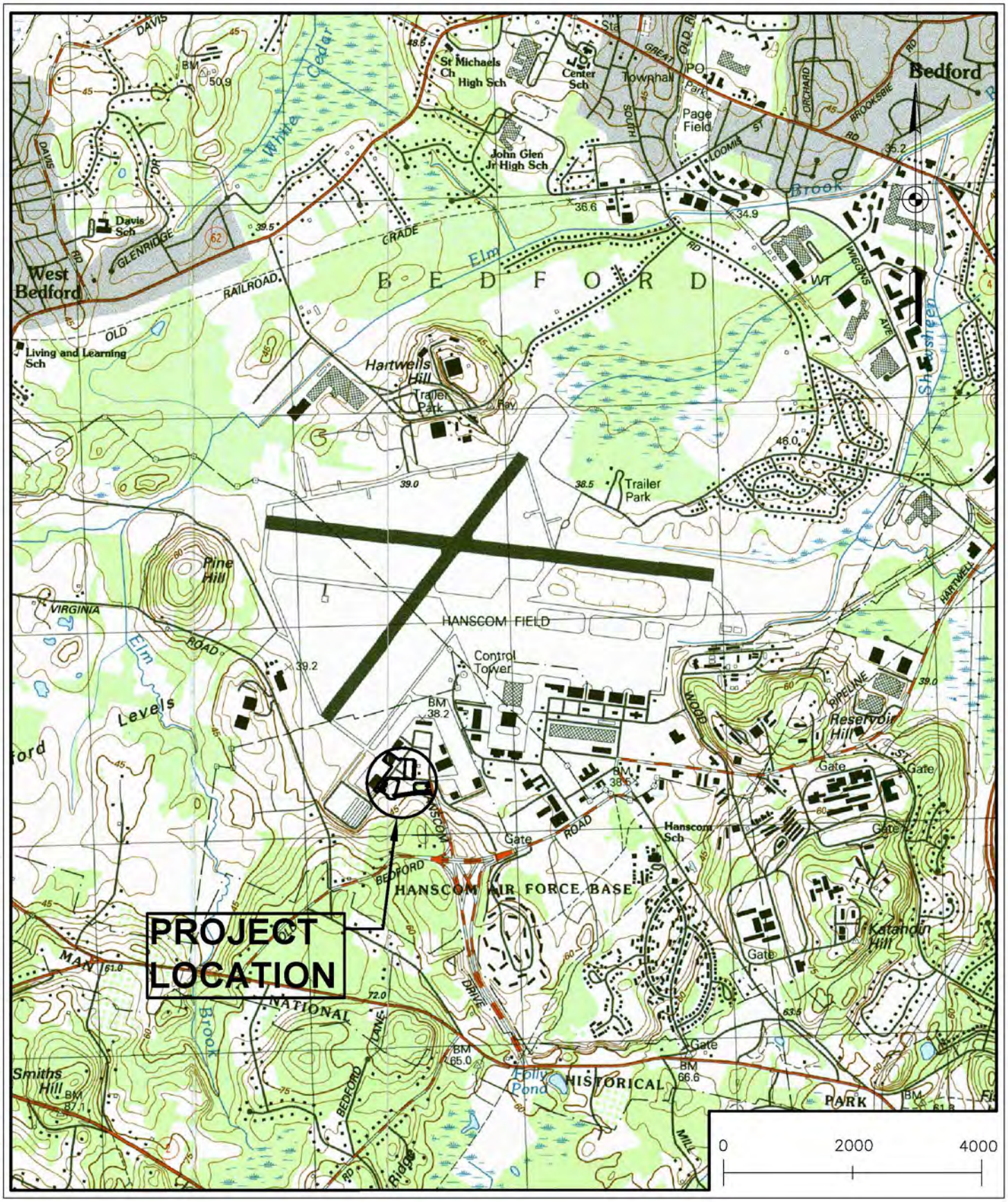
Jet Aviation is a Fixed Based Operator (FBO) located at L.G. Hanscom Field (BED) that handles a range of needs for based and transient aircraft, their operators and their passengers such as cleaning, maintaining, fueling, and parking/hangaring aircraft, providing flight planning services for the pilots, and arranging for the specific needs of those flying. Jet Aviation is proposing facility improvements in order to improve the safety and efficiency of their operations; these actions would cause Massport and FAA to modify the existing Hanscom Field Airport Layout Plan (ALP). The existing Jet Aviation facilities are unable to safely accommodate newer aircraft that occupy a larger footprint than the existing fleet. In order to hangar larger aircraft and limit taxiing and re-positioning of all existing aircraft, Jet Aviation is proposing replacement of Hangar 17 with a new, 40,000 sf Hangar with 16,000 sf office/shop space; other project components include a new 12,000 sf FBO facility, 94,160 sf of ramp areas, a new landside access road, and replacement automobile parking. The new hangar would be connected to the existing ramp via 94,000 sf of new ramp space. Hangar 17, 21,315 sf in size, was constructed in 1945 and is inefficient, outdated and undersized for newer aircraft.

Jet Aviation is committed to designing and certifying the proposed Hangar, office/shop space and FBO facility in accordance with LEED (Leadership in Energy and Environmental Design) Silver certification standards. LEED is a voluntary, consensus-based, market-driven program that provides third-party verification of green buildings through the US Green Building Council (USGBC). Participation in the LEED process demonstrates leadership, innovation, environmental stewardship and social responsibility. LEED for new construction takes an integrative approach to producing buildings that are designed to be efficient and have a lower impact on their environment. LEED measures eco-friendly construction practices based on a point system. It awards silver, gold or platinum certification according to the number of credits accrued in five green design categories: sustainable sites, water efficiency, energy and atmosphere, materials and resources and indoor environmental quality. The *LEED 2009 Reference Guide for Green Building Design and Construction* is the most comprehensive guide for the design, construction and major renovations of commercial and institutional buildings (USGBC 2009; www.usgbc.org/resources/leed-reference-guide-green-building-design-and-construction-global-acps).

1.2 Project Location

Hanscom Field is located in Bedford, Concord, Lexington and Lincoln, Massachusetts (Figure 1). Hanscom is a full-service general aviation airport with convenient access to Eastern Massachusetts. Located about 20 miles northwest of Boston, Hanscom Field plays a critical role as a corporate reliever for Boston Logan International Airport.

Jet Aviation offers private aircraft handling and full FBO services, including domestic and international flight handling, line maintenance services, refueling, and passenger and crew transportation. Jet Aviation provides routine or unscheduled maintenance services and offers 24-hours Aircraft on Ground (AOG) services. The company is an approved repair station by the Federal Aviation Administration (FAA) #JARV120F and European Aviation Safety Agency (EASA) #145.5359. Jet Aviation serves all major business jet models and component makers and provides clients with comprehensive services. The project would include areas within the lease boundary as shown on Figure 2; Jet Aviation also leases abutting areas to the north and west of this specific lease area that would not be affected.



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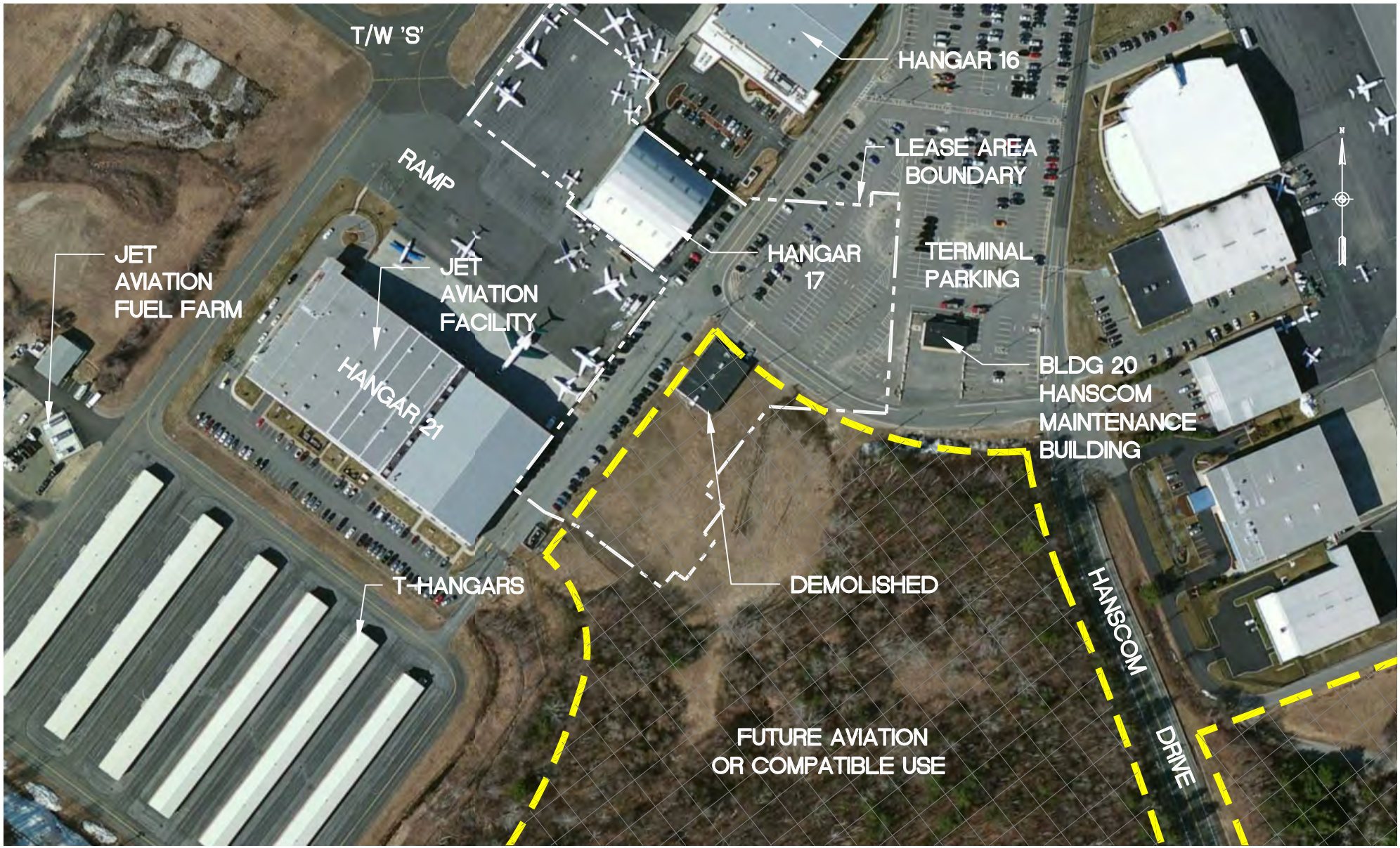
PROJECT LOCATION MAP
JET AVIATION PROJECT

FIGURE

1



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EXISTING SITE CONDITIONS AND TERMINAL AREA PLAN

FIGURE 2

1.3 National Environmental Policy Act (NEPA)

The National Environmental Policy Act (NEPA) of 1969 is a key piece of federal legislation designed to raise environmental awareness. Any project involving action by the federal government that could significantly affect the environment requires a federal environmental determination. The Federal Aviation Administration (FAA) complies with and supports both the policies and procedures of NEPA. To address NEPA in airport development, FAA developed and issued *Order 1050.1E: Environmental Impacts: Policies and Procedures, and Order 5050.4B: 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 Environmental Assessment Requirement

The FAA protocols and procedures for implementing NEPA and addressing the requirements set in the Council on Environmental Quality regulations (40 CFR 1502, 1978) at airports have outlined airport-specific development actions and the required permitting for each. CEQ states that an EA is a "concise document" that takes a "hard look" at expected environmental effects of a proposed action.

In this instance, the proposed federal action includes FAA approval of the proposed revisions to the approved ALP for L.G. Hanscom Field. Jet Aviation, a tenant of the Massachusetts Port Authority (Massport), proposes facility modifications that require a modification of the ALP. Based on preliminary review of concept plans for the proposed improvements, FAA New England Division determined that the Project exceeds the minimal expansion intent for actions eligible for CatEx (FAA communication October 17, 2012). Therefore, further environmental impact analysis is required through a more detailed EA.

1.5 Federal, State And Local Agency Jurisdiction

The proposed project could require state and local permitting as listed in Table 1-1, pending final review and choice of alternative.

Table 1-1. Agency Coordination and Permitting

Resource	Agency	Permit	Regulatory Requirement/Threshold
Wetlands	Town of Lincoln Conservation Commission and Massachusetts Department of Environmental Protection (DEP)	Notice of Intent/Order of Conditions	Massachusetts Wetland Protection Act; Work conducted within 100 feet of a wetland
Stormwater	US Environmental Protection Agency (EPA) and DEP	National Pollutant Discharge Elimination System (NPDES): Construction General Permit (CGP)/NOI and Stormwater Pollution Prevention Plan (SWPPP)	MA Stormwater Management Standards; Stormwater discharge from construction activities; Construction over one (1) acre

2 PURPOSE AND NEED

2.1 Overview

The Purpose and Need within a NEPA document is a formal statement approved by a federal agency agreeing to the need for the project and the overall project purpose. The statement documents the justification for the project study and provides the basis for evaluating the effectiveness of alternatives.

2.2 Purpose And Need

There is a *need* to improve overall airport safety, operations and aircraft traffic flow at Jet Aviation's lease site at Hanscom Field. Manufacturers of aircraft for business and private use have developed larger, quieter and more fuel-efficient aircraft for their fleet. Jet Aviation provides maintenance and storage services for these types of aircraft. The new aircraft occupy a larger footprint and requires larger wingtip clearances from other aircraft and permanent structures. The current ramp apron does not provide enough space to safely maneuver these newer generation aircraft.

The *purpose* of the project is to increase the safety and efficiency of aircraft operations of the new aircraft design and to improve maintenance operations at the Jet Aviation facilities. Providing additional space in the hangar and ramp areas would improve safety for all operations and maintenance personnel by allowing for increased spacing between aircraft, particularly in areas where propeller aircraft are parked.

Jet Aviation proposes to develop a storage and maintenance hangar, increased apron area, and a new FBO facility to address the physical requirements of larger aircraft at the Jet Aviation lease site. These actions require a revision to the Airport Layout Plan (ALP) for Hanscom Field and would allow Hanscom Field to better serve the overall air demand of eastern Massachusetts, New England and the Nation. Hanscom Field is the primary general aviation reliever airport for Boston's General Edward Lawrence Logan International Airport.

The proposed project area is located partially within the area identified for "Future Aviation or Compatible Use" on the Airport Layout Plan, Terminal Area Plan, as shown on Figure 2.

2.3 Background And Public Involvement

As part of the initial project planning, Jet Aviation filed an Abbreviated Notice of Resource Area Delineation (ANRAD) with the Lincoln Conservation Commission for verification of wetland resources. The ANRAD public hearing was held on October 5, 2012 at the Temporary Town Offices on Ballfield Road in Lincoln. This hearing was publicly advertised. The project was identified and discussed with the Conservation Commission as well as members of the public. In preparation for the ANRAD, a publicly advertised site visit was held on August 29, 2012 with members of the Conservation Commission. The Order of Resource Area Delineation (ORAD) was issued by the Town of Lincoln Conservation Commission on October 17, 2012 (Appendix A).

A Draft EA for the Jet Aviation Site Safety and Efficiency Improvements Project was mailed to interested parties, including federal, state and local agencies and stakeholders, on October 3, 2013 as listed in Chapter 7 of this document. An informational public meeting to discuss the

project and the EA was held on Wednesday, October 16, 2013 at the Hanscom Field Civil Air Terminal (CAT) Room 115, at 200 Hanscom Drive, Bedford, Massachusetts at 6:00 pm. The public was invited to attend to ask questions, review maps and figures of the proposed project, and/or leave verbal or written comments on the project. The public or other interested parties were also invited to submit comments on the Project to FAA via email, fax, or phone per directions provided in the "Notice of Availability of Environmental Assessment and Public Comment Period" published in the Boston Globe on October 4, 2013, and in the four local papers: The Concord Journal, The Bedford Minuteman, Lincoln Journal and The Lexington Minuteman on October 10, 2013. The comment period was initially noticed as being open from October 4, 2013 to November 1, 2013, however in response to comments provided during the public meeting, this date was extended to November 18, 2013, and extended a second time to November 25, 2013 to allow all parties to have adequate time to comment on the Project. During this time period, the EA was available for public review and copying at The Town of Lincoln Town Office at 16 Lincoln Road, at the FAA New England Regional Office at 12 New England Executive Park, Burlington, MA and on the Massport website at www.massport.com. Digital copies or hard copies could be requested by contacting Kimberly Peace at (603) 669-5555 ext. 151 or email at kpeace@hoyletanner.com.

Twenty-six comments were received via email and letters. A single request was made to provide a paper copy of the Draft EA. Each comment received was retained in the Project file. A Comment Analysis and Response to Comments was prepared which recognizes all of the comments received and provides more information on specific comments and how they were categorized (Appendix B).

Issues Identification and Changes between the Draft and Final EA

The public comment process brought forth a number of ideas and suggestions. FAA reviewed all public comments, identified the issues raised, and determined how they would be used in the analysis, as detailed in the Comment Analysis. Some issues were identified as being outside the scope of the project or already decided by law or regulation. These issues were not used in the analysis provided in this Final EA. Questions raised on particular topics were evaluated to determine if they could be addressed through project mitigation measures, design alternatives or a more thorough or clearly defined effects analysis than that provided in the Draft EA. These issues included potential impacts from increases in noise, increases in operations, changes in air quality, and impacts to historic resources including the Minute Man National Historical Park. FAA determined that each of these issues would be most appropriately addressed in the effects analysis for the associated resources detailed in Chapter 5, and revisions were made to Sections 5.2, 5.5, and 5.9 to reflect these comments.

3 PROPOSED ACTION AND ALTERNATIVES

3.1 Proposed Action

Jet Aviation proposes to upgrade and expand its Hangar, Fixed Base Operator (FBO) and ramp facilities and parking areas to improve site safety and efficiency within their lease area boundary within Hanscom Field as shown on Figure 2. The increased hangar size would allow the modern fleet of business aircraft to use Jet Aviation facilities, and the increased interior capacity would allow for less overall movement or taxiing of planes as they are used, hangared and maintained within the Jet Aviation site as an improvement to the safety of personnel. The access road and adjacent parking areas would be constructed on Massport property outside of the current Jet Aviation lease site; Jet Aviation would retain the right to use the access road.

Massport requires individual projects to implement Best Management Practices (BMPs) to meet their stormwater management policy. The policy is that projects resulting in increases in impervious surfaces cannot increase peak runoff rates. The proposed project would also comply with the Massachusetts Stormwater Standards. The proposed improvements include three closed underground treatment systems which would allow for pre-treatment, infiltration and attenuation of stormwater before ultimately discharging to the 60" outfall pipe running below the existing ramp, across Hanscom Field to connect to the outfall pipe to the Shawsheen headwaters in the northeast corner of the Field. This new closed system would be designed to capture more of the overall stormwater runoff from the entire Jet Aviation lease site and meet the most current, stringent standards for water quality protection.

These actions, specific to the Jet Aviation site, require modification of Hanscom Field's Airport Layout Plan (ALP) since there would be new structures and Hanscom Field's secure airside/landside boundary would be adjusted to provide more airside operating space.

3.2 Sustainable Design

As noted in the Introduction of this document, Jet Aviation is committed to designing and certifying the proposed Hangar, office/shop space and FBO facility in accordance with LEED (Leadership in Energy and Environmental Design) Silver certification standards. In addition to the LEED Silver certification, Jet Aviation is also committed to incorporating Massport's *Sustainable Design Standards and Guidelines, Volume 2*, (2011a) and the Massport *Guide to Tenant Construction* (2009) into the project design. These documents are components of Massport's overall sustainability program, which include diverse sustainability initiatives ranging from facilities maintenance to innovative partnerships and public incentives. The Standards apply to new construction projects such as this one, and are intended to be used by architects, engineers, and planners working on tenant alterations on Massport property.

Jet Aviation is committed to reducing energy use. In addition to committing to using energy-efficient lighting for this project, Jet Aviation has reviewed the existing facilities for ways to reduce energy consumption. In 2012, implementation of lighting upgrades reduced electricity consumption by 10,550 watts per hour, equal to 46,209 KWH per year, resulting in an approximate $7856 per year cost reduction and 32.6 metric tons of CO_2 sequestered. Jet Aviation has replaced 85% of their gas fueled vehicles with alternative fueled vehicles and is committed to future improvements for fleet vehicles. Examples of design initiatives suitable for LEED Silver certification and compliance with the Massport Standards to be used in the Jet Aviation project include the following: designing the building to use 20-40% less water than the

USGBC baseline for buildings of similar size and occupation; implementing water conservation measures that pertain to landscaping and wastewater technologies including procedures for water reuse; using at least 10 percent less energy than the USGBC baseline; using renewable energy sources for building operation; using recycled materials for building construction; implementing a recycling program in daily operations; using low emitting or fuel efficient vehicles; and designing and using energy-efficient lighting systems.

3.3 Alternatives

The alternatives proposed vary in the size and locations of the proposed components: Hangar, FBO, ramp and parking areas. Table 3-1 following this section outlines the alternatives, and associated potential impacts, and acts as a decision matrix.

3.3.1 *No Action – No Improvements to Existing Conditions*

At the locations leased by Jet Aviation from Massport there currently exists two hangars: Hangar 17 is 21,315 sf in size, and Hangar 21 is 84,500 sf (Figure 2). These facilities house aircraft while they are being repaired or maintained. The size limitations of Hangar 17, based on its current location and footprint, limits the ability of Jet Aviation to complete repair and maintenance safely, and restricts the maximum size of aircraft that can be housed or worked on. The site thus does not function efficiently and is inefficient in energy use compared to modern hangar designs. The limited amount of space in which to maneuver and repair aircraft can cause an unsafe environment for personnel, especially when transitioning aircraft. If no action is taken on the proposed project, the existing conditions would continue as described and the project safety and efficiency needs would not be met.

3.3.2 *Alternative 1 – Original configuration of ramp and hangar*

Alternative 1 presents the original project design concept prior to delineation of wetlands in the undeveloped area to the south of the existing facilities. This alternative was designed to meet the purpose and need for the project via the following components: a 40,000 sf proposed Hangar with 11,000 sf of office/shop; a 12,000 sf FBO facility; a 182,000 sf ramp area; a new landside access road; and reconfigured or new parking areas to replace parking lost to new construction (Figure 3). This alternative would result in approximately 50,090 sf of direct impacts to wetlands from new construction and grading. Hangar 17 and Building 20 would need to be removed from the site. This alternative was dismissed due to wetlands impacts.

3.3.3 *Alternative 2 – Revised configuration of ramp and hangar*

Alternative 2 was developed after the identification of wetlands on-site and portrays the first efforts to avoid and minimize wetland impacts while meeting the purpose and need for the project. The components are similar to Alternative 1, with a 40,000 sf Hangar with 7,500 sf of office/shop, a 12,000 sf FBO facility, 240,000 sf of ramp area, and a new landside access road and parking areas (Figure 4).

This alternative would minimize wetland impacts; however, direct impacts from the road crossing and associated culvert installation to the jurisdictional bank/or stormwater swale adjacent to Wetland 1 would result in approximately 300 sf of impact to this resource. Additionally, there would be direct impacts from grading to Wetlands 1, 2 and 4 of approximately 700 sf. This alternative would also have a visual impact to Hangar 16 as seen from Hanscom Drive. The view of this building would be partially blocked by the proposed Hangar. Hangar 17, an outdated and inefficient aircraft hangar constructed in 1945, as well as Building 20, a bulk storage and maintenance facility, would need to be removed from the site.

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ALTERNATIVE #1

FIGURE
3

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ALTERNATIVE #2

FIGURE

4

3.3.4 *Alternative 3 - Avoidance of Direct Wetland Impacts – Proposed Action*

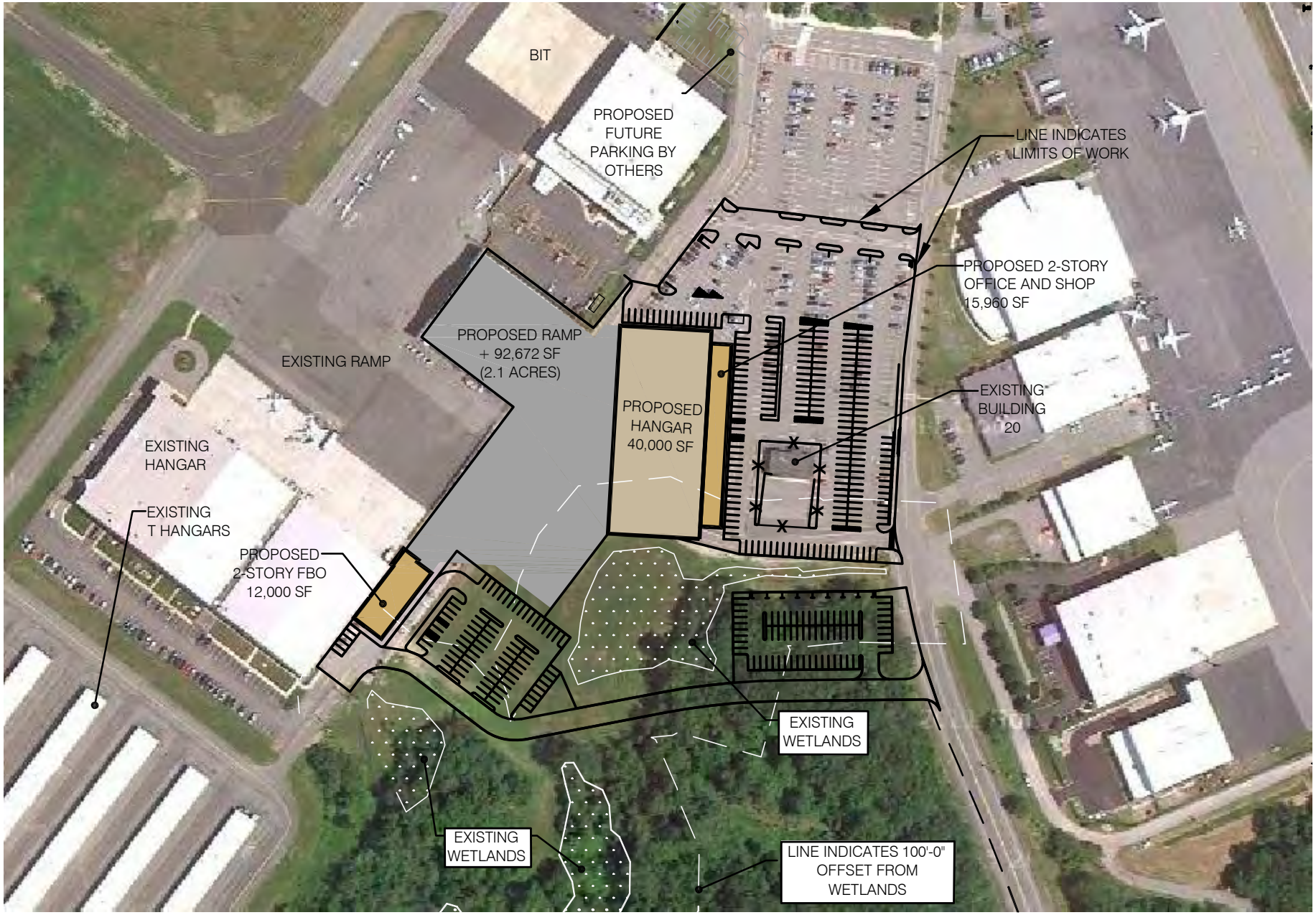
Alternative 3 was designed to completely avoid direct impacts to wetlands while meeting the purpose and need for the project. Similar to Alternatives 1 and 2, project components would include construction of a new 40,000 sf Hangar with 16,000 sf of office/shop space, a new 12,000 sf FBO facility, 94,160 sf of ramp areas, a new landside access road, and replacement automobile parking (Figure 5). Approximately 466 parking spaces will be displaced, with approximately 348 spaces replaced, for a net loss of 85 parking spaces on Massport property. Demolition of Hangar 17 would occur but Building 20 would be left in place. The configuration of Alternative 3 would result in no direct impacts to the wetlands on site, but would require approximately 101,146 square feet of impacts to the wetland buffer areas. These impacts are detailed and further discussed in Section 5.14. The ramp size would be significantly reduced from Alternatives 1 and 2 to shift the Hangar south and west on the site, avoiding the visual impact of blocking the Liberty Mutual building from being seen from Hanscom Drive.

3.4 Alternatives Reviewed But Eliminated From Detailed Analysis

Alternatives exist which although initially meet the spirit of the purpose and need, are not reasonable or financially/technically feasible enough to carry through the full analysis of impacts in this document. There were approximately fourteen design iterations between the original design and the design presented in Alternative 3. Each of these designs were reviewed and found inadequate to carry through alternative analysis for the following reasons: the design would result in direct wetland impacts; the design would reduce existing parking areas while not allowing for new parking to be created; or, the proposed ramp area would be too small to allow for increases in efficiency of moving planes.

Table 3-1. Alternatives Matrix

Alternative	Description	Preliminary Impacts	Comparison
No Action	No improvements	Does not meet purpose and need	NA
Alternative 1	40,000 sf Hangar; 11,000 sf office/shop; 12,000 sf FBO facility; 182,000 sf ramp; remove Hangar 17 and Building 20	Meets purpose and need; direct and sizable impacts to wetlands and buffer areas	245,000 sf construction; demolition of two tructures; 50,090 sf of direct impacts to wetlands and bank/swale
Alternative 2	40,000 sf Hangar; 7,500 sf office/shop; 12,000 sf FBO facility; 240,000 sf ramp; remove Hangar 17 and Building 20	Meets purpose and need Direct impacts to wetlands, bank and buffer areas View of Liberty Mutual building would be blocked from Hanscom Drive	299,500 sf construction; demolition of two structures; removes an unacceptable number of existing parking spaces; 1,000 sf impact to wetlands and bank/swale; visual impacts
Alternative 3	40,000 sf Hangar; 16,000 sf office/shop; 12,000 sf FBO facility; 94,000 sf ramp; remove Hangar 17	Meets purpose and need; no direct impacts to wetlands or bank	162,000 sf construction; demolition of single structure; no direct wetland impacts, impacts only to buffer areas; no visual impacts; least amount of new impervious surface created



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ALTERNATIVE #3
PROPOSED ACTION

FIGURE
5

4 AFFECTED ENVIRONMENT

4.1 Project Location And Existing Conditions

Hanscom Field has been a major part of aviation in New England since 1941, when the Commonwealth of Massachusetts acquired 500 acres of land in the towns of Bedford, Concord, Lexington, and Lincoln. Military operations dominated Hanscom until it became a joint military and civilian facility in the 1950's. In 1959, the Massachusetts Port Authority was formed and assumed control of the state land. In 1974, general operations and maintenance of the airfield became the responsibility of Massport and military operations declined to approximately 1% of total operations. Hanscom has since been managed as a regional aviation facility, whose major users are a mix of corporate aviation, recreational pilots, flight schools, commuter/commercial air services, as well as some charters and light cargo (Massport/Hanscom website 2013).

In general, the existing conditions for the proposed project location consist mostly of a relatively level paved parking and roadway areas near Hangar 17 adjacent to an area of open field that is mowed. The proposed landside access road would be located within an undeveloped, wooded area within the eastern section of the site. The area for the proposed ramp expansion mainly consists of paved parking areas, Hangar 17, the pad where Building 18 was recently demolished, and a small portion of the mowed field (Figure 2).

4.2 Operations And Future Forecasting

Analysis of the potential impacts for this project focus on the environmental data recorded in the *L.G. Hanscom Field 2005 Environmental Status and Planning Report* (ESPR; Massport 2006). This document was submitted to and approved by the Massachusetts Executive Office of Environmental Affairs (EOEA) in accordance with the provisions of the Massachusetts Environmental Policy Act (MEPA). This document functions as a status report on environmental conditions on and surrounding Hanscom Field. It is intended to be utilized as a planning tool for Hanscom Field and the communities surrounding it. Additional information was used to supplement the data from the 2005 ESPR where available and appropriate.

The 2005 ESPR compares conditions to historic data from the 2000 ESPR (Massport 2000) and other available sources, and evaluates the cumulative environmental effects of Moderate and High Growth scenarios for 2010 and 2020. The 2010 and 2020 scenarios analyzed by the 2005 ESPR represent estimates of what could occur in the future using certain planning assumptions and include expanded development of the Jet Aviation lease area. The future scenarios describe a range of operations that were projected to occur at that time, and can provide a basis for sensitivity analysis, the evaluation of potential environmental impacts including traffic, air quality and noise, and an assessment of potential future facility needs at Hanscom Field. Assessment of the potential impacts of this project will use in part and where appropriate, data from the future scenarios in the 2005 ESPR. The 2012 ESPR was submitted to MEPA on December 31, 2013; thus, only some sections of this document were available during preparation of the draft and final EA. The 2012 ESPR shows that noise levels for 2012 are lower than 2005 and overall impacts are reduced from 2005 levels.

Hanscom Field was divided into six planning areas for the future forecasts in the 2005 ESPR. Jet Aviation is located in the “Terminal Area” and forecasted highlights for this area for 2010 and 2020 include additional General Aviation (GA) facilities, including new hangars, and associated parking spaces on existing and in-fill areas, and ramp areas for new GA hangars; thus, the proposed project is included within this forecast. General aviation (GA) operations accounted for

97.3 percent of aircraft operations in 2005. Forecasted projections for GA operations (which include Jet Aviation) for Moderate and High Growth scenarios for 2010 and 2020 from the 2005 ESPR were based on historic trends at Hanscom Field, national historic trends in GA activity, and industry projections for the national GA market as shown in Table 4-1.

Table 4-1. 2005 ESPR Forecasts of General Aviation Activity

	2005 Actual	2010		2020	
		Moderate	High	Moderate	High
GA Operations	165,424	184,032	191,653	228,052	246,999

To provide an update to the forecasted operations numbers, operations data provided in the Massport *Annual Noise Report* (Massport 2011) was reviewed. This report includes data for annual operations from 1987 to 2010 from FAA Tower counts, which include all arrivals and departures for both civilian and military aircraft activity between 7 a.m. and 11 p.m. As shown in Table 4-2, there were 163,737 recorded total operations in 2010, a 9.2 increase over 2009. Multiplying the operations values by 97% gives an estimated value of GA operations of 158,825 for 2010. *This value is significantly less than the predicted Moderate or High future forecasts for 2010 from the 2005 ESPR.* Operations data for 2011 and 2012 was taken from *The State of Hanscom*, years 2012 and 2013.

Table 4-2. Hanscom Field Annual Estimated Operations

Year	Operations	Estimated GA
2005	169,955	165,424
2006	172,457	167,283
2007	165,907	160,930
2008	165,889	160,912
2009	149,911	145,414
2010	163,737	158,825
2011	162,999	161,580
2012	166,214	165,469

Source: Massport Annual Noise Report, 2011 and The State of Hanscom, 2012 and 2013

The decline in anticipated general aviation operations seen at Hanscom Field has been reflected across the US. Overall trends in GA activity are influenced by several factors including demographics, the economy, and operating costs. Over the past decade, GA operators have faced rising operating costs including escalating fuel prices, increased insurance premiums, and new security–related expenses. In addition, economic growth has been stagnant to low.

At Hanscom Field, there was a surge in business jet use after the terrorist attacks on September 11, 2001, as businesses began reevaluating the use of commercial airlines for their travel needs. This resulted in a net increase in business jet use in 2001; jet use continued to climb through 2007, when jets represented 21.0 percent of Hanscom Field's total activity (Massport 2011). The economic recession that hit in 2008 caused business jet activity levels to decrease in 2008 and sharply in 2009. In 2010, as the economy showed signs of a recovery, business jet activity increased (Massport 2011). *It is not anticipated that operations at Hanscom Field would meet the values for either the Moderate or High Growth scenarios used to evaluate environmental affects in the 2005 ESPR.*

Jet Aviation Operations

It is expected that there will be no net change in Hanscom operations as a result of the project. The number of operations at the Jet Aviation facility may increase by less than 2 operations per day, or a single additional plane flying in and out per day. However, these additional operations would likely be offset by a reduction in flights which currently ferry aircraft from Hanscom to other airports. With the existing facilities, an aircraft may land, disembark passengers, and then take-off again to be serviced at another airport and then return to Hanscom. The increased hangar size would allow these aircraft to remain at Hanscom Field while they are maintained and/or repaired.

Similarly, with the proposed hangar improvements, the number of aircraft located at the Jet Aviation facility, based on the existing client base, may increase from 40 aircraft to 42 aircraft. This includes projections that some of the existing clients may choose to reduce their fleet from two planes to a single plane because the newer aircraft can fly farther distances due to increased energy efficiencies.

These values are specific to Jet Aviation operations and do not reflect the predicted growth in GA operations of Hanscom Field forecasted in the 2005 or the 2012 ESPR and detailed earlier in this section. Although operations have not met the values for either the Moderate or High Growth scenarios used to evaluate environmental affects in the 2005 ESPR, operations can be anticipated to increase slightly based on the rebounding economy.

There are 23 possible environmental impact categories identified by FAA Order 1050.1E, Appendix A. Per direction provided in FAA Guidance Memo #2, 2011, it is not the intent of this document to provide detailed discussion or analysis of all categories. Only those areas where there may be significant environmental impact caused by the proposed action, or where there are uncertainties which require evaluation, are identified in this document. The area of analysis for direct and indirect impacts includes the Jet Aviation lease site, and where necessary, is expanded to include Hanscom Field and the surrounding communities.

The proposed action at BED will impact the following environmental categories:

4.3.1 Air Quality

The study area for Air Quality includes the entirety of Hanscom Field. The primary air pollutant sources at Hanscom Field are aircraft operations and landside roadway traffic. Other sources include space heating emissions and fugitive emissions from fuel storage, fuel spillage, and aircraft refueling activities. Prior studies have shown that emissions from these latter sources are very small compared to the aircraft and groundside roadway traffic (Massport 2006).

Air Quality at Hanscom Field has improved over a 35-year period from 1970 to 2005 (Massport 2006). In 2005, Hanscom Field was in compliance with Massachusetts and National Ambient Air Quality Standards (NAAQS) except for the new eight-hour ozone NAAQS. Ozone levels had been in compliance with the older one-hour NAAQS for ozone in the Boston area, including the Hanscom Field communities, since 1996. Calculations of annual emissions from aircraft operations and motor vehicles accessing the airport demonstrate that Hanscom Field emissions are a very small fraction of regional emissions. Aircraft emissions for all pollutants except carbon monoxide increased between 2000 and 2005; these changes are a result of the changes

in the mix of aircraft operating at Hanscom Field. Roadway emissions for all pollutants declined between 2000 and 2005 due to the effects of more stringent emission controls on motor vehicles.

The 2005 Massport, *L.G. Hanscom Field Environmental Status and Planning Report* (ESPR) presents an Analysis of Future Scenarios which could occur at Hanscom into the years 2010 and 2020 derived from an emissions burden analysis of airside operations and groundside motor vehicle traffic for the 2010 and 2020 scenarios. Because of economic conditions and as detailed in Section 4.2, GA operations numbers from 2003 through 2010 have remained below 200,000, not even reaching the forecast moderate levels predicted for 2010. The FAA Terminal Area Forecast (TAF) shows only slow growth in the GA operations activity through 2020. Data in the future forecasts from the 2005 ESPR include hangar upgrades to the Jet Aviation location, as well as increased traffic on Hanscom Drive and Old Bedford Road, that would account for any potential changes in air quality as a result of increased operations in this area of Hanscom Field.

The 2005 Massport ESPR estimated maximum concentrations of Air Emissions for the 2020 (High Growth) scenario. The estimated maximum concentrations in 2020 for the worst case (High Growth) would all be in compliance with the NAAQS and the DEP 1-hour NO2 Policy Guideline (Appendix C). Concentration levels for the other three future scenarios would be lower because emissions for these cases are lower. Thus, it is anticipated that air pollutant emissions for all future growth scenarios would increase incrementally but would not have an adverse impact on local air quality in Bedford, Lexington, Concord, and Lincoln.

In 2008, KB Environmental Services, a private consultant conducted an air quality assessment for the proposed East Ramp project at Hanscom Field (KBES 2008; Appendix D). At that time, aircraft operational emissions and construction emissions used data more recent than that used in the 2005 ESPR. As a means of ensuring that continual progress toward achieving and maintaining compliance with the NAAQS for CO and O3 were made, the General Conformity Rule established criteria (called “de minimis” levels) for NOx/VOC and CO emissions. For the Boston metropolitan area, the applicable de minimis levels were 50 tons/year for either NOx or VOCs and 100 tons/year for CO. Air emissions levels forecasted for 2010 and 2015 operational levels for the no action and build alternatives for the project were below the de minimis thresholds for CO, VOC and NOx.

4.3.2 Biotic Resources

The assessment of biotic communities used existing data, field investigations, wildlife sightings, and the identification of vegetative communities. The analysis area for biotic resources affected by the proposed project includes the entire Hanscom Field.

<u>Vegetation</u>

The Maintained Grounds within Hanscom are comprised of the airport runways, taxiways, aprons and structures, asphalt roads, and neighboring residential and industrial lots. Most of the developed lands are vegetated with lawns and ornamental trees and shrubs. All of the upland areas have been highly influenced by human activity. Naturally vegetated plant communities in the vicinity of Hanscom Field primarily are composed of mixed hardwood/softwood forests and successional uplands, as well as wetlands and mowed grasslands.

A Grassland Management Plan is implemented for airport infield areas at Hanscom Field. Within these areas, the grasslands are mowed to maintain visibility for operational safety, as well as to maintain grassland habitat for two State-listed rare bird species (see Section 4.3.5 below). As detailed in Section 4.3.13, the area south of the proposed project location is interspersed with forested and emergent wetland communities, although some areas of scrub/shrub wetland vegetation also are present (Figure 6). The remaining lands predominantly consist of upland forest and a periodically mowed field.

Wildlife and Fish Habitat

Plant communities within the analysis area provide a range of importance to wildlife species which utilize the area. The variety of vegetative cover types, presence of wetlands and waterways, and undeveloped parcels on and in the vicinity of Hanscom Field provide potential habitat for wildlife species capable of coexisting with human activities and development. Wildlife species that may be expected to inhabit the area include larger mammals such as whitetail deer (*Odocoileus virginianus*), Eastern coyote (*Canis latrans*) and red fox (*Vulpes vulpes*), and smaller mammals such as raccoon (*Procyonlotor*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), gray squirrel (*Sciurus carolinensis*) and various species of mice, voles, moles and shrews. Bird species that would typically populate such habitat include various insectivorous and seed-eating passerines, ground-oriented species such as woodcock (*Scolopax minor*), and predators such as red-tailed hawks (*Buteo jamaicensis*), among others. Various reptiles and amphibians may be expected to occupy portions of the property as well, including the Eastern garter snake (*Thamnophis sirtalis*), Northern water snake (*Nerodia sipedon*), painted turtle (*Chrysemys picta*), snapping turtle (*Chelydra serpentine*), green frog (*Lithobates clamitans*) and wood frog (*L. sylvatica*).

Perennial streams (Elm Brook, Shawsheen River) within and along the periphery of Hanscom Field are Class B surface waters according to Massachusetts Surface Water Quality Standards (314 CMR 4.06), suitable as "habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation" [314 CMR 4.05(3)(b)]. Based on Hartel, Halliwell and Launer (2002), fish species anticipated to occur in these surface waters include such warm water species as the common shiner (*Luxilus cornutus*), golden shiner (*Notemigonus crysoleucas*), white sucker (*Castostomus commersoni*), creek chubsucker (*Erimyzono blongus*), brown bullhead (*Ameiurus nebulosus*), chain pickerel (*Esox lucius*) and pumpkinseed (*Lepomis gibbosus*), among others.

4.3.3 Construction

Massport has in place requirements for construction contractors that are aimed at minimizing environmental impacts. Massport requires contractors to adhere to construction guidelines relating to, construction debris and demolition waste recycling, selection of high efficiency spaceheating/cooling systems, soil treatment and reuse on site (Soil Management Plan), construction worker vehicle trip limitation, and adherence to the Clean Construction Initiative.

As part of the Hanscom Environmental Management System (EMS) implementation and Massport's continued commitment to reduce impacts to the environment, Massport implemented the DEP Clean Air Construction Initiative/EPA's voluntary Diesel Retrofit Program. Implementation of the initiative requires contractors to retrofit their heavy equipment with advanced pollution control devices during construction of all Massport projects. Contractor owned equipment such as front-end loaders, backhoes, cranes and excavators will be retrofitted

with oxidation catalysts and low particulate filters. These devices filter out and break down harmful diesel emissions of hydrocarbons, particulate matters and carbon dioxide.

Jet Aviation is committed to adherence to Massport Sustainable Design Standards, and achieving LEED Silver certification, at a minimum. Construction contractors would be chosen who can adhere to these standards. As noted in Section 3.2, project initiatives for reducing construction impacts may include: using low emitting materials for construction including paint and flooring; using renewable energy sources for construction activities; using recycled materials for building construction; and implementing a recycling program for used or remnant construction materials.

4.3.4 Section 4(f)

Section 4(f) relates to historic sites, properties and parks, recreation areas, and wildlife and waterfowl refuges. The analysis area for these resources is limited to the potential project site as shown on Figure 5. Although the entirety of Hanscom Field is surrounded by several listed 4(f) sites, including Great Meadows National Wildlife Refuge and the Minute Man National Historical Park, as detailed fully in Chapter 10 of the 2005 and 2012 ESPR, none of these sites are within the project site boundaries.

The Massachusetts Historical Commission (MHC) is the entity that functions as the State Historic Preservation Office (SHPO) for Massachusetts. Review of their database via use of the online search tool Massachusetts Cultural Resource Information System (MACRIS) resulted in no listed sites within the proposed project area.

MHC and the Historical Commissions of the four towns within which Hanscom Field is located (Lincoln, Concord, Bedford and Lexington) were contacted and given opportunity to review the Draft EA and provide comment.

Because Hangar 17 is over fifty years old, a historic survey and assessment of the hangar was conducted for this project (Appendix E). The Hangar is not associated with any of the significant development, events or activities that took place at Hanscom Field in the mid-twentieth century. The building is a relatively small example of a fairly common type of Hangar built during the 1960's and does not represent an important or unique engineering accomplishment. Hangar 17 is not recommended for listing in the National Register of Historic Places.

4.3.5 Federal- and State-Listed Threatened or Endangered Species

The analysis area for listed species affected by the proposed project includes the entire Hanscom Field. According to the Massachusetts Natural Heritage Atlas (NHESP; 13th Edition; Effective October 1, 2008], the airside portion of Hanscom is located within Priority Habitat 459. Two species have been identified by NHESP (Appendix E) as existing at Hanscom Field: the endangered upland sandpiper (*Bartramia longicauda*) and the threatened grasshopper sparrow (*Ammodramus savannarum*).

A review of the species listing by county in Massachusetts developed by the U.S. Fish and Wildlife Service (USFWS) New England Office revealed no listed, proposed, or candidate species (T/E species) are likely to occur within the proposed project county. A copy of this listing and the associated official correspondence is provided in Appendix F.

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LAURENCE G. HANSCOM FIELD
BEDFORD, MASSACHUSETTS

WETLAND RESOURCES
LOCATION PLAN

FIGURE
6

Upland sandpipers and grasshopper sparrows have been observed within several areas of maintained grassland vegetation between runways and taxiways at Hanscom Field. The specific locations of nesting pairs of these species vary and include locations adjacent to the Field and can be seen in detail in the 2005 ESPR. No portion of the proposed Jet Aviation project area, as shown on Figure 1, affects grasslands that would serve as habitat for either of these species.

4.3.6 Energy Supplies, Natural Resources, And Sustainable Design

The analysis area for these resources is limited to the proposed project area as shown on Figure 5. As detailed in Section 3.2, Massport is a leader among Massachusetts agencies in the promotion and implementation of sustainable designs. The new hangar facilities proposed for the project will achieve the US Green Building Council's LEED Silver Certification, at a minimum, as well as adhere to Massport's *Sustainable Design Standards and Guidelines*.

There are multiple permanent structures located within and neighboring the Jet Aviation lease site requiring energy. These structures are used for maintenance, storage, and terminal operations. Each structure requires heating in the winter months and electricity for their specific purpose.

Jet Aviation is committed to reducing energy use and using energy-efficient lighting. In 2012, implementation of lighting upgrades reduced electricity consumption by 10,550 watts per hour, equal to 46,209 KWH per year, resulting in an approximate $7856 per year cost reduction and 32.6 metric tons of CO_2 sequestered. On the outside of the facility, 10 fixtures totaling over 4000 watts were replaced with 6 fixtures totaling 1680 watts. This resulted in an annual savings for a typical 13 hour run-time of $1,862 per year or a reduction of .598 metric tons of CO_2 emitted. An additional 4 metal halide fixtures were replaced with 1 LED light fixture, and 3 new 60 watt and 7 new 140 watt LED fixtures replaced 9 450 watt metal halides, resulting in a savings of 2,980 watts per hour, or $6 per 13-hr day.

Inside the facilities and offices, Jet Aviation replaced a total of 79 2x4 and 4x4 fixtures averaging 135 watts consumption per fixture, or 10,665 watts per hour with new LED fixtures, which are 100% brighter and consume only 50 watts per fixture.

Landscaped areas around the buildings require regular mowing in the growing season and the runway, taxiway, ramp and parking lots requires snow removal in the winter months. These operations require fuel for the maintenance vehicles. Jet Aviation has replaced 85% of their gas fueled vehicles with alternative fueled vehicles and is committed to future improvements for fleet vehicles.

4.3.7 Hazardous Materials

The analysis area for hazardous materials is limited to the proposed project area as shown on Figure 5. There are no Mass DEP-listed disposal sites within the project site or active, unremediated Massachusetts Contingency Plan (MCP) sites. Jet Aviation has currently five registered underground and aboveground storage tanks. Jet Aviation was responsible for two releases of oil or hazardous materials: Release Tracking Number 3-20326 dated 1/18/2001; Release Tracking Number 3-19404 dated 3/27/2000. These releases were remediated and have reached regulatory closure under the MCP.

A Notice of Activity and Use imitation (AUL) for an area adjacent to Building 20 was issued for Release Tracking Number 3-11652 on November 22, 1995. A portion of this property is listed as a disposal site as a result of a release of oil or hazardous materials. The response actions listed in the AUL include permitted and restricted uses of the site. This site, although near the proposed project area, would not be disturbed by the project.

Massport works with the tenants like Jet Aviation to identify ways to reduce the amount and toxicity of certain products used at Hanscom Field. Massport involves its tenants in achieving environmental compliance and pollution prevention. Massport provides ongoing technical assistance to tenants regarding new regulations and means for compliance through an inspection program. In addition, educational materials are distributed on pollution prevention, storm water best management practices, spill prevention and response procedures, and other topics. Ongoing implementation of Hanscom Field's Spill Prevention Control and Countermeasure Plan to ensure that all of Massport's hazardous material storage tanks are in compliance with current regulations and to monitor the age, condition, and regulatory compliance status of these tanks on an ongoing basis through the Tank Management Program. Massport employs pollution prevention measures as they apply to site drainage, material storage, material transfer, truck unloading operations, and site security as part of this plan.

4.3.8 Historic And Archaeological

Procedures in Section 106 of the National Historic Preservation Act of 1966 and the Archaeological and Historic Preservation Act of 1974 are used to evaluate impacts to archaeological, architectural, and cultural resources, including those listed or eligible for listing on the National Register of Historic Places. The analysis area for these resources is limited to the potential project site as shown on Figure 5. The entirety of Hanscom Field is surrounded by many listed Historical and Archaeological sites, including Minute Man National Historical Park. Hanscom Field is not visible from most of the Battle Road Interpretive Trail, a part of this park.

As detailed fully in Chapter 10 of the 2005 ESPR, none of the listed or potentially listed sites are within the project site boundaries. Per this document, most of the potential new corporate hangar locations in the Terminal Area, including facilities proposed by Jet Aviation, are located on existing developed areas, entirely within an area assessed as having a low archaeological sensitivity.

As part of the 2005 ESPR development, a survey and inventory of the buildings located within the Hanscom Field boundary was conducted by Public Archaeology Laboratory (PAL; Doherty et al. (PAL), Architectural Building and Inventory Survey, Hanscom Air Force Base, 2003). Only one building listed would be affected by this project: Building/Hangar 17 was built in 1945. No contributing factors for listing were associated with this building in the 2005 ESPR.

The Massachusetts Historical Commission is the entity that functions as the state historic preservation office or SHPO for Massachusetts. Review of their database via use of the online search tool Massachusetts Cultural Resource Information System (MACRIS) resulted in no sites which are listed or eligible for listing on the National Register within the proposed project area.

Because Hangar 17 is over fifty years old, a historic survey and assessment of the hangar was conducted for this project (Appendix E). The Hangar is not associated with any of the significant development, events or activities that took place at Hanscom Field in the mid-twentieth century. The building is a relatively small example of a fairly common type of Hangar built during the

1960's and does not represent an important or unique engineering accomplishment. Hangar 17 is not recommended for listing in the National Register of Historic Places.

Massachusetts Historical Commission (MHC) and the Historical Commissions of the four towns within which Hanscom Field is located (Lincoln, Concord, Bedford and Lexington) were contacted and given opportunity to review the Draft EA and provide comment. No response was received from three of the town historical commissions; the Town of Lincoln responded on December 11, 2013 that they have "no issue with the proposal as submitted." MHC responded on October 28, 2013 and noted no objections to the project and requested to be consulted on any future analysis of the project. This correspondence is included in Appendix G.

4.3.9 Induced Socioeconomic

The study area for Induced Socioeconomic resources includes the entirety of Hanscom Field and the surrounding communities. Massport's facilities at Hanscom Field enable the region's residents and leading industries to make connections with new markets, products, customers, family, and friends. In just about every aspect of life in Massachusetts, Massport is helping the local economy grow.

Hanscom Field has been a vital link to domestic and international destinations for individual pilots, commuter airlines and local employers, including high technology corporations, research and development firms, and educational institutions. Businesses look for accessible air travel when deciding where to locate, and Hanscom provides local businesses with easy access to corporate travel opportunities.

In FY11, Massport invested $3.7 million in airfield, terminal, equipment and other facility improvements required to maintain the airport (Massport 2012).

The Massachusetts Department of Transportation conducted an economic impact study for 2010 activity levels at Massachusetts' airports. It was determined that there were 1,551 full-time equivalent jobs related to Hanscom Airfield activity. Annual wages for those workers whose employment is directly related to airport activity are over $75 million. Hanscom generated estimated economic benefits of $250 million when all the direct, indirect and induced economic benefits of the airport were considered (Massport 2012).

4.3.10 Light Emissions And Visual Effects

The analysis area for these resources is limited to the proposed project area as shown on Figure 5. In accordance with FAA Order 5050.4A, Airport Environmental Handbook, the sponsor of an airport development project shall "consider the extent to which any lighting associated with an airport action will create an annoyance among people in the vicinity of the installation." It is also prudent to consider whether lighting associated with a proposed project might confuse or interfere with the vision of the air traffic controller's directing the aircraft in the vicinity of the Field, or the vision of the pilots on approach to an airport runway.

Existing lighting emission sources include airfield lighting and terminal/landside lighting. Airfield lighting includes high-intensity runway lights, taxiway edge lights, runway end strobe lights, runway centerline and touchdown zone lights. Building security lighting consists of common lighting sources such as roof perimeter lights and lighting from the interior of the structures. Existing and future roof perimeter and parapet lights would be shielded and directed down and

would not spill far from the source. Roadway lighting and parking lot lights would consist of amber security lighting or older low profile street lights (lower intensity white light). Such lighting, similar to building light, is directed downward and does not typically spill more than 30-50 feet away from the light source.

As noted in Section 4.3.6, Jet Aviation is committed to reducing impacts from light emissions, using energy-efficient lighting and adhering to Massport's *Sustainable Design Standards and Guidelines*. In 2012, lighting upgrades on the exterior of the facility resulted in replacing 10 fixtures totaling over 4000 watts with 6 fixtures totaling 1680 watts. These new light fixtures have a directed, downlit design and reduce light bleed offsite.

4.3.11 Noise

The study area for Noise includes Hanscom Field and areas of the surrounding communities. Data generated for the 2012 ESPR, the 2005 ESPR, the *Technical Memo Regarding Proposed Development of the East Ramp* that included data and trends from 2006 and 2007 (HMMH 2008), and the *Hanscom Field Annual Noise Report* (Massport 2011b) show noise levels at Hanscom Field have decreased over the past decade, due primarily to technological trends toward quieter and better performing aircraft and an overall reduction in operations.

The FAA first issued noise standards for civil aircraft in 1969, when regulations established that minimum noise performance levels must be demonstrated for new turbojet and transport category large airplane designs. In 1977, more stringent standards were adopted, and Stage 1, 2, and 3 classifications were introduced. Stage 1 airplanes do not meet either the 1969 or 1977 standards. Stage 2 airplanes meet the 1969 standards but do not meet the 1977 standards. Stage 3 airplanes meet the 1977 standards.

Each year, the Massport prepares a noise report for Hanscom Field to report on aircraft activity and the noise environment at the airport. It includes data on the numbers and types of operations and overall noise exposure for the most recent calendar year. The 2011 report presented data on Hanscom Field's 2010 operations and used comparable data from previous study years to demonstrate trends in aviation activity and noise levels. This report included a comparison of 1995, 2000, and 2005 through 2010 noise levels recorded at six noise-monitoring sites located in the communities and on the airfield. Relevant noise data from this report include the following:

- While military flights represented approximately one percent of the total activity, they contributed 43 percent of the total departure noise exposure.
- Business jet activity, which represented 16.7 percent of the total activity, contributed 89.1 percent of the civilian departure noise.
- Despite the decrease in Stage 2 jet operations (the noisiest civilian aircraft) from 11 percent of the jet fleet in 2000 to 1.4 percent in 2010, Stage 2 jets contributed over 16 percent of the civilian jet departure noise in 2010.
- Since 2009, Hanscom has reduced touch and go traffic over Minute Man National Historical Park; an average of 13.5 percent fewer flights per year travel over the Park.

Comparison of year 2012 Day-Night Sound Levels (DNL) noise contours prepared for the 2012 ESPR to the contours shown in the 2005 ESPR show that overall noise levels at Hanscom Field have decreased, largely due to lower activity levels by jets and Stage 2 General Aviation (GA)

aircraft, as well as decreased nighttime operations. The total population exposed to levels greater than DNL 65 dB has decreased from 17 people in 2005 to 0 people in 2012. The total population in the four towns abutting Hanscom Field exposed to DNL values of 55 dB or greater in 2012 is estimated to be 1,041 people, a significant decrease from 2,953 people in 2005.

Massport has implemented several policies that have had a positive impact on noise levels at Hanscom since 1978. The 1978 Hanscom Field Master Plan and Environmental Impact Statement (The Master Plan) and the 1980 General Rules and Regulations for Lawrence G. Hanscom Field include the policies and regulations that continue to guide Massport as it operates Hanscom Field. Since the adoption of these documents, Massport has worked closely with the Hanscom Field Advisory Commission (HFAC) and the Hanscom Area Towns Committee (HATS), as well as other interested parties, to balance its commitment to regional transportation and the business community with the need to recognize and minimize the airport's impact on the surrounding communities. For example, concepts for a new initiative to reduce touch and go traffic over Minute Man National Historical Park have resulted in an average of 13.5 percent fewer flights over the Park since the inception of the program in 2009 (Massport 2011b).

In 2001, Massport distributed "Fly Friendly" videos to all Hanscom pilots, flight schools, and FBOs. Massport is now asking all pilots who receive a Hanscom ID badge to watch a video about quiet flying techniques. The quiet flying techniques are also described on Massport's website, on posters that are prominently displayed by the flight schools and the FBOs, and on handouts that are available for pilots to include with their airport flight materials.

4.3.12 Water Quality

The analysis area for water quality resources is limited to the project area as shown in Figure 5. There are no navigable waterways, municipal drinking water supplies, sole-source aquifers or protected groundwater supplies within the proposed project site. Expanded review of these resources as they relate to Hanscom Field can be found in the 2005 ESPR but are not relevant to this project and are not included here.

As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. Point sources are discrete conveyances such as pipes or man-made ditches. Industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. Stormwater discharges from construction activities (such as clearing, grading, excavating, and stockpiling) that disturb one or more acres, such as the proposed project, are regulated under NPDES stormwater program. Prior to discharging stormwater, construction operators must obtain coverage under an NPDES permit, which is administered in Massachusetts by the US Environmental Protection Agency (EPA).

Where EPA is the permitting authority, construction stormwater discharges are almost all permitted under the Construction General Permit (CGP). The CGP requires compliance with effluent limits and other permit requirements, such as the development of a SWPPP. Construction operators intending to seek coverage under EPA's CGP must submit a Notice of Intent (NOI) certifying that they have met the permit's eligibility conditions and that they will comply with the permit's effluent limits and other requirements.

Airports in the United States, including Hanscom Field, are required to obtain a Stormwater

Multisector General Permit under the NPDES permit program. Tenants such as Jet Aviation who lease property on Hanscom Field and engage in activities covered under the permit program are listed as co-permittees.

Massport has updated its Stormwater Pollution Prevention Plan (SWPPP) to include best management practices for stormwater management and snow removal (Massport 2012). Massport performs periodic visual inspections of water quality at Hanscom Field stormwater outfalls incompliance with the NPDES permit.

As detailed in Section 5.13, impacts from new impervious surface areas will be offset by a new stormwater treatment system that would capture more of the overall stormwater runoff from the Jet Aviation lease site in a new closed system which would be designed to meet the most current, stringent standards for water quality.

4.3.13 Surface Water and Wetlands

The analysis area for these resources is limited to the potential project site as shown on Figure 5. The surface water and wetland resources associated with Hanscom Field are, with the exception of those described below, outside of the potential for impact from this project.

Surface Water

Hanscom Field is included in the watershed drainage area of two perennial waterways: the Shawsheen River and Elm Brook. The Shawsheen River has a total drainage area of approximately 78 square miles, and encompasses all or part of 12 Massachusetts municipalities, including Bedford where its headwaters originate (Figure 1). Representing one of the smaller watersheds in the state, the mainstem of the Shawsheen River flows 25 miles from the east side of Hanscom Field, losing 70 feet in elevation as it travels to its confluence with the Merrimack River in Lawrence. The watershed has an urban character throughout and supports a population of approximately 250,000 people. Elm Brook is a tributary of the Shawsheen with a watershed of 5.8 square miles located in Lincoln, Concord and Bedford. The confluence of these waterbodies is located northeast of the airport property as seen on Figure 1.

Neither of these resources is located within the project site boundary; however stormwater runoff from Hanscom Field does outfall to Elm Brook and the Shawsheen River, after appropriate treatment has been applied. Examination of the potential effects of such outfall on water quality within these two water bodies was conducted and detailed in the 2005 ESPR. Water samples taken from the Elm Brook location upstream of, and thus not affected by, the Hanscom Field outfalls were found to have lower water quality than either of the samples taken from the Hanscom Field's Elm Brook or Shawsheen River outfalls. In essence, the surrounding land uses have a stronger effect on water quality than the activities at Hanscom Field. No new water quality analyses were prepared for the 2012 ESPR.

Wetlands

In accordance with Federal and State guidelines, on-site wetland boundaries were delineated by Wetlands & Wildlife, Inc. in April, 2012 and subsequently approved by the Lincoln Conservation Commission in October 2012 (Appendix A) through the ANRAD process. These areas, four of which occur on or proximate to the project site, constitute vegetated wetlands. These wetlands are subject to regulation at the Federal level by the U.S. Army Corps of Engineers pursuant to

Section 404 of the Clean Water Act. At the State level, these wetlands consist of Bordering Vegetated Wetland (BVW) and one Bank area as shown on Figure 6.

Wetland 1 consists of the emergent plant community within the open field adjacent to former Building 18. Besides a preponderance of soft rush (*Juncus effusus*), field investigations also confirmed the presence of hydric soils in this area. The soil was abundantly mottled and saturated at the surface with some standing water, as well. Nowhere within Wetland 1 was soil sampling depths of greater that 10-12 inches achieved, indicating underlying fill material.

Wetland 2 is a forested, scrub/shrub and emergent wetland located south of Wetland 1. The two wetlands are not hydrologically connected. Red maple (*Acer rubrum*) and cottonwood (*Populus deltoides*) constitute the most abundant canopy species, while alder (*Alnus rugosa*), pussy willow (*Salix discolor*), oriental bittersweet (*Celastrus orbiculatus*), jewel weed (*Impatiens capensis*) and cattail (*Typha latifolia*) are common understory species.

Wetland 2 originates in an area of seasonal standing water surrounded by upland forest vegetation. Within this pool, two (2) wood frog egg masses were observed on 4 April, 2012. On 17 April 2013, 18 wood frog egg masses and one (1) adult wood frog were observed in the Wetland 2 pool. Based on the MA Natural Heritage & Endangered Species Program (NHESP) Guidelines for the Certification of Vernal Pool Habitat (March 2009), at least five (5) wood frog egg masses are required for an area of standing water to be certified as a vernal pool. The subject pool also must not exhibit a permanently flowing outlet. The area of standing water within Wetland 2 meets these criteria (see photos in Appendix H); this pool is anticipated to be eligible for NHESP certification.

Wetland 3 is located southwest of Wetland 2, is primarily forested, and drains in a westerly direction to the drainage channel adjacent to the existing T hangars. Dominant canopy species throughout Wetland 3 include red maple and yellow birch (*Betula lutea*), while understory species consist of arrowwood (*Viburnum dentatum*), spicebush (*Lindera benzoin*), skunk cabbage (*Symplocarpus foetidus*) and sensitive fern (*Onoclea sensibilis*), among others.

Wetland 3 also contains an area of standing water. Other than water striders (Order: Hemiptera, Family: Gerridae), a facultative vernal pool species, no other obligate or facultative species were observed during field investigations on 4 April 2012. On 17 April 2013, however, 13 wood frog egg masses were observed, and no flow was observed being discharged from the criteria pool (see photos in Appendix H). As such, Wetland 3 pool also is anticipated to be eligible for State NHESP certification.

Wetland 4 is located north of Wetland 2, adjacent to and up-gradient of the Jet Aviation parking lot. This primarily scrub/shrub and emergent wetland is characterized by pussy willow, blue vervain (*Vervena hastata*), wool grass (*Scirpus cyperinus*) and tussock sedge (*Carex stricta*), among other wetland plant species. Groundwater and surface runoff from Wetland 4 flow in the direction of the drainage channel adjacent to the existing T-hangars.

The “bank” resource is associated with the small intermittent stormwater swale located in the northeastern portion of the project area, immediately south of the road that leads to the existing Jet Aviation facility. This drainage-way discharges to the Hanscom stormwater management system at a headwall located at the junction of the above-referenced road and Hanscom Drive. From this point, stormwater flows through variable sized landside and airside culverts, ultimately discharging to the headwaters of the Shawsheen River south of Runway-End

29. As noted in Section 4.3.12, Massport and Jet Aviation have implemented measures to reduce impervious pavement and stormwater impacts to the Shawsheen River.

4.4 Secondary And Cumulative Impacts

Massport and its tenants continue to develop improvements to Hanscom Field. Past, present and recently foreseeable future actions at Hanscom include the following (Massport 2012):

- In 2012, Massport completed a project to relocate portions of the perimeter road at the approach of Runway 11.
- Massport will complete the project to relocate portions of the perimeter road at the approach of Runway 29 in 2013. Massport will also rehabilitate the pavement around the Old T-hangars.
- The Hangar 24 redevelopment project, which includes development of a new FBO facility commenced in 2013.

4.5 Not Affected

For the following potential impact categories, some are not applicable to Hanscom Field due to its location, such as:

- Coastal Resources- the project is not located in a Coastal Resource Area and would not be under the jurisdiction of the Massachusetts Office of Coastal Zone Management.

- Farmlands- there are no important farmlands such as pasturelands, croplands, or forests considered to be prime, unique, or statewide or locally important lands affected by the project.

- Floodplains- the project is not located within an area identified as a floodplain on a FEMA-developed Flood Insurance Rate Map (FIRM).

- Wild and Scenic Rivers- the Departments of the Interior and Agriculture manage the Wild and Scenic Rivers Act (Act) via the National Park Service (NPS). The NPS has designated sections of the Sudbury, Assabet and Concord Rivers as Wild and Scenic, including corridors that stretch for 29 miles along the Sudbury River, Concord River and Assabet River within the communities of Concord and Bedford. These river sections lie to the north and west of Hanscom Field, with the closest location to Hanscom being a portion of the Concord River just northwest of Route 62 approximately ¾ of a mile away. None of the rivers receive surface water or stormwater runoff from Hanscom Field, thus, they would not be affected by the project.

Other potential impact categories are not applicable because of the nature of the proposed action, thus analysis is not required because the resource is not present within the project boundary, or the no action, proposed action, and reasonable alternatives would not affect the impact category:

- Compatible Land Use- The proposed project has been included in the 2005 ESPR and identified for future aviation development. No changes or restrictions of use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including the landing and takeoff of aircraft, need to be made.

- Soild Waste- the solid waste generated during project implementation, including construction waste, would be disposed of appropriately per Federal, state, and local regulations addressing such materials.

- Environmental Justice- Environmental justice ensures no low-income or minority population bears a disproportionate burden of effects resulting from Federal actions. The project would not cause disproportionate and adverse effects on low-income or minority populations.

- Social Impacts- The project would not require moving homes or businesses, would not divide or disrupt established communities, significantly change surface transportation patterns, disrupt orderly, planned development, or create a large change in employment. Section 5.10 discusses the Induced Socioeconomic consequences in detail.

5 ENVIRONMENTAL CONSEQUENCES

5.1 Environmental Consequences Evaluation Process

In this chapter, the effects of the proposed action are described for each environmental impact category identified in Chapter 4, Affected Environment. The cumulative impact of the proposed action is determined by the significance and duration of these impacts in conjunction with impacts from previous and anticipated future projects.

For each of the impact categories listed below, impacts would be similar in nature for each of the three project build alternatives, unless otherwise noted.

5.2 Air Quality

As noted in Section 4.3.1, calculations of annual emissions from aircraft operations and motor vehicles accessing the airport demonstrate that Hanscom Field emissions are a very small fraction of regional emissions. Air Quality has improved at Hanscom over the past three decades due to a variety of factors, including modification of aircraft design to decrease air emissions.

The proposed project is expected to result in a temporary increase in air emissions from construction, but in the long-term would reduce air emissions as follows:

- The number of operations at the Jet Aviation facility may increase by less than 2 operations per day, or a single additional plane flying in and out per day. However, these additional operations would be offset by a reduction in flights which currently ferry aircraft from Hanscom to other airports. With the existing facilities, an aircraft may land, disembark passengers, and then take-off again to be serviced at another airport and then return to Hanscom. The increased hangar size would allow these aircraft to remain at Hanscom Field while they are maintained and/or repaired, thus reducing air emissions.

- With the proposed hangar improvements, the number of aircraft located at the Jet Aviation facility, based on the existing client base, may increase from 40 aircraft to 42 aircraft. However, Jet Aviation anticipates that the additional aircraft would be upgraded aircraft that are more fuel efficient and produce less air emissions. Examples of these types of aircraft are shown in Table 5-1.

Table 5-1. Potential Aircraft at Jet Aviation as New or Replacement

Tenant Name	Type of A/C
Managed Client	Gulfstream-650
Real Estate investment firm	Gulfstream-650
Venture Capital Group	Gulfstream-650
Venture Capital Group	Challenger - 601
Current JA Tenant	Bombardier Global Express
Current JA Tenant	Bombardier Global Express
Current Signature Tenant	Gulfstream - 450
Aircraft Management company	Gulfstream - 450

- Some of the existing clients may choose to reduce their fleet from two planes to a single, larger plane because the newer aircraft can fly farther distances due to increased fuel efficiencies; again, the newer aircraft would produce less air emissions.

Due to the anticipated changes in fleet mix, and the lack of increases in operations, direct air emissions attributed to Jet Aviation activities would decrease, as the newer aircraft are designed to be more efficient and have fewer emissions. Thus, it is anticipated that air pollutant emissions would not have an adverse impact on local air quality in Bedford, Lexington, Concord, and Lincoln.

As an example of reduced air emissions, the Gulfstream 650 is the largest, most technologically advanced aircraft in the Gulfstream fleet. The G650 is powered by the new Rolls-Royce BR725 engine featuring a 50-inch swept fan with 24 blades for improved flow, increased efficiency, reduced fuel use and noise, and a 21 percent improvement in NOx emissions compared to similar engines on older aircraft. The G650 has fuel-burn levels comparable to those of smaller aircraft. In addition, Gulfstream has a commitment to green fuels by adapting new aircraft to use a 50-50 blend of biofuel and Jet A (a common jet fuel which is kerosene and paraffin oil-based). The biofuel, dubbed Honeywell Green Jet Fuel, is made from camelina—a non-food plant that can be grown in rotation with wheat and other cereal crops. Gulfstream says that based on lifetime cycle studies, burning each gallon of the biofuel instead of Jet A reduces carbon dioxide equivalent emissions by 68 percent. The Gulfstream 450 can currently be modified so that one of its Rolls-Royce engines is powered by a 50/50 blend of Honeywell Green Jet Fuel and petroleum-based jet fuel. The Bombardier Global Express 5000 and 6000 are brand new to the industry, powered by two BMW Rolls Royce BR-710 turbofans; these engine's Stage 4 low emissions exceed the industry's current Stage 3 requirement, with a high bypass ratio for significant noise reduction. The Challenger 601 is powered by updated General Electric CF34-3A engines which have also been designed to reduce air emissions compared to older engines.

Direct emissions caused by the proposed action would also result from the temporary construction activities. Construction related activites are expected to result in short-term impacts associated with vehicle emissions from material delivery trucks and construction equipment operation. As noted in Sections 3.2 and 4.3.3, Jet Aviation is committed to reducing environmental impacts via the use of contractors who adhere to Massport and DEP Clean Air Construction Initiative/EPA's voluntary Diesel Retrofit Program. Implementation of the initiative requires contractors to retrofit their heavy equipment with advanced pollution control devices during construction of all Massport projects. Construction activities also have the potential to result in short-term emission of small amounts of particulate matter, in the form of fugitive dust, which typically occurs during ground disturbance, on-site movement of equipment, stockpiling and transportation of construction materials. Dust is more likely to occur during dry and windy conditions and can be managed with the application of water. Stockpiles of earth material will be covered, encircled with erosion controls, or seeded to shield from weathering forces. These methods, or other approved means, will be used to mitigate the particulate matter released into the air. The construction impact to the ambient air quality is temporary by nature and not expected to be significant.

5.3 Biotic Resources

The proposed project is expected to have impacts to biotic resources. Approximately 113,000 sf of currently vegetated areas would be converted from vegetated (permeable) to paved (impermeable) for the hangar, ramp, parking areas and access road (including the newly

grassed area under Building 18 which was removed); the majority of this land, approximately 101,146 sf, lies within the 100-foot wetland buffer. See Section 5.14 for more information on wetland impacts. These actions are expected to result in minimal impacts on the wildlife that currently use these areas, particularly due to the relatively limited extent of upland forest and periodically mowed open field habitat to be affected. Extensive areas of upland forest will remain following project implementation that can be utilized by wildlife, thus a slight shift in habitat location would be anticipated rather than direct effects to individuals using the field and forest areas. Wetlands would not be disturbed and would continue to provide their respective functions. Unaffected portions of the open field would continue to be periodically mowed in order to maintain the diversity of existing habitats. The proposed project would not result in any impacts to the perennial streams within the region, thus, no impacts to fisheries.

5.4 Construction

Impacts from construction activities would be temporary in nature. Emissions from and noise generated by construction vehicles would have no long-term impacts on either a micro or macro scale; this same finding also would apply to the consumption of energy supplies, light emissions, and the generation of solid waste. With respect to ground disturbances, soil erosion controls and other Best Management Practices (BMP's) will be implemented in accordance with the SWPPP to preclude potential impacts to adjacent wetlands and down-gradient waterways.

5.5 Section 4(F)

No Section 4(f) resources are located within the immediate project area, and therefore no impacts to such resources would occur.

The Great Meadows National Wildlife Refuge is located near Hanscom Field, but is distant enough (approximately one mile north and west of the Field) that the project would not affect this resource.

The Minute Man National Historical Park is a Section 4(f) property located outside of the project area and adjacent to Hanscom Field. See Section 5.9 for the discussion on potential effects on historic properties.

5.6 Federal- And State-Listed Endangered And Threatened Species

The proposed project alternatives would not impact Federally-listed species since there are no listed species within the project area. The State-listed upland sandpiper and grasshopper sparrow would not be impacted by the project. There would be no net loss of habitat for either species since no areas of airfield grassland will be altered. Massport suspends mowing activities in some areas (excluding runway safety areas) during the critical nesting season of these birds.

5.7 Energy Supply, Natural Resources And Sustainable Development

Jet Aviation is committed to designing and certifying the proposed Hangar, office/shop space and FBO facility in accordance with LEED (Leadership in Energy and Environmental Design) Silver certification standards. In addition to the LEED Silver certification, Jet Aviation is also committed to incorporating Massport's *Sustainable Design Standards and Guidelines*, *Volume 2*, (2011a) and the Massport *Guide to Tenant Construction* (2009) into the project design. It is anticipated that the newer aircraft to be serviced by Jet Aviation would be more fuel efficient than the aircraft currently serviced, as detailed in Section 5.2. Ground service equipment and

fleet vehicles at Hanscom Field and Jet Aviation have converted to alternative fuels, either electric or propane. Jet Aviation has replaced 85% of their gas fueled vehicles with alternative fueled vehicles and is committed to future improvements for fleet vehicles.

The proposed project would not significantly affect energy supply or natural resources, and would work towards the sustainable development goals identified by Massport. As identified in Massport's *Sustainable Design Standards and Guidelines*, Massport has several programs and initiatives in place that contribute to the sustainable operation and maintenance of Hanscom Field and its facilities. Jet Aviation has shown a strong commitment to implementing such programs and initiatives and will continue to do so with this project, including:

- implementation of a comprehensive solid waste and recycling program;
- development of an Energy Master Plan;
- development and documentation of greenhouse gas and emissions inventories;
- development and implementation of a green cleaning program;
- and, examining the potential for installation of energy-reducing and renewable power systems such as wind turbines or solar panels.

In addition, as previously noted, Examples of design initiatives suitable for LEED Silver certification and compliance with the Massport Standards to be used in the Jet Aviation project include the following: designing the building to use 20-40% less water and 12% or more less energy than the USGBC baseline for buildings of similar size and occupation; implementing water conservation measures that pertain to landscaping and wastewater technologies including procedures for water reuse; using at least 10 percent less energy than the USGBC baseline; designing an HVAC system that does not use any chlorofluorocarbon (CFC) based refrigerants; using low emitting materials for construction including paint and flooring; using renewable energy sources for building operation; using recycled materials for building construction; implementing a recycling program in daily operations; using low emitting or fuel efficient vehicles; and designing and using energy-efficient lighting systems.

5.8 Hazardous Materials

The proposed project would not result in a release of hazardous materials and is not anticipated to generate hazardous waste. Hangar 17, 21,315 sf in size, may contain hazardous materials such as asbestos or lead, however any such materials would be removed at the time of demolition and BMPs would be implemented in accordance with local, state and federal regulations to ensure compliance.

5.9 Historic And Archaeological

According to the reviews conducted for the 2005 and 2012 ESPRs, and the recent historical assessment of Hangar 17 (Appendix E), no known Historic or Archaeological resources are located within the immediate project area. Direct impacts to such resources would not occur.

Massachusetts Historical Commission (MHC) and the Historical Commissions of the four Hanscom Field towns affected by activities at Hanscom Field, (Lincoln, Concord, Bedford and Lexington), were contacted and given opportunity to review the Draft EA and provide comment. No response was received from three of the town historical commissions; the Town of Lincoln responded on December 11, 2013 that they have "no issue with the proposal as submitted." MHC responded on October 28, 2013 and noted no objections to the project and requested to

be consulted on any future analysis of the project. This correspondence is included in Appendix G.

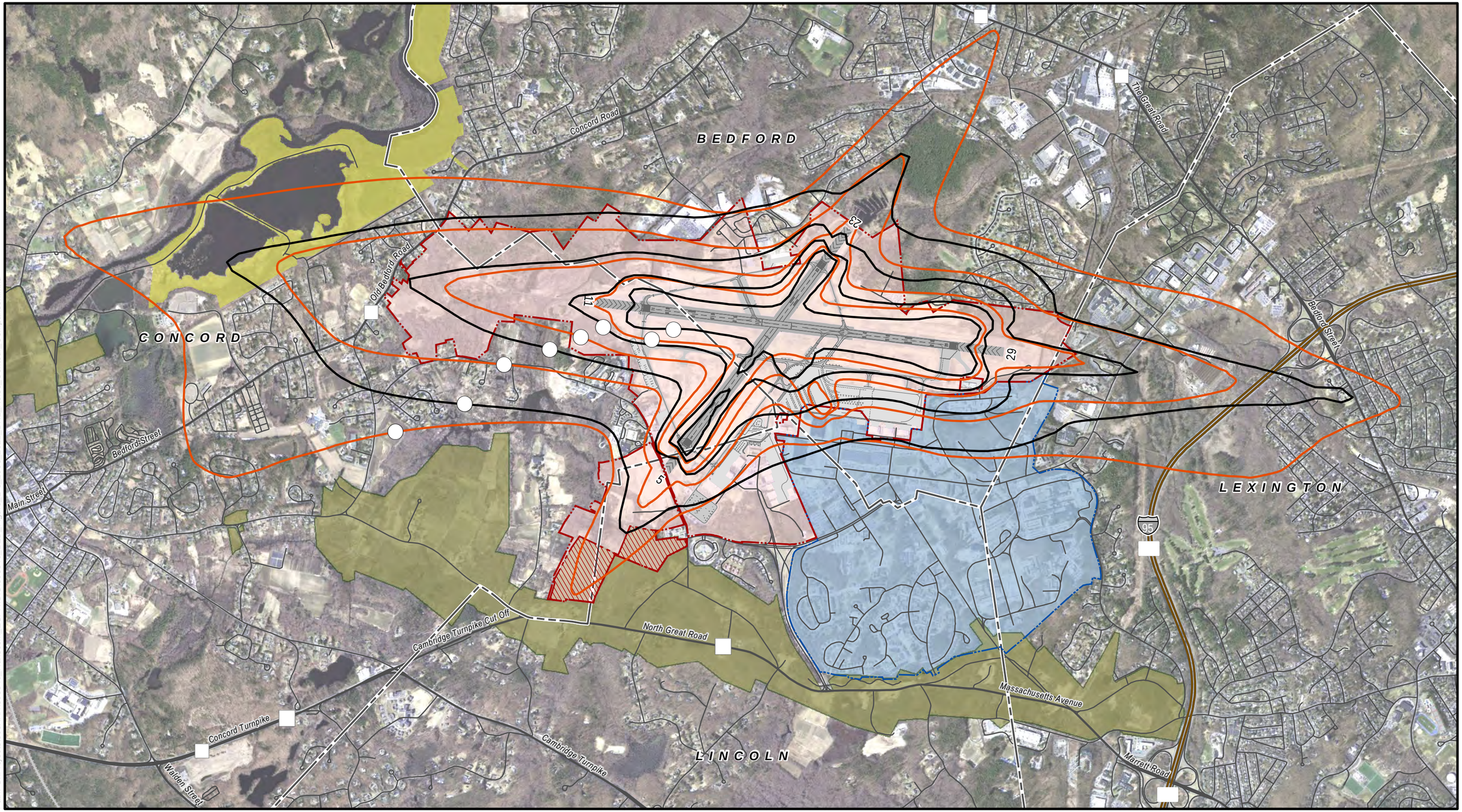
Comments from the National Park Service (NPS) regarding potential impacts to the Minute Man National Historical Park dated November 18, 2013 (Appendix I), questioned the sound metrics referred to in the Draft EA and the potential noise impacts from the proposed project on the park and those attending its programs and suggested review of impacts above the 52 dB threshold.

As detailed in Section 5.12, for noise analysis of airport actions, FAA Order 1050.1E CHG 1 requires identification of the number of people newly exposed to noise levels greater than DNL 65 dB, as well as any areas projected to experience an increase in long-term noise level of 1.5 dB or more (within DNL 65). With respect to the 52 dB noise threshold proposed by NPS, (assuming this value is a Day-Night Sound Level or DNL), DNL values in the low 50s are considerably lower than the federally-recognized threshold of 65DNL.

As discussed in Section 4.3.11, comparison of year 2012 Day-Night Sound Levels (DNL) noise contours prepared for the 2012 ESPR to the contours shown in the 2005 ESPR show that overall noise levels at Hanscom Field have decreased (Figure 7). The total population exposed to levels greater than DNL 65 dB has decreased since 2005, and the total population in the four towns abutting Hanscom Field exposed to DNL values of 55 dB or greater has decreased. In addition, the 2012 ESPR analyses shows that even with forecasted increases in operations or other activities, no noise analysis locations (including historic sites and the Minute Man National Historic Park) would experience a DNL value greater than 60 dB under any future scenario. The Deacon John Wheeler/Capt. Jonas Minot Farmhouse and the Wheeler-Merriam House are the only historic sites that would experience potential noise levels between 55 and 60 dBA in the 2020 and 2030 scenarios. No portion of the MMNHP is located in the 55 DNL contour in the 2012 ESPR (Figure 8) including the future forecasts for 2020. Only a small portion (.4 acres) of the MMNHP is predicted to be in the 55 DNL contour in 2030. The project would not result in additional operations or noise impacts.

FAA issued a draft Section 106 "Finding of No Adverse Effect" for the project on December 5, 2013 (Appendix J). As summarized from this finding, FAA based this determination on the following factors:

- The hangar to be replaced appears to be of limited historical value based on its lack of association with historic events/persons, its design/construction or information value;
- The land area to be impacted by the hangar/roadway/apron construction has been significantly disturbed by past airport construction;
- The current operations are historically low for this airport, and improvements of the type proposed by the project have little effect on numbers of operations or associated noise impacts;
- The noise analysis developed for the 2012 Environmental Status and Planning Report (ESPR) shows no historic properties fall within the 65DNL noise contour, and no historic properties fall within the 60DNL noise contour.
- For the 2 properties within the 55DNL noise contour (Deacon John Wheeler/Captain Jonas Minot Farmhouse and the Wheeler-Meriam House), noise levels at these properties have decreased since the 2005 ESPR noise analysis, and remain well below the threshold level of 65DNL.
- No portion of Minute Man National Historical Park is within the 65, 60 or 55DNL contour.



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North

0 2,000 4,000 Feet

2012 DNL Noise Contour
2005 DNL Noise Contour
Hanscom Field Property Boundary
Massport Property within MMNHP Congressional Boundary
Hanscom AFB Property Boundary
Municipal Boundary

Historic Road
Interstate
Highway
Road
Trail
Active Rail Service

Open Water
Wetland/Marsh
Stream
MNNHP Boundary
Great Meadows
Open Space Non-protected
Open Space Protected in Perpetuity

DRAFT

Hanscom Field 2012 ESPR

Bedford, Concord, Lexington, Lincoln, Massachusetts

2005 and 2012 DNL Noise Contour Comparison

Figure 1-5

Data Sources: MassGIS (Roads, Rail), March 5, 2013; MassGIS (Community Boundaries), March 5, 2013; NPS (Park Boundary), March 8, 2013; ArcGIS - Bing Online (Bing ArcGIS Online, 2011), May 06, 2013

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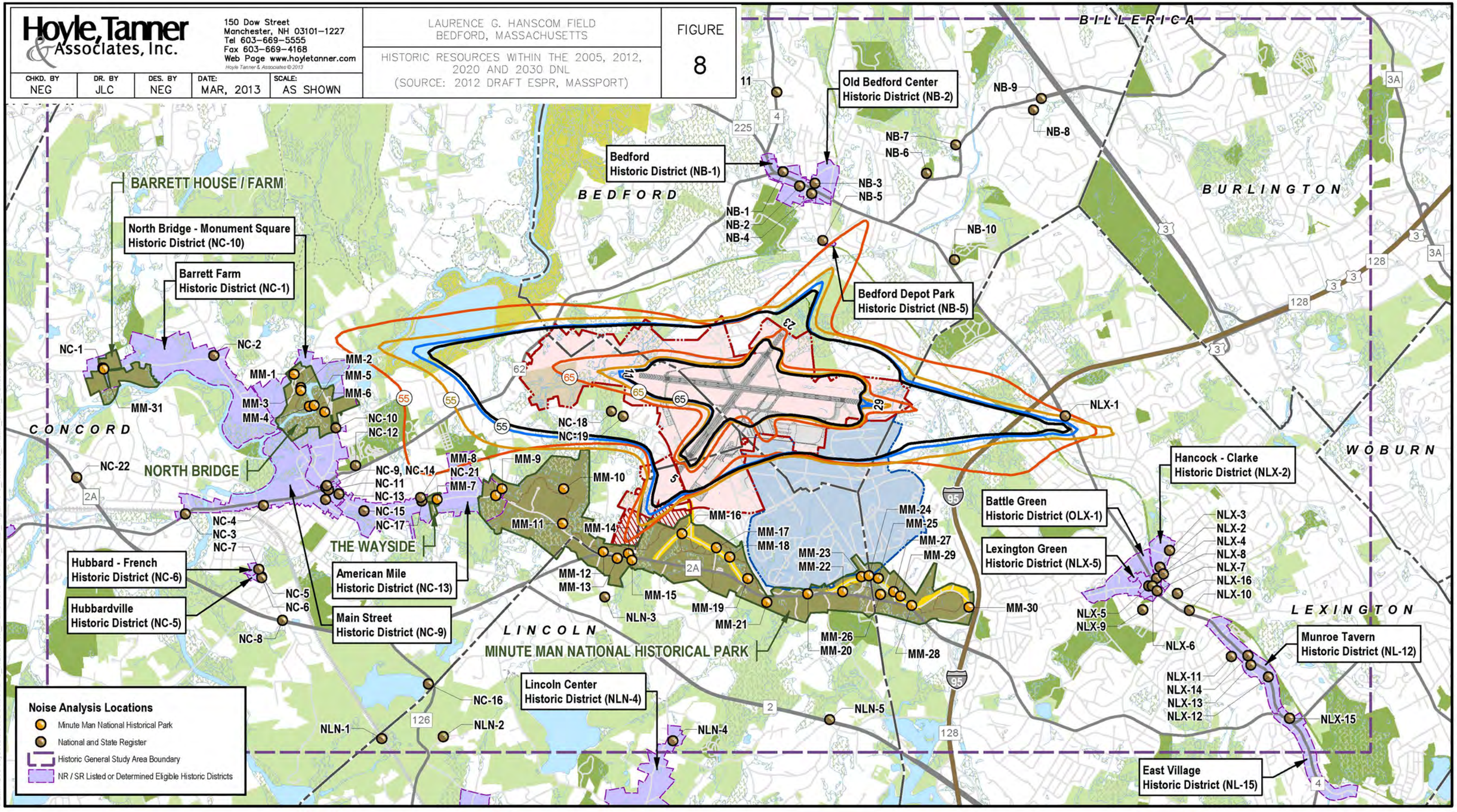
NEG	JLC	NEG	MAR, 2013	AS SHOWN

LAURENCE G. HANSCOM FIELD
BEDFORD, MASSACHUSETTS

HISTORIC RESOURCES WITHIN THE 2005, 2012, 2020 AND 2030 DNL
(SOURCE: 2012 DRAFT ESPR, MASSPORT)

FIGURE
8



North
0 3,500 7,000 Feet

2005 DNL Noise Contour
2012 DNL Noise Contour
2020 DNL Noise Contour
2030 DNL Noise Contour

Hanscom Field Property Boundary
Massport Property within MMNHP Congressional Boundary
Hanscom AFB Property Boundary
Municipal Boundary

Historic Road
Interstate
Highway
Road
Trail
Active Rail Service

Open Water
Wetland/Marsh
Stream

MMNHP Boundary
Great Meadows
Open Space Non-protected
Open Space Protected in Perpetuity

Data Sources: ESRI (USGS Topographic Maps), March 4, 2013; MassGIS (Community Boundaries), March 5, 2013; PAL, Inc. (Noise Sensitive Receptors), August 28, 2013

Hanscom Field 2012 ESPR
Bedford, Concord, Lexington, Lincoln, Massachusetts

Historic Resources within the 2005, 2012, 2020 and 2030 DNL Noise Contours

Figure **1-6**

On January 6, 2014, MHC requested adequate documentation in support of the FAA Finding (Appendix K); the historic survey and assessment of the Hangar 17 was conducted in response to this request (Appendix E). The Hangar is not associated with any of the significant development, events or activities that took place at Hanscom Field in the mid-twentieth century. The building is a relatively small example of a fairly common type of Hangar built during the 1960's and does not represent an important or unique engineering accomplishment. Hangar 17 is not recommended for listing in the National Register of Historic Places. FAA forwarded this information to MHC and the Lincoln Historical Commission on February 26, 2014 (Appendix L).

Per the future scenarios of the 2005 and 2012 ESPRs, the proposed new corporate hangar locations are entirely within areas assessed as having a low archaeological sensitivity. Most of the potential new corporate hangar locations in the Terminal Area are located on existing developed areas, entirely within an area assessed as having a low archaeological sensitivity. These potential development sites would not affect potentially significant archaeological resources.

5.10 Induced Socioeconomic

The project would result in positive induced socioeconomic impacts. Implementation of the proposed alternatives would allow Jet Aviation to increase their client base, reduce the potential for injuries to workers, and provide jobs for local residents. Such effects are positive and stabilizing for Jet Aviation's economic profile, which in turn allows for local economic stability.

The increase in hangar size and office/shop space would allow Jet Aviation to hire additional employees. Some of the new office/shop space would be available for rental to aviation related businesses, thus increasing jobs on the Airport. Because of this, the project would result in direct positive effects to those who would have new jobs, as well as indirect or secondary positive effects (increases) in local services such as restaurants, gas stations, etc. within the Airport and local areas.

5.11 Light Emissions And Visual Effects

The project would not increase light emissions or create visual effects. The characteristics of most airport lighting systems create potential sources of annoyance to nearby residents, such as visual navigational aids, edge lights, and others, which may emanate disturbing emissions. There will be no net increase of such lighting emissions. Lights around the ramp area would be repositioned as needed but would not increase significantly in number. Building lighting and parking lot areas would comply with the lighting specifications in Massport's *Sustainable Design Standards and Guidelines,* as well as the *Guide to Tenant Construction,* so as to not increase light emissions significantly. Final design has not been completed, however, Jet Aviation would commit to using LED lighting fixtures or compact fluorescent light bulbs where feasible. All lights would be directional to send light down to the surface to eliminate bleeding of light offsite. EnergyStar equipment would be used where feasible. Advanced lighting technologies would be implemented where practicable, and lighting systems, as a part of the entire energy use system, would be periodically reviewed for potential energy-reducing improvements.

There are no nearby residential areas. The closest residential buildings are located over 700 feet to the south of the proposed project area along Old Bedford Road. The existing forested areas between Jet Aviation and these houses will remain in place, screening these residents from potential light emissions.

Construction vehicles must have proper identification according to a Construction Safety and Phasing Plan. Any vehicle operating in the movement area during hours of darkness or reduced visibility must be equipped with a flashing amber dome-type light. These flashing lights would be temporary and utilized only during periods of construction activity within airport property. Proposed construction activities are expected to be conducted almost exclusively in daylight hours.

5.12 Noise

For noise analysis of airport actions, FAA Order 1050.1E CHG 1 requires identification of the number of people newly exposed to noise levels greater than DNL 65 dB, as well as any areas projected to experience an increase in long-term noise level of 1.5 dB or more (within DNL 65).

Comparison of year 2012 Day-Night Sound Levels (DNL) noise contours developed for the 2012 ESPR to the contours shown in the 2005 ESPR show that overall noise levels at Hanscom Field have decreased, largely due to lower activity levels by jets and Stage 2 General Aviation (GA) aircraft, as well as decreased nighttime operations. Forecasts of future population estimates within the 65 and 55 DNL contours for the 2020 and 2030 scenarios suggest that even with the projected growth in operations for 2020 and 2030 (independent of this project), no residents near Hanscom Field will be located within the 65 dB contour and populations exposed to both the 65 dB and 55 dB contour will remain below 2005 actual levels (Figure 7).

In addition, the 2012 ESPR analyses shows that even with forecasted increases in operations or other activities, no noise analysis locations (including historic sites and the Minute Man National Historic Park) would experience a DNL value greater than 60 dB under any future scenario. The Deacon John Wheeler/Capt. Jonas Minot Farmhouse and the Wheeler-Merriam House are the only historic sites that would experience potential noise levels between 55 and 60 dBA in the 2020 and 2030 scenarios. No portion of the MMNHP is located in the 55 DNL contour in the 2012 ESPR (Figure 8) including the future forecasts for 2020. Only a small portion of the MMNHP would be within the 55 DNL contour in 2030.

The aircraft proposed for future fleet located at Jet Aviation, as detailed in Section 5.2, are all Stage 3 or Stage 4 aircraft and are designed to reduce noise levels from take-off, operation and landing. It is anticipated that the change in aircraft serviced would result in continuing the trend of decreased noise emissions at Jet Aviation and would not affect the local residential population. The construction vehicles will have a temporary and insignificant impact on noise during operation.

5.13 Water Quality

The proposed project would not impact water quality at Hanscom Field. The potential to impact water quality stems from three sources: 1) ground disturbance due to sedimentation caused by erosive forces, 2) increases to impervious surface area, and 3) increases in potential spills of fuel or other contaminants. The first potential source will be mitigated by best management practices such as erosion control, implementation of a Stormwater Pollution Prevention Plan (SWPPP), and soil stabilization using native seeding or other approved means. The extent of soil disturbance will be limited during construction.

In response to the second, Massport directs new development to areas with existing impervious surfaces and to take advantage of existing infrastructure wherever possible. Jet Aviation is committed to assisting Massport and meeting their *Sustainable Design Standards and Guidelines*

by minimizing the surface area of new impervious pavement and re-using areas of existing impervious pavement to the extent practicable. Comparison of the alternatives shows a good faith effort of reducing the ramp size from Alternative 1 (182,000 sf ramp) and Alternative 2 (240,000 sf ramp) to the configuration in Alternative 3 (94,160 sf ramp); these values are approximate and reflect the initial steps in the process of reducing impervious area and do not include pavement that can be re-used. Alternative 3 ramp areas would include the following existing impervious areas: land beneath Hangar 17 (to be demolished), parking areas, and the access road beside the existing western hangar. New impervious area for the ramp and hangar is estimated at approximately 31,000 sf. New impervious area for the access road and parking lots would approximate 82,000 sf. The EA will be issued before designs are finalized, so these areas have been approximated and may change slightly during final design and project construction.

Massport requires individual projects to implement Best Management Practices (BMPs) to address Massport's policy regarding stormwater runoff requirements that projects resulting in increases in impervious surfaces do not increase peak runoff rates. The proposed project would comply with the Stormwater Management Standards. The proposed action would include three closed underground treatment systems which would allow for pre-treatment, infiltration and attenuation via an open bottom lined with gravel to allow water to infiltrate or penetrate into the ground. Remaining water would ultimately discharge to the 60" outfall pipe running below the existing ramp, across Hanscom Field to connect to the outfall pipe to the Shawsheen headwaters in the northeast corner of the Field. Installation and operation of this system will follow BMPs.

The new stormwater treatment system would be an improvement over the existing system, in that more of the overall stormwater runoff from the Jet Aviation lease site would be captured in the new closed system which has been designed to meet the most current, stringent standards for water quality. Although this water eventually outlets into the headwaters of the Shawsheen River, the treatment process is designed to ensure that this river would not be affected.

Massport also requires all development and facility operations, including those by tenants, to conform to the requirements of the NPDES permit for Hanscom Field. All activities would continue to be required to meet applicable standards for stormwater management required for site development or redevelopment by Massachusetts DEP. The stormwater treatment system designed for this project will meet these standards.

Finally, Jet Aviation will implement a comprehensive Spill Management Program within their lease areas. Components of this program include design of a state-of-the-art spill containment system for the new hangar and FBO, close monitoring of fuel spillage, and tracking the status of spill response actions and compliance with the Massachusetts Contingency Plan (MCP). State environmental regulations require the responsible party to report all 10-gallon or larger petroleum spills to the MA Department of Environmental Protection (DEP).

5.14 Surface Water And Wetlands

Direct wetland impacts were avoided and work in the buffer zone was minimized to the extent practicable via design alteration, and is the notable difference between Alternatives 1, 2 and 3 as shown in Table 5-1. The proposed Alternative 3 configuration would not result in direct impacts to surface waters, wetlands or areas of standing water that may or may not meet the criteria for State certification as vernal pools. As detailed in the section prior to this, stormwater runoff would not be directed into the potential vernal pools.

For the proposed development in Alternative 3, approximately 101,146 sf of new pavement or building construction, clearing and grading would occur in the upland buffer surrounding wetlands 1, 2, 4 and the bank resource as shown on Figures 5 and 6. This alternative provides the least amount of impact to the wetland and buffers.

Table 5-2. Wetland Impacts by Alternative

Alternatives	Wetland Impacts
Alternative 1	50,090 sf direct impacts, impacts to wetland buffers
Alternative 2	1,000 sf direct impacts, impacts to wetland buffers
Alternative 3	No direct impacts, impacts to buffers only

With respect to vernal pool species, wood frogs (*Lithobates sylvatica*) were the only vertebrate species observed in association with the areas of standing water in Wetlands 2 and 3. As described by Klemens in Amphibians and Reptiles of Connecticut and Adjacent Regions (Klemens, Michael W. PhD; 1993. State Geological and Natural History Survey of Connecticut Bulletin 112), "[Wood frog] Adults prefer heavily forested areas with a thick cover of herbaceous vegetation and duff." As designed, the proposed landside access road would traverse an area of upland forest, close to but outside of the 100-foot state buffer for Wetland 2. This forested area, however, is near the northern periphery of the overall forest stand, and the drainage from the proposed road would fall away from this wetland. Unlike the contiguous woodlands to the south, this stand contains an abundance of conifers which inhibit the establishment and growth of understory plant species. As such, the wooded area associated with the proposed landside access road does not constitute preferred wood frog terrestrial habitat. Impacts to local wood frog populations, if any, would be negligible.

5.15 Secondary And Cumulative Impact Analysis

The proposed project would not cause secondary or cumulative impacts to any of the analyzed criteria. Cumulative effects may result from individually minor but collectively significant actions taken place over a period of time. Mitigation for the previous improvements or modifications to the ALP reduces the effect of cumulative impacts. None of the categories of potential impacts that were mitigated for that project would be cumulative with the effects from the proposed project. The proposed impacts to traffic on Virginia Road from the Hangar 24 project would not be added to by this project. Noise and air quality impacts are dependent on aviation forecasts; the FAA stated in the Final EA for the Hangar 24 project that it is unlikely to induce increases in operations beyond that which is predicted and evaluated in the 2005 ESPR, and would not add cumulatively to other operations-related impacts. Thus, the Jet Aviation project as proposed would not add cumulatively to noise or air quality impacts as compared to the 2005 ESPR forecasts.

6 MITIGATION

Mitigation is used to offset the impacts caused by the selected airport improvements. There are several methods used to mitigate the environmental impacts. The primary methods to reduce environmental impacts are to avoid the resource when possible or minimize the impacts to the resource being impacted. When that is not possible mitigation is often necessary to reduce the adverse effects of the improvements. Each method of mitigation is proposed to the regulatory agency where it is revised through an interim process. Ultimately, mitigation is confirmed through the permitting process with local, state, and federal resource agencies.

The above-listed impact categories detail mitigation measures where necessary. They are summarized here briefly:

Air Quality and Noise

The proposed project is anticipated to yield positive benefits relative to air quality and noise due to the modernization of and improvements to the fleet mix to be serviced at Jet Aviation. The proposed project is expected to have temporary air emissions from construction, but in the long-term would have an overall positive effect on Air Quality. Hanscom Field emissions are a very small fraction of regional emissions. Air Quality has improved at Hanscom over the past three decades due to a variety of factors, including modification of aircraft design to decrease air emissions and fewer annual operations. Overall noise levels at Hanscom Field have similarly decreased, largely due to decreases in Stage 2 General Aviation (GA) aircraft, and nighttime operations; these trends are forecasted to continue and the proposed project will not change this trend.

Direct air emissions would result from temporary construction activities as particulate matter or fugitive dust. Dust is more likely to occur during dry and windy conditions and can be managed with the application of water. Stockpiles of earth material would be covered, encircled with erosion controls, or seeded to shield from weathering forces to prevent fugitive dust.

Water Quality

A National Pollutant Discharge Elimination System (NPDES) Stormwater General Permit for construction would be required and a Stormwater Pollution Prevention Plan (SWPPP) would be generated for construction-related activities. The SWPPP, anticipated to be prepared by the contractor, would include a plan incorporating the soil erosion and sediment controls relative to proposed project elements, and any other structural and non-structural controls that may be used, as appropriate, to control erosion/sedimentation within the construction zone. Best Management Practices (BMPs) would be listed in the stormwater management plan, in accordance with the MA DEP Stormwater Management Standards/Handbook (effective 2 January 2008).

The SWPPP would also document procedures for the inspection of erosion/sedimentation controls to ensure that all such controls are functioning properly. The SWPPP requires that all erosion and sediment control measures and other protective measures be maintained in effective operating condition. The SWPPP also requires regular inspections of the erosion and sediment controls to assess the effectiveness of these measures in controlling the quality of stormwater discharges from the construction activities. Based on the results of these inspections, the SWPPP would be modified, as necessary, to include additional or modified BMPs designed to correct any identified problems.

Surface Water and Wetlands

Throughout the initial planning and design phase of the project, measures were identified and incorporated into the project design to avoid or minimize potential direct impacts to wetlands. This effort culminated in Alternative 3; this Alternative completely avoids direct impacts to wetland resources.

Prior to construction, the boundaries of adjacent wetlands and the limits of construction would be re-flagged to clearly identify wetland boundaries and preclude unnecessary disturbances. Soil erosion and sedimentation controls would be installed for resource protection purposes, such as straw bales, silt fencing and other measures. The installation of these controls would comply with the Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas (MA Department of Environmental Protection; Reprinted 2003). These controls would be inspected daily and after rainfall events, and maintained periodically, as required, until such time that their removal is approved by all pertinent regulatory agencies, including the Lincoln Conservation Commission.

Energy Supply, Natural Resources and Sustainable Development

Jet Aviation and Massport are committed to implementing programs aimed at sustainable development relative to energy usage and natural resources.

Hazardous Materials

Any hazardous materials encountered during demolition of Hangar 17 would be removed or managed in place in accordance with Massport *Sustainable Design Standards and Guidelines* as well as the *Guide to Tenant Construction* (2009) at the time of demolition. BMPs would be implemented in accordance with local, state and federal regulations to ensure compliance.

Construction

Construction BMPs would be incorporated into the contract documents and specifications governing the activities of contractors and subcontractors. All construction activities would be monitored to ensure that mitigation measures are properly implemented, particularly at locations adjacent or proximate to wetland resources.

Light Emissions and Visual Effects

As detailed in Section 4.3.6 and 4.3.10, light emission impacts would be minimized via design details as specified in the Massport *Sustainable Design Standards and Guidelines*. All lighting would be designed with reduced energy use in mind. Lighting requirements would be carefully designed and reviewed such that improvements could be made where feasible. LED lighting would be utilized for lighting, signage (including internal “exit” signs) and signals; compact fluorescent light bulbs would be used where feasible. Building lighting and parking lot areas would comply with lighting design specifications so as to not increase light emissions significantly.

Construction vehicles would be equipped with a flashing amber dome-type light. These flashing lights would be temporary and utilized only during periods of construction activity within airport property.

In summary, potential project-related impacts have been mitigated to the maximum extent practicable, such that project implementation will have no long-term effects to natural resources, or airport facilities and operations.

7 LIST OF AGENCIES CONTACTED, PERSONS CONSULTED, EA PREPARERS, AND DISTRIBUTION LIST

EA Preparers

Hoyle Tanner & Associates, Inc. Kimberly Peace, Evan R. McDougal CM, Nils Gonzalez, PE, Matthew O'Brien, PE. 150 Dow St. Manchester, New Hampshire 03101. (603) 669-5555 EA Preparation

Wetland & Wildlife, Inc. Marshall Dennis. 233 Russell Hill Road, Ashburnham, MA 01430. (978) 827-5800 Wetlands Delineation, State and Local Permitting

Shlemmer, Algaze Associates. Michael Martin Leed® Ap Project Manager. 33 Wood Avenue South, Suite 600, Iselin, NJ, 08830. (732) 603-3858 Project Architects

Agencies Contacted/Consulted

Massachusetts Port Authority (Massport). 1 Harborside Dr #200S, East Boston, MA.

Federal Aviation Administration. New England Region, Airports Division (ANE-600), 12 New England Executive Park, Burlington, MA 01803.

US Fish and Wildlife Service, New England Field Office.70 Commercial Street, Suite 300 Concord, NH 03301-5087. (603) 223-2541 Review of website for Federally-listed species

Massachusetts Natural Heritage and Endangered Species Program, Massachusetts Division of Fisheries and Wildlife. 100 Hartwell Street, Suite 230, West Boylston MA 01583. (508) 389-6300 Review for State-listed species

Massachusetts Historical Commission. 220 Morrissey Boulevard, Boston, MA 02125. (617) 727-8470 Review of website for impacts to historical, cultural and archaeological resources and Section 4(f).

David Kelland, Historical Commission, Town of Lexington, 1625 Massachusetts Avenue, Lexington, MA 02420. Review for historic properties affected.

Lucretia Giese, Historical Commission, Town of Lincoln, Town Office, 16 Lincoln Road, First Floor, Lincoln, MA 01773. Review for historic properties affected.

Marcia Rasmussen, Historical Commission, Town of Concord, "Town House" P.O. Box 535, 22 Monument Square, Concord, MA 01742. Review for historic properties affected.

William S. Moonan, Historical Commission, Town of Bedford, 10 Mudge Way, Bedford, MA 01730. Review for historic properties affected.

Distribution List

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Minute Man National Historic Park
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8 REFERENCES

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Appendix A

Town of Lincoln Conservation Commission ORAD

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 4B - Order of Resource Area Delineation
Massachusetts Wetlands Protection Act M.G.L. c. 131 S40

Provided by MassDEP:
MassDEP File #:203-0851
eDEP Transaction #:513207
City/Town:LINCOLN

A. General Information

1. Conservation Commission LINCOLN
2. This Issuance is for (Check one):
   a. ☑ Order of Resource Area Delineation
   b. ☐ Amended Order of Resource Area Delineation

3. Applicant Details

a. First Name	FRANK		b. Last Name	DIGLIO	
c. Organization	JET AVIATION				
d. Mailing Address	380 HANSCOM DRIVE				
e. City/Town	BEDFORD	f. State	MA	g. ZIP	

4. Property Owner (if different from applicant):

a. First Name	THOMAS		b. Last Name	ENNIS	
c. Organization	MASSACHUSETTS PORT AUTHORITY				
d. Mailing Address	ONE HARBORSIDE DRIVE				
e. City/Town	EAST BOSTON	f. State	MA	g. ZIP	02128

5. Project Location

a. Street Address	OFF HANSCOM DRIVE		
b. City/Town	LINCOLN	c. Zip	
d. Assessors Map/Plat#	4	e. Parcel/Lot#	41-0
f. Latitude	42.46014N	g. Longitude	71.29212W

6. Dates

a. Date ANRAD Filed	9/25/2012	b. Date Public Hearing Closed	10/17/2012	c. Date Of Issuance	10/17/2012

7. Final Approved Plans and Other Documents

Plan Title	Plan Prepared By	Plan Signed By	Plan Final Date	Plan Scale
WETLAND RESOURCES LOCATION PLAN	HOYLE TANNER & ASSOCIATES		August 2012	1" = 50'

B. Order of Delineation

1. The Conservation Commission has determined the following (check whichever is applicable)

a. ☑ **Accurate:** The boundaries described on the referenced plan(s) above and in the Abbreviated Notice of Resource Area Delineation are accurately drawn for the following resource area(s):

1. ☑ Bordering Vegetated Wetlands
2. ☑ Other resource area(s), specifically
   a.BANK

b. ☐ **Modified:** The boundaries described on the plan(s) referenced above, as modified by the Conservation Commission from the plans contained in the Abbreviated Notice of Resource Area Delineation, are accurately drawn from the following resource area(s):

1. ☐ Bordering Vegetated Wetlands
2. ☐ Other resource area(s), specifically
   a.

c. ☐ **Inaccurate::** The boundaries described on the referenced plan(s) and in the Abbreviated Notice of Recource Area Delineation were found to be inaccurate and cannot be confirmed for the following resource area(s):

1. ☐ Bordering Vegetated Wetlands
2. ☐ Other resource area(s), specifically
   a.
3. The boundaries were determined to be inaccurate because:

C. Findings

This Order of Resource Area Delineation determines that the boundaries of those resource areas noted above, have been delineated and approved by the Commission and are binding as to all decisions rendered pursuant to the Massachusetts Wetlands Protection Act (M.G.L. c.131, S 40) and its regulations (310 CMR 10.00). This Order does not, however, determine the boundaries of any resource area or Buffer Zone to any resource area not specifically noted above, regardless of whether such boundaries are contained on the plans attached to this Order or to the Abbreviated Notice of Resource Area Delineation. This Order must be signed by a majority of the Conservation Commission. The Order must be sent by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate DEP Regional Office (see http://www.mass.gov/dep/about/region/findyour.htm).

D. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate DEP Regional Office to issue a Superseding Order of Resource Area Delineation. When requested to issue a Superseding Order of Resource Area Delineation, the Department's review is limited to the objections to the resource area delineation(s) stated in the appeal request. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request for Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant. Any appellants seeking to appeal the Department???s Superseding Order of Resource Area Delineation will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order or Determination, or providing written information to the Department prior to issuance of a Superseding Order or Determination. The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act, (M.G.L. c. 131, S 40) and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal bylaw or ordinance, and not on the Massachusetts Wetlands Protection Act or regulations, the Department of Environmental Protection has no appellate jurisdiction.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
WPA Form 4B - Order of Resource Area Delineation
Massachusetts Wetlands Protection Act M.G.L. c. 131 S40

Provided by MassDEP:
MassDEP File #:203-0851
eDEP Transaction #:513207
City/Town:LINCOLN

E. Signatures

1. Date of Original Order
2. No. of Signatures required 6

James Meadows

This Order is valid for three years from the date of issuance.

If this Order constitutes an Amended Order of Resource Area Delineation, this Order does not extend the issuance date of the original Final Order, and the Amended Order will expire on the date of the Original Final Order unless extended in writing by the Department.

This Order is issued to the applicant and the property owner (if different) as follows:

3. ☐ By hand delivery on

a. Date _____

4. ☒ By certified mail, return receipt requested on

a. Date 10/18/12

Appendix B

Comment Analysis and Response to Comments

Jet Aviation Draft Environmental Assessment (EA)

Site Safety and Efficiency Improvements Project, Hanscom Field

Comment Analysis and Response to Comments

December 13, 2013

In accordance with the National Environmental Policy Act (NEPA), Jet Aviation prepared an Environmental Assessment (EA) to disclose the potential human and environmental effects of this proposed action.

Public Comment Process

The Draft EA was made available to the public on October 1, 2013. The project was publicly advertised in the Boston Globe on October 4, 2013, and the local newspapers of the surrounding communities of Lexington (Lexington Minuteman), Lincoln (Lincoln Journal), Concord (Concord Journal) and Bedford (Bedford Minuteman) on October 10, 2013. The Draft EA was mailed to the distribution list included in the document, such that a copy was available at each of the Town's offices, and it was available for review and download from the Massport website at www.massport.com. Requests for a digital copy of the document via a CD, or a paper copy, could be made by contacting Kimberly Peace at (603) 669-5555 ext. 151 or email at kpeace@hoyletanner.com.

The 30-day public comment period was originally noticed to end on November 1, 2013. At a public meeting on October 24, 2013, held at the Civil Air Terminal at Hanscom Field, requests were made to extend this deadline. Jet Aviation published a notice of extension of the comment period on October 28, 2013 which changed the comment period end date to November 18, 2013. On November 18, 2013, this deadline was extended for a second time to November 25, 2013, to allow the public additional time to comment.

All comments were directed to be sent to the following: via mail, Kimberly Peace, Hoyle, Tanner & Associates, Inc., 150 Dow Street, Manchester, NH, 03101, via phone at (603) 669-5555 ext. 151 or email at kpeace@hoyletanner.com, as well as Mr. Richard Doucette, Environmental Program Manager, Federal Aviation Administration (FAA) New England Region, via email, richard.doucette@faa.gov, or phone: (781) 238-7613.

Comment Analysis

During the comment period, a total of 26 comments were received via email and letters. A single request was made to provide a paper copy of the Draft EA.

Each comment received was retained in the Project file. Comments were reviewed and categorized for response and analysis for inclusion in the Final EA; comments regarding the same issue were grouped into a single response. Comments identified below within parentheses are quoted directly from the letters received (spelling and grammatical errors are left in place) and are provided to give context as an example of such comments; otherwise, the comments

are summarized. Numbers in brackets provide the number of comments received regarding this resource and are provided to gauge the public level of concern.

Comment Response

Comments have been grouped into the following response categories: Supportive, Comments addressed in the Draft EA, Comments that will be addressed in the Final EA, Comments beyond the scope of the project, and Other comments.

Supportive Comment

A single comment was received in support of the project. Jet Aviation thanks the public for their support.

Comments that were addressed in the Draft EA

Several of the comments discussed resources that were fully evaluated in the Draft EA. Impacts were minimized to the extent practicable and are either minimal or non-existent. These resource categories do not appear to warrant additional or expanded response in the Final EA.

There is concern that the proposed alternative has a negative impact on the wetlands and/or the upland buffers of the wetlands in the project area. (13)

- "..a filing with the Lincoln Conservation Commission (is required). At the very least, no action should be contemplated until that body has issued its finding."
- "Confirm that the plans will be presented for review by the Lincoln Conservation Commission, especially with regard to the wetlands and wetland buffer areas.."

There will be no wetlands directly impacted by the proposed action (Alternative #3). Jet Aviation spent a considerable effort identifying the wetlands within the project area and developing alternatives which would avoid these valuable resources. Several alternatives for the project were evaluated, and Alternative #3 has been chosen as the Proposed Action based on the lack of direct wetland impact when compared to other alternatives.

As detailed in the Draft EA Section 5.14, page 33, there will be approximately 101,146 sf of alteration to the wetland buffers adjacent to Wetlands #1, #2 and #4. These wetlands will not be affected by this development, as the contractor will use appropriate and required Erosion and Sediment Control Best Management Practices (BMPs) during construction to protect these resources. Most notably, the wetland which will have the most impact to its buffer, Wetland #1, is currently a mowed field wetland that has only recently been deemed jurisdictional based on the Order of Resource Area Delineation (ORAD) for the project received in October 2012. This wetland shows evidence of being underlain by fill material, causing water to perch, allowing for hydric soil conditions.

Jet Aviation will be submitting a Notice of Intent (NOI) to the Town of Lincoln Conservation Commission for the impacts to the wetland buffer and will work with this governmental body to achieve any required permits.

There is concern that airport-related noise levels will increase due to the project. (12)

- "Any increase in noise pollution will NOT be tolerable for us or any of the residents in the area.."

- "The increase in operations that these FBO's will support will only increase the level of noise pollution in the abutting host communities.."

Aircraft related noise levels at Hanscom Field have decreased for the past 30 years. Future aircraft are anticipated to be quieter due to advances in aviation engineering. The aircraft proposed for future fleet located at Jet Aviation are all Stage 3 or Stage 4 aircraft, the quietest aircraft available to date, and are designed to reduce noise levels from take-off, operation and landing. It is anticipated that the change in aircraft serviced would result in continuing the trend of decreased noise emissions at Jet Aviation. In addition, by December 31, 2015 by federal regulation there will be no more Stage 2 (largest noise contributor) aircraft operating at Hanscom. Noise levels beyond the Hanscom Field boundary are not expected to exceed the threshold of 65 decibels (dB).

Appendix A of *The Hanscom Field 2010 Annual Noise Report* (Massport 2011) presents a detailed explanation of noise terminology, including the measurement of sound and development and use of the Day-Night Sound Level (DNL). As noted in this document, normal conversational speech has a sound pressure level of approximately 60 to 65 dB. Since 1992, the FAA has designated the DNL 65 dB contour as the cumulative noise exposure level above which residential land uses are not compatible. As presented in the Draft EA in Sections 5.12, pages 31 and 32, and Section 4.3.11, pages 21 and 22, the total population around Hanscom Field exposed to Day-Night Sound Level (DNL) greater than 65 dB, has decreased over the past decades according to the data listed in the 2005 Massport, L.G. Hanscom Field Environmental Status and Planning Report (ESPR).

Even under the most aggressive future forecasted growth data in the 2005 ESPR, which current operations have not met, no noise analysis locations (including historic sites) would experience a DNL value greater than 65 dB. In 2012 no part of MMNHP is within the 55 DNL contour.

There is concern that the cumulative effects of incremental increase of activity at Hanscom Field have not been evaluated. (7)

- "Massport has several projects identified for development that are not included in examining impacts."

The ESPR developed by Massport is required by Massachusetts Secretary of the Executive Office of Energy & Environmental Affairs to be prepared approximately every five years to evaluate the cumulative effect of growth and change at Hanscom Field. This document provides data and analyses on airport facilities, activity levels, planning and sustainability, among others. The proposed project lies within an area identified in the 2005 ESPR as appropriate for such future activities.

Between 1990-2012 there has been a net increase of only 82,000 sf of new hangar space (150,000 sf of new hangar replacing 32,000 sf of existing outdated hangar facilities and the abandonment of the 36,000 sf Navy hangar). This is compared to approximately 540,000 sf of overall hangar facilities on Hanscom Field.

The new Rectrix FBO will add 42,000 sf of new hangar space (60,000 sf hangar replacing an obsolete 18,000 sf hangar). The proposed Jet Aviation Project will add an additional 18,000 sf of new hangar space (40,000 sf of new hangar space replacing 22,000 sf of outdated hangar space).

There is concern that the project need identified in the Draft EA is not reasonable. (6)

- "Our cities are economically vibrant, and we absolutely don't need more airport business to help the local economy or create jobs."
- "I simply see no reason for an expansion."
- "Pease Air base in NH is already set up to accommodate any future needs for the type of expansion you are considering"
- "just for the sake of accommodating the privileged few at the expense of the many, both living and to come."

The FAA has considered the project's purpose and need, as detailed in Section 2.2, page 5, of the Draft EA, and agrees there is a need for this project. As detailed in Section 5.10, the project would result in positive socioeconomic impacts. Implementation of the proposed alternatives would allow Jet Aviation to provide jobs for local residents. Such effects are positive and stabilizing for Jet Aviation's economic profile, which in turn allows for local economic stability.

Hanscom Field is part of Massport's group of aviation facilities. Logan International Airport is New England's largest commercial airport serving over 29 million passengers. Worcester Regional Airport serves the central Massachusetts regional commercial and GA operations. Jet Blue recently began commercial service at Worcester. Hanscom is Massport's premier GA airport serving corporations and businesses in Boston, the Rte. 128 and 495 corridors.

The increase in hangar size and office/shop space would allow Jet Aviation to hire additional employees. Some of the new office/shop space would be available for rental to aviation related businesses, thus increasing jobs on the Airport. Jet Aviation's current client base and employees provide economic benefits to the local communities- they eat, shop, spend nights in hotels, and use local services that otherwise would not happen if Jet Aviation were not in operation. The proposed project is essential to allowing Jet Aviation to remain competitive in the General Aviation market, and continue to have a presence and provide such economic benefits to these communities.

There is concern regarding the proposed increase in impervious pavement and potential stormwater concerns. (2)

As noted in Sections 5.13 and 5.14, pages 32-33 of the Draft EA, the proposed project would comply with the Stormwater Management Standards and will provide an improvement to the existing stormwater system. The proposed action would include three closed underground treatment systems which would allow for pre-treatment, infiltration and attenuation via an open bottom lined with gravel to allow water to infiltrate or penetrate into the ground. Remaining water would ultimately discharge to the 60" outfall pipe running below the existing ramp, across Hanscom Field to connect to the outfall pipe to the Shawsheen headwaters in the northeast corner of the Field. Installation and operation of this system will follow BMPs.

Massport will continue to require all development and facility operations, including those by tenants, to conform to the requirements of the NPDES permit for Hanscom Field. Also, all activities would continue to be required to meet applicable standards for stormwater management required for site development or redevelopment by DEP.

<u>Comments that will be addressed in the Final EA</u>

There is concern regarding the impact of the project on the historic and natural heritage sites, including the Minuteman National Historical Park, parks and other conservation and 4(f) areas, which are proximate to the project area. (12)

- "Lexington and Concord are the birthplace of this nation where for the first time Americans fought and died for liberty and freedom against foreign oppressors."
- "We live in an historic area that needs to be respected."

Jet Aviation recognizes that the area surrounding Hanscom Field is rich in historic value and conservation, and is important to our country's citizens. As detailed Section 4.3.4, Section 4(f) of the Department of Transportation (DOT) Act of 1966 was set forth in Title 49 United States Code (U.S.C.), Section 1653(f). Section 4(f) relates to historic sites, properties and parks, recreation areas, and wildlife and waterfowl refuges. Sections 4.3.8 and 4.3.4 note that the entirety of Hanscom Field is surrounded by many listed Historical and Archaeological sites, including Minute Man National Historical Park (MMNHP) and Great Meadows National Wildlife Refuge. None of these sites are within the project site boundaries, and Hanscom Field is not visible from most of the Battle Road Interpretive Trail, a part of this park.

Section 4(f) states that, subject to exceptions for de minimis impacts, FAA may approve a project requiring the use of publicly-owned land of a park, recreational area, or wildlife and waterfowl refuge of national, state, or local significance or land of a historic site of national, state, or local significance as determined by the official having jurisdiction over those resources. Section 4(f) is considered satisfied with respect to historic sites and parks, recreation areas, and wildlife and waterfowl refuges if FAA makes a de minimis impact finding. FAA may make this finding if it has determined the project will not adversely affect or not affect historic properties.

As detailed Sections 5.5 and 5.9, none of the listed or potentially listed sites are within the project site boundary, which according to the 2005 ESPR is located entirely within an area assessed as having a low archaeological sensitivity.

Because of the proximity of the 4(f) listed sites, including MMNHP, Jet Aviation reached out to the four local historic commissions, the Massachusetts Historical Commission (MHC) which is the entity that functions as the state historic preservation office or SHPO for Massachusetts, and MMNHP for their review and comment on the proposed project.

Review of the MHC database via use of the online search tool Massachusetts Cultural Resource Information System (MACRIS) resulted in no sites which are listed or eligible for listing on the National Register within the proposed project area. Correspondence received from MHC after the issuance of the Draft EA noted no objections to the project and requested to be consulted on any future analysis of the project.

The MMNHP commented on November 18, stating "we remain concerned about the ongoing incremental growth of airport facilities, the expansion of the airport layout plan, and the lack of a regional transportation plan." Jet Aviation acknowledges the comment, however, as noted in detail below, is not responsible for a regional planning effort.

In addition MMNHP questioned the sound metrics referred to in the Draft EA. The FAA designated the DNL 65 dB contour as the cumulative noise exposure level above which residential land uses are not compatible in 1992 and uses this sound threshold to evaluate impacts. Day-Night Average Sound Level (DNL) is a 24-hour equivalent sound level. DNL is expressed as an average noise level on the basis of annual aircraft operations for a calendar year. To calculate the DNL at a specific location, Sound Exposure Levels (SELs) (the total sound energy of a single sound event) for that particular location are determined for each aircraft operation (landing or takeoff). The SEL for each operation is then adjusted to reflect the duration of the operation and arrive at a "partial" DNL for the operation. The partial DNLs are then added logarithmically - with the appropriate penalty for those operations occurring during

the nighttime hours - to determine total noise exposure levels for the average day of the year. The forecasted predictions for the DNL 65 dB contour form the 2005 ESPR do not include any part of the MMNHP, and only include a small portion of the Park within the 55 dB contour. In 2012 no part of MMNHP is within the 55 DNL contour.

The Draft EA Sections 5.5 and 5.9 will be revised to reflect the correspondence from MMNHP and MHC.

There is concern that the project will allow for increased operations, or more flights. (11)

- "This would likely lead to increased aviation activity, and in particular an increase in the number of private jets, which are significant polluters."

Jet Aviation is proposing facility improvements in order to improve the safety and efficiency of their operations. Tenants are expected to upgrade their existing fleet with Stage 3 and 4 aircraft in response to the increased hangar space.

The project requires a revision to the Airport Layout Plan (ALP) for Hanscom Field and would allow Hanscom Field to better serve the overall air demand of eastern Massachusetts, New England and the Nation. Hanscom Field is the primary general aviation reliever airport for Boston's General Edward Lawrence Logan International Airport. Jet Aviation anticipates that the replacement hangar will meet the future corporate aviation fleet needs.

The existing Jet Aviation facilities are unable to safely accommodate newer aircraft that occupy a larger footprint than the existing fleet. Hangar 17, 21,315 sf in size, was constructed in 1945 and is inefficient, outdated and undersized for newer aircraft. Manufacturers of aircraft for business and private use have developed larger, quieter and more fuel-efficient aircraft for their fleet. Jet Aviation provides maintenance and storage services for these types of aircraft. The new aircraft occupy a larger footprint and require larger wingtip clearances from other aircraft and permanent structures. The current ramp apron does not provide enough space to safely maneuver these newer generation aircraft.

The purpose of this project is not to increase flight operations at Hanscom Field, and Jet Aviation would not significantly add to their existing fleet and operations. Preliminary estimates of the number of aircraft located at the Jet Aviation location based on the existing client base show an increase from 40 aircraft to 42 aircraft; this includes estimates that some of the clients may choose to alter their fleet mix from two planes to a single plane because the newer aircraft can fly farther distances due to increased energy efficiencies.

Preliminary estimates of the number of increased operations based on discussions with Jet Aviation's existing and potential clients approximate 500 operations per year, or less than 2 operations per day. It is important to note that airport operations are counted as a single take-off or landing, thus, this estimated increase would amount to a single plane flying in and out per day. The increased hangar size would allow aircraft to remain at Hanscom Field while they are maintained and/or repaired instead of in the existing scenario where an aircraft may land, disembark passengers, and then take-off again to be serviced at another airport. This is anticipated to reduce the amount of operations per day based on the existing Jet Aviation client usage, thus in an overall sum of operations it is anticipated that there will be no observable increase in daily flight operations.

To place this in a historical perspective, operations data provided in *The Hanscom Field 2010 Annual Noise Report* (Massport 2011) and The State of Hanscom, years 2012 and 2013, was

reviewed. These values are significantly less than the predicted Moderate or High future forecasts for 2010 from the 2005 ESPR.

The decline in anticipated general aviation operations seen at Hanscom Field has been reflected across the US. Overall trends in activity are influenced by several factors including demographics, the economy, and operating costs. Over the past decade, aviation operators have faced rising operating costs including escalating fuel prices, increased insurance premiums, and new security–related expenses. In addition, economic growth has been stagnant to low.

Hanscom Field Annual Estimated Operations

Year	Operations	Estimated GA
2005	169,955	165,424
2006	172,457	167,283
2007	165,907	160,930
2008	165,889	160,912
2009	149,911	145,414
2010	163,737	158,825
2011	162,999	161,580
2012	166,214	165,469

Source: Massport Annual Noise Report, 2011 and The State of Hanscom, 2012 and 2013

The Draft EA Sections 4.1 and 4.2 will be revised to reflect the preliminary estimates of operations data provided by Jet Aviation.

There is concern that the project will impact air quality, increase "air pollution" and carbon-based fuels, and contribute to global warming. (11)

- "..as it would promote the use of small aircraft which gobble up fossil fuels and emit tons of emissions, thereby contributing disproportionately to global climate change."
- "..if flights are increased from Hanscom this will mean a decrease in air quality for all the surrounding communities."

Air Quality at Hanscom Field has improved over the past 30 years and continues to do so. Air emissions resulting from the change in aircraft located at Jet Aviation would decrease, as the newer aircraft are designed to be more efficient and have fewer emissions.

As detailed in the Draft EA in Sections 5.2, pages 27 and 28, and Section 4.3.1, pages 14 and 15, Hanscom Field emissions are a very small fraction of regional emissions. The 2005 Massport ESPR estimated maximum concentrations of Air Emissions for the 2020 (High Growth) or worst-case scenario, which has not been met, would be in compliance with current federal standards and would increase incrementally but would not have an adverse impact on local air quality.

As noted above, Jet Aviation would not significantly add to the existing fleet and operations, but rather it is expected that tenants would upgrade their existing fleet with newer, more energy efficient aircraft. Thus, air emissions would not be expected to increase above existing levels, and may, in fact, decrease.

According to Gulfstream promotional brochures, the Gulfstream 650 provides the best in class fuel efficiency at cruise speeds. Promotional materials for Bombardier Global Express note these aircraft will be powered by the next-generation General Electric Passport thrust engines that deliver significant efficiency and emissions advantages, including reduced NOx emissions and an eight per cent overall fuel efficiency when compared to the industry leading aircraft.

Due to the improvements in air emissions and fuel efficiency of the Stage 3 and 4 engines, even with anticipated increases of approximately 2 operations per day, the proposed project is not expected to result in impacts to air quality.

The Draft EA Section 5.2 will be revised to reflect the preliminary estimates of operations data provided by Jet Aviation and include more specific analysis on how these values relate to changes in air quality.

<u>Comments beyond the scope of this project</u>

There is concern that the project will affect the community and neighborhood quality of life. (10)

- "will ruin our nice, historic, country-like neighborhood."
- "To propose a massive increase in pollution for all the densely settled neighboring areas, is completely irresponsible."
- "very negatively impacting the property values and quality of life in the surrounding communities"

Air Quality at Hanscom Field has improved and continues to do so. Air emissions resulting from the change in aircraft located at Jet Aviation would decrease, as the newer aircraft are designed to be more efficient and have fewer emissions. Ground traffic is not expected to increase significantly due to this project. A majority of vehicular trips associated with the Jet FBO operations are off-peak. In 2012, Hanscom's contribution to am and pm peak period travel on Route 2A was less than 4%.

There is concern that Hanscom Field is allowing this project when there is no regional transportation plan. (9)

- "we remain concerned about the ongoing incremental growth of airport facilities, the expansion of the airport layout plan, and the lack of a regional transportation plan."
- "The HATS communities continue to be concerned about proposals for incremental development lacking a "roadmap" for an integrated, long-term comprehensive regional transportation plan that includes air, road, and rail modalities and assesses the capacity of the environment to absorb the effects of the proposed development."
- "No expansion of Hanscom Field operations, infrastructure, or changes in use (i.e., pushing aviation use into wetlands) until a regional transportation plan is in place that will permanently protect the surrounding historic communities and their natural resources from any further harmful aviation-related impacts."

These comments are noted by Jet Aviation. Development of a regional transportation plan is beyond the scope of this document and outside of the NEPA process. Hanscom Field is required to provide an Airport Layout Plan (ALP) to FAA and an ESPR to the Commonwealth of Massachusetts to ensure growth and development occur in a sustainable manner.

Hanscom Field is part of Massport's group of aviation facilities. Logan International Airport is New England's largest commercial airport serving over 29 million passengers. Worcester Regional Airport serves the central Massachusetts regional commercial and GA operations. Jet Blue recently began commercial service at Worcester. Hanscom is Massport's premier GA airport serving corporations and businesses in Boston, the Rte. 128 and 495 corridors.

The ALP as approved by FAA shows the boundaries of the airport and all proposed additions, together with the boundaries of all offsite areas owned or controlled by the airport, the location and nature of all existing and proposed airport facilities and structures (such as runways, taxiways, aprons, terminal buildings, hangars and roads), including all proposed extensions and reductions of existing airport facilities, and the location of all existing and proposed nonaviation areas and of all existing improvements thereon. The ALP serves as a planning guidance document for the FAA when projects are proposed. The proposed project is within an area on the existing for Hanscom Field identified for future aviation development. The ALP update that triggered the EA will simply depict the building foot print and changes to pavements.

The ESPR includes an overview of the operational environment and planning status of Hanscom Field and provides long-range projections of environmental conditions against which the effects of future individual projects can be compared. The ESPR allows the public to see historical, environmental information, current information, and a forecast of future environmental effects at Hanscom Field. The future growth scenarios in the 2005 ESPR include hangar upgrades to the Jet Aviation location, classified as the Terminal Area, as well as increased traffic on Hanscom Drive and Old Bedford Road as part of the planning for future growth at Hanscom Field.

There is concern that vehicular traffic will increase due to the project. (7)

- "The roads in this area, especially where I live in Bedford, are completely overrun with traffic"

This comment is noted by Jet Aviation. The proposed project is not anticipated to increase operations, thus will not affect vehicular traffic within the area.

<u>Other Comments</u>

Jet Aviation recognizes the following issues of concern identified by public comments which were neither addressed in the Draft EA nor are proposed to be addressed in the Final EA, for the following reasons: the comments are too vague or subjective to be analyzed, the comments are beyond the scope of both the project and the NEPA analysis process, or the comments are similar in nature so as to have been responded to in the above sections.

- The smell of jet fumes
- They service the dirtiest types of aircraft
- Not really a safety project
- Public impact versus private gain
- Expansion into currently undeveloped lands
- Inconsistent assumptions of socioeconomic impacts
- Disregard on the part of Massport for our input
- Should require a higher level of environmental review
- Ability to land larger aircraft on new ramp
- Maximum limits for flights or plane sizes
- Alternative that will not need modification of ALP and encroach on green space

- Use structured parking
- Use of de-icing fluids
- Wetland locations on maps
- Lead emissions

Appendix C

Comparison of Predicted Maximum Air Concentrations in 2020 High Growth Scenario at Ten Community Receptors (µ/m3) to Air Quality Standards
Source: 2005 ESPR (Massport 2006)

Table 8-14 Comparison of Predicted Maximum Air Concentrations in 2020 High Growth Scenario at Ten Community Receptors (µ/m3) to Air Quality Standards[1]
Source: 2005 ESPR (Massport 2006)

	Receptor	CO 1 hr	CO 8 hr	NO_2 1 hr	NO_2 annual	PM_{10} 24 hr	PM_{10} annual	$PM_{2.5}$ 24 hr	$PM_{2.5}$ annual
Concentration from Hanscom Operations	1	1,879	1,262	116	8	4	0.6	4	0.6
	2	1,559	1,091	99	7	4	0.6	4	0.6
	3	976	683	62	5	2	0.4	2	0.4
	4	945	661	57	5	2	0.4	2	0.4
	5	1,160	778	74	6	2	0.4	2	0.4
	6	673	471	42	3	1	0.3	1	0.3
	7	455	319	29	3	1	0.3	1	0.3
	8	890	623	54	5	2	0.3	2	0.3
	9	448	313	29	3	1	0.3	1	0.3
	10	459	322	29	3	1	0.3	1	0.3
Total Concentration Including Background	1	4,294	3,102	259	55	62	29.6	34	13.5
	2	3,974	2,931	242	54	62	29.6	33	13.5
	3	3,391	2,523	205	52	60	29.4	32	13.3
	4	3,360	2,501	200	52	60	29.4	32	13.3
	5	3,575	2,618	217	53	60	29.4	32	13.3
	6	3,088	2,311	185	50	59	29.3	31	13.2
	7	2,870	2,159	172	50	59	29.3	31	13.2
	8	3,305	2,463	197	52	60	29.3	32	13.2
	9	2,863	2,153	172	50	59	29.3	30	13.2
	10	2,874	2,162	172	50	59	29.3	31	13.2
Standards[1]		40,000	10,000	320	100	150	50	35	15

[1]Massachusetts and National Ambient Air Quality Standards (NAAQS) as shown in Table 8-2, 2005 ESPR

Appendix D

Memorandum: Hanscom Field Air Quality Assessment for East Ramp, 2008

Memorandum

To: Tom Ennis, Massport

From: Michael Kenney

Subject: **Hanscom Field Air Quality Assessment for East Ramp**

Date: December 10, 2008

I. Introduction

This memorandum presents the result of the air quality assessment for the proposed East Ramp at Hanscom Field. The purpose of this assessment is to demonstrate compliance with the General Conformity Rule of the federal Clean Air Act (CAA). Both the project-related operational and construction emissions are evaluated.

II. General Conformity Rule Applicability

Currently, the Boston metropolitan area (including the area surrounding Hanscom Field) is designated by the U.S. Environmental Protection Agency (EPA) and Massachusetts Department of Environmental Protection (DEP) as an "attainment" area for all of the Ambient Air Quality Standards (AAQS); with the exception of carbon monoxide (CO) and the eight-hour standard for ozone (O_3).[1,2] The "non-attainment" designation for O_3 is further classified as "moderate" and is based upon air quality monitoring data collected by DEP at various locations throughout the area.[3] The "maintenance" designation for CO signifies that violations of the AAQS for this pollutant have occurred in the past but the area is transitioning to the full attainment designation.

As a result of these designations and in accordance with the federal CAA, the DEP has developed a State Implementation Plan (SIP) which focuses on the reduction and control of CO as well as nitrogen oxides (NO_x) and volatile organic compounds (VOC) – the two primary precursors to O_3-formation.[4]

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[1] NAAQS have been established for the following "criteria" pollutants: carbon monoxide (CO), lead Pb), nitrogen dioxide (NO_2), particulate matter less than or equal to 10 and 2.5 microns ($PM_{10/2.5}$), sulfur dioxide (SO_2) and ozone (O_3).

[2] This current non-attainment designation applies to the eight-hour NAAQS for O_3 established by the EPA in 1997. The EPA has replaced this standard in 2008 and updated "attainment/non-attainment" designations will be made in the 2010/2011 timeframe.

[3] This ozone non-attainment area comprises 11 counties, including Barnstable, Bristol, Dukes, Essex, Middlesex, Nantucket, Norfolk, Plymouth, Suffolk, and Worcester). Logan Airport is in Suffolk County.

[4] *Eight-hour Ozone Attainment Demonstration for the Massachusetts Portion of the Boston-Lawrence-Worcester, Massachusetts-New Hampshire Ozone Non-attainment Area*, prepared by the Massachusetts Department of Environmental Protection.

As a means of ensuring that continual progress toward achieving and maintaining compliance with the AAQS and SIP for CO and O_3 are made, the General Conformity Rule establishes criteria (called "de minimis" levels) for NO_x/VOC and CO emissions.[5] In brief, project-related emissions below these de minimis levels are automatically assumed to comply with the SIP and no further assessment of these emissions is required.[6] For the Boston metropolitan area, the applicable de minimis levels are 50 tons/year for either NO_x or VOCs and 100 tons/year for CO.

III. Analysis Years and Conditions

For the purposes of this assessment and consistent with Federal Aviation Administration (FAA) guidelines, the air quality analysis analyzed the following conditions:

- 2010 and 2015 No Action Condition
- 2010 and 2015 Build Condition

The years of 2010 and 2015 were selected based on the expected construction completion dates for Phase I and full Build schedules for the East Ramp Project. Comparisons between No Action and Build Conditions reveal the expected changes in emissions that are attributable to the proposed project.

IV. Approach and Methodology

The emissions inventory was conducted using methods, models and emission factors approved by the FAA, EPA and DEP combined with development plans and operational data specific to the East Ramp Project. The emissions inventory includes aircraft, ground support equipment (GSE), auxiliary power units (APU), and motor vehicles (both on and off airport) as well as construction activities.

The operational emissions inventory was prepared following FAA guidelines (i.e., FAA Orders 1050.1E, Change 1 and 5050.4B) and using the most recent version of the FAA Emissions and Dispersion Modeling System (EDMS).[7, 8, 9, 10]

Aircraft operations were based on and consistent with documentation prepared for the East Ramp Project noise assessment (HMMH, *Analysis of the Proposed Development of the East Ramp at Hanscom Field*, dated July 9, 2008). Aircraft operating time-in-mode,

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[5] 40CFR Part 51, *Determining Conformity of General Federal Actions to State or Federal Implementation Plans*, November 30, 1993.
[6] In cases where total emissions of NOx/VOC and/or CO exceed the applicable de-minimis levels, the project is not automatically assumed to conform to the SIP and a formal General Conformity Determination must be made.
[7] EDMS5.1 is the most recent version available.
[8] Federal Aviation Administration, Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions, April 26, 2006.
[9] Federal Aviation Administration, Order 1050.1E, Environmental Impacts: Policies and Procedures, Change 1, March 20, 2006.
[10] Federal Aviation Administration, *An Environmental Desk Reference for Airport Actions*, October 10, 2007.

GSE and APU assignments were based on EDMS defaults pertaining to each aircraft type.

Motor vehicle traffic volumes were derived based on the *2005 Environmental Status and Planning Report* (Chapter 6) and include on-airport roadway (Hanscom Drive) and off-airport roadways (Lexington Road and Virginia Road). Motor vehicle emission factors were obtained from the U.S. EPA MOBILE6.2 using DEP-recommended input data reflecting Massachusetts motor vehicle fleet mix and operating characteristics.[11]

For the construction emissions inventory, the construction schedules and requirements (i.e., work crews, equipment types, etc.) for the project were estimated by qualified construction planners. These data and information were then combined with appropriate emission factors obtained from the EPA NONROAD2005 and MOBILE6.2 emission models to obtain estimates of total annual construction emissions. Emissions of fugitive dust were calculated using emission factors listed within the U.S. EPA's *Compilation of Air Pollution Emissions Factors* (i.e., AP-42).[12]

V. Results

Tables 1 and 2 provide the emissions inventories for 2010 and 2015 for the No Action and Build Alternative and includes operational emissions from aircraft, GSE, APU, and motor vehicles, as well as construction activities (for the Build Alternative). The total difference between the Build and No Action Alternatives is also shown. Notably, the operational and construction emissions are added together as if they will occur in the same year – a "worst-case" assumption.

For comparative purposes, the applicable General Conformity Rule *de minimis* levels also are provided for CO, NO_x and VOCs . From this comparison, "yes/no" statements show whether the project-related emissions are less than the *de minimis* thresholds. Emissions of SO_2, PM_{10} and $PM_{2.5}$ are also shown for disclosure purposes, although the General Conformity Rule does not apply to these pollutants.

[11] Communications between DEP and KB Environmental Sciences, March, 2008.

[12] A fugitive dust emission factor of 1.2 tons per acre disturbed per month was used; with a maximum disturbed area of 7.6 acres during 2010 and 9.7 acres during 2015. For PM emissions resulting from demolition and upset of ground-based fugitive dust, a dust control efficiency of 75 percent due to daily watering and other measures was estimated based on EPA AP-42. $PM_{2.5}$ was assumed to be 10 percent of PM_{10} for fugitive dust-based calculations.

Table 1
2010 Air Emissions Inventory Results

Alternative	Emission Source	Pollutant (tpy)					
		CO	**VOC**	**NO_X**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
No Action	Aircraft	477	62.5	43.9	7.0	1.5	1.5
	GSE	109	3.9	12.7	0.3	0.4	0.3
	APU	4.9	0.1	1.3	0.2	0.2	0.2
	Onsite Motor Vehicles	3.4	0.2	0.2	<0.1	<0.1	<0.1
	Offsite Motor Vehicles	6.7	0.3	0.3	<0.1	<0.1	<0.1
	No Action Totals	**600**	**67.0**	**58.4**	**7.6**	**2.1**	**2.1**
Build	Aircraft	493	68.0	46.9	7.6	1.7	1.7
	GSE	119	4.2	13.8	0.3	0.4	0.4
	APU	5.5	0.2	1.5	0.3	0.2	0.2
	Onsite Motor Vehicles	3.6	0.2	0.2	<0.1	<0.1	<0.1
	Offsite Motor Vehicles	7.1	0.4	0.3	<0.1	<0.1	<0.1
	Construction	12.3	1.23	13.8	0.2	4.5	1.0
	Build Totals	**640**	**74.2**	**76.5**	**8.4**	**6.8**	**3.3**
	Difference	**39.5**	**7.2**	**18.1**	**0.8**	**4.7**	**1.3**
	De minimis threshold	100	50	50	n/a	n/a	n/a
	Less than De minimis?	**Yes**	**Yes**	**Yes**	n/a	n/a	n/a

Source: KB Environmental Sciences, Inc, 2008.
Differences = Build – No-Build/No-Action
The applicable *de minimis* levels are 50 tons/year for either NO_x or VOC and 100 tons/year for CO. Emissions below these levels are automatically assumed to comply with the State Implementation Plan (SIP).
n/a means not applicable to the General Conformtiiy Rule.
Yes means the emissions are below the de minimis levels and the project emissions conform to the SIP.

Table 2
2015 Air Emissions Inventory Results

Alternative	Emission Source	Pollutant (tpy)					
		CO	VOC	NO_X	SO_2	PM_{10}	$PM_{2.5}$
No Action	Aircraft	537	80.3	54.3	8.9	2.0	2.0
	GSE	80.1	2.8	8.4	0.3	0.3	0.3
	APU	6.9	0.2	1.8	0.3	0.3	0.3
	Onsite Motor Vehicles	4.0	0.1	0.1	0.0	0.0	0.0
	Offsite Motor Vehicles	7.6	0.2	0.2	0.0	0.0	0.0
	No Action Totals	**636**	**83.7**	**64.8**	**9.5**	**2.6**	**2.6**
Build	Aircraft	568	90.7	60	10.0	2.3	2.3
	GSE	90.6	3.2	9.4	0.3	0.3	0.3
	APU	8.1	0.2	2.2	0.4	0.3	0.3
	Onsite Motor Vehicles	4.2	0.1	0.1	<0.1	<0.1	<0.1
	Offsite Motor Vehicles	8.2	0.3	0.2	<0.1	<0.1	<0.1
	Construction	11.2	1.1	10.1	<0.1	5.3	1.0
	Build Totals	**690**	**95.6**	**82.2**	**10.7**	**8.3**	**3.9**
	Difference	**54.0**	**11.9**	**17.4**	**1.2**	**5.7**	**1.4**
	De minimis threshold	100	50	50	n/a	n/a	n/a
	Less than De minimis?	**Yes**	**Yes**	**Yes**	n/a	n/a	n/a

Source: KB Environmental Sciences, Inc, 2008.
Differences = Build – No-Build/No-Action
The applicable *de minimis* levels are 50 tons/year for either NO_x or VOC and 100 tons/year for CO. Emissions below these levels are automatically assumed to comply with the State Implementation Plan (SIP).
n/a means not applicable to the General Conformtiiy Rule.
Yes means the emissions are below the de minimis levels and the project emissions conform to the SIP.

VI. Conclusions

As discussed previously, the General Conformity provisions of the CAA require federal agencies to demonstrate that projects and actions approved, funded, and/or permitted under their authorization to conform to the applicable SIP. Under General Conformity, an applicability test is first applied to determine if a formal determination is necessary. If the project-related emissions are within prescribed *de minimis* levels, no further analysis is required. Project-related emissions are derived from the future-year emissions inventory results and are based on the differences (+/-) in total emissions between the No Action Alternative and the Build Alternative.

Because the area surrounding Hanscom Airport is currently designated as a maintenance CO area and a non-attainment area for O_3, the applicable *de minimis* level is 100 tpy (for CO) and 50 tpy (for NO_x and VOC). Therefore, if project-related emissions of CO and NOx/VOC are less than 100 and 50 tpy, respectively, the General Conformity Rule does not apply.

As shown in **Tables 1 and 2**, the operational and construction-related emissions associated with the East Ramp Project are well within the *de minimis* levels. Therefore, these emissions conform to the SIP and no further analysis or conformity demonstration is required.

End of memo.

Appendix E
Massachusetts Historical Commission Building Inventory Form B

FORM B – BUILDING

MASSACHUSETTS HISTORICAL COMMISSION
MASSACHUSETTS ARCHIVES BUILDING
220 MORRISSEY BOULEVARD
BOSTON, MASSACHUSETTS 02125

Assessor's Number	USGS Quad	Area(s)	Form Number
4-1-0	Maynard		

Town/City: Lincoln, MA

Place: *(neighborhood or village)*:
Laurence G. Hanscom Field

Address: Hanscom Drive

Historic Name: Hangar 2 (Hangar 17)

Uses: Present: Aircraft Hangar

Original: Aircraft Maintenance Hangar

Date of Construction: ca. 1960

Source: Historic aerial photography and plans

Style/Form: steel, open arch hangar

Architect/Builder: Unknown

Exterior Material:
Foundation: concrete

Wall/Trim: corrugated steel sheets

Roof: corrugated steel sheets

Outbuildings/Secondary Structures:
Attached furnace building

Major Alterations *(with dates):*
Interior partition walls were removed in late twentieth century

Condition: Fair

Moved: **no** ☒ **yes** ☐ **Date:**

Acreage: approximately 0.5 acres

Setting: Hangar 2 is located on a paved tarmac within the boundaries of Hanscom Field. The building opens onto taxiways "M" and "S" northwest of the building. The rear of the hangar is adjacent to Hanscom Drive. A row of tall hedges runs along the north elevation of the building.

Photograph

Locus Map

Recorded by: Quinn R. Stuart and John J. Daly
Organization: PAL
Date (*month / year*): February 2014

☐ Recommended for listing in the National Register of Historic Places.
If checked, you must attach a completed National Register Criteria Statement form.

Use as much space as necessary to complete the following entries, allowing text to flow onto additional continuation sheets.

ARCHITECTURAL DESCRIPTION:

Describe architectural features. Evaluate the characteristics of this building in terms of other buildings within the community.

Hangar 2, also known as Hangar 17, is a one-story, single-bay, utilitarian structure approximately 150 feet wide (north-south) by 135 feet long (east-west). The building has a segmental-arch roof clad with corrugated steel panels fastened to the frame with sheet metal screws and rubber washers. The roof panels extend past the north and south elevations to create shallow overhanging eaves that are lines with metal fascia. The west (facade) and east elevations have an arched enclosed sheet metal soffit. The walls are covered with corrugated steel panels similar to the roof and rest on a concrete slab foundation. The retractable, manually-operated aircraft entry consists of a pair of five-panel leaves sheltered under a pent canopy. Each steel-framed door leaf is clad in corrugated steel panels with translucent fiberglass windows. The manually-operated doors roll on steel tracks embedded in the concrete slab floor and collapse into steel-framed pockets clad in corrugated steel panels. Steel personnel doors are located at each end of the facade of the door pockets. Similar steel doors are located on the north, east and south elevations. A one-story, one-bay-by-one-bay, concrete block furnace building with a flat roof and concrete slab foundation extends from the east elevation. A single-hung steel door is on the south elevation of the furnace building. A sign reading “Jet Aviation” flanked by fluorescent spot lights is affixed below the roof overhang on the facade.

The hangar interior is comprised of a single, clear-span aircraft bay with exposed exterior cladding and framing. The frame is comprised of 11 steel, two-hinged arch ribs bolted together from L-channel components. Bolted lateral braces and threaded diagonal rods act as stiffeners between the ribs. The arch ribs rise from poured concrete piers (aka skewbacks) along the north and south hangar walls. Steel I-beam purlins supporting the roof panels run perpendicular to and rest on top chord of the arch ribs. The panels are backed with fiberglass insulation. Corrugated translucent fiberglass skylights are located in two bands along the north and south slopes of the roof. The north and south walls are of steel stud construction resting on a raised, poured concrete sill. These walls are also backed with fiberglass insulation. The east wall is framed with nine, rolled steel I-beam columns extending from the floor sill to the eastern-most arch rib. These support longitudinal Z-bars, to which is fastened the metal cladding. The west wall is framed with rolled-steel I-beam columns reinforced with diagonal braces that extend from the ceiling to the top rail of the retractable hangar doors. The floor is a poured concrete slab. There is evidence of rectangular partitioned rooms that were removed along the north and south elevation. Remnants of linoleum tile, paint, and holes for stud wall fasteners remain. An enclosure with concrete flat roof, wood fascia planks, and concrete block walls is located in the northwest corner of the space. The room has three entrances on the south elevation; one wood panel, one steel, and one opening covered with plywood. A temporary wood stud-frame partition with plywood wall covering is located in the southeast corner. Florescent lighting is suspended from the roof framing.

Hangar 2 represents a modest example of the two-hinged arch frame system as applied to the aircraft building type. Arch truss framing was developed in the United States in the mid-nineteenth century for use in balloon train sheds. The framing system became popular throughout the twentieth century as an ideal form to support vaulted roofs of wide spans, especially in geographical areas where wind and snow loads were a factor. This structural type became widely used by the military for hangars beginning in World War II due to the great open spans that could be created to house aircraft. The arches were typically prefabricated in half-sections on the ground and put in place using cranes. Hangar 2 is a small example of this common structural type. Five hangars approximately 272-feet-by-229-feet of similar steel-arch construction were built at the Westover Air Base in Chicopee, MA in 1941 (MHC Nos. CHI.737-CHI.741). The largest recorded hangar using a two-hinged arch system was the Navy’s Coastal Patrol Blimp hangar in New Jersey constructed during World War II that had a clear span of 328 feet and a height of 184 feet (Condit 1961:37-39; Pedrotty et al. 1999).

HISTORICAL NARRATIVE

Discuss the history of the building. Explain its associations with local (or state) history. Include uses of the building, and the role(s) the owners/occupants played within the community.

Hangar 2, also known as Hangar 17, is associated with the post-World War II expansion of Laurence G. Hanscom Field (Hanscom Field) for civil aviation. Hanscom Field was established 1940–1941 through the efforts of the Massachusetts Aeronautics Commission and then-Governor Saltonstall, who advocated for the establishment of an auxiliary airport near Boston to supplement the Boston (now Logan) airport. In 1941, the Commonwealth of Massachusetts, with federal assistance, purchased 509 acres of land in Bedford, Lincoln, and Concord for the new airfield, which was designated the Boston Auxiliary Airport at Bedford. It was officially dedicated the Laurence G. Hanscom Field in February 1943, in honor of Laurence Gerard Hanscom, an aviation enthusiast, State House reporter, and the first commander of the Massachusetts Wing of the Civilian Air Reserve. The Army operated and maintained the airfield through World War II, during which time it was known as the Bedford Army Airfield, and additional land and improvements were added (Adams et al. 2006:39-40; Del Papa 1991:1-7).

After the conclusion of the war, the federal government transferred ownership of all the buildings and improvements at Hanscom to the Commonwealth. Four years later, the Secretary of the Air Force petitioned the Governor of Massachusetts to donate Hanscom Field to the Air Force for use as a military installation. The Commonwealth of Massachusetts deeded 396 acres and leased an additional 641 acres to the federal government, while the remaining 724 acres were retained by the state. The Air Force maintained and operated the airfield, while the state was responsible for the 83-acre civil terminal area and reserved the right to use up to 20 percent of the airfield's capacity. Hanscom evolved into an important research and development center for Air Force electronics and geophysics programs due to its proximity to academic institutions such as the Massachusetts Institute of Technology (MIT) (Adams et al. 2006:40; Del Papa 1991:23-24).

In 1956, the Massachusetts Port Authority (Massport) was created and, between 1956 and 1959, assumed control and management of the state-owned Hanscom lands, including those under lease to the Air Force. During this period, the civil terminal area, including Hangar 2 and four other extant buildings, was established. The Air Force terminated its flying mission at the airfield in 1973 and its lease of the airfield in August 1974. Thus, major portions of the airfield reverted to full Massport control, operation, and maintenance. The Air Force retained a 50-year lease on three parcels containing a total of 58 acres of state-owned land. Hanscom Field, the civilian airport, now comprises approximately 1,300 acres of land that Massport manages as a regional aviation facility, whose major users are a mix of commuter/commercial air services, corporate aviation, private pilots, flight schools, some charters, and light cargo. The civil terminal area has been substantially altered in the late twentieth century by alterations and additions to buildings and substantial demolition and new construction (Adams et al. 2006:40, 46).

Hangar 2's origins and use over time are poorly documented, but Massport records indicate the hangar has continually been leased by private commercial companies and not under the maintenance or control of Massport (Leonhardt, email correspondence, 2014). The facility was constructed ca. 1960 in the civil terminal area of Hanscom Field (Air Force 1956; historicaerials.com 1955, 1957, 1963). Plans of the airfield kept in the Hanscom Air Force Base Plan Vault show the hangar was used as a "general aviation hangar" in 1968 (Howard et al. 1968). By 1975 the hangar was occupied by an aviation maintenance technology training school, East Coast Aero Tech, but designated "MPA [Massachusetts Port Authority] Hangar No. 2" on an airport layout plan by 1979 (Howard et al. 1975; Hoyle et al. 1979). Hangar 2 is currently used for airplane storage by the private company Jet Aviation.

Hangar 2 is not associated with any of the significant development, events, or activities that took place at Hanscom Field in the mid-twentieth century. There are no records indicating Hangar 2 was associated with any of the Air Force or MIT – Lincoln Laboratory research and development activities. Collections retained at the Hanscom Air Force Base Environmental Office and Real Property Office do not include any information pertaining to the occupation or use of Hangar 2. The MIT – Lincoln Laboratory Archives (Information Services Department) were unable to locate any records involving activities at Hangar 2. The building is a relatively small example of a fairly common type and does not represent an important or unique engineering accomplishment.

Continuation sheet 2

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Photo 2. View looking northwest from Hanscom Drive.

Photo 3. Interior, view looking east.

Photo 4. Interior, view looking west.

Photo 5. Interior framing detail, view looking south.

Appendix F

Federal- and State-listed Species Correspondence and Supplemental Information

5.0 EXISTING/AFFECTED ENVIRONMENT

5.4 BIOTIC COMMUNITIES

A variety of biotic communities typical to the region can be found on airport property and in adjoining areas. The developed portion of the airport is surrounded by wetland, forested upland, commercial, residential, and industrial development, as well as a network of roads. The airport contains five primary habitat types, each defined in the natural community guidelines established by the Massachusetts Natural Heritage and Endangered Species Program (NHESP), including: grassland, scrub/shrub wetland, forested wetland, wetland/upland mixed forest, and upland forest. Other important biotic communities, including vernal pools, are located on airport property and in its vicinity. Each of the primary biotic communities is described below, including their locations and typical biological and physical characteristics. Vegetation management areas identified in the *2002-2006 Vegetation Management Plan* are shown in Figure 5-4.

Grassland: The airport is dominated by a community defined as "Cultural Grassland" according to NHESP guidelines. This managed community encompasses vegetated areas adjacent to runways and taxiways, as well as portions of the clear zones of the primary, approach, and transitional surfaces of each runway. The community is dominated by grasses, grass-like species, and some herbaceous plants. This vegetative community covers a substantial portion of the airfield in the Towns of Bedford, Concord, and Lincoln. This community is human created, maintained with mechanized turf mowing equipment, and frequently associated with airports. Portions of the grassland at Hanscom are considered habitat for two state-listed rare bird species, the upland sandpiper and the grasshopper sparrow, along with other, more common grassland bird species. Mowing in designated grassland management areas is timed to avoid nesting periods for the bird species, as recommended by the Massachusetts Audubon Society. Management includes scheduled periodic mowing of these areas to restrict the establishment of woody vegetation, and to maintain the height of the vegetation at or near the runway surface elevation. The areas outside of the grassland management areas are mowed regularly during the growing season, consistent with airport operational procedures.

5.5 THREATENED AND ENDANGERED SPECIES

This section describes the threatened and endangered species which have been identified on airport property. The Massachusetts *Endangered Species Act* (MESA) defines "Endangered" as any species of plant or animal in danger of extinction throughout all or a significant portion of its range and species of plants or animals in danger of extirpation as documented by biological research and inventory. A "Threatened" Species is any species of plant or animal likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range and any species declining or rare as determined by biological research and inventory and likely to become endangered in the foreseeable future. MESA also classifies "Species of Special Concern." Species of Special Concern are any species of plant or animal that have been documented by biological research and inventory to have suffered a decline that could threaten the species if allowed to continue unchecked or that occurs in such small numbers or

with such a restricted distribution or specialized habitat requirements that it could easily become threatened in Massachusetts.

Portions of Hanscom Field are situated within an area identified as priority habitat for rare species according to the Massachusetts Natural Heritage and Endangered Species Program (NHESP). The priority habitat consists of the human-maintained turfgrass areas that support small breeding populations of two species of state-protected rare birds. Grasslands are a vegetative community gradually declining in the New England region, as a result of development, ecological succession, and the decline in farming. The extensive grass areas found at airports can supply habitat for rare grassland species. Based on the Massachusetts Natural Heritage Atlas (NHESP; 11th Edition; Valid July 1, 2003), approximately 6.33 acres of the project site is located within Priority Habitat 459.

The rare species observed at Hanscom Field, within areas of Priority Habitat as defined by the Massachusetts Natural Heritage Atlas, are the upland sandpiper (*Bartramia longicauda*), a state-endangered species, and the grasshopper sparrow (*Ammodramus savannarum*), a state-threatened species (see Figure 5-5). Neither rare species is included in the federal endangered species list for Massachusetts, maintained by the United States Fish and Wildlife Service. The presence of both bird species has been documented in several areas of managed grassland located between the runways and taxiways at Hanscom Field. The Massachusetts Audubon Society observed Hanscom Field from 1993 to 1998, documenting specific locations for nesting. Massport implemented a mowing schedule in 1996, following consultation with the Massachusetts Audubon Society, to avoid mowing in particular areas during critical portions of the nesting seasons of the upland sandpiper and the grasshopper sparrow. Massport has noted increased nesting success since implementation of grassland management techniques. Vegetation management techniques were assessed in the aforementioned 2002-2006 Vegetation Management Plan, prepared in 2002. Specific grassland management goals and objectives, and implementation recommendations were developed in a *Grassland Management Plan* developed by Massport in 2004 (see Figure 5-6).

The goal of the *Grassland Management Plan* is to provide safe aircraft operating conditions at Hanscom Field while protecting endangered and threatened grassland bird species. A set of grassland management techniques was developed with the specific goal of managing the airport's grasslands for the grasshopper sparrow and upland sandpiper, along with other declining grassland bird species. Grassland management is conducted in designated grassland management areas where it is compatible with airport operations and will not result in the attraction of wildlife species known to be aviation hazards. The management plan is designed to encourage nesting and brood-rearing in areas outside of established runway and taxiway safety areas. The mowing schedule was developed to maintain managed grassland areas at a height of 6 to 15 inches. Safety areas adjacent to the runways and taxiways are mowed throughout the growing season, which discourages nesting in these areas, thus confining nesting to areas that are away from aircraft movement areas. Mowing is not conducted in grassland management areas throughout the breeding season (May 1 to July 31). After the breeding season, the habitat areas are inspected for active nests, and mowing can resume when it is clear that all the birds have fledged.

One other formerly and one other currently NHESP-listed species have been observed in the vicinity of Hanscom Field. The eastern box turtle (*Terrapene carolina*) is listed as a species of special concern. The elderberry long-horned beetle (*Desmocerus palliatus*) is no longer listed as a rare species based on the July 2006 NHESP list of rare species[1]. Neither the eastern box turtle nor the elderberry long-horned beetle are known to occur on airport property. Consultation with the NHESP conducted for the Draft 2000 L.G. Hanscom Field Environmental Status and Planning Report (ESPR) confirmed that these two species occupy habitat near, but not within, Hanscom Field.

Runway End 5 Project Site

The proposed safety area at Runway End 5 is not managed for grassland bird breeding habitat and is mowed frequently for airport operations and to discourage nesting. Grassland birds may utilize this area as foraging habitat, but alternative foraging areas are available throughout the airfield. Any birds identified here would be considered transient, and would not be a constraint on project implementation.

Runway End 23 Project Site

The proposed safety area at Runway End 23 is not managed for grassland bird breeding habitat and is mowed frequently for airport operations and to discourage nesting. Grassland birds may utilize this area as foraging habitat, but alternative foraging areas are available throughout the airfield. Any birds identified here would be considered transient, and would not be a constraint on project implementation.

[1] "2006 MESA List Changes", http://www.mass.gov/dfwele/dfw/nhesp/mesalistchang06.pdf

MASSACHUSETTS
NATURAL HERITAGE ATLAS

13TH EDITION

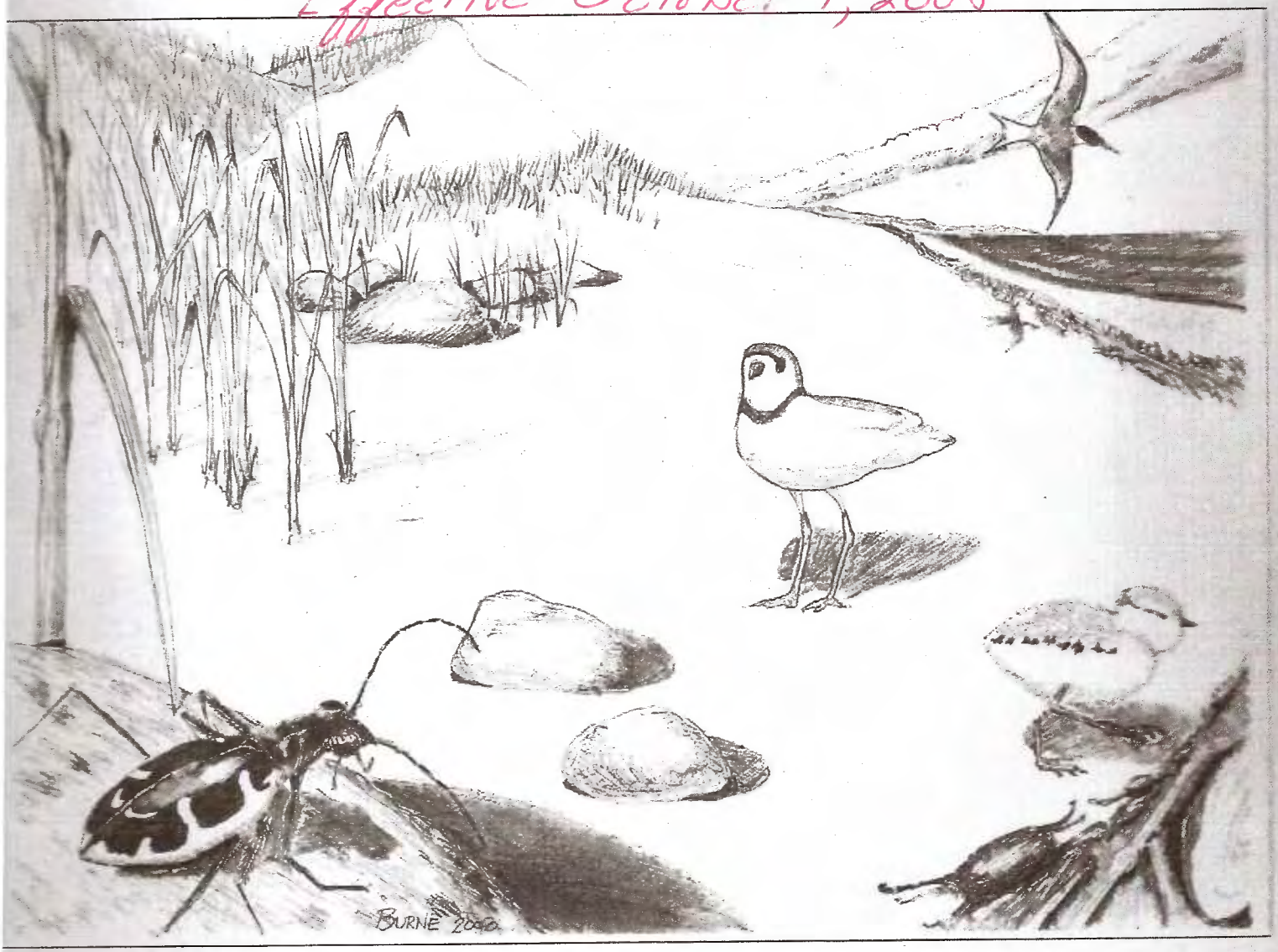
This Atlas contains maps displaying:

PRIORITY HABITATS OF RARE SPECIES

ESTIMATED HABITATS OF RARE WILDLIFE

CERTIFIED VERNAL POOLS

Effective October 1, 2008



Priority Habitats and Estimated Habitats - Effective October 1, 2008

Priority Habitats for use with the MA Endangered Species Act Regulations (321 CMR

Estimated Habitats for use with the MA Wetlands Protection Act Regulations (310 CM

Produced by the Natural Heritage & Endangered Species Program *website: www.nhesp.org*

Commonwealth of Massachusetts

Division of Fisheries & Wildlife

MassWildlife

Wayne F. MacCallum, Director

11 October 2006

RECEIVED

OCT 13 2006

MEPA

Robert Golledge, Secretary
Executive Office of Environmental Affairs
Attention: MEPA Office
William Gage, EOEA No.13594
100 Cambridge St. Suite 900
Boston, MA 02114

Project Name:	*L.G. Hanscom Field Runway 5/23 Safety Improvement Project*
Proponent:	*Massport*
Location:	*Hanscom Field, Bedford, Concord, and Lincoln*
Document Reviewed:	*Draft Environmental Assessment/Draft Environmental Impact Report*
NHESP File Number:	*06-19316*

Dear Secretary Golledge:

The Natural Heritage & Endangered Species Program (NHESP) of the MA Division of Fisheries & Wildlife has reviewed the Draft Environmental Impact Report (DEIR) for the L.G. Hanscom Field Runway 5/23 Safety Improvement Project (dated July 2006), and would like to offer the following comments.

According to the Massachusetts Natural Heritage Atlas, 12th Edition (effective 10/1/06), the proposed work area is mapped as Priority Habitat of Rare Species (PH 1146). As noted in the DEIR, the site provides habitat for the Upland Sandpiper and Grasshopper Sparrow, two state-listed species. Pursuant to 321 CMR 10.18, this project must be reviewed by the NHESP for compliance with the Massachusetts Endangered Species Act (MESA). In order to initiate a MESA review, the project proponent should submit a MESA Filing Checklist, required filing information, and fee to the NHESP (see www.nhesp.org "Regulatory Review" tab for additional information) Based on a preliminary review of the information in our database and the information provided by the project proponent, it appears that impacts to state-listed species associated with the Safety Area Improvements project could be avoided if the work were to be conducted outside of the Grasshopper Sparrow and Upland Sandpiper breeding season.

The NHESP is concerned that the Grassland Management Program depicted in Figure 5-6 of the DEIR could result in a "take" of state-listed bird species. We request that the project proponent contact Jon Regosin, Ph.D. of our office to discuss endangered species concerns associated with grassland management and mowing at Hanscom Field (508-792-7270, ext. 316). We appreciate the opportunity to comment on this project.

Sincerely,

Thomas W. French, Ph.D.
Assistant Director

Bedford Conservation Commission
Bedford Planning Board
Bedford Board of Selectmen
Concord Conservation Commission
Concord Planning Board
Concord Board of Selectmen
Lincoln Conservation Commission
Lincoln Planning Board
Lincoln Board of Selectmen
DEP Northeast Regional Office

Commonwealth of Massachusetts

Division of Fisheries & Wildlife

MassWildlife

Wayne F. MacCallum, *Director*

RECEIVED
AUG 6 2007
McFARLAND-JOHNSON, INC.
CONCORD, NH

August 1, 2007

Bedford Conservation Commission
Town Hall
10 Mudge Way
Bedford, MA 01730

RE:	Applicant:	Thomas Ennis, Massachusetts Port Authority
	Project Location:	Hanscom Field, Runway 5/23
	Project Description:	Increase Runway End Safety Areas to comply with FAA standards, alteration of BVW
	DEP Wetlands File No.	103-0635
	NHESP Tracking No.	**07-22599**

To Whom It May Concern:

The applicant listed above has submitted a Notice of Intent with site plans (dated May 2007) to the Natural Heritage & Endangered Species Program (NHESP) of the Massachusetts Division of Fisheries & Wildlife, in compliance with the rare wildlife species section of the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.59). The NHESP also received the MESA Review Checklist and supporting documentation for review pursuant to the MA Endangered Species Act Regulations (321 CMR 10.18).

WETLANDS PROTECTION ACT (WPA)

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 this project, as currently proposed, will **not** adversely affect the actual Resource Area Habitat of state-protected rare wildlife species. Therefore, it is our opinion that this project meets the state-listed species performance standard for the issuance of an Order of Conditions.

Please note that this determination addresses only the matter of **rare** wildlife habitat and does not pertain to other wildlife habitat issues that may be pertinent to the proposed project.

MASSACHUSETTS ENDANGERED SPECIES ACT (MESA)

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 this project, as currently proposed, will **not** result in a prohibited "take" of state-listed rare species, **provided the work, including all re-seeding, is completed during 1 September – 15 April**. Any changes to the proposed project or any additional work beyond that shown on the site plans may require an additional filing with the NHESP pursuant to the MESA. This project may be subject to further review if no physical work is commenced within three-years from the date of issuance of this determination, or if there is a change to the project.

Please note that this determination addresses only the matter of state-listed species and their habitats. If you have any questions regarding this letter please contact Amy Coman, Endangered Species Review Assistant, at (508) 389-6364.

Sincerely,

Thomas W. French

Thomas W. French, Ph.D.
Assistant Director

cc: Thomas Ennis, Massachusetts Port Authority
Jed Merrow, McFarland-Johnson, Inc
DEP Northeast Region, Wetlands Section

Appendix G

Correspondence from Massachusetts Historical Commission and Lincoln Historical Commission

TOWN OF LINCOLN

MIDDLESEX COUNTY MASSACHUSETTS

TOWN OFFICES
16 Lincoln Road,
Lincoln, MA 01773
Phone: 781-259-2613
Fax: 781-259-8729
carrolle@lincolntown.org

Lincoln Historical Commission ***Historic District Commission***

December 11, 2013

Mr. Richard P. Doucette
Manager of Environmental Program
Federal Aviation Administration
12 New England Executive Park
Bedford, MA 01803

Dear Mr. Doucette:

I am responding for the Lincoln Historical Commission to the request of Brona Simon, Executive Director, Massachusetts Historical Commission, for comments concerning a proposed project at Hanscom Field. The project involves the demolition of Hangar 17 and new construction in the vicinity, as stated and discussed in material supplied by Hoyle, Tanner & Associates, Inc.

This proposal was discussed by the Lincoln Historical Commission at its December 3, 2013 meeting. The Commission decided it had no issue with the proposal as submitted and would take no action at this time.

Sincerely yours,

Lucretia H. Giese, Chair
Lincoln Historical Commission

DEC 18 2013

RECEIVED
NOV 04 2013
MASSACHUSETTS PORT AUTHORITY
Chief Executive Officer

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

cc: RJ
JLM
Billy
Tole

October 28, 2013

Richard P. Doucette
Manager of Environmental Programs
Federal Aviation Administration
12 New England Exec Park
Burlington, MA 01803

RE: Jet Aviation Site Safety & Efficiency, Demolition of Hangar 17, New Construction at Hanscom Field, 380 Hanscom Drive, Bedford, MA; MHC# RC.54899

Dear Mr. Doucette:

The Massachusetts Historical Commission (MHC) is in receipt of a Project Notification Form (PNF) for the project referenced above, submitted by Jet Aviation and received at this office on October 3, 2013. After review of MHC files and the information submitted, the MHC has the following comments.

This project proposes the demolition of Hangar 17, a Quonset style hangar with small offices built in 1945 and the construction of a replacement hangar with additional office/shop space attached, a new aircraft apron/ramp, landside access road, and replacement automobile parking. This work will require a change to the official Airport Layout Plan (ALP) for Hanscom Field, and as such is subject to review under Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800). The MHC understands that the Federal Aviation Administration (FAA) will serve as the lead federal agency for this project.

The MHC looks forward to consulting with the FAA regarding this project, and to receiving the results of the FAA's identification and evaluation efforts, as well as the FAA's determination of effect. As you know, the FAA must seek and consider the views of the public pursuant to 36CFR800.3(e) for the proposed changes.

The MHC recommends that the FAA seek the comments of the National Park Service at Minute Man National Historical Park and the Historical Commissions in the towns of Bedford, Concord, Lexington, and Lincoln for the proposed undertaking. Please send copies of any comments received from any interested parties to the MHC.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800 and, M.G.L. Chapter 9, sections 26-27C (950 CMR 71.00). Please do not hesitate to contact Brandee Loughlin of my staff if you have any questions.

Sincerely,

Brona Simon

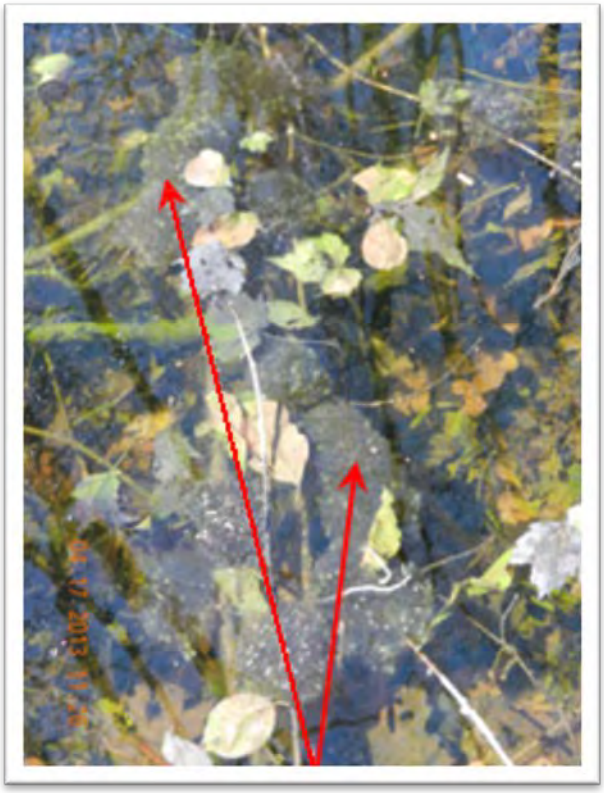
Brona Simon
State Historic Preservation Officer
Executive Director
Massachusetts Historical Commission

xc: Thomas P. Glynn, Massachusetts Port Authority
Nancy Nelson, NPS Minute Man National Historical Park
Bedford Historical Commission
Concord Historical Commission
Lexington Historical Commission
Lincoln Historical Commission

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.sec.state.ma.us/mhc

Appendix H

Potential Vernal Pool Photos



Wetland 2, wood frog egg masses

Wetland 2, lack of outlet

Wetland 3, wood frog egg masses

Wetland 3, lack of outlet

Appendix I

Correspondence from National Park Service, Minute Man National Historical Park

National Park Service
U.S. Department of the Interior

Minute Man
National Historical Park
174 Liberty Street
Concord, MA 01742

www.nps.gov/mima

November 18, 2013

Ms. Kimberly Peace
Hoyle, Tanner & Associates, Inc.
150 Dow Street
Manchester, NH 03101

Re: Jet Aviation Draft Environmental Assessment
Site Safety and Efficiency Improvements Project
Hoyle, Tanner Project Number: 304903

Dear Ms. Peace:

Thank you for requesting comments from Minute Man National Historical Park on the Jet Aviation Draft Site Safety and Efficiency Improvements Project. We thank Sharon Williams, Hanscom Field Director and Tom Ennis, Massport Senior Project Manager for meeting with us to review the plan.

We appreciate that Jet Aviation desires to replace an older hangar with a larger new hangar that will accommodate the larger jets that are in use today. However, we remain concerned about the ongoing incremental growth of airport facilities, the expansion of the airport layout plan, and the lack of a regional transportation plan. We believe that incremental growth of facilities and operations does carry the risk of increasing impacts to the national park and other natural and historic sites, including the current proposal to increase the footprint of the airport facilities into currently undeveloped land. These incremental changes should be reviewed comprehensively so that the cumulative effects (traffic, noise, air pollution, etc.) can be understood. We concur with the six requests listed in the letter of November 5, 2013 from HATS (Hanscom Area Towns Committee.)

We disagree with the sound metrics referred to in the Environmental Assessment. FAA noise analysis requires identification of the number of people newly exposed to noise levels greater than DNL 65 dB, which is described as the level typically associated with the sound of normal conversation. However, the Environmental Protection Agency and the National Park Service affirm that 52 dB is the speech interference threshold for speaking in a raised voice to an audience at ten meters, which interferes with the interpretive programs at Minute Man. We also have measured 60 dB as impacting normal voice communications at one meter.

Sincerely,

Lou Sideris

Lou Sideris, Chief of Planning and Communication

Cc: Richard Doucette, Environmental Program Manager, Federal Aviation Administration

Appendix J

Section 106 FAA Finding of No Adverse Effect, December 5, 2013

U.S. Department
of Transportation
**Federal Aviation
Administration**

Federal Aviation Administration
New England Region

12 New England Executive Park
Burlington, MA 01803

December 5, 2013

Ms. Brona Simon
State Historic Preservation Officer
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, MA 02125

Dear Ms. Simon:

The FAA is in receipt of your letter of October 28, 2013 regarding the proposed replacement of the Jet Aviation hangar, apron and roadway improvements at L.G.Hanscom Field. These projects are the subject of a draft Environmental Assessment (EA) issued in October 2013. The draft EA was widely distributed, and generated several comment letters. The EA document was submitted to the local historical commissions, who did not comment.

The potential impacts to historic resources can be categorized as either direct effects caused by construction, or indirect effects caused by increased operations (landings and takeoffs). The hangar to be replaced by Jet Aviation appears to be of limited historical value; based on its lack of association with historic events/persons, its design/construction or information value. The land area to be impacted by the hangar/roadway/apron construction has been significantly disturbed by past airport construction.

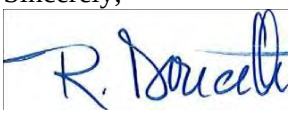
Civilian operations at airports are driven by regional and national economic factors. Hanscom's annual operations from 1980 to 2000 fluctuated between 180,000 and 250,000. Annual operations declined from 2002 to 2009, followed by recent slow growth to 166,000. The current operations are historically low for this airport; all years prior to 2007 exceeded this amount. Experience at other airports indicates that improvements of the type contemplated at Hanscom have little effect on numbers of operations or associated noise impacts.

Analysis now underway by Massport for the 2012 Environmental Status and Planning Report (ESPR) updated the 2005 ESPR reconnaissance survey of historic resources near Hanscom Field. This analysis identified 61 historic properties (39 individual resources and 22 districts) within the 6,000 acre general study area around Hanscom Field. The noise analysis shows no historic properties fall within the 65DNL noise contour, and no historic properties fall within the 60DNL noise contour. It does show 2 individual properties and a small portion of Minute Man National Historical Park within the 55DNL noise contour. These properties are the Deacon John Wheeler/Captain Jonas Minot Farmhouse (aka Thoreau Birthplace) and the Wheeler-Meriam House in Concord. The noise levels at these properties have decreased since the 2005 ESPR noise analysis, and remain well below the threshold level of 65DNL.

The highest airport noise contour within Minute Man National Park is the 55DNL contour. This is considerably lower than the federally-recognized threshold of 65DNL. The FAA does, in limited circumstances, conduct nonstandard noise analyses to assess noise impacts on national parks and other sensitive locations. These analyses are not conducted at all airports near national parks. They are limited to projects that would increase noise levels in parks where a quiet setting is a generally recognized purpose and attribute. As described above, we do not feel these undertakings will result in additional operations or noise impacts. While we understand the importance of Minute Man National Historical Park and the desire for a quiet setting for park visitors, the presence of interpretive programs alone is not sufficient to require additional noise analyses. Such analyses would only be initiated if the undertaking caused additional noise impacts on a park where a quiet setting is a recognized purpose and attribute of that park.

After review of the relevant information, the FAA issues a draft Section 106 "Finding of No Adverse Effect" for these undertakings. Thank you for your review of this draft Finding. Please do not hesitate to contact me if you have any questions or comments on this matter.

Sincerely,



Richard P. Doucette
Manager of Environmental Programs
FAA New England Region

CC: Tom Ennis, Massport
Nancy Nelson, Minute Man National Historical Park

Appendix K
MHC Request for Additional Documentation

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

January 6, 2014

Richard P. Doucette
Manager of Environmental Programs
Federal Aviation Administration
12 New England Executive Park
Burlington, MA 01803

RE: Jet Aviation Site Safety & Efficiency, Demolition of Hangar 17, New Construction at Hanscom Field, 380 Hanscom Drive, Bedford, MA; MHC# RC.54899

Dear Mr. Doucette:

The Massachusetts Historical Commission (MHC) is in receipt of your letter dated December 9, 2013, regarding the the proposed project referenced above, which was received at this office on December 10, 2013. After review of MHC files and the information submitted, the MHC has the following comments.

In your letter you state that Hangar 17 "appears to be of limited historical value." However, you did not include any information regarding the history, construction, use, associations with World War II or the Cold War (if any), nor any photographs of Hangar 17. Thus, the MHC does not have sufficient information to agree or disagree with your opinion.

In your letter, you state that the FAA has issued a draft Section 106 "Finding of No Adverse Effect." However, your letter did not include any documentation to support your finding.

Please submit adequate documentation to the MHC so that the MHC may review and comment on your draft Section 106 finding. Please refer to 36 CFR 800.11 Documentation Standards, which specify the documentation that should be submitted to this office in compliance with Section 106 of the Section 106 of the National Historic Preservation Act (36 CFR 800) in conjunction with your finding.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 (36 CFR 800 and, M.G.L. Chapter 9, sections 26-27C (950 CMR 71.00). Please feel free to contact me if you have any questions.

Sincerely,

Brona Simon

Brona Simon
State Historic Preservation Officer
Executive Director
Massachusetts Historical Commission

xc: Thomas P. Glynn, Massachusetts Port Authority
Tom Ennis, MassPort
Nancy Nelson, NPS Minute Man National Historical Park
Bedford Historical Commission
Concord Historical Commission
Lexington Historical Commission
Lincoln Historical Commission
Neil Rasmussen, Save Our Heritage

220 Morrissey Boulevard, Boston, Massachusetts 02125
(617) 727-8470 • Fax: (617) 727-5128
www.sec.state.ma.us/mhc

JAN 08 2014

Appendix L
FAA Response to MHC Request for Additional Documentation

U.S. Department
of Transportation
**Federal Aviation
Administration**

Federal Aviation Administration
New England Region

12 New England Executive Park
Burlington, MA 01803

February 26, 2014

Ms. Brona Simon
State Historic Preservation Officer
Massachusetts Historical Commission
220 Morrissey Boulevard
Boston, MA 02125

Dear Ms. Simon:

The FAA is in receipt of your letter of January 6, 2014, regarding the proposal to demolish Hangar 17 at Hanscom Field in Bedford. In your letter, you requested additional documentation to support a finding of no adverse effect on historic properties.

Please see attached the historic building assessment that has recently been completed by the Public Archaeology Laboratory Inc. Information gathered regarding the potential significance of the hangar indicate it "is not associated with any of the significant development, events, or activities that took place at Hanscom Field in the mid-twentieth century…The building is a relatively small example of a fairly common type and does not represent an important or unique engineering accomplishment."

This documentation is submitted in support of the FAA Section 106 "Finding of No Adverse Effect". Please do not hesitate to contact me if you have any questions or comments on this matter.

Sincerely,

Richard P. Doucette
Manager of Environmental Programs
FAA New England Region

CC: Hoyle, Tanner & Associates Inc.
Massachusetts Port Authority
Lincoln Historical Commission

Appendix M:

FAA Finding of No Significant Impact (FONSI)

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
FINDING OF NO SIGNIFICANT IMPACT

Jet Aviation Hangar and related facilities
L.G. Hanscom Field, Lincoln Massachusetts

Proposed Action

Jet Aviation proposes to upgrade and expand its Hangar, Fixed Base Operator (FBO) and ramp facilities and parking areas at L.G. Hanscom Field (BED) in Bedford, Massachusetts. The increased hangar size would allow the modern fleet of business aircraft to use Jet Aviation facilities, and the increased interior capacity would allow for less overall movement or taxiing of planes as they are used, hangared and maintained within the Jet Aviation site. Federal actions include approval of an update to the Airport Layout Plan (ALP). An Environmental Assessment (EA) was prepared to assess this proposed action.

Purpose And Need

The purpose of the project is to increase the efficiency and safety of aircraft operations of the new aircraft design and to improve maintenance operations at the Jet Aviation facilities. Providing additional space in the hangar and ramp areas would improve safety for all operations and maintenance personnel by allowing for increased spacing between aircraft, particularly in areas where propeller aircraft are parked.

Alternatives Considered

The alternatives proposed vary in the size and locations of the proposed components: Hangar, FBO, ramp and parking areas.

No Action – No Improvements to Existing Conditions
Hangar 17 is 21,315 sf in size, and Hangar 21 is 84,500 sf (Figure 2). These facilities house aircraft while they are being repaired or maintained. The size limitations of Hangar 17, based on its current location and footprint, limits the ability of Jet Aviation to complete repair and maintenance safely, and restricts the maximum size of aircraft that can be housed or worked on. The site thus does not function efficiently and is inefficient in energy use compared to modern hangar designs. The limited amount of space in which to maneuver and repair aircraft can cause an unsafe environment for personnel, especially when transitioning aircraft. If no action is taken on the proposed project, the existing conditions would continue as described and the project safety and efficiency needs would not be met.

Alternative 1 – Original configuration of ramp and hangar
Alternative 1 presents the original project design prior to delineation of wetlands in the surrounding area. This alternative was designed with the following components: a 40,000 sf proposed Hangar with 11,000 sf of office/shop; a 12,000 sf FBO facility; a 182,000 sf ramp area; a new landside access road; and reconfigured or new parking areas to replace parking lost to new construction. This alternative would result in approximately 50,090 sf of direct impacts to wetlands. Hangar 17 and Building 20 would be removed from the site. This alternative was dismissed due to wetlands impacts.

Alternative 2 – Revised configuration of ramp and hangar
Alternative 2 was developed after the identification of wetlands on-site and portrays the first efforts to avoid and minimize wetland impacts. The components are similar to Alternative 1, with a 40,000 sf Hangar with 7,500 sf of office/shop, a 12,000 sf FBO facility, 240,000 sf of ramp area, and a new access road and parking area. This alternative would minimize wetland impacts; however, direct impacts from the road crossing would result in approximately 300 sf of impact to this resource. Additionally, there would be direct impacts from grading of approximately 700 sf. Hangar 17 and Building 20 would be removed from the site. This alternative was dismissed due to wetlands impacts.

Alternative 3 - Avoidance of Direct Wetland Impacts – **Proposed Action**
Alternative 3 was designed to completely avoid direct impacts to wetlands while meeting the purpose and need for the project. Similar to Alternatives 1 and 2, project components would include construction of a new 40,000 sf Hangar with 16,000 sf of office/shop space, a new 12,000 sf FBO facility, 94,160 sf of ramp areas, a new landside access road, and replacement automobile parking. Demolition of Hangar 17 would occur but Building 20 would be left in place. The configuration of Alternative 3 would result in no direct impacts to the wetlands, but would require approximately 101,146 square feet of impacts to the wetland buffer areas. The ramp size would be significantly reduced from Alternatives 1 and 2 to shift the Hangar south and west on the site, avoiding the visual impact of blocking the Liberty Mutual building from being seen from Hanscom Drive.

Alternatives Reviewed But Eliminated From Detailed Analysis
Alternatives exist which although initially meet the spirit of the purpose and need, are not reasonable or financially/technically feasible enough to carry through the full analysis of impacts in the EA. There were approximately fourteen design iterations between the original design and the design presented in Alternative 3. Each of these designs were reviewed and found inadequate for the following reasons: the design would result in direct wetland impacts; the design would reduce existing parking areas while not allowing for new parking to be created; or, the proposed ramp area would be too small to allow for increases in efficiency of moving planes.

Assessment

Assessment of impacts for projects at Hanscom Field typically focuses on historic and biotic resources, as the airport is proximate to a National Park and a National Wildlife Refuge. There is also a history of public opposition to airport development. Controversy and litigation has sprung from this opposition in the past. Chapter 5 of the EA details the potential environmental consequences of the proposed project.

As is typical of limited hangar development with associated FBO infrastructure, there are few environmental impacts anticipated. The proposed design avoids wetland impacts. No direct impacts to historic resources are anticipated. A draft finding of no adverse effects to historic resources was issued by the FAA on December 5, 2013. At the request of the Massachusetts State Historic Preservation Officer, additional historical documentation was gathered on the hangar proposed for demolition. The historic building assessment, provided on February 26, 2014, indicates the hangar "is not associated with any of the significant development, events, or activities that

took place at Hanscom Field in the mid-twentieth century…The building is a relatively small example of a fairly common type and does not represent an important or unique engineering accomplishment."

The scale of the project is such that minimal impacts are anticipated by any future aircraft operations that might be related to this development. The ongoing noise monitoring indicates the noise generated by aircraft at Hanscom is historically low. Any increase in noise, related or unrelated to this project, continues to fall below significant levels as defined by FAA guidance.

Mitigation Measures

As described above, few impacts are anticipated. Any potential minor impacts can be mitigated through the use of standard Best Management Practices during construction. These are described in Chapter 6 of the EA.

Finding of No Significant Impact

I have carefully and thoroughly considered the facts contained in the attached EA. Based on that information, I find the proposed Federal action is consistent with existing national environmental policies and objectives of Section 101(a) of the National Environmental Policy Act of 1969 (NEPA) and other applicable environmental requirements. I also find the proposed Federal action will not significantly affect the quality of the human environment or include any condition requiring any consultation pursuant to section 102(2)(C) of NEPA. As a result, FAA will not prepare an EIS for this action.

APPROVED:

R Doucette

Richard Doucette,
Environmental Program Manager

4/4/14
Date

DISAPPROVED:

_____
Richard Doucette,
Environmental Program Manager

_____
Date