# Final Environmental Impact Report
## (EEA No. 16640)

# CAPE COD GATEWAY AIRPORT
## MASTER PLAN IMPROVEMENT PROJECTS

September 16, 2024



GATEWAY CAPE COD AIRPORT

Epsilon ASSOCIATES INC.

# Final Environmental Impact Report
## (EEA No. 16640)

# CAPE COD GATEWAY AIRPORT

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## Table of Contents

# TABLE OF CONTENTS


**1.0 INTRODUCTION 1-1**
**1.1 Purpose and Need 1-4**
**1.2 Project Description Summary 1-5**
1.2.1 Airside Facilities 1-5
1.2.1.1 Construct Partial Parallel Taxiway D to Runway 15-33 1-7
1.2.1.2 Remove Taxiway E and Existing Runup Area/Construct a Runup Area for Partial Parallel Taxiway D 1-7
1.2.1.3 Realign and Reconstruct Taxiway B 1-7
1.2.1.4 Runway 15-33 and Taxiway A Extension 1-7
1.2.1.5 Aeronautical Development Areas 1-11
1.2.2 Landside Improvements 1-11
1.2.2.1 Construct Seasonal SRE and Maintenance Facility 1-11
1.2.2.2 Construct Electric Aircraft Support Equipment 1-12
1.2.2.3 Smart Microgrid 1-12
1.2.3 Airspace Control Improvements 1-12
1.2.3.1 Runway 33 RSA and Runway Object Free Area (ROFA) Avigation Easements 1-12
1.2.3.2 Enhance Airport control over off-Airport Property within Runway Protection Zones 1-13
1.2.3.3 Runway 15 Avigation Easements 1-13
**1.3 Requirement for an Environmental Impact Report 1-14**
1.3.1 Changes to the Project since the Submittal of the Draft EIR/EA 1-15
1.3.2 Land Alteration Updates 1-17
**1.4 Future Project Design Review Processes 1-20**
**1.5 Anticipated Permits and Approvals 1-21**

**2.0 ALTERNATIVES ANALYSIS 2-1**
**2.1 Taxiway D Alternatives 2-2**
2.1.1 Taxiway D Alternative 4 – 300' Separation Distance 2-3
2.1.2 Taxiway D Alternative 5 – No Service Road (Updated Preferred Alternative) 2-5
**2.2 Alternative Analysis for North and East Ramp Hangar Development 2-7**
2.2.1 Hangar and Ramp Development – No-Build Alternative 2-8
2.2.2 Alternative 1: Northfield Development 2-9
2.2.3 Alternative 2: East and North Ramp Development – Preferred Alternative 2-9
**2.3 Runway 6-24 Runway Safety Area (RSA) Improvement 2-11**
2.3.1 Alternative 1 – No-Build Alternative 2-11
2.3.2 Alternative 2 – Full Dimension RSA 2-12

# TABLE OF CONTENTS (Continued)


| | | | |
|---|---|---|---|
| | 2.3.3 | Alternative 3 – Length Reduction of Runway to 4,028 feet | 2-12 |
| | 2.3.4 | Alternative 4 – Relocation of Runway 6-24 | 2-12 |
| | 2.3.5 | Alternative 5 – Declared Distances | 2-13 |
| | 2.3.6 | Alternative 6 – EMAS (Preferred Alternative) | 2-13 |
| **2.4** | **Terminal Improvements Alternatives** | | **2-13** |
| | 2.4.1 | Terminal Alternative 1 – No-Build Alternative | 2-14 |
| | 2.4.2 | Terminal Alternative 2 (Preferred Alternative) – Phased Improvements to Functional Organization and Building Space | 2-14 |
| | 2.4.3 | Terminal Alternative 3 – Interior Functional Organization Only | 2-14 |
| **3.0** | **GROUNDWATER AND SOLE SOURCE AQUIFER** | | **3-1** |
| **3.1** | **Groundwater Depth, Contours, and Flow Directions** | | **3-1** |
| | 3.1.1 | Hydraulic Conductivity | 3-5 |
| **3.2** | **Additional Hydrogeologic Information** | | **3-6** |
| **3.3** | **Groundwater Protection Measures** | | **3-6** |
| | 3.3.1 | Spill Prevention, Control, and Countermeasure Plan | 3-7 |
| | 3.3.2 | Industrial Stormwater Pollution Prevention Plan | 3-7 |
| | 3.3.3 | Deicing and Aircraft Washing Procedures | 3-8 |
| **3.4** | **Drinking Water Wells and Wellhead Protection Areas** | | **3-9** |
| | 3.4.1 | Groundwater Monitoring | 3-9 |
| | 3.4.2 | Compliance with Zoning Overlay Districts | 3-10 |
| **3.5** | **Construction Period Protection Measures** | | **3-12** |
| | 3.5.1 | Soils Management | 3-12 |
| | 3.5.2 | Stormwater Management | 3-12 |
| **4.0** | **ENVIRONMENTAL JUSTICE AND PUBLIC HEALTH** | | **4-1** |
| **4.1** | **Environmental Justice and Populations** | | **4-1** |
| **4.2** | **Public Meetings and Project Information** | | **4-3** |
| **4.3** | **MEPA Distribution List Outreach Update** | | **4-5** |
| **4.4** | **Airport Capacity** | | **4-6** |
| | 4.4.1 | Hangars | 4-7 |
| | 4.4.2 | Runway 15-33 | 4-8 |
| | 4.4.3 | Future Estimates associated with Project Components and Phase Two Projects | 4-9 |
| **4.5** | **Electrification of Aircraft and Associated EJ Benefits** | | **4-10** |
| **4.6** | **Stormwater Management** | | **4-12** |
| | 4.6.1 | Precipitation Projections for Stormwater Management | 4-12 |
| | 4.6.2 | Updated Stormwater Standards for Flood Protection and Water Quality Improvements | 4-12 |

# TABLE OF CONTENTS (Continued)


**4.7 EJ Community Impact Categories 4-13**
4.7.1 Noise and Air Emissions 4-13
4.7.1.1 Air Monitoring 4-14
4.7.1.2 Noise Monitoring 4-15
4.7.2 Public Health - Groundwater / Sole Source Aquifer 4-15

**5.0 WETLANDS AND STORMWATER 5-1**
**5.1 Wetlands 5-1**
5.1.1 Wetland Resource Area Impacts for Taxiway D 5-1
5.1.2 Proposed Wetland Mitigation Site 5-3
5.1.2.1 Review of Hydrology at Preferred Mitigation Site 5-5
5.1.2.2 Proposed Plantings 5-6
5.1.2.3 Wetland Replication Area Construction 5-7
**5.2 Stormwater Management 5-7**
5.2.1 Stormwater Treatment Goals 5-8
5.2.2 System Design Parameters and Attributes 5-9
5.2.3 Proposed Stormwater Control Measures 5-9
5.2.4 Low-Impact Development 5-12
5.2.5 Sizing 5-13
5.2.6 Adaptation and Resiliency 5-13
5.2.7 Construction Period Stormwater Management 5-13
**5.3 Compliance with Criteria for the Evaluation of Application for Discharge of Dredged or Fill Material 5-14**
5.3.1 Compliance with 314 CMR 9.06 5-15
5.3.2 General Performance Standards of 314 CMR 9.07(1) 5-17
5.3.3 Dredging Performance Standards 5-19

**6.0 CLIMATE CHANGE 6-1**
**6.1 New Infrastructure Over Next 20 Years and Associated GHG Commitments 6-1**
6.1.1 Extreme Heat 6-2
6.1.2 Extreme Precipitation and Flooding 6-3
6.1.3 Sea Level/Storm Surge 6-3
6.1.4 GHG Emissions from Aircraft 6-4
6.1.5 Designated Electric Vehicle Charging Stations 6-4
**6.2 Minimization of Tree/Shrub Clearing and Land Disturbance 6-5**
6.2.1 Tree Replanting 6-5
6.2.1.1 Replanting Locations 6-8
6.2.2 Reuse of Cut Wood 6-9
**6.3 Proponent's Commitments to GHG Reduction 6-9**

# TABLE OF CONTENTS (Continued)


**7.0 SOLID AND HAZARDOUS WASTE 7-1**

**7.1 Storage and Management of Solid and Hazardous Wastes 7-1**

7.1.1 Aircraft and Vehicle Maintenance Practices and Pollution Reduction and Control 7-3

7.1.2 Hazardous Waste and Waste Oil 7-4

**7.2 Upper Gate Pond and Lewis Pond Sediment Results Analysis 7-5**

**7.3 PFAS Contamination and Mitigation 7-6**

**8.0 MITIGATION AND CHAPTER 61 FINDINGS 8-1**

**8.1 Introduction 8-1**

**8.2 Anticipated State Permits and Approvals 8-1**

**8.3 Proposed Section 61 Findings 8-1**

**9.0 RESPONSE TO COMMENTS 9-1**

**10.0 LIST OF PREPARERS 10-1**


# List of Appendices


Appendix A – J Cape Cod Gateway Airport Master Plan Improvement Project

# List of Figures


| | | |
|---|---|---|
| Figure 1.1-1 | USGS Locus Map | 1-2 |
| Figure 1.1-2 | Existing Conditions | 1-3 |
| Figure 1.2-1 | Proposed Master Plan Projects | 1-6 |
| Figure 1.2-2 | Taxiway D No Access Road Alternative | 1-8 |
| Figure 1.2-3 | Proposed Taxiway B Relocation | 1-9 |
| Figure 1.2-4 | Proposed Runway 15 Extension | 1-10 |
| Figure 1.3-1 | Land Alterations and Tree Removals | 1-18 |
| Figure 2.1-1 | Taxiway D 300-Foot Separation Alternative | 2-4 |
| Figure 2.1-2 | Taxiway D No Access Road Alternative | 2-6 |
| Figure 2.2-1 | Alternative 1 - Northfield Hangar Development | 2-10 |
| Figure 3.1-1 | Groundwater Monitoring Wells | 3-2 |
| Figure 3.1-2 | Groundwater Contours | 3-3 |
| Figure 3.1-3 | Protected Water Supply Areas | 3-4 |
| Figure 3.4-1 | Barnstable Wellhead Protection Overlay District | 3-11 |
| Figure 4.1-1 | Environmental Justice Block Group, 1-Mile Radius | 4-2 |
| Figure 5.1-1 | Proposed Wetland Replication Area | 5-4 |
| Figure 6.2-1 | Proposed Tree Planting Areas | 6-6 |

# List of Tables


| | | |
|---|---|---|
| Table 1.2-1 | ROFA Penetrations | 1-13 |
| Table 1.2-2 | Avigation Easements Needed for Proposed Conditions associated with Runway 15 Extension | 1-14 |
| Table 1.3-1 | Proposed Project Schedule | 1-16 |
| Table 1.3-2 | Summary of Draft EA/EIR vs FEIR Impacts | 1-19 |
| Table 1.5-1 | Permits and Approvals Required for the Project | 1-21 |
| Table 2.1-1 | Taxiway D Alternative 4 Comparison with DEIR Preferred Alternative | 2-3 |
| Table 2.1-2 | Taxiway D Alternative 5 Reduction in Wetland Resource Impacts | 2-5 |
| Table 2.1-3 | Taxiway D Alternative 5 Comparison with DEIR Preferred Alternative | 2-7 |
| Table 2.2-1 | Aircraft Hangar Demand | 2-8 |
| Table 2.2-2 | Hangar Development Summary | 2-11 |
| Table 3.1-1 | 2020 Groundwater Elevation Data | 3-5 |
| Table 3.1-2 | Drawdown Pump Test Results | 3-5 |
| Table 3.3-1 | List of Potential Pollutants | 3-7 |
| Table 4.1-1 | 2020 EJ Block Groups within the DGA | 4-3 |
| Table 4.4-1 | Annual Operations Forecast by Type | 4-7 |
| Table 4.4-2 | HYA Based Aircraft Master Plan Forecast | 4-8 |
| Table 4.5-1 | Airport Electrical Use- Existing Conditions and Project Baseline | 4-11 |
| Table 4.5.2 | Airport Baseline – Carbon footprint | 4-11 |
| Table 5.1-1 | New Preferred Alternative for Taxiway D Reduced Impacts | 5-2 |
| Table 5.1-2 | New Preferred Alternative for Taxiway D Alternative 5's Temporary Impacts | 5-2 |
| Table 5.1-3 | Proposed Work Effect on Immediate Environment and Methods of Management | 5-3 |
| Table 5.1-4 | Proposed Plantings for Wetland Replication Area | 5-6 |
| Table 6.1-1 | RMAT Tool - Asset Preliminary Climate Risk Rating | 6-2 |
| Table 6.2-1 | Summary of Tree Cutting Impacts by Area | 6-5 |
| Table 6.2-2 | Carbon Sequestration Estimates | 6-7 |
| Table 7.1-1 | Airport Virgin Petroleum Storage | 7-1 |
| Table 7.1-2 | Airport and Tenant Mobile Refuelers | 7-2 |
| Table 7.1-3 | Airport OHM Storage Locations | 7-2 |
| Chart 7.3-1 | Deployment Cap Effect on Groundwater Quality | 7-8 |
| Table 8-1 | Anticipated State Permits and Approval | 8-1 |
| Table 8-2 | Summary of Mitigation Measures | 8-3 |
| Table 9-1 | Secretary's Certificate and Comment Letters | 9-1 |

# LIST OF ACRONYMS

| | |
|---|---|
| AC | Advisory Circular |
| ADG | Airplane Design Group |
| AEDT | Aviation Environment Design Tool |
| AFFF | Aqueous Film Forming Foam |
| AIP | Airport Improvement Program |
| ALP | Airport Layout Plan |
| AMP | Airport Master Plan |
| ARFF | Airport Rescue and Fire Fighting |
| AST | Aboveground Storage Tank |
| ATCT | Airport Traffic Control Tower |
| AUL | Activity Use Limitation |
| BMP | Best Management Practices |
| BRL | Building Restriction Line |
| BVW | Bordering Vegetated Wetlands |
| CCGA | Cape Cod Gateway Airport |
| CCRTA | Cape Cod Regional Transit Authority |
| CFR | Code of Federal Regulations |
| CGP | Construction General Permit |
| CIP | Capital Improvement Plan |
| CMP | Construction Management Plan |
| CMR | Code of Massachusetts Regulations |
| CWA | Clean Water Act |
| DEIR | Draft Environmental Impact Report |
| DGA | Designated Geographic Area |
| DNL | Day Night Average Sound Level |
| DRI | Development of Regional Impact |
| EA | Environmental Assessment |
| EIR | Environmental Impact Report |
| EIS | Environmental Impact Statement |
| EJ | Environmental Justice |
| EMAS | Engineered Material Arresting System |
| ENF | Environmental Notification Form |
| EO | Executive Order |
| EOEEA | Executive Office of Energy and Environmental Affairs |
| EPA | Environmental Protection Agency |
| ERP | Energy Reduction Plan |
| ESA | Environmental Site Assessment |
| ESHGWT | Estimated Seasonal High Groundwater Table |
| EV | Electric Vehicles |
| EVSE | Electric Vehicle Supply Equipment |
| FAA | Federal Aviation Administration |
| FAR | Federal Aviation Regulations |
| FONSI | Finding of No Significant Impact |
| Ft | Feet |
| GHG | Greenhouse Gases |
| HWG | Horsley Witten Group |
| HYA | Cape Cod Gateway Airport |
| IRA | Immediate Response Action |
| LDA | Landing Distance Available |

# LIST OF ACRONYMS (Continued)

| | |
|---|---|
| LF | Linear Feet |
| LID | Low Impact Development |
| LQG | Large Quantity Generator |
| LSP | License Site Professional |
| LUW | Land Under Water |
| NOAA | National Oceanic and Atmospheric Administration |
| NOI | Notice of Intent |
| NPDES | National Pollutant Discharge Elimination System |
| NPIAS | National Plan of Integrated Airports System |
| OHM | Oil and Hazardous Materials |
| OWS | Oil Water Separator |
| p | Phosphorus |
| PAH | Polycyclic Aromatic Hydrocarbons |
| PFAS | Per- and polyfluoroalkyl substances |
| PM | Particulate Matter |
| RAO | Response Action Outcome |
| RAPS | Response Action Performance Standards |
| RDC | Runway Design Code |
| RMAT | Resilient MA Action Team |
| RTN | Release Tracking Number |
| ROFA | Runway Object Free Area |
| RPZ | Runway Protection Zones |
| RSA | Runway Safety Area |
| RVZ | Runway Visibility Zone |
| RWY | Runway |
| SAF | Sustainable Aviation Fuel |
| SCM | Stormwater Control Measures |
| SF | square foot |
| SHMCAP | State Hazard Mitigation and Climate Adaptation Plan |
| SHPO | State Historic Preservation Officer |
| SIC | Standard Classification Code |
| SIP | State Implementation Plan |
| SMART | Strengthening Mobility and Revolutionizing Transportation |
| SPCCP | Spill Prevention, Control, and Countermeasure Plan |
| SRE | Snow Removal Equipment |
| SWPPP | Stormwater Pollution Prevention Plan |
| TOFA | Taxiway Object Free Area |
| TOYR | Time-of-Year Restrictions |
| TPH | Total Petroleum Hydrocarbons |
| TSA | Taxiway Safety Areas |
| TSS | Total Suspended Solids |
| TWY | Taxiway |
| UHI | Urban Heat Island |
| USACE | U.S. Army Corps of Engineers |
| USGS | United States Geological Survey |
| VFR | Visual Flight Rule |
| WOTUS | Waters of the United States |
| WPA | Wetlands Protection Act |
| WQC | Water Quality Certification |

# Chapter 1.0

Introduction

# 1.0 INTRODUCTION

Cape Cod Gateway Airport Commission (the Commission) proposes to implement a series of airport improvement projects identified in the Federal Aviation Administration (FAA)-approved 2022 Cape Cod Gateway Airport Master Plan Update (the Projects). The 2022 Master Plan Update provides a framework to guide future Airport development that will enhance safety, cost-effectively satisfy current and future aviation demand, meet FAA standards for airport design for the families of aircraft that use the airport, while considering potential environmental and socioeconomic impacts.

The Cape Cod Gateway Airport (HYA or the Airport) is in the village of Hyannis in the Town of Barnstable, Massachusetts, and is owned and operated by the Town of Barnstable as an Enterprise Fund (see **Figure 1.1-1**). As such, the Airport sets rates and charges for the services offered to cover its operating expenses. The Town of Barnstable's General Operating Fund and citizen taxes are not used to operate the airport or to supplement funding for the Airports operation. As the owner and operator, the Town of Barnstable is also identified by the FAA as the designated Sponsor of the airport and accepts federal and state grants and the associated grant assurances. The Airport also serves as an important regional transportation hub to area attractions and recreational venues and provides a key role in emergency response activities. The Airport is identified in the National Plan of Integrated Airports System (NPIAS) with a service level of Non-Hub Commercial Service. See **Figure 1.1-2** for the Airport's current layout.

The current airport funding program, known as the Airport Improvement Program (AIP), was established by the Airport and Airway Improvement Act of 1982 (Public Law 97-248). Since then, the AIP has been amended several times, most recently with the passage of the FAA Modernization and Reform Act of 2012. **Funds obligated for the AIP are drawn from the Airport and Airway Trust fund, which is supported by aviation user fees, fuel taxes, and other similar revenue sources.**

The analysis presented in this Final Environmental Impact Report (FEIR) refines the projects discussed in the 2023 Draft Environmental Assessment and Environmental Impact Report (Draft EA/EIR) and provides even more detail on the environmental impacts of the projects and the mitigation strategies that will be taken on to address environmental impacts. This document has been prepared in accordance with the MEPA Certificate on the Draft Environmental Assessment and Draft Environmental Impact Report dated February 16, 2024 (Appendix A) and MEPA Regulations (301 Code of Massachusetts Regulations [CMR] 11.07), and most importantly, feedback and comments received through the public engagement process. The Final Environmental Assessment (EA) document has been prepared as a separate, stand-alone document to meet National Environmental Policy Act (NEPA) (40 Code of Federal Regulations [CFR] 1500-1508 and 23 CFR 771) requirements of federal agencies to determine whether there are significant impacts associated with federal actions, including federally funded projects. Information in this FEIR is incorporated into the NEPA EA as may be required.

G:\Projects2\MA\Barnstable\6116\MXD\1-1_USGS_Locus_20230911.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

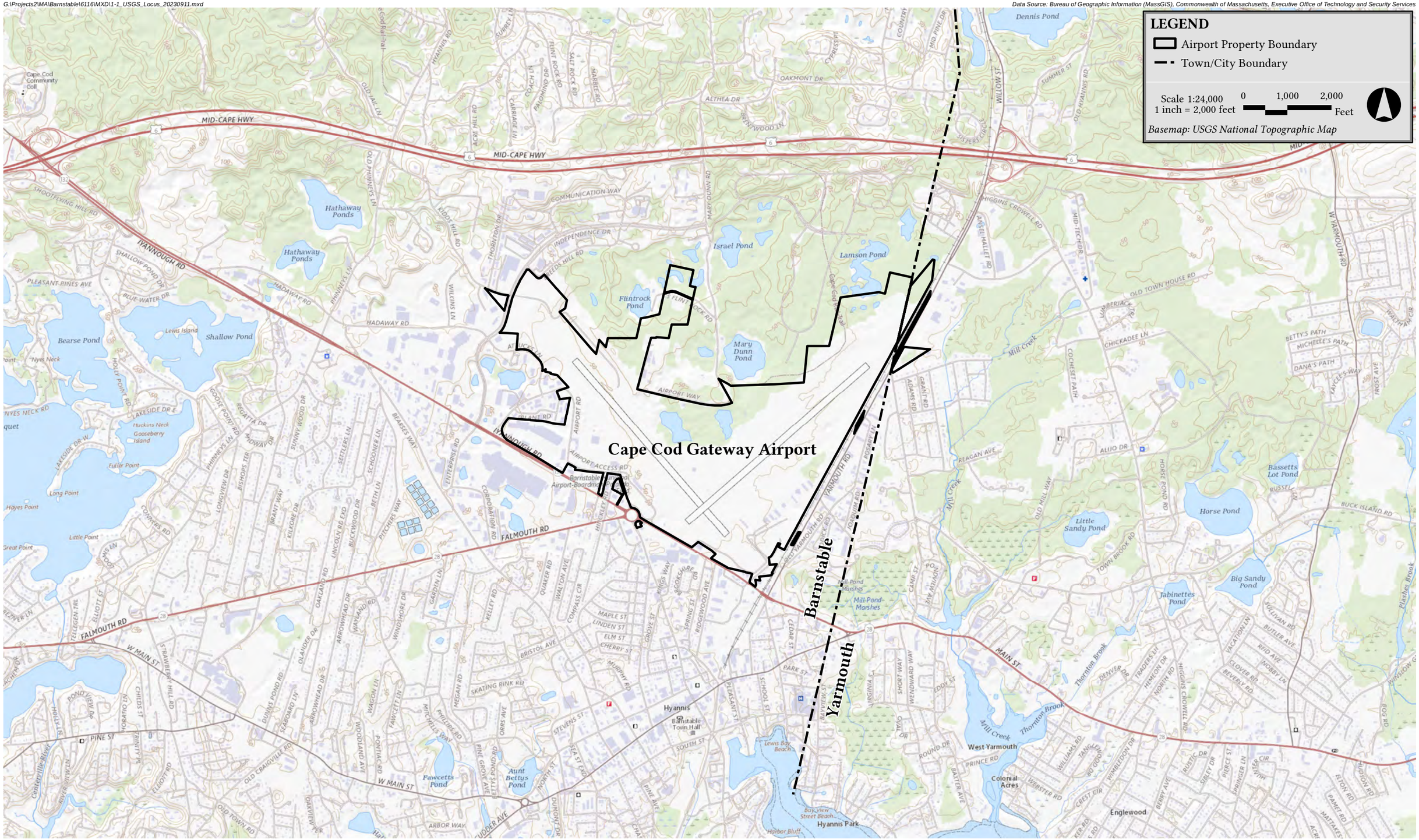





**Figure 1.1-1**
*USGS Locus Map*

G:\Projects2\MA\Barnstable\6116\MXD\1-2_Existing_Conditions_20230913.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services




**Cape Cod Gateway Airport** **Barnstable, Massachusetts**

**Figure 1.1-2**
*Existing Conditions*

This FEIR will provide a brief background about the airport and a brief description of the projects (Chapter 1.0); an in-depth exploration of additional alternatives possible in these projects (Chapter 2.0); a look into the Sole Source Aquifer of the Cape Cod, Massachusetts area and how these projects will address impacts to the sole source aquifer and the groundwater in general (Chapter 3.0); an analysis of the impacts to environmental justice communities and public health (Chapter 4.0); an explanation of the surrounding wetlands, the project's impacts to the wetlands, wetland replication proposed, and how stormwater will be stabilized during and after the projects (Chapter 5.0); an analysis of climate change impacts to the airport, how the projects will be affected by climate change, and how the project proponent can take steps to lessen climate impacts (Chapter 6.0); a review of solid and hazardous waste management practices at the airport during these projects and after they are completed (Chapter 7.0); an evaluation of mitigation and avoidance/minimization measures (Chapter 8.0); and a response to comments chapter of comments that were received during the MEPA public comment period (Chapter 9.0).

## 1.1 Purpose and Need

The Projects are designed to meet safety and efficiency standards for the aircraft family operating at the Airport, both currently and within future planning horizons, and to support the financial self-sufficiency of the Airport. In addition, the Projects are designed to meet the operational and efficiency requirements of the existing and future design Critical Aircraft as required by FAA. The proposed Projects are based on the recent 2022 Airport Master Plan (AMP) and Airport Layout Plan (ALP). The AMP and ALP serve as the framework for planning future development at the Airport and identify not only airport components that do not meet current design criteria established by the FAA, but also address forecasted demand, capacity requirements, and operational improvements. The 2022 AMP and ALP allow for the planning necessary to preserve the Airport's role in the state, region, and national transportation system and to reaffirm and maintain the future function of the Airport.

The Airport is not increasing airfield capacity nor expanding the Airport but rather, improving safety by increasing runway length, taxiway configurations, and safety area geometry for the current family of aircraft operating at the Airport. As demonstrated by the operational data provided in Chapter 1.0 of the Draft EA/EIR, historical operations were far greater than current and modeled future operations presented. As aircraft, technology, FAA safety and design criteria change, so must the Airport.

**The Airport is not seeking an "expansion in capacity" to accommodate aircraft it believes will come if the projects are built, but to meet the needs of existing Airport users by building infrastructure to safely and efficiently accommodate their use.**

The proposed Projects from the 2022 Master Plan for the Cape Cod Gateway Airport have the following purposes:

- To improve airfield safety and compliance with current FAA airport design standards by eliminating nonstandard taxiway designs and geometries including direct taxiway connections from apron areas to runways and non-standard taxiway intersections;
- To provide a reasonable and balanced approach in meeting runway length recommendations for safety and operational efficiency as identified in the Master Plan for the current and future families of aircraft using the Airport including general aviation, air carrier, air taxi, military, and private and corporate aircraft;
- To enhance and maintain safe and efficient landside facilities that are compliant with FAA airport design standards and MassDOT Aeronautics Division regulations; and
- To develop opportunities to promote financial self-sufficiency and energy sustainability at Cape Cod Gateway Airport and economic growth for the community.

## 1.2 Project Description Summary

The Master Plan Projects to be implemented over the next twenty years have to do with airside projects, landside projects, and airspace safety improvements. The Proponent and MassDOT Aeronautics Division (in May of 2022) approve the Master Plan Update and the FAA approves the forecast and accepts the Master Plan Update.

Over the next 5-7 years, HYA plans to commence the design and/or construction of the following projects:

1. **Airside Projects:** Partial parallel Taxiway D to Runway 15-33, Removal of Taxiway E and existing aircraft runup area, and construct an aircraft engine runup area and noise barrier for partial parallel Taxiway D, Relocation and reconstruction of Taxiway B, Extension of Runway 15-33, and Extension of Taxiway A, and the development of hangars within the North and East Ramp areas.
2. **Landside Projects**: Construction of electric aircraft infrastructure and support equipment, construct snow removal equipment (SRE) storage and seasonal maintenance building.
3. **Airspace Control Projects:** Completion of acquisition of Runway 15-33 Runway Safety Area (RSA) and Runway Object Free Area (ROFA) Aviation easements and enhancement of airport control over Runway Protection Zones.

Additional summary description is provided below for each of these projects (see **Figure 1.2-1)**. Please see Chapter 3 of the Draft EA/EIR for detailed descriptions of each project as these have not changed.

### *1.2.1 Airside Facilities*

Airside facilities are those airport layout components that are directly related to the arrival and departure of aircraft, primarily runways and taxiways and their associated safety areas. This section addresses the projects determined to be necessary to bring the airside portion of the airport into compliance with FAA design criteria and standard geometry (see areas in yellow on **Figure 1.2-1)**.

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

PROPOSED AIRPORT PERIMETER ROAD

PROPOSED 895' RUNWAY EXTENSION

PROPOSED 695' DISPLACED THRESHOLD

NON-AVIATION DEVELOPMENT AREA

PHASE 2

EMAS

EASEMENT ACQUISITION AREA

PROPOSED GA DEVELOPMENT

PROPOSED GA DEVELOPMENT

TAXIWAY D (PROPOSED)

TAXIWAY B (PROPOSED)

PHASE 2

PROPOSED ELECTRICAL AIRCRAFT CHARGING AREA

Kidds Hill Road
Merchants Way
Thornton Drive
Gonsalves Road
Independence Drive
Breeds Hill Road
South Flint Rock Road
Mary Dunn Road
Oak Avenue
Willow Street
Attucks Lane
Festival Plaza
Plant Road
Pinecrest Lane
Taxiway A
Runup Pad
Airport Road
Lewis Pond
Upper Gate Pond
Taxiway E
Existing Runway 15-33 (5,255' x 150')
Taxiway C
Existing Runway 6-24 (5,425' x 150')
Taxiway D
Taxiway B
NORTH RAMP
TERMINAL RAMP
EAST RAMP
Jefferson Avenue
Adams Road
Grant Road
Eisenhower Road
Coolidge Road
Lincoln Avenue
Roseary Lane
Benjamin Way
Alijo Drive
Fox Wood Condominiums
Camp Street
Old Mill Way
Yarmouth Road
Joaquim Road
Bodick Road
Farnoe Street
Yarmouth
Mill Pond Village
Old Yarmouth Road
Maher Road
Mary Dunn Way
Barnstable
Buck Island Road
Pondview Avenue
Town Brook Road
Cedar Street
Enterprise Road
Bearse Way
Corporation Street
Yarmouth Road
Bearse Road
Otis Road
Lewis Road
Barnstable Road
Kings Way
Brookshire Road
Ridgewood Avenue
Spring Street
Winter Street
Locust Street
Walnut Street
Spruce Street
Mulberry Street
Maple Street
Linden Street
Hinckley Road
Baxter Road
Corbas Circle
Falmouth Road
Hiramar Road
Alicia Road
Bell Road
Windshore Drive
Edlen Lane
Delta Street
Garden Lane
Uncle Willies Way
Megan Road
Kelley Road
Franklin Avenue
Quaker Road
Walton Avenue
132
28

LEGEND

- Airport Property Boundary
- Existing Runway
- Existing Taxiway
- Noise Barrier
- Pavement to be Removed
- Proposed Electrical Aircraft Charging Area
- Proposed Pavement
- Potential Aviation Development Area
- Phase 2 Projects
- Easement Acquisition Area

Scale 1:12,000
1 inch = 1,000 feet

0 500 1,000 Feet

*Basemap: Nearmap Aerial Image, April 2023*



**Figure 1.2-1**
*Proposed Master Plan Projects*

#### 1.2.1.1 Construct Partial Parallel Taxiway D to Runway 15-33

This Proposed Action involves construction of a new partial parallel taxiway east of Runway 15-33 with a standard 400-foot runway centerline to taxiway centerline separation (**see Figure 1.2-2**). It will extend from the existing Taxiway A1 across existing Taxiway D and Runway 6-24 to the proposed relocated Taxiway B (see Section 1.2.1.3 below). This taxiway would be approximately 3,700 feet in length, 50 feet wide, and tie in with the existing/remaining taxiway. Ultimately, this new partial parallel taxiway will be named Taxiway D. This Project also includes the removal of the portion of existing Taxiway D between existing Taxiway A across Runway 15-33 and up to the proposed new partial parallel taxiway.

#### 1.2.1.2 Remove Taxiway E and Existing Runup Area/Construct a Runup Area for Partial Parallel Taxiway D

The Proposed Action will remove existing Taxiway E and the aircraft runup area (pit), correcting non-right angle geometry at Runway 15-33 (taxiway Intersecting runway at non-right angle). Construction of a new run-up area along the north side of the proposed partial parallel Taxiway D (discussed above) will accommodate the existing fleet of aircraft using the current run-up pad (including the Cessna 402 and Tecnam P2012). A noise wall would be constructed adjacent to the runup area to provide noise mitigation for surrounding areas, replacing the current noise pit that does not meet current federal standards for noise abatement.

#### 1.2.1.3 Realign and Reconstruct Taxiway B

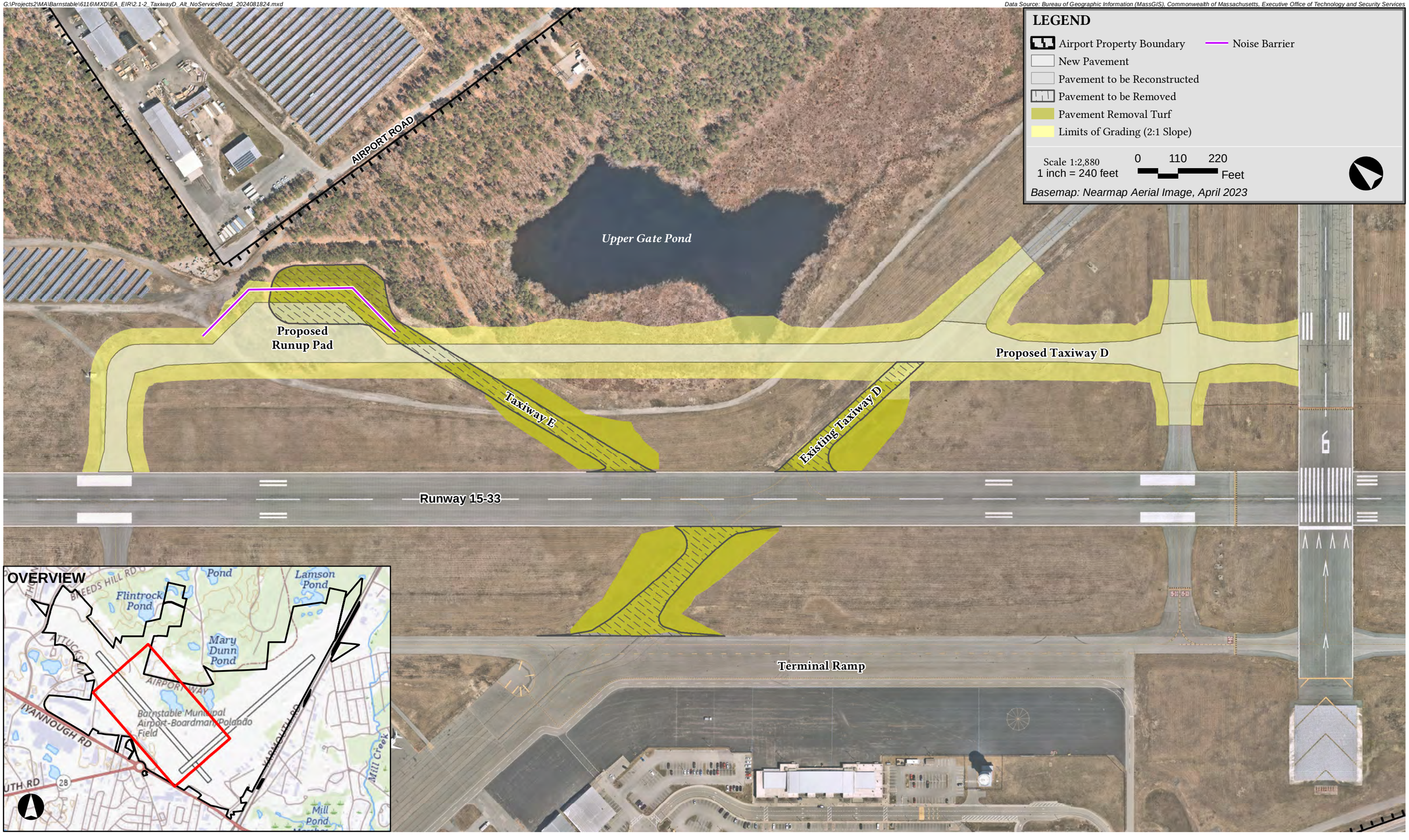
The Proposed Action would re-align Taxiway B to a standard 400-foot separation south of Runway 6-24 to separate the taxiway from the East Apron (see **Figure 1.2-3**). The proposed Taxiway B would be widened to 50 feet to meet taxiway FAA standards to optimize existing and future aircraft movement. Taxiway B would be 4,000 feet long. The Proposed Action would also extend Taxiway B northward by 750 feet to the south of the existing glide slope while the TOFA would remain clear of the glide slope.

#### 1.2.1.4 Runway 15-33 and Taxiway A Extension

The Proposed Action would extend Runway 15-33 by 895 feet on the 15-end (western end) to a total length of 6,150 feet from 5,255 feet (see **Figure 1.2-4**). This extension provides a runway length balanced in terms of enhancing safety and operations, meeting the runway length recommendation identified in the 2022 Master Plan, while minimizing community impacts. This extension is based on the runway length analysis for the critical aircraft identified in the Master Plan and updated analysis in Chapter 2.0 of the Draft EA/EIR document. Critical Design Aircraft as discussed in the 2022 Master Plan and Draft EA/EIR Section 2.2.1 are the Embraer E190 (existing commercial), Gulfstream V/G500 (Existing General Aviation), and Airbus A220 (future commercial). The analysis takes a measured and balanced approach, as the runway length analysis for each of these aircraft not only included a complete

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



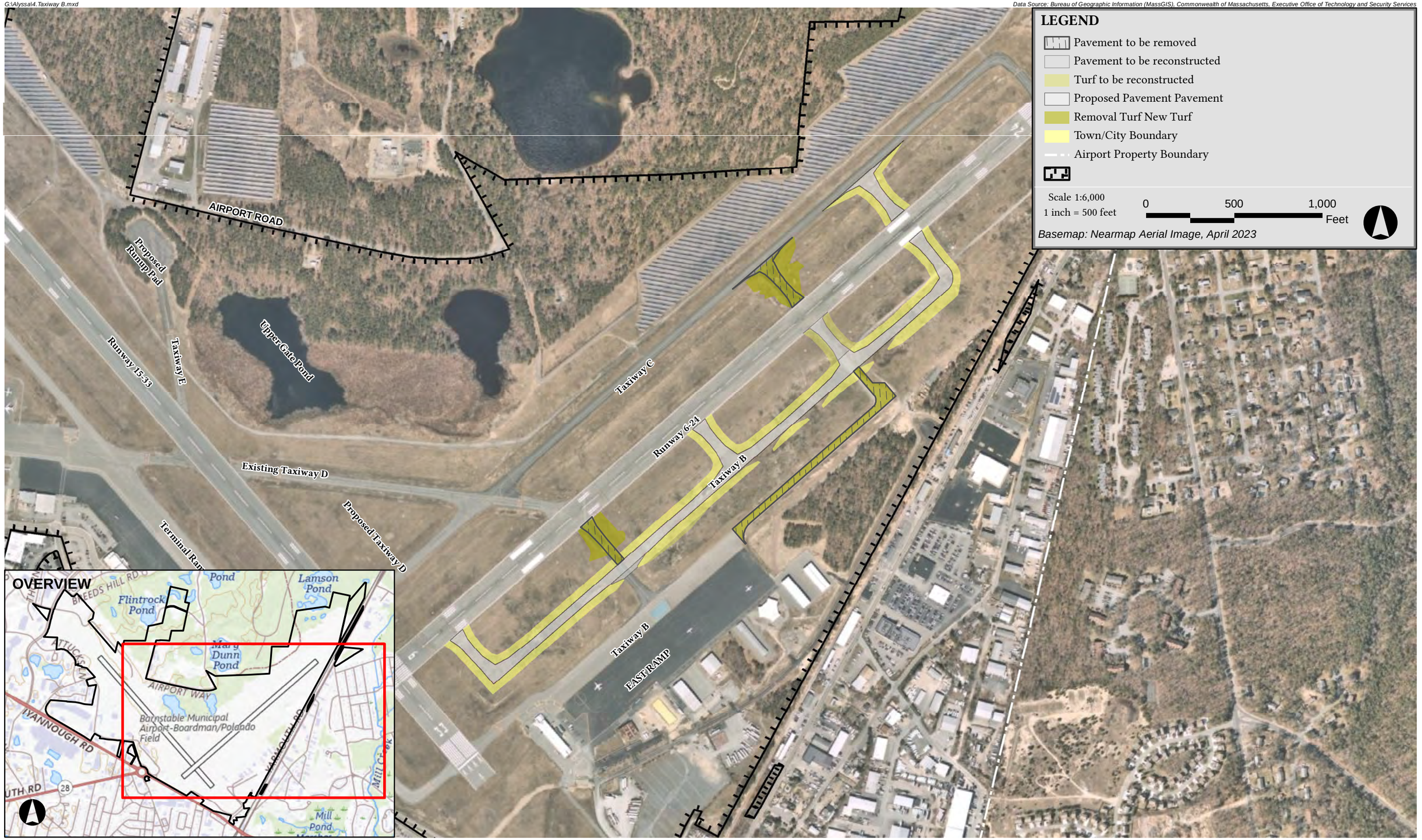

Cape Cod Gateway Airport Barnstable, Massachusetts

**Figure 1.2-2**

*Taxiway D No Access Road Alternative*

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services




Cape Cod Gateway Airport Barnstable, Massachusetts

**Figure 1.2-3**
*Proposed Taxiway B Relocation*

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

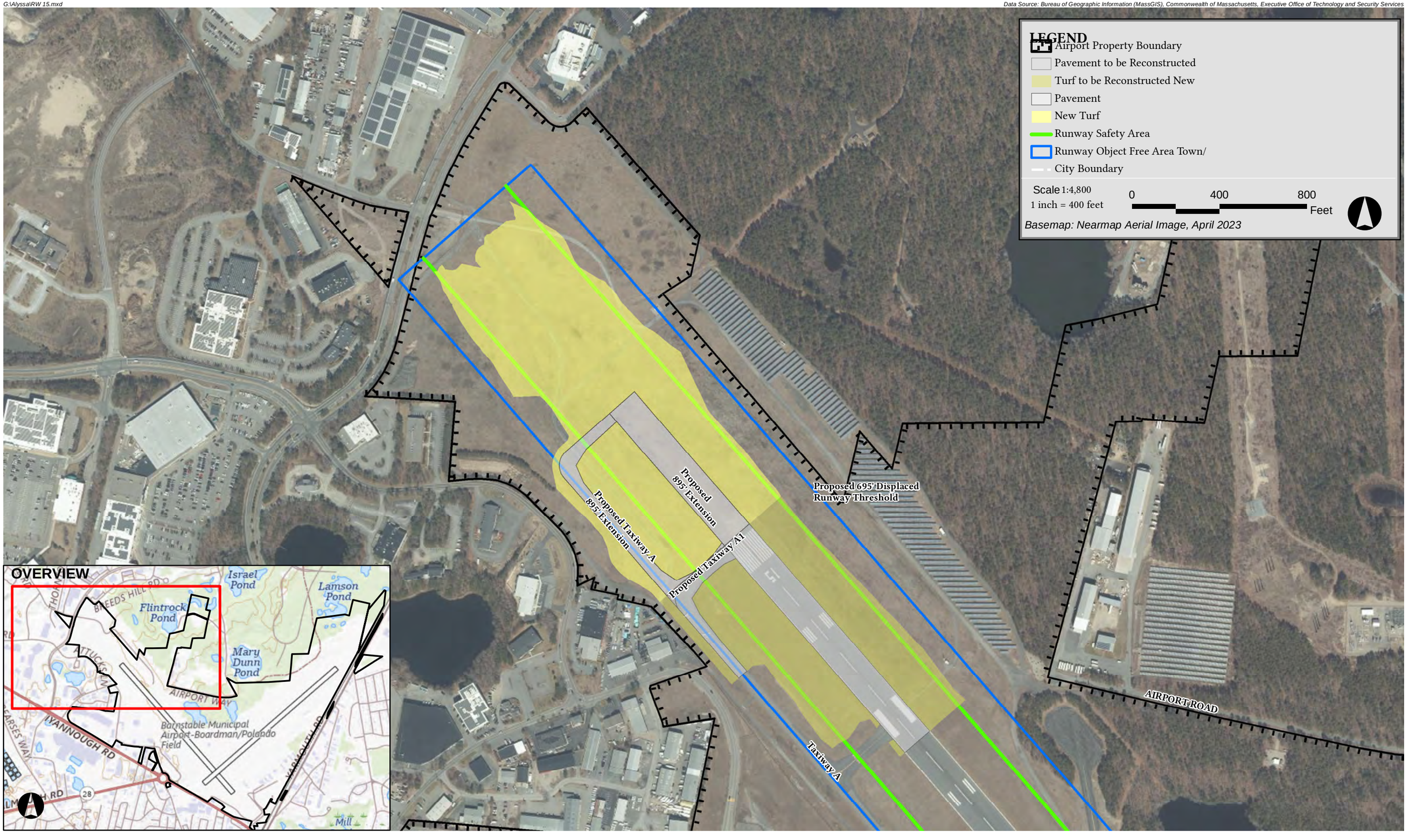





**Figure 1.2-4**
*Proposed Runway 15 Extension*

runway length recommendation assessment based on their individual maximum takeoff weights (MTOW), but it also established a typical stage length for each aircraft that is normally experienced at the Airport. The two-step runway length analysis was done to help ensure that the proposed project was moderated and scaled to the actual needs of Cape Cod Gateway Airport.

The extension would maintain the existing width of 150 feet. Grading of a new turf runway safety area would extend from the end of the runway by 1,000 feet. Taxiway A would be extended to the new runway end and connect to Runway 15 at a 90-degree angle. As part of the extension of Taxiway A, a new stub taxiway, Taxiway A4, would be constructed to connect Runway 15-33 to Taxiway A approximately 5,380 feet from the Runway 15 threshold. Due to the grading required associated with the safety areas and runway construction, a portion of the existing runway will also be reconstructed. This includes elevating the grades of a portion of the existing runway to meet the new runway extension. Additionally, Runway 15 Precision Approach Path Indicators (PAPI) will be relocated for the new end of runway. There will be no impacts on wetland resource areas as part of this extension nor tree removals.

This extension includes a 695-foot displaced threshold on the Runway 15 end resulting in a takeoff run available (TORA) of 6,150 feet and a landing distance available (LDA) of 5,455 feet. Runway 33 TORA would increase to 6,150 feet also, and more importantly, LDA increases to 6,000 feet. This provides the Airport with a runway that meets the LDA for the critical design aircraft for existing and future conditions. Taxiway A would be extended to the new runway end and connect to Runway 15 at a 90-degree angle. This extension will take place all on airport property and incorporates declared distances as a mitigating factor for development.

#### 1.2.1.5 Aeronautical Development Areas

The Proposed Action includes two areas for additional aeronautical development on the Airport for a combined 42 acres - East Ramp and North Ramp - as opportunities for growth arise. These ramp development areas would include space for transient aircraft parking as well as additional hangars or other aeronautical businesses.

### *1.2.2 Landside Improvements*

Landside improvements are those projects which support the operations of the Airport.

#### 1.2.2.1 Construct Seasonal SRE and Maintenance Facility

The Proposed Action will construct a new 20,000 sf building for storage of the existing maintenance vehicles and snow removal equipment (SRE). A seasonal vehicle storage structure would be constructed on the northeast side of the Airport, within the East Ramp. This facility would function as winter vehicle and equipment storage in the summer and as summer vehicle and equipment storage in the winter.

#### 1.2.2.2 Construct Electric Aircraft Support Equipment

To respond to industry developments, the Proposed Action includes space for up to six electric aircraft parking for itinerant FAA Airplane Design Group (ADG) II aircraft. (this includes aircraft with a Tail Height of 20 ft to < 30 ft and Wingspan of 49 ft to < 79 ft) The Airport has identified space on either side of the terminal to plan for electric aircraft infrastructure for both GA and commercial aircraft. This equipment will support the charging of electric aircraft.

#### 1.2.2.3 Smart Microgrid

MassDOT Aeronautics recently received a US$1.95 million grant award to be used in the planning of a smart microgrid at the Airport. A microgrid is a local energy production and distribution network that can function independently when disconnected from the main electrical grid (via battery storage and onsite renewables). The microgrid is an important component to the Airport's plan to reduce future emissions based on new abilities to generate and store green energy however it is not included within the Master Plan itself nor funded by FAA or MassDOT.

The microgrid will generate and distribute clean, reliable power, not only to the Airport, but for charging electric aircraft, and electric ground vehicles (including buses). In collaboration with the Cape Cod Regional Transit Authority (CCRTA), the initiative will increase access to clean energy independence while supporting communities near the Airport with cleaner transportation options. The microgrid enhances the Airport's plans to implement electric aircraft charging infrastructure described above and pursue opportunities that are less reliant on external/conventional power sources.

Phase I involves the study and planning of a microgrid placed at the Airport. Phase II will consist of funding to construct the microgrid infrastructure.

### *1.2.3 Airspace Control Improvements*

#### 1.2.3.1 Runway 33 RSA and Runway Object Free Area (ROFA) Avigation Easements

The Proposed Action will acquire avigation easements from willing parties designed to bring existing Runway Object Free Areas (ROFAs) into Airport control. Currently, not all the ROFAs are within airport control for existing conditions. A total of four (4) easements for 0.8 acres have been identified as out of airport control, associated with Runway 33 end. These are identified as Parcels 33-1 through 33-4 on the Town parcel map (see **Figure 1.2-1**). Roadways such as Iyannough Road and Yarmouth Road are not proposed for acquisition. Existing airport penetrations into ROFA are managed through modification to standards approved by the FAA every five years.

**Table 1.2-1 ROFA Penetrations**

| Location | Penetration |
|---|---|
| Runway 33 End | Iyannough Road, Mary Dunn Way, four off-Airport buildings, Airport perimeter fence, ARFF/Maintenance/SRE Ramp; |
| Runway 24 End | Yarmouth Road, railroad tracks, Airport perimeter fence |
| Runway 15 | Glideslope runway visual range (RVR), wind cone |
| Runway 15-33 along the side of the runway | Distance measuring equipment (DME), precision approach path indicator (PAPI) power and control units |
| Runway 6-24 along the side of the runway | Localizer, DME, PAPI power and control units, glideslope, ASOS |

#### 1.2.3.2 Enhance Airport control over off-Airport Property within Runway Protection Zones

The Proposed Action will acquire avigation easements from willing parties designed to bring existing Runway Protection Zones (RPZs) into Airport control. Under existing conditions at the Airport, areas within RPZs that are not under Airport control via either avigation easements or fee simple include all portions of the Runway 6 RPZs west of Iyannough Road (70 parcels), the north and southwest corners of the Runway 15 RPZ (15 parcels), the southern corner of the Runway 24 RPZ (12 parcels), and the eastern portion of the Runway 33 RPZ (36 parcels), for a total of 44 acres/133 parcels. Airport control of these areas could be obtained through direct property acquisition or easements or zoning to control development and land use activities.

Existing avigation easements are identified on Sheet 23 of the Airport Layout Plan in **Appendix B.**

#### 1.2.3.3 Runway 15 Avigation Easements

Avigation easement acquisition off the 15-end, to prevent future obstructions, is required for the runway extension within the Town of Barnstable. A total of 12 additional partial easements will be pursued on a willing seller basis. These easements are primarily commercial properties located on Independence Drive, Thornton Drive, and Kidd's Hill Road. Layout plans depicting these parcels identified for easement acquisition for existing or proposed RPZs are included in **Appendix B**.

**Table 1.2-2 Avigation Easements Needed for Proposed Conditions associated with Runway 15 Extension**

| Parcel ID | Address | Acres | Full or Partial Easement |
|---|---|---|---|
| 314-041-00S | 270 Communication Way | 0.017 | Partial |
| 296-005-001 | 11 Thornton Drive | 1.11 | Partial |
| 296-009 | 53 Thornton Drive | 0.2 | Partial |
| 296-025 | 400 Kidd's Hill Road | 1.57 | Partial |
| 295-004-001 | 0 Wilkins Lane | 0.77 | Partial |
| 295-011 | 75 Perseverance Way | 0.72 | Partial |
| 296-008-0A | 30 Thornton Drive | 0.11 | Partial |
| 296-010 | 52 Thornton Drive | 0.49 | Partial |
| 296-031 | 270 Communication Way | 1.42 | Partial |
| 296-007 | 31 Thornton Drive | 0.49 | Partial |
| 296-005-002 | 20 Merchants Way | 0.01 | Partial |
| 296-012-00H | 72 Thornton Drive | 0.18 | Partial |
| Total | | 7.11 ac | |

## 1.3 Requirement for an Environmental Impact Report

The project is undergoing MEPA review and is subject to a mandatory EIR pursuant to 301 CMR 11.03(1)(a)(1) and 11.03(1)(a)(2) because it requires Agency Actions and will result in direct alteration of 50 or more acres of land and creation of 10 or more acres of impervious area, respectively.

The project is also required to prepare an EIR pursuant to 301 CMR 11.06(7)(b) because it is located within a DGA (1 mile) around one or more EJ Populations. The project exceeds ENF thresholds at 11.03(6)(b)(3) for expansion of an existing runway at an airport, 11.03(6)(b)(4) for construction of a New taxiway at an airport, and 11.03(3)(b)(1)(f) for alteration of one-half or more acres of other wetlands (LUW). The project requires a Section 401 Water Quality Certification (WQC) from the Massachusetts Department of Environmental Protection (MassDEP). It is subject to the MEPA GHG Emissions Policy and Protocol.

The Executive Office of Energy and Environmental Affairs (EOEEA) issued a MEPA Certificate on the DEIR on February 16, 2024, The MEPA Certificate specified the scope of the analysis needed in the EIR to satisfy MEPA requirements. The MEPA Certificate is provided in **Appendix A.**

The EIR process typically involves a Draft EIR followed by a final EIR. The Draft EIR was prepared and made public on December 8, 2023 (EEA#16640) which opened a formal public comment period through February 9, 2024. This comment period was extended by an additional month beyond the regulatory requirement of 30 days following publication. A public meeting was held on December 12, 2023. In the FEIR, the proponent responds to written comments from the public and regulatory agencies on the Draft EA/EIR and any additional MEPA requirements. At the conclusion of the EIR process, EOEEA issues a MEPA Certification on the FEIR.

### *1.3.1 Changes to the Project since the Submittal of the Draft EIR/EA*

Since the submittal of the Draft EIR/EA on December 15, 2023, the Proponent has continued to refine the projects proposed through conceptual design, additional need analysis, and input from the community and regulatory agencies. This has resulted in additional alternatives evaluated for the Project, including refined Taxiway D alternative configurations. Ultimately, a modification of the Draft EA/EIR-identified Preferred Alternative for Taxiway D was selected that minimized wetland impacts by 35% through the removal of the gravel service road from the design. This modified Preferred Alternative of Taxiway D is presented in Chapter 2.0 Alternatives Analysis.

Additionally, this document presents the following updates:

- Refined land alteration impact calculations;
- Identified areas on Airport for tree planting and off-Airport tree planting program participation;
- Additional information on proposed stormwater management;
- Wetland mitigation plan for wetland resource area impacts;

As presented in the Draft EA/EIR, as a result of public feedback, the Airport shortened the proposed Runway 15-33 extension by 400 feet to address community concerns regarding potential noise, among other modifications. No further modifications to Runway 15-33 are proposed. FAA has also commenced consultation with Massachusetts Historical Commission (MHC) and Tribal Historic Preservation Offices (THPOs).

There have been minor changes to the phasing of these projects, as annual Capital Improvement Plan (CIP) budgets are implemented at the state and federal level based on funding availability. These updates are shown in the construction phasing discussion in Chapter 3.0. Projects that have been determined to commence later than 2029 (including design phases) have been removed from the analysis provided herein. Additional alternatives are discussed for any terminal modifications or expansion as well as the Runway 6 RSA enhancements per the FEIR scope specified in the MEPA Certificate for the Draft EIR, dated February 16, 2024.

**Table 1.3-1 Proposed Project Schedule**

| Project | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 |
|---|---|---|---|---|---|---|
| **Airside** | | | | | | |
| Relocate and Extend Taxiway B | -- | Design | Design Construct | | - | - |
| Reconstruct and Realign Taxiways D/E, new run up ramp | - | Permit | - | Design/ Construct | Construct | - |
| Extend/Reconstruct Runway 15-33 | - | - | - | - | - | Design |
| Extend Taxiway A (including new Taxiway A and A4) | -- | - | - | - | - | Design |
| East Ramp Development | On-going pending leasing | | | | | |
| North Ramp Development | On-going pending leasing | | | | | |
| **Landside** | | | | | | |
| Smart Microgrid | Design | Design | - | - | - | - |
| Construct SRE / maintenance seasonal facility | - | - | - | - | Construct | - |
| Construct electric aircraft support equipment | Construct | Construct | - | - | - | - |
| **Airspace Enhancements** | | | | | | |
| Proposed RPZ Easements Phase I | - | - | - | Design/ Acquire | - | - |
| Proposed RPZ Easements Phase II | - | - | - | - | - | Design/ Acquire |

In response to continued public engagement, the Airport has contracted with aeronautical engineers to consult with FAA, Town of Yarmouth, and the neighborhood civic associations regarding the ability to suggest modifications to required flight paths to minimize neighborhood noise impacts. **This consultation process will continue on a separate track from the MEPA/NEPA review process as FAA has indicated that the noise analysis completed for these projects complies with FAA's regulatory requirements for NEPA review.**

Finally, the Airport has continued to engage neighbors to provide updates on environmental practices related to ongoing remediation efforts on Airport related to PFAS and submitted the Phase IV report to MassDEP through public meetings and presentations.

### *1.3.2 Land Alteration Updates*

Future airfield enhancement projects (Taxiway B, Taxiway D, Runway 15 Extension) have been conceptually designed to avoid and minimize land alteration and impervious area creation. Examples of this impact minimization includes designing with the minimum pavement widths for proposed taxiways and runway projects to limit/minimize the creation of impervious areas. Other examples include minimizing turf side slopes (to the extent practicable) within critical airport surfaces to minimize land alteration (e.g., Runway Safety Areas, Taxiway Safety Areas, etc.) including most notably minimizing the side slope of proposed Taxiway D within the Taxiway Object Free Area (TOFA) as it crosses Upper Gate Pond from the standard 4:1 side slope to a 2:1 side slope in order to minimize the impact to BVW, LUW, and Bank. Additionally, a segment of the perimeter vehicular access road was removed to minimize land and wetland alterations.

The conceptual design for the proposed extension of Runway 15 minimizes land alteration with a combination of runway profile and side slope grading standards (see **Figure 1.2-4**). A closer investigation and evaluation of existing grades and proposed design standards may achieve even less land alteration in the next phase of design development as the permitting phase for individual projects is advanced.

As discussed in the Draft EA/EIR, the Airport also intends to remove certain existing pavement surfaces as future projects are implemented. In total, upon completion of the projects included in the DEIR, the airport anticipates removing approximately 5.84 acres of impervious pavement (see fuchsia areas in **Figure 1.2-1**.) This will result in a minimization of a net increase of impervious surfaces.

With respect to preserving open space and tree cover, the Airport is required by the FAA to keep all of its 'on-airport' aeronautical facilities, and all of its various airspace surfaces clear of obstacles and obstructions. Examples of this include critical areas associated with airfield equipment such as lights, signs, and air navigational aids (NAVAIDS) including ground-based equipment used by pilots for air navigation beyond the airport property boundary. Furthermore, the FAA requires the ground around certain critical areas to meet FAA standards for grading and drainage; maintained as open turf areas which is conducive to preserving open space.

Similar to ground-based NAVAIDS, various object free areas and airspace standards exist for runways and taxiways, which also contribute to preserving open space. For example, airport surfaces such as runways and taxiways have designated "safety areas" requiring specific grading standards resulting in open turf areas which is conducive to preserving open space. In addition, runways are partially defined by certain other 'airspace' surfaces designed to protect the flight of aircraft arriving and departing the airport. Multiple airspace surfaces are generally defined by the location and elevation of the runway end, on centerline, and extend

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

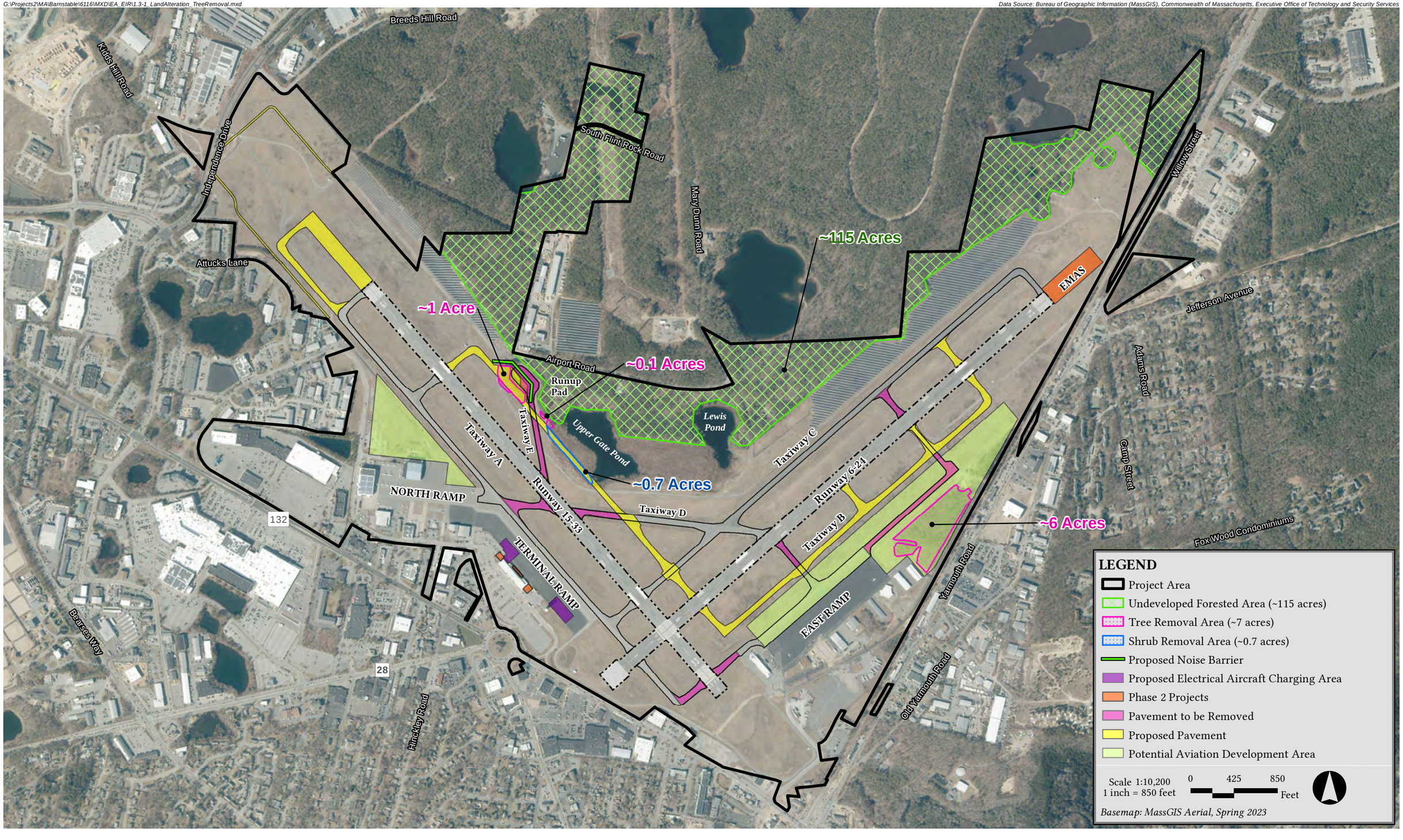





**Figure 1.3-1**

*Land Alterations and Tree Removals*

outward and upward into the runway approach. For obvious reasons, these "approach" surfaces need to be unobstructed for the safe operation of aircraft. For this reason, airports constantly manage the vegetation surrounding runway approach surfaces to keep them unobstructed while simultaneously preserving open space. Since runway approach surfaces are defined by the location and elevation of the runway end, it stands to reason that a runway extension will shift the location and elevation of its corresponding approach surface. However, the inner-approach surface to the proposed extension to Runway 15 is a highly developed industrial area with few trees so the proposed extension will not result in any additional (new) tree clearing beyond what is currently required for routine airspace maintenance.

Taxiway B is entirely within an existing developed area so the net result of shifting this taxiway will not result in any tree removal. Taxiway D will result in approximately 1.54 acres of tree clearing and 3.37 acres of brush removal, most of which will be converted to open grassland.

**Table 1.3-2 Summary of Draft EA/EIR vs FEIR Impacts**

| | Existing | Reviewed in DEIR | FEIR Update |
|---|---|---|---|
| **LAND** | | | |
| Total Site Acreage (in acres) | 639 | 639 | 639 |
| New acres of altered land (in acres) | -- | 50* | 49* |
| Acres of New Impervious Area (in acres) | 167 | 40 | 40 |
| New bordering vegetated wetlands alteration (in sf) | | 4,600 | 3,000 |
| New other wetland alteration (in sf) | | 12,700 sf LUW<br>300 lf Bank | 10,900 sf LUW<br>300 lf Bank |
| **STRUCTURES** | | | |
| Footprint of buildings (in acres) | 121 | 0.25** | 0.25** |
| Gross square footage | 43,097 | 55,000 | 55,000 |
| **TRANSPORTATION** | | | |
| Internal roadways (in acres) | 902 | +14*** | +14*** |
| Parking and other paved areas (in acres) | 50 | +26.4 | +26.4 |
| Vehicle trips per day | 88 | +70 - 171**** | +70 - 171**** |
| Parking spaces | 1,135 | 0 | 0 |
| Other altered areas (in acres) | 27 | -- | -- |
| Undeveloped areas (in acres) | 460 | -40 | -40 |
| **WASTEWATER** | | | |
| Water Use (Gallons per day [GPD]) | 7,000 | -- | -- |
| Water withdrawal (GPD) | 7,000 | -- | -- |
| Wastewater generation/treatment (GPD) | 13,000 | -- | -- |

* Includes calculations of both vegetation converted to impervious surface and temporary impacts due to grading of grass areas to remain grass.

** This number does not include potential hangars which may be up to a total of 5 acres. These 5 acres overlap with the impervious surface number under "other paved areas."

*** Paved apron and ramp space is included in" other paved surfaces."

**** The Airport Master Plan includes a 100% growth scenario (increase in 200 peak hour passenger design capacity). Increased trips represent between a 0.51% and 1.30% increase in daily and peak hour volumes, respectively, along the major travel routes.

## 1.4 Future Project Design Review Processes

Airport projects are funded via a state and federal funding allocation process that occurs years before MEPA review and is typically funded in three separate phases, Planning, Design/Permitting, and Construction through the Capital Improvement Plan (CIP) process covering a five-year period. Additionally, because this EA/EIR document describes projects over a longer period, such as a 20-year Master Plan as described above, design for these infrastructure projects is limited to a conceptual, pre-25% design level. Efforts such as stormwater management modeling require a more completed design which is quite simply, not available nor feasible at this time of document preparation due to funding timing and considerations.

Because certain information as requested in the Certificate on the Draft EA/EIR is not available until further engineering design is completed for specific projects upon receipt of funding, it is proposed that a supplemental submittal be prepared for each major project documenting compliance with the Massachusetts Stormwater Standards and Greenhouse Gas Emissions requirements via modeling and calculations though a Notice of Project Change (NPC) and the provision of final impact numbers, regardless of whether or not they exceed a new MEPA review threshold or change more than 25% (per MEPA requirements under 301 CMR11.10 (6) Secretary's Consideration of Environmental Consequences). This process would be completed in parallel with Cape Cod Commission review, via an amendment process. The major projects proposed for this process are:

- Taxiway B
- Taxiway D
- Runway 15 Extension
- East Ramp Hangar Development in current unaltered areas only

The North Ramp area is primarily paved or previously disturbed and is not included in the above list for these reasons.

In this document, given the conceptual level of design, the Airport is making commitments for compliance with regulations and standards and describing the design approach conceptually for the above referenced projects. It is anticipated that the NPC would provide additional details and documentation such as stormwater management calculations demonstrating compliance with standards and consistency with the conceptual design such as requested on p. 26 of the Draft EA/EIR Certificate. Furthermore, for any new buildings, expansions, or additions, the Proponent will commit:

- High performing envelope that complies with the 2023 Stretch code envelope performance requirements;
- 100% heat pump space heating;
- Energy recovery ventilation per the 2023 Stretch code update;

- Electric domestic hot water heating, specific method to be determined. Heat pump domestic hot water heating to be analyzed;
- Roof to be constructed PV-ready;
- Installed electric vehicle (EV) charging spaces, quantity to be determined;
- EV infrastructure for additional future EV-parking spaces to be installed, quantity to be determined.

## 1.5 Anticipated Permits and Approvals

The Projects are anticipated to require the following permits and approvals from local, state, and federal agencies listed in Table 1.5-1.

**Table 1.5-1 Permits and Approvals Required for the Project**

| Permit/Review | Agency | Status and Relevant Project(s) | Measures to Comply with Applicable Performance Standards |
|---|---|---|---|
| **Federal** | | | |
| National Environmental Policy Act (NEPA) | Federal Aviation Administration (FAA) | Draft EA filed December 2023, final EA to be filed summer/fall 2024 | An Environmental Assessment (EA) and associated Finding of No Significant Impact (FONSI) and subsequent agency action (federal finding) will be prepared in accordance with FAA Order 1050.1F. |
| Section 404 General Permit (Pre-Construction Notification) | Army Corps of Engineers (Corps) | PCN to be filed (Date TBD) for Taxiway D only | Selection of the least environmentally damaging practicable alternative including measures designed to avoid, minimize, and mitigate impacts to wetlands and other waters of the U.S. |
| Coverage under National Pollutant Discharge Elimination System (NPDES) Construction Activities Permit | Environmental Protection Agency | Notice of Intent (NOI) to be filed one to two months prior to start of construction of each Projects over 1 acre of impact. | Stormwater Pollution Prevention Plan to be developed and implemented, involving series of construction BMPs to reduce potential for erosion and sedimentation. |
| FAA planning, design, and safety Standards: AC 150/5300-13B Airport Design | Federal Aviation Administration (FAA) | Conceptual design complete. Final construction design to be completed in permitting phase. | Taxiways / runways will be designed to comply with FAA requirements. |
| Table 1-Section 7 Consultation under U.S. Endangered Species Act | Department of Interior, U.S. Fish and Wildlife Service (USFWS) | FAA lead agency to consult with USFWS when EA is filed | The Project will be reviewed by the USFWS through the Section 404 permitting process with the Corps as well as NEPA. |
| Review under Section 106 of the National Historic Preservation Act (36 CFR 800) | FAA, U.S. Army Corps of Engineers; Tribal Consultation; State Historic Preservation Officer (SHPO) | FAA lead agency in consultation with SHPO | The Project has prepared a Archaeological Avoidance Plan. Consultation will be led by FAA and a determination of "no effect" is anticipated to be made by the MA SHPO based on consultation letter. |

**Table 1.5-1 Permits and Approvals Required for the Project (Continued)**

| Permit/Review | Agency | Status and Relevant Project(s) | Measures to Comply with Applicable Performance Standards |
|---|---|---|---|
| **State** | | | |
| Individual 401 Water Quality Certificate | Department of Environmental Protection (MassDEP) | WQC to be filed (Date TBD) for Taxiway D | Similar BMPs are to be employed as required by NPDES and the Corps and under the Massachusetts Wetlands Protection Act. Avoid, minimize, and mitigate impacts to wetlands and waterbodies. |
| Wetlands Protection Act M.G.L. c. 131 § 40 | MassDEP | Notice of Intent To be filed Date TBD for Taxiway D | Avoid, minimize, and mitigate impacts to wetlands and other waterbodies including a minimum of 1:1 replication for unavoidable fill placed in BVW |
| M.G.L. c. 90 § 35B, 780 CMR 111.7 | Massachusetts Department of Transportation (MassDOT) – Aeronautics Division | Conceptual design complete of runway/taxiways complete. Final construction design to be completed in permitting phase. | Taxiway / runway surfaces will be designed to comply with MassDOT requirements. |
| Review under Massachusetts Endangered Species Act | Natural Heritage and Endangered Species Program | No impacts anticipated. MESA Checklist filed if necessary. | Avoid and minimize impacts to state listed species habitats. |
| State Historic Register Review (Chapter 256) | Massachusetts Historical Commission (MHC) | FAA to consult with MHC upon submittal of the EA. | The Project will be designed to avoid or minimize impacts to historic resources. Consultation will be led by FAA and a determination of "no effect" is anticipated to be made by the MA SHPO based on consultation letter. |
| **Regional** | | | |
| Development of Regional Impact | Cape Cod Commission | DRI application to be submitted upon completion of MEPA. | The Project will demonstrate compliance with applicable Goals and Objectives in the CCC's Regional Policy Plan. |
| **Local** | | | |
| Wetlands Bylaw Order of Conditions | Barnstable Conservation Commission | Notice of Intent to be filed Date TBD For Taxiway D | Avoid, minimize, and mitigate impacts to wetlands and other waterbodies including a minimum of 1:1 replication for fill placed in BVW and compensatory flood storage. Similar BMPs to be employed during construction as required by NPDES, the Corps, and MassDEP to prevent erosion and sedimentation that could result in discharges to wetlands. |

# Chapter 2.0

Alternatives Analysis

# 2.0 ALTERNATIVES ANALYSIS

This chapter describes the additional alternatives considered for a discrete selection of projects identified in the MEPA Certificate on the Draft EA/EIR for further analysis and the rationale behind the selection of the updated preferred alternatives. The FAA's primary focus is on airfield safety, and their funding for airport capital improvements focuses on meeting FAA safety standards. **In fact, the FAA is making a significant investment in projects to reconfigure airports that do not meet current FAA airfield design standards.** Airfield facilities that do not meet minimum FAA design standards need to be prioritized in the airport's capital improvement program. The list of proposed projects under the Master Plan is presented in the Draft EA/EIR and again in Section 1.2 of this FEIR. A summary of design alternatives for each project is presented in Table 4.1 of the Draft EA/EIR. Per the MEPA Certification of the Draft EIR, additional alternative analyses were required for the following projects:

- Taxiway D;
- Noth and East Ramp Hangar Development Areas;
- Runway 6-24 RSAs Improvement; and
- Terminal Building Improvements.

Taxiway D Alternatives evaluated in the Draft EA/EIR included the No Build and four build alternatives to improve multiple existing non-standard geometry conditions (see **Table 4.1-4 in Chapter 4.0 of the Draft EA/EIR**). Alternative 4 in the Draft EA/EIR is further assessed in more detail below to address MEPA comments in the Certificate. An additional alternative (Alternative 5) is evaluated herein and selected as the updated Preferred Alternative due to reduction in wetland resource area impacts.

MEPA also requested assessment of additional alternatives relative to the location of proposed aeronautical development areas, East Ramp and North Ramp. The alternatives analysis for the Phase 2 Master Plan Projects (i.e., terminal improvements, Runway 6 Safety Area) are discussed again below per the MEPA certificate scope but was provided as an Appendix to the Draft EA/EIR. Similarly to the alternatives analysis of the Phase 1 projects discussed in Chapter 4.0 of the Draft EA/EIR, the following additional alternatives analysis presents considered alternatives in comparative form based on the information and analysis presented in Chapter 5.0, Affected Environment and Chapter 6.0, Environmental Consequences, of the Draft EA/EIR. Consistent with this goal, the following analysis on alternatives considers what effect changing the parameters of a project, or components, will have on the environment. The following information is provided within this alternatives analysis:

- Information on the No- Action (i.e., No-Build) Alternative;
- Reasonable alternatives to the Proposed Action, including alternatives that the agency eliminated from detailed study and reasons for their elimination, and

- The Proposed Action (Preferred alternative or alternatives, if one or more exists).

FAA Order 5050.4B, paragraph 706 (d)(7), notes that when an alternative is considered but judged "not reasonable," the EA should concisely explain why the sponsor or FAA eliminated the alternative from further consideration.

## 2.1 Taxiway D Alternatives

As noted in the National Plan of Integrated Airport Systems (NPIAS) (2023-2027), the FAA helps airports maintain safe conditions by developing airport design standards based on airport design categories that apply to facilities throughout the system. The FAA airport design standards have evolved over time and provide the necessary dimensions to accommodate aircraft operations, such as with the standards for runways and taxiways. Airports agree to meet these FAA design standards when they accept AIP funds for capital improvements to their facilities. The FAA standards address physical layout characteristics, such as runway length and width, separation between runways, taxiways and taxilanes, RSAs, lighting, signs, and markings. The standards also address material characteristics (e.g., pavement, wiring, and luminance of lights) and issues, such as ARFF equipment, training and operations, snow removal plans and supporting equipment, and wildlife hazard management.

Airport design standards are established by the Federal Aviation Administration (FAA) through the issuance of various guidance documents including, but not limited to, FAA Advisory Circulars (AC). FAA AC 150/5300-13B contains FAA standards for airport design for runways, taxiways, aircraft parking aprons, and other airfield systems and facilities. FAA design standards are based on the type of aircraft using a particular airfield facility. Based on the Cape Cod Gateway Airport's latest approved Airport Master Plan study (2022), the minimum runway-taxiway separation distance is 400 feet, measured from the centerline of the runway to the centerline of the taxiway. However, for the purposes of this additional analysis, a runway/taxiway separation distance that does not meet minimum FAA design standards but avoids all wetland resource area impacts was further assessed at the request of MEPA and is discussed below (Alternative 4).

FAA design standards require the proposed Parallel Taxiway "D" to achieve a runway to taxiway centerline separation distance of 400 feet. This analysis meets the same conclusion as the discussion relative to Alternative 4 presented in the Draft EA/EIR that the separation distance (taxiway centerline to runway centerline) cannot be reduced from the recommended 400 feet for Taxiway D to avoid all impacts to wetland resource areas.

The location of this new taxiway, fixed by FAA design standards, results in unavoidable impacts to BVW, LUW, and Bank. **The Airport re-evaluated the Preferred Alternative 2B from the Draft EA/EIR and reduced BVW impacts by over 50% through the removal of the perimeter access road from the design (new Alternative 5).** No other practicable alternative is available that has less adverse impact to the aquatic ecosystem.

### *2.1.1 Taxiway D Alternative 4 – 300' Separation Distance*

This Taxiway D Alternative ("Shifted Alt") a runway/taxiway centerline separation distance of **300 feet** would not impact BVW, LUW and Bank (refer to **Figure 2.1-1** for a graphical representation of this alternative taxiway layout.) This proposed alternative would circumnavigate Upper Gate Pond without impacting BVW, LUW and Bank. The "shifted" alternative layout was designed at a conceptual phase level (e.g., 25% conceptual design stage). In this alternative, the taxiway shifts closer to the runway by approximately 100 feet thereby providing a Runway to Centerline to Taxiway to Centerline separation distance of 300 feet, versus the required FAA centerline separation distance of 400 feet. **This alternative is not feasible because it does not meet FAA safety standards.** Other changes to impervious surface (an increase) and reductions in the area of shrub removal along with overall land disturbance are summarized in Table 2.1-1 below. *The analysis demonstrates the distance between Runway 15-33 and TWY D that would result in no impact to BVW, LUW and Bank*. This alternative would avoid all impacts to wetland resource areas.

**Table 2.1-1 Taxiway D Alternative 4 Comparison with DEIR Preferred Alternative**

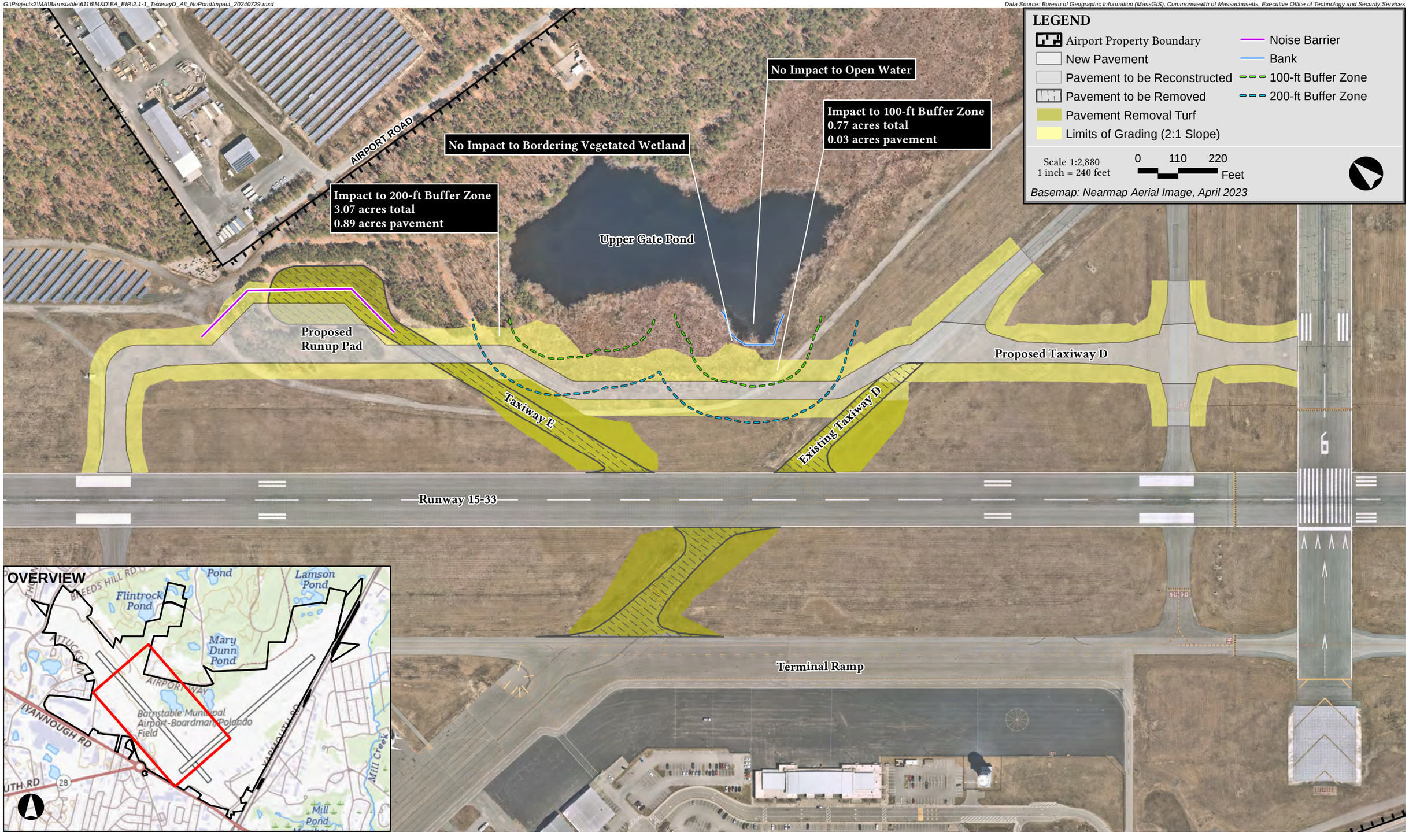
| | Preferred Alternative 2B presented in the Draft EA/EIR | 300 ft Separation ("Shifted Alt") | Change from DEIR Pref. Alt. 2B |
|---|---|---|---|
| | | | |
| Total Pavement | 294,129 sf | 295,450 sf | +1,321 sf |
| New Pavement[1] | 59,686 sf | 61,007 sf | +1,321 sf |
| Shrub Removal | 114,041 sf | 73,859 sf | -40,181 sf |
| Tree Removal | 58,370 sf | 58,370 sf | - |
| Net Grass Area | 550,510 sf | 595,151 sf | +44,641 sf |
| **Work Area** | 873,221 sf | 877,680 sf | +4,459 sf |

1: Existing Impervious surfaces = 234,443 SF

This alternative is rejected as an infeasible alternative and does not meet the Purpose and Need of improving safety and meeting design standards. Recent FAA decisions including funds allocated to Taunton Municipal Airport to shift the taxiway further away from Runway 12-30 by 39 feet to meet the airport's runway/taxiway centerline separation distance indicate that meeting safety standards is paramount to airport design. Accordingly, FAA will not fund the construction of a new parallel taxiway that does not meet standard runway/taxiway centerline separation distance of 400 feet.

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services




Cape Cod Gateway Airport Barnstable, Massachusetts

**Figure 2.1-1**
*Taxiway D 300-Foot Separation Alternative*

### *2.1.2 Taxiway D Alternative 5 – No Service Road (Updated Preferred Alternative)*

In this alternative, the same alignment and runway to taxiway separation distance of 400 feet is maintained, along with a 2:1 side slope in the vicinity of Upper Gate Pond. The area to the north of the taxiway which consists of the 37.5 foot wide Taxiway Safety Area (TSA) and the 12 foot-wide perimeter vehicular service road has been narrowed to just include the TSA (see **Figure 2.1-2**). The service road will terminate east of Upper Gate Pond and vehicular access to this portion of the airfield will be either via Airport Road to the north of the project area or via Taxiway D. This enables a taxiway that still meets standards including TOFA and TSA but reduces wetland impacts. Airport operations will be minimally impacted, and vehicular access will be restricted in this section of taxiway unless coordinated with the Air Traffic Control Tower.

**This Alternative would result in a 35% reduction of permanent fill of 1,600 sf of BVW from the Preferred Alternative 2B presented in the Draft EA/EIR, from 4,600 sf to 3,000 sf. Land Under Water (LUW) impacts would be reduced from 13,700 sf to 12,400 sf; and impacts to 300 linear feet (LF) of Inland Bank as a result of the realignment of Taxiway D.** These impacts have been avoided and minimized to the maximum extent practicable through utilization of 2:1 side slope design with an engineered slope option, see Table 2.1-2. As discussed above, to meet FAA safety standard designs for taxiway to runway separation, impacts to wetlands cannot be completely avoided.

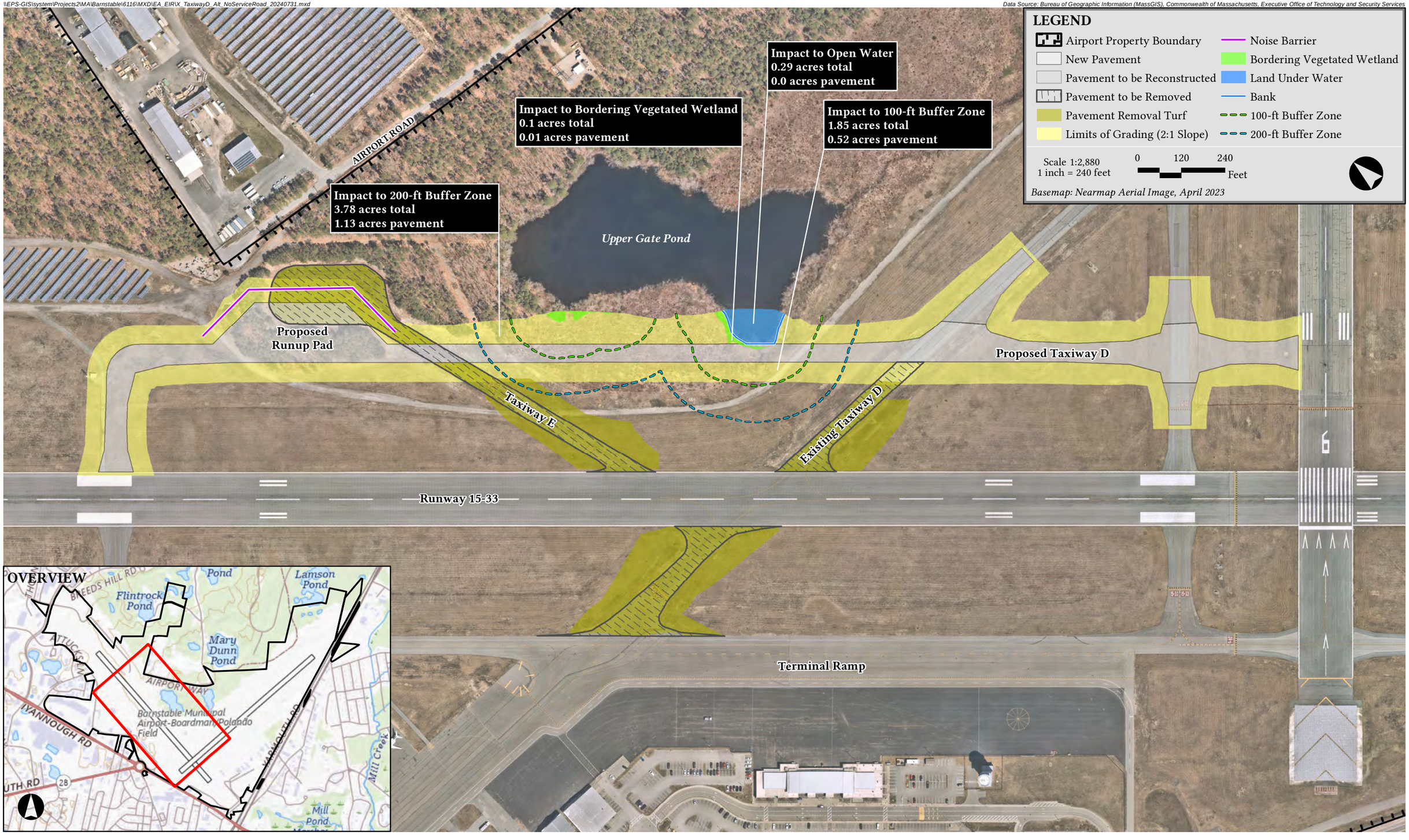
**Table 2.1-2 Taxiway D Alternative 5 Reduction in Wetland Resource Impacts**

| | Impact from Preferred Alternative 2B presented in the Draft EA/EIR | Impact TWD Alt. 5 ("No Service Road") | Change |
|---|---|---|---|
| | | | |
| BVW | 4,600 sf | 3,000 sf | -1,600 sf |
| Land Under Water (LUW) | 13,700 sf | 12,400 sf | -1,300 sf |
| Inland bank | 300 lf | 300 lf | - |

Other positive changes with the new preferred alternative selected in the FEIR includes a reduction to shrub and tree removal areas, net grass area, and the overall disturbance within the footprint of the work area is summarized in Table 2.1-3 below.

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services




**Cape Cod Gateway Airport  Barnstable, Massachusetts**

**Figure 2.1-2**
*Taxiway D No Access Road Alternative*

**Table 2.1-3 Taxiway D Alternative 5 Comparison with DEIR Preferred Alternative**

| | Preferred Alternative 2B presented in the Draft EA/EIR | TWD Alt. 5 ("No Service Road") | Change from DEIR Pref. Alt. 2B |
|---|---|---|---|
| | | | |
| Total Pavement | 294,129 sf | 294,129 sf | - |
| New Pavement[1] | 59,686 sf | 59,686 sf | - |
| Shrub Removal | 114,041 sf | 105,748 sf | -8,292 sf |
| Tree Removal | 58,370 sf | 58,220 sf | -150 sf |
| Net Grass Area | 550,510 sf | 547,351 sf | -3,159 sf |
| **Work Area** | 873,221 sf | 877,680 sf | -11,601 sf |

1: Existing Impervious surfaces = 234,443 SF

The appropriate mitigation measures to demonstrate consistency with the WQC regulations and wetland mitigation requirements are discussed in Section 5.1 along with the location of proposed wetland replication. Additionally, construction means and methods such as steel sheet piling coffer dams and turbidity curtains can isolate the work area in water and avoid impacts to the remainder of the pond. Material handling and disposal of dredged sediments are discussed further in Section 5.1.

## 2.2 Alternative Analysis for North and East Ramp Hangar Development

The following alternatives analysis reviews the need for hangar development, based on the current forecasted demand for the Airport. This component to the airport infrastructure is needed to meet an anticipated industry trend for aircraft storage and is not a an "increase in capacity" to induce more demand for airplane and vehicular travel. The 2010 Environmental Notification Form and 2011 Draft EIR for the 2008 Airport Master Plan evaluated alternatives for hangar development in detail. As the preferred alternative in the 2011 assessment remains the same the 2020 Master Plan, that analysis remains valid as those areas have not yet been built out. Additionally, this analysis takes into consideration the evolution of aircraft and future hangar development should consider longer wingspans, which are a feature of modern single- and multiengine- aircraft. The typical T-hangar door width is 42 feet and modern ADG I aircraft have wingspans of 44 to 48 feet (e.g., Piper M350 and Piper Malibu).

GA hangars at an airport are planned for both based and itinerant aircraft. Requirements are calculated based on the size and quantity of aircraft based at the Airport. While each aircraft will vary in size, the following planning factors were used to calculate the approximate hangar space requirements for aircraft based at the Airport:

- 1,200 SF for Single Engine and Rotor Aircraft
- 1,600 SF for Multi-Engine Aircraft
- 3,200 SF for Jet Aircraft

When calculating hangar demand, it is assumed that 70 percent of single engine and 35 percent multi-engine aircraft will be stored in individual hangars. It is also assumed that 25 percent of single engine aircraft, 60 percent of multi-engine aircraft, and 100 percent of jet aircraft will be stored in conventional hangars.

The forecast for based aircraft reflects a 0.4 percent decline in total based aircraft based on the historical trends of the Airport. These trends represent a small increase in small jet growth but the consolidation of light GA aircraft because of flying clubs and fractional ownership. More people will use based aircraft, which is why based aircraft numbers may decline, but aircraft operations increase. Based on the forecasting detailed below in Table 2.2-1, there is an existing shortage of conventional hangar space, which needs to be accommodated. Should demand exceed what is forecast, it is recommended to plan for six individual hangars and up to eight new conventional hangars to account for unplanned demand for new hangars and new businesses.

**Table 2.2-1 Aircraft Hangar Demand**

| Year | Facility Demand | Current Provision | Additional Need |
|---|---|---|---|
| **Baseline** | | | |
| Individual Hangars | 28 | 33 | 0 |
| Conventional Hangars | 27,860 sf | 24,850 sf | 3,010 sf |
| **2025** | | | |
| Individual Hangars | 27 | 33 | 0 |
| Conventional Hangars | 28,220 sf | 24,850 sf | 3,750 sf |
| **2030** | | | |
| Individual Hangars | 25 | 33 | 0 |
| Conventional Hangars | 27,620 sf | 24,850 sf | 2,770 sf |
| **2040** | | | |
| Individual Hangars | 24 | 33 | 0 |
| Conventional Hangars | 30,220 sf | 24,850 sf | 5,370 sf |

Source: McFarland Johnson 2020

In the analysis below, a No Build Alternative, Alternative 1: Northfield Development and Alternative 2: North and East Ramp Development are identified for proposed hangars and other development, considering impacts to land alteration and impervious area.

### *2.2.1 Hangar and Ramp Development – No-Build Alternative*

The No-Build Alternative for hangar and ramp development would not add additional aircraft parking and hangar space to the Airport. The No-Build Alternative would not meet the current need of the airport users identified above.

### *2.2.2 Alternative 1: Northfield Development*

This alternative considers the Northfield development area to the north of the proposed Taxiway D alignment in the vicinity of Upper Gate Pond and Lewis Pond (see **Figure 2.2-1**). Given runway and taxiway safety area operational setbacks, property available to be developed outside of the East Ramp or North Ramp is limited to undisturbed areas on the northern side of the airfield. Development of this portion of the Airport could allow for the construction of 178,200 sf of corporate and general aviation hangars. Alternative 1 would result in a net increase of disturbance of 10.5 acres over the Preferred for just the hangars and ramp areas alone. Development may also impact wetland resource areas of Upper Gate and Lewis Ponds. Additionally, this area is proximate to several active municipal supply wells used periodically. It would require additional infrastructure through the creation of a suitable access road via Mary Dunn Road or along the northern airfield perimeter road. It would also require the construction of a separate secure entrance, security fencing and automated gates, security lighting, and other associated appurtenances. These security concerns would add substantial increased costs.

Alternative 1 would also represent a large change in aircraft travel patterns throughout the Airport that would need to be evaluated by the FAA. Impacts to natural resources were deemed sufficient to eliminate Alternative 1 from further consideration.

### *2.2.3 Alternative 2: East and North Ramp Development – Preferred Alternative*

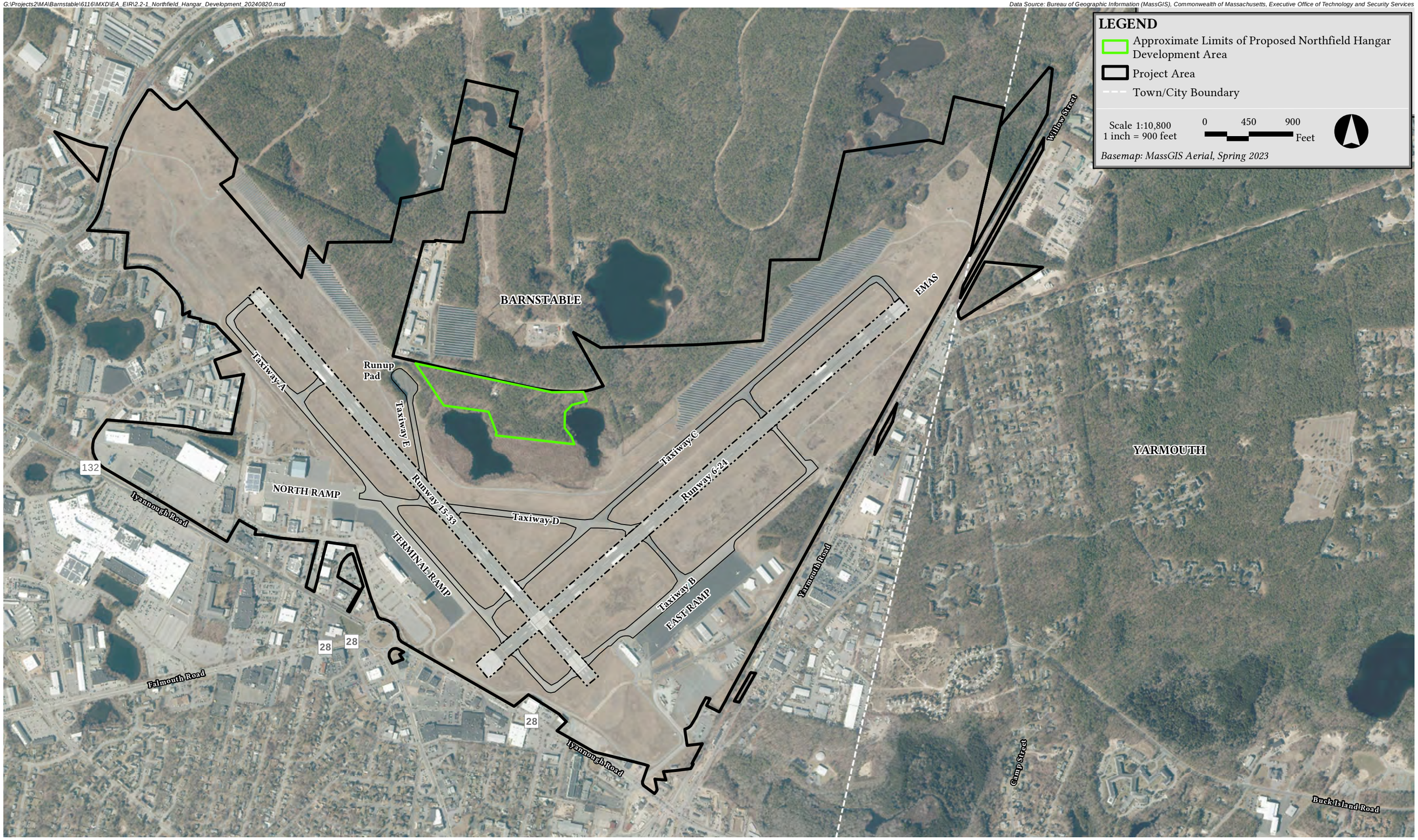
The relocation of Taxiway B would open additional space to the areas of the airport that are currently in use for aeronautical activities at the East Ramp. Hangars at the East Ramp would have all water and sewer service provided by existing mains installed in 2022 along Mary Dunn Way. Connections to these mains would be required by the individual hangar developers.

The majority of the North Ramp is already paved and has taxi lane access, making it an ideal location for airside development in close proximity to the terminal building. No wetland impacts are associated with this alternative.

These ramp development areas include future space for transient aircraft parking as well as additional hangars or other aeronautical businesses and will be developed as opportunities for growth arise. The alternatives analysis, and summary Table 2.2-2 below, supports the selection of the Preferred Alternative and includes all feasible measures to avoid Damage to the Environment, or to the extent Damage to the Environment cannot be avoided, to minimize and mitigate Damage to the Environment to the maximum extent practicable.

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services




**Cape Cod Gateway Airport Barnstable, Massachusetts**

**Figure 2.2-1**
*Alternative 1 - Northfield Hangar Development*

**Table 2.2-2 Hangar Development Summary**

| | Alt. 1 Hangars within North Field Area Upper Gate and Lewis Pond | Alt. 2 Hangars within East and North Ramp Area of Airport (Pref. Alt) | Difference in Impact of Preferred Alt. from Alt.1 (Pref Alt). |
|---|---|---|---|
| | | | |
| Total Area | 15 acres | 15 acres | - |
| New Pavement[1] | 15 acres | 14.5 acres | -0.5 acres |
| Existing Disturbed Areas[2] | 0 acres | 4.5 acres | -10.5 acres |
| Existing Pavement | 0 acres | 0.5 acres | +0.5 acres |
| Tree / Vegetation Removal | 15 acres[1] | 6.6 acres | -8.4 acres |
| Impacts to Wetland Resource Areas (e.g., BVW) | Yes | No | No wetland impacts associated with the Alt.2 |

[1] Hangar buildings would need to be located beyond the Building Restriction Line (BRL) for the RVZ within this area.

[2] Areas categorized as previously disturbed include service roadways, disturbed grass areas and existing pavement.

## 2.3 Runway 6-24 Runway Safety Area (RSA) Improvement

The following alternatives to provide full dimensional Runway 6-24 RSAs were considered in accordance with **FAA Order 5200.8, Runway Safety Area Program**. The Runway 24 end currently has a non-standard Runway Safety Area (RSA) that does not fully meet the FAA standard sizing of 800 feet by 1,000 feet per FAA AC 150/5300-13B. An EMAS is built at the end of a runway to reduce the severity of the consequences of a runway overrun.

### *2.3.1 Alternative 1 – No-Build Alternative*

An EMAS is built at the end of a runway to reduce the severity of the consequences of a runway overrun. The No-Build Alternative for Runway 6 would not add an Engineered Material Arresting System beyond the existing Runway 6 departure end (near the Runway 24 threshold) as it is not feasible to provide full dimension RSA for Runway 6-24. The No-Build Alternative would not provide safety enhancements. An EMAS provides an equivalent level of safety to a full dimension RSA.

While the No-Build Alternative does not enhance safety by adding EMAS, it is important to note that the existing RSA determination (approved by the FAA on September 13, 2000) deemed Runway 6-24 to be safe. The FAA determination remains in effect until such a time that changes to the operations, FAA standards, or local conditions are made from those at the time the RSA determination was signed.

### *2.3.2 Alternative 2 – Full Dimension RSA*

This alternative would provide a full dimension (1,000 feet beyond each runway end by 500 feet in width) RSA with no modifications to location of the runway ends. This would require the relocation of the railroad tracks, Yarmouth Road, and Iyannough Road/Route 28 and impacts residential areas and businesses. Extensive additional land acquisition would be required to accommodate not only the full dimension RSA, but also for the ROFA, relocation of the roadways and railroads, and the Airport access road. The land acquisition and construction costs far exceed the maximum feasible cost threshold of $17.5 million for RSA improvements. This alternative was dismissed due to the immediate vicinity community and infrastructure impacts that would be extremely disruptive to the Towns of Barnstable and Yarmouth, as well as anticipated high costs exceeding the allotted budget.

### *2.3.3 Alternative 3 – Length Reduction of Runway to 4,028 feet*

As the primary visual flight rules (VFR) runway, reducing the Runway 6-24 pavement length would reduce usability of the Airport and is not feasible. Runway length directly impacts an aircraft's performance during takeoff and landing. Reduced runway length can result in reduced safety margins for takeoffs and landings. Should Runway 6-24 length be reduced to meet full dimension RSA standards, the operational limitations to Runway 6-24 would shift operations to Runway 15-33 and put disproportionate burden on the neighborhoods near the Runway 33 end.

### *2.3.4 Alternative 4 – Relocation of Runway 6-24*

Various configurations of relocating or realigning Runway 6-24 were evaluated to determine if improvements in the RSA could result from this activity. Relocating Runway 6-24 to provide full dimension RSAs would move Runway 6-24 north and east and require relocation of parallel Taxiway C, the ground mounted solar array, the ATCT, and portions of the Terminal Ramp. Removing the existing solar farm (6.7-megawatt facility that offsets approximately 5,000 metric tons of CO2 emissions annually and reduces electric costs over $400,000 annually) would be necessary and would negatively impact existing property leases with Eversource. Additionally, the threshold of Runway 6 in this alternative would start in the middle of Runway 15-33, which is a non-standard geometry condition and is not recommended by the FAA.

Constructing a new 5,425-foot-long runway would cost approximately $18-20 million, which is over the maximum feasibility for RSA improvements cost. Realigning Runway 6-24 would create similar impacts and high costs to the relocation of the runway. These cost estimates do not include final design, environmental permitting, mitigation, clearing of trees for the runway and RSA (and associated coordination with the Cape Cod Commission), terrain grading, property acquisition, full-length parallel taxiway construction, relocation of approach lighting and instrumentation, or airspace review and approach obstruction removal.

Additionally, there would be impacts to several wetlands, ponds, and vernal pools associated with this alternative. Therefore, this alternative was deemed not feasible and was dismissed due to community, environmental, and cost impacts.

### *2.3.5 Alternative 5 – Declared Distances*

Declared distances (useable runway length) are already applied to Runway 6-24. Similar to reducing the Runway 6-24 length, changing the declared distances even further would reduce the useable runway length (approximately 4,376 feet for Runway 6 landings and 4,528 feet for Runway 24 landings), which is not feasible given the need for a longer runway. Should declared distances be applied to meet full dimensional RSA standards, the operational limitations to Runway 6-24 would shift larger operations to Runway 15-33, which would put undue burden on the neighborhoods near the Runway 33 threshold, including an increase in noise levels. This alternative was dismissed due to the immediate vicinity community impacts.

### *2.3.6 Alternative 6 – EMAS (Preferred Alternative)*

This alternative proposes the construction of a 200-foot by 400-foot engineered material arresting system (EMAS) on the approach end of Runway 24 to enhance safety for aircraft landing on Runway 6. An EMAS is built at the end of a runway to reduce the severity of the consequences of a runway overrun. This alternative would correct the Runway 24 end's existing non-standard RSA that does not fully meet the FAA standard sizing of 800 feet by 1,000 feet per FAA AC 150/5300-13B. An EMAS, such as the one located at the Runway 6 end, per FAA standards, provides an equivalent level of safety as a full dimension RSA and is considered a standard RSA. There would be no impacts to off-airport property including the adjacent railroad tracks, Yarmouth Road, and Iyannough Road/Route 28. Per the requirements of FAA Order 5200.8, *Runway Safety Area Program*, construction of a 200-foot by 400-foot (EMAS) on the approach end of Runway 24 would meet the requirements of a standard RSA.

## 2.4 Terminal Improvements Alternatives

The Master Plan analysis identified space and operational deficiencies within the Airport's Terminal Building. An overall deficiency of between 5,000 and 10,000 sf was recommended to meet projections for 150 peak hour passengers and an additional 20,000 to 25,000 sf recommended to meet the projected 200 peak hour passenger requirements.

Based on the 20-year planning horizon analysis in the Master Plan, the Terminal Building is deficient in space for: 1) Secure holdroom, 2) Security screening checkpoint and line space, 3) Outbound baggage screening and make up, and 4) Baggage claim and inbound baggage handling.

### *2.4.1 Terminal Alternative 1 – No-Build Alternative*

Alternative 1, the No-Build Alternative, would not add additional space, square footage, to the Terminal building envelope. This Alternative would not result in impacts due to construction, including increase in impervious surface, building electrical and water use, and land/parking areas adjacent to the building. However, this alternative was dismissed because it would be unable to meet additional space requirements identified in the 150 peak hour passenger analysis. Alternative 1 is not deemed a viable long-term solution to accommodate the forecasted passengers and operational needs of the Airport Terminal building.

### *2.4.2 Terminal Alternative 2 (Preferred Alternative) – Phased Improvements to Functional Organization and Building Space*

Alternative 2 would result in a combination of both reconfiguration of existing interior space and building additions to meet increased passenger and baggage demands. As noted in other alternatives, interior reconfiguration results in a smaller expansion of the Terminal building structure that would not allow for the reconfiguration of interior space. The reconfiguration proposed by this alternative would maintain the basic terminal organization: a single terminal with secure departures to the south, arrivals/non-secure departures to the north, with airline operations/ticketing in the center.

Alternative 2 reduces construction related impacts by providing a phased implementation to improve the Terminal building. A phased approach allows the Airport to implement improvements beginning with interior reconfiguration. As need arises, and as anticipated demand is realized in the future, the Airport is able to implement the second phase, which would include space additions to the Terminal building. This approach also has the benefit of implementing the Alternative as funding becomes available.

### *2.4.3 Terminal Alternative 3 – Interior Functional Organization Only*

Alternative 3 does not propose construction of additional square footage to the building structure, only interior organizational and functional changes to the Terminal Building. In this Alternative, the function of the building is modified from a single terminal with departures and arrivals at each end, to a secure terminal to the south end (with both departures and arrivals/bag claim functions), and separate, non-secure terminal at the north end. The non-secure terminal building section would have its own departures and arrivals/bag claim functions for non-secure flights. This alternative achieves needed improvements to passenger flow and keeps secure arrivals/departures contained at one end of the terminal.

The capital and operational costs for creating both secure and non-secure baggage claim areas are not warranted by the level of air traffic; therefore, this alternative was dismissed.

# Chapter 3.0

Groundwater & Sole Source Aquifer

# 3.0 GROUNDWATER AND SOLE SOURCE AQUIFER

As requested in both the MEPA Certificate and EPA's comment letter, this chapter details information about groundwater depth, contours, and flow directions to better describe the context, existing location and subsurface environment for areas potentially affected by the project. A figure is also included which details the location of monitoring wells, public and private water supply wells, and surface water supply sources within five miles of the Project. Additionally, this chapter provides additional hydrogeologic information including potential contaminants, stormwater discharges, and construction activities, and the potential impacts, to existing or proposed public or private water supplies. Please note that the entirety of the Airport is connected via sewer to the Town of Barnstable wastewater treatment plant and there is no discharge of wastewater at the Airport.

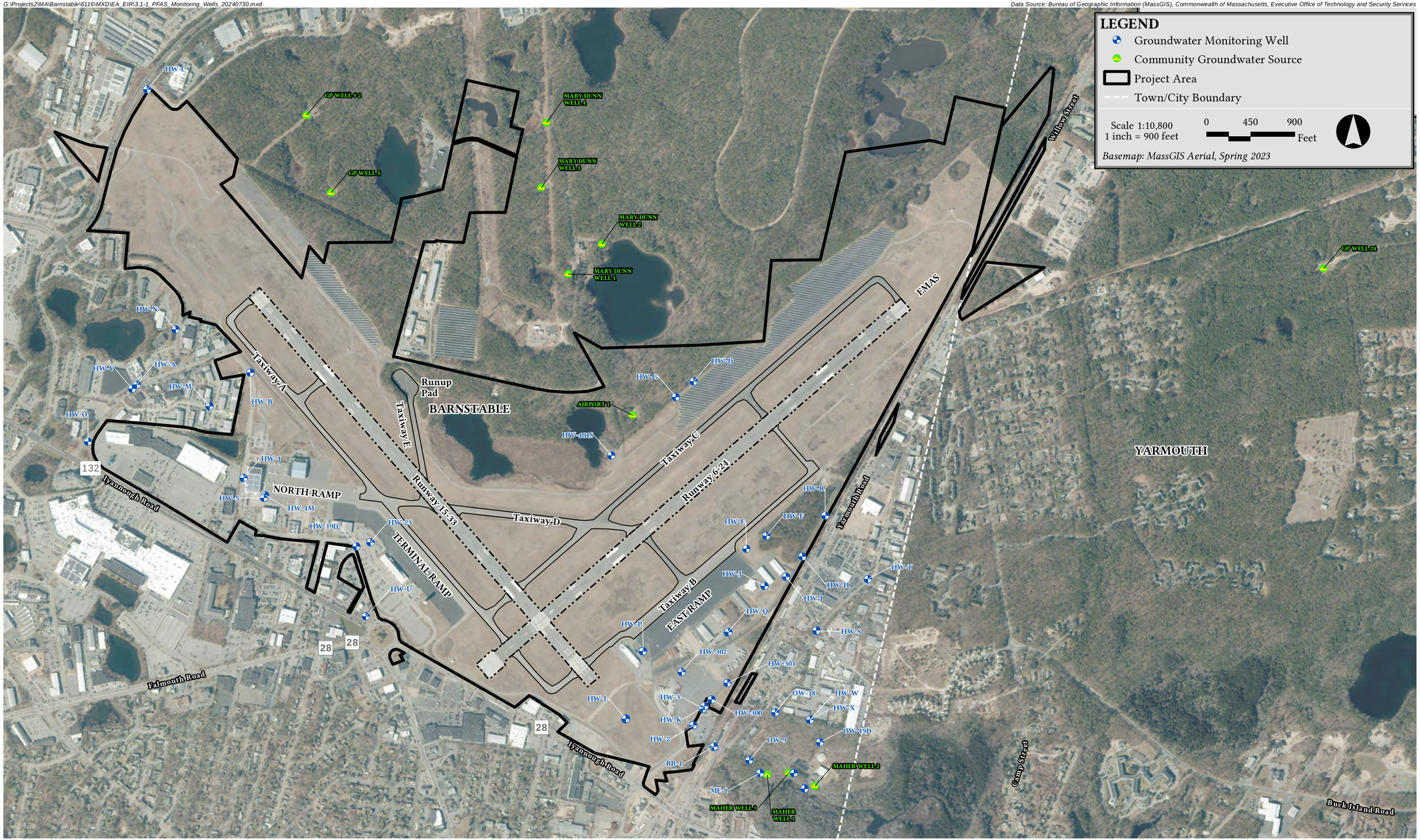
## 3.1 Groundwater Depth, Contours, and Flow Directions

As detailed in the Draft EA/EIR Section 5.17.3 and the Phase IV report provided in **Appendix C,** starting in 2016 the Airport installed groundwater monitoring wells to investigate impacts to soil and groundwater from the historic use of airport firefighting foam (AFFF) containing Per- and polyfluoroalkyl substances (PFAS). Additional wells were installed on Airport in subsequent years to expand the testing in compliance with state regulations (M.G.L. c.21E and the MCP [3104 CMR 40.0000]) in support of the Phase II Comprehensive Site Assessment (RTN4-26347). See **Figure 3.1-1** for the location of these wells. Using data collected from these wells, the Airport's Licensed Site Professional (LSP) developed a water table map specific to the Airport property based on data taken on April 27, 2020). As indicated on **Figure 3.1-2,** groundwater flows onto the Airport property from the west and northwest, migrates to the southeast, and exits the property at the southeast corner of the Airport. Please see **Figure 3.1-3** for the location of public and private supply wells, and surface water supply sources within 5 miles of the Airport.

Groundwater contours were developed by the U.S. Geological Survey as part of their regional groundwater model for the Sagamore lens aquifer that includes the area of Hyannis in which the Airport is located. These groundwater contours were also used as they provide broader information regarding the migration of groundwater at the Airport, and in upgradient and downgradient areas, thus evaluating how groundwater flows across the Airport and downgradient towards the Maher Well field. The Cape Cod Commission also maintains a series of groundwater level monitoring wells with monthly data available on the web at https://capecodcommission.org/our-work/cape-cod-groundwater-levels/ and also provide historical context for year to year fluctuations in the regional water table.

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

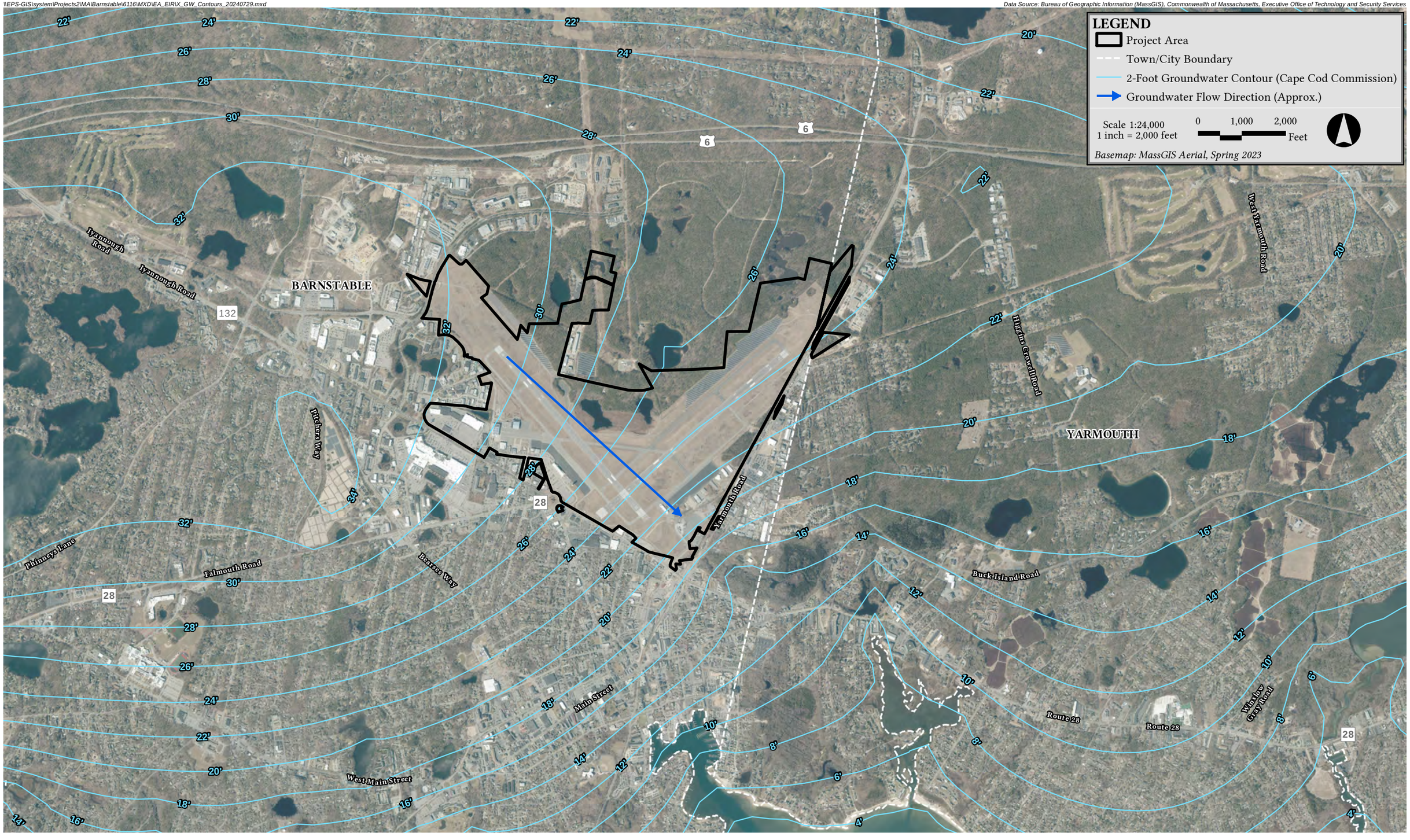



**Cape Cod Gateway Airport** **Barnstable, Massachusetts**

**Figure 3.1-1**
*Groundwater Monitoring Wells*

\\EPS-GIS\system\Projects2\MA\Barnstable\6116\MXD\EA_EIR\X_GW_Contours_20240729.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services




**Cape Cod Gateway Airport Barnstable, Massachusetts**

**Figure** 3.1-2
*Groundwater Contours*

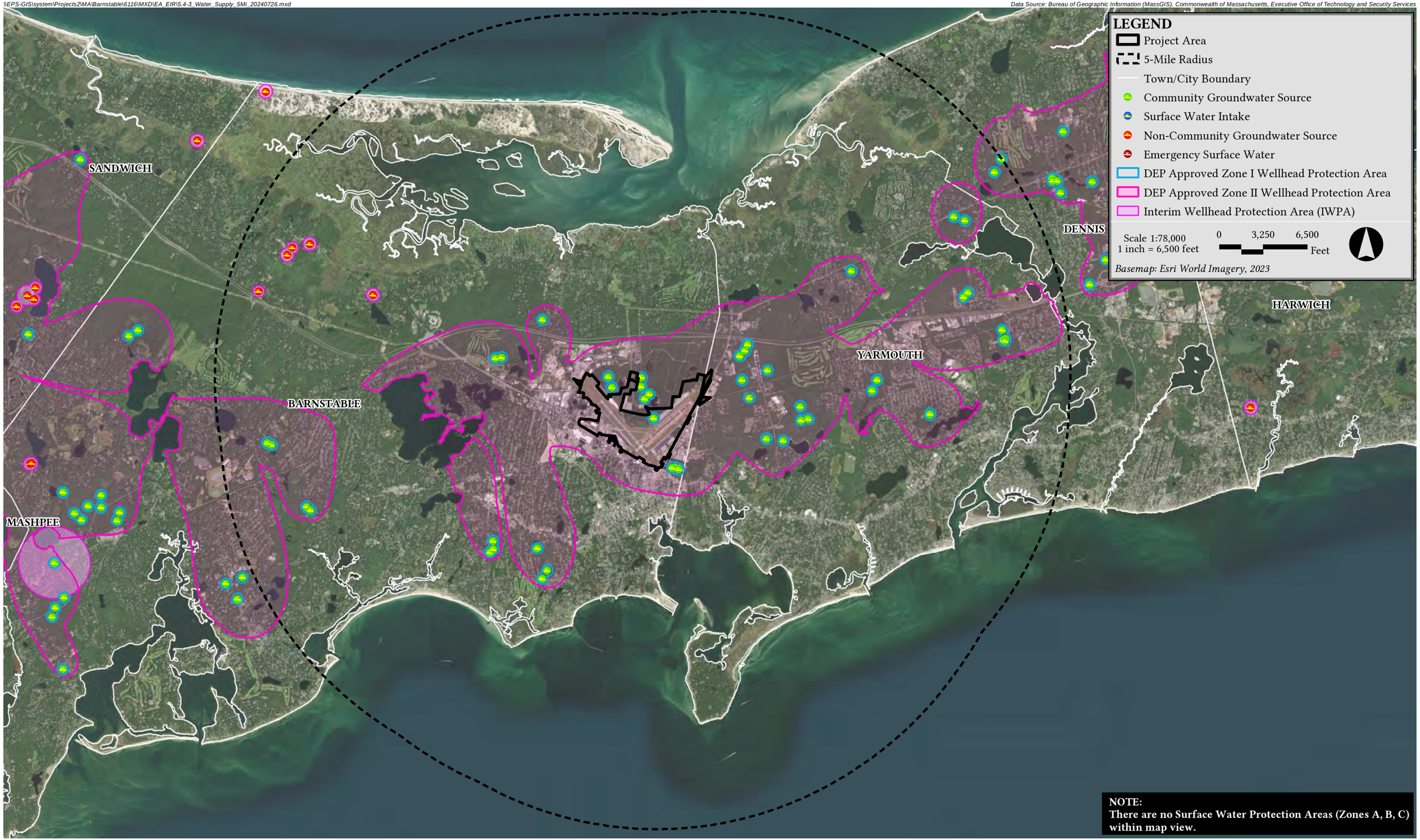





**Figure 3.1-3**
*Protected Water Supply Areas*

Groundwater elevations, measured by Horsley Witten Group (HWG) throughout the Airport, are also included on Table 3.1-1 below. Each time the monitoring wells are sampled, groundwater elevations are recorded. Based upon the groundwater elevations, the estimated hydraulic gradient is set forth below.

**Table 3.1-1 2020 Groundwater Elevation Data**

| Start (Well ID) | End (Well ID) | Distance (Feet) | Change in Groundwater Elevation (Feet) | Hydraulic Gradient (Feet per foot) | Well Start Location | Well End Location |
|---|---|---|---|---|---|---|
| HW-1 | HW-23 | 1,477 | 2.7 | 0.0018 | North Ramp | North Ramp |
| HW-1 | HW-4M | 325 | 0.66 | 0.0020 | North Ramp | North Ramp |
| HW-23 | HW-L(d) | 3,175 | 9.42 | 0.0029 | North Ramp | ARFF/SRE Area |
| HW-302 | OW-9(s) | 1,201 | 6.57 | 0.0054 | Steamship Parking Lot | Maher Well Field |
| HW-E | HW-I(s) | 507 | 1.57 | 0.0030 | Deployment Area | Deployment Area |
| Average Hydraulic Gradient | | | | 0.00302 | | |

### *3.1.1 Hydraulic Conductivity*

In 2020, to determine the hydraulic conductivity, the Airport completed a series of drawdown pump tests using a submersible pump and a transducer capable of logging the fluctuation of the water level in hundredths of a foot in 0.5-second intervals. In general, the tests were completed over a 30- minute period at a pumping rate of 0.25 to 0.33-cubic feet per minute. Details from the pump test are indicated below.

**Table 3.1-2 Drawdown Pump Test Results**

| Well ID | Well Location | Depth to Water (Feet) | Total Well Depth (Feet) | Screen Length (Feet) | Maximum Drawdown | Pump Rate (Cubic Feet Per Minute | Calculated Hydraulic Conductivity |
|---|---|---|---|---|---|---|---|
| HW-I(s) | Deployment Area | 18.410 | 25.09 | 10 | 18.732 | 0.33 | 117 feet per day |
| HW-F | Deployment Area | 20.242 | 26.82 | 10 | 20.483 | 0.25 | 114 feet per day |
| OW-19(m) | Maher Well Field | 26.942 | 76.14 | 10 | 27.417 | 0.33 | 78 feet per day |
| Average Hydraulic Conductivity | | | | | | | 103 feet per day |

Groundwater velocity at the Airport is estimated by the following equation:

Velocity (ft/d) = Hydraulic Conductivity (ft/d) x Hydraulic Gradient (ft/ft)

Effective Porosity

ft/d = feet per day

ft/ft = feet per foot

Based on the dominance of sand in the area in the aquifer, effective porosity is assumed to be 33 percent[1]. Therefore, based on the slope of the water table in this area, the porosity of the aquifer, and the hydraulic conductivity of the aquifer based on tests from wells HW-1(s), HW-F, and OW-19(m), the average groundwater velocity is estimated to be 0.94 feet per day or 344 feet per year.

## 3.2 Additional Hydrogeologic Information

In general, soil at the Airport in proximity to the Deployment Area and ARFF/SRE Area consists of fine to medium sand, with some coarse sand, gravel, and cobbles down to a depth of approximately 70 feet below ground surface. Below 70 feet, a layer consisting of gray silt and clay exists. The materials encountered during the soil borings are consistent with those described by the USGS soil survey for Barnstable Outwash Plain Deposits[2] (Oldale, 1974). Bedrock was not encountered in any of the soil borings and is expected to be located at a depth greater than 125 feet below grade.

The ponds located on Airport themselves are quite shallow and do not interact with deeper groundwater found that far below the water table. There are no surface water outflows from the ponds that would cause groundwater to migrate upward to discharge to the ponds or an outlet stream. The ponds only interact with shallow groundwater.

## 3.3 Groundwater Protection Measures

The Airport implements several programs that serve to protect the groundwater and sole source aquifer. The programs described below will be updated upon the completion of each project to reflect the additional potential sources of contaminants in the project areas. Future stormwater management implementation is discussed in Section 5.2. Additionally, the Airport's analytical data set includes over 200 groundwater samples collected from 2016 to 2024. These programs include:

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[1] Freeze, R.A., and Cherry, J.A., 1979, Groundwater: Englewood Cliffs, NJ, Prentice-Hall, 604 p.

[2] Oldale, Robert N., Geologic Map of the Hyannis Quadrangle, Barnstable County, Cape Cod, Massachusetts, Geologic Quadrangle 1158, U.S. Geological Survey, 1974.

- Spill Prevention, Control and Countermeasure Plan (SPCC);
- Stormwater Management Pollution Prevention Plan (Industrial); and
- Deicing and Aircraft Washing Procedures.

### *3.3.1 Spill Prevention, Control, and Countermeasure Plan*

The Airport, in accordance with Code of Federal Regulations 40, Subpart 112 (40 CFR 112), maintains a Spill Prevention, Control, and Countermeasure Plan (SPCCP) to minimize the risk associated with bulk storage and transfer of Oil and Hazardous Materials (OHM); the SPCCP is updated as needed. These changes are tracked in the documentation by the Program Manager. A copy of the SPCC plan is attached in **Appendix D**. Additional information about location of OHM on Airport is located in **Chapter 7.0**, Solid and Hazardous Materials (specifically, Section 7.1.1) and in the SPCC plan referenced above.

### *3.3.2 Industrial Stormwater Pollution Prevention Plan*

The Airport also maintains a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the U.S. EPA National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity. The SWPPP plan is provided in **Appendix E**. In accordance with NPDES permit classifications, Cape Cod Gateway Airport is designated as Standard Classification Code (SIC) 4581, "Airports, flying fields, and Terminal Services", Sector S "Air Transportation Facilities." The SWPPP identifies potential sources of stormwater pollutants on Airport property, minimizing or eliminating the potential for those pollutants to enter stormwater discharges from the airport. The SWPPP describes the existing stormwater drainage system, identifies potential pollutant sources and locations, and best management procedures (BMPs) and controls for the prevention of stormwater pollution, and establishes reporting and annual monitoring requirements. SWPPP provides information critical to the prevention of stormwater pollution at the Airport, and includes discussions of both tenant and Airport operations, potential pollutants associated with those activities, and potential pollutant storage facilities.

Table 3.3-1 lists the potential pollutants associated with each identified activity. The list of potential pollutants includes all materials that have been handled, stored, or disposed at the Airport property.

**Table 3.3-1 List of Potential Pollutants**

| Industrial Activity | Associated Pollutants |
|---|---|
| Fuel Delivery and Transfer | Jet A fuel, low lead fuel, gasoline and diesel fuel |
| Vehicle, Aircraft, and equipment maintenance | Fuels, oils, hydraulic fluids, solvents, lubricants, sealants, and cleaning compounds |
| Deicing activities | Deicing fluids (glycol) |
| Vehicle washing | Fuels, oils and cleaning solvents |
| Snow removal activities | Sediments and salts |

On a bi-annual basis, during the first and fourth years of Multi-Sector General Permit (MSGP) coverage, the Airport collects a stormwater sample from each outfall and conduct indicator monitoring of stormwater discharges. Monitoring periods are as follows:

- May 30, 2021- October 30, 2021
- November 1, 2021 – April 30, 2022;
- July 1, 2024 – November 30, 2024; and
- December 1, 2024 – May 30, 2025.

These samples are tested for 16 individual polycyclic aromatic hydrocarbons (PAHs) identified in **Appendix E** to 40 CFR Part 423. These analytes include the following: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, fluoranthene, pyrene, benzo[a]anthracene, chrysene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, benzo[g,h,i]perylene, indeno[1,2,3-c,d]pyrene, and dibenz[a,h]anthracene. The Airport reports the monitoring results using NET-DMR, EPA's electronic database. Additionally, an annual report is submitted to EPA providing a summary of the Airport's inspection documentation.

### *3.3.3 Deicing and Aircraft Washing Procedures*

The Airport maintains an "Aircraft Deicing and Washing Program" which outlines the procedures for Airport tenants to follow during aircraft deicing and washing at the Airport's South Ramp deicing pad. This is provided in Appendix E of the SWPPP referenced above. The South Ramp Deicing and Washing Pad was constructed in 2015 by the Airport to provide tenants and aircraft operators with a central location to complete these activities and reduce the potential for environmental impacts. The paved apron in the South Ramp Deicing Pad drains to a single, centrally located catch basin that discharges to the Barnstable Water Pollution Control Facility (WPCF) during aircraft deicing or washing. South Ramp deicing and washing pad features an oil water separator (O/WS) and pump station with an integrated Mission pump monitoring system.

During aircraft deicing or washing (when the pump station is in operation), the Mission pump monitoring system will notify the Barnstable WPCF. During all other times, this same catch basin discharges to the Airport's stormwater conveyance system that ultimately discharges to Upper Gate Pond. The discharge system is controlled through a series of manual gate valves that are operated by Airport Operations personnel. The Airport currently requires all tenants to utilize Type I propylene glycol based deicing fluids and "green" washing fluids. Each lease also refers to the tenants' responsibilities in adhering to the Aircraft Deicing and Washing Program.

In accordance with Barnstable WPCF requirements and the Airport's SWPPP, each aircraft owner / tenant agent must maintain a record of the cumulative amount of deicing fluid used each day. The cumulative record should be stored with the deicing fluid equipment or at the

hangar office. The volume of deicing fluid used during each calendar month shall be reported to the Airport Manager's office at the end of each month, or at any time Airport Management requests this information.

The Barnstable WPCF designated Simple Green Aircraft and Precision Cleaner is the only permitted detergents to be utilized during aircraft washing.

## 3.4 Drinking Water Wells and Wellhead Protection Areas

### *3.4.1 Groundwater Monitoring*

HYA implemented a mitigation project of PFAS-effected soils in 2020 by capping the soils and installing monitoring wells to monitor mitigation success. Two locations of approximately 2.25-acres total (0.39% of overall airport property) were identified and confirmed with MassDEP after extensive groundwater and soils tests. Boundaries of the site where AFFF use has occurred on the 639-acre parcel were identified and accepted by MassDEP. Installation of the impervious caps serves to protect the soils from rainwater and prevent migration of the PFAS. The caps are inspected bi-annually to verify their effectiveness. The caps have significantly reduced migration of PFAS from soil into groundwater based on the groundwater analytical data.

Groundwater treatment for PFAS is occurring at the Maher wells treatment plant via granular activated carbon (GAC) treatment systems. Groundwater samples, along with multiple other lines of evidence including groundwater flow direction, contaminant fate and transport, groundwater modeling and environmental forensics all support the fact that the Airport PFAS plume impacted the Maher Wells in 2022, after the construction of the GAC treatment system. Forensics also supports the chemical signature as being related to fluorotelomer based AFFF, which corelates to the Airports purchase records. The analytical data was processed by a Massachusetts certified laboratory and is not limited or highly caveated.

The Town of Barnstable, through the Hyannis Water System, will continue to operate the Maher Wells treatment plant and will continue to provide drinking water that meets the regulatory drinking water standards. MassDEP periodically inspects the Maher Treatment plant under the water supply/drinking water program.

Groundwater monitoring by the Airport will continue to track the PFAS plume migration and document the reduction in concentration over time until regulatory closure is achievable (estimated to be completed by 2029). Bi-annual reports will continue to be uploaded to MassDEP until a permanent solution can be obtained.

Groundwater monitoring by the Airport is conducted bi-annually to monitor the effect of the soil caps on the Airport's PFAS Plume. At a minimum, groundwater samples are collected from the following wells (shown in **Figure 3.1-1**) for PFAS analysis:

- HW-I(s)
- HW-I(m)
- H-I(d)
- HW-S (s)
- HW-S (m)
- HW-P(s)
- HW-P(m)
- HW-302
- HW-3
- ME-1 (untreated intake water from Maher Drinking Water Well 1)
- ME-2 (untreated intake water from Maher Drinking Water Well 2)
- ME-3 (untreated intake water from Maher Drinking Water Well 3)

Groundwater sampling occurred in December of 2023 and again in May of 2024. Overall, after the caps were installed trapping the PFAS Plume, the groundwater concentrations of PFAS went down dramatically and have stayed consistently lower than concentrations were before the caps were installed. Additional discussion is provided in Chapter 7. The public can review all reports on-line through either the MassDEP online database or the Airport's website. The most recent sampling results are provided in **Appendix C.**

### *3.4.2 Compliance with Zoning Overlay Districts*

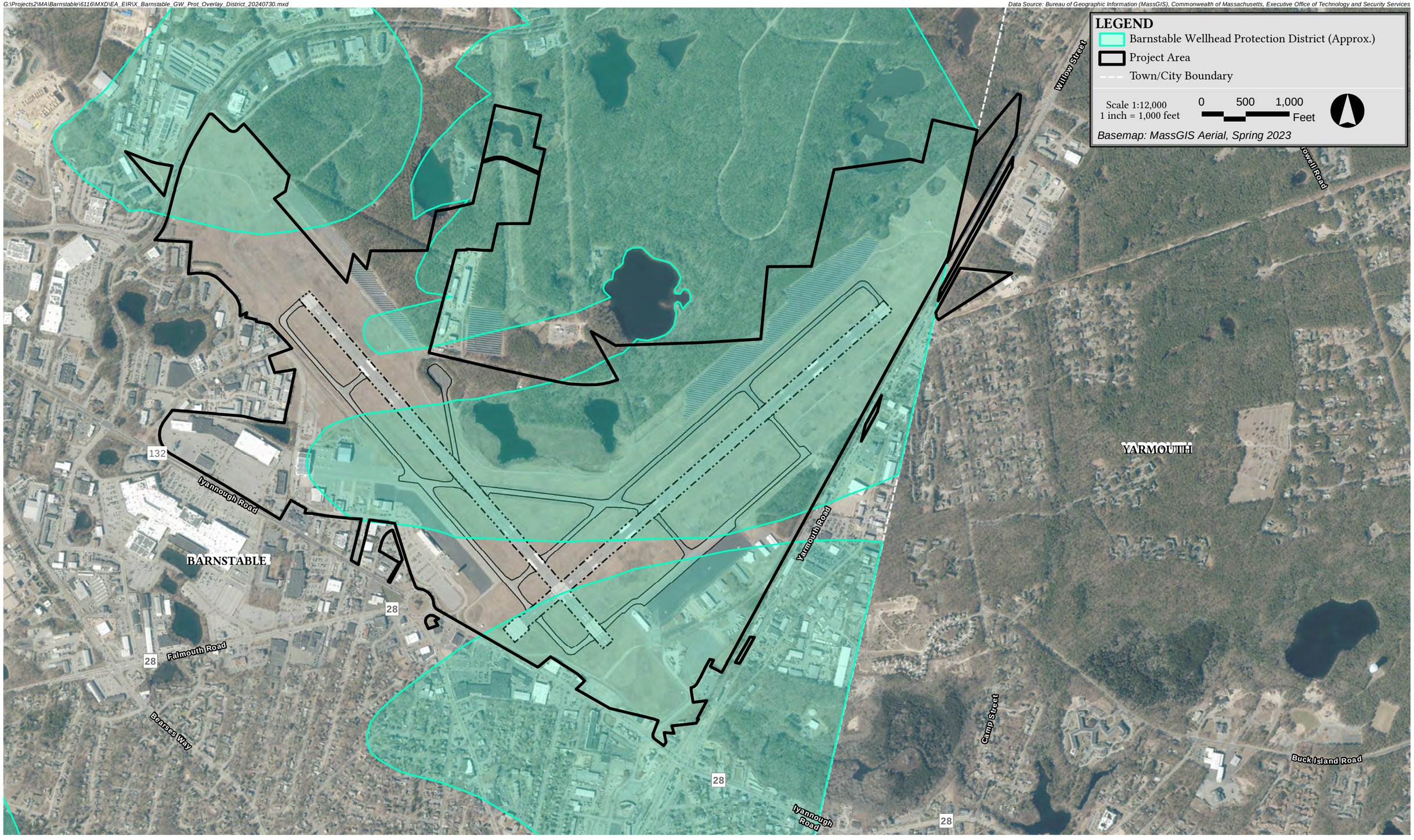
Per the Town of Barnstable Zoning Code, §240*-35 Groundwater Protection Overlay Districts (rev 1993),[3] there are three overlay districts which serve to "protect the public health, safety, and welfare by encouraging nonhazardous, compatible land uses within groundwater recharge areas." These are the Aquifer Protection Overlay, Groundwater Protection Overlay and Well Protection Overlay. The Aquifer Protection Overlay encompasses the entirety of the Town with the exception of the other two overlay districts. The Groundwater Protection Overlay, based on MassDEP Zone II mapping, and Well Protection Overlay, based on five-year time of travel zone to existing, proven future and potential future public supply wells, encompass different portions of the Airport and project areas. See **Figure 3.4-1.**

The proposed projects described in Chapter 1 are in full compliance with the Groundwater Protection Overlay District regulations at Section F including recharge requirements, site clearing limitations and stormwater management. With regards to the Well Protection Overlay District Regulations at Section G, the proposed projects are also in full compliance, including spill protection and prevention planning. The proposed projects will be incorporated into the SWPPP and SPCC plans referenced above in Sections 3.3.1 and 3.3.2 respectively, as they are implemented.

[3] See Town of Barnstable Zoning Code at https://ecode360.com/6559171#6559171

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services




Cape Cod Gateway Airport Barnstable, Massachusetts

**Figure 3.4-1**
*Barnstable Wellhead Protection Overlay District*

## 3.5 Construction Period Protection Measures

### *3.5.1 Soils Management*

PFAS impacted soil in the East Ramp deployment area and at the ARFF/SRE Building area have been capped to prevent further groundwater impacts. Within the ARFF/SRE Building Area, pavement was used to create the cap. Within the deployment area within the vicinity of the east ramp, a Geomembrane (30 mil Plastic liner), covered by topsoil and grass was utilized. Both caps prevent rain from leaching through the soil and entering groundwater. No further ground disturbances are proposed in these two areas. The airport will take all necessary precautions (e.g., marking construction limits) during all ground moving activities (e.g., grading, excavating, and fill) to ensure the capped areas of the airport remain intact during construction, and that the PFAS-contaminated soil will remain in place indefinitely. Any future construction within the estimated extent of PFAS impacted soils will be conducted under a Release Abatement Measure (RAM) as described in the Massachusetts Contingency Plan (MCP) under 310 CMR 40.0440.

With regards to other areas of the Airport, consistent with design and construction projects implemented recently at the Airport, during the design process the Airport's design engineer will undertake a sampling program to supplement the existing database of sampling efforts in the project specific areas. The program will be designed by a Licensed Site Professional (LSP) and soil samples will be taken through the project limits of disturbance. This sampling effort will guide the reuse, storage, or disposal of excess materials. To the maximum extent feasible, the design process will aim to balance the cuts and fills of site grading to minimize and avoid any off-site material movement.

### *3.5.2 Stormwater Management*

All stormwater during construction periods will be managed on site and no stormwater will be allowed to discharge off Airport property. Groundwater and surface water will either be treated and discharged to surface water in accordance with requirements of the NPDES Remediation General Permit, recharged in accordance with local, state, and federal regulations, or collected and transported offsite for disposal. Please see Section 5.2.6 for additional discussion on construction period stormwater management.

# Chapter 4.0

Environmental Justice & Public Health

# 4.0 ENVIRONMENTAL JUSTICE AND PUBLIC HEALTH

In accordance with the MEPA Public Involvement Protocol for Environmental Justice Populations (the "EJ Involvement Protocol") and the MEPA Interim Protocol for Analysis of Project Impacts on Environmental Justice Populations (the "EJ Analysis Protocol"), this chapter of the Final EIR addresses the MEPA scope for EJ and Public Health, including an updated description of the efforts made and planned to engage potentially affected Environmental Justice (EJ) communities. Additionally, this chapter discusses Airport capacity, the potential for electric aircraft, and stormwater management.

This chapter also updates conclusions for existing health and environmental burdens including health vulnerabilities, historical or existing sources of environmental pollution, and climate risks.

## 4.1 Environmental Justice and Populations

Per the Massachusetts Executive Office of EEA, EJ is based on the principle that all people have a right to be protected from environmental pollution, and to live in and enjoy a clean and healthy environment. The EEA has established an EJ Policy (updated June 2021) to "help address the disproportionate share of environmental burdens experienced by lower-income people and communities of color" and "ensure their protection from environmental pollution as well as promote community involvement in planning and environmental decision-making."

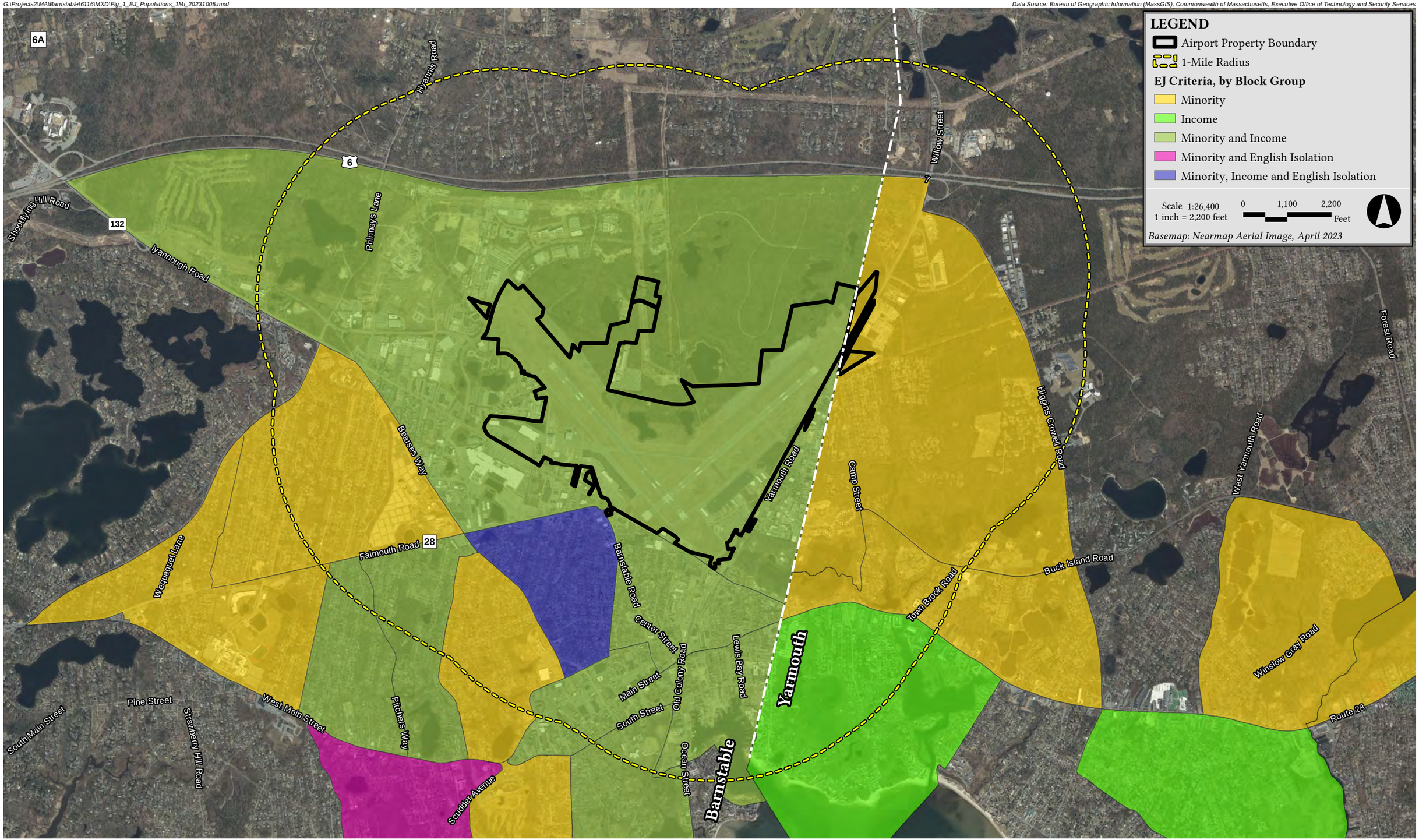
MEPA has classified areas of Massachusetts as to whether they meet the criteria of an EJ Population by using the United States Census data to determine whether a block group meets one or more of the following criteria:

- The annual median household income is not more than 65% of the statewide annual median household income;
- Minority groups comprise 40% or more of the population;
- 25% or more of households lack English language proficiency;
- Minority groups comprise 25% or more of the population and the annual median household income of the municipality in which the neighborhood is located does not exceed 150% of the statewide annual median household income; or
- The Secretary has determined that a particular neighborhood should be designated as an EJ population.

Based on the updated EJ Viewer maps, the Project is located in and within one mile of communities that meet the criteria for EJ populations including minority, minority and income, and minority, income, and English isolation. **Figure 4.1-1** shows the EJ populations

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services




**Cape Cod Gateway Airport** **Barnstable, Massachusetts**

**Figure 4.1-1**
*Environmental Justice Block Groups, 1-Mile Radius*

within a one-mile radius (denoted by a dashed yellow circle) around the Project site and establishes the Designated Geographic Area (DGA) used as the basis for analyzing potential Project impacts and for public outreach purposes.

All EJ populations within the DGA are located in Barnstable and Yarmouth. The Proponent identified three EJ block groups that intersect the DGA, summarized in **Table 4.1-1** below.

**Table 4.1-1 2020 EJ Block Groups within the DGA**

| Census Tract | Block Group | EJ Designation | Municipality |
|---|---|---|---|
| 1 | 153 | Minority and income | Barnstable |
| 1 | 126.01 | Minority | Barnstable |
| 2 | 126.01 | Minority | Barnstable |
| 1 | 126.02 | Minority and income | Barnstable |
| 4 | 126.02 | Minority and income | Barnstable |
| 3 | 126.02 | Minority | Barnstable |
| 2 | 126.02 | Minority, income, and English isolation | Barnstable |
| 2 | 125.02 | Minority and income | Barnstable |
| 2 | 153 | Minority and income | Barnstable |
| 3 | 153 | Minority and income | Barnstable |
| 4 | 121.02 | Minority | Yarmouth |
| 2 | 121.02 | Minority | Yarmouth |
| 3 | 121.02 | Income | Yarmouth |

## 4.2 Public Meetings and Project Information

The Proponent held the first public outreach meeting in-person public meeting at the Airport on Thursday, October 27, 2022, at 6:00 PM to notify the public of the proposed improvements at the Airport. A weekday was selected to avoid interfering with personal schedules. The date was chosen to be ahead of the ENF submission to allow for the incorporation of community input into the filing. Evening (6:00 to 8:30 PM) was selected as a meeting time to allow people to come after work. Translation services in Spanish and Portuguese were offered as well.

Prior to the ENF filing, additional efforts were made including:

- An updated EJ Reference List was obtained from the MEPA office (received from MEPA on September 26, 2023). See **Appendix I.**
- Newspaper ads, postcards, and press releases sharing a brief description of the Project as well as notifying the public of the October 27, 2022, public meeting were shared far and wide.
- The EJ Screening Form (translated to Portuguese and Spanish) was distributed on October 12, 2022. See **Appendix I.**
- A website was created to provide Project information, updates, meeting notices, and presentation materials (https://flyhya.com/airport-info/environmental-assessment/).
- A Project email was made available to allow the public to contact the Project team with any questions or comments (envirohya@epsilonassociates.com.
- A pamphlet with brief Project information and environmental timeline review was distributed during the October 27, 2022, public meeting.

A second public meeting was held for the ENF Scoping Meeting held on January 5, 2023, both virtually (at 2:00 PM) and in person (at 6:00 PM) at the Airport. This meeting was focused on the MEPA review process, a summary of the master plan projects and proposed impacts, and for those that attended in person, a site tour of the Airport was held, visiting each project area. Outreach efforts for this meeting included the following:

- Newspaper ads, emails to stakeholders, and press releases sharing a brief description of the Project as well as notifying the public of the January 5, 2023, public meeting were shared far and wide. The Airport's website was updated to include a downloadable version of all meeting notices, and translations of said notices. After the meeting, the presentation was published on the Airport's website.

A third public outreach meeting was held virtually at 2:00 PM and in-person at the Barnstable Town Hall on Thursday, June 21, 2023, at 6:00 PM to update the public on revisions made to proposed improvements at the Cape Cod Gateway Airport. The meeting also provided an opportunity to share information on additional impact analyses conducted since the filing of the ENF. Similar to past meetings, a weekday was selected to avoid interfering with personal schedules and evening hours (6:00 to 8:30 PM) selected to allow people to come after work. Translation services were also offered in Spanish and Portuguese. Efforts made to promote the meeting included:

- Newspaper ads on Barnstable Patriot and the Cape Cod Times and emails to stakeholders.
- The Airport's website was updated to include a downloadable version of all meeting notices, and translations of said notices.

- After the meeting, the presentation was published on the Airport's website.

On September 6, 2023, a FAA Noise Policy Letter was distributed to Airport stakeholders notifying them of the national opportunity to comment on FAA's nationwide Noise Policy Review Process, including evaluating use of Day-Night Average Sound Level (DNL) as the primary noise metric. The letter noted that the comment period opened on May 1, 2023, and ended on September 29, 2023.

A fourth meeting was held on December 12, 2023. The meeting was held virtually at 2:00 PM and an in-person meeting, presenting the same information, at 6 PM at Barnstable Town Hall. This meeting was also attended by staff from FAA and MassDOT Aeronautics staff to answer questions from the public. The meeting also allowed the project team to inform the public of studies conducted since the third public meeting.

A fifth and final public outreach/informational meeting was held on August 27, 2024. The meeting was held virtually at 2:00 PM and an in-person meeting, presenting the same information, at 6 PM at Barnstable Town Hall. This meeting provided the community with an update on the project analysis updates and changes to the project components included in the final EIR document.

As with all public meetings, the MEPA EJ Reference List/Distribution List along with the Airport's database of stakeholders, and interested parties, was used for email notification.

## 4.3 MEPA Distribution List Outreach Update

The FEIR/EA has been updated to include an updated EJ outreach effort using the latest EJ Reference/Distribution list provided by the MEPA office. The EJ Reference list is compliant with the EJ Policy updates Effective April 1, 2024, which requires projects requesting an "EJ Reference List" from the MEPA Office that contains applicable EJ organizations/individual contacts for notification/distribution purposes within a to be used to compile a project-specific "EJ Distribution List".

The following steps were taken to meet the requirements of the updated EJ distribution list Policy for the proposed Project:

- An updated EJ Reference List was requested on May 6th, 2024, and received from the MEPA Office on May 9th, 2024;
- The updated EJ Reference List contained updated contacts for Statewide EJ Organizations, Indigenous Organizations, Federal Tribes, Local Organizations, and EJ Distribution List.
- The Airport download the EJ workbook and populated the blank EJ Distribution List tab;

- The EJ Distribution List tab was populated with information about the project and the project site. The Airport also populated the project name, the project address, municipalities within the Project's DGA, the date that the project-specific EJ Distribution List was generated, and the filing type (ENF, EIR, etc.) for which the distribution list was generated.
- All contacts in the Statewide Organizations and Indigenous Organizations tabs were copied and pasted into the EJ Distribution List.
- From the Federal Tribes tab, since the Proposed Project is not located in Western, MA, all contacts in the Federal Tribes were copied except for the Stockbridge-Munsee Tribe into the EJ Distribution List.
- Appropriate contacts from the Local Organizations tab were added to the municipalities identified within or partially within the project's DGA.
- Using the *Service Area* column, within the Local Organizations tab, the Project team searched for municipalities one-at-a-time to identify community-based organization (CBO) contacts within the project's DGA.
- Contacts for each applicable municipality were copied into the EJ Distribution List.
- The Airport has supplemented the project-specific EJ Distribution List by adding contact information based on its own local research into additional CBOs, tribes, or other neighborhood leaders who may have interest in the proposed Project. These additional contacts identified through supplemental research were added to the EJ Distribution List.
- The updated EJ Distribution List was provided to the MEPA Office via a copy of the populated EJ Distribution List tab in an Excel Workbook format.

## 4.4 Airport Capacity

As requested by MEPA in the Final EA/EIR scope related to Environmental Justice, the following section discusses the increase in infrastructure capacity (e.g., hangar space) and its assumed relationship to future additional demand in Airport operations.[1] In its scope the MEPA office requests the following:

> *The "FEIR should clearly explain why an increase in infrastructure capacity, including hangar space, runway and taxiway extensions, and terminal expansion, should not be presumed to include additional demand for Airport operations, and should cite academic literature or other sources to support this explanation. FEIR should present revised estimates of noise, traffic, and air quality/mobile source that include certain assumed increases from No -Build to Build conditions as a result of the project components that are described as capacity expansions to support growth."*

[1] A takeoff and landing are each counted individually as one operation.

**The Airport is not seeking an "expansion in capacity" to accommodate aircraft it believes will come if the projects are built – rather, the Airport's stated goal presented in the Purpose and Need, is to address the needs of existing Airport users by building the Airport infrastructure needed to safely and efficiently accommodate their use.**

The term "improvements that support future Airport growth," as used in the DEIR/EA and the FEIR/EA, relate to the facility and infrastructure improvements identified in the Master Plan which are necessary for all operators and types of activity not just air carrier activity. As noted in the Master Plan operations forecast by aircraft type (Table 4.4-1), within the Based GA category, an increase in almost +3,000 annual operations is forecasted over AMPU horizon (2024-2040), regardless of the infrastructure improvements described herein. Within the more immediate period of 2025 to 2030, +647 annual operations are anticipated in the AMPU forecast, again, with or without the infrastructure improvements proposed herein.

**Table 4.4-1 Annual Operations Forecast by Type**

| Year | Air Carrier | | Air Taxi | Itinerant GA | Military | Total | GA | Local Military | Total | Total Ops |
|---|---|---|---|---|---|---|---|---|---|---|
| **Baseline** | 183 | | 35,595 | 22,340 | 95 | 58,213 | 9,009 | 128 | 9,137 | 67,350 |
| **2025** | 197 | | 32,360 | 24,639 | 95 | 57,291 | 9,800 | 128 | 9,928 | 67,219 |
| **2030** | 219 | | 31,401 | 26,514 | 95 | 58,229 | 10,447 | 128 | 10.575 | 68,804 |
| **2040** | 270 | | 29,567 | 30,567 | 95 | 60,888 | 11,985 | 128 | 12,113 | 73,001 |

Sources: Cape Cod Gateway Airport Management, 2019; McFarland Johnson, 2019.

While the proposed Projects provide safety enhancements and infrastructure upgrades to the Airport to meet the expected future needs, the overall context is that total operations in 2040 (73,001) are much lower than historic (2008 to 2017), and therefore is not anticipated to result in, or require, "an expansion" in operational capacity. Operations and the demand for certain Airport facilities (e.g., hangars) may diverge – that is the operations, existing and forecasted, and the infrastructure of the Airport does not necessarily have a positive correlation to each other (that is moving in the same direction along two variables).

### *4.4.1 Hangars*

Hangar development may occur at any time depending on interested leasing parties. These projects are described in Section 3.1.5 (Draft EA/EIR). The forecast for hangars includes changes in operations based on based aircraft (i.e., "Local") that would be housed in hangars. Table **2.1-1** in Chapter 2 of this document details the existing and future hangar needs.

"Expansion in capacity" would refer to the capacity of the Airport to "house" aircraft on site, whether in hangars or tie down spaces. **Table 4.4-2** below shows the based aircraft forecast. The forecast shows that based single engine aircraft are predicted to decline, along with a slight increase from 16 to 17 for Mult-Engine aircraft, and an additional Jet aircraft in the period of 2020-2040.

**Table 4.4-2 HYA Based Aircraft Master Plan Forecast**

| Year | Single Engine | Multi Engine | Jet | Total |
|---|---|---|---|---|
| Baseline | 31 | 16 | 1 | 48 |
| 2020 | 29 | 17 | 1 | 47 |
| 2030 | 27 | 17 | 1 | 45 |
| 2040 | 25 | 17 | 2 | 44 |

Sources: Cape Cod Gateway Airport Management, 2019; McFarland Johnson, 2019.

There is not a defined number of hangars proposed. **Figure 2.2-7** of the DEIR shows a potential configuration depending upon interested leasing parties. The size and quantity of hangars depends entirely upon the party leasing the space and constructing the hangar.

Please refer to Appendix B of the Draft EA/EIR which includes Chapters 4-6 of the Master Plan, Chapter 5, Section 5.5.1 for the detailed analysis of hangar demand for the Airport.

The hangars areas proposed within the North Ramp and East Ramp areas of the Airport are not a "per se" contributor to overall increased Airport operations. For example, a current based aircraft using tiedown spaces at the Airport may utilize a hangar in the future, and in this scenario, the Airport would not see a "new" aircraft operating at the Airport – instead, it is the same aircraft with a different storage location at the same Airport. Additionally, if a newly based aircraft at the Airport utilizes a hangar, it may be such that the aircraft would have decided to be based at the Airport regardless of if the hangar space was available. In both of these scenarios, the additional hangar space would not result in additional activity (operations) at the Airport.

### *4.4.2 Runway 15-33*

The Runway 15-33 extension is being proposed to support both the current and future size of aircraft using the runway. In particular, as noted the Section 2.1 (Draft EA/EIR), the design aircraft for existing and future use remains the Gulfstream V/G500 **(this is an existing aircraft)** which is noted in Table 2.2-4 of having a longer recommended runway length than the E190 (existing) or the A220 (proposed) commercial aircraft. The projects proposed are not to provide infrastructure to support the use of larger families of aircraft.

The analysis in the Master Plan examines the future fleet mix of aircraft. Since Jet Blue has committed to the retirement of the E190 and the shift to the A220, that was identified as one of the future critical design aircraft. The A220 has increased passenger capacity versus the E190 but does not require a longer runway than the other critical design aircraft. By size comparison, the A220 is actually shorter than the E190 in length but slightly larger in other dimensions. Please see Section 1.2.1.4 for prior discussion on runway length analysis. Attached in **Appendix F** is the letter from JetBlue confirming the fleet change to the A220.

Consistent with the above information, relative to the project's role is addressing Airport efficiency and capacity, the environmental consequences associated with the Preferred Alternatives have already taken into account future estimates of aircraft operations (via the Master Plan estimates). As a result, the conclusions presented in the Draft EA/EIR and the Final EIR have considered the extent of operation increases for the proposed projects. Sections 4.6 and 4.7 below update conclusions relative to Stormwater and Air and Noise Emissions for impacts within surrounding EJ populations.

### *4.4.3 Future Estimates associated with Project Components and Phase Two Projects*

FAA has requested that the Airport move two projects (the Airport terminal building enhancement/expansion and EMAS) to a future phase (i.e., "Phase 2") of the environmental review under NEPA/MEPA, due to the estimated development timeframe of greater than five years. These projects are still considered within the current documentation as a "future project" per NEPA guidelines and are discussed in 6.15.2 of the Draft EA/EIR.

As this is generally consistent with NEPA/MEPA guidelines, these projects were shifted to discussion as future impacts. Additionally, there is not any design information available to support any meaningful GHG analysis for the terminal improvements as information such as HVAC design, footprint size, etc. is not available to support any type of modeling. Commitment to the meet state building stretch codes is consistent with the Airport's carbon footprint reduction goals that they have been implementing for the past several years.

Otherwise, potential impacts from Phase 2 are generally outlined in the Draft EA/EIR and Final EIR with respect to land alteration, impervious area, wetlands, and MCP/PFAS. Future noise reflects full build of the runway extension in the future 2040 condition. As previously noted, the model (AEDT) used for this analysis is what is required by FAA for a Part 150 study. The analysis conducted relative to noise was also very conservative in the types of aircraft used in the future conditions. For example, the loudest of the helicopters in the current fleet was used in the model for helicopter operations, not the actual fleet mix which operates on a daily basis which has quieter noise signatures.

Traffic was based on the two identified forecasts of passenger trip increases (50% and 100% growth scenarios). Traffic impacts assess air pollutants from combustion of fuels of all kinds (namely PM and NOx), including those from aircraft.

The transportation analysis evaluated passenger increases consistent with the operations forecasting.

## 4.5 Electrification of Aircraft and Associated EJ Benefits

Electric aircraft, while still a developing technology, have numerous potential benefits, including noise and emissions reductions. According to a 2021 Report from the National Renewable Energy Lab, *Electrification of Aircraft: Challenges, Barriers, and Potential Impacts*[2], "electric aircraft have the potential to reduce the noise because of both the electric motor and steep climb/descent profiles of electric aircraft…studies indicate that commercial hybrid-electric and electric propulsion could reduce aircraft noise up to 85% (electric), improve fuel consumption by 40% (hybrid), reduce CO2 emissions by more than 20% (hybrid), and reduce airline operating and maintenance costs up to 20% (electric and hybrid) (NREL, 2021).

The NREL study further notes that "Airports need to begin considering the electrical needs and long-term power demand required to meet the needs of future all-electric aircraft. Near-term efforts need to consider both electric aircraft and growing electrification of other airside and landside vehicles.

The Airport is committed to support electric aircraft as evidenced through its investment in planning a smart grid/renewable energy project (the "microgrid"). The electrification of aircraft will be enabled by the Airport's microgrid project currently in planning stages and funded via a $1.95 million grant award from the U.S. Department of Transportation's Strengthening Mobility and Revolutionizing Transportation (SMART) Program.

Environmental justice issues are a key driver in the area of electric aircraft – given the benefits of reductions in noise and emissions. Accordingly, environmental justice concerns are triggered by human health or environmental effects, including interrelated social and economic effects. Around Airports, noise and air quality are the most frequent concerns relative to environmental issues.

The future microgrid –the existing onsite green energy generation options combined with the addition of new sustainable sources of energy –will be designed to green the Airport's infrastructure to accommodate the electrification of its operations. From the future microgrid, the Airport will achieve environmental benefits and promote overall human health benefits. The following sources of new electrical loads at the Airport will be:

- Electrified small aircraft (replacing Cessna 402s and similar sized aircraft;
- Electrified rental car fleets and Airport operation fleets;
- Increased flight traffic from transient electric aircraft; and

[2] https://www.nrel.gov/docs/fy22osti/80220.pdf

- Charging of local RTA fleet vehicles and charging stations for local/nearby residents and visitors.

The changes within the aviation sector to introduce electric aircraft will result in additional electrical capacity, as well as high-speed charging stations around the Airport. Estimates of the Airport's projected electrical use is provided in Table 4.5-1(ARUP, 2024).

**Table 4.5-1 Airport Electrical Use- Existing Conditions and Project Baseline**

| Year | kW | kWh |
|---|---|---|
| 2025 | 296 | 1,192,904 |
| 2026 | 488 | 1,362,904 |
| 2027 | 680 | 1,532,904 |
| 2028 | 872 | 1,702,904 |
| 2029 | 2,011 | 2,089,680 |
| 2030 | 2,493 | 2,644,904 |
| 2031 | 2,835 | 3,115,904 |
| 2032 | 3,177 | 3,586,904 |
| 2033 | 3,519 | 4,057,904 |
| 2034 | 3,861 | 4,528,904 |

The carbon emissions from the Airport include both the electricity used and the aircraft fuel consumed. Each component has a different amount of carbon per unit, used to establish a baseline for the Airport's carbon footprint, as shown in Table 4.5.2 – Airport Baseline Carbon footprint.

The design of the microgrid will include the consideration of the addition of solar photovoltaic panels, increasing the Airport's access to revenue from renewable power and the environmental benefits from using this green energy source. Energy storage in the microgrid will also allow for better utilization of these renewable power sources and allow the Airport to meet their growing demand. (ARUP, 2024).

**Table 4.5.2 Airport Baseline – Carbon footprint**

| Source | Carbon / Unit | Total Carbon |
|---|---|---|
| Electricity purchased | 574 lbs/MWh | 688,800 lbs |
| Aircraft fuel consumed | 24.56 lbs/gallon | 4,470,000 lbs |

The anticipated results from the microgrid planning phase (i.e., Phase 1) will be the basis for the Airport's application for a larger SMART grant of $15 million to design the details of the microgrid (i.e., Phase 2). The planning will also entail economic considerations with the selected engineering firm modeling various scenarios and technologies to determine potential microgrid cases with the funding. Construction and implementation of the microgrid is entirely dependent upon being selected for the second phase of grant funding.

The current planning phase (as of 2024) would result in the selection of a smart microgrid configuration (option of technologies) that will be included in a separate funding phase (permitting and design) which will seek to gain the above noted economic benefits while also taking into account the reliability, sustainability, resiliency of the system – and the larger benefits to the community beyond, especially in and around EJ communities.

## 4.6 Stormwater Management

### *4.6.1 Precipitation Projections for Stormwater Management*

The projects will be designed to meet the updated stormwater management standards that MassDEP is proposing (as of late 2024), as part of the update to the Wetlands Protection Act. New stormwater regulations pertaining to precipitation intensity and frequency by, at a minimum, will adopt the NOAA Atlas 14-Precipitation-Frequency Atlas of the United States Volume 10 Version 3.0: Northeastern States.

Using these new higher storm designs will allow the Airport to address related stormwater management issues of the proposed projects and to respond to broader climate resilience implications by incorporating the most recent storm data. As necessary, the Airport will consider options for possible future climate related increases to precipitation projections, such as adding stormwater management reserve areas, that can be utilized to account for future conditions.

### *4.6.2 Updated Stormwater Standards for Flood Protection and Water Quality Improvements*

As noted above, the Project has committed to meeting the updated measures within DEP's proposed regulations relating to stormwater design standards. These measures will help address any potential for impacts to EJ communities surrounding the Airport by improving resiliency against increasing flooding, storm damage, and runoff pollution.

Recent climate findings have noted that storms have been increasing in intensity with climate change, and as a result, today's "100-year storm" delivers more water than the 100-year storm of the 1960s. Current stormwater regulations use older data to design stormwater systems, and as a result, use pipes that are not large enough to carry the water. Furthermore, stormwater that is not captured can cause flooding, scouring of riverbanks, damage to buildings and bridges, and other problems.

The Project, by using up-to-date precipitation data to design stormwater systems, will help to prevent stormwater causing damage to off-Airport property. Other benefits of the proposed stormwater systems include the following:

- Ensures resilience of wetlands resources and stormwater systems by incorporating design to handle extreme precipitation events. The system will handle precipitation amounts reaching 90% of the upper end of the range of historical precipitation, aka "NOAA 14 PLUS", and is proposed to ensure that stormwater from most (80%) storms will be adequately managed.
- Reduces flooding, pollution, and replenishes groundwater and streamflow by utilizing stormwater system design to move more stormwater into the ground. This measure will only be proposed within appropriate areas of the Airport, consistent with current efforts to contain and clean up PFAS, specifically the East Ramp PFAS containment area.

The proposed stormwater systems will use natural and ecological processes to handle stormwater runoff and to prevent flooding and polluting nearby waters. This will include increasing use of bioretention areas, and addition of tree canopy (within compatible areas of the Airport, e.g., parking lots). Please see Section 5.3 for further discussion of stormwater management and compliance with stormwater standards.

Use of these natural components within proposed stormwater systems will reduce/replace the amount of pavement and pipes and other hard infrastructure necessary within the Airport property. As a result, given the Airport's commitment to use stormwater management design for higher storm totals, and use of natural and ecological processes (e.g., LID), it is not anticipated that the proposed project will exacerbate or contribute to any existing or future potential SW or flooding impacts within EJ communities.

## 4.7 EJ Community Impact Categories

### *4.7.1 Noise and Air Emissions*

As further discussed in the Final EIR Chapter 6 - Climate Change, the Airport and its commercial operator are undertaking several measures to reduce air emissions. In summary, the Airport will seek additional tree replanting efforts and will reuse harvested wood materials onsite, to the greatest extent possible, to offset losses in carbon sequestration and carbon release from proposed tree cutting and vegetation removal within Airport property. While tree replanting and reuse of wood materials would assist the reduction in loss of carbon sequestration and aircraft emissions, the Airport is also fully supportive of the local "Greening Hyannis"[3] initiative that will organize the planting new carbon sequestering trees within

[3] See https://greeninghyannis.com/.

Hyannis and in EJ communities. The initiative is funded by a grant awarded for tree plantings from the Greening the Gateway Cities Grant Program. The Airport will coordinate with the Staff from Greening Hyannis to assist with locations for tree replanting and/or supplemental funding for trees to be planted within certain EJ areas and around the Airport. By supporting this program, the Airport will improve air quality conditions within EJ communities.

The transition to the Airbus 220 from the Embraer 190 commercial jet by JetBlue results in a 25% reduction in air emissions and 20 % reduction in fuel usage. Furthermore, the A220 engines are capable of burning a 50% blend of Sustainable Aviation Fuel (SAF) and by 2030, will be able to use 100% SAF.[4]

#### 4.7.1.1 Air Monitoring

Over the past few years small low-cost air quality sensors have become available and are being used by citizens, researchers, and states to expand local air quality monitoring. One source is the AirNow Fire and Smoke Map[5], which shows publicly available crowdsourced particulate matter data, together with data from regulatory $PM_{2.5}$ monitors operated by state/local governments.

$PM_{2.5}$ is a mixture of solid particles and liquid droplets found in the air and made up of hundreds of different chemicals. $PM_{2.5}$ is so small that it can be inhaled into the lungs and may contribute to health effects. $PM_{2.5}$ sensors can be used to understand local air quality and identify areas with potentially higher pollution levels where mitigation efforts can be directed to protect residents' health.

In 2021, MassDEP began providing $PM_{2.5}$ sensors to communities to monitor local air quality. This MassDEP grant program provides up to ten $PM_{2.5}$ sensors to place at outdoor locations in cooperation with residents, schools, businesses, and community organizations. The data from these sensors can be seen on the map in the following link: https://www.mass.gov/info-details/air-sensors-for-particulates. The closest sensors to the Airport are located in East Sandwich and Chatham.

The Airport will coordinate with the Town of Barnstable relative to seeking a grant from MassDEP to fund the purchase of $PM_{2.5}$ sensors to use for monitoring of air quality in the areas surrounding the Airport.

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4 Nantucket Current | New 140-Seat JetBlue Aircraft Makes First...

5 https://fire.airnow.gov

#### 4.7.1.2 Noise Monitoring

FAA employs and requires the use of the AEDT[6] model software to generate detailed noise results over large areas, as noise modeling is the only practical way to accurately and reliably determine geospatial noise effects in the surrounding community when analyzing aviation noise.

According to FAA[7], there are many challenges and limitations to using noise measurements (i.e., monitoring) for evaluating Airport vicinity noise. The following challenges are noted by FAA on the use of noise monitoring:

- Non-aircraft sound can have a large influence on noise monitoring data, which can be difficult to separate from aircraft noise during data post-processing.
- Long-term noise monitoring requires regular maintenance and calibration of the individual noise monitors on a continuous, year-round basis, which has considerable costs.
- To ensure the same accuracy and fidelity of data generated by noise models, a substantial number of noise monitoring locations is required. (e.g., tens of thousands of noise monitors, collecting year-round data in the vicinity of an Airport would be needed to match the fidelity and accuracy of noise modeling).

Given the requirements to use AEDT, and the considerable drawbacks to using noise monitoring to measure aircraft noise, the Project is not proposing this as a monitoring measure to be included in the Project.

### *4.7.2 Public Health - Groundwater / Sole Source Aquifer*

An updated groundwater analysis is presented in the Final EIR to fully address the comments from EPA's Sole Source Aquifer program. Please see Chapter 3 for a discussion on the groundwater resources and project related impacts and mitigation measures. As it relates to Public Health, please refer to Section 3.4 for information on the project related measures proposed to reduce the potential for release of contaminants with additional discussion in Chapter 6. Also, as noted previously, the Airport has conducted comprehensive efforts to address PFAS within the Airport property, please see the Airport's PFAS website for information on sampling, monitoring, remediation and cleanup activities: https://flyhya.com/Airport-info/pfas/.

Additionally, the Airport continues to coordinate with MassDEP and the Town of Barnstable as they complete ongoing investigations into the impacts of PFAS on soil and groundwater. The purpose of Airport PFAS related efforts is to continue reporting, testing, mitigation, and

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6 https://aedt.faa.gov/

7 https://www.faa.gov/faq/why-does-faa-use-noise-modeling-vs-noise-monitoring

monitoring as necessary to meet MassDEP Bureau of Waste Site Cleanup reporting requirements. Multiple reports are required to meet MCP requirements and can be found here: https://flyhya.com/Airport-info/pfas/. Per the Airport's most recent DEP submittal, Immediate Response Action (IRA) Status Report 14, IRA Completion Statement, Phase IV Final Report and Completion Statement, and Phase V Status Report, the Airport is managing the PFAS plumes associated with its historical use of fluorotelomer based AFFF. The Airport is not required to investigate or remediate non-Airport related PFAS plumes. The Airport has controlled its PFAS source areas with engineered barriers ("caps") to reduce potential groundwater impacts. As presented in multiple IRA Status reports available on MassDEP's website and the Airport's website (see above), the caps have significantly reduced migration of PFAS from soil into groundwater (depicted in **Figure 3.1-1**).

The Airport is not responsible for controlling non-Airport related PFAS plumes or soil impacts. It is the regulatory agencies and/or the Responsible Party(s) that will need to investigate sources that are outside of the Airport's responsibility.

Groundwater treatment for PFAS is occurring at the Maher wells treatment plant. The Town of Barnstable, through the Hyannis Water System will continue to operate the Maher Wells treatment plant and will continue to provide drinking water that meets the regulatory drinking water standards. The Airport's PFAS plume reached Maher Wells after the construction of the new treatment was completed in 2020 and as such, no exposure to the community is believed to have occurred (Horsley Witten, 2024).

The MassDEP periodically inspects the Maher Treatment plant under the water supply/drinking water program.

Groundwater monitoring by the Airport will continue to track the PFAS plume migration and document the reduction in concentration over time until regulatory closure is achievable (estimated to be completed by 2029). The PFAS soil caps are inspected bi-annually to verify their effectiveness. The caps have significantly reduced migration of PFAS from soil into groundwater based on the groundwater analytical data.

# Chapter 5.0

Wetlands & Stormwater

# 5.0 WETLANDS AND STORMWATER

As specified in the Secretary's Certificate and MassDEP's comment letter on the Draft EA/EIR, this section provides an update on the following topics:

- Wetland impact summary associated with the updated Preferred Alternative for Taxiway D realignment and identifies avoidance and minimization measures relative to proposed impacts;
- Identified location of any proposed wetland replication area and conceptual design;
- Appropriate mitigation measures to demonstrate consistency with the WQC regulations;
- Stormwater management system design including accommodation of larger storm events including using the rainfall volumes that are provided by the MA Resilience Design Tool as indicative of future climate conditions and describe how the project will consider future conditions in design.

## 5.1 Wetlands

### *5.1.1 Wetland Resource Area Impacts for Taxiway D*

The environmental consequences of the Preferred Alternative include unavoidable wetland resource area impacts associated with the permanent fill from the relocation of Taxiway D and associated grading on Upper Gate Pond. **No other projects will impact wetland resource areas.**

As described in the additional alternatives evaluated in Chapter 2.0 for Taxiway D, due to FAA design requirements for airport geometry, this Project activity cannot be designed to fully avoid impacts to Bordering Vegetated Wetlands (BVW). However, the Airport looked at additional alternatives which would reduce impacts while still meeting FAA design requirements. A new alternative, Alternative 5, was evaluated which would reduce impacts by removing the perimeter access road adjoining Taxiway D for a limited portion of the site. **This would result in a 35% reduction of permanent fill of BVW from the Preferred Alternative 2B presented in the Draft EA/EIR, from 4,600 sf to 3,000 sf.**

**Land Under Water (LUW) impacts would be reduced from 13,200 sf to 12,700 sf, and permanent impacts to Inland Bank will be reduced to 300 linear feet (LF) as a result of the realignment of Taxiway D.** These impacts have been avoided and minimized to the maximum extent practicable through utilization of 2:1 side slope design with an engineered slope option. In addition to the proposed permanent impacts to BVW, temporary impacts of 405 sf of BVW/810 sf of LUW generally involve a 5-foot horizontal area necessary for construction access and work associated with the Taxiway D. The proposed construction would temporarily alter these areas by a variety of construction activities including temporary excavation and backfilling, support of excavation and water control, staging and operating construction

equipment, grading, and installing erosion controls. Once construction is complete, the resource areas not permanently impacted by filling would be restored to pre-existing grades and seeded with a native wetland seed mix.

**Table 5.1-1 New Preferred Alternative for Taxiway D Reduced Impacts**

| Alternative 5 | Reduced Impacts | Engineering Design |
|---|---|---|
| • New Alternative<br>• Remove Perimeter Access Road adjoining Taxiway D for a limited portion of the site | • 35% Reduction of Permanent Fill of 1,600 sq ft of BVW with the resultant fill being 3,000 sq ft instead of 4,600 sq ft.<br>• LUW impacts reduced from 13,200 sq ft to 12,700 sq ft | • Use of a 2:1 slope design<br>• Engineered Slope Option |

**Table 5.1-2 New Preferred Alternative for Taxiway D Alternative 5's Temporary Impacts**

| Alternative 5 | Temporary Impacts | Construction Activity Causing Temporary Impacts |
|---|---|---|
| • New Alternative<br>• Remove Perimeter Access Road adjoining Taxiway D for a limited portion of the site | • 405 sf of BVW/810 sf of LUW<br>• 5-foot horizontal area necessary from toe of slope for construction access<br>• Resource areas (that are not permanently impacted) will be restored to pre-existing grades and seeded with native wetland seed mix | • Temporary Excavation and Backfilling<br>• Support tools of excavation and water controls<br>• Staging and operation equipment<br>• Grading<br>• Installation of erosion controls |

Although final design and means and methods of construction have not yet been determined, there is also the potential for excavation (dredge) of unconsolidated organic materials (i.e., "muck") along the pond bottom in order to provide suitable base material for the taxiway slope. Release Tracking Number (RTN) 4-28577 was identified in the proposed Taxiway D improvement area. RTN 4-28577 is associated with the presence of Polycyclic Aromatic Hydrocarbons (PAHs) and lead in soil and sediments above the MassDEP Sediment Screening Criteria at Upper Gate Pond. Pending the project sequencing, the work will be performed under the Permanent Solution Statement (PSS) (**Appendix G** dated November 2023) provisions of the Massachusetts Contingency Plan (MCP), as applicable. It is important to note that per the PSS, an Imminent Hazard evaluation per 310 CMR 40.0950 found that an imminent hazard to Human Health or the environment does not exist based on the levels of PAHs and lead detected in the sediment.

Since the proposed work is being performed within a portion of this MCP regulated site, soil, sediment, groundwater, and surface water will be managed in accordance with requirements of the MCP. The in-water work areas will be isolated via steel sheet pile coffer dams and bottom anchored turbidity curtains prior to the commencement of any in-water work, including the dredging. Groundwater and surface water will either be treated and discharged to surface water in accordance with requirements of the NPDES Remediation General Permit, recharged in accordance with local, state, and federal regulations, or collected and transported offsite for disposal.

**Table 5.1-3 Proposed Work Effect on Immediate Environment and Methods of Management**

| Element Affected by Proposed Work | Method of Management |
|---|---|
| Soils/Sediment | Steel sheet pile coffer dams and bottom anchored turbidity curtains |
| Groundwater/Surface Water | Either treated and discharged to surface water, recharged, or collected and transported offsite |

### *5.1.2 Proposed Wetland Mitigation Site*

Mitigation for the Preferred Alternative's unavoidable impacts to BVW will be provided in accordance with local and state wetlands regulations and performance standards. For permanent impacts resulting from filling BVW, the altered BVW would be replaced (replicated) in-kind proximate to the water body or reach of the waterway area lost to meet mitigation requirements under the Barnstable Wetlands Protection Bylaw, Cape Cod Commission Water Resources Policy, Massachusetts Wetlands Protection Act (WPA) see 310 CMR 10.55(4)(b))., and MassDEP Water Quality Certificate regulations (see 314 CMR 9.06). The proposed ratio of replacement area to BVW loss is at least 1:1, and a total of 3,000 sf of BVW replication would be provided on Airport property proximate to the impact location(s). The wetland replication area will be designed and constructed as per MassDEP's *Massachusetts Inland Wetland Replication Guidelines, Second Edition* (September 2022).

The proposed wetland mitigation site is located along the eastern bank of Upper Gate Pond as shown in **Figure 5.1-1**. This area is one of the shallower sloped banks to the pond and enables the construction of a wetland mitigation site that is both accessible and requires less disturbance to pond bank than other areas around the edge of the pond with very steep banks. The proposed mitigation site is vegetated with herbaceous plants and woody shrubs. It is within the maintained Runway Visibility Zone (RVZ) which requires vegetation to be maintained at a height of five (5) feet or less above the runway centerline per FAA AC 150-5300-13A Section 207.

G:\Projects2\MA\Barnstable\6116\MXD\EA_EIR\X_Wetland_Replication_Area_20240806.mxd

Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services

**LEGEND**

- Airport Property Boundary Proposed
- Wetland Replication Area Land Under
- Water (LUW) Bordering Vegetated
- Wetland (BVW) 10-ft Contour
- 2-ft Contour
- New Pavement
- Pavement to be Removed
- Pavement to be Reconstructed
- Pavement Removal Turf Limits of
- Grading (2:1 Slope)

Scale 1:1,200
1 inch = 100 feet

0 40 80 Feet

*Basemap: Nearmap Aerial, April 2023*

**Proposed Wetland Replication Area**

**BVW Impact Area**

*Upper Gate Pond*

**BVW/LUW Impact Areas**

**Taxiway D**

Taxiway D

OVERVIEW

Pond
Lamson Pond
Flintrock Pond
Mary Dunn Pond
Barnstable Municipal Airport - Boardman/Polando Field
Mill Creek
Mill Pond
BREEDS HILL RD
AIRPORT WAY
YARMOUTH RD
28

Cape Cod Gateway Airport Barnstable, Massachusetts

**Figure 5.1-1**
*Proposed Wetland Replication Area*

Existing vegetation consists of sweet pepperbush (*Clethra alnifolia*), honeysuckle (*Lonicera sp.*), black cherry (*Prunus serotina*), scrub oak (*Quercus ilicifolia*), white oak (*Quercus alba),* bracken fern (*Pteridium aquilinum*), teaberry (*Gaultheria procumbens*), poison ivy (*Toxicodendron radicans*), Oriental bittersweet (*Celastrus orbiculatus*) and catbriar (*Smilax glauca*). The BVW within the existing wetland adjacent to the proposed mitigation area consists of gray willow (*Salix cenera*), maleberry (*Lyonia lingustrina*), arrowwood (*Viburnum dentatum*), boneset (*Eupatorium perfoliatum*), marsh fern (*Thelypteris palustris*), sensitive fern (*Onoclea sensibilis*), soft rush (*Juncus effusus*), and rough-stemmed goldenrod (*Solidago rugosa*).

#### 5.1.2.1 Review of Hydrology at Preferred Mitigation Site

Converting an upland habitat to a wetland habitat requires a steady and reliable groundwater source and/or establishment of a hydrological connection to a surface water source. The source needs to be of sufficient volume and duration to inundate or saturate soils to the surface for a sufficiently long period during the growing season to sustain hydric, or wetland conditions, and support a wetland plant community. In the case of the preferred mitigation site, by sharing the hydrology with Upper Gate Pond, and by approximating the elevations to the adjacent wetlands, the replacement area should have sufficient hydrology to support the desired wetland plant communities. The primary hydrologic input in the wetland replication area will be derived from a combination of groundwater, surface water, and precipitation.

Existing groundwater data from the nearby monitoring well (HW-404) along with soil test pit observations, described below, will be used to advance the wetland replacement area design. That design will be evaluated during the permit application review processes. To supplement the groundwater monitoring data, test pits were completed within the preferred mitigation area to examine soils to understand ground water elevations based on field indicators. On June 4, 2024, a professional wetland scientist (PWS) conducted a series of test pits in select locations throughout the limits of the preferred wetland mitigation site. The purpose of these preliminary test pits was to gain an understanding of subsurface hydrologic conditions and redoximorphic features in the soil profile and correlate those conditions to the existing known groundwater information. Highest groundwater levels and water table fluctuations are routinely estimated by soil scientists based on a soil's morphology, mainly the soil color. The depth and duration of a water table can generally be correlated to the location and abundance of redoximorphic features in the soil profile. With this in mind, hand dug test pits were conducted within the proposed mitigation site using a dutch auger.

The 3,000-sf wetland creation area located along the eastern limit of Upper Gate Pond will be monitored for two years following construction per anticipated permit requirements. A summary of invasive species monitoring information for this discrete area will be available as part of the post-construction Wetland Creation monitoring reports submitted annually for a period of two years by the Airport to the local Conservation Commissions and MassDEP. It will also include a discussion of any measures taken to control invasive species. The report will

include a quantitative assessment of the Mitigation Site (if practicable), a qualitative assessment of the Mitigation Site, a discussion of measures taken to control invasive species (if found), an estimate of control success, and recommendations for future actions. The report will also include photo documentation of each site and maps locating the approximate limits of documented invasive species (if found). Each subsequent monitoring event will include a comparison of the data to the baseline condition.

#### 5.1.2.2 Proposed Plantings

Emergent marsh and scrub shrub vegetation cover types are proposed for the replication area. The plantings will primarily consist of a native wetland seed mix with a variety of shrub plantings, including maleberry (*Lyonia Ligustrina)*, fetterbush (*Lyonia Lucida*), highbush blueberry (*Vaccinium Corymbosum*), arrowwood *(Vibrunum Dentatum)* and pussy willow (*Salix Caprea*) similar to the impact areas. Shrubs will be planted in random locations and densities throughout the replication area to blend with the vegetation composition of the surrounding existing wetland and to mimic conditions at the impact sites. Plantings will be located at the direction of the supervising wetland scientist to simulate natural growth patterns. Shrubs will be a minimum of three to four feet in height. The plant material will either be bare-root or container grown and only plant materials native to the region will be used. The replication area will be sown with a wetland seed mix and covered with a light mulch of weed free straw if planted during summer months. The woody plants will be surrounded with an approximately 3-foot diameter ring of woody mulch to a depth of approximately 2-inches or biodegradable plastic or fiber (which will be stapled or staked to the ground) to reduce the threat of competition from herbaceous species during the first growing season.

**Table 5.1-4 Proposed Plantings for Wetland Replication Area**

| Native Wetland Seed Mix with Shrub Plantings Listed Below | Characteristics of Plantings |
|---|---|
| • Maleberry (Lyonia Ligustrina);<br>• Fetterbush (*Lyonia Lucida*);<br>• Highbush blueberry (*Vaccinium Corymbosum*);<br>• Arrowwood (Vibrunum *d*entatum); and<br>• Pussy willow (*Salix Caprea*). | • Will simulate natural growth patterns;<br>• Three to four feet in height;<br>• Bare-root or container grown;<br>• Only materials native to region will be used;<br>• Covered with light mulch of weed free straw if planted during the summer months; and<br>• Woody plants surrounded by an approx. 3 foot diameter ring of woody mulch to a depth of approx. 2 inches or biodegradable plastic or fiber |

This conceptual replication plan will be presented to the regulatory agencies as part of the permitting phase. Once consensus is reached on a permittable plan, a draft wetland replication site plan will be developed, and accompanying narrative will be completed. The wetland replication plan, to the extent compatible with the airport's safety needs, will also incorporate important wildlife habitat features into the design including burrowable soils for small mammals, flowering herbs for pollinator species, and dense herbaceous cover, designed to replicate those functions of the impacted wetlands.

#### 5.1.2.3 Wetland Replication Area Construction

Mitigation area permit drawings will include erosion control details, grading plans, planting schedules and plans, and planting notes. Monitoring wells are to be installed. Construction of the wetland mitigation area, including fine grading, soils placement, and planting, shall be done under the supervision of a qualified wetland scientist.

Prior to the commencement of mitigation construction, the mitigation area will be staked out and the selected contractor, Airport representatives and qualified wetland scientist will walk the site to verify limits of work, locations and installation of erosion controls, proposed construction methods, and grade stake elevations.

No plants will be installed until the wetland scientist approves the site, including proposed grading required to maintain/promote sufficient hydrology to support the desired wetland plant communities, the condition of the plant material, and the process of installation. The wetland scientist will be on site to monitor construction of the wetland mitigation area during all phases to ensure compliance with the mitigation plan and to adjust when needed to meet mitigation goals.

## 5.2 Stormwater Management

Given the funding required for the three major projects (Taxiway B, Taxiway D, Runway 15 Extension) of approximately $60 Million and the likely resultant staggering of project implementation, the Airport intends to secure local, state, regional and federal permits by individual project as may be required. Neither stormwater calculations nor a Stormwater Report were included in this MEPA/NEPA planning phase project, both of which will be produced under the next funding phase of permitting and design. That said, all reasonable measures will be employed in future designs to protect the water quality of the SSA. Submissions under MEPA Notice of Project Changes associated with future permitting projects will describe the proposed stormwater management system for each project/phase and identify BMPs incorporated into the design. It will also describe how the proposed stormwater management system will fully comply with current water quality standards. Design submissions associated with future permitting projects will provide details on the size,

location, and design of proposed stormwater systems which will endeavor to exceed stormwater management standards by incorporating Low Impact Design (LID) strategies and green infrastructure wherever practicable.

To the maximum extent feasible, green infrastructure measures will be incorporated to treat stormwater generated by impervious surfaces. LID designs will be carefully considered, and where not used, the stormwater report and permit application will provide a thoughtful explanation as to why they are infeasible for implementation on-site. The Airport has done an exemplary job of monitoring stormwater and maintaining its current system in a state of good repair, and it will continue to commit to ongoing maintenance and monitoring to ensure stormwater is adequately treated before entering surface and groundwater bodies.

As described further below, the FAA states that, "Climate Change is leading to an increase in the intensity and frequency of severe weather events, higher temperatures, and more frequent heat waves that will severely impact some airports…" (FAA Action Plan 2021). The projects under the Proposed Action are in line with the efforts of the Airport to be safer, more efficient, and responsive to Climate Change from both an internal outward and an external inward perspective.

Accordingly, the Project will be designed to include stormwater management systems able to accommodate future storms. In future funding phases, identified starting in FY 2025, contingent upon on completion of this environmental planning review phase, stormwater management systems will be designed to comply with state SMS and investigate the feasibility to accommodate future storm conditions within the overall system to be construction as the Airport redevelops existing infrastructure.

### *5.2.1 Stormwater Treatment Goals*

The objective of the stormwater management for the Airport is to mitigate any increase in peak storm runoff rates due to the construction of the proposed runway / taxiway project while improving water quality and resiliency.

MassDEP has implemented the Stormwater Management Standards (Standards) as of November 18, 1996, and updated them in April 2008. These Standards are currently under revision by MassDEP, and it is anticipated that by the time of permitting and construction, a version of the proposed revisions will be the new regulatory standard. With this in mind, each project will be designed such that the standards in place at that future time will be met for new and redeveloped areas.

### *5.2.2 System Design Parameters and Attributes*

As the proposed projects will result in an increase in impervious areas, the proposed stormwater management systems will be designed so that there is no increase overall in post construction discharge rates from the project site. In fact, it is anticipated that all mitigation will be contained entirely within Airport property, having no impact on any of the abutting properties.

An important consideration for projects of this scale is the loss of annual recharge to groundwater. This issue shall be eliminated or minimized through the use of environmentally sensitive site design, stormwater best management practices, and effective operation and maintenance. Annual recharge from the post- development project sites will approximate the annual recharge from pre-development conditions based on soil type. The stormwater management system will be designed to infiltrate the required recharge volume as determined in accordance with the current Massachusetts Stormwater Handbook.

From a stormwater and groundwater perspective, the stormwater management system will be sized to treat for the ½“ to 1” runoff rate as is appropriate based on the varying conditions (non-critical areas to areas of rapid infiltration rates and / or critical areas such as Wellhead Protection Areas) on site and will be applied to the total impervious area for the water quality volume. Where site topography and groundwater elevation preclude the use of infiltration BMPs, industry standard water quality units are proposed that are specifically designed to address water quality prior to discharge. This water quality standard will address Total Suspended Solids (TSS) and Phosphorus (p) removal per the latest revisions to local, state, and federal requirements. Current required TSS removal rates of 80% are expected to be increased to a 90% removal rate in the future, with the design considering this future water quality upgrade in its design.

An operation and maintenance plan for both construction and post-development stormwater controls will be developed. The plan will align with and improve the successful O&M plan in place at the Airport (see **Appendix E** for the Industrial SWPPP) and will include the parties responsible for operation and maintenance at different phases of the project and afterwards with a schedule for inspection and maintenance, including routine and non-routine maintenance tasks.

### *5.2.3 Proposed Stormwater Control Measures*

Outlined below are the numerous stormwater control measures (SCMs) proposed to be used on-site. A selection or combination of the below SCMs may be selected for each project. The runoff will be captured via trench drains and then transmitted to the subsurface infiltration and detention systems. Subsurface conditions (such as permeability of the soil and/or seasonal high groundwater elevation) will be significant factors in the BMP selection(s).

**Subsurface Structures (Infiltration Chambers):** Subsurface structures are underground systems that receive captured surface runoff, and gradually infiltrate it into the groundwater. These underground infiltration systems can be installed to enhance groundwater recharge. Subsurface structures are constructed to temporarily detain stormwater while it percolates into the underlying soil and are a system already in use in the Airport. Underground infiltration structures will be utilized only where the soil is adequately permeable, and the maximum water table and/or elevation is sufficiently low, however not adjacent to the expanded East Ramp due to the presence of PFAS. They will be used to control the quantity, as well as quality, of stormwater runoff with the structures serving as storage chambers for captured stormwater, while the surrounding soil matrix provides treatment.

**Detention Structures**: In areas with poorly draining soils, higher water tables, or other soil characteristics not suitable for infiltration, such as the areas near the PFAS caps, Detention Structures are proposed. This post-construction practice consists of water-tight underground chambers designed to detain incoming stormwater runoff thus reducing the peak rates of runoff meeting the SMP requirements. The main reason detention structures would be used is if a 2' or more separation from the bottom of any infiltration and the estimated seasonal high groundwater table (ESHGWT) is not achieved. The Airport does not anticipate using this type of structure.

**Deep Sump Catch Basins**: Strategically placed in all the apron areas will be deep sump catch basins (also known as oil and grease or hooded catch basins) that will act as underground retention systems designed to remove trash, debris, and coarse sediment from stormwater runoff and protect the groundwater and surrounding water resource areas. These BMPs will also serve as temporary spill containment devices for floatable materials such as oil and grease that provides pretreatment. A 25% TSS removal is awarded to the deep sump catch basin when used as pre-treatment. Deep sump catch basins will be appropriate in the East Ramp where fueling of aircraft takes place; the outflow of would then be directed to a water quality unit and/or to an infiltration BMP.

**Water Quality Units (WQUs):** Water Quality Units will be used in all apron areas as flow-through structures with a settling or separation unit to remove sediments and other pollutants. They use the power of swirling or flowing water to separate floatables and coarser sediments and will be specifically designed and manufactured to accommodate different design storms and flow conditions.

**Detention Basin/ Sediment Forebay:** A sediment forebay (not an extended detention basin from a water quality perspective) is a post-construction practice consisting of an excavated pit, bermed area, or cast structure combined with a weir, designed to slow incoming stormwater runoff, and facilitating the gravity separation of suspended solids. A typical forebay is excavated below grade with earthen sides, and used to slow velocities of incoming stormwater, provides TSS removal before discharge. Detention Basins/Sediment Forebays tend to consume large

areas of land, which may in the future, be difficult to meet FAA grading standards. With this in mind, if used, detention basins/sediment forebays should be located outside of runway and taxiway object free areas (ROFA and TOFA). However, sometimes sediment forebays can be much smaller and perhaps be an effective water treatment or pre-treatment BMP before out letting to wetlands.

**Rain Garden(s)/ Bioretention:** Bioretention is a technique that uses soils, plants, and microbes to treat stormwater before it is infiltrated and/or discharged. Bioretention cells (also called rain gardens) are shallow depressions filled with sandy soil topped with a thick layer of mulch and planted with dense native vegetation. Stormwater runoff is directed into the cell via piped or sheet flow. The runoff percolates through the soil media that acts as a filter. There are two types of bioretention cells: filtering bioretention areas and those configured to recharge groundwater in addition to acting as a filter exfiltrating bioretention areas. Bioretention areas remove pollutants through filtration, microbe activity, and uptake by plants; contact with soil and roots provides water quality treatment better than conventional infiltration structures. Studies indicate that bioretention areas can remove from 80% to 90% of TSS. If properly designed and installed, bioretention areas remove phosphorus, nitrogen, metals, organics, and bacteria to varying degrees. Bioretention areas help reduce stress in watersheds that experience severe low flows due to excessive impervious cover. Bioretention areas are suitable for vehicular parking areas, roadways, and around hangar buildings. They are not suitable for airfield areas near taxiways and runways.

**Sand Filters:** Also known as filtration basins, sand and organic filters consist of self-contained beds of sand or peat (or combinations of these and other materials) underlaid with perforated underdrains. Sand filters improve water quality by straining pollutants through a filtering media and by settling pollutants on top of the sand bed and/or in a pretreatment basin. Sand filters are rarely used, because besides apron areas, airfields are relatively "clean" environments that do not have a lot of pollutants. When sand filters are used, it is in an area that requires a higher level of pollutant or TSS removal (i.e. potentially next to any maintenance areas).

**Infiltration Trenches:** Infiltration trenches are shallow excavations filled with stone. They can be designed to capture sheet flow or piped inflow. The stone provides underground storage for stormwater runoff. The stored runoff gradually exfiltrates through the bottom and/or sides of the trench into the subsoil and eventually into the water table. Infiltration trenches can be installed at the toe of slope just outside of runway and taxiway safety areas.

**Vegetated Filter Strips:** Vegetated filter strips, also known as filter strips, grass buffer strips and grass filters, are uniformly graded vegetated surfaces (i.e., grass or close-growing native vegetation) that receive runoff from adjacent impervious areas. Vegetated filter strips are used to pretreat sheet flow or small concentrated flows from roads, highways, and small parking

lots. Vegetated filter strips are designed to slow runoff velocities, trap sediment, and promote infiltration, thereby reducing runoff volumes. Vegetated Filter Strips can be used for TSS removal on the airfield prior to entering a closed drainage system.

**Grassed Channel/Swale:** Grassed channels (formerly known as Biofilters swales) are treatment systems with longer hydraulic residence time than drainage channels. The removal mechanisms are sedimentation and gravity separation rather than filtration. Grassed Channels/Swales also can be used for TSS removal on the airfield prior to entering a closed drainage system.

**Tree Box Filters:** The Tree Box Filter consists of an open bottom concrete barrel filled with a porous soil media, an underdrain in crushed gravel, and a tree. Stormwater is directed from surrounding impervious surfaces through the top of the soil media. Stormwater percolates through the media to the underground. Treated stormwater beyond the design capacity is directed to the underdrain where it may be directed to a storm drain, other device, or surface water discharge. Advantages of using tree box filters are that they provide pretreatment to stormwater, provides decentralized stormwater treatment, and they can reduce the volume & rate of runoff. Tree box filters can be used in auto parking lots if the "tree" does not pose a hazard to air navigation.

### *5.2.4 Low-Impact Development*

The objective of the stormwater management for the site is to mitigate any increase in peak storm runoff rates due to the construction of the proposed taxiway / runway project as well as to use Low Impact Development (LID) and Green Infrastructure design considerations.

As outlined above, there are limitations in certain LID stormwater best management practices (BMPs) to be used on an aviation site due to permanent pool or open water systems attracting waterfowl and thus creating safety hazards (specifically *Advisory Circular No. 1501.5200-33 "Hazardous Wildlife Attractions On or Near Airports"* See Section 2.3.2 of AC: designed and operated so as not to create above-ground standing water. Stormwater detention ponds should be designed, engineered, constructed, and maintained for a maximum 48–hour detention period after the design storm and to remain completely dry between storms…*).* However, as part of the LID approach the designers will combine hydrologically functional site design with pollution prevention measures to compensate for any land development impacts on hydrology and water quality.

The Project is proposing to use infiltration BMP's where existing soil conditions allow (based on water table plus soil characteristics and chemical characterization) that preserve and maintain essential hydrologic functions of the development site and local watersheds. This will also include the use of at-source control approach, in contrast to the end of pipe control approach and pretreatment green infrastructure BMP's such as drainage swales, biofilters, and other methodology to remove 44% TSS removal prior to any infiltration BMP.

To the maximum extent feasible, green infrastructure measures will be proposed to treat stormwater generated by impervious surfaces. LID designs will be carefully considered, and where LID systems can be used, the consultant will provide an explanation of why the specific LID systems are appropriate. LID systems that transmit runoff / stormwater while draining within 24 hours following a 1- or 2- year storm event and within 48 hours of a 10-year storm will be implemented. These systems will be placed outside critical aviation zones for grading/slopes and may include a variety of BMP's listed above.

### *5.2.5 Sizing*

In order to mitigate larger future storm events, all Stormwater Control Measures will be designed and installed for easy expansion. The subsurface infiltration and detention systems are to be constructed from chambers which are modular in nature and can be added onto existing systems in the future.

### *5.2.6 Adaptation and Resiliency*

The proposed stormwater design for each project is anticipated to meet the recommended 2050 10-year return period (24-hour rainfall volume of 6.1 inches) from the Resilient Massachusetts Action Team (RMAT) Tool for the runway extension and taxiways. The 2070 100-year return period volume for aviation hangars and buildings (24-hour rainfall volume of 11.0 inches) from the current 100-year storm (7 inches) to the 2070 50-year storm (9.4 inches) will be addressed in stormwater management designs.

In order to mitigate the future 2070 50-year storm event and the 2070 100-year storm volume for aviation hangars and buildings, all SCMs will need to be expanded by an estimated 50%. The new subsurface infiltration and detention systems could be constructed from chambers which are modular in nature and can be added onto existing systems in the future.

Private developers will implement future hangar development. The Airport will implement construction requirements that assure that applicable stormwater management systems for all future hangar and building development will be designed pursuant to the 2070 100-year return period volume (24-hour rainfall volume of 11.0 inches).

### *5.2.7 Construction Period Stormwater Management*

The projects will each have a Soil Erosion and Sediment Control Plan during construction specifically designed to control erosion at its source with temporary control structures and to minimize the runoff from areas of disturbance by de-concentrating and distributing stormwater runoff through natural vegetation before discharge to critical zones such as streams or wetlands. Since there is a potential for encountering residual contamination from closed releases (e.g., RTN 4-26225), soil and groundwater will be managed in accordance with the requirements of the MCP. Pending the project sequencing, the work will be performed

under the Preliminary Response Action or Comprehensive Response Action provisions of the MCP, as applicable. At this time, it is anticipated that soil will either be reused on-site during construction, stockpiled in accordance with the MCP for future reuse, or transported offsite for reuse, recycling, or disposal. While it is not expected that significant groundwater management will be encountered as part of this project, if groundwater is encountered it will either be recharged in accordance with local, state, and federal regulations, treated and discharged to surface water in accordance with requirements of the NPDES DRGP, or collected and transported offsite for disposal.

The Soil Erosion and Sediment Control Plan will be enacted at the onset of the first phase of construction to protect the resource areas during construction. The erosion control devices will remain in place until all exposed areas have been stabilized with vegetation or impervious surfaces. This plan will be incorporated into the stormwater pollution prevention plan (SWPPP) for Projects identified herein with land disturbance of greater than 1 acre. The Airport and selected contractor will need to seek coverage under the 2022 (or its replacement) EPA NPDES Construction General Permit (CGP), which requires a SWPPP. The Airport or its designee will regularly inspect the active construction sites for compliance with the SWPPP and make sure that appropriate erosion control measures are in place and working properly.

In addition, construction will be phased out so that disturbed areas are minimized to the extent feasible. The SWPPP and selected BMPs will be finalized as construction methods and schedule are determined by the selected contractor. The SWPPP will be finalized prior to construction, updated as necessary during construction, and maintained throughout the period of construction. In addition, construction activities will comply with the FAA Advisory Circular 150/5370-10H (Latest Version), Airport Construction Standards. Site plans included in the SWPPP will depict sedimentation and erosion control measures and EPA and MassDEP BMPs to control and reduce sediments and dust in stormwater discharges to the extent feasible, in accordance with NPDES requirements.

## 5.3 Compliance with Criteria for the Evaluation of Application for Discharge of Dredged or Fill Material

As detailed above, the Airport has avoided, minimized, and mitigated impacts to jurisdictional Waters of the United States (WOTUS) to the maximum extent practicable consistent with state and local regulatory performance standards and Section 404(b)(1) Guidelines employed by the Corps and EPA under the federal Clean Water Act. Future projects will be designed to comply with the WQC regulations codified in 314 CMR 9.00. These regulations contain Criteria for the Evaluation of Applications for Discharge of Dredged or Fill Material (314 CMR 9.06). Under 314 CMR 9.06(1) through (7), the proposed activities conform to the 401 WQC criteria as follows.

### *5.3.1 Compliance with 314 CMR 9.06*

> ***314 CMR 9.06(1) (in part) - No discharge of dredge or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences …***

As discussed in the Draft EA/EIR and further in Chapter 2 of this document, an alternatives analysis was completed to demonstrate there is no practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem.

> ***314 CMR 9.06(2) - No discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will avoid and minimize potential adverse impacts to the bordering or isolated vegetated wetlands, land under the water or ocean, or the intertidal zone. For discharges to bordering or isolated vegetated wetlands, such steps shall include a minimum of 1:1 restoration or replication. The Department may waive the requirement for 1:1 restoration or replication for projects which will restore or otherwise improve the natural capacity of any wetland or other water of the Commonwealth pursuant to 314 CMR 9.06(8). However, no such project may be permitted which will have any adverse effect on specified habitat sites of rare vertebrate or invertebrate species as specified in 310 CMR 10.00.***

Appropriate and practicable steps have been taken to avoid and minimize potential adverse impacts, as discussed above. Wetland replication will be provided for unavoidable discharges of fill to Vegetated Wetlands (i.e., WOTUS) at a ratio of 1:1. The replicated wetland will be located within the same hydrologic unit as the impacted area. Section 5.1.2 above describes proposed mitigation measures for fill impacts.

The project limits are not mapped as Estimated or Priority Habitat for rare vertebrate or invertebrate species, as specified in 310 CMR 10.00.

> ***314 CMR 9.06(3)(a) through (k) (in part) – No discharge of dredged or fill material shall be permitted to Outstanding Resource Waters, except for the activities specified in 314 CMR 9.06(3)(a) through (k), which remain subject to an alternatives analysis and other requirements of 314 CMR 9.06 and/or 314 CMR 9.07 …***

This criterion is not applicable. No discharge of dredged or fill material is proposed within vernal pools or other Outstanding Resource Waters.

***314 CMR 9.06(4) – Discharge of dredged or fill material to an Outstanding Resource Water specifically identified in 314 CMR 4.06(1)(d) (e.g., vernal pools, within 400 feet of a water supply reservoir and any other areas so designated) is prohibited as provided therein unless a variance is obtained under 314 CMR 9.08.***

This criterion is not applicable. No discharge of dredged or fill material is proposed within an Outstanding Resource Water per 314 40.06(1)(d).

***314 CMR 9.06(5) – No discharge of dredged or fill material is permitted for the impoundment or detention of stormwater for purposes of controlling sedimentation or other pollutant attenuation. Discharge of dredged or fill material may be permitted to manage stormwater for flood control purposes only where there is no practicable alternative and provided that best management practices are implemented to prevent sedimentation or other pollution. No discharge of dredged or fill material is permitted for the impoundment or detention of stormwater in Outstanding Resource Waters for any purpose.***

The project does not involve a discharge of fill material in a wetland for the impoundment or detention of stormwater for purposes of controlling sedimentation or other pollutant attenuation.

***314 CMR 9.06(6)(a) through (f) (in part) – Except as otherwise provided in 314 CMR 9.06(6), stormwater discharges shall be provided with stormwater best management practices to attenuate pollutants and to provide a setback from the receiving water or wetland in accordance with the following Stormwater Management Standards as further defined and specified in the Massachusetts Stormwater Handbook …***

The Taxiway D project, as a redevelopment project, will comply with the MassDEP Stormwater Standards to the maximum extent practicable. See Section 5.2 above for further discussion.

***314 CMR 9.06(7) – No discharge of dredged or fill material shall be permitted in the rare circumstances where the activity meets the criteria for evaluation but will result in substantial adverse impacts to the physical, chemical, or biological integrity of surface Waters of the Commonwealth.***

As discussed in Section 5.1.1, the project will not result in substantial adverse impacts on the physical, chemical, or biological integrity of surface Waters of the Commonwealth.

### *5.3.2 General Performance Standards of 314 CMR 9.07(1)*

The project will comply with the general performance standards defined at 314 CMR 9.07(1):

> ***(a) No dredging shall be permitted unless appropriate and practicable steps have been taken which will first avoid, and if avoidance is not possible then minimize, or if neither avoidance or minimization are possible, then mitigate, potential adverse impacts to land under water or ocean, intertidal zone and special aquatic sites. No dredging shall be permitted if there is a practicable alternative that would have less impact on the aquatic ecosystem. An alternative is practicable if it is available and capable of being implemented after taking into consideration; costs, existing technology and logistics in light of overall project purposes and is permittable under existing federal and state statutes and regulation.***

As discussed in Chapter 2.0, an alternatives analysis was completed to demonstrate there is no practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem. Dredging has been minimized and mitigated to the extent practicable for the preferred alternative, as described in Section 5.1.1 above.

> ***(b) All applications, except for maintenance projects, shall include a comprehensive analysis of practicable alternatives as defined in 314 CMR 9.07(1)(a). The scope of alternatives to be considered shall be commensurate with the scale and purpose of the proposed activity, the impacts of the proposed activity, and the classification, designation and existing uses of the affected wetlands and waters in the Surface Water Quality Standards at 314 CMR 4.00.***

An analysis of alternatives is presented in Chapter 2.0.

> ***(c) Dredging and dredged material management shall be conducted in a manner that ensures the protection of human health, public safety, public welfare and the environment.***

The project will comply with this standard. Dredging will occur within cofferdams, which will isolate the work area from the lacustrine environment. Additionally, public safety and welfare will be maintained by restricting public access to the work site during construction activities.

> ***(d) Applications submitted to the Department shall meet the criteria and performance standards of 314 CMR 9.07. If the project submitted by the applicant does not meet a particular provision of 314 CMR 9.07 and criteria of 314 CMR 4.00, the applicant shall demonstrate to the Department's satisfaction that the project will provide an equivalent level of environmental protection.***

The project will meet all criteria and performance standards of 314 CMR 9.07.

***(e) Dredged material shall not be disposed if a feasible alternative exists that involves the reuse, recycling, or contaminant destruction and/or detoxification. An evaluation of whether such an alternative is feasible shall consider:***

1. ***the volume and physical characteristics of the dredged material;***
2. ***the levels of oil and/or hazardous materials present within the dredged material;***
3. ***the relative public health and environmental impacts of management alternatives; and***
4. ***the relative costs of management alternatives.***

The Airport intends on meeting the applicable dredging performance standards during the Master Plan projects, including in the design and permitting phases. Additional sampling will be conducted as may be necessary and appropriate disposal options will be evaluated at that time.

***(f) The Department may consider any additional information including but not limited to that submitted under MEPA or NEPA on impacts from the dredging activity, management of the dredged material, the alternatives available for reuse or disposal techniques, alternative sites for the various management activities, or information related to other Department programs.***

The Airport intends on meeting the applicable dredging performance standards during the Master Plan projects, including in the design and permitting phases. One project involves the dredging of sediment related to taxiway construction.

***(g) Dredged material management activities or facilities subject to the 401 Water Quality Certification, shall comply with the provisions of 314 CMR 9.00 and the conditions of the 401 Water Quality Certification. The Certification does not relieve the proponent of the obligation to comply with all other applicable federal, state and local statutes and regulations.***

The project will comply with all other necessary regulatory approvals.

***(h) Dredged material, including sediment, placed on or in the land at an upland location is subject to the release notification requirements and thresholds of 310 CMR 40.0300 and 40.1600 for soil, unless such placement is in accordance with the provisions of 3 10 CMR 40.0317(10) and 314 CMR 9.07 (4), (6), (9), (10), or (11).***

The selected Contractor will be required to adhere to any applicable release notification requirements, pending selection of the final sediment reuse or disposal option.

***(i) No dredging is permitted for the impoundment or detention of stormwater for purposes of controlling sedimentation or other pollutant attenuation. Dredging may be permitted to manage stormwater for flood control purposes only where there is no practicable alternative and provided that best management practices are implemented to prevent sedimentation or other pollution. No dredging is permitted for the impoundment or detention of stormwater in Outstanding Resource Waters.***

This provision is not applicable since no dredging is proposed for management by impoundment of stormwater.

***(j) No dredging shall be permitted in rare circumstances where the activity meets the criteria for evaluation but will result in substantial adverse impacts to the physical, chemical, or biological integrity of waters of the Commonwealth.***

The project will not result in substantial adverse impacts on the physical, chemical, or biological integrity of surface Waters of the Commonwealth. As discussed in Section 5.1 above, the project has been designed to avoid, minimize, and mitigate impacts to jurisdictional WOTUS to the greatest extent feasible. Rather, the project will positively impact the water quality of the Upper Gate Pond by improving water quality of existing stormwater discharges.

***(k) No dredging shall be permitted in Outstanding Resource Waters, except for the following activities specified in this paragraph, which remain subject to an alternatives analysis and other requirements of 314 CMR 9.07....***

This criterion is not applicable because Upper Gate Pond is not an Outstanding Resource Water.

***(l) Notwithstanding any other provision of 314 CMR 9.07, the Department may allow a project which will restore or otherwise improve the natural capacity of any wetland or other water of the Commonwealth. Such projects include, but are not limited to, dam removal, salt marsh restoration, stream restoration, nutrient management, control or removal of aquatic nuisance vegetation, or vegetation management to improve wildlife habitat.***

This criterion is not applicable.

### *5.3.3 Dredging Performance Standards*

The project will comply with the dredging performance standards defined at 314 CMR 9.07(3):

***(a) The resuspension of silt, clay, oil and grease and other fine particulate matter shall be minimized to protect aquatic life and other existing and designated uses of waters of the Commonwealth.***

As discussed in Chapter 2.0, the project has been designed to avoid, minimize, and mitigate impacts to jurisdictional WOTUS to the greatest extent feasible.

> ***(b) Improvement dredging activities shall minimize and, to the maximum extent possible, avoid affecting areas of ecological importance including but not limited to vegetated wetlands, shellfish habitat, spawning habitat, habitat of state-listed rare wildlife, salt marsh, intertidal zone, riffles and pools, and vegetated shallows.***

Improvement dredging is not proposed as part of this project.

> ***(c) Where feasible, a minimum of 25 feet shall remain unaltered between the edge of vegetated wetlands, salt marsh or vegetated shallows, and waterward edge of the top of the slope of a dredging area.***

Insofar as dredging is necessary to remove unsuitable materials for the base of Taxiway D within the limits of BVW and LUW, dredging will impact vegetated wetlands along the limits of Upper Gate Pond. Appropriate best management practices such as metal sheet pile cofferdams and turbidity curtains will serve to isolate the work area and protect the adjacent BVW. The project will not impact salt marsh, or vegetated shallows.

> ***(d) Dredging shall not be undertaken during migration, spawning, or juvenile development periods of finfish, shellfish, crustaceans or merostomatans in locations where such organisms may be affected, except as specifically approved by the Department. Restricted time periods for dredging, or in-water sediment management, will be established by the Department after consultation with Massachusetts Division of Marine Fisheries or Division of Fisheries and Wildlife. Any applicant proposing to dredge during the recommended restricted time period must demonstrate to the Department's satisfaction that measures to minimize impacts (e.g., dredging in the dry, the use of silt curtains, etc.) will be sufficient to avoid adverse affects to the species of concern….***

There are no time-of-year restrictions (TOYR) for Upper Gate Pond identified by DMF or DFW.

> ***(e) In evaluating the potential effects of suspension of contaminated sediment on aquatic organisms, the Department may compare the bulk sediment chemistry with recognized guideline values…***

The Airport intends on meeting the applicable dredging performance standards during the Master Plan projects, including in the design and permitting phases. Additional sampling will be conducted as may be necessary and appropriate disposal options will be evaluated at that time.

# Chapter 6.0

Climate Change

# 6.0 CLIMATE CHANGE

As required by the MEPA regulations under 301 CMR 11.07, and NEPA regulations such as the CEQ interim National Environmental Policy Act *Guidance on Consideration of Greenhouse Gas Emissions and Climate Change* document, issued in 2023, this section of the Final EIR assesses the potential impacts of the proposed Projects as it relates to climate change/climate change impacts and presents revised mitigation plans as part of the Final EIR to address and offset these impacts.

Previous chapters addressed other initiatives that also address Climate Change: electric aircraft (Chapter 4) and future storm events, precipitation data and adaptive strategies for stormwater management (Chapter 5).

## 6.1 New Infrastructure Over Next 20 Years and Associated GHG Commitments

The federal government and the states have all committed to working towards a more sustainable future through having a goal of being net-zero carbon by 2050. As everyone, including Airports, is moving towards achieving these climate change related reductions for greenhouse gas (GHG) emissions, the proposed Projects include efforts and mitigation by the Airport aligned with these goals.

In Massachusetts, the Executive Office of Energy and Environmental Affairs (EOEEA) and the Massachusetts Emergency Management Agency (MEMA) lead the Resilient MA Action Team (RMAT), an interagency team comprised of Climate Change Coordinators from each Secretariat who are supported by agency staff, stakeholders, and subject matter experts. The RMAT oversees the Design Standard Tools (the RMAT Tool), which is a tool that entities can enter project information into to see potential climate impacts. There were a number of areas in which the Airport improvement projects received a "high exposure" rating: extreme heat, extreme precipitation in relation to riverine and urban flooding, and sea level rise/storm surge. While the Projects may be impacted by climate change in these ways, there are also aspects of the project which will respond to and reduce climate risks, hazards, and increase resiliency to the transportation infrastructure in the region.

The proposed Project is consistent with, and responds to future climate scenarios (e.g., heat impacts) by adding runway length to maintain safe aircraft operations. As described in the DRAFT EA/EIR, the State Hazard Mitigation and Climate Adaptation Plan (SHMCAP) 2018[1], notes "high temperatures may also impact airplane operations. If the length of existing runways is not sufficient under higher temperature conditions, planes may not be able to take off when

[1] https://www.mass.gov/info-details/massachusetts-integrated-state-hazard-mitigation-and-climate-adaptation-plan

there is less lift available [and] high temperatures and dense air conditions could lead to increased runway length requirements for aircraft due to diminished performance in such conditions."

As noted in the Draft EA/EIR, the Airport has reviewed the output report generated from the RMAT Tool (see **Appendix G** of the Draft EA/EIR) to identify whether the climate parameters for sea level rise/storm surge and extreme precipitation (urban or riverine flooding), ranked "High," would affect the surrounding areas and also EJ population(s). (See **Table 6.1-1**). For additional details on the Climate Resiliency and GHG Emissions analysis, please refer to the Draft EA/EIR Sections 5.7 and 6.4

**Table 6.1-1 RMAT Tool - Asset Preliminary Climate Risk Rating**

| | Sea Level Rise/Storm Surge | Extreme Precipitation - Urban Flooding | Extreme Precipitation - Riverine Flooding | Extreme Heat |
|---|---|---|---|---|
| **Runways and Taxiways** | Low Risk | High Risk | High Risk | High Risk |
| **Terminal Building** | Low Risk | High Risk | High Risk | High Risk |
| **Hangar Development Areas** | Low Risk | High Risk | High Risk | High Risk |

### *6.1.1 Extreme Heat*

The Municipal Vulnerability Preparedness (MVP) report for the Town of Barnstable[2] predicts future weather conditions to include more frequent heat waves and droughts, as well as changes to coastal resource areas, with significant implications for the seasonal economy. In Massachusetts, temperatures are projected to increase significantly over the next century. Winter average temperatures are likely to increase more than those in summer. Estimates for the rise in temperatures is up to 3.6°F by 2030 (Resilientma.org, Interactive Map). To address extreme heat, and heat related impacts, municipalities can adopt and encourage green infrastructure, white roofs, landscaping for parking lots and redevelopment.

The Airport's large amount of open space, including the significant areas of grasslands and forested areas, functions as green infrastructure providing evapotranspiration and cooling benefits to surrounding areas helping to minimize and reduce the potential for heat island impacts beyond the Airport boundaries.

[2] Town of Barnstable Municipal Vulnerability Preparedness Report, 2020.

The Urban Heat Island (UHI) effect is not expected as a result of the Project's new pavements as areas of the Airport are balanced by ample vegetation (trees, grass, shrubs) on the airfield surrounding impervious/paved areas. Any obstruction removal activities (off-Airport) within future easement areas consist of selectively cutting trees that penetrate the airspace. Tree removal from airspace allows for forest understory to regrow to heights that do not penetrate the protected airspace.

Vegetated areas, including grassland areas, on and off the Airport, will continue to function as a vegetation buffer (providing cooling via evapotranspiration) to surrounding neighborhoods, reducing the potential for UHI surrounding the Airport.

While UHI is not anticipated as an impact, as noted in the Final EIR, and detailed in Sections 6.2.1 and 6.2.1.1 below, the Proponent has made new commitments to replant trees on Airport and off-Airport in association with the Greening Hyannis/Gateways program to address losses of trees as a result of the Project. The replanting of trees will provide cooling benefits to roadways, parking areas, and surrounding areas. Also, replanting of trees will provide new carbon sequestration benefits.

### *6.1.2 Extreme Precipitation and Flooding*

Future climate predictions for the Northeast suggest more frequent and intense rainfall, with an average annual precipitation increase of 4.42 inches by 2090 (ReslientMA.org/maps, RCP4.5 scenario). All current and future upgrades to the stormwater management system will be designed and sized to accommodate the storm events listed in Sections 6.1.2.1 and 6.4.2 of the Draft EA/EIR for each rain event to account for the predicted increase in rainfall quantities and frequency for the region. The Airport is not located within a mapped floodplain.

The Projects will be designed to meet the updated MassDEP stormwater management requirements (pending in 2024) for reconstruction of existing infrastructure and additional pavement associated with the runway extension. These stormwater features will upgrade outdated or undersized stormwater infrastructure as construction takes place.

### *6.1.3 Sea Level/Storm Surge*

The Project received a "Low Risk" rating because of the following: Increased impervious area, and, maximum annual daily rainfall exceeding 10 inches within the overall project's useful life.

However, the model noted no historic flooding at the Project Site and existing impervious area of the Project Site is between 10% and 50% - an expected value based on the use as an air transportation facility. No impacts are anticipated to or from sea level and /or storm surge, as the Airport is a sufficient distance away from the coastline to have impacts from this climate category.

### *6.1.4 GHG Emissions from Aircraft*

The Federal Aviation Administration (FAA) released a Final rule on April 26, 2024, to limit carbon particles emitted by subsonic aircraft engines (e.g., with speeds less than 250 mph). This rule sets maximum standards for the amount of non-volatile particulate matter (nvPM) emissions from U.S. civil aircraft engines. It aligns with Environmental Protection Agency recommendations and International Civil Aviation Organization standards.

Engine manufacturers will have new emissions standards to follow to reduce harmful effects to health and the environment. This new rule gives manufacturers certainty about nvPM emissions criteria that they can use in developing the next generation of aircraft engines.

Over the next 20 years, ways the Airport is moving towards a more sustainable future are:

- Following of the current FAA standards for the amount of carbon that can be emitted through subsonic aircrafts;
- The development of a future microgrid/smart grid project that enables electric vehicle charging stations and electric airplane charging stations. The availability of charging stations will be necessary as individuals and corporations are moving away from carbon - based forms of energy and GHGs towards electric sources of energy; and
- Sustainable Aviation Fuels are being developed by industry and the federal government[3]. When these non-GHG fuels are available, the Airport will make them available to aircraft.

These efforts are described further in Sections 4.5 and 6.1.5.

### *6.1.5 Designated Electric Vehicle Charging Stations*

Under the Town's Energy Reduction Plan (ERP) and green vehicle procurement policy, the Cape Cod Gateway Airport has already installed eight (8) electric vehicle (EV) charging stations using the Massachusetts' charging station program. Eight (8) additional EV charging stations are anticipated to be added to the Airport during the Airport improvement projects. These additional charging stations will allow Airport staff and customers to charge their electric vehicles and promote less waiting for charging stations overall. As more and more people are turning to purchasing electric vehicles to individually fight climate change, more EV charging stations will be needed.

As stated in the Draft EA/EIR and committed to in the Final EIR, the Airport will make available designated EV charging stations as the increase in people purchasing EVs continues and the subsequent demand of EV charging stations goes up. The proposed Electric Vehicle Supply

[3] https://www.energy.gov/eere/bioenergy/sustainable-aviation-fuels

Equipment (EVSE) at the Airport is an important component to support the developing EV charging network on Cape Cod. The Airport plays a role in the development of this network as part of a cooperative, coordinated approach with both public and private partners. The project will contribute to the build out of a regional EV charging network including public access to and availability of EVSE.

## 6.2 Minimization of Tree/Shrub Clearing and Land Disturbance

### *6.2.1 Tree Replanting*

The Final EIR has updated the number of trees (~7. 5 acres) that will be required to be removed and converted to pavements to make room for the projects (6.6 acres for the East Ramp development, and 0.9 acres associated with Taxiway D). Additionally, Taxiway D and runup area will result in 0.9 acres of shrub removal to pavements, see **Figure 6.2-1**.

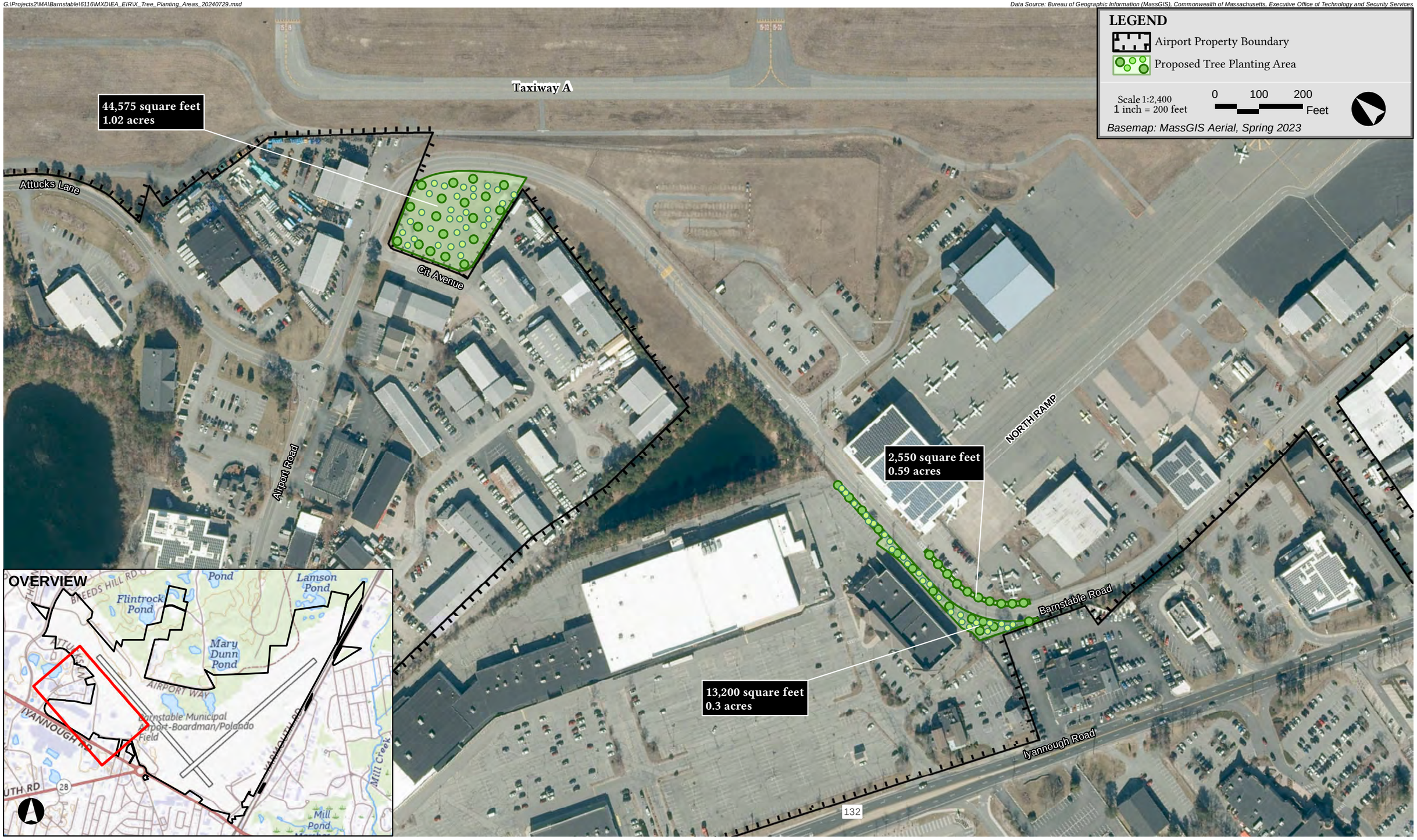
**Table 6.2-1 Summary of Tree Cutting Impacts by Area**

| Project | Total Impacts | Tree Removal and Change to Pavement (acres) | Tree Removal with Vegetation Remaining (acres) | Brush/Shrub Removal and Change to Pavement (acres) | Proposed Work Components |
|---|---|---|---|---|---|
| Aeronautical Development (East Ramp) | 6.6 ac (287,496 sf) | 6.6 ac | 0 | 0 | Tree cutting and removal of vegetation for construction of future aircraft hangars |
| Taxiway D and Runup Pad Relocation | 2.2 ac (95,832 sf) | 0.90 ac | 0.40 ac | 0.90 ac[(a)] | Tree cutting and removal within areas of proposed pavement - along Taxiway safety area and side slopes, tree removal area will be graded and restored to grass. |
| **TOTAL** | **8.8 ac (383,328 sf)** | **7.5 ac (326,700 sf)** | **0.4 ac (17,424)** | **0.90 ac (39,204 sf)** | |

a) The Airport currently maintains vegetation around the areas of Upper Gate Pond and Lewis Pond within the Runway Visibility Zone to prevent trees from visually obstructing this area. The proposed Taxiway D will result in approximately 1.9 acres of this area comprised of a shrub layer to be graded and maintained as grass within the side slopes adjacent to Upper Gate Pond. For the purposes of this analysis, grasses and shrub layers are assumed to provide comparable levels of carbon sequestration, as grasses sequester carbon year-round without releasing it. Of the total area, approximately 0.9 acres will be converted from a brush/shrub layer to pavement.

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Data Source: Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services




Cape Cod Gateway Airport Barnstable, Massachusetts

**Figure 6.2-1**
*Proposed Tree Planting Areas*

Estimates provided for the level of carbon sequestration from forested areas and reductions associated with tree removal are updated in the Final EIR. To estimate carbon sequestered (in metric tons of $CO_2$) for an acre of forest in one year, the number of acres was multiplied by -0.84 metric ton $CO_2$ acre/year, see **Table 6.2-2.**

**Table 6.2-2 Carbon Sequestration Estimates**

| Project | Area of Tree Removal and Conversion to Non-vegetated Land (Pavement) | Carbon Sequestration by Acre Per Year (MTs) (a)(b) | Total Change (Loss) in Carbon Sequestration (MT) (c) |
|---|---|---|---|
| Aeronautical Development Areas (East Ramp) | 6.6 ac (287,496 sf) | -0.84 metric ton $CO_2$ acre/year | +5.54 MT Carbon/Year |
| Taxiway D and Runup Pad Relocation | 1.8 ac (78,408 sf) | -0.84 metric ton $CO_2$ acre/year | +1.51 MT Carbon/Year |
| **TOTAL** | **8.4 ac (365,904 sf)** | | **+7.05 MT Carbon/Year (15,542 lbs./Year) +211 MT Carbon over 30-Year Period** |

a. Metric Ton (1.1 Short Tons) = 2,204 lbs.
b. A carbon sequestration factor was derived from EPA's estimate in *U.S. Greenhouse Gas Emissions and Sinks: 1990–2020* of 0.57 metric tons of carbon sequestered per hectare per year (or 0.23 metric tons of carbon sequestered per acre per year). https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references, 9/7/2023.
c. 1The negative value in this equation indicates carbon sequestration. A positive value indicates a loss in carbon sequestration.

The above analysis of carbon sequestration and project related losses to carbon sequestration from tree removals within areas of the Airport being converted from forested area to pavement, equals, in one-year, an estimated loss to carbon sequestration of +7.05 MT Carbon/Year (15,542 lbs./Year). Similarly, the loss is approximately +211 MT Carbon over a 30-Year Period. One-time releases of carbon stored within trees is estimated at 173 MT/C[4].

The Airport will replant trees on-site and off-site to offset losses in carbon sequestration from trees that were removed during the span of the project. Replanting trees and shrubs is proposed as mitigation, because trees naturally sequester carbon in their structures. Similarly, other plant species (grasses) also sequester carbon, so increasing the native vegetative species in the area will only be helpful to address climate change and to reduce carbon levels in the atmosphere.

[4] The analysis uses 55 MT/C/Hectare (22.26 MT/C/Acre for the above ground forest biomass store of carbon to arrive at an estimate of up to 173 MT/C released from carbon stores due to cutting. However, the project is anticipated to result in a lower amount as carbon stores being released as wood products post-harvest will be reused on site (e.g., wood chips) and will keep carbon within the materials.

#### 6.2.1.1 Replanting Locations

The Airport will seek to revegetate, restore, and implement site landscaping as shown in **Figure 6.2-1**, with native tree, shrub, and grass species, as these will provide multiple benefits that derive from maintaining and restoring native habitats. The climate benefit includes ecosystem services such as filtering of air pollutants (such as carbon sequestration), water pollutants, and creating habitats for wildlife and native pollinators.

While a landscaping plan has not yet been developed and types of trees have not yet been selected, the Proponent estimates that plantings of native species on the Site will sequester an estimated 15 tons of $CO_2$ per acre over 30 years. When applied to the 1 acre (detention pond site), and along both sides of approximately 1,800 LF of Barnstable Road that will be planted, this equates to 25-30 tons of $CO_2$ stored on the Site at the end of the 30-year period. When it comes to restoring native species at and around the Airport, the Restoration process will be consistent with CCC's *Wildlife and Plant Habitat Technical Bulletin: Objective WPH2 Methods*.

Land southwest of Runway 15 along Airport Road

In terms of locations to add new tree plantings on Airport property to offset the tree removal associated with the Master Plan projects, the Proponent agrees to place trees in a currently open, undeveloped plot of land that is to the southwest of the end of Runway 15, along Airport Road (facing the non-Airport side of the road) see **Figure 6.2-1**. To the north of the detention pond, the Proponent also proposes to have a paved path in this area originating from Cit Avenue through the plot of land in question and having trees planted and a bench or two placed along the proposed path. The path will serve a public purpose allowing an outdoor walking path for citizens, especially citizens visiting the adjacent businesses.

Barnstable Road and Capetown Plaza Shopping Mall

Additionally, another proposed location for tree planting would be along Barnstable Road, starting from the Capetown Plaza Shopping Mall and continuing South and East along Barnstable Road, see **Figure 6.2-1**. Capetown Plaza Shopping Mall is owned by Cape Cod Gateway Airport, and the Airport has been talking for several years about how this area could be beautified. Tree and shrubbery plantings near the Shopping Center and along Barnstable Road on both sides of the roadway would allow this area to be more aesthetically pleasing and would also allow carbon sequestering plants and trees to be added to ultimately offset the tree cuttings from the Master Plan projects.

Additional Off-Airport Tree Replanting Locations

The project proponent will also explore off-property methods of tree planting that would also help fight climate change. The Town of Barnstable has been awarded a grant to plant 2,400 trees in the Town's Environmental Justice communities through the "Greening the Gateway

Cities Grant Program." Environmental Justice communities tend to be areas that have more pollution in air and water than the rest of the population. The Airport will coordinate with the program to support several trees being planted that compensate for the proposed Projects removal of trees. The Airport supports the Greening the Gateway Program as it will add to the clarification of Environmental Justice communities' air, which adds to a healthier community in Barnstable.

This Greening the Gateway project will fight the pollution in the air for Environmental Justice populations, and the Airport is fully supportive of this and will actively be involved in the planting of new vegetation.

### *6.2.2 Reuse of Cut Wood*

To reduce the losses from the land clearing and decrease the Airport's carbon footprint, the Airport will mark a portion of the cut trees for chipping on site and reuse the wood chips as mulch within areas of the Airport where covering soil can reduce maintenance needs (i.e. along fence lines, within stormwater areas, landscaped areas, and on pathways). To ultimately keep track of cut trees, the Airport will document the amount and types of trees being removed. The Airport's landscaping plan will take tree cuttings and reuse of wood into consideration when developed during the design phase of the project.

This reuse will help reduce greenhouse gas emissions from the proposed tree cutting by taking away the need for vehicle transport of the wood chips off premises and eliminating the need for disposal of the wood chips whether it be on the Airport premises or off-site.

## 6.3 Proponent's Commitments to GHG Reduction

The Proponent is committed to environmental stewardship and has detailed its commitments to mitigate Projects GHG emissions. As the Project's' design develops further, the Proponent expects that additional measures described previously, or possibly new technologies developed in the interim period, may be adopted that will further decrease GHG emissions. Previous efforts the Airport had taken relative to climate over the years has included the following investments to promote energy conservation and efficiency at the Airport:

- Two solar fields (24,640 solar panels in total) on the northern side of the Airport property, occupying approximately 25 acres of Airport property and the adjacent Fire District property. The solar fields generate approximately 6.7 megawatts (direct current or DC) of energy and are estimated to offset more than 5,000 metric tons of CO2 emissions annually;
- Upgraded Airport street and parking lot lights to LED using Cape Light Compact's lighting program;
- Installed electric vehicle charging stations in three parking lot locations;
- Worked with Cape Air to install roof mounted solar arrays on two leased hangars; and
- Purchased electric, solar and propane mowing equipment.

The Proponent as part of mitigation for the proposed Project will continue investments and efforts relative to GHG reducing measures throughout the life of the Project. The Proponent is committed to the following mitigation elements for the Project:

- Replanting trees on Airport with locations compatible with airspace surfaces and in conjunction with the Greening Hyannis program;
- Reusing cut wood materials from the Projects when tree cutting takes place so that losses of carbon are reduced by reuse of wood onsite as landscaping materials, weed suppression, and in stormwater management areas;
- Providing new EV Charging Stations; and
- Implementing the necessary infrastructure to support the use/adoption of electric aircraft.

The Proponent is committed to implementing the measures to reduce GHG emissions presented in this Final EIR but must retain an amount of design flexibility to allow for changes that will inevitably occur as the design progresses. If, during design of the Project, a specific combination of design strategies proves more advantageous from an engineering, economic, or safety perspective, the design project may vary from what has been described herein.

As detailed in Section 1.5, the Airport Projects are funded via a state and federal funding process occurring over 5 years in three separate phases: Planning, Design/Permitting, and Construction through the Capital Improvement Plan (CIP). Because the Final EIR describes projects over a longer period, such as a 20-year Master Plan, design for these infrastructure projects is limited to a conceptual, pre-25% design level at this time.

Certain information as requested in the Certificate on the Draft EA/EIR is not available until further engineering design is completed for specific projects upon receipt of funding. It is proposed that a supplemental submittal be prepared for each major project documenting compliance with the Massachusetts Stormwater Standards and Greenhouse Gas Emissions requirements via modeling and calculations though a Notice of Project Change (NPC) and the provision of Final impact numbers, regardless of whether or not they exceed a new MEPA review threshold or change more than 20%. This process would be completed in parallel with Cape Cod Commission review, via an amendment process.

The major projects proposed for this process are:

- Taxiway B;
- Taxiway D;
- Runway 15 Extension; and
- East Ramp Hangar Development in current, unaltered areas only.

The North Ramp area is primarily paved or previously disturbed and is not included in the above list for these reasons.

The Airport is making commitments for compliance with regulations and standards and describing the design approach conceptually for the above referenced projects. It is anticipated that the NPC would provide additional details and documentation such as stormwater management calculations demonstrating compliance with standards and consistency with the conceptual design such as requested on p. 26 of the Draft EA/EIR Certificate. Furthermore, for any new buildings, expansions, or additions, the Proponent will commit:

- High performing envelope that complies with the 2023 Stretch Code envelope performance requirements;
- 100% heat pump space heating;
- Energy recovery ventilation per the 2023 Stretch Code update;
- Electric domestic hot water heating, specific method to be determined. Heat pump domestic hot water heating to be analyzed;
- Roof to be constructed PV-ready;
- Installed electric vehicle (EV) charging spaces with quantity to be determined;
- EV infrastructure for additional future EV-parking spaces to be installed, quantity to be determined.

Upon completion of the projects, the Proponent will submit a self-certification to the MEPA Office, prepared in accordance with the GHG Policy. This certification will identify the GHG mitigation measures incorporated into the project. Details of the Proponent's implementation of mitigation measures will also be included.

# Chapter 7.0

Solid & Hazardous Waste

# 7.0 SOLID AND HAZARDOUS WASTE

This chapter provides an update on the Airport's practices related to the storage and management of solid and hazardous wastes. In accordance with the MEPA scope for the Final EIR, the following information is provided below: (1) a list of chemicals used at the Airport and how the chemicals are stored and managed; (2) the Airport as a generator of hazardous waste and/or waste oil; (3) PFAS contamination, past and ongoing mitigation, and whether a RAM Plan is needed; and (4) soil sampling results and the Airport's avoidance of future soil and groundwater contamination.

## 7.1 Storage and Management of Solid and Hazardous Wastes

The Airport and its users as a part of their operations use/store certain chemicals on Airport property necessary for aircraft fueling and maintenance operations. The locations and size of petroleum storage for aircraft operations at the Airport, along with spill protection measures at each site are provided in Table 7.1-1 through Table 7.1-3 below. These locations are depicted on the Oil and Hazardous Materials Storage Map prepared by Horsley Whitten Group in **Appendix D, Figure 2**.

**Table 7.1-1 Airport Virgin Petroleum Storage**

| Operator | Location | Product | Tank Type | Spill Protection | Volume (Gallons) |
|---|---|---|---|---|---|
| Atlantic Aviation | Gate P fuel farm | Avgas / Jet A | AST | Overfill protection, steel secondary containment | 10,000 /10,000 |
| Griffin Avionics | Griffin fuel farm | Avgas | UST | Overfill protection, cathodic protected steel, interstitial monitoring | 10,000 |
| Cape Air | Inside Cape Air Hangar | Avgas | Portable AST | Spill containment pallet | 100 |
| Hertz Car Rental | Barnstable Road – Service Lot | Unleaded gasoline | UST | In tank monitor | 10,000 |
| Cape Cod Gateway Airport | Gate F fuel farm | Unleaded gasoline | AST | Overfill protection, steel secondary containment, interstitial monitoring | 4,000 |
| | | Diesel | AST | | 4,000 |
| | | Jet A | AST | | 20,000 |

AST - aboveground storage tank
UST - underground storage tank
*Source: Barnstable Municipal Airport Spill Prevention, Control, and Countermeasure Plan, 2020.*

**Table 7.1-2 Airport and Tenant Mobile Refuelers**

| Operator | Product | Number of Refueler Trucks | Truck Designation | Storage Capacity (Gallons) |
|---|---|---|---|---|
| Cape Cod Gateway Airport | Jet A | 3 | 55931 / 55932 / 5251 | 5,000 / 5,000 / 3,000 |
| Atlantic Aviation | Avgas | 1 | 44219 | 1,500 |
| Atlantic Aviation | Avgas | 1 | 5693 | 3,000 |
| Cape Air | Avgas | 1 | 4298 | 1,500 |
| Griffin Avionics | Avgas | 2 | 612 / 4134 | 620 / 1,200 |

*Source: Barnstable Municipal Airport Spill Prevention, Control, and Countermeasure Plan, 2020.*

**Table 7.1-3 Airport OHM Storage Locations**

| Operator | Location | Product | Storage Vessel Type | Spill Protection | Volume (Gallons) |
|---|---|---|---|---|---|
| Cape Cod Gateway Airport | Outside Airport ARFF/SRE Building | Waste Oil / Anti-freeze | AST | Leak detection, double walled with reinforced concrete | 350 / 150 |
| | Inside Airport ARFF/SRE Building | Antifreeze / 15W-40 / Grease / Hydraulic Oil / ATF / 5W-30 Synthetic / Waste Oil | Drums | Spill Containment Pallet | 55 |
| Atlantic Aviation | Gate P Fuel Farm | Waste absorbent material / waste Avgas | Drums | Spill Containment Pallet with overhead cover | 55 / 55 |
| Atlantic Aviation | Inside Hangar | Waste Oil / Waste Absorbent | AST /Drums | Double walled / Spill Containment Workstation with Lid | 55 / 55 |
| Griffin Avionics | Inside Griffin Hangar | Used Oil filters | Drums | Spill Containment Pallet | 55 |
| Cape Air | Inside Cape Air Hangar | Waste oil | AST | Overflow Detection, Double Walled | 500 |
| | | Waste oil / Hydraulic Oil / Used Oil filters /Antifreeze | Drums | Spill Containment Pallet | 55 |
| Gull Air | Inside Gull Air Hangar | Waste Oil | Drums | Spill Containment Pallet | 55 |
| AMA Nantucket Inc. | Inside Hangar Nantucket Inc. Hangar | Waste Oil / Mineral Spirits | Drums / Drums | Spill Containment Pallet / Spill Containment Pallet | 55 / 55 |

**Table 7.1-3 Airport OHM Storage Locations (Continued)**

| Operator | Location | Product | Storage Vessel Type | Spill Protection | Volume (Gallons) |
|---|---|---|---|---|---|
| Cape Flight Instruction | Inside Hangar | Waste oil / Antifreeze / used oil filters | Drums | Spill Containment Pallet | 55 |
| Avis Car Wash | Barnstable Road – Service Lot | Car Washer Fluid | AST | OWS | 250 |
| Hertz Car Wash | Barnstable Road – Service Lot | Car Washer Fluid | AST | OWS | 250 |

AST - aboveground storage tank
SRE – snow removal equipment
OWS – oil water separator
ARFF – Airport rescue and fire fighting

*Source: Barnstable Municipal Airport Spill Prevention, Control, and Countermeasure Plan, 2020.*

### *7.1.1 Aircraft and Vehicle Maintenance Practices and Pollution Reduction and Control*

As listed above in Tables 7.1-1 through 7.1-3, there are a number of chemicals used in the fueling of aircraft and other vehicles or in the maintenance of aircraft or other vehicles. For each type of chemical, there is a spill protection protocol that the Airport uses to minimize the risk from spills and runoff associated with fueling and maintenance practices.

Further, the Airport, in accordance with Code of Federal Regulations 40, Subpart 112 (40 CFR 112), maintains a Spill Prevention, Control, and Countermeasure Plan (SPCCP) to minimize the risk associated with bulk storage and transfer of Oil and Hazardous Materials (OHM). This plan is updated periodically as facility design, construction, operation or maintenance conditions and projects warrant.

A rapid spill response trailer is maintained at the Airport ARFF/SRE Building for responding to any spills or releases at the Airport. Inventories of clean up materials are conducted regularly, and out-of-date equipment is replaced. A smaller spill kit is also maintained on each of the Airport's Mobile Refuelers, at the Gate F Fuel Farm, and at the Airport ARFF/SRE Building waste oil and anti-freeze storage aboveground storage tank (AST). Each tenant involved in the storage or transfer of fuel is responsible for maintaining their own spill response resources on each of their vehicles and at fuel storage locations. The SPCC Plan details the potential flow pathways for each fuel storage and transfer area and oil and hazardous material container storage area. All fuel storage areas have double walled tanks and leak detection systems installed.

The Airport conducts regular inspections of all OHM storage areas including fuel storage tanks, mobile refuelers, waste storage area, and drum storage areas. Inspections are conducted by properly trained Airport personnel and are recorded on inspection sheets. Inspection sheets are kept on file at the Airport Operations office for a minimum of three years, as required by 40 CFR 112.7.

### *7.1.2 Hazardous Waste and Waste Oil*

Under the Resource Conservation and Recovery Act, 42 U.S.C. § 6901 et. seq, the Airport is categorized as a "Generator." The Airport's EPA Identification number is MAC300009198.[1] Under RCRA, the Airport is a Large Quantity Generator (LQG) which means that the Airport generates 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste.[2] The RCRA regulations in 40 CFR part 262 for Large Quantity Generators requires the following:

- "Waste can only be stored on-site for 90 days;
- There is no limit on the quantity of the hazardous waste on site;
- Waste must be managed in tanks, containers, drip pads or containment buildings;
- LQGs must comply with the manifest (shipping document EPA Form 8700-22) requirements;
- LQGs must comply with the preparedness, prevention, and emergency procedures in addition to the land disposal restriction requirements, and;
- LQGs must submit a biennial hazardous waste report (EPA Form 8700-13A/B)."[3]

Under the State standards of the Massachusetts Oil and Hazardous Material Release Prevention and Response Act (M.G.L. Chapter 21E) and the Massachusetts Hazardous Waste Regulations (310 CMR 30.00 et seq.), the Airport is a Small Quantity Generator, which means the Airport generates "between 220 and 2,200 pounds per month (roughly 27 to 270 gallons), and/or up to 1 kilogram (2.2 pounds) of acutely hazardous waste per month.[4]

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1 State of Massachusetts, List of Massachusetts Hazardous Waste Generators, Excel Spreadsheet located at https://www.mass.gov/guides/hazardous-waste-generation-generators, April 8, 2024.

2 EPA, Large Quantity Generators, https://www.epa.gov/hwgenerators/categories-hazardous-waste-generators, April 8, 2024, citing 40 CFR Part 262.

3 Id.

4 State of Massachusetts, Hazardous Waste Generation and Generators, https://www.mass.gov/guides/hazardous-waste-generation-generators, April 8, 2024.

## 7.2 Upper Gate Pond and Lewis Pond Sediment Results Analysis

Concerns relative to contamination in Upper Gate and Lewis Pond sediments have been previously investigated by the Airport, and a Permanent Solution Statement with No Conditions under MassDEP's Waste Site Cleanup Program was prepared by Horsely Witten Group for the Airport in November of 2023. The statement focused on polycyclic aromatic hydrocarbons (PAHs) and lead discovered in sediments within Upper Gate Pond and Lewis Pond. The paragraphs below summarize the findings from the investigation into the pond sediments:

"A forensic evaluation of the data verified that the (PAHs) detected in the sediments are consistent with engine emissions from vehicles or aircraft that enter the ponds, outfalls, and infiltration basins from the Airport's stormwater management system, and the elevated lead can be attributed to use of leaded aviation gasoline and/or historic use of leaded gasoline in vehicles."[5] "Municipal water and groundwater samples collected from monitoring wells located in proximity to the Ponds did not indicate exceedances of the applicable Method 1 groundwater standards."[6]

"The Imminent Hazard Evaluation was prepared consistent with 310 CMR 40.0950. The highest detection of PAHs and Lead … was used for the evaluation. As indicated on the Imminent Hazard Short Form included in Appendix B, the Hazard Index is less than 1 and the excess lifetime cancer risk is less than 1 in 100,000. No stressed biota, fish fills, abiotic conditions or other conditions which produce an immediate or acute impact to freshwater fish were identified. As such, an Imminent Hazard to Human Health or the environment does not exist based on the levels of PAHs and lead detected in the sediment."[7] See **Appendix G**.

As noted in the excerpts above, the investigation did not find exceedances of the applicable Method 1 for groundwater and the levels of contamination did not present an imminent hazard to human health or the environment due to level of PAHs and lead detected in the sediment.

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5 Horsely Witten Group, Permanent Solution Statement with No Conditions, RTN 4-28577, November 2023, Page 11.

6 Id.

7 Id. at 14.

## 7.3 PFAS Contamination and Mitigation

PFAS (Per & Polyfluoroalkyl Substances) contamination has been noted at the Cape Cod Gateway Airport since 2015 due to its use of firefighting foam that contains PFAS. PFAS are a class of synthetic chemicals that are used in consumer and industrial products.[8] The hazards of PFAS to humans came into the public eye in the mid-2010s even though PFAS has been used in many common products since the 1940s.[9] PFAS are known to be "persistent in the environment, bio-accumulative in organisms, and toxic at relatively low ppt levels."[10] There are links between PFAS and cancer, lowered birth weights, and negative compromises to human's immune systems.[11]

In 2015, the Cape Cod Gateway Airport ceased use of PFAS Aqueous Firm Forming Foam (AFFF) for "tri-annual exercises and annual testing." In 2016, Cape Cod Gateway Airport purchased an ecological unit to test AFFF consistency to meet annual FAA testing requirements before it was recommended by the FAA. Also in 2016, the Airport successfully cleaned up an AFFF release from the response to an aircraft accident using contractors and vacuum trucks. The AFFF was removed from the catch basin and disposed of properly off site.

In 2016, the Airport started the process of reporting and analyzing PFAS contamination at the Airport following the Massachusetts Oil and Hazardous Material Release Prevention and Response Act (M.G.L. Chapter 21E), the regulations of the Massachusetts Contingency Plan (210 CMR 40.00 et seq.), and a Notice of Responsibility issued to the Airport by MassDEP for the Airport to conduct additional field investigations to evaluate "(1) sources of PFAS detected in groundwater at the Airport; (2) sources of 1,4-dioxane detected in a monitoring well downgradient of Airport on the Maher Well field property; and (3) potential impacts to public water supply wells operated by the Hyannis Water District at the Mary Dunn and Maher Well fields."[12] The Airport submitted a proposed Immediate Response Action (IRA) Plan to MassDEP to answer the Notice of Responsibility that would "serve as the guide for the soil and groundwater testing conducted since November 2016."[13]

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8 Andrew J. R. Gillespie, Ph.D., US EPA's Science-Based Approach to Understanding and Managing Environmental Risk from PFAS, EPA Presentation found at: tps://www.epa.gov/sites/default/files/2020-09/documents/epa_pfas_rd_overview_complete_2020_09_25.pdf, September 2020.

9 Id.

10 Id.

11 Chemsec, PFAS Movement, www.chemsec.org/pfas, April 8, 2024.

12 Horsley Witten Group on behalf of Cape Cod Gateway Airport, Final IRA Status Report 14, IRA Completion Statement, Phase IV Final Inspection, Report and Completion Statement, and Phase V Status Report, April 2024, Section 2.1.

13 Id at 2.1.

In June of 2019, MassDEP issued a "Request for Modified IRA Plan/Interim Deadline" that required the Airport "to reduce infiltration of precipitation through PFAS-impacted soil, such as temporarily capping the source areas; excavating and properly disposing of the PFAS-impacted soil; or some equivalent approach."[14]

A Final Immediate Response Action Plan Modification was submitted by the Airport in response that detailed installation of a cap in two places on Airport property to ultimately "reduce precipitation infiltration."[15] Each year since 2016, the Airport has followed the law and regulations to test, monitor and submit the proper reports regarding PFAS contamination at the Airport. The Phase IV Report (see **Appendix C**) details the soil samples taken at the Airport between the years of 2016 and 2023, with the final soil samples taken in December of 2023.[16] With the reporting, the Airport also has been engaging the public to keep everyone informed on the steps to combat PFAS contamination that the Airport is taking on. There has been a total of four public meetings regarding PFAS cleanup, monitoring, and mitigation: one held in 2019, one held in 2022, and two held in 2023 with annual meetings planned for November each year as the airport steps into Phase V in 2024[17]

Since the initial PFAS finding, the Airport has been utilizing remediation tools in order to contain the PFAS plumes as removing all PFAS from the Airport soil is "economically infeasible;" soil caps have been installed in two different places at the Airport as described previously in Section 3.4.1. The capped areas "total approximately 94,100 square feet and represent a majority of the known PFAS source areas."[18] The caps will prevent the contaminated soil from becoming loose and infiltrating clean areas and will prevent contaminated PFAS substances from leaching into the groundwater from stormwater exposure.

The caps have significantly reduced the concentrations of total PFAS in groundwater in the vicinity of the Deployment Area and ARFF/SRE Area, as indicated on Table 3 and the time plots presented in **Appendix C**. See Chart 7.3-1 below for a graphical depiction of this data.

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[14] Id. at Section 2.1.

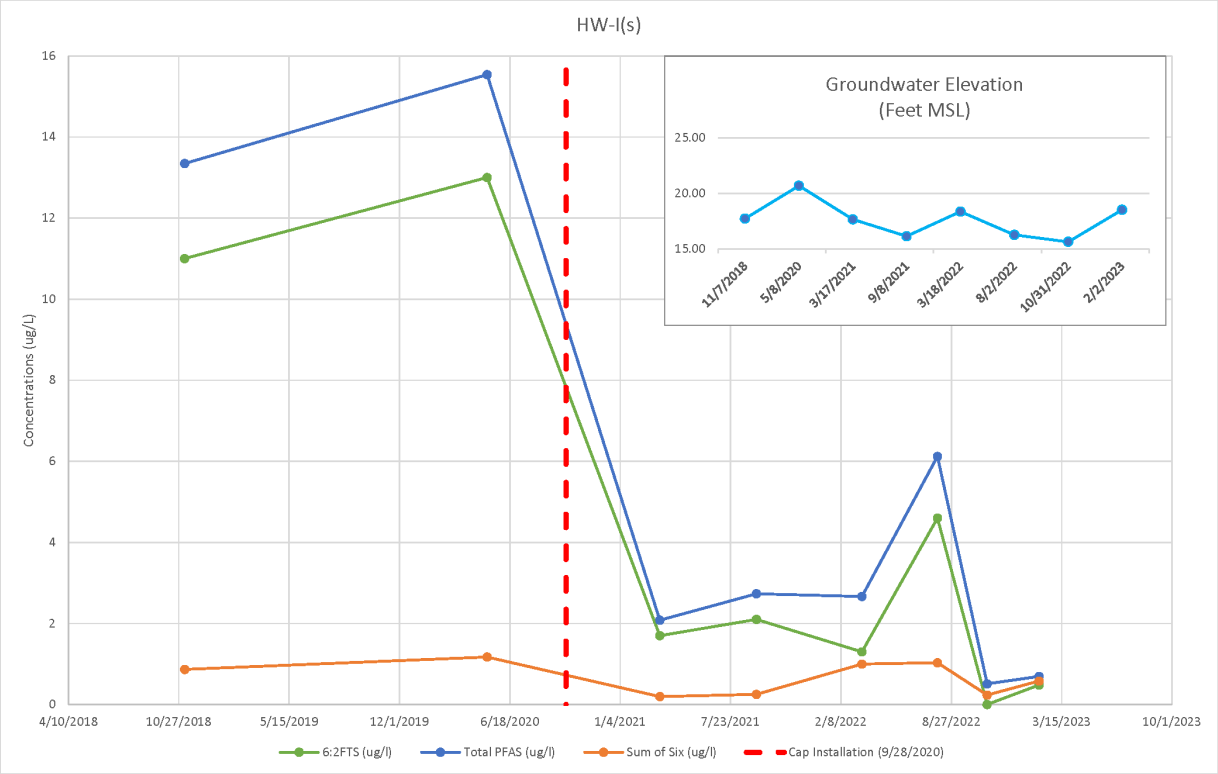
[15] Id. at Section 2.1.

[16] Id. at Section 3.1.

[17] Cape Cod Gateway Airport, PFAS, www.flyhya.com/Airport-info/pfas/, April 8, 2024 (whole paragraph based on this citation).

[18] Id. at Section 2.1.

**Chart 7.3-1 Deployment Cap Effect on Groundwater Quality[19]**




Fluctuations in the concentrations of PFAS is expected as the groundwater level rises and falls over the next several years and contaminants are flushed from the capillary fringe zone above the water table After flushing is complete, concentrations associated with the Airports PFAS Plume are expected to decline. The effectiveness of the caps will be documented through the collection of groundwater samples until a Permanent or Temporary Solution can be achieved. The caps will be inspected twice annually and maintained as necessary until a Permanent or Temporary Solution can be achieved. Assuming that the future Permanent or Temporary Solution relies on the caps to maintain a level of no significant risk, the caps will be maintained and inspected in the future in accordance with an Activity and Use Limitation (AUL).

During its investigation, the Airport identified several non-Airport PFAS related plumes that are located hydraulically upgradient (i.e., the Barnstable Fire Training Academy - RTN 4-0026179), downgradient, and/or cross-gradient of the Airport but not on Airport property, thus from other industrial/commercial sites. These plumes are not related to the Airports PFAS plume and are the responsibility of others. These plumes have been brought to the attention

[19] Source: Horsely Witten Group, December 2023 PIP Presentation.

of MassDEP and others by the Airport. If a Responsible Party can be identified by the MassDEP, they will issue a Notice of Responsibility requiring the Responsible Party to initiate investigation and cleanup activities. The Airport is not responsible for PFAS plumes relating to non-Airport sources.

In the future, the Airport will be monitoring and reporting soil results through a Phase V Inspection Report to track PFAS contamination and to document that PFAS in soil is not migrating beyond the caps, potentially impacting groundwater.

# Chapter 8.0

Mitigation & Draft Section 61 Findings

# 8.0 MITIGATION AND CHAPTER 61 FINDINGS

## 8.1 Introduction

M.G.L.c.30, s.61 requires that "[a]ll authorities of the Commonwealth … review, evaluate, and determine the impact on the natural environment of all works, projects or activities conducted by them and … use all practicable means and measures to minimize [their] damage to the environment. … Any determination made by an agency of the Commonwealth shall include a finding describing the environmental impact, if any, of the project and a finding that all feasible measures have been taken to avoid or minimize said impact." Each state agency that issues a permit for the Project shall issue a Section 61 Finding in connection with permit issuance, identifying mitigation that is relied upon to satisfy the Section 61 requirement. A proposed Section 61 Finding is provided in Section 8.3, and a table of mitigation measures is included as part of the Section 61 Finding. All mitigation will be the responsibility of the Proponent.

## 8.2 Anticipated State Permits and Approvals

Table 8-1 lists potential State Actions required by the Project.

**Table 8-1 Anticipated State Permits and Approval**

| Agency | Action/ Relevant Projects |
|---|---|
| Massachusetts Department of Transportation-Aeronautics Division | Airspace Coordination under M.G.L. c. 90 § 35B<br>Airspace Coordination as governed by the building code under 780 CMR 111.7 |
| Massachusetts Department of Environmental Protection | Superseding Order of Conditions under Wetlands Protection Act M.G.L. c. 131 § 40. (if necessary) |
| Massachusetts Department of Environmental Protection | 401 Water Quality Certificate. |

## 8.3 Proposed Section 61 Findings

| | |
|---|---|
| Project Name: | Cape Cod Gateway Airport Master Plan Improvement Projects |
| Project Location: | Hyannis, MA |
| Project Proponent: | Cape Cod Gateway Airport |
| EEA Number: | 16640 |
| Date Noticed in Monitor: | 9/24/2024 |

The potential environmental impacts of the Project have been characterized and quantified in this Final Environmental Assessment/Final Environmental Impact Report dated September 3, 2024, which are incorporated by reference into this proposed Section 61 Finding. Throughout the planning and environmental review process, the Proponent has been working to develop measures to mitigate significant impacts of the Project.

The Proponent recognizes that the identification of effective mitigation, and implementation of that mitigation throughout the life of the Project, is central to its responsibilities under MEPA. The Proponent has accordingly prepared the annexed Table of Impacts and Mitigation Measures that specifies the mitigation that the Proponent will provide.

Now, therefore, [AGENCY], having reviewed the MEPA filings for the Project, including the mitigation measures itemized on the annexed Table of Impacts and Mitigation Measures, finds pursuant to M.G.L. C. 30, S. 61, that with the implementation of the aforesaid measures, all practicable and feasible means and measures will have been taken to avoid or minimize potential damage from the Project to the environment.

_____

**[Agency]**

_____

**By**

_____

**[Date]**

**Table 8-2** describes the mitigation measures related to the required state actions and the schedule for implementation in addition to identifying the construction period mitigation measures. The Proponent will be responsible for all mitigation measures.

**Table 8-2 Summary of Mitigation Measures**

| Mitigation Measures | Schedule | Cost |
|---|---|---|
| **Water Resources** | | |
| ♦ Use of a 2:1 side slope to construct Taxiway D to minimize impacts to wetland and water resource areas associated with Upper Gate Pond<br>♦ Construction of an approximately 2,100 sf BVW replication area for mitigation compliance for MassDEP<br>♦ Full compliance with Massachusetts Stormwater Management Standards for impervious surface additions<br>♦ Utilization of revised rainfall intensities by NOAA Atlas 14, Point Precipitation Frequency Estimates for future climate conditions.<br>♦ Stormwater Best Management Practices to be incorporated into design include:<br>o Infiltration chambers or leaching basins with pre-treatment<br>o Vegetative strips<br>o Oil/Water separators.<br>♦ Updates to Airport's MSGP SWPPP and SPCC plans, as necessary.<br>♦ Groundwater monitoring to track PFAS plume at Airport.<br>♦ Construction period stormwater management best practices | During and post construction. | Included in the overall Project cost |
| Wetland resource areas will be protected from direct impacts, including erosion and sedimentation, during construction.<br>♦ EPA NPDES Construction General Permit will be obtained for each project and a construction period SWPPP will be developed and implemented.<br>♦ Work in the water of Upper Gate Pond will require the use of a coffer dam in two discrete areas. Water within the work zone encompassed by the coffer dam will need to be pumped out. This area will be pumped into straw bale basins or filter bags. The basins will consist of a ring of staked straw bales overlain by non-woven geotextile filter fabric and crushed stone. Discharge water will be pumped into the basin and allowed to drain through the fabric onto relatively-flat stabilized surfaces.<br>♦ Dewatering structures will be placed as far away from vegetated wetland resources as possible. | During operation | Included in the overall Project cost |

**Table 8-2 Summary of Mitigation Measures (Continued)**

| Mitigation Measures | Schedule | Cost |
|---|---|---|
| **Water Resources** | | |
| ♦ No fueling or lubrication of equipment will be performed within 100 feet of vegetated wetlands, streams, or vernal pools. A spill kit will be kept on site by the site contractor. | | |
| **Climate and Greenhouse Gas Emissions** | | |
| ♦ New or renovated buildings will meet 2023 Stretch Energy Code measures including:<br>o High performing envelope that complies with the 2023 Stretch code envelope performance requirements;<br>o 100% heat pump space heating;<br>o Energy recovery ventilation per the 2023 Stretch code update;<br>♦ Electric domestic hot water heating, specific method to be determined. Heat pump domestic hot water heating to be analyzed;<br>♦ Roof to be constructed PV-ready;<br>♦ Installation of electric vehicle (EV) charging spaces, quantity to be determined;<br>♦ EV infrastructure for additional future EV-parking spaces to be installed, quantity to be determined.<br>♦ 110 acres of dense forest exists north of Upper Gate Pond and Lewis Pond, Airport's forests land within this area results in 92.40 MT/C/Year in carbon sequestration.<br>♦ Plantings of native species on the Site will sequester an estimated 15 tons of $CO_2$ per acre over 30 years[1] | Design and post construction | Included in the overall Project cost |

[1]A carbon sequestration factor was derived from EPA's estimate in *U.S. Greenhouse Gas Emissions and Sinks: 1990–2020* of 0.57 metric tons of carbon sequestered per hectare per year (or 0.23 metric tons of carbon sequestered per acre per year). https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references, 9/7/2023.

**Table 8-2 Summary of Construction Period Mitigation Commitments (Continued)**

| Mitigation Measures | Schedule | Cost |
|---|---|---|
| **Natural Resources** | | |
| ♦ Recycling of asphalt for base course for new taxiway and runway surfaces or in other locations on the airfield such as the perimeter access road<br>♦ Stockpiling of excess aggregate from grading / excavation activities for use as fill material<br>♦ Reuse of wood chips from tree removal<br>♦ Tree planting program for areas of the airport compatible with airspace surfaces | Ongoing, During and post-construction | Included in the overall Project cost |
| **Noise** | | |
| ♦ Installation of noise barrier along the runup pad for the relocated Taxiway D adjacent to the existing runup pit<br>♦ Evaluation of voluntary noise abatement flight procedures for visual flight rules<br>♦ Voluntary quiet hours between 10 p.m. and 6 a.m.<br>♦ Voluntary avoidance of touch and go nighttime operations<br>♦ Multiple noise complaint reporting mechanisms including in person, over the phone or online https://flyhya.com/pilot-info/noise-abatement/)<br>♦ Consultation with FAA and primary Airport air taxi operators on flight path and approach angle modifications for take-offs and landings that may serve to minimize noise impacts.<br>Every reasonable effort will be made to minimize the noise impacts from construction activities, including:<br>♦ Limiting construction to weekdays between 7 AM and 5 PM;<br>♦ Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;<br>♦ Muffling enclosures on continuously running equipment, such as air compressors and welding generators; | Ongoing, During and post-construction | Included in the overall Project cost |

**Table 8-2 Summary of Construction Period Mitigation Commitments (Continued)**

| Mitigation Measures | Schedule | Cost |
|---|---|---|
| **Noise** | | |
| ♦ Replacing specific construction operations and techniques by less noisy ones where feasible;<br>♦ Selecting the quietest of alternative items of equipment where feasible;<br>♦ Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels;<br>♦ Turning off idling equipment; and<br>♦ Locating noisy equipment at locations that protect sensitive locations by shielding or distance. | | |
| **Biological Resources** | | |
| ♦ Necessary tree removal of 7.5 acres will be accomplished during time periods appropriate for minimizing impacts to any potential bat populations outside of the summer roosting period (April through September), and optimally during the winter months (October 1 through March 31 when possible).<br>♦ No work will occur within NHESP mapped habitat and there will be no impacts to state-listed species.<br>♦ Wildlife habitat features to be incorporated into wetland replication area | Ongoing, During and post-construction | Included in the overall Project cost |
| **Hazardous Materials** | | |
| ♦ Soil, sediment, groundwater, and surface water will be managed in accordance with the requirements of the MCP. Pending the project sequencing, the work will be performed under the Preliminary Response Action or Comprehensive Response Action provisions of the MCP, as applicable. Existing PFAS disposal site caps will not be altered or impacted.<br>♦ At this time, it is anticipated that excess soil or sediment will either be reused on-site during construction, stockpiled in accordance with the MCP for future reuse, or transported offsite for reuse, recycling, or disposal in accordance with all local, state, and federal regulations. | Ongoing, During and post-construction | Included in the overall Project cost |

**Table 8-2 Summary of Construction Period Mitigation Commitments (Continued)**

| Mitigation Measures | Schedule | Cost |
|---|---|---|
| **Hazardous Materials** | | |
| ♦ If soil is reused during construction, it is anticipated that the soil will be reused in the general proximity of the location of the original excavation. If excess soil is retained for future reuse, it will be placed in an area designated by the Airport for materials management. Soil placed in the Airport materials management area(s) will be covered with polyethylene sheeting to minimize potential fugitive dust or otherwise stabilized. Secondary containment such as berms will be installed, as necessary, to prevent sediment in runoff from leaving the material management area.Groundwater and surface water will either be treated and discharged to surface water in accordance with requirements of the NPDES DRGP, recharged in accordance with local, state, and federal regulations, or collected and transported offsite for disposal.<br>♦ Excavation and management of soil contaminated with, or potentially contaminated with, OHM will be conducted in general accordance with Response Action Performance Standards (RAPS) as defined in the MCP (310 CMR 40.0191).<br>♦ Construction projects will be completed in accordance with requirements of MCP provisions for the various response actions across the Airport | | |
| **Air Quality** | | |
| Measures to mitigate construction-related air quality impacts will include:<br>♦ Using wetting agents on areas of exposed soil on a scheduled basis;<br>♦ Using covered trucks;<br>♦ Minimizing spills on the construction site;<br>♦ Monitoring actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized;<br>♦ Minimizing storage of debris on the Project site;<br>♦ Periodic street and sidewalk cleaning with water to minimize dust accumulations;<br>♦ The contractor will comply with the National Emission Standards for Hazardous Pollutants (NESHAP) throughout demolition and construction activities; | During construction. | Included in the overall Project cost |

**Table 8-2 Summary of Construction Period Mitigation Commitments (Continued)**

| Mitigation Measures | Schedule | Cost |
|---|---|---|
| **Air Quality** | | |
| ♦ Using equipment retrofitted with diesel emissions control devices. The Proponent will specify during the procurement of the subcontractors, that the majority of the heavy equipment operating on the Project site be retrofitted with diesel emissions control devices;<br>♦ Maintaining an "idle free" work zone of fossil fuel trucks and equipment by providing supplemental hoisting and pumping equipment along with "just-in-time" delivery methods. On-site idling will be limited to five minutes. "Do Not Idle" signs will be posted at appropriate locations;<br>♦ By locating combustion engines away from sensitive receptors such as fresh air intakes, air conditioners and windows; and<br>♦ Using Ultra Low Sulfur Diesel for all trucks and construction machinery as required by the US EPA. | | |
| **Stormwater Management** | | |
| For construction period stormwater management:<br>♦ Each project disturbing greater than 1 acre will develop a Stormwater Pollution Prevention Plan (SWPPP) that complies with the EPA construction general permit for stormwater discharges will be developed.<br>♦ Construction will be planned so that disturbed areas are minimized to the extent feasible<br>♦ Sedimentation and erosion controls will be incorporated into design and construction practices. | Before and during construction | Included in the overall Project cost |
| **Historical, Archeological, and Cultural Resources** | | |
| ♦ Protection of archeological sites during construction will include:<br>♦ Construction personnel briefing;<br>♦ High visibility fencing with No Trespassing signs around the sensitive cultural resource areas to be protected.<br>♦ Pre-and post-construction inspections. | Before and during construction | Included in the overall Project cost |

**Table 8-2 Summary of Construction Period Mitigation Commitments (Continued)**

| Mitigation Measures | Schedule | Cost |
|---|---|---|
| **Traffic and Transportation** | | |
| Construction period traffic will be managed to minimize off-airport impacts including the following:<br>♦ The Proponent will coordinate with the Town of Barnstable to discuss transportation-related construction-period impacts; | Before and during construction | Included in the overall Project cost |
| ♦ Police detail officers will be used as necessary and as required by the towns to facilitate and maintain safe and efficient passage of vehicles and pedestrians during construction;<br>♦ Prior to the start of construction, the general contractor will submit a Construction Period Traffic Management Plan to the Town. The plan will identify designated construction truck routes and any temporary roadway improvements necessary to accommodate truck traffic, while maintaining safe and efficient passage for vehicles, pedestrians, and bicyclists;<br>♦ The Proponent will avoid full or partial street closures to the extent possible. Should a partial street closure be necessary to accommodate materials transport or construction-related activities, the closure will be limited to off-peak hours. | | |
| ♦ Parking for construction workers will be provided within the Project site, and workers will be prohibited from parking along adjacent roadways. | Before and during construction | Included in the overall Project cost |
| ♦ Evaluation of traffic demand management opportunities<br>♦ Electric Vehicle charging stations and providing electrical conduit for future EV stations | Post construction. | Included in the overall Project cost |

**Table 8-2 Summary of Construction Period Mitigation Commitments (Continued)**

| Mitigation Measures | Schedule | Cost |
|---|---|---|
| **EJ & Public Health** | | |
| ♦ The Project is consistent with the MEPA Public Involvement Protocol for Environmental Justice Populations (effective date of January 1, 2022). Public participation will meet or exceed the requirements of the EJ Policy.<br>♦ The Project has made and will continue to make diligent effort to promote public participation opportunities for all members of the public, including those with limited English proficiency (see Table 9.2-1). | Prior to and during construction | Included in the overall Project cost |
| The Project is also consistent with the MEPA Interim Protocol for Analysis of Project Impacts on Environmental Justice Populations (effective date of January 1, 2022). An enhanced analysis of potential impacts to all populations, including EJ populations, has been conducted and mitigation measures identified (see section 5.16.2). Impacts are anticipated to primarily result from construction-related activities. They will be temporary and minimized through several measures described above under traffic, air quality, and noise. | During construction | Included in the Project cost |
| The Project will promote climate change resiliency and minimize potential effects from climate change to surrounding communities including EJ populations. The Airport has adopted several green initiatives to reduce greenhouse gas emissions including installation of EV charging stations and will install a stormwater management system designed to reduce runoff and flooding. | During construction and operation | Included in the Project cost |

# Chapter 9.0

Response to Comments

# 9.0 RESPONSE TO COMMENTS

This Chapter provides responses to the comment letters received by the Secretary of the Massachusetts Executive Office of Energy and Environmental Affairs during the review of the Draft Environmental Assessment and Environmental Impact Report. The comment letters have been annotated and individual comments coded in the right-hand margin. The responses to the comments are listed below with the corresponding code numbers and a brief synopsis of the comments. Comment letters were received from the following agencies, organizations, and individual members of the public: Massachusetts Executive Office of Energy and Environmental Affairs; U.S. Environmental Protection Agency- Region 1; Cape Cod Commission; Massachusetts Dept. of Env. Protection-Southeast Regional Office; Sierra Club-Cape and Islands Group; Chris Greeley; Thomas Collier; and Karen Ingemie.

**Table 9-1 Secretary's Certificate and Comment Letters**

| Commenter | Abbreviation |
|---|---|
| Massachusetts Executive Office of Energy and Environmental Affairs Secretary's Certificate on the ENF | MEPA |
| U.S. Environmental Protection Agency- Region 1 | EPA |
| Cape Cod Commission | CCC |
| Massachusetts Dept. of Env. Protection-Southeast Regional Office | DEP |
| Sierra Club-Cape and Islands Group | SC |
| Christine Greeley | CG |
| TJ Sully | TS |
| Diane LeDuc | DL |
| Association to Preserve Cape Cod, Inc. | APCC |
| Linda Bollinger, Hyannis Park Civic Association | LB |
| Betty Ludtke | BL |
| Galileo Faria | GF |
| Helyne Medeiros | HM |
| Walter Spokowski | WS |
| Thomas Collier | TC |
| Karen Ingemie | KI |

**MEPA 01** **The FEIR should describe any changes to the project since the filing of the DEIR. It should identify, describe, and assess the environmental impacts of any changes to the project that have occurred between the preparation of the DEIR and FEIR.**

The Final EIR provides new and updated information on additional alternatives to Taxiway D, which were analyzed include a no impact alternative, and one other alternative resulting in reduced impacts to Upper Gate Pond resource areas. This document has presented a new preferred alternative which minimizes wetland impacts associated with Taxiway D and has identified a wetland mitigation site for these impacts and conceptual plan.

Wetland mitigation details and locations are provided in Chapter 5, along with additional information on the proposed stormwater management design and features to address project stormwater runoff as well as future climate related concerns. This information includes new a stormwater analysis and information on the proposed initial stormwater design details, location, and sizes.

Climate related Information on the plan to address losses of carbon sequestration from aeras of proposed tree cutting or vegetation has been added to Chapter 6: Climate Change, along with carbon mitigation options, commitments to support local tree replanting efforts, and identification of areas within airport property to be replanted as an offset.

The airport is continuing to advance its microgrid/smart grid plans with MassDOT Aeronautics Division's Engineering, Planning and Environmental staff (via a federal grant) that will allow the airport to develop independent power sources for the airport, along with sustainable energy options and battery storage - the micro grid. This will be separately developed from this EA/EIR.

The microgrid is not per se mitigation for the proposed projects but is discussed in the Final EIR within the context of airport related actions taken to reduce overall environmental impacts of all airport activities and projects. The microgrid is also a key initiative of the airport to provide the necessary infrastructure for the electric aircraft sector and enable this technology to be employed at CCGA – along with the air and noise emission benefits that they bring. The micro grid is key to enabling local and regional solutions to charging electric vehicles and RTA fleets and serve the EJ Communities.

**MEPA 02** **The FEIR should also include an updated list of required Permits, Financial Assistance, and other state, local and federal approvals and provide an update on the status of each of these pending actions. It should also describe a mechanism for conducting more detailed reviews of future projects through the filing of NPCs.**

An updated list of anticipated required permits and approvals from local, state, and federal agencies is provided in Table 1.5-2. The process for reviewing future projects through the filing of NPCs is described in Section 1.5.

For the Phase 2 Project components, the Airport will file a Notice of Project Change (NPC) if there is any material change in the Project prior to the taking of all agency actions. The NPC will specify the details of any change in the project and information provided previously in the FEIR.

Prior to filing the NPC, the Airport will consult with the MEPA Office and any participating state agencies to determine if an NPC is required. The Airport will also schedule a pre-filing meeting with the MEPA Office to discuss unique aspects of the project/change and anticipated filing requirements. If an NPC is required, the Airport will include the following items within its submittal:

- A completed NPC form which clearly identifies the MEPA review thresholds that the project meets or exceeds, any outstanding Agency Actions that it may require, and Agency Actions that have already been taken. The Airport will also provide a Supplemental narrative and tables in the NPC form to clarify aspects of the project or its impacts.
- The NPC will include also include a supporting project narrative with a detailed project change description, an alternatives analysis, evaluation of potential environmental impacts, and a description of mitigation measures. Supporting studies or technical analysis will be appended to the ENF or provided as attachments.
- The MEPA required filing documents, including the following: One electronic copy of the signed NPC that meets the electronic filing requirements identified above, and Attachments: the Secretary's most recent Certificate on this project; a plan showing existing conditions and most recent previously-reviewed proposed build condition; a plan showing currently proposed build condition; an original U.S.G.S. map or good quality color copy (8-1/2 x 11 inches or larger) indicating the project location and boundaries; and a list of all agencies and persons to whom the proponent circulated the NPC, in accordance with 301 CMR 11.10(7).

Should the need arise to file an NPC for Phase 2 projects, the supplemental alternatives analysis will be provided project components, and include discussion on future forecasted demand, and the extent the project will improve the safety and efficiency of the airport. Any potential increase in activity will be discussed. The analysis would include a No Build Alternative, and also alternatives for the projects that may avoid or minimize impacts to land alteration and impervious area. Also, the alternatives analysis would include discussion relative a selection of the Preferred Alternative that includes all feasible measures to avoid Damage to the Environment, or to the extent Damage to the Environment cannot be avoided, to minimize and mitigate Damage to the Environment to the maximum extent practicable.

**MEPA 03** **The FEIR should include plans of existing and proposed conditions at a legible scale that identify all major project components (existing and proposed buildings, access roadways, runways, taxiways, etc.), public areas, impervious areas, subsurface utilities, surface elevations, wetland resource areas, ownership of parcels including easements, and stormwater and utility infrastructure. Conceptual plans should be provided for on-site work as well as any proposed off-site work for transportation or utility improvements that will benefit the project.**

These plans are provided as figures throughout the document as conceptual level only. Design level plans will be developed during the next phase of the funding.

**MEPA 04** **The FEIR should clarify whether the project itself is anticipated to, directly or indirectly, result in an increase in Airport operations and associated increase in airplane or jet activity. If so, the FEIR should explain the methodology used to quantify the projected increase in Airport operations.**

The Airport is not seeking to increase airfield capacity nor expand the Airport but rather, meet airfield geometry standards, recommendations for runway length, and address FAA safety and design criteria deficiencies such as runway length, taxiway configurations, and safety area geometry for the current family of aircraft operating at the Airport as stated in Chapter 2 of the Final EIR. As demonstrated by the operational data provided in Chapter 1.0 of the Draft EA/EIR, historical operations were far greater than current and modeled future operations presented. As aircraft, technology, FAA safety and design criteria change, so must the Airport.

**MEPA 05** **The FEIR should provide updated air quality, noise, and GHG emissions analyses that account for the forecasted increase in Airport operations.**

Noise, air and GHG analyses presented in the Draft EA/EIR are based on the forecasts in the Airport Master Plan update, which provides numbers of airport/aircraft operations with factors to increase operations for future scenarios. There are not any revised estimates to update. Additional information is presented regarding conclusions and mitigation measures.

**MEPA 06** **The FEIR should include all impacts associated with activities asserted to qualify as "Replacement Project" and "Routine Maintenance" work for which no advisory ruling has been issued by the MEPA Office.**

This document does not identify any projects or activities that would be considered a replacement project or routine maintenance.

**MEPA 07** **The Proponent should review the requirements in 314 CMR 9.06 and determine whether a practicable alternative is available that has less adverse impact to the aquatic ecosystem.**

Chapter 2, Alternatives Analysis, identifies additional alternatives for Taxiway D that avoid and minimize impacts to aquatic resource areas. No other projects proposed have any direct or indirect impact on Waters of the US. Compliance with 314 CMR 9.06 and 9.07 is addressed in Section 5.3.

**MEPA 08** **Specifically, the alternatives analysis should include a thorough analysis to demonstrate why the separation distance (taxiway centerline to runway centerline) cannot be reduced from the recommended 400 feet for TWY D to decrease wetland impacts.**

Section 2.1.1 discusses reducing the separation distance from taxiway centerline to runway centerline to 300 feet, and this alternative is rejected, because it does not comply with FAA safety standards, which are paramount over decreasing the wetland impacts.

**MEPA 09** **The FEIR should identify the distance between Runway 15-33 and TWY D at which there would be no impacts to BVW, LUW and Bank. It should also review an alternative that minimizes impacts to wetland resource areas and identify the separation distance from Runway 15-33.**

**Figure 2.1-1** shows an alternative (Alternative 4) of proposed Taxiway D circumnavigating Upper Gate Pond without impacting BVW, LUW and Bank. The "shifted" alternative layout is based on conceptual design stage.

In this alternative, the taxiway is shifted closer to the runway by approximately 100 feet, thereby providing a Runway Centerline to Taxiway Centerline separation distance of 300 feet, versus the required FAA centerline separation distance of 400 feet. Section 2.1-1 in the narrative explains why this alternative is not feasible, precisely because of FAA safety standards. The FAA would not allow HYA to build a new parallel taxiway that does not meet standard runway/taxiway centerline separation distance of 400 feet.

**Figure 2.1-2** identifies a modification to the preferred alternative (Alternative 5) which reduces BVW impacts by over 50%. In this alternative, the same alignment and runway to taxiway separation distance of 400 feet is maintained, along with a 2:1 side slope in the vicinity of Upper Gate Pond. The area to the north of the taxiway which consists of the 25-foot wide Taxiway Safety Area (TSA) and the 12 foot-wide perimeter vehicular service road has been narrowed to just include the TSA \ The service road will terminate east of Upper Gate Pond and vehicular access to this portion of the airfield will be either via Airport Road to the north of the project area or via Taxiway D. See discussion in Section 2.1-2.

**MEPA 10** **In the event impacts to wetlands cannot be justifiably avoided, the FEIR should propose appropriate mitigation measures to demonstrate consistency with the WQC regulations. It should identify the location of any proposed wetland replication.**

Section 5.1.2 discusses wetland replication in mitigate direct impacts to Airport wetlands. Figure 5.1-1 identifies the replication area location adjacent to the Taxiway D impact area. Consistency with the WQC regulations is discussed in Section 5.3

**MEPA 11** **The FEIR should include additional alternatives analysis for project components not discussed in the DEIR, including the hangar development in the North and East Ramps and other Phase 2 projects that were excluded from the DEIR. To the extent the Airport wishes to defer review of Phase 2 components, a procedure for review through the filing of NPCs should be proposed in the FEIR.**

Section 2.2 discusses the alternative analysis for the North and East Ramp Hangar Development. Section 2.3 addresses the Runway Safety Area improvements needed for the 6-end of Runway 6-24. Section 2.4 addressed the terminal expansion alternatives. This alternative analysis was included as an appendix to the Draft EA/EIR as well.

See MEPA 02 above for a discussion on the proposed procedure through the filing of NPCs.

**MEPA 12** **The supplemental alternatives analysis should justify the need for hangar development, whether it is supported by current or future forecasted demand, and whether this increase in capacity will induce more demand for airplane and vehicular travel. The analysis should include a No Build Alternative, and also identify any alternative configurations or locations for proposed hangars and other development at the North and East Ramps that would avoid or minimize impacts to land alteration and impervious area. The alternatives analysis and project narrative should support the selection of the Preferred Alternative that includes all feasible measures to avoid Damage to the Environment, or to the extent Damage to the Environment cannot be avoided, to minimize and mitigate Damage to the Environment to the maximum extent practicable.**

Hangar development may occur at any time depending on interested leasing parties. These projects were previously described in Draft EA/EIR Section 3.1.5. The forecast table includes changes in operations based on based aircraft (i.e., "Local") that would be housed in hangars. "Expansion in capacity" would refer to the capacity of the airport to "house" aircraft on site, whether in hangars or tie down spaces. In Appendix B of the Draft EA/EIR which includes Chapters 4-6 of the Master Plan, Chapter 5, Section 5.5.1 provides a detailed analysis of hangar demand for the Airport.

**MEPA 13** **The FEIR, or a summary thereof, should be distributed to the EJ Reference List that was used to provide notice of the DEIR. The Proponent should obtain a revised EJ Reference List from the MEPA Office to ensure that contact information is updated. The same efforts to notice the project should be made prior to the submission of the FEIR.**

An updated EJ Reference List was requested from MEPA office on 5/6/2024; After receiving the EJ Reference List, the project proponent created a project-specific EJ Distribution List, which was ultimately combined into a project specific stakeholder list of every citizen, organization, and agency that has been involved in the project, whether due to geographic location, due to regulations saying certain agencies are involved, or due to being involved in the public comment period. The project was noticed on **August 21, 2024** in the following ways.

- Email to EJ Reference List and Airport-maintained Stakeholder List
- Posted on Airport's website (www.flyhya.com/airport-info/environmental-assessment)

**MEPA 14** **The FEIR should provide an update on any outreach conducted since the filing of the DEIR, and identify any changes made to the project design in response to this outreach.**

To engage with the public further in 2024, the project proponent has been hosting open houses to talk about the Master Plan projects with local groups, such as the Yarmouth Camp. The project proponent has also completed a project presentation on the Master Plan projects at the Yarmouth Rotary Club in July 2024. During the month of July 2024, the project proponent has also met with Congressman Keating; Congressman Keating agreed to not move the Airport to join Joint Base Cape Cod.

The Airport held its 5th and final public meeting on August 27, 2024, in person (6-8pm) and virtually (2 to 4pm). The meeting directly addressed the public/agency comments from the Draft EA/EIR and allowed for questions from the public after each explanation was given. The meeting was held at two different times during the day to accommodate participation in both a virtual and in-person format. The virtual meeting was held via zoom from 2 to 4 pm. And an in-person meeting was held from 6 to 8 pm at Barnstable Town Hall. The meeting provided the community with an opportunity to learn about environmental analysis completed and information documented in the Final EIR. Several officials from the Federal Aviation Administration (FAA) and the Massachusetts Department of Transportation (MassDOT)Aeronautics Division also were in attendance to address questions from the community. The airport engaged communication specialists from HSH to moderate the meeting. The meeting participants, and community members, were able to submit questions and comments in written form both in advance and during the meetings.

**MEPA 15** **The FEIR should respond to comments from the Sierra Club regarding unfair and inequitable burdens on EJ communities in the vicinity of the Airport, particularly as related to ongoing cleanup of PFAS contamination in the surrounding community.**

The Sierra Club states in its comment letter the following:

*"The DEIR does not acknowledge or in any way mitigate historical and continuing unfair and inequitable burdens imposed on designated environmental justice (EJ) communities in the vicinity of the Airport. In particular, decades of handling and use of aqueous film-forming firefighting foams (AFFF) at and around the Airport resulted in inadvertent but extensive PFAS contamination of public water supply wells and exposed Hyannis residents, students, workers, and visitors to significant but unknown amounts of hazardous but unknown chemical mixtures for significant but unknown time periods with potentially significant but unknown health consequences. PFAS-contaminated soil and the associated plumes flowing onto and emanating from Airport property continue to pose risks."*

The comment from the Sierra Club states there are unfair and inequitable burdens imposed on designated environmental justice (EJ) communities in the vicinity of the Airport. However, the comment does not provide evidence of the burdens that it cites.

We respectfully recommend that the commenter visit the Airport's webpage on PFAS here https://flyhya.com/airport-info/pfas/ to learn about the comprehensive efforts of the airport to address PFAS. Furthermore, we note the following efforts of the airport specifically as they relate to PFAS.

- 2015: HYA ceased use of AFFF in 2015 for tri-annual exercises and annual testing.

- 2016: Cape Cod Gateway Airport (HYA) was the first airport in Massachusetts to purchase an ecologic unit to test AFFF consistency to meet annual FAA testing requirements without the need to deploy AFFF on the ground for testing. HYA bought this unit before it was approved by FAA as an alternative testing platform to be as proactive as possible.

- 2016: Cape Cod Gateway Airport successfully recovered AFFF used in a 2016 aircraft accident response. All 10 gallons of AFFF concentrate applied at the accident site was captured in an enclosed concrete catch basin, vacuumed out and appropriately disposed of off-site.

- 2016: Cape Cod Gateway Airport (HYA) initiated the process of reporting and analysis following requirements outlined in Massachusetts General Law, and the Massachusetts Contingency Plan (MCP).

Additionally, the Airport continues to coordinate with MassDEP and the Town of Barnstable as they complete ongoing investigations into the impacts of PFAS on soil and groundwater. The purpose of the Airport's efforts is to continue reporting, testing, mitigation, and monitoring as necessary to meet MassDEP Bureau of Waste Site Cleanup reporting requirements. Please note that this is a long process, and multiple reports are required to meet MCP requirements. The reports from 2016 to 2024 can be found here: https://flyhya.com/airport-info/pfas/

Lastly, we note that the Airport has conducted extensive public outreach and has provided public information relative to PFAS and the actions the airport has taken. The Airport has met with the community on multiple occasions holding public meetings and open dialogue on the Airport's response to PFAS. Additionally, the public has the opportunity to comment on any of the draft reports submitted to DEP. The public meetings the airport has held on PFAS are as follows:

- July 29, 2019 - Public Involvement Plan (PIP) Presentation held at 6PM in the Airport Terminal Building Conference Room. Presentation link: https://flyhya.com/wp-content/uploads/2023/08/Final-PIP-Presentation-7-29-2019.pdf
- September 13, 2022 - Airport Community Presentation held at 4PM in the Airport Terminal Building Conference Room. Presentation link: https://flyhya.com/wpcontent/uploads/2023/08/FINAL_Presentation_All-Slides.pdf
- August 7, 2023 - Airport Community Presentation held at 6PM in the Barnstable Town Hall, Presentation link: https://flyhya.com/wp-content/uploads/2023/08/FINAL_PFAS-Public-Meeting.pdf
- December 18, 2023 - Airport Community Presentation/Public Involvement Plan (PIP) Meeting at 6PM in Cape Cod Gateway Airport Conference Room, Presentation link: https://flyhya.com/wp-content/uploads/2023/12/PIP-PFAS-Presentation-FINAL.pdf
- Meeting - Video on Demand: https://streaming85.townofbarnstable.us/CablecastPublicSite/show/10876?channel=1
- November 2024 - Date TBD - Airport Community Presentation - update on results of ongoing monitoring

**MEPA 16** **The FEIR should clearly explain why an increase in infrastructure capacity, including hangar space, runway and taxiway extensions, and terminal expansion, should not be presumed to induce additional demand for airport operations, and should cite academic literature or other sources to support this explanation.**

The Airport is not looking for an "expansion in capacity" to accommodate what it thinks will come if the proposed projects are completed. The Airport is looking to meet the needs of existing users to build the airport to safely accommodate them.

For example, the improvements identified in the Master Plan refers to those improvements which are necessary for all operators and types of activity, not just improvements that would serve one segment of the airport, e.g., air carrier activity. Of the 3,300 public use airports, 383 are air carrier airports.

Furthermore, Hangar development may occur at any time depending on interested leasing parties. The forecast table includes changes in operations based on based aircraft (i.e., "Local") that would be housed in hangars. "Expansion in capacity" would refer to the capacity of the airport to "house" aircraft on site, whether in hangars or tie down spaces. In Appendix B of the Draft EA/EIR which includes Chapters 4-6 of the Master Plan, Chapter 5, Section 5.5.1 provides a detailed analysis of hangar demand for the Airport.

**MEPA 17** **The FEIR should present revised estimates of noise, traffic, and air quality/mobile source that include certain assumed increases from No Build-to-Build conditions as a result of the project components that are described as capacity expansions to support growth. Based on this assumed increase, the FEIR should update all conclusions relative to the extent of increased impacts and detail the extent to which each category impact is likely to impact surrounding EJ populations.**

Noise, air, and traffic analyses presented in the Draft EA/EIR are based on the forecasts in the Airport Master Plan update, which provides numbers of airport/aircraft operations with factors to increase operations for future scenarios. There are not any revised estimates to update. Additional information is presented regarding conclusions and mitigation measures.

**MEPA 18** **The FEIR should consider additional mitigation measures to address noise and air quality impacts, including strong measures to support future electrification of aircraft and use of sustainable aviation fuels (SAFs) and noise abatement measures such as those suggested by the Town of Yarmouth.**

Please refer to Section 4.5 for a discussion on mitigation measures for noise and air quality impacts.

**MEPA 19** **The FEIR should consider whether real-time data related to noise and air monitoring could be made available to the surrounding communities for added transparency.**

This document considers the use of real-time noise and air monitoring in Section 4.5. FAA cites several reasons that real-time noise modeling is not used by FAA in its analyses including difficulty processing data, costs, and accuracy. Therefore, FAA only uses noise modeling to generate detailed noise results over large areas as the only practical way to accurately and reliably determine geospatial noise effects in the surrounding community when analyzing proposals related to aviation noise.

The airport will investigate the use of MassDEP grants to obtain air monitoring hardware associated with the Town of Barnstable.

**MEPA 20** **The FEIR should provide information regarding a Scope of Work to review potential modifications to Airport departure procedures including coordination with residents and EJ populations.**

The Airport has developed a scope with its consultants to review departure procedures. Due to the timeline of this effort, it is not currently available to be provided as part of the FEIR/EA. The effort to review airport departure procedures includes airport users, management, as well as stakeholders from airport neighborhood groups.

**MEPA 21** **The FEIR should update analyses related to air emissions and noise to account for the increase in airplane activity that is anticipated from the proposed hangar expansion or other work that may result in an increase in Airport capacity.**

Noise and air emissions presented in the Draft EA/EIR are based on the forecasts in the Airport Master Plan update, which provides numbers of airport/aircraft operations with factors to increase operations for future scenarios. These growth factors are based on national and regional aviation trends and estimates. There are no further updates to the analyses.

**MEPA 22** **The FEIR should provide all the information requested in the EPA comment letter as to anticipated impacts to groundwater and the SSA, including from stormwater, associated with the project.**

EPA's comments and questions are addressed in Chapter 3: Groundwater and Sole Source Aquifer and below in response to EPA comments.

**MEPA 23** **The FEIR should assess whether any increase in pollutant loading in groundwater is anticipated to impact the identified EJ Population based on the results of groundwater modeling or other analysis.**

The Maher Wells groundwater treatment system operated by the Town of Barnstable is providing treated drinking water to the community eliminating the risk associated with ingestion of drinking water containing PFAS above the MassDEP regulatory limits. Based on environmental forensics and fate and transport mechanisms documented in the Updated Phase II Report and Final Phase IV Report, the Airport's PFAS plume impacted the Maher Wells (ME-2 only) after the Town of Barnstable installed a treatment system designed to treat for PFAS (see **Appendix C**, p.26)

**MEPA 24** **The FEIR should include a plan showing groundwater depth, contours, and flow directions to better describe the context, existing location and subsurface environment for areas potentially affected by the project. The plan should detail the location of existing and proposed monitoring wells, public and private water supply wells, and surface water supply sources within five miles of the Project. The plan should be accompanied by a narrative to explain how groundwater contours were developed.**

Section 3.1 includes a discussion of groundwater depth, contours, and flow directions and the methodology for determining each. **Figure 3.1-1** provides the monitoring well locations. **Figure 3.1-2** identifies groundwater levels and direction of flow. **Figure 3.1-3** provides the location of public and private groundwater supply wells and protection areas within five miles of the airport. **Figure 3.4-1** details the Town of Barnstable Groundwater Protection Districts on and near the Airport.

**MEPA 25** **The FEIR should provide additional hydrogeologic information as it relates to the flow of potential contaminants from the project, including from increased wastewater flows, stormwater discharges, and construction activities, and the potential impact, including groundwater flow continuing off-site, to existing or proposed public or private water supplies. Distances and time of travel (if times are readily available) to nearest water supplies should also be provided.**

Section 3.1 addresses the time of groundwater travel, and Section 3.2 address additional hydrogeologic information regarding soil types and the lack of surface water interactions with groundwater.

**MEPA 26** **The FEIR should include a list describing the expected annual loading of potential contaminants of groundwater (as compared to baseline conditions at the Airport) from construction and project-related operations including information on fuel-related contaminants and loadings such as volatile organic compounds, metals, and polyaromatic hydrocarbons. It should provide a description of any past contamination events at the airport along with baseline groundwater contaminant conditions. It should also include an expanded description of measures and best management practices to reduce the release of contaminants and provide aquifer protection during construction and airport operations, with a specific focus on how the Airport will protect groundwater from contaminated runoff, spills, or accidents at the airport.**

A description of past contamination events was provided in Section 5.17 of the Draft EA/EIR. Section 3.2 includes a detailed discussion of measures and best management practices during and post construction to protect ground and surface water. The stormwater management systems will be designed to comply with all current MassDEP stormwater standards for groundwater and surface water protection.

**MEPA 27** **The FEIR should include a monitoring plan that describes how and when soil and groundwater will be monitored for potential contaminants of concern and how baseline soil and groundwater contaminant conditions will be established. The monitoring plan should detail the frequency of sampling and how the sampling results, along with needed and executed response actions, will be shared with appropriate water department officials in the project area.**

Cape Cod Gateway Airport already has multiple groundwater monitoring programs. Groundwater monitoring is conducted bi-annually to make sure soil caps on the Airport's PFAS plume are working properly so no PFAS has leached into the groundwater. The sampling at certain wells happens in May and November. Secondly, monitoring occurs in compliance with the Airport's NPDES Multi-Sector General Permit. See Section 3.5 for more detailed information. These programs will be updated as may be necessary as Projects are designed and constructed.

**MEPA 28** **The FEIR should further clarify how the project is designed to avoid and minimize land alteration and impervious area. It should provide a comprehensive evaluation of all measures to preserve open space and tree cover, to reduce the amount of land alteration, and to convert impervious areas to pervious materials, including reductions in pavement associated with runways and taxiways, reductions in size of aprons and hangars, and supplemental landscaping or tree planting to mitigate impacts associated with clearing.**

The Airport examined multiple different alternatives for the Master Plan projects, which are discussed in Chapter 2.

The Airport is participating in the Greening Hyannis initiative, which will plant trees in and around environmental justice communities in Hyannis. The initiative is looking to provide cleaner air for historical underprivileged communities. The Airport wants to support this initiative while also offsetting some of the tree clearing that will occur through the completion of the Master Projects.

The Airport will also be planting trees in two selected open areas around the property that will not cause any flight obstructions. The first of which is an undeveloped plot of land that is to the southwest of the end of Runway 15, along Airport Road (facing the non-airport side of the road). On the plot of land to the south, there is a detention pond that nothing will be able to be planted or built around, but to the north of the detention pond, the Proponent proposes adding the trees along a potential paved path through this area, which could serve as a walking path for citizens or customers of the surrounding businesses.

The second location of tree planting is along Barnstable Road, starting from the Capetown Plaza Shopping Mall (WS Development) and continuing south and east along Barnstable Road. Capetown Plaza Shopping Mall is owned by Cape Cod Gateway Airport. Tree and shrubbery plantings near the Shopping Center and along Barnstable Road on both sides the roadway would allow this area to be more aesthetically pleasing and aid in the fight against climate change. Please see **Figure 6.2-1** for these tree planting locations.

**MEPA 29** **The FEIR should confirm the amount of open space that will remain undisturbed and/or restored upon completion of construction. It should include site plans that clearly locate and delineate areas proposed for development and those to be left undisturbed.**

Figure 1.3-1 and Section 1.3 discusses the impacted areas on Airport. Any areas that are temporarily altered for construction of runway or taxiway projects will be restored to vegetated areas (grass or shrub) as discussed.

**MEPA 30** **The FEIR should indicate whether a CR could be considered for non-development areas of the airport, and how non-development commitments will be enforced.**

A CR restriction on airport land was considered as part of the Final EIR to offset development and/or vegetation removal as part of the proposed Projects.

A conservation restriction is a legally enforceable agreement whose purpose is to ensure permanent protection of specific conservation values while permitting limited land uses consistent with the protection of said conservation values. Different from term-limited restrictions, conservation restrictions, as defined in Sections 31-33 of Chapter 184 of the Massachusetts General Laws, are permanent restrictions that require the approval "in the public interest" of the Secretary of Energy and Environmental Affairs. The Division of Conservation Services (DCS) manages all reviews for CRs that will be held by charitable corporations/trusts, or municipalities.

Ultimately, the use of a conservation restriction on airport plan was not selected as mitigation. However, it is important to note that large land areas owned by the airport are already protected given the airport's existing mission and need to maintain open areas of space for the purpose of preventing hazards to air travel (for the flying public). As noted within the Final EIR, per FAA and MassDOT Aeronautics regulations, the airport is required to keep areas of the airport as open space by maintaining these areas free of obstruction, whether they be a manmade structure (building) or vegetative obstruction (tree). In cases where trees are limited in height due to the airspace regulations, these areas still allow for lower-growing vegetation such as shrubs, small trees, and grasses – providing the same or greater benefit if the trees were allowed to grow to maturity. These requirements result in the airport maintaining areas of open spaces.

Furthermore, placing a CR on airport land may prevent the citizens of the Town of Barnstable of land-use options that they may seek in the future. These areas, if placed in a CR would be restrictive to opportunities to use public lands in a manner consistent with both the Airport's mission and the future vision of the town.

For these reasons listed above, the Airport has committed to addressing land impacts by using the minimum width necessary for taxiways and runways and phasing projects as discussed in Section 1.3.

**MEPA 31** **As the design for runway and taxiway modifications is finalized, the Proponent should identify any new areas where vegetated buffers can be maintained or re-established to protect nearby surface waters and incorporate these locations in landscaping and maintenance plans.**

The slope of Taxiway D and the Taxiway Safety Area will remain vegetated and provide a buffer to Upper Gate Pond. The safety area will remain grassed. To the extent feasible, the slope will be planted with native shrubs and herbaceous plants that can be maintained at a height in accordance with FAA regulations.

**MEPA 32** **The DEIR includes a high-level review of stormwater for several, not all, project components. The FEIR should provide a copy of the Stormwater Report for the project which identifies all measures that will be employed to protect the water quality of the SSA, describes the proposed stormwater management system for each project/phase, and identifies BMPs that will be incorporated into its design. It should describe how the proposed stormwater management system will fully comply with the SMS. The FEIR should provide details on the size, location, and design of proposed stormwater systems.**

Given the funding required for the three major projects (Taxiway B, Taxiway D, Runway 15 Extension) of approximately $60 Million and the likely resultant staggering of project implementation, the Airport intends to secure local, state, regional and federal permits by individual project as may be required. Neither stormwater calculations nor a Stormwater Report were included in this MEPA/NEPA planning phase project, both of which will be produced under the next funding phase of permitting and design. That said, all reasonable measures will be employed in future designs to protect the water quality of the SSA. Submissions under MEPA Notice of Project Changes associated with future permitting projects will describe the proposed stormwater management system for each project/phase and identify BMPs incorporated into the design. It will also describe how the proposed stormwater management system will fully comply with current water quality standards. Design submissions associated with future permitting projects will provide details on the size, location, and design of proposed stormwater systems which will endeavor to exceed stormwater management standards by incorporating Low Impact Design (LID) strategies and green infrastructure wherever practicable.

**MEPA 33** **The Airport should take all feasible measures to manage stormwater runoff, including by exceeding stormwater management standards and incorporating Low Impact Design (LID) strategies and green infrastructure wherever practicable; such measures should be described in the FEIR. Green infrastructure is an effective way to treat stormwater generated by impervious surfaces and provides cooling and other benefits for the community and should be incorporated to the maximum extent possible. LID designs should be carefully considered, and where not used, the FEIR should provide a thoughtful explanation as to why they are infeasible for implementation on-site. LID designs should be carefully considered, and where not used, the FEIR should provide a thoughtful explanation as to why they are infeasible for implementation on-site.**

To the maximum extent feasible, green infrastructure measures will be incorporated to treat stormwater generated by impervious surfaces. LID designs will be carefully considered, and where not used, the stormwater report and permit application will provide a thoughtful explanation as to why they are infeasible for implementation on-site. The Airport has done an exemplary job of monitoring stormwater and maintaining its current system in a state of good repair, and it will continue to commit to ongoing maintenance and monitoring to ensure stormwater is adequately treated before entering surface and groundwater bodies.

Please see Sections 5.2.3 and 5.2.4 for a discussion on proposed Stormwater Control Measures and LID measures, respectively.

**MEPA 34** **The FEIR should commit to ongoing maintenance and monitoring to ensure stormwater is adequately treated before entering surface and groundwater bodies.**

An operation and maintenance plan for both construction and post-development stormwater controls will be developed. The plan will align with and improve the successful O&M plan in place at the Airport (see **Appendix E** for the Industrial SWPPP) and will include the parties responsible for operation and maintenance at different phases of the project and afterwards with a schedule for inspection and maintenance, including routine and non-routine maintenance tasks.

**MEPA 35** **As described further below, the FEIR should discuss how the stormwater management system will be designed to accommodate larger storm events. The FEIR should consult the rainfall volumes that are provided by the MA Resilience Design Tool as indicative of future climate conditions and describe how the project will consider future conditions in design. It should include a plan showing the location of BMPs and describe whether sufficient space is being provided to allow for future retrofits as needed to accommodate large storms.**

The Projects will be designed to include stormwater management systems able to accommodate future storms. In future funding phases, identified starting in FY 2025, contingent upon on completion of this environmental planning review phase, stormwater management systems will be designed to comply with state SMS and investigate the feasibility to accommodate future storm conditions within the overall system to be construction as the Airport redevelops existing infrastructure. See Section 5.2.

**MEPA 36** **The FEIR should describe the precipitation data used for the design of the stormwater management system and clearly discuss how it will be sized to address future climate conditions.**

The future design of the stormwater management system will utilize revised rainfall intensities by NOAA Atlas 14, Point Precipitation Frequency Estimates including for future climate conditions or other data sources as may be required by the current MassDEP Stormwater Management Standards at the time. MassDEP is proposing to require that precipitation amounts be 90% of the upper end of the range of historical precipitation. This is called “NOAA 14 PLUS” and is proposed to ensure that stormwater from most (80%) storms will be adequately managed. This somewhat increased precipitation is based on actual events.

**MEPA 37** **The FEIR should discuss whether the proposed stormwater design is anticipated to meet the recommended 2050 10-year return period (24-hour rainfall volume of 6.1 inches) from the Tool for the runway extension and taxiways. It should also discuss the 2070 100-year return period volume for aviation hangars and buildings (24-hour rainfall volume of 11.0 inches). Estimates can be provided in lieu of exact calculations, to the extent stormwater design is not advanced enough by the time of the FEIR.**

The proposed stormwater design for each project is anticipated to meet the recommended 2050 10-year return period (24-hour rainfall volume of 6.1 inches) from the Resilient Massachusetts Action Team (RMAT) Tool for the runway extension and taxiways.

To the maximum extent feasible, green infrastructure measures will be incorporated to treat stormwater generated by impervious surfaces. LID designs will be carefully considered, and where not used, the stormwater report and permit application will provide a thoughtful explanation as to why they are infeasible for implementation on-site. The Airport has done an exemplary job of monitoring stormwater and maintaining its current system in a state of good repair, and it will continue to commit to ongoing maintenance and monitoring to ensure stormwater is adequately treated before entering surface and groundwater bodies.

**MEPA 38** **To the extent the project is unable to accommodate future year storm scenarios, the FEIR should discuss whether the project has engaged in flexible adaptative strategies, and whether current designs allow for future upgrades to be made to adapt to climate change.**

In order to mitigate the future 2070 50-year storm event and the 2070 100-year storm volume for aviation hangars and buildings, all SCMs will need to be expanded by approximately 55-60%. The new subsurface infiltration and detention systems would be constructed from chambers which are modular in nature and can be added onto existing systems in the future.

Private developers will implement future hangar development. The Airport will implement construction requirements that assure that applicable stormwater management systems for all future hangar and building development will be designed pursuant to the 2070 100-year return period volume (24-hour rainfall volume of 11.0 inches).

**MEPA 39** **The FEIR should identify all proposed new buildings, expansions, or additions, including hangars that may be developed in the 20-year timeframe and discuss GHG commitments for these components. The Proponent should consult with the MEPA Office regarding the requirement to prepare separate GHG analyses for future new buildings, expansions, or additions, including the SRE.**

For any new buildings, expansions, or additions discussed in this document, the Proponent will commit:

- High performing envelope that complies with the 2023 Stretch Code envelope performance requirements;
- 100% heat pump space heating;
- Energy recovery ventilation per the 2023 Stretch Code update;
- Electric domestic hot water heating, specific method to be determined. Heat pump domestic hot water heating to be analyzed;
- Roof to be constructed PV-ready;
- Installed electric vehicle (EV) charging spaces, quantity to be determined; and
- EV infrastructure for additional future EV-parking spaces to be installed, quantity to be determined.

**MEPA 40** **The DEIR notes eight EV charging stations will be installed. The FEIR should commit to providing designated parking spaces for these vehicles.**

All eight EV charging stations are to be constructed in designated parking/recharging areas within parking lots. Exact locations are to be determined and identified during the design stages of the Airport's Microgrid project underway. Spaces will be convenient to key areas of the airport (e.g., terminal, hangar areas, and facilities).

The Airport will determine the potential demand for Electric Vehicle Supply Equipment (EVSE) based on industry best practices and information by the Cape Cod Commission Electric Vehicle Charging Station Siting Analysis Tool. The following best practices for EVSE implementation will be considered in the design/planning phase:

- Level 2 EVSE or higher considered for most land uses. Level 1 EVSE may be appropriate in limited applications;
- Connectors to allow for use by a variety of vehicle makes; and
- Appropriate signage and pavement markings.

- Signage that details the ESVE voltage and amperage levels, safety information, contact information for reporting when the equipment is not operating or other problems, and, as applicable, any use limitation on use (i.e., patrons only), hour of operations, time limits, and usage fees;
- All EVSE placed and proposed shall be compliant with the Americans with Disabilities Act and with applicable Massachusetts Architectural Access Board rules and regulations; and
- Where EVSE is provided or proposed within an adjacent pedestrian circulation area, such as a sidewalk or accessible route to the building entrance, the charging equipment must be located so as to not interfere with accessibility requirements.

The proposed EVSE at the Airport is an important component to support the developing EV charging network on Cape Cod. The Airport plays a role in the development of this network as part of a cooperative, coordinated approach with both public and private partners. The project will contribute to the build out of a regional EV charging network including public access to and availability of EVSE. Certain allocation of the charging infrastructure proposed may be prioritized/restricted to residents, employees, patrons, or other particular site users.

**MEPA 41** **The FEIR should provide an update regarding implementation of electric aircraft charging stations and implementation of conduits to facilitate future stations. It should provide a clear timeline for planning and construction of the microgrid infrastructure. It should include strong measures to facilitate a transition to electrification of airplanes and use of SAFs. For instance, the FEIR should consider whether conduits can be installed to facilitate electric charging stations for aircrafts. Any new infrastructure such as hangar spaces should be fully equipped with electric wiring and solar PV where feasible. The FEIR should describe how many aircraft charging stations will be proposed.**

The exact areas for electric aircraft charging are unknown at this time and will be further investigated as part of the Airport's Microgrid project funded by the U.S. DOE Smart Grid funding program. The number of chargers would be anticipated to grow as the aviation industry adopts this type of technology for its aircraft fleet.

**MEPA 42** **The FEIR should describe efforts to minimize tree and shrub clearing and land disturbance to the extent practicable and mitigate impacts when unavoidable.**

The areas affected by the construction will be returned to their original or improved condition. Adequate protection will be in place throughout the construction process to prevent the discharge of silt and erosion caused by air movement and water. All areas cleared of natural cover, but not improved, will be replanted with permanent vegetation. See Section 5.2.7 for a discussion of construction period stormwater management, including site stabilization.

**MEPA 43** **The FEIR should clearly explain the Proponent's plan for disposition of the trees cleared through the project, including the process for identifying potential markets for reuse of wood. The Proponent should commit to reuse of cleared trees for long-lived wood products to the greatest extent practicable and should indicate how the ultimate disposition of the trees will be tracked and documented.**

Wood chips from felled trees associated with the Proposed Action will be utilized on site to minimize and mitigate the release/creation of GHGs. Wood chips from the trees removed related to the Project will be stockpiled on site, and utilized within areas of the airport where covering soil with wood mulch can reduce maintenance needs (e.g. along fence lines, within stormwater areas, landscaped areas, and on pathways) or provide temporary soil stabilization during construction– which will help reduce greenhouse gas emissions.

By retaining woodchips on site, greenhouse gases are avoided by eliminating the need to transport materials off site (minimization of truck trips) and also the avoidance of disposal and disposal related vehicle emission reductions.

Environmental benefits from the use of wood chips on site, the anticipated benefits include saving water, improving soil, combatting pests, and stopping weeds, wood mulch actually reduces the release of greenhouse gases.

**MEPA 44** **The use of CRs should be considered to ensure permanent protection of non-development areas.**

See response to MEPA #30

**MEPA 45** **The FEIR should describe the proposed location of tree planting and the number of trees onsite or off-site in the Town of Barnstable.**

The project proposes tree planting as part of landscaping plan and/or stormwater LID plan. Trees and other vegetation store carbon within their structures and will continue to absorb and store carbon as long as they are alive. tree planting, and plantings with other native vegetation can contribute to carbon sequestration.

Revegetation, restoration, and/or site landscaping with native tree, shrub, and grass species is proposed due to the multiple benefits that derive from maintaining and restoring native habitats (e.g., ecosystem services such as filtering of air and water pollutants, provision of habitats for wildlife and native pollinators, and the aesthetic benefits of naturally vegetated lands).

Tree replanting will be undertaken as shown in the areas shown on **Figure 6.2-1** due to trees being especially good at sequestering carbon due to their size. Tree planting proposed within areas that are suitable and appropriate to the airport environment. Additionally, the Proponent will engage with local organizations to study planting trees offsite. The Proponent has been in communication with Greening Hyannis and the Town of Barnstable to cooperate with their efforts to plant trees in Environmental Justice communities; these plantings will provide the dual benefit of both carbon sequestration and reduction of 'hot spots' through the lessening of the heat island effect in EJ areas. Restoration with native plant materials will follow the Cape Cod Commission's *Wildlife and Plant Habitat Technical Bulletin Objective WPH2 Methods*.

**MEPA 46** **The FEIR should explore additional ways to directly mitigate the GHG emissions of land clearing, including through tree replanting efforts, reuse of felled wood, and CRs placed on conservation areas within EJ communities.**

Wood chips from felled trees associated with the Proposed Action will be utilized on site to minimize and mitigate the release/creation of GHGs. Wood chips from the trees removed related to the Project will be stockpiled on site, and utilized within areas of the airport where covering soil with wood mulch can reduce maintenance needs (e.g., along fence lines, within stormwater aeras, landscaped areas, and on pathways) – which will help reduce greenhouse gas emissions. By retaining woodchips on site, carbon releases are avoided by eliminating the need to transport materials off site (minimization of truck trips), reducing the need for the acquisition of chips produced elsewhere and also the avoidance of disposal and disposal related vehicle emission reductions.

Within the context of environmental benefits from the use of wood chips on site, the anticipated benefits include saving water, improving soil, combatting pests, and stopping weeds, wood mulch actually reduces the release of a greenhouse gas.

The Airport will also utilize, to the extent feasible, wood chips from tree removal in existing and proposed stormwater control measures (e.g., bioretention, swales and basins). In stormwater applications, wood chips can be utilized as a

mulch to provide beneficial functions such as the following: decompose slowly; slowly release nutrients; effectively retain and slowly release moisture; moderate temperature; provide weed control; are sustainable; resist compaction; create a diverse environment for soil biota by increasing soil organic carbon; and may sequester some pollutants.[1]

**MEPA 47** **The FEIR should provide a list of chemicals used at the Airport, and a description of where and how they will be stored and managed on airport property. The list should be accompanied by a discussion of aircraft or vehicle maintenance practices/activities that can pollute runoff along with measures that will be implemented to reduce and control pollutants.**

Section 7.1 provides a summary of the list of chemicals and OHM used by the Airport. Section 3.1 provides information on airport activities that are implemented to reduce and control pollutants including the Spill Prevention and Pollution Control Plan (SPCCC), Industrial Stormwater Pollution Prevention Plan (SWPPP), an aircraft washing and deicing measures.

**MEPA 48** **MassDEP comments reiterate that one or more RAM Plans or possibly a modified Phase IV Remedy Implementation Plan may be necessary for the various construction activities proposed in the DEIR. The FEIR should describe how the project will comply with all applicable requirements.**

Should MassDEP deem a RAM Plan or a modified Phase IV Remedy Implementation Plan necessary for construction activities, the Airport will develop said documents prior to construction.

**MEPA 49** **The FEIR should confirm if a RAM Plan will be required under 310 CMR 40.0000 for any project activities based on review of proposed projects by a Licensed Site Professional (LSP). The Proponent and LSP should evaluate whether the sampling/analytical results obtained from soil management under this project affect the remediation options as described in the Phase III Remedial Action Plan under RTN 4-0026347. The Proponent and the LSP should work together to ensure that future RAMs for the airport construction activities do not exacerbate contamination. In particular, it should be demonstrated that any excavation of, or introduction of, soil beneath the caps will not exacerbate groundwater contamination.**

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[1] Minnesota Stormwater Manual, *Wood chips and applications of wood chips in stormwater* www.stormwater.pca.state.mn.us

To clarify, no disturbance of the caps is proposed as part of any project. Protective construction measures will be implemented to protect the integrity of the caps. As described in Section x, a soil sampling plan is proposed for each project to ensure that any contaminated soils are identified during the design process such that the Airport engineer and LSP can work together to ensure that the site remains in compliance with the Phase IV Inspection and Completion report submitted to MassDEP in April 2024 (see **Appendix C**).

**MEPA 50** **The Proponent should work with MassDEP to resolve any issues regarding PFAS before conducting any work for the project. The FEIR should provide a detailed response to comments from the Association to Preserve Cape Cod and the Sierra Club regarding PFAS contamination and further response actions.**

Please see Section 7.6 on information regarding PFAS Contamination and Mitigation at Cape Cod Gateway Airport. Response to comments from APCC and the Sierra Club are provided herein. **Appendix C** contains the Phase IV and V reports submitted to MassDEP in April 2024.

**MEPA 51** **The FEIR should identify if the Proponent qualifies as a generator of hazardous waste and/or waste oil.**

The Proponent, Cape Cod Gateway Airport is a "generator" of hazardous waste and/or waste oil. Please refer to Section 7.1.1 for more information on the Proponent's "generator" status under federal and state law.

**MEPA 52** **The FEIR should include a commitment to provide a GHG self-certification to the MEPA Office upon expansion of the terminal building signed by an appropriate professional indicating that all of the GHG mitigation measures, or equivalent measures that are designed to collectively achieve identified reductions in stationary source GHG emission and transportation-related measures, have been incorporated into the project. If equivalent measures are adopted, the project is encouraged to commit to achieving the same level of GHG emissions (i.e., "carbon footprint") identified in the Preferred Alternative expressed as a volumetric measure (tpy) in addition to a percentage GHG reduction from Base Case.**

The Airport commits to providing a GHG self-certification to the MEPA Office upon expansion of the terminal building that is prepared and signed by an appropriate professional indicating that all of the GHG mitigation measures, or equivalent measures that are designed to collectively achieve identified reductions in stationary source GHG emission and transportation-related measures, have been incorporated.

To the extent that equivalent measures for GHG mitigation measures are adopted, the Airport will commit to achieving the same level of GHG emissions identified in the Preferred Alternative expressed as a volumetric measure (tpy) in addition to a percentage GHG reduction from Base Case.

## U.S. ENVIRONMENTAL PROTECTION AGENCY-REGION 1

**EPA 01** **Barnstable has adopted local regulations which impose stronger restrictions on the five-year "time of travel" area for the aquifer. The Barnstable Groundwater Protection Overlay District is referred to under local zoning as the Wellhead Protection (WP) Overlay District. EPA recommends that the final EA/EIR provide more information about how the Airport plans to meet the restrictions required in the Barnstable WP Overlay District.**

Compliance with the local Groundwater Protection Overlay Districts regulations is discussed in Section 3.4.2. These requirements will be incorporated into the final stormwater management designs for each project as may be necessary or applicable.

**EPA 02** **EPA recommends that the groundwater section of the final EA/EIR be expanded to provide additional hydrogeologic information as it relates to the flow of potential contaminants from construction and operation of the proposed project and the potential impact, including groundwater flow continuing off-site, to existing or proposed public or private water supplies. We recommend that distances and time of travel (if times are readily available) to nearest water supplies be provided. We also recommend that the EA describe past and proposed future coordination with public water supply systems regarding drinking water resources.**

Section 3.1 addresses the time of groundwater travel, and Section 3.2 address additional hydrogeologic information regarding soil types and the lack of surface water interactions with groundwater.

**EPA 03** **The EA/DEIR should be expanded to fully support any conclusions reached regarding direct or cumulative groundwater impacts to include the following:**

**a. A map showing groundwater depth, contours, and flow directions to better describe the context, existing location and subsurface environment for areas potentially affected by the proposed project. Please show the location of existing and proposed monitoring wells and include a narrative to explain how groundwater contours were developed. We recommend that the locations of public and private water supply wells and surface water supply sources within 5 miles of the proposed project be included in the maps;**

Section 3.1 includes a discussion of groundwater depth, contours, and flow directions and the methodology for determining each. Figure 3.1-1 provides the monitoring well locations. Figure 3.1-2 identifies groundwater levels and direction of flow. Figure 3.1-3 provides the location of public and private groundwater supply wells and protection areas within five miles of the airport. Figure 3.4-1 details the Town of Barnstable Groundwater Protection Districts on and near the Airport.

**b. A list describing the expected annual loading of potential contaminants to groundwater (as compared to baseline conditions at the airport—see below) from construction and project related operations including information on fuel-related contaminants and loadings such as volatile organic compounds, metals, and polyaromatic hydrocarbons;**

See section 3.3 for a discussion of Groundwater Protection Measures. These include the airport's SPCC, the SWPPP, and deicing and aircraft washing procedures. Contaminants reaching the groundwater are minimized/prevented by the said documents and associated efforts and actions.

**c. A description of baseline groundwater contaminant conditions;**

Information pertinent to baseline groundwater contamination can be found in the Airport's Phase I Report and Teir Classification Report, RTN 4-26347 November 2017, available at https://flyhya.com/airport-info/pfas/

**d. An expanded description of measures and best management practices to reduce the release of contaminants and provide aquifer protection during construction and airport operations. We specifically recommend additional detail regarding how the airport will protect groundwater from contaminated runoff, spills, or accidents at the airport.**

Please refer to Section 3.5 - Construction Period Protection Measures for a discussion of measures to protect groundwater.

**EPA 04** **The final EA/EIR should provide a list of chemicals and de-icing products used at the airport, and a description of where and how they will be stored and managed on airport property. A full discussion of aircraft or vehicle maintenance practices/activities that can pollute runoff along with measures that will be implemented to reduce and control pollutants is recommended.**

Section 7.1 provides a summary of the list of chemicals and OHM used by the Airport. Section 3.1 provides information on airport activities that are implemented to reduce and control pollutants including the Spill Prevention and Pollution Control Plan (SPCCC), Industrial Stormwater Pollution Prevention Plan (SWPPP), an aircraft washing and deicing measures.

**EPA 05** **The final EA/EIR should include a list of past and current firefighting foam products (which might contain per- and polyfluoroalkyl substances PFAS/PFOA/PFOS) which will be used in association with the proposed.**

No PFAS/PFOA/PFOS containing substances will be used in associated with the proposed project.

**EPA 06** **We recommend that the final EA/EIR consider the development of multi-media monitoring as a means of determining the effectiveness of pollution prevention measures aimed at preventing or minimizing the potential for the proposed project to contaminate the aquifer. We request that the final EA/EIR include a monitoring plan that describes how and when soil and groundwater will be monitored for potential contaminants of concern and how baseline soil and groundwater contaminant conditions will be established. We recommend that the monitoring plan detail the frequency of sampling and how the sampling results, along with needed and executed response actions, will be shared with appropriate water department officials in the project area. We recommend annual reporting.**

Cape Cod Gateway Airport already has multiple groundwater and soil monitoring programs. Extensive monitoring results are found in **Appendix C**. Groundwater monitoring is conducted bi-annually to make sure soil caps on the Airport's PFAS plume are working properly so no PFAS has leached into the groundwater. The sampling at certain wells happens in May and November. Results are distributed to local officials and posted on both the Airport's and MassDEP's website. The caps have significantly reduced the concentrations of total PFAS in groundwater in the vicinity of the Deployment Area and ARFF/SRE Area as documented in Section 7.6 and the Phase IV and V Reports provided in **Appendix C**. Secondly, monitoring occurs in compliance with the Airport's NPDES Multi-Sector General Permit. See Section 3.5 for more detailed information. These programs will be updated as may be necessary as Projects are designed and constructed.

**EPA 07** **Given the location of the proposed project above a Sole Source Aquifer, EPA recommends that the airport's Spill Prevention, Control and Countermeasure (SPCC) Plan be updated prior to construction to account for all aspects of the proposed project's construction and operations. The current plan (Revision 4) is dated 2020.**

The SPCC plan is updated regularly to reflect any new or changing airport conditions. Revision 5 is currently underway and future revisions are anticipated to be completed prior to construction of Master Plan projects described herein.

**EPA 08** **The final EA/EIR should provide additional detail to explain why there is only limited potential for pollutants to be exposed to stormwater.**

Potential pollutants at the Airport are stored within Airport or tenant buildings or within sealed containment structures (i.e., fuel storage tanks) and are not exposed to stormwater as described in Section 7.1. Pollution prevention measures minimize the potential for exposure to stormwater. Future projects will implement similar measures. Projects such as easement acquisition do not involve any concerns over pollutants and stormwater management. See **Appendices D** and **E** for more information.

**EPA 09** **EPA recommends that the airport's erosion and sediment control plan, including stormwater runoff controls and Best Management Practices (BMPs) include consideration of groundwater resources at the site, and adjacent public drinking water supply wells. The final EA/EIR should detail any necessary changes to reflect this focus and include a description of monitoring wells and advanced stormwater BMPs needed for spill control. We also recommend that all stormwater BMPs described include a description of pretreatment capabilities as required by Massachusetts stormwater requirements.**

Section 5.2 provides a detailed list of potential BMPs that will be utilized during the stormwater management design process. As the Airport is considered a Critical Area due to the groundwater resources at the site, the stormwater management design will comply with Standard 6 of the MassDEP Stormwater Standards for Critical Areas which is designed to protect these resources.

**EPA 10** **EPA requests more information about the proposed BMPs that will be developed for the airport, and regarding the operations and maintenance of the Vortech system. Also, given the location of the proposed project above a Sole Source Aquifer, EPA encourages the use of monitoring wells.**

Section 5.2 provides a detailed list of potential BMPs that will be utilized during the stormwater management design process. **Appendix E (SWPPP)** identifies the operations and maintenance requirements for the Vortech system. The Airport is required to conduct routine facility inspections of all areas of the facility where industrial materials or activities are exposed to stormwater, areas identified in the SWPPP, areas identified as potential sources of pollution, discharge points, and all stormwater control measures, on a quarterly basis, and on **a monthly basis** during the deicing season.

**EPA 11** **Any new Underground Injection Control (UIC) wells need to be approved by MassDEP. MassDEP needs a UIC registration application with the required UIC Stormwater Technical Compliance Form, site plans, and cross-sectional plans showing the proposed UIC well structures.**

Upon the completion of the design of the stormwater management system for each project, the Airport engineer will submit a UIC registration application with MassDEP, consistent with its current operating requirements and past practices.

## MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION-SOUTHEAST REGIONAL OFFICE

**DEP 01** **Cape Cod Gateway Airport is required to demonstrate the ability to apply extinguishing agent as part of its FAA Part 139 safety certification. The capital improvements to the airport should include provisions to collect the wastewater containing the extinguishing agents generated during these demonstrations and/or training events so that proper treatment and/or disposal can occur in conformance with Massachusetts requirements.**

Please see the Airport's webpage on addressing PFAS here: https://flyhya.com/airport-info/pfas/. We also note that the following measures relative to the capture and collection of any AFFF:

- 2016: Cape Cod Gateway Airport (HYA) was the first airport in Massachusetts to purchase an ecologic unit to test AFFF consistency to meet annual FAA testing requirements without the need to deploy AFFF on the ground for testing. HYA bought this unit before it was approved by FAA as an alternative testing platform to be as proactive as possible.

- 2016: Cape Cod Gateway Airport successfully recovered AFFF used in a 2016 aircraft accident response. All 10 gallons of AFFF concentrate applied at the accident site was captured in an enclosed concrete catch basin, vacuumed out and appropriately disposed of off-site.

- 2016: Cape Cod Gateway Airport (HYA) initiated the process of reporting and analysis following requirements outlined in Massachusetts General Law, and the Massachusetts Contingency Plan (MCP).

Additionally, the Airport continues to coordinate with MassDEP and the Town of Barnstable as they complete ongoing investigations into the impacts of PFAS on soil and groundwater. The purpose of this project is to continue reporting, testing, mitigation, and monitoring as necessary to meet MassDEP Bureau of Waste Site Cleanup reporting requirements as detailed below. Please note that this is a long process, and multiple reports are required to meet MCP requirements.

**DEP 02** **MassDEP reiterates that one or more RAM Plans or possibly a modified Phase IV Remedy Implementation Plan may be necessary for the various construction activities as proposed in the DEIR.**

Comment noted. The Airport will continue to work with MassDEP relative to any potential RAM Plans or a modified Phase IV Remedy Implementation Plan that may be necessary for the various construction activities.

**DEP 03** **MassDEP also reiterates that the Proponent and LSP should evaluate whether the sampling/analytical results obtained from soil management under this project affect the remediation options as described in the Phase III Remedial Action Plan under RTN 4-0026347. All remediation waste shall be properly managed per the MCP.**

The Airport will consult a LSP to evaluate whether the sampling/analytical results obtained from soil management under this project affect the remediation options as described in the Phase III Remedial Action Plan under RTN 4-0026347.

**DEP 04** **MassDEP also directs the Proponent's attention to the portions of the MCP that state that remedial activities shall not result in the exacerbation of contamination. The Proponent and the LSP should work together to ensure that future RAMs for the airport construction activities do not exacerbate contamination. In particular, it should be demonstrated that any excavation of, or introduction of, soil beneath the caps will not exacerbate groundwater contamination.**

The Airport will work with a LSP to ensure that future RAMs for the airport construction activities do not exacerbate contamination. There will be no excavation of the caps nor the addition of soil beneath the caps as part of the proposed project construction.

**DEP 05** **The Project Proponent is advised that a spills contingency plan addressing prevention and management of potential releases of oil and/or hazardous materials from pre- and post-construction activities should be presented to workers at the site and enforced. The plan should include but not be limited to, refueling of machinery, storage of fuels, and potential on-site activity releases.**

The Airport maintains a Spill Prevention, Control, and Countermeasure Plan (SPCCP) that identifies fuel storage and transfer locations at Airport facilities and provides information needed to prevent and respond to releases of oil and/or hazardous materials (OHM).

The SPCCP was updated in January 2020. The plan also contains an Emergency Response Action Plan (ERAP and provides contact information for emergency personnel as well as local, state, and federal emergency response agencies.

The Airport's SPCCP includes release reporting information, establishes personnel training requirements, outlines spill response procedures, and contains standard operation procedures (SOPs) for Airport operations. The Airport's On-Call Environmental consultant conducts yearly inspections to document compliance with the SPCCP.

A Construction Period SWPPP will include site and project specific SPCC measures as required by the NPDES Construction General Permit.

**DEP 06** **The Proponent should determine if the Airport qualifies as a generator of hazardous waste and/or waste oil.**

The Proponent, Cape Cod Gateway Airport is a "generator" of hazardous waste and/or waste oil. Please refer to Section 7.1.1 for more information on the Proponent's "generator" status under federal and state law.

**DEP 07** **The proponent should propose measures to prevent and minimize dust, noise, and odor nuisance conditions, which may occur during construction.**

The construction contract for any proposed construction activities for the proposed Project will include requirements and measures to prevent and minimize dust, noise, and odor nuisance conditions, which may occur during construction. This includes compliance with Odor and Dust Control Regulation – 310 CMR 7.09. Noise Control Regulation – 310 CMR 7.10 – Regulations adopted under the authority of M.G.L. Chapter 111, Section § 142B and § 142D.

**DEP 08** **MassDEP requests that all non-road diesel equipment rated 50 horsepower or greater meet EPA's Tier 4 emission limits, which are the most stringent emission standards currently available for off-road engines. If a piece of equipment is not available in the Tier 4 configuration, then the Proponent should use construction equipment that has been retrofitted with appropriate emissions reduction equipment. Emission reduction equipment includes EPA-verified, CARB-verified, or MassDEP approved diesel oxidation catalysts (DOCs) or Diesel Particulate Filters (DPFs). The Proponent should maintain a list of the engines, their emission tiers, and, if applicable, the best available control technology installed on each piece of equipment on file for Departmental review.**

The Airport will include in its construction contracts requirements that all non-road diesel equipment rated 50 horsepower or greater meet EPA's Tier 4 emission limits. If a piece of equipment is not available in the Tier 4 configuration, then the Airport will require the use of construction equipment that has been retrofitted with appropriate emissions reduction equipment.

Emission reduction equipment includes EPA-verified, CARB-verified, or MassDEP approved diesel oxidation catalysts (DOCs) or Diesel Particulate Filters (DPFs).

The contractor will be required to maintain a list of the engines, their emission tiers, and, if applicable, the best available control technology installed on each piece of equipment.

**DEP 09** **All aircraft, once on the ground, should cease to operate its engines until such time when departure is warranted. Alternatively, to running these engines on idle, when warranted to maintain comfort within these aircraft during the warm summer months, plug in stations should be provided by the airport as an alternative to the greenhouse gas emissions, air pollutant emissions and noise that are emitted while these engines continue to operate while on the ground to keep onboard systems (refrigeration, air conditioning, etc.) running.**

The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft under 14 CFR § 91.3. To the extent that it is safe to do so, the pilot in command may take measures to reduce engine running time.

**DEP 10** **Sound impacts should be mitigated to extent practicable.**

The Project will include a noise mitigation plan to minimize, to the extent practicable, the generation of sound levels that will impact off-site receptors.

The noise mitigation plan will involve mitigation measures such as:

- Allowable construction timeframes will adhere to local requirements, which are anticipated to be work hours between 7:00 a.m. and 5:00 p.m., and major activities such as excavation or demolition will typically be limited to normal working hours;
- In accordance with Massachusetts Vehicle Idling Regulations, idling of construction equipment will comply with 310 CMR 7.11;
- Instituting a proactive program to ensure compliance with the applicable regulations or ordinances for noise limitation;
- Using appropriate mufflers on all equipment and ongoing maintenance of intake and exhaust mufflers;
- Muffling enclosures on continuously running equipment, such as air compressors and welding generators;

- Replacing specific construction operations and techniques by less noisy ones where feasible;
- Selecting the quietest of alternative items of equipment where feasible;
- Scheduling equipment operations to keep average noise levels low, to synchronize the noisiest operations with times of highest ambient levels, and to maintain relatively uniform noise levels;
- Locating noisy equipment at locations that protect sensitive locations by shielding or distance;
- Construction equipment will be required to be properly maintained, lubricated, and fitted with properly functioning muffler systems; and
- To the extent practicable, specific activities such as crushing and pulverizing, as well as equipment staging areas, will be located at appropriate distances from residential receptors.

**DEP 11** **Once the Project is occupied, MassDEP requests that the Proponent install permanent signs limiting idling to five minutes or less on-site.**

The Airport will install signs limiting idling to five minutes or less on-site.

**DEP 12** **MassDEP recommends the Proponent consider source separation or separating different recyclable materials at the job site. Source separation may lead to higher recycling rates and lower recycling costs.**

The contractors selected for the construction phase will adhere to materials banned from disposal under 310 CMR 19.017: asphalt pavement, brick, concrete, metal, wood, and clean gypsum wallboard. The Airport will seek to recycle these materials at the job site to the greatest extent feasible. All recyclable materials will be separated to achieve a higher recycling rate and reduce recycling costs.

## CAPE COD COMMISSION

**CCC 01** **The DEIR includes a detailed alternatives analysis and some beneficial modifications, such as a decrease in the total acreage of new land alteration—from approximately 63 acres in the ENF to less than 50 as currently proposed. The Applicant should continue assessing any alternatives that might be less detrimental to sensitive resources.**

Chapter 2 of this document continues to assess alternatives which reduce impacts to sensitive resources and land.

**CCC 02** **Among the identified alternatives, the retaining wall (2C) and bridge/elevated taxiway surface (2D) both appear less impactful to Upper Gate Pond than the preferred 2:1 side slope. These options warrant further evaluation in light of their potential wetland resource benefits. The cost and feasibility of providing mitigation for wetlands impacts, potentially at other locations, should be considered as part of this analysis.**

Additional alternatives for Taxiway D are evaluated in Section 2.1. As a result, a significant reduction in wetland impacts is anticipated with the identification of a new preferred alternative for Taxiway D. While Alternatives 2C results in slightly less permanent impacts, there would be an increase in temporary impacts and disturbance of pond bottom due to the space needed to construct the wall. As discussed in the Draft EA/EIR, a bridge span is cost prohibitive.

A wetland mitigation plan is presented in Section 5.1.

**CCC 03** **The Runway 15-33 extension alternatives analysis notes that the preferred alternative adds only the minimum pavement necessary to meet runway length needs. We support the modification of the design initially selected in the ENF, which would have added more pavement than the current proposal.**

Comment noted.

**CCC 04** **As the design for runway and taxiway modifications is finalized, the Applicant should identify any new areas where vegetated buffers can be maintained or re-established to protect nearby surface waters and incorporate these locations in landscaping and maintenance plans.**

See MEPA responses 42 and 45 above.

**CCC 05** **The Applicant should plan for ongoing maintenance and monitoring to ensure stormwater is adequately treated before entering surface and groundwater bodies.**

See MEPA Responses 32 and 33 above.

**CCC 06** **The Applicant should still aim to minimize tree and shrub clearing and land disturbance to the extent possible and mitigate when unavoidable.**

The Airport will minimize tree and shrub clearing and land disturbance to the extent possible. Tree/shrub clearing is proposed to be mitigated when unavoidable. Please see tree replanting plans to offset/mitigate loss from the proposed Projects are detailed in Chapter 6, Section 6.4.

**CCC 07** **The DEIR proposes to offset carbon releases and loss of carbon sequestration resulting from the Project with tree planting/replanting, and preservation of forested areas north of the airport. Commission staff encourage the Applicant to pursue permanent protection of existing forest via conservation restriction where feasible and identify locations on-site and elsewhere in the Town of Barnstable that might be appropriate for new planting.**

Tree replanting plans to offset/mitigate loss from the proposed Projects are detailed in Chapter 6, Section 6.4. Tree replanting is proposed in specific locations on airport property along Barnstable Road. Also, the airport will coordinate with the Greening Hyannis program which The Town was awarded a grant through the Greening the Gateway Cities Grant Program to plant 2,400 trees in the community's Environmental Justice areas. The airport will assist with finding locations for trees and/or provide funding for tree replanting.

Please refer to MEPA #30 for a discussion on the application of a conservation restriction to existing forested areas owned by the Airport. Furthermore, the area is designated for aeronautical use which would require action from the FAA to release the land.

**CCC 08** **The DEIR states the Applicant will prepare an avoidance plan for review by Massachusetts Historical Commission to address known archaeological sites in the area. The potential for unexpected discoveries should also be addressed by an unexpected discoveries plan and general monitoring of cultural resources during the construction process.**

FAA has commenced consultation with MHC regarding the draft archaeological protection plan. This consultation will continue on a parallel path.

**CCC 09** **The Applicant commits to implementing a Transportation Demand Management ("TDM") program as part of the Master Plan. Commission staff support the inclusion of a TDM program as a method to reduce single-occupancy vehicle trips to the Airport and promote alternative transportation options.**

Comment noted. The airport will investigate/adopt TMD measures as part of the proposed Project.

**CCC 10** **The DEIR notes several planned roadway infrastructure projects in the vicinity of the Project site, including but not limited to, the MassDOT Airport Rotary improvements and the Town of Barnstable Route 132 Corridor Improvements. We encourage the Applicant to review and coordinate with MassDOT and the Town of Barnstable to ensure multimodal connectivity is provided to the Airport from these roadways and major intersections.**

The Airport has already been in coordination with MassDOT and the Town relative to traffic improvement and roadway infrastructure projects in proximity to the airport. The Airport will continue to be involved in these planning meetings.

## ASSOCIATION TO PRESERVE CAPE COD, INC.

**AAPC 01** **Given that the taxiway will fill in part of the pond and destroy portions of the 100 and 200 ft. wetland buffer, it is difficult to envision that the taxiway's extremely close proximity to what remains of the wetland after construction will not lead to increased stormwater impacts to the [Upper Gate] pond.**

Within the Airport, 100% of stormwater that is discharged to Upper Gate and Lewis ponds undergo pre-treatment in five "Vortech" stormwater treatment units that are located underground. The units trap and retain trash, debris, and sediment from stormwater runoff. They remove 81 to 87% of total suspended solid and 67% of total petroleum hydrocarbons (TPH).

The Airport also has previously installed seven bioretention basins that collect stormwater from the Atlantic Aviation site as well as its associated aircraft parking area, access road, and several parking lots. These bioretention basins use plants, soil, and microbes to treat stormwater prior to discharge to an infiltration basin.

All stormwater from new impervious surfaces will be treated consistent with existing practices outlined above as well as meeting the Massachusetts Stormwater Standards requirement under the sections of the Wetlands Regulations, 310 CMR 10.00, and the Water Quality Regulations, 314 CMR 9.00.

Anticipated for late 2024, MassDEP intends to approve updated stormwater design standards to improve resiliency against increasing flooding, storm damage, and runoff pollution. The Project will achieve compliance with the standards anticipated by proposing and included stormwater control measures that meet the following new stormwater goals and guidance as follows:

- Replace outdated (60-year-old) precipitation data with up-to-date data (from the "NOAA 14 Atlas"). Storms have been increasing in intensity with climate change so today's "100-year storm" delivers more water than the 100-year storm of the 1960s. Using the older data to design stormwater systems results in pipes that are not large enough to carry the water. The water that is not captured in the systems can cause flooding, scouring of riverbanks, damage to buildings and bridges, and other problems. Using the up-to-date precipitation data to design stormwater systems will help to prevent stormwater from one property from causing damage to neighboring properties.

- Ensure resilience of wetlands resources and stormwater systems by requiring that systems are designed to handle extreme precipitation events. Rather than using the mid-point or "average" precipitation presented by NOAA Atlas 14, MassDEP is proposing to require that precipitation amounts be 90% of the upper end of the range of historical precipitation. This is called "NOAA 14 PLUS" and is proposed to ensure that stormwater from most (80%) storms will be adequately managed. This somewhat increased precipitation is based on actual events.
- Reduce flooding, reduce pollution, and replenish groundwater and streamflow by requiring that stormwater systems be designed to move more stormwater into the ground.
- Incentivize the use of nature and ecological processes to handle stormwater runoff and to prevent flooding and polluting nearby waters. This will reduce the amount of pavement and pipes and will be less costly for developers.
- Better align with the Environmental Protection Agency's requirements for stormwater management (through its General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in MA) to protect Massachusetts waters from harmful stormwater pollutants.

**AAPC 02** **The DEIR states that there is the potential for up to 5,200 cubic yards of unconsolidated organic materials along the pond bottom to be excavated in order to provide suitable base material for the taxiway slope. Polycyclic aromatic hydrocarbons and lead are contaminants known to be present in Upper Gate Pond sediments, likely as a result of airport stormwater runoff. APCC recalls from airport projects in the previous decade, which required study of Upper Gate Pond and Lewis Pond, that the airport's environmental consultants determined it would be unwise to dredge the pond bottom in an attempt to remove contaminated sediments because it would release and distribute contaminants and further degrade pond water quality. APCC also questions whether releasing contaminants into the water body may impact groundwater.**

Insofar as dredging is necessary to remove unsuitable materials for the base of Taxiway D within the limits of BVW and LUW, dredging will impact vegetated wetlands along the limits of Upper Gate Pond. Appropriate best management practices such as metal sheet pile cofferdams and turbidity curtains will serve to isolate the work area and protect the adjacent BVW.

**AAPC 03** **The project applicant has proposed, in very general, non-specific terms, possible mitigation for the wetland impacts that includes potential wetland replication on airport property (with limitations on what is acceptable to FAA guidelines) and/or on a property or properties elsewhere in the town of**

**Barnstable. The DEIR states that the mitigation "will be designed in the subsequent permitting phases of the project." Given the scarcity of detailed information regarding any specific proposed mitigation actions, it is APCC's position that the mitigation measures described in Section 7 of the DEIR are inadequate in relation to the substantial impacts created by the work proposed in and adjacent to Upper Gate Pond and its wetland buffer. It is impossible for the public to adequately review and comment on the appropriateness of the mitigation for these significant wetland impacts if the mitigation plan is not provided in the MEPA review process.**

Additional information on the Project's wetland impacts and proposed mitigation in Chapter 5: Wetlands and Stormwater. A specific wetland replication location, planting plan, hydrology and construction methodology is identified in Section 5.1.2. This conceptual replication plan will be presented to the regulatory agencies as part of the permitting phase. Once consensus is reached on a permittable plan, a draft wetland replication site plan will be developed, and accompanying narrative will be completed.

Mitigation area permit drawings will include erosion control details, grading plans, planting schedules and plans, and planting notes. Monitoring wells are to be installed. Construction of the wetland mitigation area, including fine grading, soils placement, and planting, shall be done under the supervision of a qualified wetland scientist.

**AAPC 04** **Lastly, the applicant in the DEIR states, "Based on the proposed avoidance, minimization, and mitigation, in Section 6.1.5., there are no significant impacts on wetlands and surface water beyond the existing condition as a result of the Proposed Action." APCC completely rejects the suggestion that the impacts to Upper Gate Pond will not be significant.**

A new alternative, Alternative 5, was evaluated which would reduce impacts by removing the perimeter access road adjoining Taxiway D for a limited portion of the site. **This would result in a 35% reduction of permanent fill of 1,600 sf of BVW from the Preferred Alternative 2B presented in the Draft EA/EIR, from 4,600 sf to 3,000 sf,** meet mitigation requirements under the Barnstable Wetlands Protection Bylaw, Cape Cod Commission Water Resources Policy, Massachusetts Wetlands Protection Act, and MassDEP Water Quality Certificate regulations (see 314 CMR 9.06) and the WPA (see 310 CMR 10.55(4)(b)). The proposed ratio of replacement area to BVW loss is at least 1:1, and a total of 3,000 sf of BVW replication would be provided on Airport property proximate to the impact location(s). The wetland replication area will be designed and constructed as per MassDEP's *Massachusetts Inland Wetland Replication Guidelines, Second Edition* (September 2022).

The use of the word "significant" in this content refers to the "Significance Thresholds" utilized by FAA as the lead federal agency in charge of making a determination as part of the EA process under NEPA. The term is not used to imply there are no impacts to the wetlands – rather the impacts that result from the proposed projects will be addressed via the requirements under state and federal laws to mitigate (and minimize) impacts and overall these impacts are not anticipated to trigger a significance threshold for the applicable Environmental Impact Category (e.g., wetlands).

FAA utilizes the "Significance Thresholds" to make a determination upon review of the final EA, public comments, and applicable interagency and intergovernmental consultation. The responsible FAA official determines whether any environmental impacts analyzed in the EA are significant.

For more information, see FAA Order 1050.1F available at the following web address:
https://www.faa.gov/documentLibrary/media/Order/FAA_Order_1050_1F.pdf

**AAPC 05** **APCC would like to see more assurances in the next EIR filing that the airport project construction and operation will not adversely impact the underlying aquifer, which is a source of public drinking water.**

The Cape Cod Aquifer is recharged solely by precipitation, with approximately 60% of rainfall and snowmelt contributing to recharge annually. Please see response to AAPC #01 for information relative to stormwater treatment proposed to avoid impacts to the groundwater.

**AAPC 06** **To ensure continued remediation of existing PFAS contamination and to prevent additional contamination in the future, MassDEP should require, and the applicant should commit to, expanded sampling and monitoring of the airport property for the presence of PFAS and other contaminants, including within the proposed project area.**

PFAS is discussed extensively on the Airport's website here: https://flyhya.com/airport-info/pfas/

Groundwater monitoring by the Airport will continue to track the PFAS plume migration and document the reduction in concentration over time until regulatory closure is achievable (estimated to be completed by 2029). A majority of the PFAS impacted soil within the two effected areas have been capped to reduce infiltration and groundwater impacts. The caps are inspected bi-annually to verify their effectiveness.

The actual time for treatment will be based on the collection of analytical samples for laboratory analysis. Groundwater monitoring beyond 2029 may be conducted at the Airport as part of an annual activity and use limitation (AUL) inspection or if plume concentrations have not dropped below the applicable GW-1. Bi-annual reports will continue to be uploaded to MassDEP until a permanent solution can be obtained.

**AAPC 07** **Additionally, the project's future EIR filing should provide more detail about proposed stormwater management, and should describe where and how LID and green infrastructure will be utilized, and where and how conventional stormwater treatment will be used. Where conventional stormwater treatment is proposed, the applicant should explain in detail why more modern LID and green infrastructure approaches are not feasible.**

The Airport has provided details in the Final EIR on proposed stormwater management in Chapter 5: Wetland and Stormwater. The chapter details the potential stormwater treatment methods and the feasibility for different areas of the airport.

**AAPC 08** **The applicant should commit, at a minimum, to replacing the number of trees that will be lost. Ideally, the sequestration value of new tree plantings should be calculated to confirm that an equal carbon sequestration value will be preserved by the replacements.**

The Airport is committed to replanting trees as a component to offset lost benefits from trees that will need to be removed as a result of the Preferred Alternative. Tree replanting efforts will take place as part of the airport's compliance with stormwater management regulations (anticipated to be in effect in late 2024, per the pending MassDEP regulatory updates) and standards which require the use of LID and Environmental Sensitive Site Design practices.

Additionally, the Airport will work with the Town of Barnstable's Greening the Gateway Cities Tree Planting Program to identify areas (either on airport or off airport sites) to replant trees. This Program is funded via a grant awarded to the Town from the Greening the Gateway Cities Grant Program to plant 2,400 trees in the community's Environmental Justice areas. As the Airport property is located within the program's Planting Zone it is able to meet the needs of the program by increasing tree canopy in the community.

Tree replanting efforts are anticipated to realize numerous benefits including visual enhancements to neighborhoods, air quality, wildlife habitat, and increased shade.

Any tree planting undertaken by the airport will need to be compatible with the airport's protected surfaces associated with instrument and visual operations. The airport (both on airport and off airport) periodically cuts bushes and trees that penetrate or have the potential to penetrate any applicable navigable surfaces.

## SIERRA CLUB-CAPE AND ISLANDS GROUP

**SC 01** **The DEIR does not acknowledge or in any way mitigate historical and continuing unfair and inequitable burdens imposed on designated environmental justice (EJ) communities in the vicinity of the Airport. In particular, decades of handling and use of aqueous film-forming firefighting foams (AFFF) at and around the Airport resulted in inadvertent but extensive PFAS contamination of public water supply wells and exposed Hyannis residents, students, workers, and visitors to significant but unknown amounts of hazardous but unknown chemical mixtures for significant but unknown time periods with potentially significant but unknown health consequences. PFAS-contaminated soil and the associated plumes flowing onto and emanating from Airport property continue to pose risks.**

In the Airport's Immediate Response Action (IRA) Status Report 14, IRA Completion Statement, Phase IV Final Report and Completion Statement, and Phase V Status Report (the "Report") for its property located at 480 Barnstable Road, Hyannis, Massachusetts (Horsley Witten, 2024), the comments provided on the DEIR by the Sierra Club have been previously addressed and are reiterated below to be responsive to the MEPA scope on the FEIR. This report is provided as Appendix C of this document.

"The Airport is managing the PFAS plumes associated with its historical use of fluorotelomer based AFFF. The Airport is not required to investigate or remediate non-Airport related PFAS plumes. The Airport has controlled its PFAS source areas with engineered barriers ("caps") to reduce potential groundwater impacts. As presented in multiple IRA Status reports available on MassDEP's website and the Airport's website (see above), the caps have significantly reduced migration of PFAS from soil into groundwater (depicted in **Figure 3.1- 1**).

The Airport is not responsible for controlling non-airport related PFAS plumes or soil impacts. It is the regulatory agencies and/or the Responsible Party(s) that will need to investigate sources that are outside of the Airport's responsibility. Additionally, the Airport's PFAS plume reached Maher Wells after the construction of the new treatment was completed and as such, no exposure to the community is believed to have occurred" (Horsley Witten, 2024).

See also MEPA 23.

**SC 02** **Sierra Club appreciates that the Airport has ceased use of AFFF except in emergency situations, that control measures are in place for when AFFF use is required, and that groundwater drawn from Hyannis-area wells is designated "safe" under the current state drinking water standard based on the granular activated carbon (GAC) treatment systems installed at various locations, including within the Maher wellfield located on property downgradient from the Airport owned by the town of Barnstable. However, this does not change the history of contamination and exposure in the Hyannis area nor erase current and future concerns facing EJ and other communities.**

See MEPA 23.

"The Airport is managing the PFAS plumes associated with its historical use of fluorotelomer based AFFF. The Airport is not required to investigate or remediate non-Airport related PFAS plumes. The Airport has controlled its PFAS source areas with engineered barriers ("caps") to reduce potential groundwater impacts. As presented in multiple IRA Status reports available on MassDEP's website and the Airport's website (see above), the caps have significantly reduced migration of PFAS from soil into groundwater.

The Airport is not responsible for controlling non-Airport related PFAS plumes or soil impacts. It is the regulatory agencies and/or the Responsible Party(s) that will need to investigate sources that are outside of the Airport's responsibility. Additionally, the Airport's PFAS plume reached Maher Wells after the construction of the new treatment was completed and as such, no exposure to the community is believed to have occurred" (Horsley Witten, 2024).

**SC 03** **The DEIR indicates that the Airport's proposed runway expansion and reconfiguration projects will utilize heavy machinery in moving hundreds of thousands of cubic yards of soil, including in locations coincident with and adjacent to temporary caps installed to prevent precipitation from mobilizing PFAS in soil contaminated by the Airport's own storage and use of AFFF. The DEIR asserts that precautions will be taken to ensure that these caps remain intact during construction and that the PFAS-contaminated soil will remain in place indefinitely, like a ticking time bomb. This is not acceptable.**

PFAS impacted soil in the East Ramp deployment area and at the ARFF/SRE Building area have been capped to prevent further groundwater impacts. Within the ARFF/SRE Building Area, pavement was used to create the cap. Within the deployment area within the vicinity of the east ramp, a

Geomembrane (30 mil Plastic liner), covered by topsoil and grass was utilized. Both caps prevent rain from leaching through the soil and entering groundwater. There are no proposed disturbances of these caps as part of the proposed projects.

As previously noted in the Draft EA/EIR, the airport will take all necessary precautions (e.g., marking construction limits) during all ground moving activities (e.g., grading, excavating, and fill) to ensure the capped areas of the airport remain intact during construction, and that the PFAS-contaminated soil will remain in place indefinitely.

**SC 04** **Update and expand DEIR to characterize unfair and inequitable AFFF-related burdens imposed on designated EJ communities to the fullest extent possible based on available and emerging sources of data, including the federally funded "Massachusetts PFAS and Your Health Study" involving blood and urine sampling, exposure assessment, and neurobehavioral assessment of Hyannis residents led by Silent Spring Institute.**

The investigation referenced above, "Massachusetts PFAS and Your Health Study", led by Silent Spring Institute referenced in this comment does not appear to have published any formal findings, datasets, or submitted articles to peer-reviewed journals as of September 2024 (the time of this Final EIR) based on a review of the project's website located at the following address:

https://silentspring.org/project/cdcatsdr-multi-site-health-study-pfas/massachusetts-pfas-and-your-health-study

Based on the information gleaned from the website, this appears to be a five-year study that is ongoing and thus, it is not feasible to address this study in this document. The Airport continues to follow the requirements of the MCP, and updated documentation is provided for public review at:

- https://flyhya.com/airport-info/pfas/
- https://eeaonline.eea.state.ma.us/EEA/FileViewer/Rtn.aspx?rtn=4-0026347

**SC 03** **...incorporate a permanent cleanup solution, to be implemented as a form of mitigation within the scope of the Airport's proposed projects, that will leverage the onsite availability of earth-moving equipment to remove AFFF-contaminated soil under the Airport's temporary caps for offsite transport, final disposition, and elimination of what would otherwise represent a "forever" source of risk to Hyannis-area communities.**

Removal of all PFAS impacted soil relating to the Airports historic use of AFFF is currently economically infeasible. As indicated in the Final Phase III Report dated June 2022 and prepared by HW (the "Phase III Report"):

"[T]he excavation of PFAS contaminated soils currently located below the two capped areas would result in approximately 3,000 trucks transporting approximately 105,000 tons of soil with an estimated transportation and disposal costs in excess of 75 million dollars. As such, large scale excavation is not justified by the benefits according to the Massachusetts Contingency Plan." The Phase III Report concludes that the existing caps along with potential future limited excavation and/or capping, is the final remedy for managing PFAS impacted soil at the Airport and as approved by the state agencies overseeing the remediation process. The caps are inspected, and groundwater data is collected every six months to document the effectiveness of the caps. This information is submitted to MassDEP every six months and is available online from MassDEP or the Airport's website.

Groundwater treatment for PFAS is occurring at the Maher wells treatment plant. The Town of Barnstable, through the Hyannis Water System will continue to operate the Maher Wells treatment plant and will continue to provide drinking water that meets the regulatory drinking water standards. The MassDEP periodically inspects the Maher Treatment plant under the water supply/drinking water program.

Groundwater monitoring by the Airport will continue to track the PFAS plume migration and document the reduction in concentration over time until regulatory closure is achievable (estimated to be completed by 2029). A majority of the PFAS impacted soil within the two effected areas have been capped to reduce infiltration and groundwater impacts. The caps are inspected bi-annually to verify their effectiveness.

**SC 04** **The DEIR does not provide detail on or in any way mitigate aviation-related greenhouse gas emissions associated with long-term Airport operations, particularly those attributable to fuel sales at and around the Airport and to fuel consumption by commercial and private aircraft flying into and out of the Airport.**

The proposed project is not intended to induce more operations. The Final EIR has been updated to provide additional information on the Airport's climate/emission reduction efforts both included as part of the proposed projects, and also as part of its larger effort in association with MassDOT Aeronautics and U.S. DOE to develop a smart micro grid at the airport –

necessary for enabling the electric aircraft and vehicle infrastructure. Other GHG reduction commitments such as tree replanting efforts, and sustainable building requirements, are discussed in Sections 6.3 and 6.4 of the Climate Change Chapter.

**SC 05** **Update and expand DEIR to present a current and detailed emission inventory for the Airport across all gases and sources, to apply these and other data in evaluating changes in aviation-related emissions attributable to the post-2005 expansion in fast-ferry service to the Islands, and to estimate future emissions under varying Airport usage scenarios including a no-build alternative.**

The Airport is in compliance with FAA requirements for air emissions for NEPA review and MEPA GHG analysis for stationary sources. The Airport is located in a NAAQS attainment area; is not in an Indirect Source Review designated area of Massachusetts; and is not located in an area with State Implementation Plan requirements. Therefore, no formal Emissions Dispersion and Modeling System or other air quality modeling is required. Instead, a qualitative analysis examining the background pollutant levels which are well within applicable air quality standards, and potential for changes and/or increases in air emissions was completed. The Project is not anticipated to result in additional emissions from any changes in operation due to several factors. This includes a near-term shift in commercial aircraft to a more fuel-efficient model which provides over 10% improvement in fuel and carbon emissions. Temporary emissions associated with construction are anticipated from the Project and will be mitigated to the extent possible as discussed below. Some additional emissions may result from increased vehicle traffic as discussed in the Draft EA/EIR. However, this additional traffic will not result in emissions sufficient to result in an exceedance of the NAAQS.

Furthermore, the Proposed Actions are anticipated to have little effect on air traffic volume over the next 5-7 years showing a modest increase of 1,000 operations by 2030, and will have minor effects on air traffic patterns, and therefore are not expected to have an adverse effect on air quality.

**SC 06** **To incorporate a climate mitigation plan consistent with state policies and targets aimed at eliminating or minimizing aviation related emissions across the time periods encompassed by the Airport's Master Plan and the anticipated lifetime of the proposed projects.**

Climate mitigation efforts, and GHG reduction commitments such as tree replanting efforts, and sustainable building requirements, are discussed in Sections 6.3 and 6.4 of the Climate Change Chapter.

## LINDA BOLLINGER, HYANNIS PARK CIVIC ASSOCIATION

**LB 01** **Noise from aircrafts has been the number one issue for the majority of Hyannis Park residents. The regular interruption of our lives by low-flying aircraft either taking off or landing along current flight paths is incompatible with our coastal village way of life.**

Cape Cod Gateway Airport is very conscious of its location in urbanized Barnstable and on the border of the Town of Yarmouth. It works cooperatively with the airlines and their pilots to reduce aircraft noise and maintain a constructive dialogue with neighbors who may be affected.

The Airport has instituted noise abatement procedures and defined flight corridors. Our visual flight rules for aircraft are voluntary by law, and pilots and aircraft operators are strongly urged to follow them when safety permits. During times of instrument flight rules when pilots must fly under the guidance of radar, the procedures do not apply.

Please refer to the airport's noise program webpage for more information

https://flyhya.com/pilot-info/noise-abatement/.

**LB 02** **Complete clean-up of contamination of groundwater, including (1) the timely containment of all identified PFAS plumes; and (2) the timely remediation of contaminated groundwater and affected soil at the source and downgradient from the source, is critical especially to a community south-southeast (i.e., downgradient) from the Airport like Hyannis Park.**

See SC 03.

**LB 03** **A major concern of the project is the effects of plane emissions on human populations under flight paths.**

The Federal Aviation Administration (FAA) released a final rule on April 26, 2024, to limit carbon particles emitted by subsonic aircraft engines. This rule sets maximum standards for the amount of non-volatile particulate matter (nvPM) emissions from U.S. civil aircraft engines. It aligns with Environmental Protection Agency recommendations and International Civil Aviation Organization standards.

Engine manufacturers will have new emissions standards to follow to reduce harmful effects to health and the environment. This new rule gives manufacturers certainty about nvPM emissions criteria that they can use in developing the next generation of aircraft engines.

This action is part of the U.S. Aviation Climate Action Plan that sets out to achieve net-zero greenhouse gas emissions from the U.S. aviation sector by 2050. Find more information about the FAA and its environmental efforts at the following webpage: https://www.faa.gov/sustainability.

**BETTY LUDTKE**

**BL 01** **It would be one thing for Cape Cod Gateway Airport to only analyze themselves as they seek to enlarge their operation, but it is quite another for Mass DoT Aviation and the FAA to join in this effort.**

The comment is unclear, however, we note that MassDOT and FAA are the state and federal aviation regulatory bodies overseeing the Airport's projects and associated environmental review and permitting – under both state and federal law.

They also provide funding and oversight to the current environmental review process under the MEPA and NEPA for the proposed projects. MassDOT and FAA officials have also attended project related public meetings (both during and beyond normal work hours) for the purpose of addressing and answering any concerns or questions from the community.

**BL 02** **The preferred alternative is the only viable alternative because of encroachment. Then what? What does Gateway do after this expansion? Build more ramp space to accommodate more corporate jets? What does the next 100 years look like?**

Airport development is guided by the FAA and MassDOT Airport Master Plan Update process. FAA Advisory Circular (AC) 150/5070-6B provides guidance for the preparation of master plans for all airports. Master plans for individual airports will vary in what elements they include and in the level of detail.

An airport master plan is a comprehensive study of an airport and usually describes the short, medium, and long-term development plans to meet future aviation demand. The elements of a master planning process vary in complexity and level of detail, depending on the size, function, issues, and problems of the individual airport.

Specific areas of the airport (e.g., ramp space) are reviewed under the Master Plan's capacity analysis and recommendations are made based on existing uses and predictions for future demand.

Airport Master Plans use a "Forecast Horizon" approach and 5-, 10-, and 20- year time frames are typical for short, medium, and long-term forecasts. Planning beyond a 20-year period, such as a 100-year time frame, would not be typically funded by FAA and likely to be too hypothetical to provide useful information.

**BL 03** **Air service for Cape Cod and the Islands needs to be studied regionally including accounting for any assets at Joint Base Cape Cod.**

MassDOT Aeronautics Division periodically conducts a Massachusetts Statewide Airport System Plan (MSASP), that serves as an important tool for the Commonwealth to help shape key policies and direct the development needs of Massachusetts' system of airports.

For more information, please use MassDOT's Aeronautics webpage at:

https://www.mass.gov/guides/massachusetts-statewide-airport-system-plan-msasp-history

FAA conducts a five-year study - The National Plan of Integrated Airport Systems (NPIAS) as required by 49 U.S.C. § 47103. The Federal Aviation Administration (FAA) is also required to maintain the plan for developing public-use airports in the United States and include the kind and estimated cost of eligible airport development necessary to provide a safe, efficient, and integrated system of public-use airport. To learn more, see:

https://www.mass.gov/guides/massachusetts-statewide-airport-system-plan-msasp-history

**BL 04** **I am not sure why you cannot bring yourselves to recognize how encroached Cape Cod Gateway Airport is.**

The Airport has grown along with the community (both businesses and the flying public) since its establishment in 1928 – with the growth of the airport as a reflection of the desirability of the transportation services, business, and employment opportunities that it generates for the not just Hyannis, but for the wider Cape Community.

The Airport continues to operate safely and efficiently, and the proposed projects included in the EA/EIR are those identified to support and enhance the safety and efficiency of the airport into the future.

**BL 05** **Just as I cannot understand why you won't even look at consolidating air operations at the largest airfield complex on Cape Cod.**

This comment notes the very large size of the runways at JBCC relative to other airports on the Cape. We specifically note the runway lengths at JBCC are as follows:

- Runway 14/32 9,501 × 150 ft and

- Runway 03/23 8,000 × 150 ft.

The JBCC runway lengths are comparable to Boston's Logan Airport runways– and by extension JBCC would be capable of serving the size aircraft that fly into and out of Logan. Opening of commercial carriers to operate out of JBCC would create a facility on the Cape that would be comparable to Logan in the size of aircraft it could accommodate, not just a "consolidation of air operations" from CCGA as suggested by the commentor.

Furthermore, JBCC has not publicly expressed any interest in opening its airfield to commercial carriers that we are aware of. Nor has JBCC expressed any ability to provide for the funding necessary to cover the costs of the transfer of existing tenants at the airport (e.g., hangars) and to refund the cost of those that would not choose to move – this cost is not known and likely to be cost prohibitive.

The comment does not cite any evidence that the JBCC is seeking to provide the same services as CCGA, and for the reasons expressed in response to BL #06, this idea has been deemed not feasible due to the significant financial, regulatory, and logistical issues that exist.

Lastly, it is important to note that several comments were received *in opposition* to this idea, for example, see WS #01, TC #01, HM #01, and GF #01.

**BL 06** **There are viable alternatives to the Gateway expansion recommended in this study. Those have not been studied to the level required to make this Environmental Assessment adequate for the task.**

The comment does not provide any specific information as to what "alternatives" it is referring to. With regard to the "JBCC Alternative," MEPA notes the following on its Certificate of the Draft Environmental Impact Report (dated Feb. 16, 2024):

*"The DEIR includes an evaluation of the use of JBCC as a public-use airport, with the closure of the Cape Cod Gateway Airport. The Proponent dismisses the alternative to use JBCC because it would shift environmental impacts to another community and notes the property itself is owned by the Commonwealth of Massachusetts and leased by the Federal Government, and hosts five different military commands, which would complicate jurisdictional issues; JBCC is outside of the control of the Cape Cod Gateway Airport Commission, which is an agency of the Town of Barnstable; would require a major change in land use for Falmouth; may not be positively received by the public; and is farther for commuting to Nantucket. In addition, the DEIR*

*identifies challenging constraints at the JBCC site and notes that the Airport supports emergency response and provides economic benefits to the local economy.*"

The Secretary in her scope for the Final EIR (pp. 26-32) in the Certificate for the DEIR (February 16, 2024), did not require additional analysis or consideration of the JBCC Alternative in the Final EIR.

**TJ SULLY**

**TS 01** **This Report is a Complete Whitewash, especially on the so-called Part 150 noise study. You can't do a Noise study from a computer to get the effects of noise on the Residents. This Draft should be rejected, and the Gateway Airport be made to have a real part 150 study done.**

Per FAA, noise models are computer models used to predict the levels of aircraft noise exposure produced over a geographic area. Noise models are used to efficiently and accurately evaluate aircraft noise, including assessing the potential noise impacts resulting from changes in aircraft operations.

The Aviation Environmental Design Tool (AEDT) is the FAA's required noise and environmental modeling application for all U.S. domestic regulatory analyses requiring FAA review. AEDT replaces several legacy environmental modeling tools, including the Integrated Noise Model (INM), the Noise Integrated Routing System (NIRS) and the Emissions Dispersion Modeling System (EDMS).

FAA uses noise modeling due to the need to generate detailed noise results over large areas, noise modeling is the only practical way to accurately and reliably determine geospatial noise effects in the surrounding community when analyzing proposals related to aviation noise.

The many challenges and limitations to using noise measurements for evaluating airport vicinity noise are summarized below:

- Non-aircraft sound can have a large influence on noise monitoring data, which can be difficult to separate from aircraft noise during data post-processing.
- Long-term (e.g., year-long) noise monitoring requires regular maintenance and calibration of the individual noise monitors on a continuous, year-round basis, which has considerable costs.
- To ensure the same accuracy and fidelity of data generated by noise models, an extremely large number of noise monitoring locations is required. (e.g., tens of thousands of noise monitors, collecting year-round data in the vicinity of an airport would be needed to match the fidelity and accuracy of noise modeling).
- Noise monitoring data is not capable of analyzing either "what if" scenarios or proposed future action airport and air space scenarios.

## DIANE LEDUC

**DL 01** **The airport in Hyannis should never have been built there. Expanding it is a ridiculous idea.**

As noted in the EIR, the proposed Projects are needed to enhance overall operational safety and efficiency at the Cape Cod Gateway Airport. The Projects are based on the need to reasonably accommodate existing and anticipated aviation demand for the current families of aircraft, FAA and MassDOT safety and security requirements, and Airport financial self-sufficiency. The Airport is not proposing expansion.

The Airport operates as an enterprise fund and is financially self-sufficient from the town in meeting its operating obligations and future infrastructure needs. References to FAA airport design standards refer to FAA Advisory Circular (AC) 150/5300-13B, Airport Design.

With respect to the extension of Runway 15-33, the proposed length is extended from 5,255 feet to a total length of 6,150 feet. This length is based on the 2022 Airport Master Plan analysis conducted for the Airport's current family of aircraft using the Airport facility and those projected to use the Airport with typical stage lengths (i.e., distances of travel to/from the Cape Cod Gateway Airport).

The length analysis used to determine the length was also based on additional screening that has taken place during the environmental review process, including input from surrounding communities. This analysis eliminates the 33-end extension, reducing the runway length recommendation identified in the Master Plan Preferred Alternative by approximately 400 feet.

**DL 02** **The people who live near the airport are being poisoned by the soot and chemicals that have migrated to their wells.**

This comment does not provide any specific information relative to the claims made. The Airport has provided documentation regarding efforts to address PFAS at the following website: https://flyhya.com/airport-info/pfas/.

**DL 03** **The noise is awful.**

This statement expresses a feeling not a substantial comment on the proposed Project. No context or additional information is provided in the statement to provide a response to such as where and when the noise is taking place and frequency.

Cape Cod Gateway Airport is very conscious of its location in urbanized Barnstable and on the border of the Town of Yarmouth. It works cooperatively with the airlines and their pilots to reduce aircraft noise and maintain a constructive dialogue with neighbors who may be affected.

The airport has instituted noise abatement procedures and defined flight corridors. Our visual flight rules for aircraft are voluntary by law, and pilots and aircraft operators are strongly urged to follow them when safety permits. During times of instrument flight rules when pilots must fly under the guidance of radar, the procedures do not apply.

Please refer to the airport's noise program webpage for more information https://flyhya.com/pilot-info/noise-abatement/.

**DL 04** **The man in charge of the Airforce Base in Bourne has said he'd be open to a conversation about moving the operation there.**

Comment noted, however, it is anecdotal in nature. It is not clear what "man" is being referred to. Furthermore, being "open to conversation" does not indicate a position in favor or against the idea.

## GALILEO FARIA

**GF 01** **I cannot understand the idea behind relocating the Cape Cod Gateway Airport to Otis Airforce Base are multiple levels. Simply the cost of relocating the airport ranging from FAA grants to private companies who operate within this airport would be so massive that I am not even sure how the Town could possibly even entertain this idea. I understand and sympathies with people who bring noise in the picture as an influential topic to this debate, but I also struggle with how this argument is valid as they are simple shifting the issue to someone else, for this instance it would be the residents of Mashpee.**

Comment noted.

## HELYNE MEDEIROS

**HM 01** **Does not support the Cape Cod Gateway Airport relocating to Otis Airforce Base.**

Comment noted.

## WALTER SPOKOWSKI

**WS 01** **The Cape Cod Gateway Airport (CCGA) has provided a crucial link in connecting Marine Home Center (MHC) operations on the islands with skilled, highly sought after workforce living in Barnstable County and the South Shore… Marine Home Center has demonstrated for over 40 years that the Hyannis airport is the only viable solution to its complex business model.**

Comment noted.

## CHRISTINE GREELEY

**CG 01** **Still unaddressed is the significant damage to land extending into the Mahar Wells and all the way down into Mill Creek in West Yarmouth draining finally into Lewis Bay.**

The Airport's PFAS plume is below the MassDEP GW-3 standard in all locations, which is protective of potential discharges to surface water. Analytical data and modeling indicate that the Airport's plume didn't reach the Maher Wells until 2022. It is anticipated that the Airport plume will enter Mill Creek, but at concentrations below the GW-1 and GW-3 standards as predicted by the fate and transport models. Please see the Airport's webpage on addressing PFAS here: https://flyhya.com/airport-info/pfas/.

As such, consistent with the Massachusetts Contingency Plan, the Airport's PFAS plume is not a risk to surface water. The Airport is not responsible for PFAS entering Mill Creek that may be above the GW-3 standard from others. Responsible parties associated with PFAS plumes impacting this area above regulatory criteria are not the responsibility of the Airport. This has been brought to the attention of MassDEP and others by the Airport. If a Responsible Party can be identified by the MassDEP, they will issue a Notice of Responsibility requiring the Responsible Party to initiate investigation and cleanup activities. The Airport is not responsible for PFAS plumes relating to non-Airport sources. It is now in the hands of MassDEP to determine next steps.

**CG 02** **The need for a larger terminal facility seems absurd when the current terminal is empty most days and the airport has been trying to seek interested lessors for unoccupied space including restaurant/snack bar space. If not for the car rental counters at the far end of the terminal there are not even employees behind counters. And the parking lots are glaringly empty.**

This comment provides anecdotal information relative to the use of terminal retail spaces by lessors and the capacity of the terminal building and does not provide any supporting data.

The need for the terminal building reconfiguration of space and/or expansion is detailed in the 2022 Airport's Master Plan Section 5.3. The Master Plan information addresses the methodology, assumptions, and general planning-level factors used to analyze facility requirements for key functional areas of the Airport passenger terminal. The terminal facility expansion is beyond the horizon of projects addressed in this document. It is within the Phase 2 group of projects for 2030 or beyond, as may be necessary. Interim short-term internal improvements are proposed as described in Section 2.4 of this document.

Furthermore, the capacity requirements were analyzed in the based on several factors and compared to growth sources identified in the Master Plan - Chapter 4: Forecasts. As stated in the Master Plan, the methodology used to investigate terminal space requirements was ACRP Report 25: Airport Passenger Terminal Planning and Design, Volume 2: Spreadsheet Models and User's Guide.

**CG 03** **Although PFAS contamination is being discussed, there is a significant issue of environmental pollution that has not been discussed, let alone addressed- the emissions clearly visible from the landing and departing aircraft. This is significant as recent studies show that it is particularly bad from smaller planes, which are heavy users of this airport. These emissions are very visible to the naked eye and are falling on the heavily populated areas around the runways. Barnstable has been allowing significant development of residential apartment complexes for several years now at the northern end of the airport, while Hyannis is a significant commercial town.**

See SC05 above.

**CG 04** **There should be great concern about the enlargement of the airport as Barnstable approved, and now has, the 1st power transfer station for the Vineyard Wind ocean-based turbines. The issues about the dialectic fluids needed at the site required significant engineering and containment plans as any leakage of even a few gallons could destroy the aquifer. This facility sits in a direct line at the end of 15/33 and would be an environmental disaster for Cape Cod should an aircraft ever crash into it.**

Comment noted. The proposed projects relate to the safety and efficiency needs of the Airport – to serve the needs of the existing families of aircraft operating at the Airport, see FEIR/EA Chapter 1, Section 1.1 Purpose and Need. Accordingly, the proposed projects would serve to reduce the likelihood of an aircraft incident or accident.

**CG 05** **Of additional concern is the fact that the airport needs to seek "easements" in order to complete their proposals. This comes after years of being told this would never be needed and development by our town should not encroach on the airport. These easements will be needed on environmentally fragile land and should not be allowed.**

Easements are needed for mostly Airport's current operating conditions. See Tables 1 These are to be acquired on a willing owner basis only. The easements are for control over airspace to provide enhanced safety for users of the Airport and NOT for future development. These are needed for the Airport's Object Free Areas, and Runway Protection Zones and are detailed in the Airport's Master

Plan update https://flyhya.com/wp-content/uploads/2022/05/5-HYA-Facility-Requirements-FINAL.pdf, where the Airport is seeking enhanced control over these areas that I currently does not have. Airspace control improvements are discussed in the Draft EA/EIR Section 4.2.

For the proposed extension on the Runway 15 end, the preferred alternative 4B does not include an extension on the Runway 33 end, and minimizes costs and impacts associated with off Airport property needed to be acquired for the construction of the Taxiway A extension to the ends of the extended Runway 33 end.

**CG 06** **The final issues include the flight paths and procedures that compromise the quality of life for so many residential properties especially at the southern end of 15/33. For years we have been seeking a better design and compliance and have only ever gotten responses saying, "It's voluntary" or the "FAA doesn't require." Looking at current noise complaint data from the airport is meaningless as people have given up calling! They claim it's pointless and they get the same answer every time with no results. At this time, the Town of Yarmouth is attempting to work with the airport on developing serious responsive flight procedures- but increasing runways is not the best solution at this time to the significant issue of noise pollution. Noise pollution studies are now emerging that show it to be a significant public health issue.**

The airport is working with the FAA, MassDOT Aeronautics, its consultant, the Town of Yarmouth, and neighborhood stakeholders on possible flight procedures that may be feasible to reduce noise impacts experienced in surrounding areas. The timeline for this effort is beyond the timeframe of the FEIR/EA, and there is not yet a scope for this effort. The airport will make information relative to this effort available on its website when it is feasible and appropriate to do so.

**THOMAS COLLIER**

**TC 01** **There is talk of moving the Airport operations over to Joint Base Cape Cod. The logistics and the expense of moving not just the Airport facilities but the airfield tenants such as Cape Air, Gull Air and even Griffin Avionics, make it economically unfeasible nor even practical.**

Comment noted.

**TC 02** **As someone who has been here quite some time, the negative knee jerk reaction to "new development" is quite understandable. However, when you consider that the airport sits on 639 acres of land, which is zoned commercial/industrial, and has only developed a paltry 140 acres, this is probably the least developed commercial property in the area. Imagine how much more developed it would be for regular commercial use, which would bring much more noise and pollution from vehicles and other activity.**

Comment noted.

**TC 03** **This project includes even more green technology, which would almost make their operations carbon neutral, which would be much less than the pollution from a parking lot of a local grocery store.**

While not a specifically a commitment proposed as part of this Project, the Airport is working on and committing resources to the planning, permitting, and design phases for a smart microgrid in conjunction with the MassDOT Aeronautics Division via a $1.95 million grant awarded from the U.S. Department of Transportation's Strengthening Mobility and Revolutionizing Transportation (SMART) Program.

The future microgrid will generate and distribute clean, reliable power at the airport.

**TC 04** **The land clearing effect on the environment is addressed extensively in their plan with off-setting mitigation strategies that would reduce any impact to a bare minimum.**

Comment noted. As discussed previously in the DEIR, the large amounts of undeveloped land contain forest and other land uses contribute to the overall carbon reductions identified – that effectively offset losses of carbon reductions associated with tree cutting identified due to the approximately 10-acre addition to the East Apron area for future hangars.

The Airport is committed to reducing the impacts from tree cutting and associated loss of carbon reducing forested areas – please see responses to MEPA #45 and #46.

**KAREN INGEMIE**

**KI 01 – KI 05** **I have attended Cape Cod Gateway Airport public meetings, have contacted the noise abatement coordinator for years regarding these issues without resolution. I gave up complaining!!!!**

- **increased traffic, helicopters, larger jets, (charters, private, commercial) no notification**
- **risk incident factor of low altitude jets**
- **the frequency and chronic exposure to noise levels and air emission pollution**
- **the airports noise abatement procedures and defined flight paths**
- **the airports vector tracking system not reflecting the correct flight path of aircraft flying over residents. I have documented videos and tracking system screenshots.**

**Please consider reviewing Cape Cod Gateway Airports Flight/Noise Abatement Procedures and potential flight path changes for arrival and departures to minimize aircraft noise and incident risk in the Hyannis Park residential area.**

Comment noted. Cape Cod Gateway Airport is very conscious of its location in urbanized Barnstable and on the border of the Town of Yarmouth. It works cooperatively with the airlines and their pilots to reduce aircraft noise and maintain a constructive dialogue with neighbors who may be affected.

The airport has instituted noise abatement procedures and defined flight corridors. Our visual flight rules for aircraft are voluntary by law, and pilots and aircraft operators are strongly urged to follow them when safety permits. During times of instrument flight rules when pilots must fly under the guidance of radar, the procedures do not apply. View HYA's Flight Path Maps here: https://flyhya.com/pilot-info/noise-abatement/flight-paths/

Comments, questions, and other information related to airport noise are welcome via a designated phone number, 508-862-8268. Messages are taken live when possible or recorded on voicemail. The airport employs a noise abatement coordinator who receives and investigates all noise complaints.

# Chapter 10.0

List of Preparers

# 10.0 LIST OF PREPARERS

This Final EIR has been prepared under the direction of the Cape Cod Gateway Airport, along with Epsilon Associates, Inc., ASG, GEI Consultants, and HSH to fulfill the requirements of MEPA for the Cape Cod Gateway Airport Master Plan Improvements Project at Cape Cod Gateway Airport, Barnstable, MA.

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# Appendix A

Secretary's Certificate on the Draft EA/EIR

# Appendix B

Airport Layout Plan

## Appendix C

Phase IV Report

# Appendix D

Spill Prevention, Control, and Countermeasure Plan

# Appendix E

Stormwater Pollution Prevention Plan

## Appendix F

JetBlue E190 Letter

**Appendix G**

Upper Gate Pond Permanent Solutions Statement with No Conditions

## Appendix H

Circulation List

# Appendix I

Updated EJ Distribution List