

FINAL
ENVIRONMENTAL ASSESSMENT

Terminal B Optimization Project

Boston Logan International Airport
East Boston, Massachusetts

PREPARED FOR

Massachusetts Port Authority



PREPARED BY



IN ASSOCIATION WITH

AECOM

Harris Miller Miller & Hanson, Inc.

DATE June 30, 2017

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

A handwritten signature in blue ink that reads "R. Doucett".

Responsible FAA Official
Environmental Program Manager
FAA New England Region

June 30, 2017

Date

**DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

FINDING OF NO SIGNIFICANT IMPACT

**Terminal B Optimization Project
Boston - Logan International Airport, Boston, Massachusetts**

Proposed Action

The Massachusetts Port Authority (Massport) is the sponsor of the Terminal B Optimization Project (the Project) at Boston-Logan International Airport. The purpose of the Project is to streamline passenger security screening and baggage handling, and improve operational efficiency at Terminal B.

The Project, necessary as a result of the American Airlines and U.S. Airways merger, would combine the operations of the legacy air carrier U.S. Airways (currently operating out of the existing Pier B as American Airlines) and American Airlines (currently operating out of the existing Pier A) into one consolidated operation at Terminal B. Terminal B, Piers A and B are connected on the secure airside, but not on the landside. After the consolidation, gates located on the Terminal B, Pier A side will have improved connectivity among the air carriers. The Project would result in 18 contiguous gates for American Airlines at Pier B.

The Terminal B Optimization Project's improvements would take place mostly within the existing terminal footprint. There would be two terminal building "bump-outs" to improve the terminal layout, functionality, and circulation for both the Arrivals and Departures Levels. There would be approximately 53,000 square feet of new building footprint; the larger bump-out would have a footprint of 47,300 square feet and the smaller bump-out would have a footprint of 5,700 square feet. Between both levels, the total new square footage of the building would be 84,000 square feet. There would also be approximately 81,000 square feet of renovations within the existing terminal footprint. The Terminal B Optimization Project will:

- Consolidate American Airlines' operations to Pier B, allowing gates to be located contiguously instead of in two separate locations;
- Consolidate security checkpoint operations from three to one location, improving safety, throughput, and customer experience;
- Connect all Terminal B, Pier B gates post security, allowing for greater gate flexibility and enhanced passenger connectivity;
- Reconfigure Terminal B, Pier B existing ticket counters into one, unified ticketing hall;
- Improve outbound baggage make-up efficiency and flexibility;
- Improve inbound baggage claim devices, improving operational efficiency and flexibility;
- Enhance passenger holdrooms to accommodate existing and anticipated passenger areas activity levels;
- Improve concession areas; and
- Optimize gate layout by relocating fuel pits and right-sizing ramp positions.

The new terminal optimization would convert two areas of existing aircraft apron to terminal building. Several aircraft parking areas and associated ground service equipment storage would be shifted to optimize use of existing paved areas of the apron and ramp. Sections of the existing underground aircraft fuel supply system will be repositioned to accommodate reorganization of the aircraft parking in the immediate project area. The

Project will not require any changes to adjacent aircraft taxiways and/or taxilanes or associated aircraft movements.

Upon consolidation, American Airlines will be operating more efficiently while using fewer gates. American Airlines' former gates on Terminal B, Pier A are expected to be backfilled by Southwest Airlines as they relocate from Terminal A. As described in the Environmental Assessment (EA) Chapter 5, *Environmental Consequences*, such moves are part of an evolving plan to make Logan Airport's terminal more flexible and capable of adjusting to market conditions.

The revision to the Airport Layout Plan (ALP) requires FAA approval. Massport and FAA prepared an EA to assess the Proposed Action under the National Environmental Policy Act (NEPA). The Proposed Action will require a Construction General Permit under the National Pollutant Discharge Elimination System. See EA Table 7-1, for anticipated permits and approvals.

Alternatives Considered

Two Action Alternatives (design variations) and the No-Action Alternative were evaluated. Alternatives are considered according to their ability to meet the Project's purpose and need (see Chapter 2, *Purpose and Need*). The key difference between the two Action Alternatives relates to how bag screening and outbound baggage handling systems (known as the baggage make-up area, which includes staging, cart lanes, bag belts, conveying systems, etc.) is improved and reconfigured on the Arrivals Level (see Chapter 3, *Alternatives and Proposed Action*). Alternative evaluation considerations include system redundancy, cost, constructability, and phasing.

Each of the Action Alternatives have similar, negligible environmental impacts. Massport selected Action Alternative B for further refinement as the Proposed Project. Action Alternative B presents the best option for the bag screening and baggage make-up reconfiguration and improvements. Additionally, Action Alternative B required fewer areas of new construction (two new building areas instead of three).

The Project would incorporate sustainable design and construction practices and would strive to achieve Leadership in Energy and Environmental Design (LEED®) Commercial Interiors Gold certification (Pier B Departures Level only). The Project would also add Thirty-one (31) electric charging stations to facilitate the rapid conversion of diesel or gasoline powered ground service equipment (GSE) to electric GSE. Transitioning to electric GSE reduces greenhouse gas and other air emissions associated with conventionally-fueled GSE. Refer to EA Chapter 3, *Alternatives and Proposed Action*, for a detailed description of alternatives.

Public Comment

The project was presented at a public meeting held on January 11, 2017. The draft EA was made available for a 30-day public review period. It was made available to local public libraries, and posted on Massport's website. A Legal Notice was published in the Boston Herald. No public comments were received on the draft EA.

Assessment and Mitigation

EA Chapter 5, *Environmental Consequences* and Chapter 6, *Beneficial Measures/Mitigation* evaluate the environmental consequences and mitigation measures. Together with the proposed mitigation, all adverse impacts to resource categories are anticipated to be less than significant based on the significance thresholds defined in FAA Order 1050.1 F. The Project will, moreover, provide significant operational environmental benefits, as described below. As the project is implemented, the FAA will determine if any subsequent changes to the Project or its phasing could trigger additional analysis and/or a Reevaluation under NEPA.

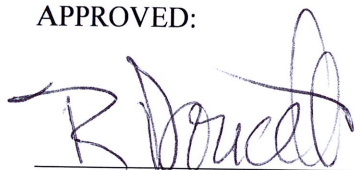
Passenger processing and experience will improve through building additions and new amenities. The Project will be built to Leadership in Energy and Environmental Design (LEED®) and Massachusetts LEED Plus standards, to achieve LEED Silver, or higher certification. Thirty-one (31) charging stations for electric GSE will be installed. EA Table 6.1 summarizes sustainability measures to be considered and additional sustainable design opportunities will be addressed as the Project design and construction progresses. These design commitments will be incorporated into construction, especially as they relate to the proper specification of sustainable materials and construction practices. The Project has been designed to comply with the resiliency goals set by Massport guidelines, including siting of critical infrastructure outside of future flood hazard areas.

All other impacts discussed in the EA are minor construction related impacts that are temporary in nature, including noise, air, and construction related traffic. Massport commits to follow appropriate construction best management practices to minimize these minor impacts.

Finding of No Significant Impact

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

APPROVED:



Richard P. Doucette
Environmental Program Manager, FAA New England Region

6/29/17
Date



Massachusetts Port Authority
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East Boston, MA 02128-2909
Telephone: 617-568-5000
www.massport.com

June 30, 2017

Mr. Richard Doucette
Federal Aviation Administration
New England Region
1200 District Avenue
Burlington, MA 01803

Re: Boston Logan International Airport/Terminal B Optimization Project Environmental Assessment

Dear Mr. Doucette,

On behalf of the Massachusetts Port Authority (Massport), I am pleased to submit the **Final Environmental Assessment (EA)** for the **Terminal B Optimization Project** in accordance with the National Environmental Policy Act (NEPA) regulations. This document follows the Federal Aviation Administration (FAA) requirements for preparation of an EA under NEPA and responds to all FAA comments on the Draft EA (May 2017).

As described in this EA, Massport continues to respond to an evolving airline industry by modifying and upgrading facilities at Boston-Logan International Airport to meet industry needs while providing facilities that improve and simplify the passenger traveling experience. The Terminal B Optimization Project will streamline passenger security screening and baggage handling, improve coordination for one of Logan Airport's largest air carriers, and increase operational efficiency in Terminal B. The Project, necessary as a result of the American Airlines and U.S. Airways merger, would combine the operations of the legacy air carrier US Airways (currently operating out of the existing Pier B as American Airlines) and American Airlines (currently operating out of the existing Pier A) into one consolidated operation at Terminal B. The Project will result in 18 contiguous gates for American Airlines at Pier B within the existing terminal footprint and adjacent aircraft apron areas.

This EA will be available for review on Massport's website at <http://www.massport.com/environment/environmental-reporting/environmental-filings>. We look forward to your review of this document. Please contact me at (617) 568-3524 or Mike Gove at (617) 568-3546, if you have any questions about this project or the Final EA.

Sincerely,

Massachusetts Port Authority

Stewart Dalzell, Deputy Director,
Environmental Planning and Permitting
Strategic & Business Planning Department

cc: M. Gove, M. Guilmet, F. Leo/Massport
C. Lurie, L. Ballou/VHB

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Project Overview and Background

1.1 Introduction

The airline industry continues to evolve with mergers, consolidations, and new entrants. Airlines have continued the trend toward more efficient operations and increasing load factors. Airports consequently have to provide greater flexibility and operational efficiency to accommodate the evolving airline configurations and to enhance passenger convenience, specifically connectivity on the airside between terminals. In an ongoing effort to adjust to changing airline business models and facility requirements, the Massachusetts Port Authority (Massport) continues to respond by modifying and upgrading facilities to meet industry needs while providing facilities that improve and simplify the passenger traveling experience. As part of this ongoing process, Massport is proposing several measures to optimize operations at Terminal B, Pier B at Boston-Logan International Airport (Logan Airport or Airport).

The Terminal B Optimization Project (the Proposed Action/Proposed Project) would streamline passenger security screening and baggage handling, improve coordination for one of Logan Airport's largest air carriers, and improve operational efficiency at Terminal B. The Project, necessary as a result of the American Airlines and U.S. Airways merger, would combine the operations of the legacy air carrier U.S. Airways (currently operating out of the existing Pier B as American Airlines) and American Airlines (currently operating out of the existing Pier A) into one consolidated operation at Terminal B. Terminal B, Piers A and B are connected on the secure airside, but not on the landside. Post the consolidation, gates located on the Terminal B, Pier A side will have improved connectivity among the air carriers. The Project would result in 18 contiguous gates for American Airlines at Pier B (**Figure 1-3**).

In total, the Project would include approximately 53,000 square feet of new building footprint (a total of 84,000 square feet split between the Arrivals and Departure Levels) and 81,000 square feet of renovated space within the existing Terminal B footprint. In addition to accommodating all American Airlines operations on Pier B, key elements of the Project include one consolidated, nine-lane passenger security checkpoint; improved baggage handling systems; a reconfigured unified ticketing hall; additional passenger holdroom facilities; and retail/concession enhancements.

The Project is responding to industry changes already in effect and would not change aircraft operations, fleet mix, passenger numbers, or ground transportation volumes. New construction would take place entirely within previously-developed areas (the existing Terminal B and immediately adjacent paved apron areas), would not affect any natural resources, and would not have an adverse effect on noise or air quality. The reconfigured

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aircraft parking locations would require relocating the associated hydrant fuel pits to accommodate the aircraft positions.

1.1.1 Logan Airport Overview

Logan Airport is the primary airport providing service for the New England region. Logan Airport operates within a larger network of New England regional airports that include Boston-Manchester Regional Airport (New Hampshire) and T.F. Green Airport (Rhode Island). For the most part, air service from these two regional airports is focused on short haul and medium haul nonstop jet service to business and leisure destinations as well as to air carrier hubs to access longer haul options.

Logan Airport is an economic engine contributing many jobs and significant economic activity to the Boston metropolitan area and the larger New England region. The Airport supports approximately 95,000 direct and indirect jobs and contributes over 13 billion dollars a year in total economic activity.¹ In 2015, Logan Airport was the 18th busiest commercial airport in the U.S. as ranked by aircraft operations and the 17th busiest in the U.S. ranked by number of passengers.²

As shown in **Figure 1-1**, Logan Airport is one of the most land-constrained airports in the nation and is surrounded by water on three sides. The Airport boundary encompasses approximately 2,400 acres in East Boston and Winthrop, including 700 acres underwater in Boston Harbor. Logan Airport is close to downtown Boston and is accessible by public transit and a well-connected roadway system.

Logan Airport has four passenger terminals (Terminals A, B, C, and E), each with its own ticketing, baggage claim, and ground transportation facilities. The airfield comprises six runways, approximately 15 miles of taxiway, and approximately 240 acres of concrete and asphalt apron. Massport continues to evaluate and implement enhancements to Logan Airport's security, operational efficiency, and accessibility to and from the Boston metropolitan area, while carefully monitoring the environmental effects of Logan Airport's operation.

1.1.2 Terminal B Overview

Terminal B is comprised of two individual piers, Pier A and Pier B, separated by a shared parking garage (the Terminal B Garage). Designed in 1972 and 1973 respectively, Pier A was constructed to accommodate American Airlines in 1975, and Pier B was constructed for the former U.S. Airways in 1974. The terminal remained relatively unchanged until the U.S. Airways expansion in 1980, which resulted in major additions including a large boarding lounge for two contact gates, additional holdroom capacity and vertical circulation for ground-boarding, and an airline club. A dedicated area for the U.S. Airways Shuttle was added in 1999 as U.S. Airways consolidated its mainline, commuter, and shuttle operations (formerly at Terminal A) in one location in Terminal B. Between 1980 and 2000, other smaller projects, including passenger holdroom improvements, concession expansions, and passenger lounges, were completed at both piers.

In response to September 11, 2001, the Department of Homeland Security, along with Massport, implemented an Airport-wide project to enhance hold baggage screening capabilities for outbound passengers on both international and domestic flights. In-line baggage screening enhancements were constructed for both piers at Terminal B as part of this initiative, including Checked Baggage Inspection System (CBIS) Bag Rooms B6 and

¹ Massport and InterVISTAS, 2015

² ACI-NA. 2014. *Airport Traffic Reports*. www.aci-na.org. Accessed April, 26, 2017.

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B7; these were completed in 2002. The B6 and B7 CBIS's were renovated in 2015 and 2014 respectively, to comply with current Transportation Security Administration (TSA) standards.

Additional terminal upgrades have been performed at Pier B to improve terminal deficiencies, including:

- Ticketing hall upgrades;
- Post-security concessions food court and landside concessions improvements;
- Lighting upgrades to baggage claim areas;
- Restroom improvements; and
- Finishes and flooring upgrades.

Figure 1-2 presents the existing conditions at Terminal B.

1.2 Regulatory Compliance

Approval of the Terminal B Optimization Project is subject to federal environmental regulations. The Federal Aviation Administration (FAA) has determined that the Proposed Project requires an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA), due to proposed changes to the Airport Layout Plan that would result from the Project's implementation. This EA describes the Proposed Project, identifies alternatives considered, and documents the potential environmental effects associated with constructing and operating the proposed Terminal B Optimization Project. The Project is not expected to result in significant environmental impacts, such as increased vehicle traffic, noise, air emissions, or new land disturbance/impervious surface area. The FAA has reviewed this EA and has issued a Finding of No Significant Impact (FONSI) for the Proposed Project.

The Proposed Project is not subject to the Massachusetts Environmental Policy Act (MEPA) since the project does not include expansion of an existing terminal at Logan Airport that is 100,000 or more square feet.³ Chapter 7, *Regulatory Compliance and Public/Agency Coordination* provides more details regarding anticipated federal and state permits for the Proposed Project, along with the status of the permits and other approvals.

³ Massachusetts Environmental Policy Act, 11.03: Review Thresholds 6 (b)6.

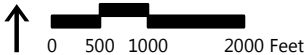


Source: ArcGIS Online Bing Aerial 2016

FIGURE 1-1 Logan Airport Physical Setting

Terminal B Optimization Project

— Select Roadways



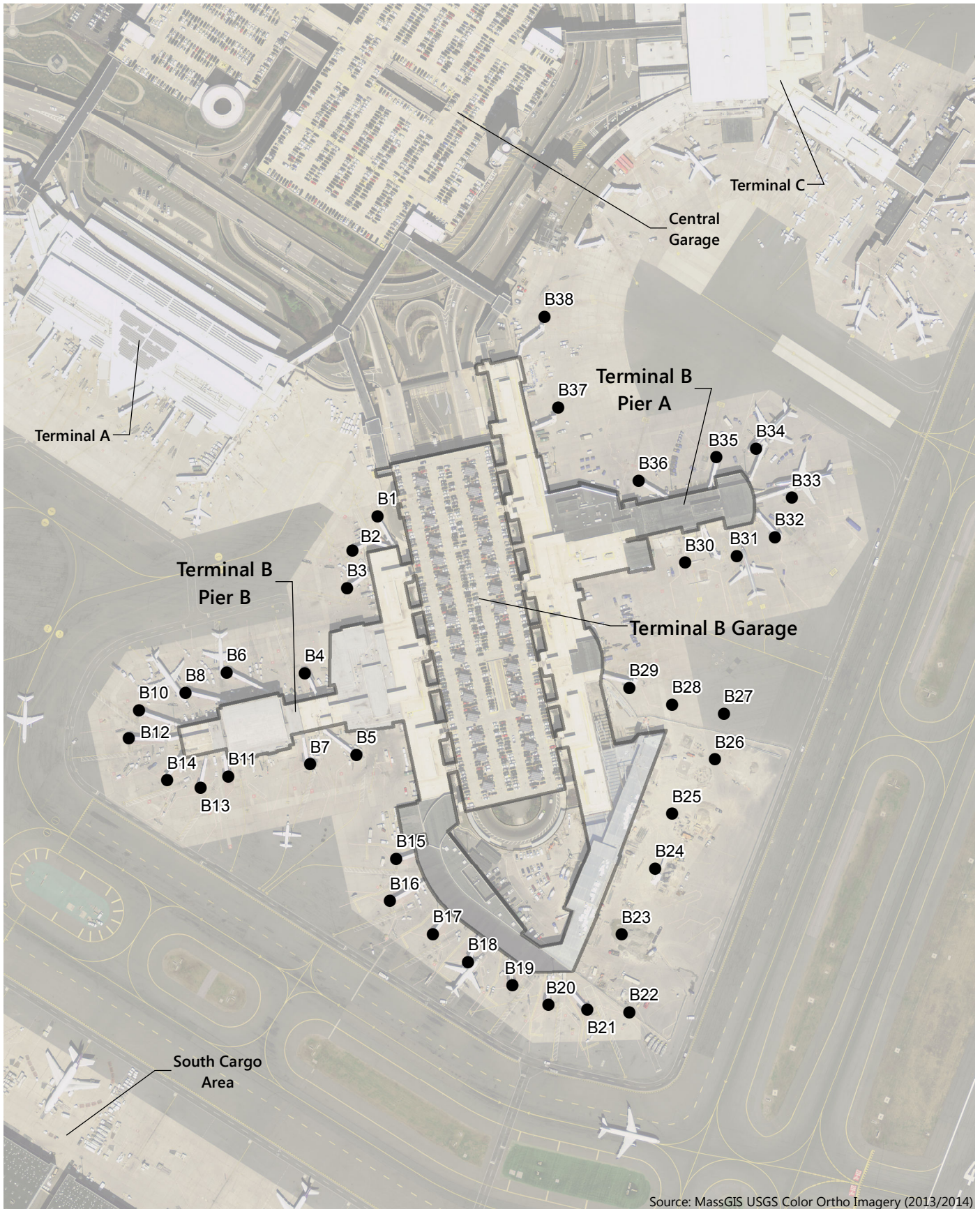


FIGURE 1-2 Terminal B Existing Conditions

Terminal B Optimization Project

- Terminal B Gates



1.3 Project Goals and Objectives

Massport must continue to provide safe, secure, and convenient facilities for its users and tenants. The overall goals of the Project are to provide flexible and efficient facilities for the changing airline industry, to improve safety and the efficiency of passenger security screening, and to enhance passenger convenience by improving connectivity within the terminal. The key objective of the Terminal B Optimization Project is to consolidate American Airlines operations from two locations in Terminal B to a single location in Pier B (**Figure 1-3**) and to improve efficiency in security and airline operations while also providing adequate, convenient facilities to accommodate passengers.

1.4 Alternatives Considered and Proposed Action

Massport has evaluated two Action Alternatives (design variations) as well as the No-Action Alternative for the Terminal B Optimization Project, as required by NEPA. Alternatives are considered according to their ability to meet the Project's purpose and need (see Chapter 2, *Purpose and Need*). The key difference between the two Action Alternatives relates to how bag screening and outbound baggage handling systems (known as the baggage make-up area, which includes staging, cart lanes, bag belts, conveying systems, etc.) is improved and reconfigured on the Arrivals Level (see Chapter 3, *Alternatives and Proposed Action*). Alternative evaluation considerations include system redundancy, cost, constructability, and phasing.

Each of the Action Alternatives have similar, negligible environmental impacts. Massport selected Action Alternative B for further refinement as the Proposed Project. Action Alternative B presents the best option for the bag screening and baggage make-up reconfiguration and improvements. Additionally, Action Alternative B required fewer areas of new construction (two new building areas instead of three new building areas).

The Project would incorporate sustainable design and construction practices and strives to achieve Leadership in Energy and Environmental Design (LEED®) Commercial Interiors Gold certification (Pier B Departures Level only). The Project would also add 31 charging stations for electric ground service equipment (GSE). Transitioning to electric GSE reduces greenhouse gas (GHG) and other air emissions associated with conventionally-fueled (diesel or gasoline) equipment.

Refer to Chapter 3, *Alternatives and Proposed Action*, for a detailed description of alternatives.

1.5 Proposed Project

The Terminal B Optimization Project's improvements would take place primarily within the existing terminal footprint. There would be two terminal building "bump-outs" to improve the terminal layout, functionality, and circulation for both the Arrivals and Departures Levels. There would be approximately 53,000 square feet of new building footprint; the larger bump-out would have a footprint of 47,300 square feet and the smaller bump-out would have a footprint of 5,700 square feet. Between both levels, the total new square footage of the building would be 84,000 square feet. There would also be approximately 81,000 square feet of renovations within the existing terminal footprint. Proposed improvements include the following key components:

- Consolidate American Airlines' operations to Pier B, allowing gates to be located contiguously instead of in two separate locations;

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- Consolidate security checkpoint operations from three to one location, improving safety, throughput, and customer experience;
- Connect all Terminal B, Pier B gates post security, allowing for greater gate flexibility and enhanced passenger connectivity;
- Reconfigure Terminal B, Pier B existing ticket counters into one, unified ticketing hall;
- Improve outbound baggage make-up efficiency and flexibility;
- Improve inbound baggage claim devices, improving operational efficiency and flexibility;
- Enhance passenger holdrooms to accommodate existing and anticipated passenger areas activity levels;
- Improve concession areas to enhance the passenger experience; and
- Optimize gate layout by relocating fuel pits and right-sizing ramp positions.

Figure 1-4 presents the Proposed Project for Terminal B Arrivals and Departures Levels.

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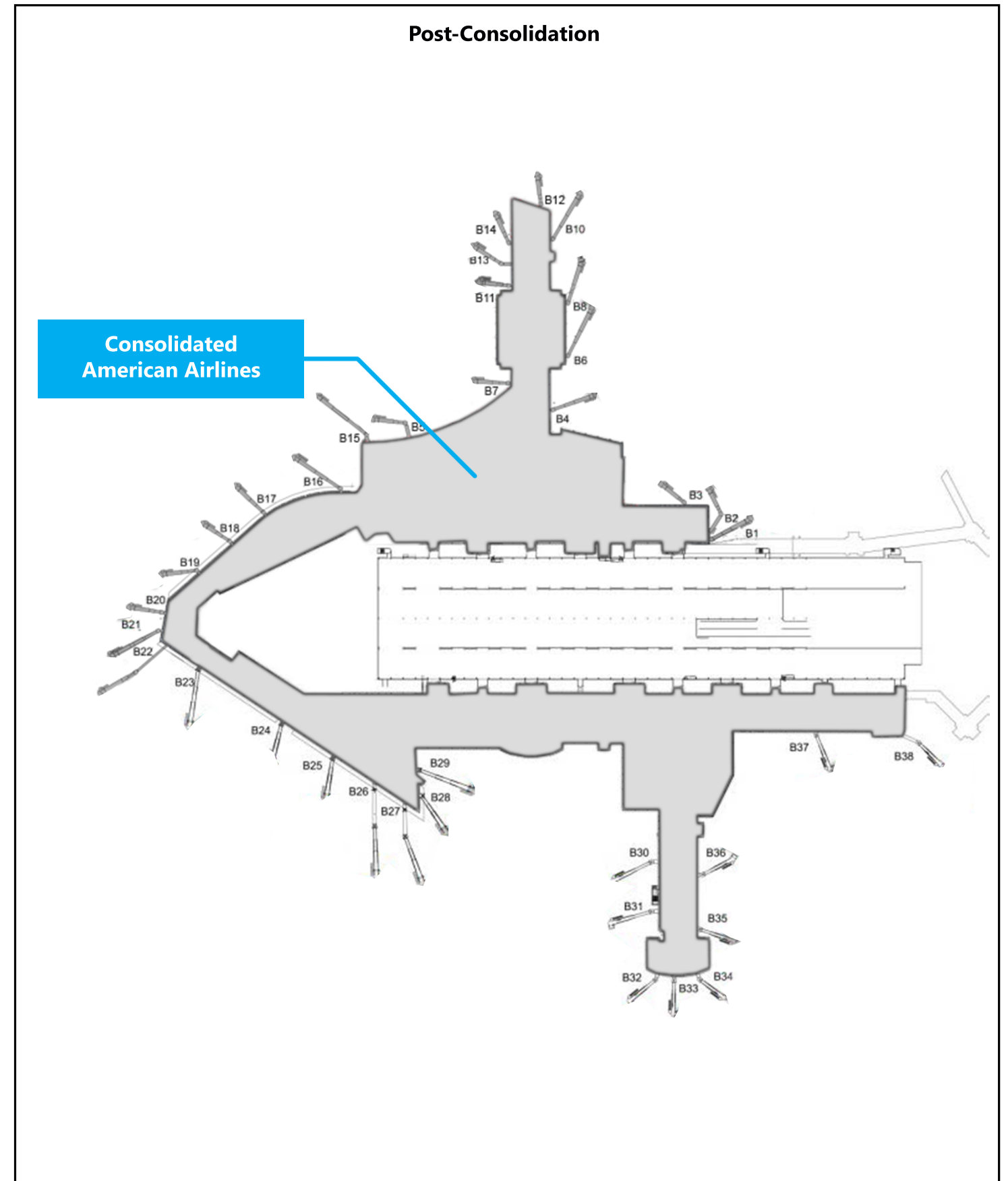
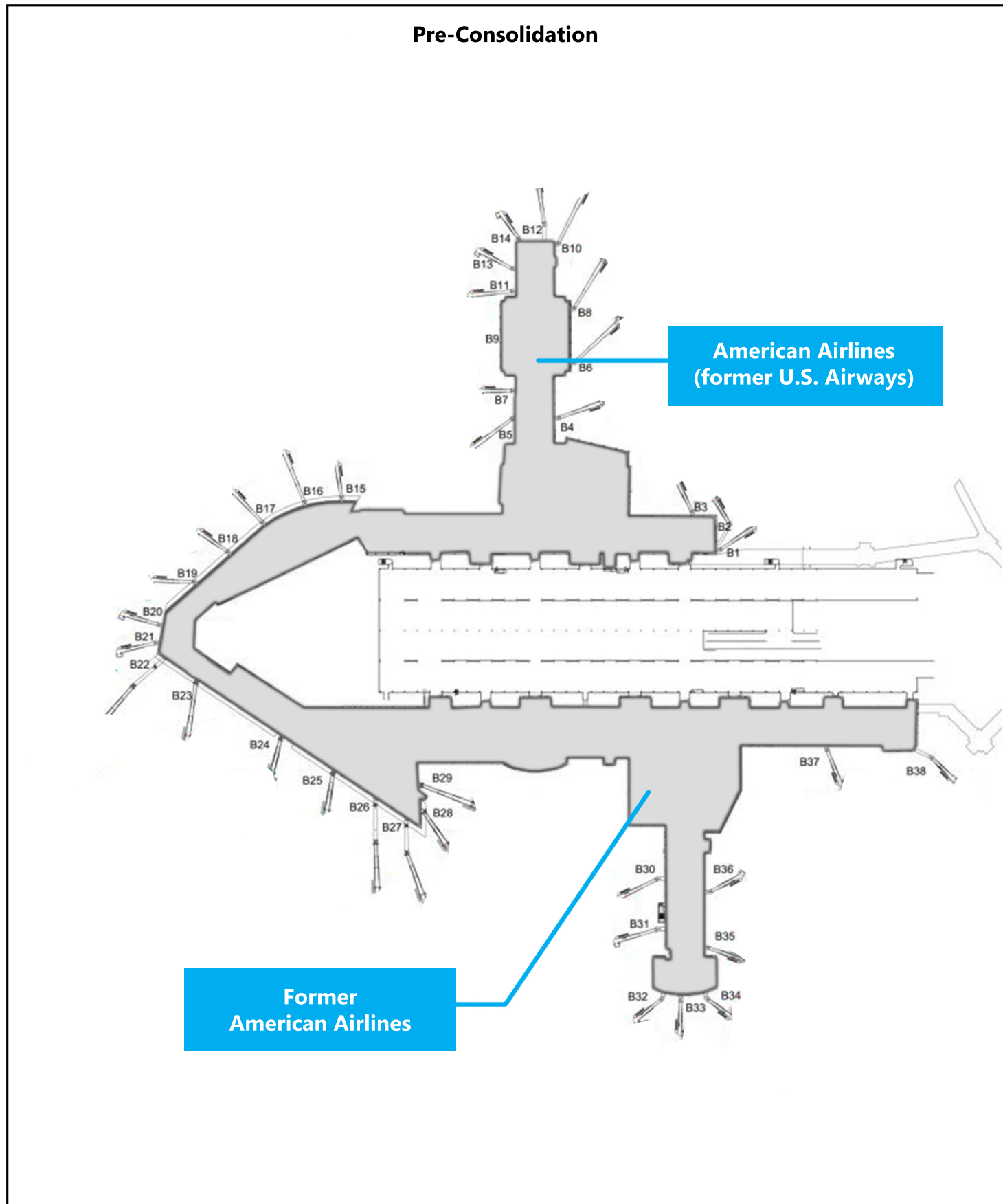


FIGURE 1-3 Airline Consolidation

Terminal B Optimization Project

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FIGURE 1-4 Proposed Action

Terminal B Optimization Project

NEW BUILDING AREA



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1.6 Summary of Impacts

The Project is expected to create no long-term adverse environmental impacts. The Project would occur on fully developed land already in airport use. There would be temporary, construction-period impacts that will be mitigated. See Chapter 5, *Environmental Consequences* for additional information.

Table 1-1 Summary of Impacts and Mitigation Measures

Environmental Resource¹	Significant Impact? (Yes/No)	Explanation
Noise and Noise-Compatible Land Use	No	The Proposed Project would not increase the number of aircraft operations or passenger activity levels; therefore, aircraft noise levels at or surrounding the Airport would not change compared to the No-Action Alternative. The Proposed Project would not result in changes to the roadway network in the vicinity of Terminal B or anywhere else at the Airport. The Proposed Project involves activities consistent and compatible with existing Airport operations. All work would take place within the Airport boundary and would not alter existing off-Airport land use. Construction-period impacts would be minimal and mitigated.
Air Quality	No	The Proposed Project would not affect the number of aircraft operations or generate any new ground access vehicle trips. There would be no significant changes to stationary sources of emissions, including greenhouse gas (GHG) emissions associated with building energy use. The Project is presumed to conform with the Clean Air Act. Construction-period impacts would be minimal and mitigated.
Natural Resources and Energy Supply	No	Project construction, operation, and maintenance would cause limited additional demands on energy supplies and other resources that can be accommodated by current power suppliers. Construction activities would temporarily increase energy supply and water demand; Massport anticipates adequate supplies of energy and water available for these activities.
Climate	No	The Project would have negligible effects on GHG emissions. The Project would be built to Leadership in Energy and Environmental Design (LEED®) Commercial Interiors Gold standards (Pier B Departures Level only). The Project would include energy efficiency and resiliency measures (see Chapter 6, <i>Beneficial Measures/Mitigation</i>).
Water Resources (including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)	No	The Project would not create any new impervious areas as the area is already fully paved. There are no wetlands, floodplains, or Wild and Scenic Rivers within the area of the Project footprint. ^{2,3} Thus only adjacent surface waters are considered. Massport would direct stormwater associated with the new structure and supporting facilities to the existing stormwater system, which discharges to Boston Harbor. A portion of the site drainage would shift from ramp drainage to roof drainage which is generally cleaner.
Hazardous Materials, Solid Waste, and Pollution Prevention	No	The Proposed Project includes excavation for foundations and utilities, which may encounter contaminated soils. Short-term construction activities are expected to cause temporary impacts related to solid and hazardous waste.
Coastal Resources	No	The Project Area is an entirely developed/disturbed portion of the Airport. Construction would be limited to paved areas of the airfield and terminal that are already in use for aviation purposes, and would not change the manner of use or quality of land in the coastal zone.
Land Use	No	All proposed work is within the existing Airport footprint on land that is currently paved and in aviation-related use and compatible with existing land uses. This resource is not applicable to the project, and is, therefore, not discussed in the narrative.

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Table 1-1 Summary of Impacts and Mitigation Measures (Continued)

Environmental Resource¹	Significant Impact? (Yes/No)	Explanation
Socioeconomics, Environmental Justice, and Children’s Environmental Health and Safety Risks	No	Several Environmental Justice communities surround Logan Airport. The Project would result in economic benefits related to construction and new goods/services in the form of temporary jobs and on-Airport spending, respectively. The Project would not result in adverse impacts to these communities nor any changes compared to existing conditions. The Proposed Project will not result in changes to the airport roadway network or curbs.
Department of Transportation Act, Section 4(f)	No	The Project footprint is currently paved and there are no historic features within the project footprint. This resource is not applicable to the project and is, therefore, not discussed in the narrative.
Visual Effects (including Light Emissions)	No	Terminal A and roadways separate East Boston residents from the Terminal B Project Area, which is entirely on-Airport. Due to the configuration of the roadways and other existing on-Airport buildings, the proposed terminal changes would not be highly visible from nearby residential communities. The existing visual character of the Project Area will remain the same; the site and surrounding land will remain in airport-use. This resource is not applicable to the project and is, therefore, not discussed in the narrative.
Farmlands	No	No farmlands of statewide importance, as defined by the Farmland Protection Policy Act, exist within the Airport boundaries or within the vicinity of the Airport. ⁴ This resource is not applicable to the Project and is, therefore, not discussed in the narrative.
Historical, Architectural, Archaeological, and Cultural Resources	No	No known archaeological or cultural resources exist within the Project Area. This resource is not applicable to the Project and is, therefore, not discussed in the narrative.
Biological Resources (including fish, wildlife, and plants)	No	No biological resources are present within the Project Area. All Project elements are outside state Priority Habitats in the vicinity of the Airport. This resource is not applicable to the Project and is, therefore, not discussed in the narrative.

1 Environmental resource categories as specified in FAA Orders 1050.1F and 5050.4B.
 2 As defined by the Wild and Scenic Rivers Act of 1968, 16 U.S.C. section 1271 et seq.
 3 Federal Emergency Management Agency (FEMA) flood insurance mapping.
 4 United States Department of Agriculture. 1981. Farmland Protection Policy Act (7 U.S.C. 4201-4209).

1.7 Summary of Beneficial Measures

As part of the Terminal B Optimization Project, Massport commits to implementing the following measures, as summarized in **Table 1-2**.

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Table 1-2 Summary of Terminal B Optimization Project Beneficial Measures

Element	Beneficial Measure
Sustainability	<ul style="list-style-type: none"> ■ The Terminal B Optimization Project would be built to Leadership in Energy and Environmental Design (LEED®) Commercial Interiors Gold standards (Pier B Departures Level only) ■ As design proceeds, Massport will consider the following: <ul style="list-style-type: none"> □ Incorporate materials to reduce heat island effect □ Use of no-glare roofing material □ Prioritize materials based on lifespan and lifecycle maintenance costs □ Specify products with recycled content to the maximum extent practicable □ Incorporate infrastructure for collection, storage, and handling of recyclables (approved pre-security and post-security recycling stations, on-site collection bins, and storage dumpsters) □ Establish a project-specific goal and specify materials extracted, harvested, recovered, and /or manufactured within 500 miles of project location □ Design Project to achieve energy efficiencies of a minimum of 20 percent below Massachusetts Energy code □ Specify energy-efficient interior and exterior lighting □ Design infrastructure and operations that reduce water use by 20 percent below the Massachusetts Plumbing Code □ Incorporate occupancy sensors with a manual override in all indoor areas □ Incorporate infrastructure for collection, storage, and handling of recyclables □ Incorporate options such as broad roof overhangs or shading devices to reduce solar heat gain and glare ■ Continue to operate 400-hertz gate power at all gates to support pre-conditioned air for aircraft, and upgrade equipment if needed ■ Add 31 charging stations for electric ground service equipment (GSE)
Project Design Features	<ul style="list-style-type: none"> ■ Enhances terminal efficiency by consolidating American Airlines operations to Pier B of Terminal B. American Airlines currently operates from both Pier A and Pier B ■ Consolidates the current three Passenger Screening Checkpoints into a single checkpoint, using the latest in automated screening equipment, thus improving passenger throughput, security, and TSA staffing efficiency ■ Introduces a secure-side connection between Gates B1 and B3 and the remainder of Pier B, thus improving passenger access to amenities and terminal facilities ■ Expands baggage make-up facilities, improving operating efficiency and baggage handling reliability ■ Right-sizes departure holdrooms, improving passenger comfort and spatial efficiency ■ Aircraft will continue to be served by passenger boarding bridges, ground power (400 hertz), and pre-conditioned air ■ High-performance glazing systems to optimize building envelope thermal performance, reducing heating and cooling energy consumption and improving passenger comfort ■ Floor to ceiling perimeter glazing with direct views to exterior to improve passengers' sense of well-being and orientation ■ High-efficiency lighting systems to increase light levels for comfort and safety while reducing building energy consumption ■ High-efficiency heating, ventilation, and air conditioning (HVAC) systems, combined with commissioning to optimize mechanical systems operation and improve passenger thermal comfort in the building

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Table 1-2 Summary of Terminal B Optimization Project Beneficial Measures (Continued)

Element	Beneficial Measure
Resiliency/Floodproofing	<ul style="list-style-type: none"> ■ All areas of the first floor (lowest level) of the proposed Project are above the Design Flood Elevation (DFE) for existing structures ■ All new critical equipment is above the DFE for new construction ■ Where spaces must be below the DFE, critical areas would be flood proofed through measures such as: <ul style="list-style-type: none"> □ Install watertight shields on doors, windows, and louvers □ Use exterior and interior membranes and sealants to reduce seepage □ Seal electrical conduits and other utilities entering below the DFE □ Install drainage collection systems and sump pumps □ Install early warning devices to monitor water levels □ Install backflow preventer valves on drainage and sanitary sewer piping located below the DFE □ Install flood openings to equalize the hydrostatic pressure ■ Provide pumps to remove floodwater in non-draining areas
Construction Period Mitigation	<ul style="list-style-type: none"> ■ Hours of work generally would be limited to typical working hours of 7:00 AM to 5:00 PM ■ Massport would require its Construction Manager to prepare: <ul style="list-style-type: none"> □ Draft Soil Management Plan □ Draft Stormwater Pollution Prevention Plan □ Draft Management Plan for Dewatering (if needed) □ Draft Health and Safety Plan ■ Ground transportation construction-period mitigation measures will include: <ul style="list-style-type: none"> □ All trucks will access the site by Route 1A, Interstate 90, and the main Airport roadway only □ Trucks would be prohibited from using local streets □ Truck routes would be specified in contractors' construction specifications □ Concrete production and batching would occur in existing plants with access via Route 1A or Interstate 90 □ Massport would encourage construction workers to use Logan Express, the water shuttle, Massachusetts Bay Transportation Authority (MBTA), and other modes of public transportation ■ Air quality construction-period mitigation measures would include: <ul style="list-style-type: none"> □ Construction vehicle/equipment anti-idling □ Retrofitting of appropriate diesel construction equipment with diesel oxidation catalyst and/or particulate filters □ Air quality and fugitive dust management would be deployed including monitoring of construction dust; disposal options for excavated materials; and fences, wheel washing, and other methods to protect the Airport and surrounding communities from fugitive dust during construction ■ Sound levels from activities associated with the construction of the Project will be voluntarily consistent with the City of Boston's noise criteria; therefore, no construction noise mitigation is required. However, construction equipment would use noise-reduction measures such as: <ul style="list-style-type: none"> □ Noise control techniques would be used to reduce noise from pile driving by at least 5 A-weighted decibels (dBA) below their unmitigated level

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Table 1-2 Summary of Terminal B Optimization Project Beneficial Measures (Continued)

Element	Beneficial Measure
Construction Period Mitigation Continued	<ul style="list-style-type: none"><input type="checkbox"/> Community noise levels would be monitored during construction to verify compliance with contract specifications and applicable state and local noise regulations■ To protect water quality, and in compliance with the Stormwater Pollution Prevention Plan, an Erosion and Sedimentation Control Program would be put in place to minimize construction phase impacts to Boston Harbor■ Spill prevention measures and sedimentation controls would be deployed throughout the construction phase to prevent pollution from construction equipment and erosion■ Erosion and sedimentation controls would be used during the airfield earthwork and construction phases<ul style="list-style-type: none"><input type="checkbox"/> Perimeter Barriers like straw wattles or compost-filled “silt sock” barriers would be placed around upland work areas to trap sediment transported by runoff before it reaches the drainage system or leaves the construction site<input type="checkbox"/> Existing catch basins within the work areas would be protected with barriers (where appropriate) or silt sacks throughout construction<input type="checkbox"/> Open soil surfaces would be stabilized within 14 days after grading or construction activities have temporarily or permanently ceased■ The contractor or subcontractor would be responsible for implementing each control shown on the Sedimentation and Erosion Control Plan

1.8 Public Involvement

Public outreach and community input is an important element of Massport's overall environmental review processes. Community and agency outreach and coordination will continue through permitting, design, and construction of the Terminal B Optimization Project.

Massport described the proposed Terminal B Optimization Project in the publicly circulated *Boston-Logan International Airport 2015 Environmental Data Report (EDR)*, published in December 2016 and available at the following URL: www.massport.com/environment/environmental-reporting.⁴ Massport also presented information on the Project at a public meeting, which was publicly noticed in the adjacent communities and held on January 11, 2017.

Massport posts information about key regulatory filings on its website. The most recent environmental filings, including this EA and all supporting documentation are available on Massport's website at: www.massport.com/environment/environmental-reporting/environmental-filings/.

Following publication of the Draft EA on May 17, 2017, there was a 30-day public comment period that closed on June 16, 2017. There were no public comments submitted to the FAA or Massport on the Draft EA.

This Final EA incorporates several technical/regulatory clarifications by FAA and is published on Massport's website at: <http://www.massport.com/massport/about-massport/project-filings/logan-airport/>.

⁴ Massport. 2016. *Boston-Logan International Airport 2015 Environmental Data Report*. December 15, 2016

1.9 Contents of the Environmental Assessment (EA)

The remainder of this EA includes:

- **Chapter 2, *Purpose and Need*:** Presents the purpose of the Project and the need to be addressed by the Project.
- **Chapter 3, *Alternatives and Proposed Action*:** Describes the alternatives developed and evaluates the alternatives based on the Project purpose and need. This chapters provides a description of the selected alternative (Proposed Action).
- **Chapter 4, *Affected Environment*:** Describes the existing environmental conditions of the Project Area.
- **Chapter 5, *Environmental Consequences*:** Identifies the potential environmental impacts as a result of the Proposed Action as compared to the No-Action Alternative.
- **Chapter 6, *Beneficial Measures/Mitigation*:** Presents Project beneficial measures relating to project design, sustainable and resilient elements, and construction period mitigation.
- **Chapter 7, *Regulatory Compliance and Public/Agency Coordination*:** Lists the anticipated federal, state, and local environmental permits required to construct the Proposed Project. The chapter also describes public and agency coordination efforts.
- **Chapter 8, *Distribution List*:** Provides a comprehensive list of agencies and individuals that received a copy of the Draft EA.
- **Chapter 9, *List of Preparers*:** Lists the project team involved with the preparation of the Terminal B Optimization Project EA.

2

Purpose and Need

2.1 Introduction

This chapter describes the purpose and need for renovations and improvements at Terminal B, Pier B (the Terminal B Optimization Project or Proposed Action/Proposed Project). As described in Chapter 1, *Project Overview and Background*, airlines continue to restructure and form new alliances to respond to changing economic circumstances. Thus, airports need to provide facilities that are flexible, efficient, and able to accommodate evolving airline needs. In an ongoing effort to adjust to changing airline business models and facility requirements, Massport continues to respond by modifying and upgrading Logan Airport to meet airlines' needs while improving efficiency and security. As part of this ongoing process, Massport is proposing to renovate and improve Terminal B, Pier B, at Logan Airport.

The Project is designed to respond to recent mergers of American Airlines and U.S. Airways (now branded as American Airlines). Following the merger, American Airlines has been operating with gates on both Pier A (long time home of American Airlines) and Pier B of Terminal B (long time home of the former U.S. Airways). To accommodate the American Airlines combined operations, Massport plans to modify and reconfigure Terminal B, Pier B. While the Project is motivated by this merger, this terminal optimization effort is also part of Massport's overall goal of being able to respond to current and future changes in the airline industry while improving efficiency and security at Logan Airport. The proposed improvements in this project would consolidate existing security checkpoints into one central location, greatly enhancing efficiency.

2.2 Purpose of the Project

The overall purpose of the Terminal B Optimization Project is to:

- Improve efficiency of passenger screenings by the Transportation Security Administration (TSA);
- Improve terminal flexibility and efficiency for the airlines and Massport; and
- Improve passenger service and convenience.

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The Project includes the following key elements:

- Consolidate American Airlines' operations to Pier B, allowing gates to be located contiguously instead of in two separate locations;
- Consolidate security checkpoint operations from three to one location, improving safety, throughput, and customer experience;
- Connect all Terminal B, Pier B gates post security, allowing for greater gate flexibility and enhanced passenger connectivity;
- Reconfigure Terminal B, Pier B existing ticket counters into one, unified ticketing hall;
- Improve outbound baggage make-up¹ efficiency and flexibility;
- Improve inbound baggage claim devices, improving operational efficiency and flexibility;
- Enhance passenger holdrooms to accommodate existing and anticipated passenger activity levels;
- Improve concession areas to enhance the passenger experience; and
- Optimize gate layout by relocating fuel pits and right-sizing ramp positions.

Refer to **Figure 4-1** for the location of the project components within the Airport footprint. Chapter 3, *Alternatives and Proposed Action*, provides a more detailed description of the proposed renovations and improvements.

2.2.1 Proposed Terminal B, Pier B Improvements

The Proposed Project would improve flexibility through a reconfiguration of Pier B areas to allow for unified and more efficient security and airline operations. The Terminal B Optimization Project aims to enhance Logan Airport's ability to efficiently accommodate current and future passenger volumes. In addition, the Project would improve customer service and convenience with improved public spaces and modern amenities in Pier B.

The improvements would consolidate three separate security checkpoints into one central location, greatly enhancing efficiency and allowing for security equipment upgrades. In addition, the Proposed Project would upgrade the outbound baggage make-up areas and enhance the baggage claim facilities making baggage handling for both arrivals and departures more efficient. Airline ticket kiosks would be configured in a central ticketing area allowing for enhanced flexibility and passenger wayfinding.

The Proposed Project would also enhance customer service and convenience by providing a seamless post-security terminal connection from the core of Terminal B, Pier B to the existing Gates B1 through B3. As shown in **Figure 1-2**, Gates B1 through B3 are located in the northwest corner of Terminal B and are currently

¹ Baggage make-up is the area where outbound bags are sorted and prepared for transport to departing aircraft.

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served by a separate security checkpoint, thus passengers flying out of these gates are currently separated from the other Pier B gates and concession areas.

The reconfiguration would make more efficient use of currently underutilized aircraft parking positions and would right-size passenger holdrooms and supporting retail/concession space. The Proposed Project would also enhance customer service and convenience by including new public spaces with comfortable, modern amenities, continuing the design features of the recently renovated Pier A. The proposed terminal modifications are designed, to the extent feasible, to be consistent with the terminal and gate design criteria contained in the Federal Aviation Administration (FAA) *Airport Design Advisory Circular*.² The Project would incorporate sustainable design and construction practices and strives to achieve Leadership in Energy and Environmental Design (LEED®) Commercial Interiors Gold certification. The Project would also add 31 charging stations for electric ground service equipment (GSE) that could accommodate up to 30 to 45 pieces of equipment. Transitioning to electric GSE reduces greenhouse gas (GHG) and other air emissions associated with conventionally-fueled (diesel or gasoline) equipment.

The Terminal B Optimization Project includes several supporting infrastructure elements on the Terminal B apron: foundation piles that would support the construction, and updates to the jet-fuel hydrant system to optimize aircraft parking layout on the ramp. The existing hydrant fuel pits and associated fuel lines would be shifted to align with the repositioned aircraft parking locations at various gates at Terminal B.

2.3 Airline Industry Trends

The airline industry continues to evolve with consolidations, new entrants, and different service models. Massport must provide terminal and landside facilities that are flexible enough to accommodate these changes. The airline industry has continued the trend toward more efficient operations (more passengers on fewer flights), with mergers and increasing passenger load factors³ in recent years. In 2016, there were six dominant passenger carriers at Logan Airport: JetBlue Airways, American Airlines, Delta Air Lines, Cape Air, United Airlines, and Southwest Airlines. Recent airline mergers include:

- U.S. Airways and American Airlines (now American Airlines);
- AirTran Airways and Southwest Airlines (now Southwest Airlines);
- Continental Airlines and United Airlines (now United Airlines); and
- Northwest Airlines and Delta Air Lines (now Delta Air Lines).

The following section describes the historical terminal development of Logan Airport as a context for understanding the current and anticipated changes in the airline industry that will have to be accommodated by Massport at Logan Airport in general, and Terminal B, Pier B in particular.

² United States Department of Transportation, Federal Aviation Administration, *Advisory Circular (AC) 150/5300-13, Airport Design, Changes 1 through 15*, December 31, 2009.

³ Load factors represent the percentage of aircraft seats occupied by passengers for a particular air carrier.

2.4 Passengers and Operation Activity Levels

Massport has tracked and reported on historical, Airport-wide passenger and aircraft operation activity levels in the annual Logan Airport Environmental Data Reports (EDRs) and Environmental Status and Planning Reports (ESPRs), under the Massachusetts Environmental Policy Act (MEPA), for over three decades. The EDRs and ESPRs assess the impact(s) of passengers and aircraft operations on ground access, noise, and air quality conditions at the Airport. In addition, Massport plans for future airport activities by developing passenger and operations forecasts. Massport assesses terminal-specific conditions for internal planning purposes to ensure that the Airport and its facilities are functioning efficiently and effectively. The following section describes the historical passenger and operations at Logan Airport in general and at Terminal B specifically. It also describes the configuration and use of aircraft gates.

2.4.1 Airport Passenger and Operations Activity Levels

The *Logan Airport 2015 EDR* reported on annual activity at Logan Airport in 2015, including air passengers, aircraft operations, aircraft fleet mix, and cargo volumes compared to 2014 levels.⁴ Logan Airport is an important origin and destination (O&D)⁵ airport both nationally and internationally and is one of the fastest growing major U.S. airports, in terms of number of passengers, over the past five years.⁶ In 2015, passenger activity levels reached a high of 33.4 million passengers and aircraft operations totaled 372,930. From 2000 to 2015, the annual number of passengers at Logan Airport increased by 20.6 percent, while the annual number of aircraft operations⁷ decreased by 23.6 percent. Despite the increase in passengers, aircraft operations at Logan Airport remained well below the 487,996 operations in 2000 and the historical peak of 507,449 operations achieved in 1998. This trend continued through 2016. Logan Airport's market demand and passenger levels are a result of the Boston metropolitan area's status as an important national and international destination, a robust regional economy, and regional demographics favorable to air travel.

Figure 2-1 illustrates historical air passenger and aircraft operation activity levels at Logan Airport from 1990 through 2015. Significant changes in activity at Logan Airport over the past few years include the following:

- From 2000 to 2015, the annual number of passengers at Logan Airport increased by 20.6 percent, while the annual number of aircraft operations⁸ decreased by 23.6 percent.
- The total number of air passengers at Logan Airport increased by 5.7 percent to 33.4 million in 2015, compared to 31.6 million in 2014.
- In 2016, passenger activity levels reached a new high of 36.3 million passengers, with 391,222 aircraft operations.

⁴ Massachusetts Port Authority, 2015 Environmental Data Report (EDR) Boston-Logan International Airport (EEA # 3247), December 2016. <http://massport.com/environment/environmental-reporting/>.

⁵ "Origin and destination" traffic refers to the passenger traffic that either originates or ends at a particular airport or market. A strong O&D market like Boston generates significant local passenger demand, with many passengers starting their journey and ending their journey in that market. O&D traffic is distinct from connecting traffic, which refers to the passenger traffic that does not originate or end at the airport but merely connects through the airport en route to another destination.

⁶ Between 2010 and 2015, Logan Airport was the 8th fastest growing airport in the U.S. in terms of domestic O&D traffic (U.S. DOT O&D Survey).

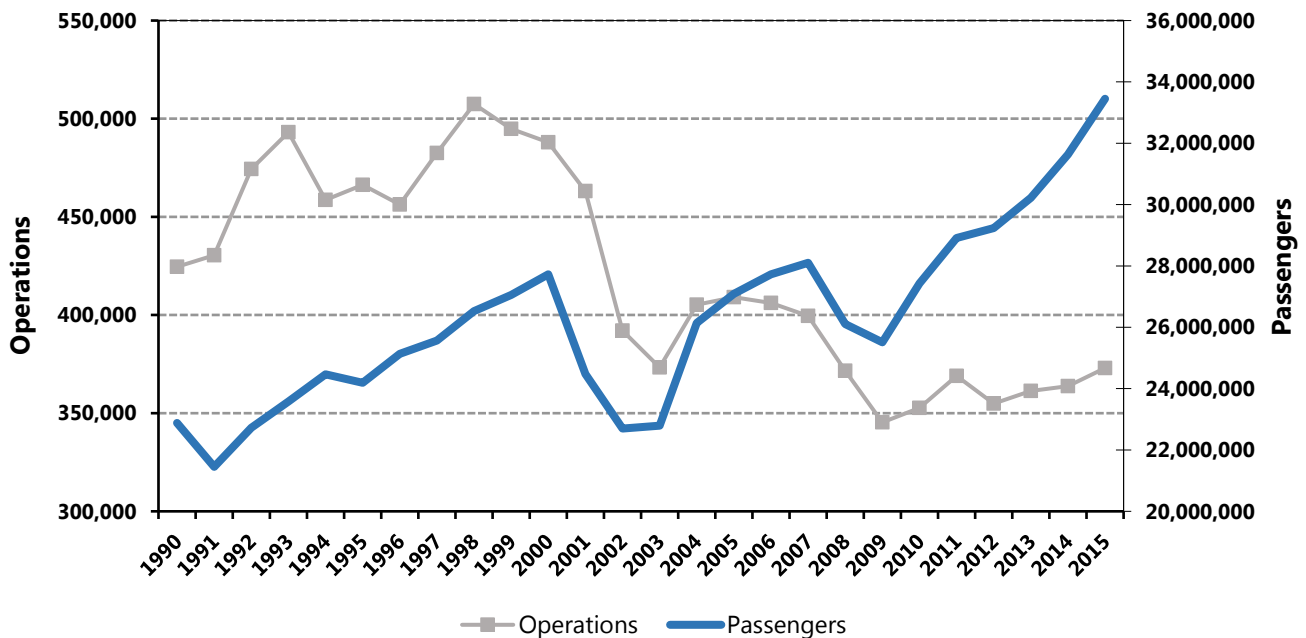
⁷ An aircraft operation is defined as one arrival or one departure.

⁸ An aircraft operation is defined as one arrival or one departure.

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- Compared to 2014 levels, domestic passenger levels increased by 4.8 percent and international passenger levels increased by 10.9 percent in 2015.
- Since 2013, Worcester Regional Airport has served more than 350,000 air passengers through the offering of JetBlue Airways’ daily non-stop service to Florida.
- Air carrier efficiency continued to increase, with the average number of passengers per aircraft operation at Logan Airport increasing from 87.0 in 2014 to 89.7 in 2015. The increasing number of passengers per flight reflects a shift away from smaller aircraft and rising load factors as airlines continue to focus on improvements in efficiency.

Figure 2-1 Logan Airport Historical Air Passenger and Aircraft Operations, 1990-2015



Source: Massport.

2.4.2 Terminal B Forecast Passenger and Operations Activity Levels

As part of American Airlines/U.S. Airways merger, Massport analyzed various options for accommodating the two airlines. Consideration was given to providing co-located facilities. Based on the existing flight schedules of the merged American Airlines as of the summer of 2016, a combined flight schedule was prepared by American Airlines to assist in establishing a basis for programming of terminal functions for 2019 (projected Project completion date). Based on historical flight schedules and passenger travel information at Logan Airport, the busiest travel time has typically been the month of August. This flight schedule represents passenger airline flight activity for an average day in the peak month, and the resulting passenger numbers were further distilled to represent peak hour passenger activities. This schedule contained all of the existing flights for the merged airline throughout the day and a corresponding peak demand period was generated. These numbers represent the maximum number of people that would travel through Pier B during the Airport’s average peak period, and serves as the basis for the detailed terminal facility requirements. The peak period demand for 2019 was applied

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to various terminal functions in order to assess the need for additional space within Terminal B. Existing terminal spaces were also evaluated and used to identify the need for additional space in critical areas.

Facility requirements for the Terminal B Optimization Project were developed based upon schedule-based passenger activity anticipated for the American Airlines. These facility requirements were developed using standard planning metrics for Peak Hour Average Day Peak Month passenger numbers extracted from the 2016 August (peak month – a typically high passenger activity month at the Airport) schedule. The projected 2019 August activity level was developed to account for future growth. An overall anticipated growth rate of 6.9 percent was applied to the 2016 activity levels, consistent with the FAA Terminal Area Forecast (TAF).⁹ The forecasted passenger activity at Terminal B falls within the forecasts developed through 2030 in the 2011 *ESPR*.

Gate requirements were based on a gating plan provided by American Airlines. Specific flight schedules are not yet determined for future years. For future growth, it is assumed that growth will occur by adding flights in off-peak times or increasing aircraft gauge, without exceeding the planned 18 contact gates for American Airlines.

Passenger security screening checkpoint requirements¹⁰ were determined based on the projected passenger peaks, and a split of Pre-Check passengers, premium/first class passengers, and non-Pre-Check passenger.

Gate requirements were programmed based upon an aircraft fleet mix developed by American Airlines and shared with Massport and the design team. The fleet mix was laid out on the existing and reconfigured apron available for improvements to the terminal. Chapter 3, *Alternatives and Proposed Action*, describes the design criteria and industry standards upon which alternative design concepts for the proposed improvements are based.

Based on an understanding of the anticipated passengers and peak hour demands, the Terminal B Optimization Project would need to configure the following facilities:

- Passenger screening facilities, checkpoints, and ticketing areas;
- Aircraft gate repositioning for American Airlines Terminal B, Pier B needs;
- Baggage claim, make-up, and screening; and
- Passenger holdrooms, public concourse areas, restrooms, and retail/concessions.

2.5 Need for the Project

Massport must continue to provide flexible and convenient facilities for its tenants and users. Based on an understanding of the changing airline industry and specific terminal configurations at Logan Airport, the following section describes the need for the Proposed Action. The Terminal B Optimization Project began with

⁹ Between 2016 and 2019, the 2015 FAA Terminal Area Forecast predicts an average annual growth of 2.3 percent for a total of 6.9 percent rate of growth over the three years at Logan Airport.

¹⁰ The Airport Cooperative Research Program (ACRP) Report 25, Terminal Planning Spreadsheet Model was used to estimate passenger checkpoint requirements.

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an airside and terminal analysis undertaken to explore opportunities for efficiency, flexibility, and connectivity, primarily in response to the merger of American Airlines and U.S. Airways.

2.5.1 Need for the Terminal B, Pier B Improvements

American Airlines currently operates out of 21 contact gates located at both Pier A and Pier B of Terminal B. American Airlines' operations can be accommodated on Pier B by use of 18 contiguous contact gates; Air Canada operations can continue to be accommodated as currently utilized at three gates subleased from American Airlines at Pier B. Consolidating American Airlines operations to one location would improve passenger wayfinding and would alleviate existing confusion. This consolidation of American Airlines on Terminal B, Pier B allows for the accommodation of other airline carrier needs on Terminal B, Pier A. In addition to consolidating American Airlines operations to Pier B, terminal improvements are needed to enhance safety and security, improve operational efficiency, enhance the passenger experience, and provide adequate space for holdrooms and retail/concessions. While the Terminal B Optimization Project is designed to respond to the current needs of American Airlines it would also provide added flexibility to accommodate future industry changes or airline realignments.

The Project includes renovation of approximately 81,000 square feet and approximately 84,000 square feet of new construction between the Departures and Arrivals Levels. There would be two small "bump-outs" to improve the terminal layout, functionality, and circulation. One bump-out would have a footprint of 47,300 square feet and the second would have a footprint of 5,700 square feet (53,000 square feet of new footprint). Currently, there is no post-security-side connectivity between Gates B1 and B3 of Pier B and the rest of Pier B. The Project would allow access to all gates of Pier B by way of one centralized passenger screening checkpoint.

Since the completion of the Logan Modernization Program in 2005, Logan Airport has continued to experience strong growth, providing mounting pressure on terminal facilities that were designed and constructed to operate under a now-outdated airline operational model. As the Airport has moved into the 21st century, airline industry changes have demonstrated the need for a cohesive post-security facility.

In 2013, Massport completed a substantial improvement to Terminal B, Pier A to accommodate the merger of United Airlines and Continental and the service reduction of American Eagle. The project upgraded and reconfigured the facilities at Terminal B, Pier A and provided a post-security connection between both sides of Terminal B, Piers A and B. Enhancements included new ticket counter positions, a redesigned TSA security checkpoint with additional lanes, concession space, and baggage handling systems. The passenger terminal curbs were reorganized and managed to improve vehicle flows and high-occupancy vehicle (HOV) access. The upgraded Pier A improvements provided flexibility to airline and terminal area operations and enhanced the passenger experience with modern interior design, baggage and boarding self-checking facilities, and signature concessions.

In addition, as described in Chapter 3, *Alternatives and Proposed Action*, the existing layout of Pier B has not kept pace with the most current industry standards for new terminal design and sizing, nor passenger experience. The Project would respond to a need to bring the terminal facilities up-to-date, specifically with improvements to the security checkpoint and baggage system. Updates to the security checkpoint would include new technologies to improve efficiency and safety, and updates to the baggage system would improve system capacity and flexibility. These improvements would allow Terminal B to provide flexible and efficient facilities for the changing airline industry and would enhance the passenger experience.

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3

Alternatives and Proposed Action

3.1 Introduction

As required by the National Environmental Policy Act (NEPA) this chapter describes the process undertaken by Massport to identify reasonable and feasible alternatives evaluated for the Terminal B Optimization Project (Project or Proposed Action). All alternatives considered are summarized, including the No-Action Alternative.

As discussed in Chapter 2, *Purpose and Need*, the purpose of the Terminal B Optimization Project is to:

- Improve efficiency of passenger screenings by the Transportation Security Administration (TSA);
- Improve terminal flexibility and efficiency for the airlines and Massport; and
- Improve passenger service and convenience.

As described in Chapter 2, *Purpose and Need*, after the merger of U.S. Airways and American Airlines (now branded as American Airlines), operations at Terminal B became inefficient due to the location of American Airlines gates at two opposite ends of the terminal. The current configuration of Terminal B, Pier B has inefficient security operations, with security checkpoints and ticketing counters in several different locations. This configuration also results in confusing air passenger wayfinding. Thus, the current configuration no longer provides the needed efficiency, flexibility, and connectivity for its tenants and users. **Figure 3-1** illustrates the existing Terminal B, Pier B layout. The existing layout of Pier B has not kept pace with the most current industry standard for new terminal design, sizing, and security, nor passenger experience. The Project would respond to a need to bring the terminal facilities up-to-date. Specifically, the Project would streamline passenger security screening and baggage handling, improve coordination for one of Logan Airport's largest air carriers, and improve operational efficiency at the Airport.

The Terminal B Optimization Project would enhance Logan Airport's ability to efficiently accommodate current and future passenger volumes. The proposed reconfiguration would result in improved and more efficient security operations by consolidating and updating passenger screening checkpoints, improving baggage handling operations with new baggage make-up rooms, and right sizing gate holdrooms and support space. In addition, the Project would improve customer service and convenience with improved public spaces and modern amenities in Pier B, and enhanced design features similar to the recently renovated Pier A. The entire Project Area is fully developed and in aviation use. As such, while there are some operational differences between the design alternatives, there is little difference from an environmental impacts perspective.

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This Environmental Assessment (EA) has evaluated two Action Alternatives (design variations) as well as the No-Action Alternative. Alternatives are considered according to their ability to meet the Project's purpose and need (see Chapter 2, *Purpose and Need*). The key difference between the two Action Alternatives relate to how bag screening and baggage make-up is improved and reconfigured on the Arrivals Level. Alternative evaluation considerations include system redundancy, cost, constructability, and phasing. All evaluated alternatives are located on previously developed land within the Airport boundary and have similar, negligible environmental impacts.

Existing Terminal - Departures Level

- Ticketing
- Passenger Screening
- Concessions / Retail
- Airline Clubs
- Holdroom Space
- Circulation
- Support
- Restrooms



Existing Terminal - Arrivals Level

- Baggage Area
- Circulation
- Support
- Restrooms
- Concessions / Retail
- Holdroom Space

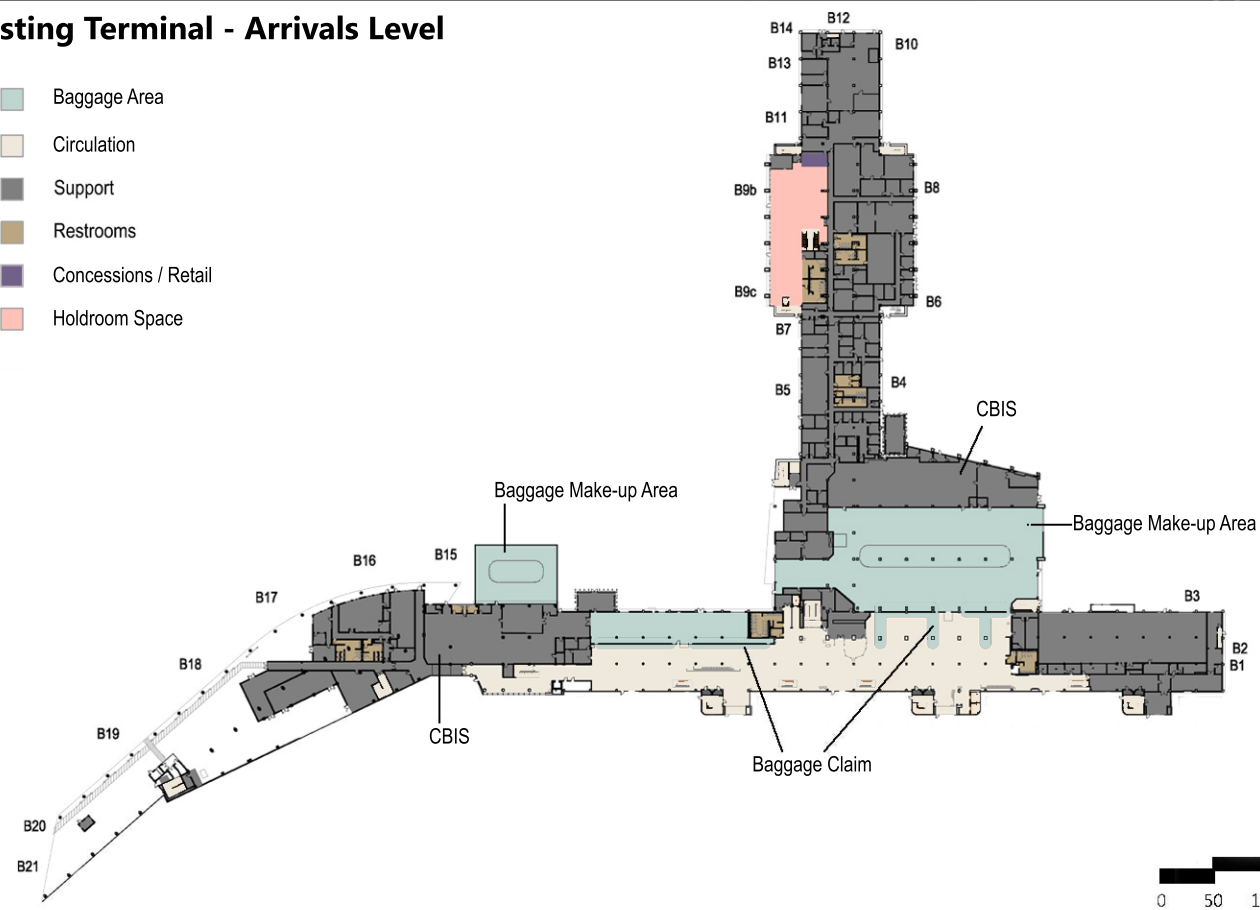


FIGURE 3-1 Existing Terminal Layout

3.2 Planning Metrics, Facility Requirements, and Design Guidelines

The following sections discuss the planning metrics, facility requirements, and design assumptions that guided the alternatives development for the Project. Key elements considered for the alternatives space requirements include aircraft gate positions, ticketing, checkpoints, concession areas, baggage claim, outbound bag rooms, passenger holdrooms and amenities, and restrooms. The alternatives described follow guidance from the Federal Aviation Administration (FAA), TSA, and Department of Homeland Security. Massport also considered aviation industry standards, Massport's internal requirements, airline needs, and Project-specific parameters during the development of the alternatives.

As part of the alternatives development process, Massport and its design team identified the following elements and initiatives to include in the Project:

- Consolidate American Airlines' operations to Pier B, allowing gates to be located contiguously instead of in two separate locations;
- Consolidate security checkpoint operations from three to one location improving safety, throughput, and customer experience;
- Connect all Terminal B, Pier B gates post-security allowing for greater gate flexibility and enhanced passenger connectivity;
- Reconfigure Terminal B, Pier B existing ticket counters into one, unified ticketing hall;
- Improve outbound baggage make-up¹ efficiency and flexibility;
- Improve inbound baggage claim devices, improving operational and efficiency and flexibility;
- Enhance passenger holdrooms to accommodate existing and anticipated passenger activity levels;
- Improve concession areas to enhance the passenger experience; and
- Optimize gate layout by relocating fuel pits and right-sizing ramp positions.

3.2.1 Planning Metrics - Analysis Years

As discussed in Chapter 2, *Purpose and Need*, facility requirements at Terminal B were developed based upon schedule-based passenger activity anticipated for the airline. For comparing the Proposed Action to the No-Action Alternative, this EA considers the build year of 2019 for projected passenger demand (as the projected completion date for the Project), based on peak August 2016 schedule and with FAA Terminal Area Forecast (TAF) growth rate of 6.9 percent applied (see Chapter 2, *Purpose and Need*). These forecast passenger activity levels form the basis for developing terminal physical requirements. Each of the alternatives described accommodates the program requirements, but with different configuration and levels of efficiency.

3.2.2 Facility Requirements - Terminal B

To allow for efficient current and future airport operations, Massport undertook a terminal space programming effort to establish gross size requirements for various functional components of the Terminal B facilities. This effort considers specific planning metrics defined by FAA guidance, the airport planning industry, and airline

¹ Baggage make-up is the area where outbound bags are sorted and prepared for transport to departing aircraft.

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business models. These metrics and guidelines inform are the general planning parameters reflected in the proposed alternatives described below.

Table 3-1 summarizes the key aircraft gate and passenger terminal area facility program requirements for the Terminal B Optimization Project. These space requirements are needed to address current deficiencies as well as meet the needs for future anticipated aircraft operations and passenger handling.

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Table 3-1 Terminal B Optimization - Pier B Space Program Facility Requirements¹

Building Use	Existing (sf)	Required (sf)
Level 1- Arrivals		
Airline Operations/Mechanical	59,481	59,481
Baggage Claim (Devices/Queue)	10,176	15,000
Baggage Makeup	23,104	49,700
Baggage Screening	18,000	18,000
Holdrooms	5,353	5,353
Public Concourse	17,110	13,110
Restroom	5,056	5,056
Retail/concessions	347	347
	138,627	166,047
Level 2-Departures		
Airline Clubs	11,007	15,000
Airline Operations/Mechanical	11,109	11,109
Holdroom	35,142	55,631
Passenger Screening	5,094	13,338
Public Concourse	54,972	63,000
Restroom	10,276	10,276
Retail/Concessions	26,183	32,250
<i>Secure</i>	21,465	30,000
<i>Non-Secure</i>	4,718	2,250
Ticketing	8,000	11,250
Vertical Circulation	5,806	5,806
	167,589	217,660
Level 3-Mechanical	34,039	38,039
Total	340,255	421,746
Net new required		81,491¹

Source: Massport; AECOM

¹ When circulation, adjacencies and the existing building layout are taken into consideration, the total new building area will equate to 84,000 square feet.

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3.2.2.1 Gate Requirements

There is a need to connect gates post-security to better enhance connectivity and flexibility of aircraft and terminal operations. For current conditions, gate requirements are based on a plan provided by American Airlines that would gate all American Airlines flights on Pier B; currently American Airlines flights are on Pier A and Pier B. Specific flight schedules are not yet determined for future years. For future conditions, it is assumed that more passengers will be handled by adding flights in off-peak times and/or with larger aircraft. Gate requirements for other airlines using Pier B are considered along with the American Airlines requirements to yield total Pier B requirements.

3.2.2.2 Security Checkpoint Requirements

Passenger security screening checkpoint requirements were determined based on the projected passenger peaks, and a split of Pre-Check passengers, premium/first class passengers, and non-Pre-Check passengers (based on national data provided by TSA). A key element for sizing checkpoints is the provision of adequate queue space, divesture space (placing bags and belongings on conveyor), and recomposure space (gathering bags and belongings after screening). This is key to maintaining secure and efficient passenger throughputs and enhancing passenger convenience.

3.2.2.3 Ticketing and Kiosk Requirements

Number and space requirements for ticket counter and kiosks are based on airline requests, estimated projected passenger peaks, passenger group size and group processing time, transition times, as well as Logan Airport passenger travel behavior.² The *Airport Cooperative Research Program Report 25 Terminal Planning Spreadsheet Model* was also used to estimate space requirements. A key criterion to consider is passenger convenience including locating ticket counters in a centralized location.

3.2.2.4 Outbound Baggage Make-up Requirements

Current area requirements for outbound baggage handling systems (known as the baggage make-up area which includes staging, cart lanes, bag belts, conveying systems, etc.) and the maximum gate use (peak) schedule were estimated using the departure flight schedule based on a fixed allocation of baggage carts for each flight. The 2019 requirements were estimated by applying the FAA TAF growth rates to the total estimated existing baggage make-up need.

3.2.2.5 Inbound Bag Claim Requirements

Bag claim area requirements were estimated based on the arriving flight schedule, the expected percentage of passengers claiming bags, and bag per passenger ratios. Estimates were also applied for the amount of linear frontage of claim and the number of claim devices needed to accommodate arriving passengers and bags, assuming that each device can serve multiple flights at the same time.

² Massport. December 2014. *Boston-Logan International Airport 2012/2013 Environmental Data Report*. Page 5-6. <http://massport.com/environment/environmental-reporting/>. Accessed February 28, 2017.

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3.2.2.6 Passenger Holdrooms

Passenger holdrooms are sized to accommodate passengers being served at each gate, considering the aircraft type, an 85 percent aircraft load factor, and providing seats for approximately 70 percent of the waiting passengers. (Other passengers are assumed to be elsewhere, such as visiting concessions areas, restrooms, or standing.) The holdroom seating is then configured to be efficient, consisting of a variety of seating options including Massport standard passenger holdroom row seating with convenience outlets; lounge seating with ‘side tables’ in lounge groupings; extended work table high seating with outlets and Wi-Fi; and groupings of roundtables with chairs.

3.2.2.7 Concessions and Retail Facilities

Concession and retail facilities are sized considering the number of passengers using the terminal, combined with industry standards for passenger demand for types of facilities including food service, convenience retail, specialty retail, and Duty Free offerings. Representative spending patterns are used to develop economically supportable space requirements.

3.2.2.8 Terminal Circulation

Circulation from ticketing to checkpoint, to gate, and to holdroom would be arranged with intuitive design signage and wayfinding information consistent with Massport’s 2015 Wayfinding Guidelines & Sign Standards. Providing adequate aisle width is also important to the passenger convenience and is based on Massport design guidelines.

3.3 Project Alternatives

The following sections describe and evaluate the proposed Action Alternatives for each of the Project components, including the No-Action Alternative. All Action Alternatives include the same project elements, but with different locations, sizes, and degrees of efficiency considered. All Action Alternatives will provide for the same 21 contact gates currently in service on Pier B (18 gates for American Airlines and three for other airlines), as well as a consolidated and centralized security checkpoint. The Action Alternatives include improvements to baggage make-up facilities for departing passengers and baggage claim facilities for arriving passengers. Each Action Alternative includes upgraded passenger holdroom facilities that would require a portion of new construction and each would enhance concession/retail options.

3.3.1 No-Action Alternative

The No-Action Alternative assumes that passenger and aircraft operations growth would continue without physical improvements at Terminal B, Pier B. As discussed in Chapter 2, *Purpose and Need*, the projected 2019 August (typical high passenger activity month at the Airport) activity level was developed to account for future growth, based on 2016 activity levels with the anticipated FAA TAF growth rate of 6.9 percent applied. The No-Action Alternative is depicted in **Figure 3-1**, which shows the location of American Airlines’ gates, the three separate security checkpoints, and the locations of the various ticketing and kiosk facilities. It also shows that there continues to be no post-security connectivity between Gates B1 and B3 of Pier B and the rest of Pier B.

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The No-Action Alternative would include routine management or operational shifts without constructing new facilities, however, it does not address the Project's purpose and need as discussed in Chapter 2, *Purpose and Need*. Under the No-Action Alternative, American Airlines would continue to provide services out of two separate gate areas on opposite sides of Terminal B; as a result, existing issues related to airline operational efficiency and passenger inconvenience and confusion would continue. TSA checkpoint locations would remain in three separate areas; there would be no security screening efficiency upgrades. Lack of efficiency in baggage processing for departing passengers would persist, and insufficient accommodation of baggage claim service would result in increasingly longer wait periods for arriving passengers. Post-security space between the gates would continue to lack connectivity. Furthermore, passenger holdrooms would continue to be crowded, and concessions would not be as modern or attractive compared to other sections of Terminal B (and other terminals) as well as other airports.

Improvements to Terminal B, Pier B are needed to provide facilities and infrastructure with enhanced safety and efficiency. The existing Terminal B is limited in its ability to accommodate evolving airline configurations and enhanced passenger experience. Environmental assessment of the No-Action Alternative is discussed in further details in Chapter 5, *Environmental Consequences*.

3.3.2 Action Alternatives - Terminal Configuration

Initial alternatives focused of layout efficiency, cost, constructability, phasing, aesthetics, and feasibility. Modern screening lanes are wider and longer than existing lanes, and require an expansion of the terminal footprint in the existing Gate B5 area. Passenger holdroom size in the Gate B10 through B14 area would be enlarged to accommodate seating and boarding requirements for gated aircraft, which would also result in additional building footprint at these gates. Both alternatives would incorporate the additional building space required for checkpoints and holdrooms. Consolidation of the ticketing functions would be accomplished within the existing terminal footprint, by reconfiguring and repurposing existing spaces.

The key difference between the Action Alternatives relates to how departing passenger bag screening and baggage make-up is improved and reconfigured on the Arrivals Level; the alternatives also differ in the amount of baggage claim space available. Since both Action Alternatives would be constructed within the Airport boundary, primarily within the existing terminal and on paved land already developed for airport purposes, with similar designs, no long-term adverse environmental effects are expected from either of the Action Alternatives. Alternative evaluation criteria include redundancy, cost, constructability, and phasing.

The following section describes the design configurations of the two proposed Action Alternatives, A and B. **Figure 3-2 and 3-3** provide illustrations of the alternative conceptual layouts.

3.3.2.1 Action Alternative A

Alternative A (**Figure 3-2**) would eliminate the existing B7 Checked Baggage Inspection System (CBIS), which was recently renovated, and would expand the B6 CBIS. This would provide additional space for baggage claim (compared to Action Alternative B) and airline clubs while keeping the existing food court area intact.

Arrivals Level

- Extend existing B6 CBIS area and the B7 outbound baggage make-up room.

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- Re-purpose existing B7 CBIS area, which currently serves the Shuttle ticket counters, to provide additional room for the adjacent airline operations.
- Eliminate B7 CBIS and extend B6 CBIS area to consolidate all bag screening.
- Construct new baggage claim area adjacent to the extended B7 baggage make-up room.

Departures Level

- Relocate Shuttle flight ticket counters to proposed consolidated ticket counters near the center of Pier B.
- Renovate space directly above the extended B6 CBIS area into additional airline passenger club space.
- Construct minimal space for new retail and concession opportunities

Construction/Phasing

- Would require construction in three building bump-outs.
- Would require extensive work within the existing B6 CBIS while maintaining screening operations.

3.3.2.2 Action Alternative B (Proposed Action)

Alternative B (**Figure 3-3**) would keep both the B6 and B7 CBIS in their current location. This alternative maintains the recent B7 CBIS renovations, allows for CBIS redundancy (two CBIS instead of one), and requires construction in two areas (instead of three). This Alternative would have slightly less space available for baggage claim and much of the existing food court would be converted to airline club space.

Arrivals Level

- Retain both B6 and B7 CBIS areas in their current locations, while still extending the B7 outbound baggage make-up room space.
- Provide baggage conveying system to transport bags from the consolidated ticket counters to be screened in either, or both, CBIS as demand changes during the day. The new baggage conveying system could be constructed separately and ongoing screening operations would not be affected.
- Construct new baggage claim area adjacent to the extended B7 baggage make-up room.

Departures Level

- Construct additional passenger holdroom space.
- Provide more retail and concession space.

Construction/Phasing

- Would require new construction in two building bump-outs.
- New baggage conveying system could be constructed separately and ongoing screening operations would not be affected.

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3.3.3 Comparison of Terminal B Optimization Project Alternatives

The No-Action Alternative does not meet the purpose and need and would not allow for Terminal B, Pier B to efficiently accommodate current and projected passenger activity levels. The No-Action Alternative would not improve the efficiency of passenger security screenings and would not improve terminal flexibility and efficiency for airlines. Additionally, the No-Action Alternative would not provide the needed passenger service and waiting areas inside the terminal. The Terminal B, Pier B gating areas would be unable to efficiently support the projected 2019 passenger operation volumes, as well as additional potential airline consolidations in near future.

Massport must continue to provide safe, secure, and convenient facilities for its users and tenants. Each of the Action Alternatives considered would address the need to provide flexible and efficient facilities, in response to the changing airline industry, while enhancing the passenger experience. From an environmental perspective, there is very little difference between Action Alternative A and B. All terminal improvements would occur on previously developed impervious areas in active airport use and most of the improvements are within the terminal building.









Alternative A was found to lack baggage screening system redundancy (one CBIS versus two) and would require three areas of new construction (versus two). Alternative A would also have a more complicated construction phasing; screening operations would need to be maintained during extensive modifications to the B6 CBIS.

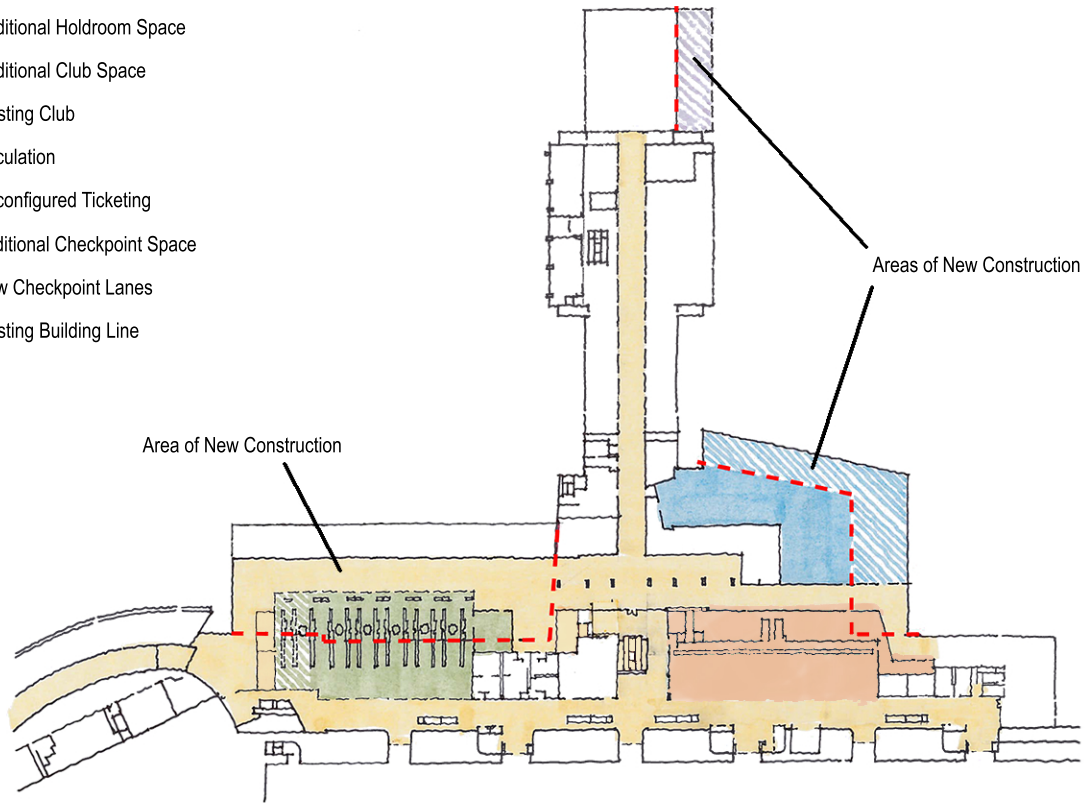
Alternative B was selected for further minor aesthetic refinements (primarily the shape of the two bump-outs) and is the Proposed Action. **Table 3-2** details the Action Alternative evaluation factors taking redundancy, cost, constructability, and phasing into account.

Table 3-2 Evaluation of Action Alternatives

	Action Alternative A	Action Alternative B
System Redundancy	Redundant screening machines available. Overall system controls lack redundancy with the elimination of the B7 CBIS.	Separate CBIS provides better overall system redundancy.
Cost	Abandons infrastructure constructed for B7 CBIS.	Retains B7 CBIS infrastructure investment.
Constructability	Would require new construction in three areas (three new building bump-outs).	Would require new construction in two areas (two new building bump-outs).
Phasing	Extensive work within existing B6 CBIS. Extensive modifications to B6 CBIS would be required while maintaining screening operations.	Allows Existing B6 and B7 CBIS to remain as is. New baggage conveying system could be constructed separately and ongoing screening operations would not be affected.










Alternative A - Departures Level

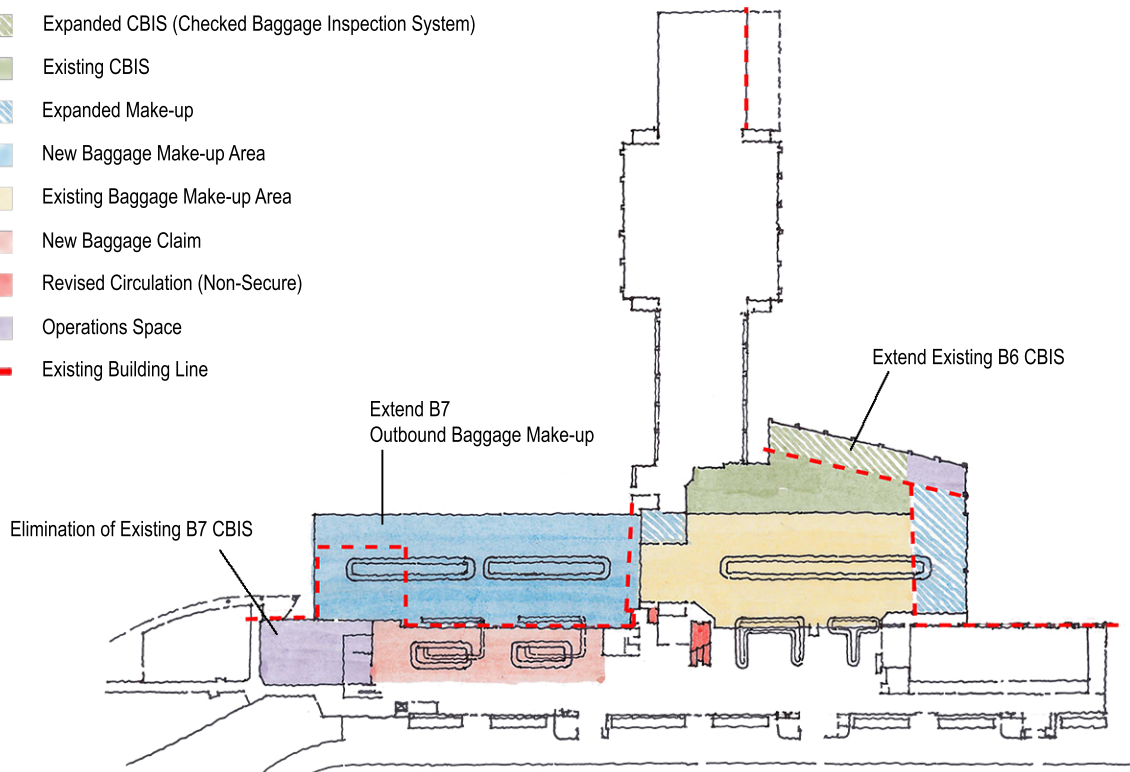
-  Additional Holdroom Space
-  Additional Club Space
-  Existing Club
-  Circulation
-  Reconfigured Ticketing
-  Additional Checkpoint Space
-  New Checkpoint Lanes
-  Existing Building Line



Not Drawn to Scale

Alternative A - Arrivals Level









-  Expanded CBIS (Checked Baggage Inspection System)
-  Existing CBIS
-  Expanded Make-up
-  New Baggage Make-up Area
-  Existing Baggage Make-up Area
-  New Baggage Claim
-  Revised Circulation (Non-Secure)
-  Operations Space
-  Existing Building Line

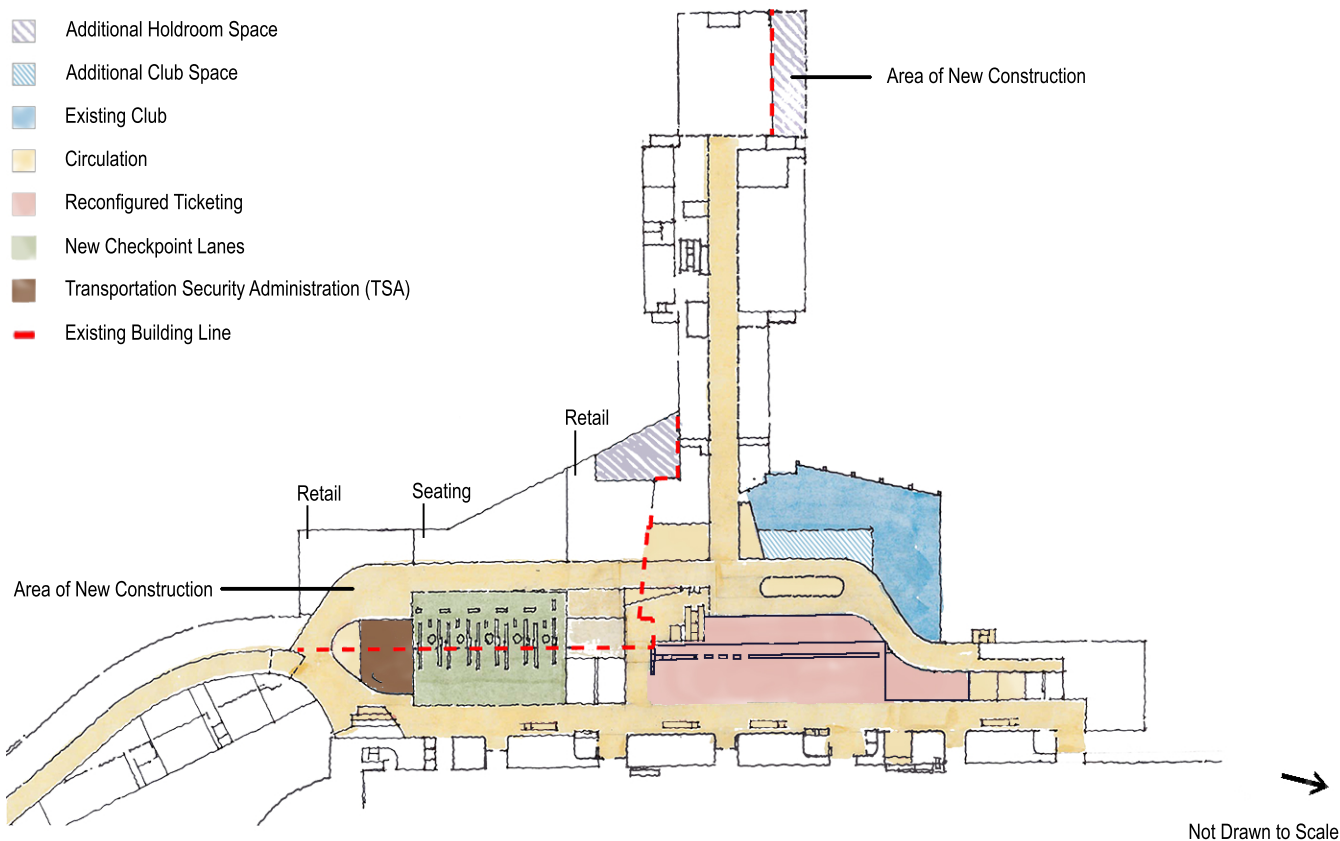


Not Drawn to Scale

FIGURE 3-2 Alternative A








Alternative B - Departures Level

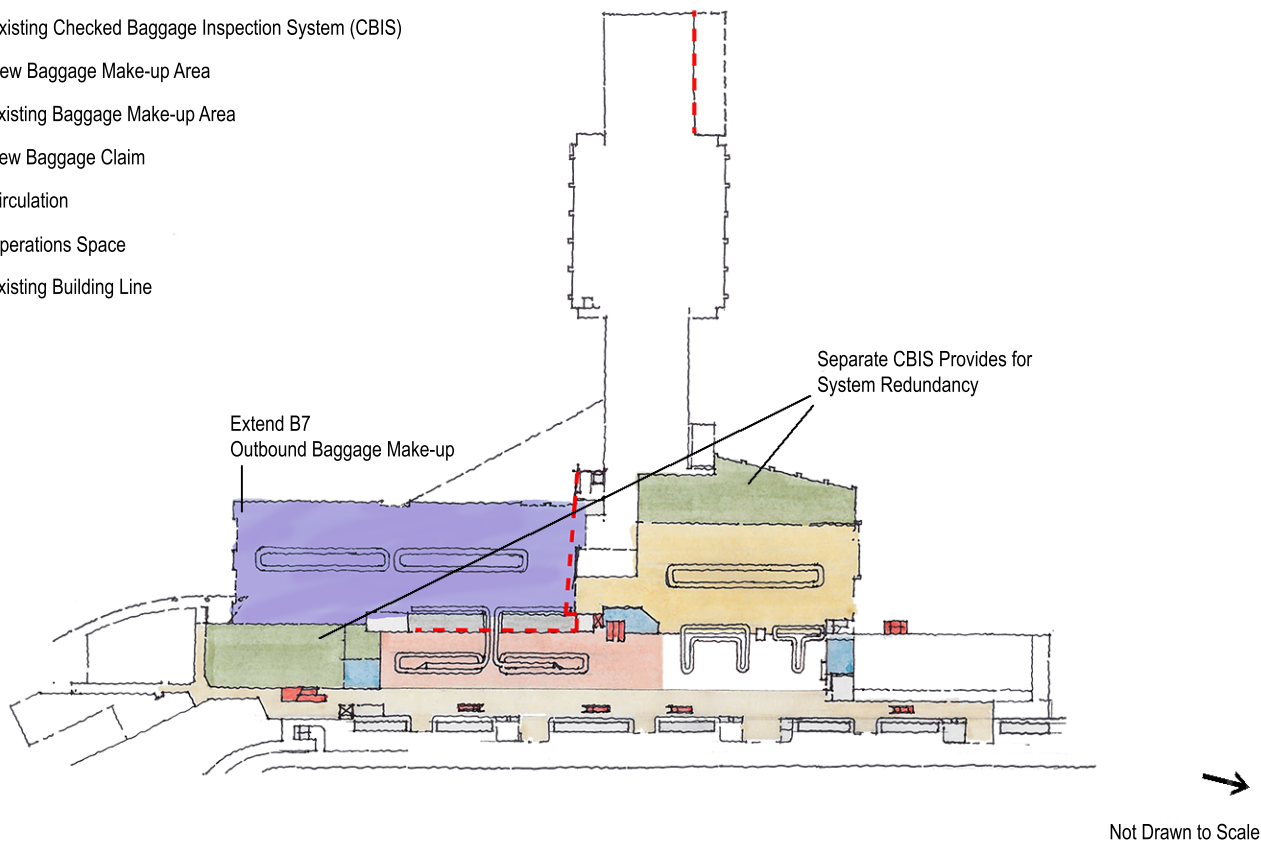
-  Additional Holdroom Space
-  Additional Club Space
-  Existing Club
-  Circulation
-  Reconfigured Ticketing
-  New Checkpoint Lanes
-  Transportation Security Administration (TSA)
-  Existing Building Line



Not Drawn to Scale

Alternative B - Arrivals Level

-  Existing Checked Baggage Inspection System (CBIS)
-  New Baggage Make-up Area
-  Existing Baggage Make-up Area
-  New Baggage Claim
-  Circulation
-  Operations Space
-  Existing Building Line



Not Drawn to Scale

FIGURE 3-3 Alternative B

3.4 Proposed Action

The proposed reconfiguration and improvements to Pier B gates and terminal layout would streamline passenger security screening, improve efficiency for one of Logan Airport's largest air carriers, and would enhance the passenger experience by improving circulation, connections, and amenities.

As described in Section 3.3.3 above, Alternative B is superior in terms of baggage system redundancy, cost, constructability, and phasing; how the baggage system is improved and reconfigured was the primary discriminator between alternatives. Massport chose to advance Action Alternative B for further aesthetic design refinement (the Proposed Action or Proposed Project). The refinement was primarily aesthetic and the shape of the bump-outs are slightly different but with the same size configuration (see **Figure 3-4**). Key elements of refinements are the following: increased recomposure area after passenger screening, improved concession and retail opportunities in new constructed areas, and improved holdroom configurations.

The proposed terminal modifications are designed, to the extent feasible, to be consistent with the terminal and gate design criteria contained in the FAA *Airport Design Advisory Circular*.³ The Project would incorporate sustainable design and construction practices and strives to achieve Leadership in Energy and Environmental Design (LEED®) Commercial Interiors Gold certification. The Project would also include 31 charging stations for electric ground service equipment (GSE) that could accommodate up to 30 to 45 pieces of equipment. Transitioning to electric GSE reduces greenhouse gas (GHG) and other air emissions associated with conventionally-fueled (diesel or gasoline) equipment.

Rooftop solar was initially considered as part of the Project but is not included in the Proposed Action. Adding rooftop solar panels to the smaller building addition could create glare problems for the air traffic control tower. The larger building addition has a sloped roof, which precludes inclusion of rooftop solar.

In total, the Project would include approximately 53,000 square feet of new building footprint (a total of 84,000 square feet on the Arrivals and Departure Levels) and 81,000 square feet of renovated space within the existing Terminal B footprint. Of the 84,000 square feet of new construction, approximately 22,000 square feet will be utilized for equipment space such as the outbound bag room and additional maintenance facilities.

The Proposed Project would increase flexibility through a reconfiguration of Pier B areas to allow for unified and more efficient airline operations. The Terminal B Optimization Project aims to enhance Logan Airport's ability to efficiently accommodate current and future passenger volumes. In addition, the Project would improve customer service and convenience with improved public spaces and modern amenities in Pier B. Security screening lanes will feature multiple passenger divest stations as well as conveyor belts that automatically return bins to the start of the lane after they have been emptied. This new equipment is projected to increase passenger throughput by up to 30 percent.

The Proposed Action would not change aircraft operations or fleet mix and does not require any modification of runways or taxiways. The Project would take place entirely within previously-developed areas (the existing Terminal B, Pier B and immediately adjacent airside ramp spaces), and would not affect any sensitive environmental resources.

The Project would include several supporting infrastructure elements on the Terminal B apron, namely, foundation piles that would support construction and minor changes to the jet-fuel hydrant system to accommodate the

³ United States Department of Transportation, Federal Aviation Administration, *Advisory Circular (AC) 150/5300-13, Airport Design, Changes 1 through 15*, December 31, 2009.

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repositioned aircraft contact gates. The reconfigured aircraft parking locations would require relocating the associated hydrant fuel pits to accommodate the aircraft positions.

3.4.1 Departures

Improvements to the Departures Level include two areas of new construction and both major and minor renovations within the existing terminal footprint. The areas of new construction would include the consolidated passenger security checkpoint and right-sized holdroom and retail/concession space. Updates to the security checkpoint would include new technologies to improve security, safety, and efficiency.

The Project would convert approximately 47,300 square feet of existing open airside operations area to interior space. The extension would be south of Pier B, and west of the main terminal, and Shuttle Terminal. It would allow for consolidation of the three existing passenger security checkpoints into one nine-lane passenger security checkpoint and the reconfiguration of existing ticket counters and kiosks into one single ticketing hall. The bump-out would provide a generous public space beyond the security checkpoint, improving circulation and right-sizing passenger holdroom facilities and concessions. The area containing the existing food court would provide secure access to gates B1 to B3.

A second 5,700-square foot bump-out is proposed at the west end of Pier B to accommodate passenger holdroom space requirements for Gates B10 through B14. Aside from these two new construction areas, all other program requirements will be reorganized within the existing terminal building footprint.

Five aircraft parking positions would be repositioned to accommodate the building additions mentioned above.

3.4.2 Arrivals

Improvements on the Arrivals Level would include new baggage handling systems, primarily the outbound baggage make-up room, and would accommodate two additional baggage make-up devices and cart staging. This would provide approximately three times the existing outbound capacity, right-sizing the baggage handling in Pier B. The proposed baggage make-up devices, bag staging, cart lanes, and stripping belts for the new Bag Claim 3 and 4 areas determine the minimum dimensions for the Arrivals Level extension and structural grid. This minimum area is roughly 100 feet wide and 300 feet long.

On the Arrivals Level, the larger extension to the south of Pier B would add 31,000 square feet. The second, smaller extension to the west would add no additional area to the Arrivals Level. The larger Departures Level plan area above provides an opportunity for "shadow space," which would include room for airline support functions and parking/recharging of aircraft GSE. Within the supporting structure, no enclosed program areas are anticipated below this smaller holdroom/boarding lounge area extension; this area could be used for GSE storage, circulation, or other airline operations.

3.4.3 Proposed Action - Project Phasing

Based on interim passenger and operational demand conditions and available budget, Massport is proposing to commence the construction of the Terminal B Optimization Project in 2017 with substantial completion by early 2019. The Project would undergo efficient phasing to minimize impacts to Terminal B, Pier B operations and other temporary construction impacts.

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Proposed Action - Departures Level



Proposed Action - Arrivals Level

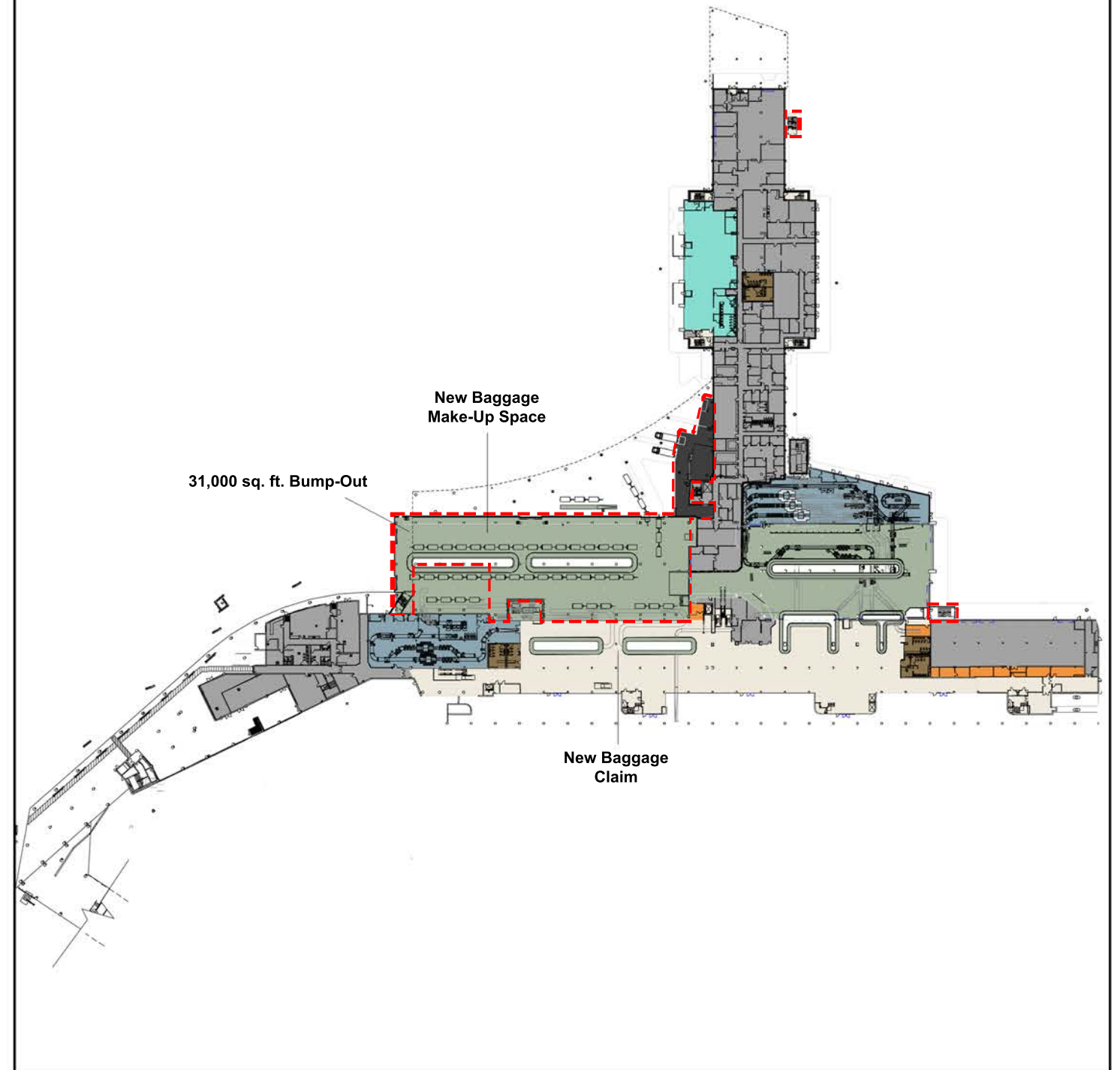
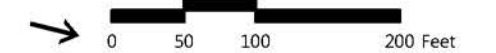


FIGURE 3-4 Proposed Action

AIRLINE SPACE	CLUB SPACE	OPEN RETAIL	CHECKED BAGGAGE INSPECTION SYSTEM	LOADING DOCK
BAGGAGE	HOLDROOM	RETAIL	MECHANICAL AND SUPPORT	GATE LOCATION
CIRCULATION	RESTROOMS	TSA	RECLAIMED LEASABLE SPACE	NEW BUILDING AREA

Terminal B Optimization Project



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4

Affected Environment

4.1 Introduction

This chapter of the Environmental Assessment (EA) describes the character of the environment in which the Terminal B Optimization Project (the Proposed Action or Proposed Project) would occur. It documents the affected environment for the Proposed Project relative to each applicable environmental resource category, as specified in Federal Aviation Administration (FAA) *Order 1050.1F*¹ and *Order 5050.4B*.² Consistent with Massport practice, broader Airport-wide environmental concerns and cumulative impacts are addressed in Massport's Environmental Status and Planning Reports (ESPR) and Environmental Data Reports (EDR) submitted annually to the Massachusetts Environmental Policy Act (MEPA) Office, not through the individual project review.

The Project Area is fully developed and in aviation use. It consists of Terminal B Piers A and B and associated aircraft apron adjacent to Terminal B, Pier B. The following sections describe existing project site environmental conditions. **Figure 4-1** shows the Project Area and existing Airport uses.

4.2 Project Environmental Setting

The following section describes the general environmental characteristics of Logan Airport and, more specifically, Terminal B.

4.2.1 Physical Setting

The Airport boundary encompasses approximately 2,400 acres in East Boston and Winthrop, including approximately 700 acres underwater in Boston Harbor, and is one of the most land-constrained airports in the nation. The Airport is located primarily on filled land and is surrounded by water on three sides. Logan Airport is close to downtown Boston and is one of the nation's most accessible airports, with both public transit and a well-connected roadway system. The airfield comprises six runways, approximately 15 miles of taxiway, and approximately 240 acres of concrete and asphalt apron. Logan Airport has four passenger terminals (Terminals A, B, C, and E), each with its own ticketing, baggage claim, and ground transportation facilities. Massport continues to evaluate and implement enhancements to Logan Airport's safety, security, operational efficiency, and accessibility to and from the Boston metropolitan area, while carefully monitoring the environmental effects of Logan Airport operations.



¹ FAA. 2015. *Order 1050.1F: Environmental Impacts: Policies and Procedures*.

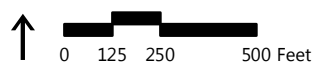
² FAA. 2006. *Order 5050.4B: National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*.



FIGURE 4-1 Project Area Context

Terminal B Optimization Project

-  New Building Footprint
-  Select Roadways



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4.2.1.1 Terminal B

Terminal B is comprised of two individual piers, Pier A and Pier B, separated by a shared parking garage (the Terminal B Garage). Designed in 1972 and 1973 respectively, construction on Pier B was completed for the former U.S. Airways in 1974 and Pier A for American Airlines in 1975. The terminal remained relatively unchanged until the U.S. Airways expansion in 1980, which resulted in major additions including a large boarding lounge for two contact gates, additional holdroom capacity and vertical circulation for ground--boarding, and an airline club. A dedicated area for the U.S. Airways Shuttle was added in 1999 as U.S. Airways consolidated its mainline, commuter, and shuttle operations (formerly at Terminal A) in one location in Terminal B. Between 1980 and 2000, other smaller projects including passenger holdroom improvements, concessions expansions, and passenger lounges were completed at both piers.

In response to September 11, 2001, the Department of Homeland Security, along with Massport, implemented an airport-wide project to enhance hold baggage screening capabilities for outbound passengers on both international and domestic flights. In-line baggage screening enhancements were constructed for both piers at Terminal B as part of this initiative, including Checked Baggage Inspection System (CBIS) Bag Rooms B6 and B7; these were completed in 2002.

Additional terminal upgrades have been performed at Pier B to improve significant deficiencies. Those projects include ticketing hall upgrades, post-security concessions food court and landside concessions improvements, lighting upgrades to bag claim areas, restroom improvements, and finishes and flooring upgrades.

The Terminal B Optimization Project would be located on fully developed land within the existing Airport footprint. Facilities in the Project Area include:

- Existing Terminal B with 38 aircraft gates served out of Piers A and B and the airside connector between the two piers;
- Remain overnight aircraft parking spaces;
- Equipment and ground support equipment (GSE) storage areas on the apron;
- Bi-level terminal roadways and curbsides (Arrivals/Departures); and
- The Terminal B parking garage.

4.2.2 Overview of Environmental Resource Categories Evaluated

FAA *Order 1050.1F* requires the evaluation of select impact categories. This EA considers all impact categories and provides a detailed assessment of existing conditions where applicable. **Table 4-1** identifies the National Environmental Policy Act (NEPA) impact categories that this document evaluates, along with a description of the potential effects to these categories from any of the alternatives. Categories that apply to the Terminal B Optimization Project and that are evaluated in this EA are noted in **Table 4-1** with a "yes." Chapter 5, *Environmental Consequences*, evaluates the direct, indirect, and construction-period impacts of these applicable categories.

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Table 4-1 National Environmental Policy Act (NEPA) Environmental Resources Evaluated in this Environmental Assessment (EA)

Environmental Resource¹	(Yes/No)	Explanation
Noise and Noise-Compatible Land Use	Yes	This category is included to assess short-term construction period impacts. The Proposed Project would not increase the number of aircraft operations or passenger activity levels; therefore, aircraft noise levels at or surrounding the Airport would not be expected to change compared to the No-Action Alternative. The Proposed Project would not result in changes to the roadway network in the vicinity of Terminal B or anywhere else at the Airport. Section 4.2.3, <i>Noise and Noise-Compatible Land Use</i> discusses the noise environment at Logan Airport.
Air Quality	Yes	This category is included to assess short-term construction period impacts. The Proposed Project would not affect the number of anticipated aircraft operations or generate any new ground access vehicle trips. See Section 4.2.4, <i>Air Quality</i> for additional information.
Natural Resources and Energy Supply	Yes	This category is included to assess the demand for natural resources, including potable water, consumable materials, and energy during Project construction, operation, and maintenance. The Project would cause limited additional demands on energy supplies and other resources that can be accommodated by current power suppliers. See Section 4.2.5, <i>Natural Resources and Energy Supply</i> for additional information.
Climate	Yes	This category is included to assess the Project's potential impact on climate change and also to assess how climate change might impact the Project. The Project would be built to Leadership in Energy and Environmental Design (LEED®) Commercial Interiors Gold standards (Pier B Departures Level only). The Project would include energy efficiency and resiliency measures. See Section 4.2.6, <i>Climate</i> , for additional information.
Water Resources (including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)	Yes	This category is included to assess the Project's potential to impact surface waters during construction, operation, and maintenance. The Project would not create any new impervious areas as the area is already fully paved. There are no wetlands, floodplains, or Wild and Scenic Rivers within the area of the Project footprint. ^{2,3} (Thus only surface waters are considered.) See Section 4.2.7, <i>Water Resources (including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)</i> for additional information.
Hazardous Materials, Solid Waste, and Pollution Prevention	Yes	This category is included due to the potential to encounter hazardous materials during construction. The Proposed Project includes excavation for foundations and utilities, which may encounter contaminated soils. See Section 4.2.8, <i>Hazardous Materials, Solid Waste, and Pollution Prevention</i> for additional information.
Coastal Resources	Yes	This category is included because Logan Airport is located within the Massachusetts Coastal Zone. The Project Area is proposed within entirely previously developed/disturbed portions of the Airport. The Proposed Project is limited to paved areas of the airfield and terminal that are already in use for aviation purposes, and would not change the manner of use or quality of land in the coastal zone. See Section 4.2.9, <i>Coastal Resources</i> for additional information.

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Table 4-1 National Environmental Policy Act (NEPA) Environmental Resources Evaluated in this Environmental Assessment (EA) (Continued)

Environmental Resource¹	(Yes/No)	Explanation
Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks	Yes	This category is included because several Environmental Justice communities surround Logan Airport. The Project would result in economic benefits related to construction and new goods/services in the form of temporary jobs and on-Airport spending, respectively. The Project will not result in adverse impacts to these communities. The Proposed Project will not result in changes to the airport roadway network or curbs. See Section 4.2.10, <i>Socioeconomics, Environmental Justice, and Children's Health and Safety Risks</i> for additional information.
Land Use	No	This category is not included because all proposed work is within the existing Airport footprint on land that is currently paved, in aviation-related use, and compatible with existing land uses.
Department of Transportation Act, Section 4(f)	No	This category is not included because there are no Section 4(f) properties within the Airport or Project footprint.
Visual Effects (including Light Emissions)	No	This category is not included because the existing visual character of the area will remain the same; the site and surrounding land will remain in airport-use. Terminal A and roadways separate residents from the Terminal B Project Area, which is entirely on-Airport. Due to the configuration of the roadways and other existing on-Airport buildings, the proposed terminal changes would not be highly visible from nearby residential communities.
Farmlands	No	This category is not included because no farmlands of statewide importance, as defined by the Farmland Protection Policy Act, exist within the Airport boundaries or within the vicinity of the Airport. ⁴ This resource is not applicable to the Project and is, therefore, not discussed in the narrative.
Historical, Architectural, Archaeological, and Cultural Resources	No	This category is not included because no known archaeological or cultural resources exist within the Project Area. This resource is not applicable to the Project and is, therefore, not discussed in the narrative.
Biological Resources (including fish, wildlife, and plants)	No	This category is not included because no biological resources are present within the Project Area. All Project elements are outside state Priority Habitats in the vicinity of the Airport. This resource is not applicable to the Project and is, therefore, not discussed in the narrative.

1 Environmental resource categories as specified in FAA *Orders 1050.1F* and *5050.4B*.
2 As defined by the Wild and Scenic Rivers Act of 1968, 16 U.S.C. section 1271 et seq.
3 Federal Emergency Management Agency (FEMA) flood insurance mapping.
4 United States Department of Agriculture. 1981. Farmland Protection Policy Act (7 U.S.C. 4201-4209).

This EA evaluates the applicable impact categories listed in **Table 4-1**. These categories are discussed in order of relevance to the Proposed Action.

This Affected Environment chapter focuses on the Terminal B Optimization Project, not the entirety of Logan Airport and its operations. Cumulative impacts will continue to be addressed through the Logan Airport ESPR and EDR, not through project-specific review of the Terminal B Optimization Project.³ Thus, the *Logan*

3 Massachusetts Executive Office of Energy and Environmental Affairs. 2015. *Certificate of the Secretary of Energy and Environmental Affairs on the Environmental Notification Form for the Terminal E Modernization Project*. December 16, 2015.

Airport 2015 Environmental Data Report,⁴ which provides a detailed assessment of Airport-wide conditions at Logan Airport in 2015, informs the overall Airport conditions, while this EA is specific to the Terminal B Optimization Project. The analysis year for the Affected Environment documentation is primarily 2015, the year for which the most complete information is available, unless otherwise noted.

4.2.3 Noise and Noise-Compatible Land Use

The noise environment of the Airport has been well documented through the annual EDRs and ESPRs. The annual Logan Airport EDRs/ESPRs report on the overall noise levels caused by aircraft on the runways and in flight at Logan Airport. The ESPR documents include future planning contours, such as the 2030 Day-Night Average Sound Level (DNL) contour published in the *2011 ESPR*.

Massport strives to minimize the noise effects of Airport operations on its neighbors through the use of a variety of noise abatement programs, procedures, and other tools. Logan Airport has an extensive noise abatement program, which includes residential and school sound insulation programs and flight tracks designed to optimize over-water operations (especially during nighttime hours). The foundation of Massport's comprehensive noise abatement program is the *Logan Airport Noise Abatement Rules and Regulations*⁵ (the "Noise Rules") which have been in effect since 1986. Almost all of the residences exposed to levels greater than a DNL of 65 decibels (dB) in 2015 have been eligible in the past to participate in Massport's residential sound insulation program (RSIP).

FAA *Orders 1050.1F* and *5050.4B* determine a significant noise impact to be a DNL increase of 1.5 dB or more at a noise-sensitive location with a DNL of 65 dB or higher. In general, FAA considers DNL 65 dB as the threshold below which all land uses are compatible. The 2015 DNL 65 dB contour encompasses the Terminal B study area. The nearest residential and recreational locations to the Project Area are within the DNL 60 dB contour. In 2015, the estimated overall number of people exposed to DNL values greater than 65 dB was 14,097 people.⁶ Within the DNL 70 dB contour the number of people was 430.

This EA evaluates noise levels associated with activities at Terminal B. Future airport-wide noise conditions will continue to be assessed in the forthcoming *2016 ESPR* which will include a forecast of future conditions.

4.2.4 Air Quality

According to FAA *Order 1050.1F* and *Order 5050.4B*, the project proponent must assess whether a project is likely to result in significant impacts to air quality of the human environment. This section describes the regulatory context related to air quality and the Airport-wide air quality conditions at Logan Airport.

4.2.4.1 National Ambient Air Quality Standards

The federal Clean Air Act (CAA), the National Ambient Air Quality Standards (NAAQS), and similar state laws govern air quality issues in Massachusetts. The NAAQS and the Massachusetts State Implementation Plan (SIP), promulgated to demonstrate compliance with the CAA (and its 1990 amendments), regulate air quality issues in the Boston metropolitan area and state, and are discussed in the next section.

⁴ Massport. 2016. *Boston-Logan International Airport 2015 Environmental Data Report*. December 15, 2016.

⁵ *Logan Airport Noise Abatement Rules and Regulations* are codified at 740 CMR 24.01 et seq.

⁶ Based on the 2010 Census.

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The United States Environmental Protection Agency (EPA) established NAAQS for a group of criteria air pollutants to protect public health, the environment, and the quality of life from the detrimental effects of air pollution. These NAAQS are set for the following six pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), and sulfur dioxide (SO₂). The NAAQS primary standards (designed to protect human health) and secondary standards (designed to protect human welfare) are summarized in **Table 4-2**.

Based on air monitoring data and in accordance with the CAA, all areas within Massachusetts are designated as attainment, nonattainment, maintenance, or unclassifiable with respect to the NAAQS. An area with air quality better than the NAAQS is designated as attainment, an area with air quality worse than the NAAQS is designated as nonattainment, and an area that is in transition from nonattainment to attainment is designated as attainment/maintenance. An area may also be designated as unclassifiable when there is a temporary lack of data to form a basis for determining attainment status. Nonattainment areas can be further classified as extreme, severe, serious, moderate, and marginal by the degree of non-compliance with the NAAQS. The current attainment/nonattainment designations for the Boston metropolitan area are summarized in **Table 4-2**.

In May 2012, EPA issued a Clean Data Finding for the Boston area ruling that the area has attained the 1997 NAAQS, suspending many obligations related to SIP development and implementation so long as the area continues to demonstrate attainment based on ambient data. In June 2013, EPA proposed to revoke the 1997 8-hour NAAQS completely. Until this action appears in the Federal Register as a final rule, the Boston area is still subject to any requirements related to its former "moderate" nonattainment status under the 1997 NAAQS that are not excused by the clean data finding. Even with the clean data finding, once the 1997 standard is officially revoked by final rule, the anti-backsliding requirements of the federal CAA may still obligate the Massachusetts Department of Environmental Protection (MassDEP) to enforce select elements of any federally enforceable SIP prepared to attain the 1997 NAAQS (see **Table 4-3**).

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Table 4-2 National Ambient Air Quality Standards

Pollutant	Averaging Time	Standard		Notes
		ppm	µg/m ³	
Carbon Monoxide (CO)	1 hour	35	40,000	Not to be exceeded more than once a year.
	8-hour	9	10,000	Not to be exceeded more than once a year.
Lead (Pb)	Rolling 3-Month Average	—	0.15	Not to exceed this level. Final rule October 2008.
	Quarterly	—	1.5	The 1978 standard (1.5 µg/m ³ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
Nitrogen Dioxide (NO ₂)	1 hour	0.100	188	The three-year average of the 98 th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm.
	Annual	0.053	100	Not to exceed this level.
Ozone (O ₃)	8-hour ¹	0.070	—	Annual fourth-highest daily maximum 8-hour concentration, average over 3 years.
Particulate Matter with a diameter ≤ 10µm (PM ₁₀)	24-hour	—	150	Not to be exceeded more than once a year on average over three years.
Particulate Matter with a diameter ≤ 2.5 µm (PM _{2.5})	24-hour	—	35	The three-year average of the 98 th percentile for each population-oriented monitor within an area is not to exceed this level.
	Annual (Primary)	—	12	The three-year average of the weighted annual mean from single or multiple monitors within an area is not to exceed this level.
	Annual (Secondary)	—	15	The three-year average of the weighted annual mean from single or multiple monitors within an area is not to exceed this level.
Sulfur Dioxide (SO ₂)	1 hour	0.075	196	Final rule signed June 2, 2010. The three-year average of the 99 th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed this level.
	3-hour	0.5	1,300	Not to be exceeded more than once a year.

Source: EPA, 2016 (<https://www.epa.gov/criteria-air-pollutants>).

Notes:

1 Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O₃ standard additionally remain in effect in some areas. Revocation of the 2008 standard and transitioning to the new standard will be achieved over the next three years.

ppm Parts per million

µg/m³ Micrograms per cubic meter

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Table 4-3 Attainment/Nonattainment Designations for the Boston Metropolitan Area

Pollutant	Designation
Carbon monoxide (CO)	Attainment/Maintenance ¹
Nitrogen Dioxides (NO ₂)	Attainment
Ozone (Eight-hour, 1997 Standard)	Attainment/Maintenance ¹
Ozone (Eight-hour, 2008 Standard)	Attainment/Unclassifiable ²
Ozone (Eight-hour, 2014 Standard)	To be determined ³
Particulate matter (PM ₁₀)	Attainment
Particulate matter (PM _{2.5})	Attainment
Sulfur Dioxide (SO ₂)	Attainment
Lead (Pb)	Attainment

Source: EPA, 2015 (<https://www.epa.gov/green-book>).

1 The Boston area was previously designated nonattainment for this pollutant but has since attained compliance with the National Ambient Air Quality Standards (NAAQS).

2 Attainment/Unclassifiable means that the initial data shows attainment but additional data is needed to verify longer-term conditions.

3 Attainment designation will be determined in 2017.

4.2.4.2 State Implementation Plan (SIP)

A SIP is a state’s regulatory plan for bringing nonattainment areas within that state into compliance with the NAAQS. MassDEP is required to submit updated SIPs to the EPA periodically to address CAA requirements. The current and future SIPs for the Boston area are summarized in **Table 4-4**.

Table 4-4 State Implementation Plan (SIP) for the Boston Area

Standard	Title	Status	Comments
Carbon Monoxide	Maintenance Plan	Published in 2014	This Maintenance Plan is required for any area that was formerly designated as non-attainment to show that it will not regress to this status.
Ozone	2008 SIP	Submitted to EPA in 2014 – pending	As of April 2014, MassDEP has determined that the Boston area is still compliant with the 2008 standard, thus the SIP status is currently pending. ¹

Source: MassDEP (<http://www.mass.gov/eea/agencies/massdep/air/reports/state-implementation-plans.html>).

Notes: The number of commercial and employee parking spaces allowed at Logan Airport is regulated by the Logan Airport Parking Freeze (310 Code of Massachusetts Regulations 7.30 and 40 CFR 52.1120), which is an element of the Massachusetts State Implementation Plan (SIP) under the Federal Clean Air Act.

1 In 2007, the EPA promulgated a new eight-hour NAAQS for ozone. Informally called the “2008 standard” to differentiate it from the former “1997 standard,” this new standard is stricter (i.e., lower) than the former standard.

4.2.4.3 Air Quality Management at Logan Airport

At Logan Airport, Massport has implemented a wide array of initiatives aimed at reducing and minimizing emissions associated with airport activities (including those associated with the existing Terminal B). Select examples include, but are not limited to, alternatively fueled fleets of transit buses and other motor vehicles; a new consolidated rental car facility; pre-conditioned air and 400 Hz power units at aircraft gates to allow aircraft to plug-in rather than operate their on-board auxiliary power units; Leadership in Energy and Environmental Design (LEED®) Certification for new buildings; and solar panels for electrical generation.

4.2.4.4 Emissions Inventory

Massport prepares a comprehensive and Airport-wide annual emissions inventory of the EPA criteria pollutants and their precursors for Logan Airport and publishes the results in the EDRs and ESPRs.⁷ This inventory includes emissions associated with aircraft engines, auxiliary power units, ground support equipment, fuel facilities, and a number of stationary sources such as boilers and back-up generators. Overall, the annual emission inventories reveal that air emissions from all sources associated with Logan Airport are significantly less than they were a decade ago. This continuous downward trend is consistent with Massport's longstanding objective to accommodate the demands of increasing passenger and cargo activity levels with fewer aircraft operations and fewer emissions.

4.2.5 Natural Resources and Energy Supply

Logan Airport is a campus of interconnected buildings, transportation facilities, utility infrastructure, natural environments, and management systems. FAA *Orders 1050.1F* and *5050.4B* require that proposed projects employ principles of environmental design and sustainability. Massport is a national leader in airport sustainability with a two-decade long track record of implementing sustainability initiatives, including the first LEED® terminal in the world. The *2015 EDR* and the *Logan Airport Sustainability Management Plan*⁸ provide comprehensive information on Massport's efforts to conserve energy, generate energy from alternative sources, and reduce greenhouse gas (GHG) emissions, among other successful initiatives.

Massport is making strides in reducing energy use at the Airport. In Fiscal Year (FY) 2015, the year of the most complete available data, Logan Airport consumed approximately 185,154 MWh (megawatt hours) of electricity, about 54 percent of which supplied the terminals. In addition to electricity, Logan Airport also consumes natural gas and heating oil. When accounting for all energy types, including electricity, natural gas, and fuel oil numbers 2 and 6, buildings at Logan Airport consumed 1,156,139 MMBtu (million British thermal units) in FY2015. This represents an energy intensity of 89.0 kBtu (thousand British thermal units) per square foot in FY2015, a nearly 20 percent reduction from 110.6 kBtu per square foot in FY2011.⁹ In FY2015, onsite renewable energy projects (non-power purchase agreement projects) at Logan Airport generated 495,010 kWh (kilowatt-hours) of electricity.

4.2.5.1 Sustainability at Logan Airport

Massport is committed to a robust sustainability program. Consistent with the Airports Council International - North America's definition of Airport Sustainability,¹⁰ Massport is focused on a holistic approach to managing Logan Airport to ensure economic viability, operational efficiency, natural resource conservation, and social responsibility. Massport is committed to implementing environmentally sustainable practices Authority- and Airport-wide, and continues to make progress on a range of initiatives.

⁷ Boston-Logan Environmental Data Reports are available at www.massport.com/environment/environmental-reporting/.

⁸ Massport. 2015. *Logan Airport Sustainability Management Plan*. <http://massport.com/environment/sustainability-management-plan/>. Accessed February 13, 2017.

⁹ Arup Group. 2013. *Logan Energy Analysis*.

¹⁰ Airport Council International (ACI). *Airport Sustainability: A Holistic Approach to Effective Airport Management*. Undated. <http://www.aci-na.org/static/entransit/Sustainability%20White%20Paper.pdf>. Accessed February 13, 2017.

Logan Airport Sustainability Management Plan

Massport is committed to reducing local environmental impacts without sacrificing service level; Massport's robust sustainability program is indicative of this commitment. In 2013, Massport was awarded a grant by the FAA to prepare a sustainability management plan for Logan Airport. The purpose of the plan is to enhance the efficiency and sustainability of Logan Airport's operations and to support the broader sustainability principles of the Commonwealth of Massachusetts. This planning effort began in May 2013 and was completed in April 2015. The plan, which takes a broad, holistic view of sustainability, is intended to promote and integrate sustainability Airport-wide and to coordinate ongoing sustainability efforts across the Authority. The *Logan Airport Sustainability Management Plan* developed a framework and implementation plan, with metrics and targets, designed to track progress over time. Massport reports on its progress in an Annual Sustainability Report, the first of which was published in April 2016 (<https://www.massport.com/environment/sustainability-management-plan/>).

Sustainability in Planning, Design, and Construction

The U.S. Green Building Council's LEED® rating system is the most widely recognized third-party green building certification system in North America. Massport is striving to achieve LEED® Silver certification or higher for new and substantial rehabilitation of building projects over 20,000 square feet. Some recent examples of LEED® certified buildings at Logan Airport are the Rental Car Center (LEED® Gold) and the Green Bus Depot (LEED® Silver).

For smaller building projects and non-building projects, Massport uses its Sustainable Design Standards and Guidelines to incorporate sustainability into capital improvement projects. These guidelines provide a sustainable building framework for design and construction of both new construction and rehabilitation projects for both building and non-building projects (for example, pavement projects). The guidelines apply to a wide range of project-specific criteria such as site design, project materials, energy management and efficiency, air emissions, water management quality and efficiency, indoor air quality, and occupant comfort.

4.2.6 Climate

Massport has adopted a GHG management and reduction policy that includes identifying and assessing measures to avoid, minimize, or mitigate GHG emissions. Massport also has a robust resiliency program to improve its climate preparedness.

4.2.6.1 GHG Emissions Inventory

As described above in Section 4.2.4, *Air Quality*, Massport prepares a comprehensive and Airport-wide emissions inventory for Logan Airport annually and publishes the results in the EDRs and ESPRs.¹¹ In addition to energy consumed by the Terminal B facility, the principal sources of GHG emissions presently associated with Terminal B are mobile sources including aircraft engines and their auxiliary power units, ground support equipment, and ground access vehicles traveling to, from, and moving about the site (these include automobiles such as cars, trucks, and vans; taxis and limousines; step-vans; shuttles; and transit buses). Other, smaller sources of emissions include back-up electrical generators, food-preparation services, and construction activities

¹¹ Boston-Logan Environmental Data Reports are available at www.massport.com/environment/environmental-reporting/.

whenever they occur. However, these sources and their emissions are not segregated from the other facilities or operations reported upon in the EDRs and ESPRs.

4.2.6.2 Resiliency

Massport is a national leader in resiliency planning. As noted on Massport's website,¹² "Changing climate is real and the consequent disruptions (such as increased storms and fluctuations of extreme temperatures) will be more frequent in the future. This requires us to change the way we plan, design, and manage both our built and non-built environment – with the end goal of creating a resilient and sustainable future for ecosystems, human communities, and economic viability." After the Superstorm Sandy event, Massport established a Resiliency Working Group to identify threats and hazards, likely scenarios, and current vulnerabilities.

A high-level evaluation of the resiliency of Massport's facilities to natural (hurricanes, storms, flooding, earthquakes), man-made (fires), and technological (data loss) threats was undertaken. In addition, Massport commissioned the *Disaster and Infrastructure Resiliency Planning Study*, which took a detailed look at resiliency at Logan Airport. The *Disaster and Infrastructure Resiliency Planning Study* assessed critical infrastructure and vulnerabilities that the Airport may face during future climate scenarios. Consideration was given to projected sea level rise and other environmental factors (e.g., high tide or low tide).

Massport's Resiliency Program has identified several goals including:

- Improve resiliency for overall infrastructure and operations;
- Restore operations during and after disruptive events in a safe and economically viable timeframe;
- Create robust feedback loops that allow new solutions as conditions change;
- Inform operations and policy, and implement design/build decisions, through the application of sound scientific research and principles that consider threats, vulnerabilities, and cost-benefit calculations;
- Become a knowledge-sharing exemplar of a forward-thinking, resilient port authority; and
- Work with key influencers and decision makers to strengthen understanding of the human, national, and economic security implications of extreme weather, changing climate, and man-made threats to Massport's facilities and the region.

4.2.7 Water Resources (including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)

The Project Area is located on previously developed, fully paved land in Airport use (no additional impervious cover), and does not include any wetlands or floodplains and is not located near or adjacent to a Wild and Scenic River. Accordingly, this section focuses on the existing conditions for stormwater. For reference purposes, **Figure 4-2** shows the 1 percent and 0.2 percent flood zones near Logan Airport.

FAA *Order 1050.1F* lists several factors to consider for surface waters, which include an action's potential to adversely affect natural and beneficial water resource values, adversely affect surface waters, or create water quality impacts that make obtaining a permit or authorization difficult.

¹² Massport. *Resiliency and Climate Change*. <https://www.massport.com/business-with-massport/resiliency/resiliency-and-climate-change/>. Accessed February 13, 2017.

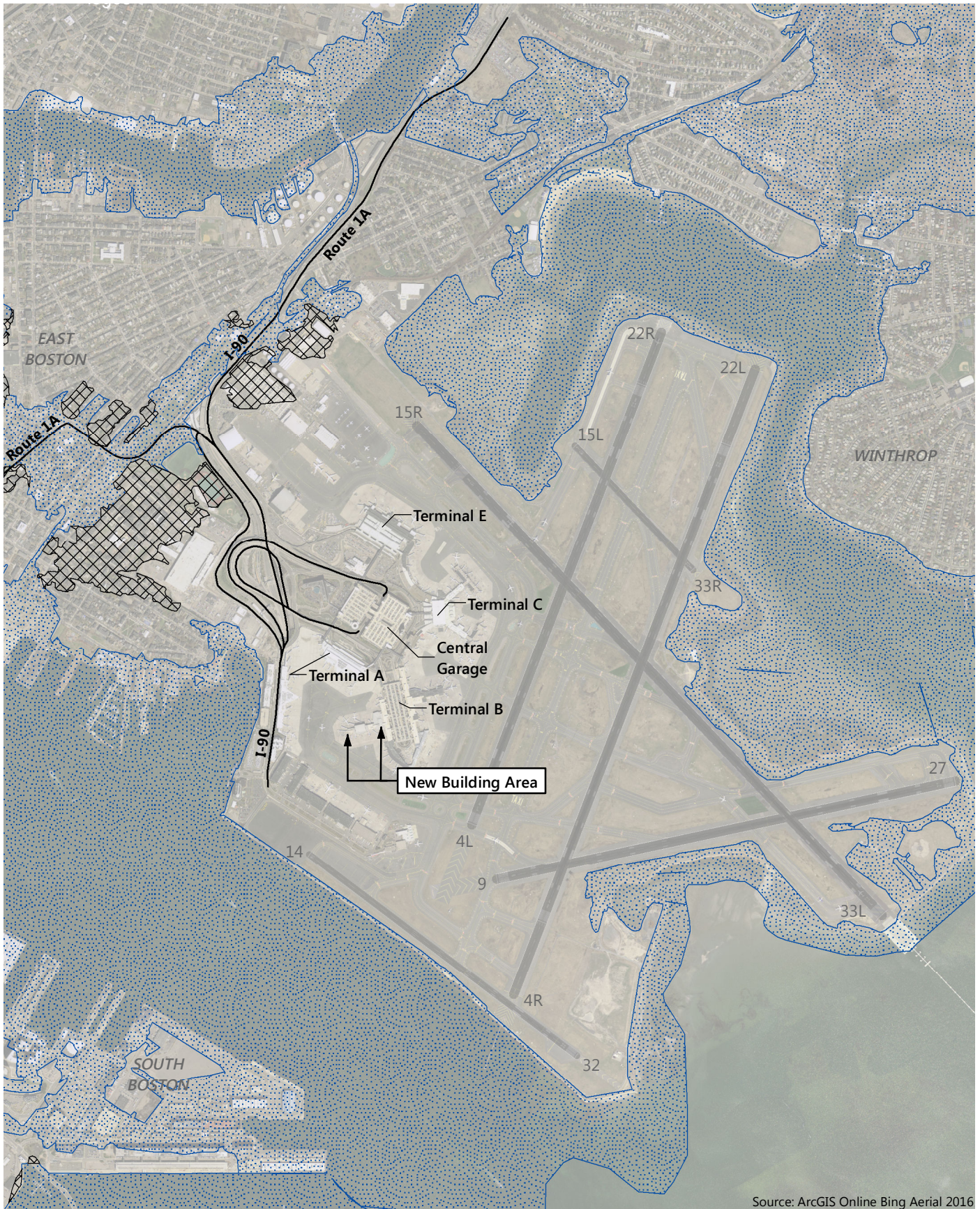


FIGURE 4-2 2016 FEMA Flood Map

Terminal B Optimization Project

- AE: 1% Annual Chance of Flooding, with BFE
- X: 0.2% Annual Chance of Flooding
- Select Roadways



4.2.7.1 Stormwater

Massport's primary water quality goal is to prevent or minimize pollutant discharges, thus limiting adverse water quality impacts associated with Airport activities. Massport employs several programs to promote awareness of Massport and tenant activities that may impact surface and groundwater quality, thus improving water quality. Programs include implementing best management practices for pollution prevention by Massport, its tenants, and its construction contractors; training staff and tenants; and a comprehensive Stormwater Pollution Prevention Plan.

Massport is responsible for compliance with applicable state and federal environmental laws and regulations. Massport promotes appropriate environmental practices through pollution prevention and remediation measures while working closely with Airport tenants and Airport operations staff to improve compliance. Massport's environmental programs pertaining to water quality and environmental compliance and management include:

- Stormwater management;
- Water quality management;
- Fuel use and spills;
- Massachusetts Contingency Plan (MCP) compliance;
- Storage tank compliance;
- Compliance auditing and inspections;
- Environmental Management System implementation; and
- Clean State Initiative and Leading by Example Program participation.

The Project Area is adjacent to and drains to Boston Harbor, which is a Category 5 impaired water body.^{13, 14}

Logan Airport Storm Drainage System

Logan Airport's storm drainage system consists of a network of stormwater inlets, drainpipes, manholes, and tide gates that make up the 48 independent drainage systems, each with a separate outlet into Boston Harbor. There are five major subsystems serving the terminal and support areas, which include areas of the Airport where refueling, maintenance, and support services occur. Within the Terminal B Project Area, one subsystem drains the Project Area. The Project Area is served by separate storm and wastewater systems. The major storm drainage subsystem within the Project Area is the West Drainage Area. The Project Area, to the west of existing Terminal B, drains to the West Outfall. The West Outfall is equipped with end-of-pipe pollution control equipment that removes debris and floating oil and grease from stormwater prior to discharging into Boston Harbor.

¹³ Category 5 water bodies are defined as waters requiring a "total maximum daily load" or TMDL.

¹⁴ Massachusetts Department of Environmental Protection. 2015. *Massachusetts Year 2014 Integrated List of Waters*. <http://www.mass.gov/eea/docs/dep/water/resources/07v5/14list2.pdf>. Accessed February 13, 2017.

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West Outfall - 002

The drainage area contributing runoff to the West Outfall is approximately 403 acres and includes Terminals A, B, C, and E; the apron and taxiways between Terminals B and C; a portion of the outer taxiway; Taxiways P, E, S, and X; and the cargo areas. The main activities in this drainage area are aircraft fueling, aircraft maintenance at gates, fuel distribution, aircraft lavatory waste management, and during winter months, aircraft deicing and the deicing and sanding of roadways, taxiways, and runways.

Massport currently maintains pollution control equipment at the West Outfall. The pollution control equipment includes a mechanically cleaned bar screen that operates daily in coordination with the outgoing tide and a skimmer that directs materials and water to a grinder pump, followed by a sedimentation tank and oil/water separator. Oil from the separator is pumped out by Massport's contractor and the underflow is circulated back to the outfall upstream of the bar screen. Absorbent floating booms are provided in the skimmer box as well as at each of the outfalls to capture floatables that may have passed through the bar screen and oil/water separator equipment. Solids collected by the bar screens and spent absorbent booms are containerized and disposed of off-site. Conditions at the outfalls and the pollution control equipment are checked weekly and are maintained as necessary.¹⁵

NPDES Permit and Sampling Requirements

The Clean Water Act requires permits for pollutant discharges into U.S. waters from point sources and for stormwater discharges associated with industrial activities. Massport holds permits under the EPA and National Pollutant Discharge Elimination System (NPDES) Program. The NPDES permit (No. MA0000787) covers Massport and its co-permittees at Logan Airport. It establishes effluent limitations and monitoring requirements for discharges from specified stormwater outfalls.

On July 31, 2007, EPA and MassDEP issued an individual NPDES permit for Logan Airport (NPDES Permit No. MA0000787). The new permit became effective on September 29, 2007, replacing the previous NPDES Permit dated March 1, 1978. The NPDES permit is on EPA's website at <https://www3.epa.gov/region1/npdes/logan/pdfs/finalma0000787rtc.pdf>. Massport holds a separate NPDES permit for the Fire Training Facility (NPDES Permit No. MA0032751).

The NPDES permit requires grab samples (single samples collected at a particular time and place) to be taken monthly from the North, West, Porter Street, and Maverick Street Outfalls. Samples are tested for pH, oil and grease, total suspended solids, benzene, surfactants, fecal coliform bacteria, and *Enterococcus* bacteria during both wet and dry weather. Grab samples are also taken quarterly from these four outfalls during wet weather to test for eight different polycyclic aromatic hydrocarbons. Additional sampling requirements of the NPDES permit include sampling for deicing compounds twice during the deicing season (October through April) at the North, West, and Porter Street Outfalls. The NPDES permit sets discharge limitations for pH, oil and grease, and total suspended solids from the North, West, and Maverick Street Outfalls and for pH from the Porter Street Outfall. The NPDES permit does not include any discharge limitations for the Northwest Outfall, airfield outfalls, or the deicing monitoring, and requires only that the sampling results be reported. The annual EDRs and ESPRs report on the results of this sampling. In 2015, 99 percent of samples tested complied with

¹⁵ Massport Dec 2015. *Logan Airport Operations Stormwater Pollution Prevention Plan*.

standards.¹⁶ In accordance with the NPDES Permit, Massport inspects the main outfalls on a monthly basis during wet and dry weather, and the airfield outfalls on an annual basis during wet weather.

4.2.8 Hazardous Materials, Solid Waste, and Pollution Prevention

FAA *Order 1050.1F* identifies several factors to consider for a Proposed Action: potential to violate federal, state, tribal, or local laws regarding hazardous materials and/or solid waste, involvement of a contaminated site, potential to produce hazardous waste, potential to generate a quantity of solid waste or exceed local capacity, or potential to adversely affect human health and the environment. This section discusses the potential presence of oil and/or hazardous materials and solid waste in relation to the Proposed Project and considerations for proper management during construction to prevent pollution.

Several state and federal regulatory programs govern the requirements for site remediation, transport of regulated hazardous materials, and potential spills during construction. Based on a search of the EPA online database, there are no National Priority List sites on Logan Airport.

In the Commonwealth of Massachusetts, the management of hazardous substance and petroleum products when released into the environment is generally governed by the MCP also known as 310 CMR 40.0000. Hazardous substances include oil, hazardous material, and hazardous waste and are defined as those substances that may constitute a present or potential threat to human health, safety, welfare, or the environment. When a hazardous substance impacts (or potentially impacts) an environmental medium, then a release (or threat of release) of oil and/or hazardous materials is said to occur. As per the MCP, a “release” is defined as “spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment.” A threat of release “means a substantial likelihood of a release of oil and/or hazardous materials which requires action to prevent or mitigate damage of health, safety, public welfare or the environment which may result from the release.” The MCP defines a “disposal site” as the place or area where an uncontrolled release of oil and/or hazardous materials has come to be located.

In accordance with the MCP process, Massport continues to assess, remediate, and bring to regulatory closure disposal sites. Massport leads the performance of a variety of response actions, including remediation at sites where Massport is the responsible party, where there are multiple responsible parties, and where no responsible party has been identified. Tracking of MCP activity is reported annually by Massport and can be found in the *Logan Airport 2015 EDR*. There are no MCP sites within or adjacent to the project footprint.

Numerous other releases have been documented within the greater Logan Airport area for which Massport is not considered the Responsible Party. Several of these disposal sites have been remediated to background levels and are not anticipated to have resulted in residual contamination that would affect the Project, also known as achieving a Class A-1 Response Action Outcome (RAO) or Permanent Solution with No Conditions. The remaining active and closed disposal sites located within or abutting the Project Area, which are not being managed by Massport, include the following:

- Historically, MassDEP was notified of releases from the Airport’s Fuel Distribution System (FDS) at Terminals B, C, D, and E. Massport was initially noted as the Responsible Party and RTN 3-1287 was assigned to the disposal site. It was later determined that U.S. Airways would assume responsibility for a portion of the FDS release at Terminal B, Pier B and Taxiway A-2. RTN 3-15758 was assigned to these areas

¹⁶ Massport. 2015. *Boston-Logan International Airport Environmental Data Report*. <https://www.massport.com/environment/environmental-reporting/>. Accessed February 13, 2017.

in November 1997. Contaminants at the disposal site (and within the Project Area) include jet fuel, which is present as separate-phase product. A partial Class A-2 Response Action Outcome (RAO) was submitted to the MassDEP for the Taxiway A-2 portion of the disposal site (RTN 3-15758) in 2012, which indicates that permanent regulatory closure was achieved. However, contaminant concentrations were not reduced to background levels. The remainder of the U.S. Airways disposal site associated with Terminal B is currently in Phase V Remedy Operation Status (ROS), indicating that maintenance and monitoring events are actively conducted to mitigate the release, which include separate-phase product recovery, remedial additive injections, soil vapor monitoring, and monitored natural attenuation.

- RTN 3-33968 was assigned in December 2016 to a release of 13 gallons of jet fuel near Terminal B, Gate B3, which is located within the Project Area. Swissport Fueling has been named as the responsible party for the release, which reportedly impacted pavement only according to the Release Log Form. However, since the release was recently reported and a Permanent Solution Statement has not been submitted, the disposal site is considered active.

4.2.9 Coastal Resources

Logan Airport is located primarily on filled land within Boston Harbor, within the heavily urbanized Boston Harbor Watershed and is entirely located within the designated Coastal Zone of Massachusetts. FAA *Order 1050.1F* identifies several factors to consider for a proposed action: the potential to be inconsistent with the state coastal zone management plan, the potential impact on a coastal barrier resource system unit, the potential impact to coral reef ecosystems, the level of risk to human safety or property, or the potential for adverse impacts to the coastal environment that cannot be mitigated. The entire Terminal B Project Area is currently on fully developed land, which includes paved areas of the airfield and terminal that are already in use for aviation purposes.

4.2.10 Socioeconomics, Environmental Justice, and Children’s Health and Safety Risks

FAA *Order 1050.1F* requires that a project consider the impacts of the alternatives on “the following broad indicators: economic activity, employment, income, population, housing, public services, and social conditions.” Logan Airport is located in the East Boston neighborhood, in Boston Massachusetts. The following section describes the existing socioeconomic conditions, environmental justice considerations, and children’s health and safety conditions.

The Airport is a major employer and economic generator for the region, and an economically stabilizing anchor in East Boston. Massport is an affirmative action/equal opportunity employer that is committed to workplace diversity. Logan Airport accounts for 89 percent of all economic impact deriving from Massport airports.¹⁷ This economic output estimate includes payments to vendors and suppliers that are located within areas generally impacted by Massport operations. In 2012, Massport’s economic contribution to vendors and suppliers in impacted communities was over \$8.0 million and in 2013, it was over \$11.7 million. This amount represents a 46.5 percent increase from the amount paid in fiscal year 2012.

¹⁷ Massachusetts Department of Transportation Aeronautics Division. 2014. *Massachusetts Statewide Airport Economic Impact Study Update*.

4.2.10.1 Socioeconomic Factors

This assessment of socioeconomic conditions in the vicinity of the Project Area considers factors such as population, employment, housing, and public services. Socioeconomic factors provide a context for evaluating whether the Proposed Action's natural or physical environmental effects are interrelated with any economic or social effects. To understand the existing social and economic condition of the surrounding community, Massport assessed social and economic indicators of East Boston. Logan Airport is a primary economic engine for the New England region, the state, and the Boston metropolitan area. It supports nearly 95,000 direct and indirect jobs,¹⁸ while generating approximately \$13.4 billion per year in total economic activity.¹⁹

4.2.10.2 Environmental Justice

Environmental justice is the concept of fair treatment and involvement of all communities; the evaluation of "Environmental Justice" communities is to analyze whether a single community would be disproportionately affected by negative environmental consequences.²⁰ Indicators such as racial minorities, low-income, and language isolation typically define Environmental Justice populations.

The MassGIS Environmental Justice Populations data layer is derived from the 2010 U.S. Census and serves as an initial screening tool for identifying potential Environmental Justice populations. According to the data layer, several census block groups within East Boston fall within Environmental Justice criteria. Communities directly abutting Logan Airport qualify for Environmental Justice consideration as minority populations, low-income populations, and English isolation populations.²¹

East Boston is home to approximately 44,989 residents. East Boston is generally considered a minority community made up of primarily Hispanic or Latino residents. According to the most recently available census information, 58 percent of East Boston residents identify as Hispanic or Latino (of any race) and 42 percent identify as "Not Hispanic or Latino." The majority of the 44,989 East Boston residents identify as either White only (63 percent) or mixed White and Black (or African) (22 percent).

4.2.10.3 Children's Health and Safety Risks

The 15,500 households in East Boston support a median household income of approximately \$50,000 annually,²² compared to the \$54,500 median household income of the 251,212 households in the larger City of Boston.²³ Of the 9,000 families in East Boston, approximately 16 percent were below the poverty level based on income during the 12 months prior to the American Community Survey. Similarly, 17 percent of the City of Boston's 119,718 families were below the poverty level based on the same metric. East Boston is generally aligned economically with the City of Boston.

4.2.10.4 Surface Transportation

This section describes the roadway network within the Transportation Study Area in accordance with FAA *Order 1050.1F* and FAA *Order 5050.4B* paragraph 706(e). The FAA requires surface transportation to be

¹⁸ Massport and InterVISTAS, 2015.

¹⁹ Massachusetts Department of Transportation Aeronautics Division. 2014. *Massachusetts Statewide Airport Economic Impact Study Update*.

²⁰ FAA. 2015. *Order 1050.1F: Environmental Impacts: Policies and Procedures*.

²¹ OLIVER: MassGIS's Online Mapping Tool. http://maps.massgis.state.ma.us/map_ol/oliver.php. Accessed February 13, 2017.

²² U.S. Census Bureau, American Community Survey 5-year estimate (2010-2014) for zip code 02128 (East Boston). Table DP03

²³ U.S. Census Bureau, American Community Survey 5-year estimate (2010-2014) for the City of Boston, MA. Table DP03

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considered when the Proposed Project has the potential to disrupt traffic patterns and substantially reduce the levels of service of roads serving an airport and its surrounding communities. Airport-wide ground transportation conditions are documented annually in Massport's EDR/ESPR filings.

Project Area Surface Transportation System

As described in detail in the *2015 EDR*, Logan Airport is proximate to downtown Boston and is accessible by two public transit lines (the Massachusetts Bay Transportation Authority's [MBTA's] Blue and Silver lines) and a well-connected regional and interstate roadway system. Major gateways serving as Airport access points include Route 1A, the Ted Williams Tunnel (Interstate 90), the Sumner/Callahan Tunnels, Frankfort Street/Neptune Road, and Maverick Street, which is gated to limit traffic to East Boston residents only (see **Figure 4-3**).

The Airport is also served by several bicycle and pedestrian connections. Sidewalks along Harborside Drive and Hotel Drive connect to the terminals, where a series of overhead, enclosed walkways connect to the Central and West parking garages, as well as the Hilton hotel. The sidewalk along Harborside Drive, Transportation Way, North Service Road, Maverick Street, and the Harborwalk facilitate pedestrian access to the Airport water shuttle boat dock, the MBTA Blue Line Airport Station, and the pedestrian and bicycle pathways at Memorial Stadium Park, Bremen Street Park, and the East Boston Greenway, which provide more regional connections. From the MBTA Airport Station, passengers arrive at Terminal B by way of free Massport shuttle bus service.

Since the mid-1970s, Massport has committed to increasing use of high-occupancy vehicle ground transportation modes for traveling to and from Logan Airport. Massport programs have encouraged the use of various high-occupancy modes, including public transit, water taxis, and Logan Express bus service. Vehicle access in the terminal areas is focused on furthering this commitment by allocating a large portion of existing terminal curbside space for high-occupancy vehicles. Pedestrian access within the terminals is provided by a combination of marked crosswalks with flashing beacons, overhead walkways, and internal terminal walkways.

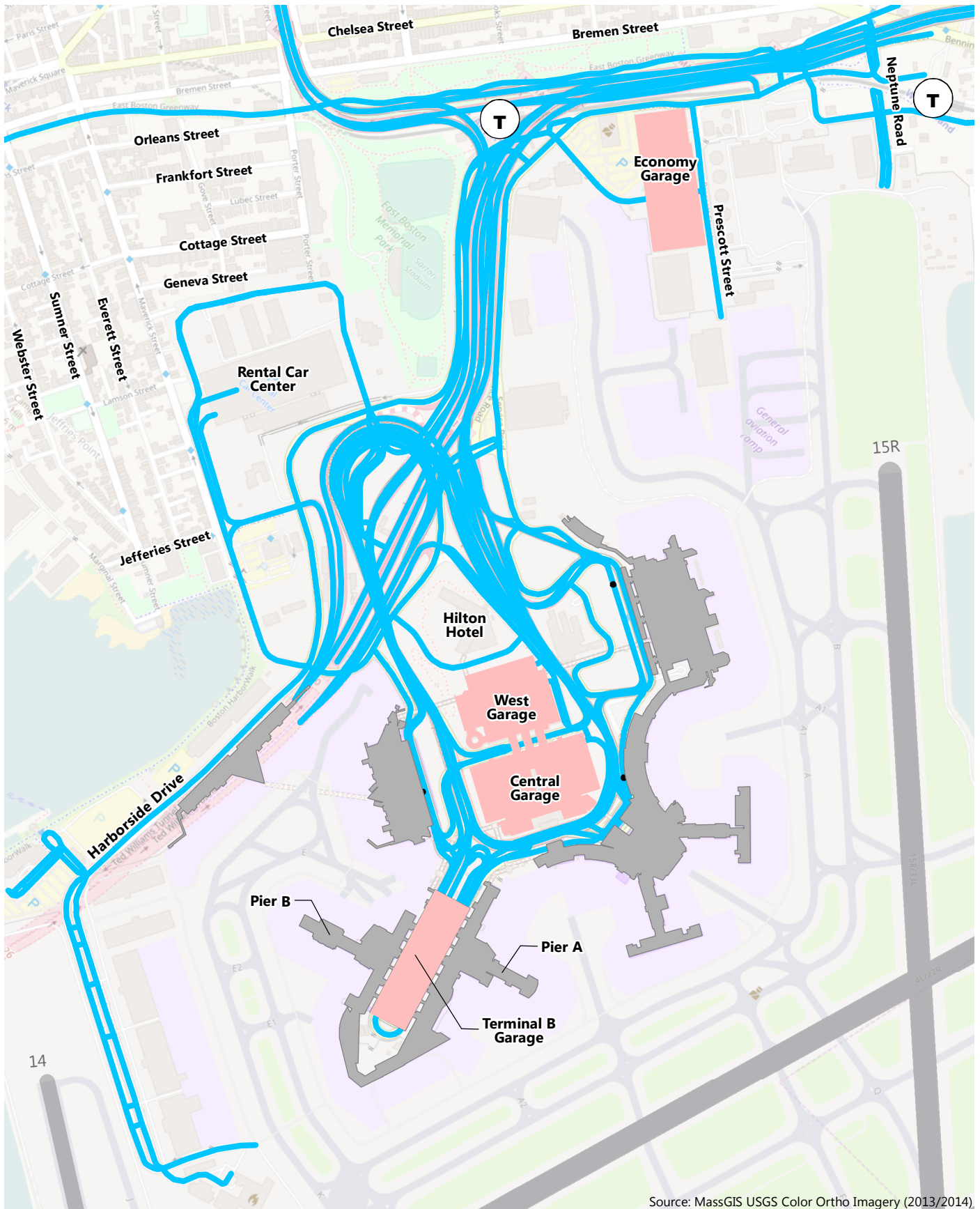


FIGURE 4-3 Logan Airport Roadway Network

Terminal B Optimization Project

- Parking Garages
- Terminal Buildings
- Airport Roadways



5

Environmental Consequences

5.1 Introduction

Per the Council on Environmental Quality (CEQ) Regulations for Implementing the National Environmental Policy Act (NEPA) (40 CFR 1500.2(f)), project proponents shall, to the fullest extent possible:

“Use all practicable means consistent with the requirements of the Act and other essential considerations of national policy, to restore and enhance the quality of the human environment and avoid or minimize any possible adverse effects of their actions on the quality of the human environment.”¹

In accordance with the NEPA regulations, this chapter documents the potential effects of the Proposed Action/Proposed Project for each applicable environmental resource category, as specified in Federal Aviation Administration (FAA) *Order 1050.1F*,² and *Order 5050.4B*³ and listed in **Table 5-1**. This chapter also evaluates measures that would avoid and/or minimize impacts, including limiting the degree or magnitude of the Proposed Project and its implementation.

This Environmental Assessment (EA) provides an analysis of whether an impact is significant, in accordance with FAA guidance on impact thresholds for significant adverse effects provided in FAA *Order 1050.1F*. The impact thresholds identified in FAA *Order 1050.1F* are discussed in Section 5.2.1, *Significance Thresholds*. Based on the impact analysis presented in this chapter, there are no adverse environmental impacts associated with the Proposed Project.

This EA also discusses cumulative impacts of the Proposed Project. Airport-wide cumulative impacts are addressed through the Environmental Status and Planning Reports (ESPRs) and Environmental Data Reports (EDRs). Section 5.2.6, *Cumulative Impacts*, provides more information on the EDRs/ESPRs.

Based on FAA *Order 1050.1F* and *Order 5050.4B* the categories evaluated in this chapter include:

- Noise and Noise-Compatible Land Use (Section 5.3.1);
- Air Quality (Section 5.3.2);

1 Council on Environmental Quality, Regulations for Implementing the National Environmental Policy Act (40 CFR 1500), http://ceq.hss.doe.gov/nepa/regs/ceq/toc_ceq.htm.

2 FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures*, released March 20, 2006.

3 FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, released April 28, 2006

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- Natural Resources and Energy Supply (Section 5.3.3);
- Climate (Section 5.3.4);
- Water Resources (only Surface Waters) (Section 5.3.5);
- Hazardous Materials, Solid Waste, and Pollution Prevention (Section 5.3.6);
- Coastal Resources (Section 5.3.7); and
- Socioeconomics, Environmental Justice, and Children’s Health and Safety Risks (Section 5.3.8).

As documented in Chapter 4, *Affected Environment*, the following categories are not applicable to the Proposed Project and are not analyzed in this chapter: Land Use; Department of Transportation Act, Section 4(f) Resources; Visual Effects; Farmlands; Historical, Architectural, Archaeological, and Cultural Resources; and Biological Resources.

5.1.1 Project Overview

As discussed in Chapter 2, *Purpose and Need*, the purpose of the Project is to improve passenger service and convenience; improve terminal flexibility and efficiency; and to improve the efficiency of passenger security screening. The Project includes the following key elements:

- Consolidate American Airlines’ operations to Pier B, allowing gates to be located contiguously instead of in two separate locations;
- Consolidate security checkpoint operations from three to one location improving safety, throughput, and customer experience;
- Connect all Terminal B, Pier B gates post security allowing for greater gate flexibility and enhanced passenger connectivity;
- Reconfigure Terminal B, Pier B existing ticket counters into one, unified ticketing hall;
- Improve outbound bag make-up⁴ efficiency and flexibility;
- Improve inbound baggage claim devices, improving efficiency and flexibility;
- Enhance passenger holdrooms to accommodate existing and anticipated passenger areas activity levels;
- Improve concession areas to enhance the passenger experience; and
- Optimize gate layout by relocating fuel pits and right-sizing ramp positions.

The design of the Terminal B Optimization Project would allow unified and more efficient American Airlines operations. The Project would increase flexibility through a reconfiguration of sections of Pier B, resulting in more efficient use of underutilized and inconveniently situated existing gates, improved baggage handling, and additional passenger holdroom and support space.

The improvements would consolidate three separate security checkpoints into one central location, greatly enhancing efficiency and allowing for upgraded security equipment. The Proposed Project would upgrade the out-bound baggage make up areas and also enhance the baggage claim facilities making

⁴ Bag make-up is the area where outbound bags are sorted and prepared for transport to departing aircraft.

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baggage handling for both arrivals and departures more efficient. Airline ticket kiosks would be configured in a central ticketing area also allowing for additional flexibility and enhanced passenger wayfinding.

The Project would also enhance customer service and convenience by providing a seamless post-security terminal connection from the core of Terminal B, Pier B to the existing Shuttle Terminal gates and the existing Air Canada gates (Gates B1 through B3). As shown in **Figure 1-2**, Gates B1 through B3 are located in the northwest corner of Terminal B and are currently served by a separate security checkpoint, thus passengers flying out of these gates are currently separated from the other Pier B gates and concession areas.

The Terminal B Optimization Project includes several supporting infrastructure elements on the Terminal B apron: foundation piles that would support the construction and minor updates to the jet-fuel hydrant system to accommodate the five relocated aircraft contact gates. The reconfigured aircraft parking locations would require relocating the associated hydrant fuel pits to accommodate the aircraft positions.

The Project would incorporate sustainable design and construction practices and will strive to achieve Leadership in Energy and Environmental Design (LEED®) Commercial Interiors Gold Certification (for Pier B Departures Level only). The Project would also add 31 charging stations for electric ground service equipment (GSE) that could accommodate up to 30 to 45 pieces of equipment. Among these are a high efficiency building envelope; energy saving heating, ventilation, and air conditioning technologies such as variable chilled and hot water flow and demand control ventilation; and materials such as a terrazzo flooring that minimize maintenance costs and waste generation. Electrical systems will employ newer technology lighting fixtures such as light emitting diode (LED) and lighting control systems to reduce energy usage. The indoor lighting control system will use daylighting strategies that will reduce the output of lighting fixtures if the outdoor lighting is sufficient to maintain the desired lighting levels inside the building.

Project construction would begin mid-2017 with expected completion in early 2019. Enabling activities, such as utility relocation, are anticipated to begin in early summer 2017. Construction of new building areas is anticipated to commence in mid-summer 2017 with completion by the end of 2018 for a total of 21 months of construction; the peak period of activity, including pile installation is expected to occur in late 2017. Temporary construction-related impacts are discussed below under each resource category.

5.2 Environmental Assessment Framework

This section defines the framework for evaluating direct, indirect, temporary construction impacts, and cumulative impacts of the No-Action Alternative and the proposed Terminal B Optimization Project. Consideration is given to the NEPA significance thresholds to assess impacts.

5.2.1 Significance Thresholds

For each environmental resource category, the Proposed Project was compared to the No-Action Alternative in the same year to determine the effect. This section provides an analysis of whether that impact is significant, based on FAA guidance for significant adverse effects provided in the FAA *Order 10501.F*. Significance thresholds identify the minimum attributes and characteristics that need to be

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present in each resource category (such as noise, water quality, or air quality) for that category to be identified as potentially adversely affected by the action.

Significance thresholds for environmental resources relevant to the Project are summarized in **Table 5-1**. This table excludes those impact categories that the Proposed Project would not affect and/or are not present in the Project Area, as discussed in Chapter 4, *Affected Environment*. Measures proposed to avoid, reduce, or minimize the potential impacts are presented, and are summarized in Chapter 6, *Beneficial Measures/Mitigation*.

**Table 5-1 Impact Thresholds for Significant Adverse Effects
National Environmental Policy Act (NEPA), FAA Order 1050.1F
Environmental Resources**

EA Section #	Environmental Resource Category	FAA Order 1050.1F Threshold for Significant Adverse Impacts
5.3.1	Noise and Noise-Compatible Land Use	When an action would increase noise by DNL ¹ 1.5 decibels (dB) or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the No-Action Alternative for the same timeframe.
5.3.2	Air Quality	When an action exceeds one or more of the National Ambient Air Quality Standards (NAAQS), as established by the U.S. Environmental Protection Agency under the Clean Air Act, for any of the times analyzed, or to increase the frequency or severity of any such existing violations.
5.3.3	Natural Resources and Energy Supply	No established significance threshold.
5.3.4	Climate	No established significance threshold.
5.3.5	Water Resources	See specific resources below.
	Surface Waters	When an action exceeds water quality standards established by federal, state, local, and tribal regulatory agencies. When an action contaminates public drinking water supply such that public health may be adversely impacted.
5.3.6	Hazardous Materials, Solid Waste, and Pollution Prevention	No established significance threshold.
5.3.7	Coastal Resources	No established significance threshold.
5.3.8	Socioeconomics, Environmental Justice, and Children's Health and Safety Risks	No established significance threshold.

Source: FAA. 2015. *Order 1050.1F: Environmental Impacts: Policies and Procedures*.

Notes: Excludes environmental resource categories that the Proposed Project would not affect and/or those resources that are not present in the Project Area including Land Use, Section 4(f) resources, visual effects, biological resources, and historical, architectural, archaeological, and cultural resources.

1 DNL refers to the Day-Night Average Sound Level, the metric required in FAA Order 1050.1F for the consideration of aircraft noise exposure in NEPA documents. The DNL represents the average annual aircraft noise exposure reflecting a cumulative A-weighted sound level over a 24-hour period, including a sound level weighting for aircraft events between 10:00:00 PM and 6:59:59 AM.

5.2.2 Analysis Years

In accordance with NEPA, this document compares the Terminal B Optimization Project to the No-Action Alternative in the same analysis year. As stated in Chapter 3, *Alternatives and Proposed Action*, early 2019 represents the future build year for the Terminal B Optimization Project. The baseline assessment year for

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the affected environment is 2015, the year for which the most complete information is available as documented in the *Logan Airport 2015 EDR*.⁵

5.2.3 Direct Impacts

NEPA defines direct impacts as impacts caused by a project that occur at the same place and at the same time. Project proponents must consider such impacts when determining an action's significance. Based on FAA *Order 1050.1F*, examples of direct impacts could include:

- Effects to natural resources within the footprint of the project; and
- Effects of the project to hazardous materials in the soil.

5.2.4 Indirect Impacts

Indirect impacts are those impacts that a project could cause later in time or at another location, but are still reasonably foreseeable. Indirect impacts from a project could occur elsewhere on the project site or in nearby neighborhoods. Indirect impacts may include impacts related to induced land use changes in the community, such as air quality impacts from induced development.

5.2.5 Temporary Construction-Related Impacts

Temporary impacts occur on a short-term basis during construction. Factors that influence the nature and extent of temporary construction impacts include construction methods, duration, materials, and equipment.

The assessment of temporary construction impacts for the Terminal B Optimization Project includes a qualitative assessment that considers other on-Airport construction activities that are scheduled to coincide with the construction duration. Each environmental resource section of this chapter identifies and assesses key projects and associated impacts during construction of the Proposed Project.

5.2.6 Cumulative Impacts

FAA's NEPA regulations describe cumulative impacts as the incremental impact of a proposed project when added to the past, present, and reasonably foreseeable future projects undertaken by any agency or person.

Logan Airport is a dynamic facility that must respond to the changing needs of the airline industry, the regulatory environment, and the traveling public, as well as regional socioeconomic trends. The sections that follow describe the major past, present, and reasonably foreseeable projects within the Project Area.

5.2.6.1 Logan Airport Environmental Data Reports (EDRs) and Environmental Status and Planning Reports (ESPRs)

For nearly three decades, Massport has had in place an industry-leading state environmental review process that assesses Logan Airport's cumulative environmental impacts. This public process was developed to provide a context against which individual Airport projects meeting state and federal environmental review thresholds can be evaluated on a project-specific basis. Annually, Massport

⁵ *Logan Airport 2015 Environmental Data Report*, December 16, 2016.

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prepares the Logan Airport EDR, and a more comprehensive Logan Airport ESPR is prepared approximately every five years. The EDRs/ESPRs are reviewed under the Massachusetts Environmental Policy Act (MEPA) process, which includes the opportunity for public comment. The ESPR provides a long-range analysis of projected operations and passengers, while the EDR reviews environmental conditions for the reporting year compared with the previous year. In previous EA and other NEPA filings, the EDRs/ESPRs have provided the baseline and future assessment of cumulative impacts.

The 2011 ESPR, filed in early 2013, reported on calendar year 2011 and updated passenger activity levels and aircraft operations forecasts through 2030. The 2015 EDR, filed in December 2016, provides a comprehensive, cumulative analysis of the effects of all Logan Airport activities based on actual passenger activity and aircraft operation levels in 2015 and presents environmental management plans for addressing areas of environmental concern. All planned Airport projects, including the Terminal B Optimization Project are described in Chapter 3, *Airport Planning*, of the 2015 EDR.⁶ The following sections summarize the recently completed projects, projects underway, and reasonably foreseeable projects that are considered in the cumulative impact assessment.

5.2.6.2 Recently Completed Projects

Past and recently completed projects at Logan Airport are described in detail in the 2015 EDR, and include:

- Logan Airport Runway Safety Area Improvements Project at Runway Ends 33L and 22R;
- Terminal B Renovations and Improvements (Pier A);
- Terminal B Garage Improvements;
- Runway 15L-33R Runway Safety Area Improvement Project; and
- Parking Garage Consolidation Project (West Garage additions).

5.2.6.3 Projects Underway

Terminal E Renovation and Enhancements Project

The Terminal E Renovation and Enhancements Project, opened in January 2017, includes interior, exterior, and airfield improvements at Terminal E, although finishes to several project elements continue. The project improves airport flexibility and accommodates Group VI aircraft by modifying three existing gates at Terminal E to accommodate A380 and other large aircraft. On the airfield, limited runway shoulder and taxiway fillet modifications are being made to accommodate Group VI ground operations. The project provides new passenger holdrooms, an extended public concourse, vertical circulation cores, three new passenger clubs, and new restrooms. It also includes a renovated security checkpoint to improve passenger throughput and an enhanced concessions program. Airfield improvements are scheduled to be complete in 2017. The project is scheduled to be complete before construction of the proposed Terminal B Optimization Project commences.

⁶ Massport. 2016. *Boston-Logan International Airport 2015 EDR*. <https://www.massport.com/environment/environmental-reporting/>. Accessed January 5, 2017.

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Runway Incursion Mitigation (RIM) Study

As part of a nationwide safety program, FAA recently initiated a new comprehensive multi-year Runway Incursion Mitigation (RIM) program to identify, prioritize, and develop strategies to help airports mitigate airfield operational risks. In support of this nationwide safety initiative, Massport is undertaking a RIM Study and Comprehensive Airfield Geometry Analysis at Logan Airport. The study findings could lead to changes to runway and/or taxiway configuration. It is not expected that construction of the proposed Terminal B Optimization Project would preclude any such safety improvements and no other cumulative impacts are anticipated.

In response to the dynamic nature of the airline industry, airline spaces are constantly being adjusted and/or relocated to meet current and future market demands. These changes can include airline mergers, airline market/service area decisions, and other evolving operating and economic factors. Reductions in activity by one airline is often offset by increased services by another airline. As an example, the Terminal B Optimization Project will facilitate the consolidation of American Airline operations (now operating on Piers A and B of Terminal B) to a single location on Pier B. Upon consolidation, American Airlines will be operating more efficiently while using fewer gates. American Airlines former gates on Pier A will be backfilled as Southwest Airlines relocates from Terminal A. As described earlier, these changes are part of an evolving plan to make Logan Airport's terminal more flexible and better capable of adjusting to market conditions.

Runway 4R Light Pier Replacement Project

The Runway 4R Light Pier Replacement Project includes replacing the existing approach light pier at Runway 4R. During construction, the runway will be temporarily closed. Massport is using this closure opportunity to resurface runways 4R and 22L. Construction is currently underway and is scheduled from mid-May 2017 through October 2017.

5.2.6.4 Reasonably Foreseeable Logan Airport Projects

The impacts of the projects listed in **Table 5-2** have been or will be determined in their respective environmental review processes. The cumulative impacts of the Terminal B Optimization Project will be addressed in those projects' environmental reviews, as applicable, and in the EDRs and ESPRs.

Table 5-2 Reasonably Foreseeable Projects at Logan Airport

Project	Construction Period
Terminal B Gate 37/38 Connector Improvements are planned post security for the connector between the Terminal B food court and the B37-38 holdrooms. This project includes heating, ventilation, and air conditioning distribution replacement within the footprint of the new connector. All of the construction is on the interior of the existing building.	Construction began in 2016 and is expected to be completed in 2018.
Central Heating and Cooling Plant Upgrade Massport intends to replace existing equipment at the Central Heating and Cooling Plant as they reach the end of their useful lives. Such replacements will improve Airport-wide energy efficiency and reduce air quality pollutants from stationary sources.	Construction planned for 2017 and beyond.

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Table 5-2 Reasonably Foreseeable Projects at Logan Airport (Continued)

Project	Construction Period
<p>Terminal C Roadway Modifications</p> <p>Massport is currently identifying options to reorganize the exiting roadways and curbs in front of Terminal C to reduce congestion and delay. Any improvements would be implanted in areas that are fully developed and no new impervious areas would be created. The project goal is to improve roadway efficiencies; this would reduce congestion and emissions in this area of the airport.</p>	<p>Concept planning is underway and construction is not expected before 2018.</p>
<p>Terminal E Modernization Project</p> <p>To accommodate existing and long-range forecasted demand for international service in an efficient, environmentally sound manner that also improves customer service, Massport is planning to modernize the existing International Terminal E. This will add the three gates approved in 1996 as part of the International Gateway West Concourse project, but never constructed, and an additional four gates to Terminal E. The facility will be designed to function as a noise barrier. New passenger handling and passenger holdrooms are being planned, as well as possible additional Federal Inspection Services (FIS) and Customs and Border Protection facilities to supplement the existing FIS areas in Terminal E. Previously a satellite FIS facility was planned and permitted in 2001 for Terminal B, but never constructed.</p>	<p>In November 2016, FAA issued a Finding of No Significant Impact/Record of Decision (FONSI/ROD) on the project, indicating that Massport can update the Airport Layout Plan (ALP) with the proposed Terminal E Modernization Project.</p> <p>The project is in the concept design phase and initial construction is anticipated to begin in 2019.</p>
<p>Logan Airport Parking Project</p> <p>As one element of its comprehensive ground transportation strategy, Massport proposes to build 5,000 new on-Airport commercial parking spaces at Logan Airport. The goal of the Logan Airport Parking Project is to reduce the number of air passengers choosing more environmentally harmful drop-off/pick-up modes, which generate up to four vehicle trips instead of two (see below for a detailed description).</p>	<p>The construction of additional commercial parking spaces at Logan Airport is predicated on a regulatory change to the Logan Airport Parking Freeze, by the Massachusetts Department of Environmental Protection (MassDEP), whereby MassDEP would amend the existing Logan Airport Parking Freeze to allow for some additional commercial parking spaces at Logan Airport. MassDEP has conducted a stakeholder process, and has initiated the process to amend the Parking Freeze regulation. Massport initiated a parallel process with the Massachusetts Environmental Policy Act (MEPA) office by filing an ENF for new parking facilities in March 2017.</p>
<p>Future Terminal Connectors</p> <p>Massport is constantly adapting to the operational needs of airline tenants within the existing terminal footprints. Massport is working to integrate the individual terminals to be more connected (landside and airside) as well as to be more flexible to airline tenant needs and to enhance customer service. Recently, Massport completed connectivity projects including Terminal E to C and connecting the two piers in Terminal B on the secure side of the terminal. Consistent with this effort, Massport is also anticipating connecting Terminal C gates 40-42 which are currently not connected to Terminal C proper and are served by a small checkpoint and an undersized hold room. Massport also expects to connect the Terminal C gates 40-42 hold room to Terminal B, Pier A at a future date.</p>	<p>Construction planned for 2018 and beyond.</p>

5.3 Environmental Consequences

Project-related impacts are described below for each impact category, as listed in **Table 5-1**. This section also identifies measures that would avoid and/or minimize impacts, where applicable. Consideration is given to the No-Action Alternative in comparison to the Proposed Project.

5.3.1 Noise and Noise-Compatible Land Use

Under FAA *Order 1050.1F* and *Order 5050.4B*, a significant adverse effect occurs when the Proposed Project, compared to the No-Action Alternative in the same timeframe, would cause noise sensitive areas located at or above the Day-Night Average Sound Level (DNL) 65 decibels (dB) to experience a noise increase of at least DNL 1.5 dB. Noise is evaluated in terms of any changes in noise sources associated with the future Terminal B Optimization Project when compared to the No-Action Alternative.

The same number of aircraft operations would be accommodated with or without the proposed Terminal B Optimization Project, thus no changes to the noise environment at Logan Airport are anticipated. Annual changes to Airport-wide noise levels due to overall changes in the number of aircraft operations and fleet mix will continue to be reported in the annual EDR/ESPR documents. Noise related to short-term construction activities is discussed in Section 5.3.1.3, *Temporary Construction-Related Impacts - Noise*. The current noise environment is described in Chapter 4, *Affected Environment*.

5.3.1.1 Direct Impacts - Noise

The same number of aircraft operations would be accommodated with the No-Action Alternative and the proposed Terminal B Optimization Project, thus no changes to the noise environment at Logan Airport are anticipated.

5.3.1.2 Indirect Impacts - Noise

No indirect noise impacts are anticipated from the Proposed Project. The same number of aircraft operations would be accommodated with the No-Action Alternative as with the proposed Terminal B Optimization Project.

5.3.1.3 Temporary Construction-Related Impacts - Noise

Construction laydown areas would be located both in the infield area of the terminal as well as the construction zone between the terminal and the vehicle service road. Significant nighttime or weekend work is not anticipated during exterior construction. Certain elements of interior renovation would occur during nighttime to allow terminal operations to continue during normal hours.

During construction of the Terminal B Optimization Project, short-term noise associated with the renovation and improvement activities would be generated. Construction equipment is expected to be used intermittently throughout the Project's construction during the typical working hours of 7:00 AM to 5:00 PM. Normal flight operations would continue during Project construction.

The Proposed Project is expected to generate typical sound levels associated with construction activities, including use of equipment, operations, material transport, and limited pile driving. The type of equipment and units of equipment would vary among the different construction phases. Typical equipment would include: aerial lifts, asphalt and concrete pavers, augers and backhoes, bulldozers, a

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mobile crane, dump trucks and trailers, excavators and graders, rollers, a pile vibrator, trucks, sweepers, water pumps and trucks, and concrete pump trucks and mixers. **Table 5-3** lists the construction equipment requirements for the Terminal B Optimization Project.

Table 5-3 Construction Equipment Requirements

Equipment	2017		2018				2019
	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar
Aerial Lift		1	1				
Auger	1						
Bulldozer	1	1					
Concrete Paver		1		1			
Concrete Pump Truck	1	1		1			
Concrete Transit Mixer	1	2		1			
Crane Mobile	1	2	2				
Dump Trailer	2	1	1	1			
Dump Truck	2	1	1	2	1	1	
Dumpster		1	1	1	1	1	
Excavator	2	2		1			
Front End Loader		1		1			
Material Handler	1	2	1				
Pile Vibrator	1						
Roller Dirt	1	1		1			
Sweeper	1	1	1	1			
Truck and High Bed Trailer	1	2	2	2	2	2	
Utility truck	2	3	2	2	2	2	1
Vibratory Plate Compactor	1			1			
Water Pump	1						
Water Truck	1						
Welding Machine		2	1				

Source: AECOM, 2017

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In 2012, Massport prepared an EA to assess the renovations and improvements at Terminal B, Pier A,⁷ the opposite pier to the Proposed Project. The construction equipment requirements and schedule presented in **Table 5-3** are similar to that which was evaluated and presented in the 2012 EA for the Renovations and Improvements at Terminals B and C/E Project.⁸ That project EA demonstrated that there would be no adverse short-term impacts associated with the Terminals B and C/E Project construction. In comparison, the Terminal B Optimization Project is smaller in footprint than the Renovations and Improvements at Terminals B and C/E Project, has fewer pieces of construction equipment anticipated to be in use for a shorter period of time, and is further from the community than the Terminals B and C/E Project. Thus, based on a review both projects, it is anticipated that the construction noise levels related to the Proposed Project would be similar to, or less than, what was presented in the 2012 EA.

The EA for the Renovations and Improvements at Terminal B and C/E Project analyzed four sensitive noise receptors and determined that there were no adverse noise construction-related impacts for the project. The nearest residences (sensitive receptors) to Terminal B are located in the Jeffries Point and East Boston neighborhoods, approximately 2,300 feet from Pier B and separated from the Airport by Terminal A satellite, the Rental Car Center, the Logan Office Center/Bird Islands Flats Garage, and roadways. Due to their distance and intervening land uses, no noise impacts to residential receptors are anticipated. See Appendix A, *Noise Evaluation Technical Memorandum* for the detailed noise analysis. It is therefore anticipated that the Terminal B Optimization Project will also have no adverse noise construction-related impacts. A full summary of this comparison is provided in Appendix A, *Noise Evaluation Technical Memorandum*.

Sound levels from activities associated with the construction of the Terminal B Optimization Project would comply with the City of Boston's noise criteria (**Table 5-4**); therefore, no noise mitigation is required. However, construction equipment would use noise-reduction measures such as the use of proper mufflers for construction equipment, measures to limit noise from truck traffic, and keeping construction activities between 7:00 AM and 5:00 PM.

Table 5-4 City of Boston Zoning District Noise Standards, dB(A)¹

Land Use Zone District	Daytime (7:00 AM – 6:00 PM)	All Other Times (6:00 PM – 7:00 AM)
Residential	60	50
Residential/Industrial	65	55
Business	65	65
Industrial	70	70

Source: Regulations for the Control of Noise in the *City of Boston, Air Pollution Control Commission*.

¹ Decibels (A-weighted scale)

5.3.1.4 Cumulative Impacts - Noise

Other reasonably foreseeable projects under construction during the Terminal B Optimization Project construction phase include the Terminal B Gate 37/38 Connector, Runway 4R Light Pier Replacement, Central Heating and Cooling Plant Upgrades, Terminal E Modernization Project, and the Logan Airport Parking Project. None of these projects are in the immediate vicinity of the Proposed Project and are separated from the project by other buildings and roadways. The nearby communities of East Boston and

⁷ Massport. 2012. *Renovations and Improvements at Terminals B & C/E*. https://www.massport.com/media/2917/2012_EA_Terminal_B_CE_Complete.pdf. Accessed March 20, 2017.

⁸ *Ibid*.

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Jeffries Point will not be impacted by the cumulative noise levels of the Project and other ongoing construction activities due to their distance from construction sites. Therefore, when considered cumulatively, the Terminal B Optimization Project would not result in adverse noise impacts.

5.3.2 Air Quality

Air quality is evaluated in terms of changes in mobile and stationary sources associated with the Terminal B Optimization Project when compared to the No-Action Alternative. As described above, the No-Action Alternative and the Proposed Project would have the same aircraft operations and passenger activity levels. The Proposed Project is not expected to increase Airport-related mobile or stationary source emissions compared to the No-Action Alternative. Emissions from construction vehicles and equipment would be substantially below the Federal General Conformity *de minimis* thresholds of 50 tons per year (tpy) of volatile organic compounds (VOC), 50 tpy of nitrogen oxides (NO_x), and 100 tpy of carbon monoxide (CO). Therefore, a Clean Air Act General Conformity Determination is not required.

As discussed in Sections 4.2.4, *Air Quality*, NEPA and the federal Clean Air Act are the two primary regulations that apply to assessment of air quality impacts attributable to the Terminal B Optimization Project. NEPA requires the disclosure of a Proposed Project's impacts on the human environment, including air quality. The Clean Air Act requires that a Proposed Project does not cause, or contribute to, a violation of the National Ambient Air Quality Standards (NAAQS).

With respect to the NAAQS Attainment/Non-attainment designations for the Boston metropolitan area, Section 4.2.4, *Air Quality*, reports that the area is currently in Attainment for CO, but because of past violations, it is still designated as Attainment/Maintenance for this pollutant. Similarly, although the Boston area now meets the former 8-hour standard for ozone, it is also still subject to the State Implementation Plan (SIP) for this pollutant under the "Anti-Backsliding"⁹ provision of the Clean Air Act. Importantly, VOCs and NO_x are used as surrogates for ozone as this pollutant is formed from these precursors.

Because of these designations, projects and actions involving federal agencies (including the FAA) must demonstrate compliance with the General Conformity Rule of the Clean Air Act. This is achieved when project-related emissions are within prescribed numerical thresholds (called *de minimis* levels) indicating that violations of the NAAQS are not expected and compliance with the SIP is assured. The Boston metropolitan area is in Attainment for the other five criteria pollutants including lead, SO₂, NO₂ and PM_{10/2.5}.

Based upon this assessment, the Proposed Project:

- Would not increase mobile or stationary source emissions (including greenhouse gas (GHG) emissions) since there are no changes in the number of aircraft operations or vehicular use;
- Would not cause or contribute to violations of NAAQS;
- Would not cause additional or worsen existing violations of or contribute to new violations of the NAAQS; and
- Would not affect attainment of the NAAQs.

⁹ EPA, Implementation of the 2008 National Ambient Air Quality Standards (NAAQS) for Ozone: State Implementation Plan (SIP) Requirements, <https://www.epa.gov/ozone-pollution/implementation-2008-national-ambient-air-quality-standards-naaqs-ozone-state>.

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5.3.2.1 Direct Impacts - Air Quality

Mobile Source Emissions

The Proposed Project would not alter the level of aircraft operations at Logan Airport compared to the No-Action Alternative. The reconfiguration of gates at Terminal B, Pier B would allow for unified and more efficient American Airlines operations. Under the Future Condition (in 2019), aircraft activity associated with American Airlines will continue to operate out of Terminal B. There is sufficient space on the airside of Terminal B, Pier B to reconfigure the existing apron and gates to adequately accommodate the relocated aircraft operations.

The Proposed Project would not affect landside ground access activities. No changes to automobile use are anticipated as a result of the proposed Terminal B Optimization Project; no changes at the Terminal B curb or curb operations are part of the Project. As a result, CO emissions would not change Airport-wide, compared to the No-Action Alternative.

Stationary Source Emissions

No significant changes to stationary sources of emissions, including GHG emissions associated with building energy use would result due to the Proposed Project compared to the No-Action Alternative. The Terminal B Optimization Project would include new construction as well as renovations to existing building layouts and heating/cooling systems. To the extent possible, the Project would use existing energy infrastructure, and more efficient equipment such as energy recovery wheels. New air-handling units at existing terminal mechanical penthouses will replace original existing high-maintenance and low-efficiency machines, resulting in lower emissions. Additionally, all jet bridges will continue to be provided with 400 Hertz (Hz) power and pre-conditioned air (PCA) to reduce the use of on-board diesel powered auxiliary power units (APUs) and reduce associated air emissions, including GHG emissions.

In addition, the project is consistent with FAA *Order 5050.4B*, Table 6-2:

Passenger handling building: construct or expand a terminal passenger handling building at an existing commercial service airport that does not substantially expand the building.

According to the Presumed to Conform List,¹⁰ the project would be considered under paragraph (6), Terminal and Concourse Upgrades. This category includes projects that expand or upgrade terminals and concourses and that do not have the effect of attracting more passengers, increasing the airport's ability to accommodate additional numbers or types of aircraft, or increasing passenger loading. A proposed terminal/concourse expansion project is presumed to conform up to the square foot additions of the project as determined by the most limiting pollutant. According to Table III-I of the Federal Register notice, the square foot threshold for the most limiting pollutant (Ozone) is 185,891 square feet. The Project would be approximately 84,000 square feet of new construction and therefore is presumed to conform to the Clean Air Act. This indicates that that the Proposed Project conforms to the SIP and would not cause, or contribute to, a violation of the NAAQS.

¹⁰ If an action/project is in a category of activities designated by a Federal agency (in this case the FAA) as having emissions below *de minimis levels* or otherwise do not interfere with the applicable SIP or the attainment and maintenance of the NAAQS, then the action/project is presumed to conform. FAA *Order 5050.4B*, Table 6-2

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5.3.2.2 Indirect Impacts - Air Quality

No indirect air quality impacts are anticipated from the Proposed Project since there are no changes in the number of aircraft operations or vehicles associated with the Project.

5.3.2.3 Temporary Construction-Related Impacts - Air Quality

Emissions from construction vehicles and equipment would be substantially below the Federal General Conformity *de minimis* thresholds of 50 tons per year (tpy) of volatile organic compounds (VOC), 50 tpy of nitrogen oxides (NO_x), and 100 tpy of carbon monoxide (CO). Therefore, a Clean Air Act General Conformity Determination is not required. A construction air quality impact assessment conducted for the Renovations and Improvements at Terminals B and C/E Project demonstrated that that project was below the Federal General Conformity *de minimis* thresholds. The Terminal B Optimization Project includes fewer pieces of equipment deployed over a smaller area, and would therefore generate fewer construction emissions, than the prior Terminal B, Pier A project.

5.3.2.4 Cumulative Impacts - Air Quality

Since the Proposed Project would accommodate the same number of aircraft operations and passengers as the No-Action Alternative, there are no additional cumulative impacts associated with the Project. The *Logan Airport EDRs* and *ESPRs* document the Airport-wide air quality conditions for 2015 and forecast through 2030.

5.3.3 Natural Resources and Energy Supply

The FAA has not established a significance threshold for Natural Resources and Energy Supply; however, under FAA *Order 1050.1F* and *Order 5050.4B*, it states that an action's construction, operation, and maintenance could cause demand to exceed available or future supplies of these resources. Accordingly, this section looks at the potential of the Terminal B Optimization Project to cause demand for natural resources, such as potable water, consumable materials, and energy, to exceed available and future supplies.

The Terminal B Optimization Project would not have a significant adverse impact on natural resources or energy supplies because there is sufficient capacity available to support the operation of the new building systems.

5.3.3.1 Direct Impacts - Natural Resources and Energy Supply

The Proposed Project includes energy efficiency measures such as a high efficiency building envelope, and energy saving heating. Electrical systems would employ newer technology lighting fixtures such as LED and lighting control systems to reduce energy usage. The Proposed Project would not place undue burdens on the area's energy system compared to the No-Action Alternative and there are sufficient energy resources to supply the Terminal B Optimization Project.

The Terminal B Optimization Project would not result in a significant increase in water use. Water consumption in Terminal B is related directly to the number of passengers and employees that use the facility. Similarly, the quantity of sewage flow from Terminal B is related directly to the number of passengers and employees. The same number of passengers would be processed in both the No-Action Alternative and Proposed Project.

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The Terminal B Optimization Project would not create additional demand on regional water resources compared to the No-Action Alternative, as the Proposed Project would not be the impetus for additional air passenger activity at the terminal. Despite not having a direct impact, Massport would design the plumbing systems for the proposed new building addition to minimize domestic water use. High efficiency, low-flow plumbing fixtures in restrooms would also reduce potable water usage.

The design of the Project does not include unusual building materials or materials that are in scarce supply in the Boston metropolitan area or larger New England region; therefore, there would be no adverse impact to the supply of raw materials.

5.3.3.2 Indirect Impacts - Natural Resources and Energy Supply

No indirect natural resources or energy supply impacts are anticipated from the Proposed Project. The Terminal B Optimization Project would accommodate existing and projected air service at Terminal B, and would not grow such demand. It would not induce additional development within or outside of Logan Airport.

5.3.3.3 Temporary Construction-Related Impacts - Natural Resources and Energy Supply

Construction of the Terminal B Optimization Project would require additional energy supply to power construction vehicles and equipment, and construction activities would temporarily increase water demand for the purposes of controlling fugitive dust and stabilizing soil. Massport anticipates that adequate capacities of energy and water will be available to support these activities.

5.3.3.4 Cumulative Impacts - Natural Resources and Energy Supply

When added to past, present, and reasonably foreseeable future actions, the Terminal B Optimization Project would not result in an incremental impact to natural resources and energy supply. As previous sections establish, adequate capacities of energy, water, and raw materials will exist in the region to support all known projects.

5.3.4 Climate

The FAA has not established a significance threshold for climate and GHG emissions, however, in December 2014, the Council on Environmental Quality (CEQ) issued revised draft NEPA guidance for considering the effects of climate change and GHG emissions.¹¹ The draft CEQ guidance recommended consideration of: the potential effects of a proposed action or its alternatives on climate change as indicated by its GHG emissions and the implications of climate change for the environmental effects of a proposed action or alternatives.

5.3.4.1 Direct Impacts - Climate

Similar to air quality, the Proposed Project was evaluated in terms of any changes in mobile and stationary sources associated with the Terminal B Optimization Project when compared to the No-Action Alternative. The additional building area would have additional energy requirements and there would be minimal resulting emissions. As noted above in Section 5.3.2.1, there would be no significant changes to

¹¹ 5 CEQ (2014). Revised Draft Guidance, Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews, 79 Federal Register 77801 (December 24, 2014). Available at: <https://www.federalregister.gov/articles/2014/12/24/2014-30035/revised-draft-guidance-for-federaldepartments-and-agencies-on-consideration-of-greenhouse-gas>

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mobile or stationary source direct and indirect emissions, including GHG emissions, and energy conservation measures and energy efficient equipment would be incorporated into the Proposed Project's design and equipment selection. To the extent possible, energy efficient equipment would be incorporated and the Project would strive to achieve LEED Commercial Interiors Gold certification. The Project would also add 31 charging stations for electric GSE that could accommodate up to 30 to 45 pieces of equipment.

To address the potential effects of climate change, Massport considers resiliency and climate adaptation strategies in each of the planning phases for new capital projects. For the Terminal B Optimization Project, the design considers the location of critical infrastructure such as energy sources or digital services. Critical systems such as electric equipment were identified and would be positioned in locations above the Design Flood Elevation. Consistent with Massport's resiliency and energy goals, the Project would also incorporate redundant power capabilities, where feasible. The ability of facilities to withstand extreme weather conditions such as high winds and flooding area also factored into the design of the building and facility upgrades.

5.3.4.2 Indirect Impacts - Climate

No indirect GHG emissions are anticipated to be generated by the Proposed Project.

5.3.4.1 Temporary Construction Impacts - Climate

Massport includes consideration of climate adaptation and resiliency measures as part of its construction efforts as documented in the EDRs and ESPRs.

5.3.4.2 Cumulative Impacts - Climate

No climate impacts or additional GHG emissions are anticipated from the Terminal B Optimization Project. There are no reasonably foreseeable projects within the Terminal B area that would influence GHG emissions. The EDRs and ESPRs report on GHG emissions Airport-wide. As documented in the 2015 EDR, Logan Airport GHG emissions continue to be less than 1 percent of statewide GHG emissions.

Massport prepares GHG emission inventories annually for stationary sources regulated by the Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP); passengers traveling to, from, and moving about the Airport; and for the EDRs/ESPRs inclusive of aircraft, ground support equipment, auxiliary power units, ground access vehicles, and stationary sources.

Consistent with the FAA's NEPA considerations, guidelines that would be applied to the Terminal B Optimization Project are outlined below. Massport periodically coordinates with the Massachusetts Office of Coastal Zone Management regarding measures to enhance resiliency and minimize potential coastal storm-related impacts. The following resiliency measures would be implemented:

- In general, all areas of the first floor (lowest level) of the Proposed Project are above the Design Flood Elevation (DFE) for existing structures. All new critical equipment is above the DFE for new construction. Thus, important utilities, life safety systems, and other critical equipment are generally above the DFE.

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- Where spaces must be below the DFE, critical areas would be flood proofed through measures such as:
 - ❑ Install watertight shields on doors, windows, and louvers;
 - ❑ Use exterior and interior membranes and sealants to reduce seepage;
 - ❑ Seal electrical conduits and other utilities entering below the DFE;
 - ❑ Install drainage collection systems and sump pumps;
 - ❑ Install early warning devices to monitor water levels;
 - ❑ Install backflow preventer valves on drainage and sanitary sewer piping located below the DFE;
 - ❑ Install flood openings to equalize the hydrostatic pressure; and
 - ❑ Provide pumps to remove floodwater in non-draining areas.

5.3.5 Water Resources/Surface Waters

FAA *Order 1050.1F* lists several factors to consider for surface waters, which include an action's potential to: adversely affect natural and beneficial water resource values; adversely affect surface waters; and create water quality impacts that make obtaining a permit or authorization difficult. FAA *Order 1050.1F* and *Order 5050.4B* require that the EA include sufficient description of a Proposed Project's design and mitigation measures developed for non-point sources under Section 319 of the Clean Water Act, and construction controls to demonstrate that water quality standards and any permit requirements will be met.

The Project Area is located on fully developed, impervious land in Airport use. The Terminal B Optimization Project would not create any new impervious areas and would not impact wetlands, floodplains, or groundwater. Therefore, this section focuses only on stormwater and surface water quality. No direct or indirect water quality impacts are anticipated from the Project.

5.3.5.1 Direct Impacts - Water Resources

There would be no adverse effect on stormwater under the No-Action Alternative. The site would remain in active Airport use, the amount of impervious area would remain the same, the existing stormwater collection system would stay in place, and the existing end-of-pipe pollution controls would remain. Massport would continue conducting outfall sampling according to its National Pollutant Discharge Elimination System (NPDES) permit. Massport would continue implementing best management practices for pollution prevention by Massport, its tenants, and its construction contractors.

As described in Chapter 4, *Affected Environment*, Massport holds a NPDES permit for stormwater discharge at the major outfalls within the Airport. In compliance with the NPDES permit, Massport monitors discharges and submits reports to the EPA and MassDEP. Massport's Stormwater Pollution Prevention Plan addresses stormwater pollutants in general, and addresses deicing and anti-icing chemical, potential bacteria, fuel and oil, and other sources of stormwater pollutants. Additionally, Massport has a *Deicing Plan* (2008) that guides best practices on the Airport and to satisfy the requirements in Section 1.D Water Quality Study in National Pollutant Discharge Elimination System (NPDES) Permit No. MA0000787 issued to Massport and Co-Permittees of Logan Airport. Massport

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manages stormwater discharges and protects groundwater resources from aircraft deicing operations during the winter months.

The areas proposed for Terminal B improvements are already paved and the Proposed Project would not result in increased impervious surfaces or pollutant-generating activities on the apron. The distribution of stormwater between the building and apron would shift slightly to more roof collection (which is typically cleaner than apron water quality), but the aggregate amount of stormwater and overall stormwater runoff quality would remain unchanged from the existing condition. No change in peak rates of runoff are anticipated as the Proposed Project would not increase impervious area. The Proposed Project would comply with the Massachusetts Stormwater Standards.

5.3.5.2 Indirect Impacts - Water Resources

No impacts to stormwater or surface water quality are anticipated from the Terminal B Optimization Project. Stormwater from the Proposed Project would continue to be accommodated in the existing stormwater collection and treatment system, which discharges to Boston Harbor. A portion of the site drainage would shift from ramp drainage to roof drainage, which is generally cleaner.

5.3.5.3 Temporary Construction-Related Impacts - Water Resources

Since the Terminal B Optimization Project involves construction disturbance of greater than one acre of land, a project-specific Stormwater Pollution Prevention Plan will be prepared in accordance with the EPA's NPDES General Permit for Construction Activities. The plan will ensure that construction activities do not result in impacts to water quality within Boston Harbor.

Massport has developed a dewatering and discharge plan for all construction projects at Logan Airport. If required, groundwater treatment and discharge construction practices would be defined and submitted to MassDEP for approval and implemented during construction. Massport would not discharge storm or groundwater to the sanitary sewer system.

5.3.5.1 Cumulative Impacts - Water Resources

No impacts to stormwater or surface water quality are anticipated from the Terminal B Optimization Project. There are no reasonably foreseeable projects within the Terminal B area that would have an effect on stormwater management. Recently completed projects have included upgrades to the stormwater collection system Airport wide.

5.3.6 Hazardous Materials, Solid Waste, and Pollution Prevention

Under FAA *Order 1050.1F* and *Order 5050.4B*, a significant adverse effect may occur when a Proposed Project involves a property on or eligible for the National Priority List or involves significant hazardous or solid waste activities. The Terminal B Optimization Project would not have a significant adverse impact related to hazardous materials or solid waste, because, as established in Chapter 4, *Affected Environment*, Logan Airport is not on the federal National Priority List, and the Terminal B Optimization Project would not involve significant hazardous or solid waste activities. In addition, Massport complies with the Massachusetts Contingency Plan (MCP, 310 CMR 40.0000) when addressing releases of oil and/or hazardous materials (OHM) and tracks the status of response actions at each "disposal site." The MCP lays out a set of regulations that govern the reporting, assessment, and cleanup of spills of OHM in

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Massachusetts. Massport also maintains a Tank Management Program, a Stormwater Pollution Prevention Plan, and a Spill Prevention Control and Countermeasure Plan.

5.3.6.1 Direct Impacts - Hazardous Materials

The No-Action Alternative would not result in any new construction and therefore there would be no disturbance of soil or need for disposal of hazardous materials.

The Terminal B Optimization Project includes several supporting infrastructure elements, piles that will support the new construction, and the relocation of associated hydrant fuel pits to accommodate the aircraft positions. The Terminal B Optimization Project would likely have a positive effect on confirmed areas of soil and groundwater contamination by advancing remediation prior to and during construction activities as per the MCP.

5.3.6.2 Indirect Impacts - Hazardous Materials

Massport does not anticipate any indirect adverse impacts from the Proposed Project on hazardous materials, solid waste, and pollution prevention. Massport routinely manages contaminated environmental media and solid waste, and conducts careful oversight of the handling, transport, containment, and disposal of such materials to ensure there are no offsite effects.

5.3.6.3 Temporary Construction- Related Impacts - Hazardous Materials

There is the potential to encounter OHM and contaminated urban fill that requires special handling and management during construction. If building materials containing OHM such as lead-based paint, asbestos, or polychlorinated biphenyls (PCBs), are encountered during construction, they will be appropriately disposed of in accordance with federal and state regulations.

Short-term construction activities are expected to cause temporary impacts related to solid and hazardous waste. During construction, Massport will promote and ensure special handling, dust control, and management and disposal of contaminated environmental media and hazardous building materials.

Preliminary assessment activities would be conducted prior to construction to identify the type and quantity of OHM impacted media and help select the optimal disposal methods and/or destination of media prior to generation. Notification to MassDEP would be required if a reporting condition is identified as per the MCP, such as when OHM is detected in soil and/or groundwater above the applicable standards, referred to as the Reportable Concentrations. Any soil encountered during construction with OHM above the MCP Reportable Concentrations would be managed appropriately in accordance with the applicable state and federal regulations.

Should impacted soil be generated during Project-related excavation that requires export or on-site re-use, this material would be properly characterized and managed in accordance with applicable regulations. Proper management would ensure appropriate re-use within the Project Area to prevent exposure to contaminants or export to appropriate destinations. Although not anticipated, if OHM-impacted groundwater is encountered during Project construction, it would also be managed in accordance with applicable regulations.

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5.3.6.4 Cumulative Impacts - Hazardous Materials

Based on reasonably foreseeable projects, it is not anticipated that the Terminal B Optimization Project would contribute to significant adverse impacts related to the generation, transportation, storage, or release of hazardous materials.

5.3.7 Coastal Resources

FAA *Order 5050.1F* requires that when a Proposed Project changes the manner of use or quality of land, water, or other coastal resources, or limits the range or the use of the coastal zone in a state with an approved coastal zone management program, the EA must include a determination as to whether the proposal is consistent with the approved State Coastal Zone Management program.

Although the entire Airport is located within the defined coastal zone for Massachusetts, the terminal improvements are confined to fully developed areas of the airfield and terminal that are already in use for aviation activities. The proposed project would not change the manner of use, quality of land, or limit the range of use of or access to the coastal zone.

5.3.7.1 Temporary Construction Related-Impacts - Coastal Resources

Construction would be limited to areas already developed and in aviation use. Temporary impacts to coastal resources are not expected.

5.3.7.2 Cumulative Impacts - Coastal Resources

The Terminal B Optimization Project would not have an impact on coastal resources; therefore, it is not expected that the Project would contribute to cumulative impacts to coastal resources.

5.3.8 Socioeconomics, Environmental Justice, and Children's Health and Safety Risks

FAA *Order 1050.1F* requires Massport to consider the impacts of the alternatives on "economic activity, employment, income, population, housing, public services, and social conditions."

5.3.8.1 Direct Impacts - Socioeconomics, Environmental Justice, and Children's Health and Safety Risks

Under the No-Action Alternative, neighborhoods in the vicinity of the Airport would continue to experience the same socioeconomic conditions as today. There would be no change to conditions for Environmental Justice communities, and children's health and safety. Roadways on the Airport would continue to operate as today with no disruptions to the community.

As described in Section 4.3.11, *Socioeconomics, Environmental Justice, and Children's Health and Safety Risks*, the Project Area is substantially distanced and buffered from the surrounding communities through elevated roadways, structures, and vegetative screening. The updated Terminal B facility would be constructed on existing Airport property and in an area where aircraft activities regularly occur.

The Proposed Project would not have an adverse environmental impact to noise conditions, air quality, water quality nor soils, and, therefore, would not cause a disproportionately adverse impact to economic

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vitality, disadvantaged populations, or the health and safety of children within neighboring communities, including those identified as Environmental Justice communities.

This impact category also considers community disruption, including surface transportation and ground access. No changes are anticipated to the roadway and curb system as a result of the Project. Passenger convenience would be enhanced through the co-location of American Airline gates.

5.3.8.2 Indirect Impacts - Socioeconomics, Environmental Justice, and Children's Health and Safety Risks

The Terminal B Optimization Project would have positive indirect effects on local and regional socioeconomics. The improvements would greatly improve the efficiency of operations for airlines and tenants/concessionaires which will in turn have the potential to increase activity in the local economy through additional business-to-business activity between Massport tenants and local suppliers as well as between the local suppliers and other local businesses.

The Proposed Project would have no indirect impacts to Environmental Justice communities, nor children's health and safety since the Project is wholly located on Logan Airport, some distance from the community and no changes would be experienced off-Airport with respect to community disruption on roadways or to ground access.

5.3.8.3 Temporary Construction-Related Impacts - Socioeconomics, Environmental Justice, and Children's Health and Safety Risks

The construction footprint of the Terminal B Optimization Project is within the existing Airport boundary and within an area currently under active use for aircraft operations, and other airport activities. Construction is not anticipated to have an adverse impact to the socioeconomics or children's health and safety of surrounding communities. As documented in Chapter 6, *Beneficial Measures/Mitigation*, Massport routinely deploys many construction-period mitigation efforts to ensure protection of the environment and community.

Construction of the Terminal B Optimization Project would positively impact local employment opportunities by generating temporary construction jobs. Because the Terminal B Optimization Project would not have an adverse impact to socioeconomics or children's health and safety, there would be no disproportionate adverse impacts to local Environmental Justice communities.

Short-term construction impacts are expected to be limited to on-Airport roadways (Transportation Way, Harborside Drive, and Terminal Area roadways) with minimal impacts to local roadways. All trucks would access the site by Route 1A, Interstate 90, and the main Airport roadways only. Trucks would be prohibited from using local streets unless they are seeking construction-related access to or from local businesses.

Construction site access would occur by two different routes (**Figure 5-1**). Daily contractor access would occur through the Terminal B Garage gate located at the south end of the Parking Garage blast wall. This will be a landside gate during Terminal B construction. Large construction equipment, major material deliveries, demolition materials, and trash hauling would occur through the South gate. During peak traffic periods, Massport would require that Contractor's staff and sub-contractors are shuttled to the project construction sites. During construction, there would be limited short-term impacts from added

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vehicle trips to and from the site by construction equipment, totaling an average of 12 to 17 daily trip trips during the construction period. A full summary in Appendix B, *Ground Access Temporary Construction-Related Impacts Memorandum*.

5.3.8.4 Cumulative Impacts - Socioeconomics, Environmental Justice, and Children's Health and Safety Risks

FAA's NEPA regulations describe cumulative impacts as the incremental impact of a proposed project when added to the past, present, and reasonably foreseeable future projects undertaken by any agency or person. The Proposed Project would not result in a change to the number of passengers or aircraft projected to be accommodated at Logan Airport compared to the No-Action Alternative. Nor will the Proposed Project result in a disproportionate impact to Environmental Justice communities. Taken with the other ongoing, planned, and reasonably foreseeable projects, it is not anticipated that the Terminal B Optimization Project will have adverse cumulative impacts to socioeconomic conditions, nor Environmental Justice communities and children's health and safety.

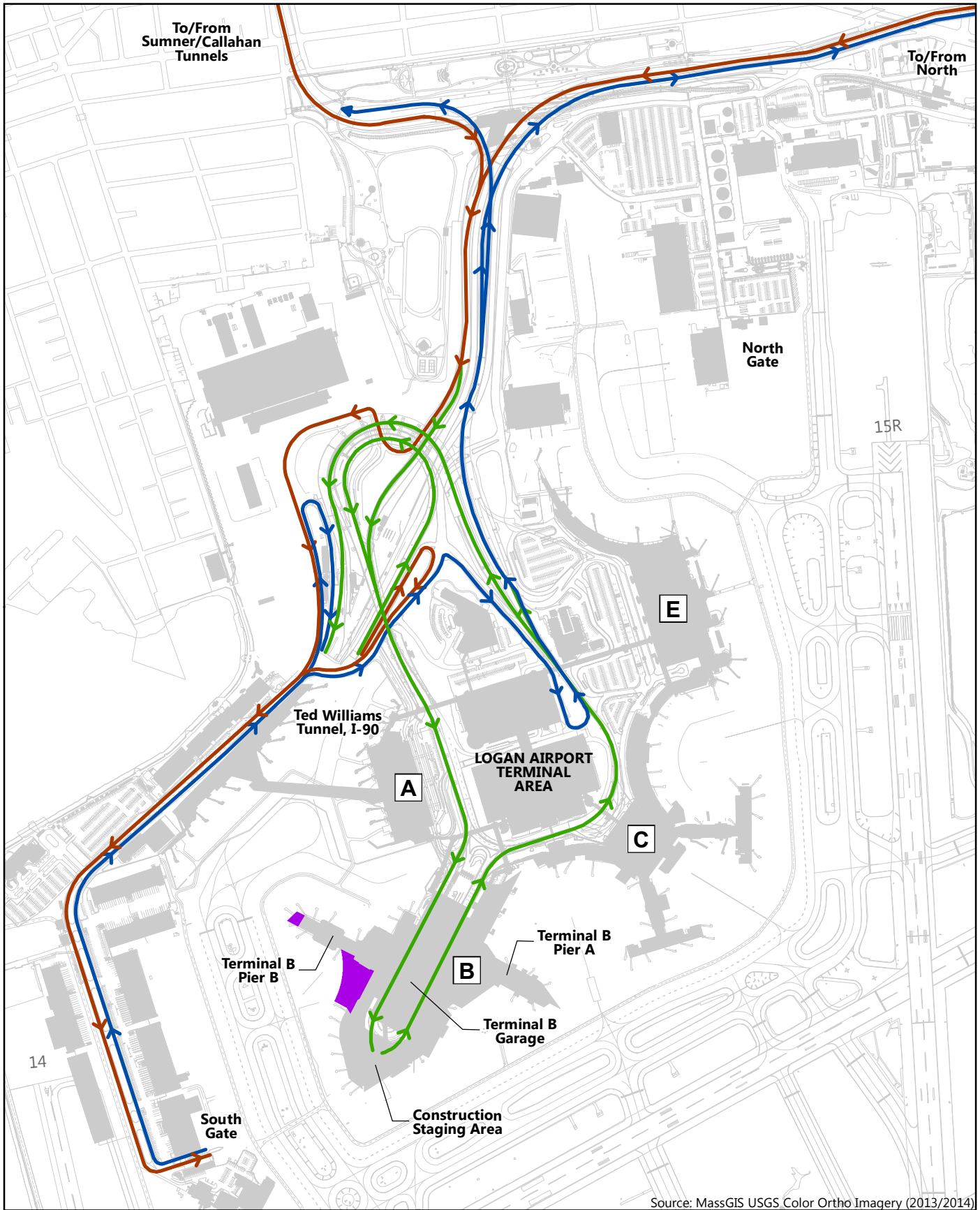


FIGURE 5-1 Temporary Construction Access/Egress Routes

Terminal B Optimization Project

- Access Routes
- Egress Routes
- Small Vehicle Contractor Access
- New Building Area



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5.4 Summary of Impacts

The table below summarizes impacts and mitigation measures associated with the Terminal B Optimization Project. The Project is expected to create no long-term adverse environmental impacts. The Project would occur on fully developed land already in airport use. There would be temporary, construction-period impacts that would be mitigated.

Table 5-5 Summary of Impacts and Mitigation Measures

Environmental Resource¹	Significant Impact? (Yes/No)	Explanation
Noise and Noise-Compatible Land Use	No	The Proposed Project would not increase the number of aircraft operations or passenger activity levels; therefore, aircraft noise levels at or surrounding the Airport would not change compared to the No-Action Alternative. The Proposed Project would not result in changes to the roadway network in the vicinity of Terminal B or anywhere else at the Airport. The Proposed Project involves activities consistent and compatible with existing Airport operations. All work would take place within the Airport boundary and would not alter existing off-Airport land use. Construction-period impacts would be minimal and mitigated.
Air Quality	No	The Proposed Project would not affect the number of aircraft operations or generate any new ground access vehicle trips. There would be no significant changes to stationary sources of emissions, including greenhouse gas (GHG) emissions associated with building energy use. The Project is presumed to conform with the Clean Air Act. Construction-period impacts would be minimal and mitigated.
Natural Resources and Energy Supply	No	Project construction, operation, and maintenance would cause limited additional demands on energy supplies and other resources that can be accommodated by current power suppliers. Construction activities would temporarily increase energy supply and water demand; Massport anticipates adequate supplies of energy and water available for these activities.
Climate	No	The Project would have negligible effects on GHG emissions. The Project would be built to LEED Commercial Interiors Gold standards (Terminal B Departures Level only). The Project would include energy efficiency and resiliency measures (see Chapter 6, <i>Beneficial Measures/Mitigation</i>).
Water Resources (including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)	No	The Project would not create any new impervious areas as the area is already fully paved. There are no wetlands, floodplains, or Wild and Scenic Rivers within the area of the Project footprint. ^{2,3} Thus only adjacent surface waters are considered. Massport would direct stormwater associated with the new structure and supporting facilities to the existing stormwater system, which discharges to Boston Harbor. A portion of the site drainage would shift from ramp drainage to roof drainage which is generally cleaner.
Hazardous Materials, Solid Waste, and Pollution Prevention	No	The Proposed Project includes excavation for foundations and utilities, which may encounter contaminated soils. Short-term construction activities are expected to cause temporary impacts related to solid and hazardous waste.
Coastal Resources	No	The Project Area is an entirely developed/disturbed portion of the Airport. Construction would be limited to paved areas of the airfield and terminal that are already in use for aviation purposes, and would not change the manner of use or quality of land in the coastal zone.
Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks	No	Several Environmental Justice communities surround Logan Airport. The Project would result in economic benefits related to construction and new goods/services in the form of temporary jobs and on-Airport spending, respectively. The Project would not result in adverse impacts to these communities nor any changes compared to existing conditions. The Proposed Project will not result in changes to the airport roadway network or curbs.

¹ Environmental resource categories as specified in FAA Orders 1050.1F and 5050.4B.

² As defined by the Wild and Scenic Rivers Act of 1968, 16 U.S.C. section 1271 et seq.

³ Federal Emergency Management Agency (FEMA) flood insurance mapping.

⁴ United States Department of Agriculture. 1981. Farmland Protection Policy Act (7 U.S.C. 4201-4209).

6

Beneficial Measures/Mitigation

6.1 Introduction

Massport actively and continuously seeks to limit, reduce, or avoid the environmental effects associated with operations at Boston-Logan International Airport (Logan Airport or Airport). Planning and development at Logan Airport is conducted within an established framework of environmental goals and objectives. It is within this Airport-wide context that mitigation for the Terminal B Optimization Project is assessed. The Project will modify a fully developed area of Logan Airport that is in active aviation use. The Project is expected to create no long-term adverse environmental impacts and minimal temporary construction-period impacts.

As described below, Massport commits to environmentally beneficial measures that pertain to: (1) project design elements; (2) sustainability features; (3) resiliency; and (4) mitigation measures that pertain to construction period impacts.

6.2 Beneficial Measures/Project Commitments

As part of the Terminal B Optimization Project, Massport commits to implementing the following measures as summarized in **Table 6-1**.

Table 6-1 Summary of Terminal B Optimization Project Beneficial Measures

Element	Beneficial Measure
Sustainability	<ul style="list-style-type: none"> ■ The Terminal B Optimization Project would be built to Leadership in Energy and Environmental Design (LEED®) Commercial Interiors Gold standards (Pier B Departures Level only) ■ As design proceeds, Massport will consider the following: <ul style="list-style-type: none"> □ Incorporate materials to reduce heat island effect □ Use of no-glare roofing material □ Prioritize materials based on lifespan and lifecycle maintenance costs □ Specify products with recycled content to the maximum extent practicable □ Incorporate infrastructure for collection, storage, and handling of recyclables (approved pre-security and post-security recycling stations, on-site collection bins, and storage dumpsters) □ Establish a project-specific goal and specify materials extracted, harvested, recovered, and /or manufactured within 500 miles of project location

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Table 6-1 Summary of Terminal B Optimization Project Beneficial Measures (Continued)

Element	Beneficial Measure
Sustainability Continued	<ul style="list-style-type: none"> <input type="checkbox"/> Design Project to achieve energy efficiencies of a minimum of 20 percent below Massachusetts Energy code <input type="checkbox"/> Specify energy-efficient interior and exterior lighting <input type="checkbox"/> Design infrastructure and operations that reduce water use by 20 percent below the Massachusetts Plumbing Code <input type="checkbox"/> Incorporate occupancy sensors with a manual override in all indoor areas <input type="checkbox"/> Incorporate infrastructure for collection, storage, and handling of recyclables <input type="checkbox"/> Incorporate options such as broad roof overhangs or shading devices to reduce solar heat gain and glare <input checked="" type="checkbox"/> Continue to operate 400-hertz gate power at all gates to support pre-conditioned air for aircraft, and upgrade equipment if needed <input checked="" type="checkbox"/> Add 31 charging stations for electric ground service equipment (GSE)
Project Design Features	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Enhances terminal efficiency by consolidating American Airlines operations to Pier B of Terminal B. American Airlines currently operates from both Pier A and Pier B <input checked="" type="checkbox"/> Consolidates the current three Passenger Screening Checkpoints into a single checkpoint, using the latest in automated screening equipment, thus improving passenger throughput, security, and Transportation Security Administration (TSA) staffing efficiency <input checked="" type="checkbox"/> Introduces a secure-side connection between Gates B1 and B3 and the remainder of Pier B, thus improving passenger access to amenities and terminal facilities <input checked="" type="checkbox"/> Expands baggage make-up facilities, improving operating efficiency and baggage handling reliability <input checked="" type="checkbox"/> Right-sizes departure holdrooms, improving passenger comfort and spatial efficiency <input checked="" type="checkbox"/> Reconfigure five existing aircraft parking positions to accommodate building modifications, aircraft will continue to be served by passenger boarding bridges, ground power (400 hertz), and pre-conditioned air <input checked="" type="checkbox"/> High-performance glazing systems to optimize building envelope thermal performance, reducing heating and cooling energy consumption and improving passenger comfort <input checked="" type="checkbox"/> Floor to ceiling perimeter glazing with direct views to exterior to improve passengers' sense of well-being and orientation <input checked="" type="checkbox"/> High-efficiency lighting systems to increase light levels for comfort and safety while reducing building energy consumption <input checked="" type="checkbox"/> High-efficiency heating, ventilation, and air conditioning (HVAC) systems, combined with commissioning to optimize mechanical systems operation and improve passenger thermal comfort in the building
Resiliency/Floodproofing	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> All areas of the first floor (lowest level) of the proposed Project are above the Design Flood Elevation (DFE) for existing structures <input checked="" type="checkbox"/> All new critical equipment is above the DFE for new construction <input checked="" type="checkbox"/> Where spaces must be below the DFE, critical areas would be flood proofed through measures such as: <ul style="list-style-type: none"> <input type="checkbox"/> Install watertight shields on doors, windows, and louvers <input type="checkbox"/> Use exterior and interior membranes and sealants to reduce seepage <input type="checkbox"/> Seal electrical conduits and other utilities entering below the DFE <input type="checkbox"/> Install drainage collection systems and sump pumps <input type="checkbox"/> Install early warning devices to monitor water levels <input type="checkbox"/> Install backflow preventer valves on drainage and sanitary sewer piping located below the DFE <input type="checkbox"/> Install flood openings to equalize the hydrostatic pressure <input checked="" type="checkbox"/> Provide pumps to remove floodwater in non-draining areas

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Table 6-1 Summary of Terminal B Optimization Project Beneficial Measures (Continued)

Element	Beneficial Measure
Construction Period Mitigation	<ul style="list-style-type: none"> ■ Hours of work generally would be limited to typical working hours of 7:00 AM to 5:00 PM ■ Massport would require its Construction Manager to prepare: <ul style="list-style-type: none"> □ Draft Soil Management Plan □ Draft Stormwater Pollution Prevention Plan □ Draft Management Plan for Dewatering (if needed) □ Draft Health and Safety Plan ■ Ground transportation construction-period mitigation measures will include: <ul style="list-style-type: none"> □ All trucks will access the site by Route 1A, Interstate 90, and the main Airport roadway only □ Trucks would be prohibited from using local streets □ Truck routes would be specified in contractors' construction specifications □ Concrete production and batching would occur in existing plants with access via Route 1A or Interstate 90 □ Massport would encourage construction workers to use Logan Express, the water shuttle, Massachusetts Bay Transportation Authority (MBTA), and other modes of public transportation ■ Air quality construction-period mitigation measures would include: <ul style="list-style-type: none"> □ Construction vehicle/equipment anti-idling □ Retrofitting of appropriate diesel construction equipment with diesel oxidation catalyst and/or particulate filters □ Air quality and fugitive dust management would be deployed including monitoring of construction dust; disposal options for excavated materials; and fences, wheel washing, and other methods to protect the Airport and surrounding communities from fugitive dust during construction ■ Sound levels from activities associated with the construction of the Project will be voluntarily consistent with the City of Boston's noise criteria; therefore, no construction noise mitigation is required. However, construction equipment would use noise-reduction measures such as: <ul style="list-style-type: none"> □ Noise control techniques would be used to reduce noise from pile driving by at least 5 A-weighted decibels (dBA) below their unmitigated level □ Community noise levels would be monitored during construction to verify compliance with contract specifications and applicable state and local noise regulations ■ To protect water quality, and in compliance with the Stormwater Pollution Prevention Plan, an Erosion and Sedimentation Control Program would be put in place to minimize construction phase impacts to Boston Harbor ■ Spill prevention measures and sedimentation controls would be deployed throughout the construction phase to prevent pollution from construction equipment and erosion ■ Erosion and sedimentation controls would be used during the airfield earthwork and construction phases <ul style="list-style-type: none"> □ Perimeter Barriers like straw wattles or compost-filled "silt sock" barriers would be placed around upland work areas to trap sediment transported by runoff before it reaches the drainage system or leaves the construction site □ Existing catch basins within the work areas would be protected with barriers (where appropriate) or silt sacks throughout construction □ Open soil surfaces would be stabilized within 14 days after grading or construction activities have temporarily or permanently ceased □ The contractor or subcontractor would be responsible for implementing each control shown on the Sedimentation and Erosion Control Plan

6.2.1 Project Design Elements

The Terminal B Optimization Project would include design elements specifically intended to improve operational inefficiencies and to improve the passenger experience, as documented below.

Currently, American Airlines is operating out of opposite sides of Terminal B, causing operational inefficiencies and significant passenger confusion. The Project would consolidate American Airlines operations in Pier B and provide improvements including renovations, enhancements, and additions to terminal and airside facilities. The Project would include the consolidation of three passenger security screening checkpoints into one centralized checkpoint. It would also include enhancements to ticketing, public spaces, concessions, departure lounges, gates, and airside configurations, as well as consolidated and enhanced inbound and outbound baggage systems. As a result of the Proposed Project, terminal and airline operations would be substantially improved and airline operations, passenger convenience, and amenity opportunities would bring Terminal B, Pier B comparable to Pier A.

6.2.2 Sustainability Features

The Project would be built to Leadership in Energy and Environmental Design (LEED®) Commercial Interiors Gold certification standards (Pier B Departures Level only), as well as the Massachusetts LEED Plus standards. In addition, the Project design team consulted Massport's *Sustainable Design Standards and Guidelines*.¹ These guidelines are one component of Massport's overall sustainability program and include diverse sustainability initiatives ranging from facilities maintenance to innovative partnerships and public incentives. The standards are tailored to Massport's operations, facilities, and geography, and are intended to be used by architects, engineers, and planners working on capital projects for Massport. The standards apply to both new construction and rehabilitation projects (building and non-building) of any square footage or monetary value, and may be used on tenant alterations or development projects on Massport property. During the preliminary design phase and later design phases for the Project, the following sustainable design opportunities will be considered for their feasibility and applicability:

- **Heat Island Effect:** Massport will evaluate materials to reduce the heat island effect. Roofing material will be non-glare for use at Logan Airport.
- **Material Durability:** Massport will evaluate and prioritize materials based on lifespan and lifecycle maintenance costs.
- **Recycled Content:** Massport will specify products with recycled content to the maximum extent practicable.
- **Recycling Operations:** The final design will incorporate infrastructure for collection, storage, and handling of recyclables (approved pre-security and post-security recycling stations, on-site collection bins, and storage dumpsters).
- **Construction Waste Management:** The contractor will be required to develop a Construction Waste Management Plan.
- **Regional Materials:** Massport will establish a project-specific goal and specify materials extracted, harvested, recovered, and/or manufactured in New England.

¹ Massachusetts Port Authority. *Logan Airport Sustainable Design Standards and Guidelines – Version 1*, June 2009.

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- **Energy Efficiency:** The Project will be designed to achieve energy efficiencies of a minimum of 20 percent below Massachusetts Energy Code.
- **Interior and Exterior Lighting:** The final design specifications will stipulate the maximum candela value of all interior lighting that falls within the building, recyclable lamps, use of compact fluorescent or light emitting diode (LED) alternatives unless the materials are not available.
- **Alternative and Renewable Energy:** Massport will investigate the feasibility of supplying at a minimum 2.5 percent of the Project's power with on-site renewable energy systems taking capital and operating costs into account.
- **Water Management and Efficiency:** The final design will include infrastructure and operations that reduce water use by 20 percent below the Massachusetts Plumbing Code.
- **Indoor Lighting Control:** The Project will incorporate occupancy sensors with a manual override in all indoor areas.
- **Waste Reduction and Recycling Infrastructure:** Incorporate infrastructure for collection, storage, and handling of recyclables (approved pre-security and post-security recycling stations, on-site collection bins, and storage dumpsters).
- **Passive Solar:** Incorporate options such as broad roof overhangs or shading devices to reduce solar heat gain and glare.
- **Airport Ramp Infrastructure:** Continue to operate 400-hertz (Hz) power and pre-conditioned air (PCA) at reconfigured gates, to reduce the use of on-board diesel powered auxiliary power units (APUs) and associated emissions, including greenhouse gas (GHG) emissions. Aircraft require electrical energy at the gates and depending on climate conditions, also PCA (for heating or cooling). If an aircraft can connect to electric power at the gate (400 Hz) and are provided PCA, they are able to turn off APUs, which rely on jet fuel for their power.
- **Electric Ground Service Equipment (GSE) Charging Stations:** Provide 31 electric GSE charging stations that could accommodate up to 30 to 45 pieces of equipment.

The following areas of the design would be reviewed as design proceeds to achieve the overall energy reduction performance goal for the Proposed Terminal B Optimization Project:

- Building Envelope
 - Thermal insulation of exterior walls, roof, and second floor slab with unconditioned space below;
 - Glazed window area limited to where needed for views;
 - High-efficiency glazing and solar shading devices to reduce solar heat gain; and
 - Vestibules and air sealing of wall openings on airside of the building.
- Lighting
 - Reduced lighting energy intensity (watts/square foot) where feasible for occupancy;
 - Daylight sensors and daylight-harvesting lighting controls; and

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- ❑ Lighting controls including occupancy sensors and timer systems.
- Mechanical
 - ❑ Energy-efficient equipment;
 - ❑ Energy recovery wheels in new fan rooms;
 - ❑ Heat recovery systems;
 - ❑ Automatic control systems;
 - ❑ Commissioning of systems for proper functioning; and
 - ❑ In addition to the heating, ventilation, and air conditioning system for the new addition to the terminal building, additional pre-conditioned air units will be provided to handle the load of the aircraft.
- Building equipment
 - ❑ Energy efficiency/energy harvesting technologies on major equipment such as baggage handling equipment; and
 - ❑ Energy Star kitchen appliances and office computers.

Additional sustainable design opportunities will be addressed as the Project progresses into design development. These design commitments will be incorporated into construction, especially as they relate to the proper specification of sustainable materials and construction practices.

Rooftop solar was initially considered as part of the Project but is not included in the Proposed Action. Adding rooftop solar panels to the smaller building addition would create sightline problems for the air traffic control tower. The larger building addition has a sloped roof, which precludes inclusion of rooftop solar.

6.2.3 Resiliency/Floodproofing

In 2013, Massport launched a comprehensive resiliency initiative to maximize business continuity in the midst of various human and natural threats. Extreme storm events, such as Hurricane Sandy (2012), Tropical Storm Irene (2011), and winter storm Nemo (2013), demonstrated the link between climate hazards and the resiliency of the built environment, including air and maritime transportation infrastructure. As part of its broader resiliency initiative, Massport conducted a *Disaster and Infrastructure Resiliency Planning Study*² focused on the risks associated with climate change, primarily coastal flooding from extreme storms and sea level rise. The *Disaster and Infrastructure Resiliency Planning Study* included climate hazard analyses, vulnerability assessments for critical infrastructure, and resiliency intent recommendations for capital improvements and programming. One of the high priority recommendations was for Massport to develop and adopt design guidelines for flood resiliency, including establishing design flood elevations possibly more stringent than required by current building codes for future flood scenarios. In April 2015, Massport published its updated Floodproofing Design Guide,³ which is based on the analysis and recommendations of the *Disaster and Infrastructure Resiliency Planning Study*.

Consistent with the Federal Aviation Administration's (FAA's) National Environmental Policy Act (NEPA) considerations, guidelines that will be applied to the Terminal B Optimization Project are outlined below. Massport

² Massport. 2014. *Disaster and Infrastructure Resiliency Planning Study*. Internal document.

³ Massport. 2015. *Floodproofing Design Guide*. Internal document.

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periodically coordinates with the Massachusetts Office of Coastal Zone Management regarding measures to enhance resiliency and minimize potential coastal storm-related impacts. The following resiliency measures will be implemented:

- In general, the first level (lowest floor) of the Project is located above the Design Flood Elevation (DFE) prescribed in the *Sustainable Design Standards and Guidelines* for new construction. Thus, important utilities, life safety systems, and other critical equipment are generally above the DFE.
- Where spaces must be below the DFE, critical areas will be flood proofed through measures such as:
 - Install watertight shields on doors, windows, and louvers;
 - Use exterior and interior membranes and sealants to reduce seepage;
 - Seal electrical conduits and other utilities entering below the DFE;
 - Install drainage collection systems and sump pumps;
 - Install early warning devices to monitor water levels;
 - Install backflow preventer valves on drainage and sanitary sewer piping located below the DFE;
 - Install flood openings to equalize the hydrostatic pressure; and
 - Provide pumps to remove floodwater in non-draining areas.

6.2.4 Construction Period Measures

In accordance with FAA *Order 5050.4B* and *Order 1050.1F*, Massport has analyzed potential construction-related impacts, including construction noise; dust and noise from heavy equipment traffic; disposal of construction debris; and air and water pollution. Temporary, construction-related impacts occur on a short-term basis during the construction period based on construction methods, duration, materials, and equipment. Construction impacts alone are rarely significant pursuant to NEPA; however, Massport has identified best practices that would minimize the likelihood of negative impacts on the natural and built environments.

Construction impacts and mitigation are considered under each of the individual impact review categories above. During construction, there would be limited short-term impacts from added vehicle trips to and from the site by construction equipment, fugitive dust, noise, negligible amounts of sediment added to the area's stormwater collection system, and demolition materials and other routine construction wastes in need of proper disposal.

Massport specifically prohibits delivery of materials through residential streets, the creation of borrow pits and disposal of spoil, burning of debris, and water pollution from erosion. In addition, Massport would require that the Project's design and construction planning would incorporate appropriate environmental protection measures. All construction impacts would be mitigated as required by construction contracts, therefore, a significant adverse effect would not be allowed to occur.

Massport would develop and implement a comprehensive Soil Erosion and Sediment Control Plan in accordance with National Pollutant Discharge Elimination System (NPDES) and Massachusetts Department of Environmental Protection standards. The Stormwater Pollution Prevention Plan would include best practices for soils and spill management, including the use of sediment control methods (such as silt fences or

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compost-filled silt sock barriers) during excavation to prevent silt and sediment entering the stormwater system and waterways, and applying water to dry soil to prevent dust production.

Temporary, short-term impacts from construction activities would be mitigated to the extent practicable. Appropriate construction mitigation measures would be incorporated into the contract documents and specifications governing the activities of contractors and subcontractors constructing elements of the Proposed Action. All construction activities would comply with FAA *Advisory Circular 150/5370-10 (latest edition), Standards for Specifying Construction of Airports*. These construction-period mitigation measures would be the responsibility of Massport. Specific mitigation measures would be developed during the final design.

6.2.4.1 Construction Management

Massport has developed a number of requirements for construction mitigation with which all architects, engineers, and construction contractors must comply. Massport will hire a construction management consulting firm that will be responsible for overseeing all activities related to the proposed Project. The construction management consulting firm will be responsible for insuring that the management practices listed below and others to be developed are followed.

- Hours of work generally will be limited to typical working hours of 7:00 AM to 5:00 PM unless constrained by operational conditions at the Airport. For example, some night activity may occur during the concrete pouring period and at other times to minimize disruption to Airport roadways.
- Adequate storage areas for construction materials will be located on-Airport (away from residential areas).
- Fugitive dust will be controlled through wetting, sweeping, and other suppression techniques. Massport will require contractors to maintain on-site water trucks. All trucks hauling materials and excavate from the site will be covered.
- A Draft Soil Management Plan will be developed based upon sub-surface investigations. The plan outlines standards and procedures for the identification and disposal of contaminated materials that may be encountered on the Project site during construction. Soil tracking protocols will be detailed from the point of excavation to designated testing areas and to the ultimate disposal site.
- A Draft Stormwater Pollution Prevention Plan will be developed which is intended to keep the Airport's stormwater system free of sediment and contaminants during construction. The plan will be incorporated into construction plans, specifications, and contracts.
- A Draft Management Plan for Dewatering will be developed which addresses the requirements for testing, handling, and treatment prior to discharge of contaminated groundwater from dewatering.
- A Draft Health and Safety Plan will be developed which provides the minimum health and safety specifications that contractors must meet during construction including requirements for environmental monitoring, personnel protective equipment, site control and security, and training.
- Rodent control inspection, monitoring, and treatment will be carried out before, during, and after the completion of all foundation and utility demolition and construction work for the Project. Rodent extermination prior to work start-up will consist of treatment throughout the Project Area including building exteriors and interiors. During the construction process, regular service visits will be made to maintain effective rodent control levels.

6.2.4.2 Ground Transportation

The mitigation of ground transportation impacts which could result from Project construction will focus on two issues: minimizing construction-related vehicles on local and Airport roadways and insuring that all Airport roadway operations are maintained at full capacity to minimize traffic congestion both on- and off-Airport. The specific measures to be taken are noted below.

- All trucks will access the site by Route 1A, Interstate 90, and the main Airport roadways only. Trucks will be prohibited from using local streets unless they are seeking construction-related access to or from local businesses.
- Truck routes will be specified in contractors' construction specifications.
- Concrete production and batching will occur in existing plants with access via Route 1A or Interstate 90. This will reduce on-Airport construction activities and consolidate truck trips to the greatest extent possible.
- It is expected that construction workers will access the Airport via public transportation or via shuttle buses from off-Airport parking areas. Specific actions regarding construction worker access are noted below.
- Construction companies will be encouraged to provide off-Airport parking for their employees and to provide shuttle services from these locations. Massport will encourage contractors to locate such off-Airport construction worker parking in areas adjacent to regional arterial roadways to help minimize traffic on local streets.
- Massport will encourage use by construction workers of Logan Express, the water shuttle, and other modes of public transportation.

6.2.4.3 Construction Air Quality Mitigation

As part of the Project approvals process and to minimize air emissions, Massport would require all contractors to comply with certain construction guidelines that relate to:

- Construction vehicle/equipment anti-idling;
- Retrofitting of appropriate diesel construction equipment with diesel oxidation catalyst and/or particulate filters;
- Construction worker vehicle trip management, including requiring contractors to provide off-Airport parking, and use high-occupancy vehicle transportation modes for employees; and
- Air quality and fugitive dust management will be deployed including monitoring of construction dust; disposal options for excavated materials; and fences, wheel washing, and other methods to protect the Airport and surrounding communities from fugitive dust during construction.

Emissions from construction activities may be further reduced by employing the following best management practices:

- Reducing exposed erodible surface area through appropriate materials and equipment staging procedures;
- Covering exposed surface areas with pavement in an expeditious manner;
- Reducing equipment idling times;

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- Reducing vehicles speeds onsite;
- Ensuring contractor knowledge of appropriate fugitive dust and equipment exhaust controls;
- Stabilizing soil with cover or periodic watering;
- Using low- or zero-emissions equipment;
- Using covered haul trucks during materials transportation; and
- Suspending construction activities during high-wind conditions.

6.2.4.4 Construction Noise

The construction of the Proposed Action would generate noise associated with various stages of the Project development activities. Construction equipment is expected to be used intermittently throughout the Project's construction phase, only during daytime hours. Normal flight operations would continue to function during project construction.

Sound levels from activities associated with the construction of the Project will be consistent with the City of Boston's noise criteria (even though Massport is not subject to these criteria); therefore, no construction noise mitigation is required. However, construction equipment would use noise-reduction measures such as:

- Noise control techniques will be used to reduce noise from pile driving by at least 5 A-weighted decibels (dBA) below their unmitigated levels. These techniques include such measures as enclosing the point of impact for the pile driver; installing an impact cushion between the pile driver and the pile; or requiring the application of dampening (energy-absorbing) material to steel piles.
- Further noise control options will be evaluated during Project design to define their effectiveness and feasibility. Appropriate operational specifications and performance standards will be incorporated into the construction contract documents. In addition, community noise levels will be monitored during construction to verify compliance with contract specifications and applicable state and local noise regulations.

6.2.4.5 Construction Water Quality

The Terminal B Optimization Project includes changes and additions to the hydrant fuel system on the apron surrounding Terminal B, as well as associated apron and airfield repaving that would disturb more than one acre. Soil disturbance from construction activity creates the potential for water quality impacts from stormwater runoff and erosion. Therefore, the Project would be required to comply with the requirements of the NPDES General Permit for Stormwater Discharges from Construction Activities. The NPDES requires filing a Notice of Intent and preparing a Stormwater Pollution Prevention Plan. As part of the Stormwater Pollution Prevention Plan, an Erosion and Sedimentation Control Program would be put in place to minimize construction phase impacts to Boston Harbor. Massport will comply with the provisions of the Massachusetts Contingency Plan.

Spill prevention measures and sedimentation controls would be deployed throughout the construction phase to prevent pollution from construction equipment and erosion. The following best practices would be deployed throughout the construction phase in order to prevent pollution from construction equipment or material:

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- Erosion and sedimentation controls would be used during the airfield earthwork and construction phases. Proposed controls are provided as recommendations for the site contractor and do not constitute or replace the final Stormwater Pollution Prevention Plan that must be fully implemented by the contractor and owner in compliance with U.S. Environmental Protection Agency NPDES regulations and with Massport's contractor requirements.
- Perimeter Barriers like straw wattles or compost-filled "silt sock" barriers would be placed around upland work areas to trap sediment transported by runoff before it reaches the drainage system or leaves the construction site.
- Existing catch basins within the work areas would be protected with barriers (where appropriate) or silt sacks throughout construction.
- Open soil surfaces would be stabilized within 14 days after grading or construction activities have temporarily or permanently ceased.
- The contractor or subcontractor would be responsible for implementing each control shown on the Sedimentation and Erosion Control Plan.

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7

Regulatory Compliance and Public/Agency Coordination

7.1 Introduction

This chapter discusses the federal and state permits that Massport anticipates for the Terminal B Optimization Project (the Proposed Action or Project), in addition to complying with the National Environmental Policy Act (NEPA). It also identifies Massport's ongoing efforts to coordinate with agencies, as well as the public.

7.2 Regulatory Compliance

Table 7-1 lists anticipated state and federal permits required for the Terminal B Optimization Project along with the status of the permits and other approvals. Subsequent sections describe how the Proposed Action will comply with these regulatory requirements.

Table 7-1 Anticipated Permits and Approvals

Issuing Agency	Approval or Permit	Status
Federal Aviation Administration	Finding of No Significant Impact (FONSI) or Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA)	Environmental Assessment (EA) submitted.
Federal Aviation Administration	Airport Layout Plan Approval	Approval to be issued
Federal Aviation Administration	Air Quality General Conformity Determination	Determination made in this document. See Chapter 5, <i>Environmental Consequences</i>
Federal Aviation Administration	14 CFR Part 77, Form 7460-1 Construction or Alteration Requiring Notice	As required prior to construction

Table 7-1 Anticipated Permits and Approvals (Continued)

Issuing Agency	Approval or Permit	Status
U.S. Environmental Protection Agency Region 1	National Pollutant Discharge Elimination System (NPDES) Individual Permit	The Project will meet the standards included in Logan Airport's individual NPDES permit (No. MA0000787).
U.S. Environmental Protection Agency Region 1	NPDES Construction General Permit	A construction-related stormwater pollution prevention plan will be developed by the contractor
Massachusetts Contingency Plan (MCP)	Hazardous materials encountered during the development would be addressed in accordance with applicable MCP regulations	As required

7.2.1 Airport Layout Plan Approval

Massport prepared this Environmental Assessment (EA) because it is seeking Federal Aviation Administration (FAA) approval for a modification of the Airport Layout Plan, which includes the components of the Proposed Action—the Terminal B Optimization Project. The Airport Layout Plan approval is a federal action that requires review pursuant to NEPA, as described in FAA *Order 5050.4B*.¹

7.2.2 National Environmental Policy Act (NEPA)

The FAA has determined that the Terminal B Optimization Project, as Massport (the Sponsor) proposes, requires an EA under NEPA due to requisite changes to the Logan Airport Layout Plan. This EA identifies project alternatives and documents the potential environmental effects associated with the construction and operation of the proposed terminal improvements at Logan Airport. Massport does not expect the Proposed Action to result in significant environmental impacts such as increased aircraft activity, vehicle traffic, additional noise, or air emissions. Based on its review of the comments on the EA or, if additional information is needed to make a determination, FAA may pursue further review under NEPA.

7.2.3 Air Quality/General Conformity Determination

As documented in Chapter 5, *Environmental Consequences*, Section 5.3.2, *Air Quality*, the Terminal B Optimization Project would be in conformance with the General Conformity Rule, established under the Clean Air Act, as related emissions would be within *de minimis* thresholds. The Proposed Action will not change the aircraft operational levels at Logan Airport nor will it alter ground-based aircraft movements (i.e., taxi and delay periods) or result in increased surface transportation traffic. Therefore, operational emissions (mobile and stationary source) will not change due to the Project.

Construction activities are expected to generate short-term construction-related air emissions, including exhaust emissions from on-road construction vehicles, off-road construction equipment, evaporative emissions from asphalt placement and curing, and the generation of fugitive dust from disturbance of unpaved areas. These Project-related emissions would be substantially below federal General Conformity *de minimis* thresholds. In addition to generating project-related emissions well below *de minimis* thresholds, the project activities fall

¹ FAA. 2006. *Order 5050.4B: National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*.

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under the list of activities "Presumed to Conform" by the FAA according to the July 30, 2007, Federal Register.² The Proposed Action is presumed to conform, falling primarily under categories 6. *Terminal and Concourse Upgrades* and 7. *New HVAC Systems, Upgrades, and Expansions*.

The Project is consistent with FAA Order 5050.4B, Table 6-2: *Passenger handling building: construct or expand a terminal passenger handling building at an existing commercial service airport that does not substantially expand the building*.

According to the Presumed to Conform List, the Project would be considered under paragraph (6), Terminal and Concourse Upgrades. This category includes projects that expand or upgrade terminals and concourses and that do not have the effect of attracting more passengers, increasing the airport's ability to accommodate additional numbers or types or aircraft, or increasing passenger loading. A proposed terminal/concourse expansion project is presumed to conform up to the square foot additions of the project as determined by the most limiting pollutant. According to Table III-I of the Federal Register notice, the square foot threshold for the most limiting pollutant (Ozone) is 185,891 square feet. The Project, therefore, is presumed to conform to the Clean Air Act. The Project will not change aircraft operations and, therefore, is presumed to conform to the Clean Air Act.

As part of the approvals process associated with the Terminal B Optimization Project and to minimize air emissions, Massport will require all contractors to comply with certain construction guidelines that relate to:

- Construction vehicle/equipment anti-idling;
- Retrofitting of appropriate diesel construction equipment with diesel oxidation catalyst and/or particulate filters; and
- Construction worker vehicle trip management, including encouraging contractors to provide off-Airport parking, and use high-occupancy vehicle transportation modes for employees.

7.2.4 FAA Part 77 Notification

In administering Title 14 of the Code of Federal Regulations (CFR) Part 77, the prime objectives of the FAA are to promote air safety and the efficient use of the navigable airspace.³ To accomplish this, an evaluation of aeronautical surfaces with respect to structure heights are conducted based on information provided by project proponents to complete a FAA Form 7460-1, Notice of Proposed Construction or Alteration. The 14 CFR Part 77.9 states that any person/organization who intends to sponsor any of the following construction or alterations must notify the Administrator of the FAA by submitting this form. Massport will submit a FAA Form 7460-1 as needed prior to construction of the Project.

7.2.5 National Pollutant Discharge Elimination System (NPDES) Permits

As authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the U.S. Point sources are discrete conveyances such as pipes or man-made ditches. The NPDES program includes permitting for municipal, industrial, and construction-related sources of pollution under general or individual

² Federal Register (72 FR 415), *Federal Presumed To Conform Actions Under General Conformity*, Federal Aviation Administration, July 30, 2007.

³ 14 CFR Part 77: <http://www.ecfr.gov/cgi-bin/text-idx?rgn=div5&node=14:2.0.1.2.9>

permits. The Project must meet the standards included in Logan Airport's individual NPDES permit (No. MA0000787), which allows Massport to discharge stormwater from outfalls on the Airport property. All project elements will be designed to meet the standards of Logan Airport's NPDES individual permit.

The Project would also require completion and submittal of a Stormwater Notice of Intent to the U.S. Environmental Protection Agency (EPA) for coverage under the NPDES Construction General Permit for stormwater discharge from construction activities because the Project will require disturbance of over one acre. The Permit requires the development and implementation of a Stormwater Pollution Prevention Plan that includes specific sedimentation and erosion control measures that will be implemented for the entire duration of construction activities. Proper implementation of the Stormwater Pollution Prevention Plan will ensure that no adverse impacts would occur from construction-related runoff. Mitigation measures included in Logan Airport's existing Stormwater Pollution Prevention Plan to minimize sedimentation and erosion are described in Chapter 5, *Environmental Consequences*.

7.2.6 Massachusetts Contingency Plan (MCP)

During construction, the soil and groundwater contamination issues surrounding the existing terminal facilities will be addressed, as needed, in compliance with the Massachusetts Contingency Plan (MCP). In compliance with the MCP, a Soil Management Plan may be required to determine whether any excavated soils that are generated through foundation construction or improvements to the fuel hydrant system can be reused onsite, and/or determine requirements for off-site reuse, recycling, or disposal. Soil will be disposed of in conformance with Massport's soil management policy. A Soils Management Plan will be developed under the supervision of a Massachusetts Licensed Site Professional and will be integrated into the requirements of existing Response Action Outcomes for portions of the site covered by Release Tracking Numbers and/or Release Abatement Measures plans for any newly identified areas of contamination. The Soils Management Plan would be developed in concert with a groundwater management plan, which will address requirements for dewatering and collection, testing and/or treatment, and disposal or discharge of water pumped from excavations, if required.

7.3 Public and Agency Coordination

During the preparation of this EA and on an on-going basis, Massport coordinates with the FAA and other federal, state, and local agencies.

7.3.1 Public Involvement

Public outreach and community input is an important element of Massport's overall environmental review processes. Community and agency outreach and coordination will continue through permitting, design, and construction of the Terminal B Optimization Project.

Massport described the proposed Terminal B Optimization Project in the publicly circulated *Boston-Logan International Airport 2015 Environmental Data Report (EDR)*, published December 2016 and available at the following URL: www.massport.com/environment/environmental-reporting.⁴ Massport also presented

⁴ Massport. 2016. *Boston-Logan International Airport 2015 Environmental Data Report*. December 15, 2016

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information on the Project at a public meeting, which was publicly noticed in English and Spanish in the adjacent communities and held on January 11, 2017.

Massport posts information about regulatory filings on its website. The most recent environmental filings, including this EA and all supporting documentation, will be made available on its website at www.massport.com/environment/environmental-reporting/environmental-filings. Notices will also be placed in local newspapers.

7.3.2 Agency Consultation and Coordination

Since this Project is redevelopment of an existing airport area that is currently in active aviation use, there are no new impacts to natural resources within the project footprint. As such, there are no anticipated adverse long-term impacts that would require Massport to consult with resource agencies regarding potential impacts, avoidance, and minimization of impacts. Massport distributed this EA to local, state, and federal agencies for their review and comment (see Chapter 8, *Distribution List*). Massport will coordinate with agencies, if needed, regarding affected environmental resources and potential impacts. Massport has disclosed the project to the Massachusetts Executive Office of Energy and Environmental Affairs (EEA) by way of the Massachusetts Environmental Policy Act (MEPA) Office through the 2015 EDR and at a public meeting that a MEPA Office representative attended. The Project does not exceed any applicable MEPA review thresholds.

Massport will publish this EA on its website at <https://www.massport.com/environment/environmental-reporting/environmental-filings>.

Following publication of the EA, there will be a 30-day public comment period.

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Distribution

Federal Aviation Administration (FAA) *Order 5050.4B* states that airport development will trigger public interest. Distributing this Environmental Assessment (EA) to the public is the best way to provide the public with the information needed to formulate an opinion. FAA *Order 5050.4B, Paragraph 804*, requires distribution to the federal agencies having jurisdiction by law or regulation over the action and to the public for review. The following is a list of recipients of the Draft EA, which include representatives of governmental agencies, community groups, and local residents interested in activities at Logan Airport. The 'P' indicates that Massport sent a printed copy.

This Final EA is available on Massport's website (www.massport.com) and electronically on CD. Persons may request limited CD or printed copies of this Final EA from Michael Gove, telephone (617) 568-3546, email: mgove@massport.com. Electronic and printed copies of the Draft EA are available for review at the following public libraries.

Library	Address	Library	Address
P,C Boston Public Library Main Branch	700 Boylston Street Boston, MA 02116	P,C Boston Public Library East Boston Branch	365 Bremen Street East Boston, MA 02128
P,C Winthrop Public Library	2 Metcalf Square Winthrop, MA 02151		

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9

List of Preparers

9.1 Introduction

The Terminal B Optimization Project Environmental Assessment (EA) was prepared by the Massachusetts Port Authority (Massport). Technical analyses and documents were prepared by a team of technical consultants. The entities involved, as well as the personnel and their individual areas of responsibility, are listed below. The years of experience for each individual are listed in parentheses as well as their qualifications.

9.2 VHB

VHB was the lead consultant responsible for the preparation of the EA.

Carol Lurie, LEED AP, AICP, ENV SP – Principal in Charge (38)	M.S., City Planning B.S., Town and Regional Planning
Lauren Ballou, ENV SP, STP – Project Manager (6)	M.A., Global Leadership and Sustainable Development B.A., Biology, Environmental Policy
Donny Goris-Kolb, LEED AP O+M, ENV SP, AICP– Project Planner (10)	M.A., Urban and Regional Planning B.A., Sociology
Van Du, LEED Green Associate, ENV SP - Project Planner (6)	M.S., City Planning and Urban Affairs B.A., Environmental Studies
Julia Meier, ENV SP – Project Planner (2)	B.S., Environmental Science

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Laura Castelli, EIT – Senior Transportation Engineer (18)	B.S., Civil Engineering
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Dr. Lisa Standley, Ph.D. – Senior Technical Reviewer (42)	Ph.D., Botany
	M.S., Botany
	B.S., Botany/Ecology

9.3 AECOM

AECOM supported the development of the entire document.

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Timothy vonAschwege – Principal Designer and Associate Vice President (47)	Bachelor of Architecture
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Pedro Fagundo, AIA, BSA, LEED AP – Senior Architect (22)	Bachelor of Architecture
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9.4 Harris Miller Miller & Hanson, Inc.

Harris Miller Miller & Hanson, Inc. supported the development of the construction noise analysis.

Robert Mentzer, Jr. – Principal Consultant (25)	B.S., Meteorology
---	-------------------

Christopher Bajdek – Principal Consultant (27)	B.S., Mechanical Engineering
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Appendices

- *Appendix A, Noise Evaluation Technical Memorandum*
- *Appendix B, Ground Access Temporary Construction-Related Impacts Memorandum*

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Appendix A

Noise Evaluation Technical Memorandum

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HMMH

77 South Bedford Street
Burlington, Massachusetts 01803
781.229.0707
www.hmmh.com

TECHNICAL MEMORANDUM

To: Massport & VHB
From: Christopher Bajdek, HMMH
Copies: Robert Mentzer, HMMH
Date: April 27, 2017
Subject: Evaluation of Construction Noise for the Environmental Assessment
Terminal B Optimization Project at Boston Logan Airport
Reference: HMMH Project Number 308890.000

1. Introduction



Harris Miller Miller & Hanson Inc. (HMMH) was retained by VHB to conduct a qualitative assessment of construction noise for the Environmental Assessment (EA) for the Terminal B Optimization Project (the Proposed Action/Proposed Project) at Boston Logan International Airport (Logan Airport or Airport). The Project would streamline passenger security screening, improve coordination for one of Logan Airport's largest air carriers, and increase operational efficiency. The Proposed Project would combine the operations of the legacy air carrier U.S. Airways (currently operating out of the existing Pier B as American Airlines) and American Airlines (currently operating out of the existing Pier A) into one consolidated operation at Terminal B. The Project would result in 18 contiguous gates for American Airlines at Pier B.

The scope and magnitude of the Proposed Project is similar to the Terminal B (Pier A) and Terminal C/E Renovations and Improvements Project at Logan Airport (the Terminal B and C/E Project). The EA for that project was completed in 2012¹ and concluded that the Terminal B and C/E Project would not result in significant impacts to the environment. In addition, the noise analysis for that project demonstrated that noise levels from construction activities would comply with the limits for construction noise that have been established by the City of Boston.² Due to the similarities between the projects, HMMH believes that a qualitative assessment of potential construction-related noise impacts for the Proposed Project is appropriate. Furthermore, based on our assessment, we believe that construction noise levels due to the Proposed Project would comply with the City of Boston limits.

This memorandum provides a brief overview of the Terminal B and C/E Project, an assessment of construction-related noise levels for the Proposed Project, and our conclusions.

2. Overview of the Terminal B and C/E Project

This section provides a brief overview of the Terminal B and C/E Project that is based on the 2012 EA for that project.³

¹ Massachusetts Port Authority, *Environmental Assessment – Renovations and Improvements at Terminals B & C/E at Boston Logan International Airport*, May 2012; available at:

https://www.massport.com/media/2917/2012_EA_Terminal_B_CE_Complete.pdf.

² City of Boston, Air Pollution Control Commission, Regulations for the Control of Noise, Regulation 3 Restrictions – Construction Sites; available at:

https://www.cityofboston.gov/images_documents/noise_reg_tcm3-13127.pdf.

³ See footnote 1.

2.1 Project Description

The Terminal B and C/E Project consisted of two key components: (1) upgrades to the facilities at Terminal B, Pier A to accommodate an airline merger and to provide a post-security connection between both sides of Terminal B (i.e. Piers A and B); and (2) improvements to Terminal C that provide a post-security connection between Terminals C and E. While the two components of the Terminal B and C/E Project were completely independent of one another, because of their common goals, proximity, and similar timing, they were considered as a single action from an environmental review perspective.

The first component of the Terminal B and C/E Project proposed to renovate approximately 78,800 square feet of pre-existing internal terminal space and increase Pier A by approximately 84,000 square feet of new building area. The first component of that project also included new ticket counter positions, a renovated security checkpoint with additional lanes, concession space, and baggage handling systems. While this component of the project proposed to reconfigure eight gates at the end of Pier A, did not increase the number of gates at Logan Airport. The second component of the Terminal B and C/E Project included interior renovations and approximately 3,500 square feet of new building area for a connector between Terminal C and Terminal E.



2.2 Construction Noise due to the Terminal B and C/E Project

Section 5.5.6.2 of the 2012 EA documented the construction noise assessment that was performed for the Terminal B and C/E Project. It stated that construction equipment would be used intermittently throughout the construction phase of the project and that exterior construction activities (rather than those inside the Terminals) would take place during daytime hours. The 2012 EA further stated that normal aircraft operations would continue during construction of the project. Construction was expected to commence in late June or July 2012 with completion by the end of 2013 – an approximately 18-month long construction period.

The Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM)⁴ was used to predict noise levels due to construction activities associated with the Terminal B and C/E Project. To evaluate potential construction noise impacts, the predicted noise levels were compared to applicable noise limits established by the City of Boston. As shown in Table 1, which is reproduced from Table 5-8 of the 2012 EA, the predicted construction noise levels were well below the City's applicable limits.

The construction noise assessment in the 2012 EA assumed that all of the construction equipment – for both the Terminal B, Pier A renovations and improvements and Terminal C/E Connector – would be operating at the same time. This is a conservative assumption, since the types and numbers of equipment will vary between different construction phases over the course of the entire construction period. HMMH also believes that additional conservatism was built into the model for another reason, based on our review of the supporting material for the construction noise analysis, which may be found in Appendix C of the 2012 EA. The noise modeling for the Terminal B and C/E project included 0 to 5 decibels of shielding between certain pairings of construction activity and noise-sensitive receptors. In some cases, these estimated amounts of shielding may be lower than what would actually exist. This is a conservative assumption, since lower amounts of shielding yield higher levels of construction noise at noise-sensitive receptors. If one were to assume higher levels of shielding provided by intervening structures, the predicted construction noise levels in Table 1 would be lower. In our opinion, the amount of shielding between certain pairings of construction activity and noise-sensitive receptors could be in the range of 5 to 10 decibels.

⁴ Federal Highway Administration, *Roadway Construction Noise Model: User's Guide Federal Highway Administration*, FHWA-HEP-05-054, January 2006.

Table 1. Predicted Construction Noise Levels Reproduced from the Table 5-8 of the 2012 Renovations and Improvements at Terminals B & C/E at Boston Logan International Airport EA

Noise-sensitive Receptor Locations	Predicted Construction L10 (dBA)*	Predicted Construction Lmax (dBA)**	City Of Boston Limit*** L10 (dBA)*	City Of Boston Limit*** Lmax (dBA)**
Receptor 1 – East Boston Yacht Club, Boston	62	45	75	86
Receptor 2 – Loring Rd near Court Rd, Winthrop	62	43	75	86
Receptor 3 – Somerset Ave near Johnson Ave, Winthrop	61	42	75	86
Receptor 4 – Jeffries Point Yacht Club, Boston	64	49	75	86

Source: Massachusetts Port Authority, *Environmental Assessment – Renovations and Improvements at Terminals B & C/E at Boston Logan International Airport*, May 2012; available at:

https://www.massport.com/media/2917/2012_EA_Terminal_B_CE_Complete.pdf.

* The “L10” is the sound level that is exceeded for 10 percent of a given time period.

** The “Lmax” is the maximum sound level for a given time period and represents the noisiest piece of equipment.

*** City of Boston, Air Pollution Control Commission, *Regulations for the Control of Noise, Regulation 3 Restrictions – Construction Sites*; available at: https://www.cityofboston.gov/images_documents/noise_reg_tcm3-13127.pdf.



3. Assessment of Construction-Related Noise Levels for the Proposed Project

This section provides a description of the Proposed Terminal B Optimization Project and an assessment of construction-related noise levels due to it.

3.1 Project Description – Proposed Terminal B Optimization

The Proposed Project’s improvements would take place primarily within the existing terminal footprint. There would be approximately 84,000 square feet of new building area between the Arrivals and Departures levels, plus approximately 81,000 square feet of renovations within the existing terminal footprint. Proposed improvements include the following key components:

- Consolidate American Airlines’ operations to Pier B, allowing gates to be located contiguously instead of in two separate locations;
- Consolidate security checkpoint operations from three to one location improving safety, throughput, and customer experience;
- Connect all Terminal B, Pier B gates post security allowing for greater gate flexibility and enhanced passenger connectivity;
- Reconfigure Terminal B, Pier B existing ticket counters into one, unified ticketing hall;
- Improve outbound baggage make-up⁵ efficiency and flexibility;
- Improve inbound baggage claim devices, improving operational efficiency and flexibility;
- Enhance passenger holdrooms to accommodate existing and anticipated passenger activity levels;
- Improve concession areas to enhance the passenger experience; and
- Optimize gate layout by relocating fuel pits and right-sizing ramp positions.

The Proposed Project would result in 18 contiguous gates for American Airlines at Terminal B, Pier B, without increasing the number of gates at Logan Airport.

⁵ Baggage make-up is the area where outbound bags are sorted and prepared for transport to departing aircraft.

3.2 Assessment of Construction Noise for the Proposed Project

During construction of the Terminal B Optimization Project, short-term noise associated with the renovation and improvement activities would be generated. Construction equipment is expected to be used intermittently throughout the Project's construction during the typical working hours of 7:00 AM to 5:00 PM. Normal flight operations would continue during Project construction. This is consistent with the Terminal B and C/E project analysis.

The Proposed Project is expected to generate typical sound levels associated with construction activities, including use of equipment, operations, material transport, and limited pile driving. The type of equipment and units of equipment would vary among the different construction phases. Typical equipment would include: aerial lifts, asphalt and concrete pavers, augers and backhoes, bulldozers, a mobile crane, dump trucks and trailers, excavators and graders, rollers, a pile vibrator, trucks, sweepers, water pumps and trucks, and concrete pump trucks and mixers. Table 2 lists the anticipated construction equipment requirements for the Proposed Project. This equipment list and anticipated schedule is similar to what had been presented in the 2012 EA for the Terminal B and C/E Project.



Table 2. Construction Equipment Requirements for the Terminal B Optimization Project

Area Category	2017 Jul-Sep	2017 Oct-Dec	2018 Jan-Mar	2018 Apr-Jun	2018 Jul-Sep	2018 Oct-Dec	2019 Jan-Mar
Aerial Lift		1	1				
Auger	1						
Bulldozer	1	1					
Concrete Paver		1		1			
Concrete Pump Truck	1	1		1			
Concrete Transit Mixer	1	2		1			
Crane Mobile	1	2	2				
Dump Trailer	2	1	1	1			
Dump Truck	2	1	1	2	1	1	
Dumpster		1	1	1	1	1	
Excavator	2	2		1			
Front End Loader		1		1			
Material Handler	1	2	1				
Pile Vibrator	1						
Roller Dirt	1	1		1			
Sweeper	1	1	1	1			
Truck and High Bed Trailer	1	2	2	2	2	2	
Utility truck	2	3	2	2	2	2	1
Vibratory Plate Compactor	1			1			
Water Pump	1						
Water Truck	1						
Welding Machine		2	1				

Source: AECOM, 2017.

HMMH believes that the construction noise levels due to the Terminal B Optimization Project will be similar to, or lower than, the predicted noise levels shown in Table 1. We offer the following observations about the noise-sensitive receptors described in Table 1 of the 2012 *Renovations and Improvements at Terminals B & C/E at Boston Logan International Airport EA*:

- Receptor 1 at the East Boston Yacht Club, Boston – construction noise levels due to the Proposed Project are likely to be *lower* than what is shown in Table 1, as a result of increased distance between the construction activity at Terminal B, Pier B and increased shielding due to intervening structures.
- Receptor 2 at Loring Road near Court Road, Winthrop – construction noise levels due to the Proposed Project are likely to be *lower* than what is shown in Table 1, as a result of increased distance between the construction activity at Terminal B, Pier B and increased shielding due to intervening structures.



- Receptor 3 at Somerset Avenue near Johnson Avenue, Winthrop – construction noise levels due to the Proposed Project are likely to be *lower* than what is shown in Table 1, as a result of increased distance between the construction activity at Terminal B, Pier B and increased shielding due to intervening structures.
- Receptor 4 at the Jeffries Point Yacht Club, Boston – construction noise levels due to the Proposed Project are likely to be the *same as or only slightly higher than* what is shown in Table 1. The decreased distance between the construction activity at Terminal B, Pier B and Receptor 4 would increase the predicted construction noise levels by approximately 2 to 3 dBA. There is unlikely to be any loss of shielding, since the Terminal B and C/E Project assumed what we believe is a conservatively low shielding factor of 5 dBA between those activities and Receptor 4. There is likely to be at least 5 dBA of shielding between the construction activity and Terminal B, Pier B and Receptor 4 due to the fact that there are intervening structures along the sound propagation path (i.e. Terminal A and the Logan Office Center). The cargo buildings to the south also provide some amount of shielding and serves as a noise barrier. Even with a possible 2 to 3 dBA increase in construction noise levels with the Proposed Project, predicted levels still would be much lower than the City's established limits.



4. Conclusions

Massport will voluntarily ensure that the sound levels from activities associated with the construction of the Proposed Project will be consistent with the City of Boston's noise criteria; therefore, no construction noise mitigation would be required. Construction equipment used on the project will incorporate noise-reduction measures such as:

- Using proper mufflers for construction equipment,
- Routing trucks away from noise-sensitive areas to limit noise from truck traffic, and
- Prohibiting exterior construction activities between the hours of 5:00 PM and 7:00 AM.

Appendix B

Ground Access Temporary Construction- Related Impacts Memorandum

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To: Massport

Date: March 21, 2017

Memorandum

Project #: 13804.00

From: VHB

Re: Temporary Construction-Related Impacts for Terminal B, Pier B Improvements

The Terminal B Optimization Project (the Proposed Action/Proposed Project) would streamline passenger movement, improve coordination for one of Logan Airport's largest air carriers, and increase operational efficiency. The Project, necessary as a result of the American Airlines and U.S. Airways merger, would combine the operations of the legacy air carrier U.S. Airways (currently operating out of the existing Pier B as American Airlines) and American Airlines (currently operating out of the existing Pier A) into one consolidated operation at Terminal B. The Project would result in 18 contiguous gates for American Airlines at Pier B. The Proposed Project would be constructed in a single phase starting in mid-2017 with expected completion in early 2019. Enabling activities, such as utility relocation, are anticipated to begin in early summer 2017. Construction of new building areas is anticipated to commence in late 2017 with completion by the end of 2018 for a total of 21 months of construction; the peak period of activity, including pile driving is expected to occur during the fall of 2017.

To avoid airside security issues, a Transportation Security Administration (TSA)-approved temporary Security Identification Display Area (SIDA) fence will be constructed as part of the Proposed Project to allow construction activities to occur outside of secured areas. Construction laydown areas will be located both in the infield area of the terminal as well as the construction zone between the Terminal and the SIDA fence along the vehicle service road. In accordance with Massport policy, significant nighttime or weekend work is not anticipated.

Construction site access will occur by two different routes. Daily contractor access will occur through the Terminal B Garage gate located at the south end of the parking garage blast wall. This will be a landside gate during Terminal B construction. Large construction equipment, major material deliveries, demolition materials and trash hauling will occur through the South gate. No access through the North gate is anticipated. Massport will require that contractor's staff and sub-contractors are shuttled to the project construction sites.

Table 1 presents the construction equipment requirements for the Project.

Table 1 Terminal B Improvements - Landside Equipment Requirements by Quarter

Equipment Estimate	2017				2018				2019
	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar
Aerial Lift	-	-	-	1	1	-	-	-	-
Asphalt Paver	-	-	-	-	-	-	-	-	-
Auger	-	-	1	-	-	-	-	-	-
Bulldozer	-	-	1	1	-	-	-	-	-
Concrete Paver	-	-	-	1	-	1	-	-	-
Concrete Pump Truck	-	-	1	1	-	1	-	-	-
Concrete Transit Mixer	-	-	1	2	-	1	-	-	-
Crane- Mobile	-	-	1	2	2	-	-	-	-
Dump Trailer	-	-	2	1	1	1	-	-	-
Dump Truck	-	-	2	1	1	2	1	1	-
Dumpster	-	-	-	1	1	1	1	1	-
Excavator	-	-	2	2	-	1	-	-	-
Front End Loader	-	-	-	1	-	1	-	-	-
Material Handler	-	-	1	2	1	-	-	-	-
Pile Vibrator	-	-	1	-	-	-	-	-	-
Roller- Dirt	-	-	1	1	-	1	-	-	-
Roller- Pvmt	-	-	-	-	-	-	-	-	-
Sweeper	-	-	1	1	1	1	-	-	-
Truck And High-Bed Trailer	-	-	1	2	2	2	2	2	-
Utility Truck	-	-	2	3	2	2	2	2	1
Vibratory Plate Compactor	-	-	1	-	-	1	-	-	-
Water Pump	-	-	1	-	-	-	-	-	-
Water Truck	-	-	1	-	-	-	-	-	-
Welding Machine	-	-	-	2	1	-	-	-	-

Note: Numbers denote average equipment per daily shift

Construction impacts are considered under the affected review categories below (specifically surface transportation, air quality, and noise). During construction there would be limited short-term impacts from added vehicle trips to and from the site by construction equipment, fugitive dust, and noise. Demolition materials and other routine construction wastes will be appropriately recycled and disposed.

Construction Surface Transportation Impacts

Short-term construction impacts are expected to be limited to the segments of the East Boston roadways that provide direct access to the Airport’s entrances (Service Road, Frankfurt Street, and Prescott Street) and on-Airport roadways (Transportation Way, Harborside Drive and Terminal Area roadways). As described in Massport’s construction management specifications, construction vehicles are restricted from using local roads.

Construction of the Proposed Project would be primarily undertaken from a defined work area of the airfield. Most of the materials and workers would be delivered to the Terminal B construction areas via secure escort from the South Gate. Materials to be delivered by truck would primarily include asphalt pavement, concrete and miscellaneous metals. Construction workers would not be allowed to drive or park at the Airport, with the exception of limited supervisory personnel. The majority of workers would be transported to the site by shuttle bus from a remote contractor lot or existing airport shuttles.

Construction Truck Traffic

The peak quarter for construction activity is anticipated to occur between October and December 2017, generally associated with overlapping activities including foundation work, apron reconstruction, foundation and utility connection activities. The detailed construction equipment schedules indicate that a maximum of 25 pieces of construction equipment will be required each day during the peak quarter of 2017 (Table 1 above).

While each piece of equipment will have to be transported to and from the Airport, most of the heavy construction equipment, including some mobile cranes, excavators, concrete pump trucks, pavers and miscellaneous equipment (welders, compressors, vibro-compactors) would be stored on the Airport during non-work hours. This equipment would be used during most workdays; however, this equipment would not enter or leave the Airport as a daily construction trip. The following types of equipment would enter and leave the Airport for each work shift and thereby represent daily construction trip vehicles:

- Concrete Transit Mixers
- Dump Trucks
- Dump Trailers
- Truck/High-bed Trailers
- Utility Trucks

The projected daily need for these types of trucks was used to estimate the daily number of truck arrivals and total truck trips (arrivals plus departures) to the Airport, as presented in Table 2. The Proposed Project construction would generate approximately 3 to 17 total truck trips per weekday (depending on the project phase), with peak daily trips coincident with peak construction activity.

Table 2 Daily Construction Trips

Year	2017				2018				2019	
	Quarter	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Mar
Daily Trips (Terminal)	0	0	12	13	9	12	8	8		2
Daily Trips (Misc.)	0	0	4	4	3	4	2	2		1
Total Daily Trips	0	0	16	17	12	16	10	10		3

It is expected that construction would take place primarily during the day shift, approximately 7:00 AM to 7:00 PM. Thus, the daily truck volume to and from the site would be the number of truck trips per work shift. It was assumed that most light duty trucks, such as escort trucks and pick-up trucks associated with supervisory workers, would all arrive to the project site during the morning peak hour and exit during the evening peak hour. No significant nighttime or weekend work is anticipated.

Construction Truck Route

Massport's agreement with the contractor would specify that direct construction truck traffic access to the Terminal B site be through the Airport's South Gate for the duration of construction (Figure 1). A small number of supervisory and utility truck vehicles will be allowed to access the planned construction staging area located south of the horseshoe end of the Terminal B Arrival Level roadway. The agreement would limit Airport access by the Contractor to federal or State highways, restricting any use of East Boston roadways by construction vehicles. Where possible, construction vehicles will use the East Boston-Chelsea Bypass Road. Truck trips directly to the project site are anticipated to come from all directions and would be routed in any of the following ways:

South Gate

- Access via McClellan Highway (Route 1A) southbound, Transportation Way, Harborside Drive; egress via Harborside Drive, Hotel Drive, SR-2 and the Airport Exit ramp from Terminal E to Route 1A northbound.
- Access via Callahan Tunnel, I-90 westbound, Transportation Way, Harborside Drive; egress via Harborside Drive, Hotel Drive, SR-2 and the Airport Exit ramp from Terminal E to the Sumner Tunnel.
- Access via Ted Williams Tunnel, Ramp T-S, Hotel Drive and Harborside Drive; Egress via Harborside Drive, Transportation Way and Ramp S-T to Ted Williams Tunnel.

Access to the Terminal B laydown area is available from each Airport gateway via the Terminal Area Arrival Roadway and Terminal B Arrival Level Roadway.

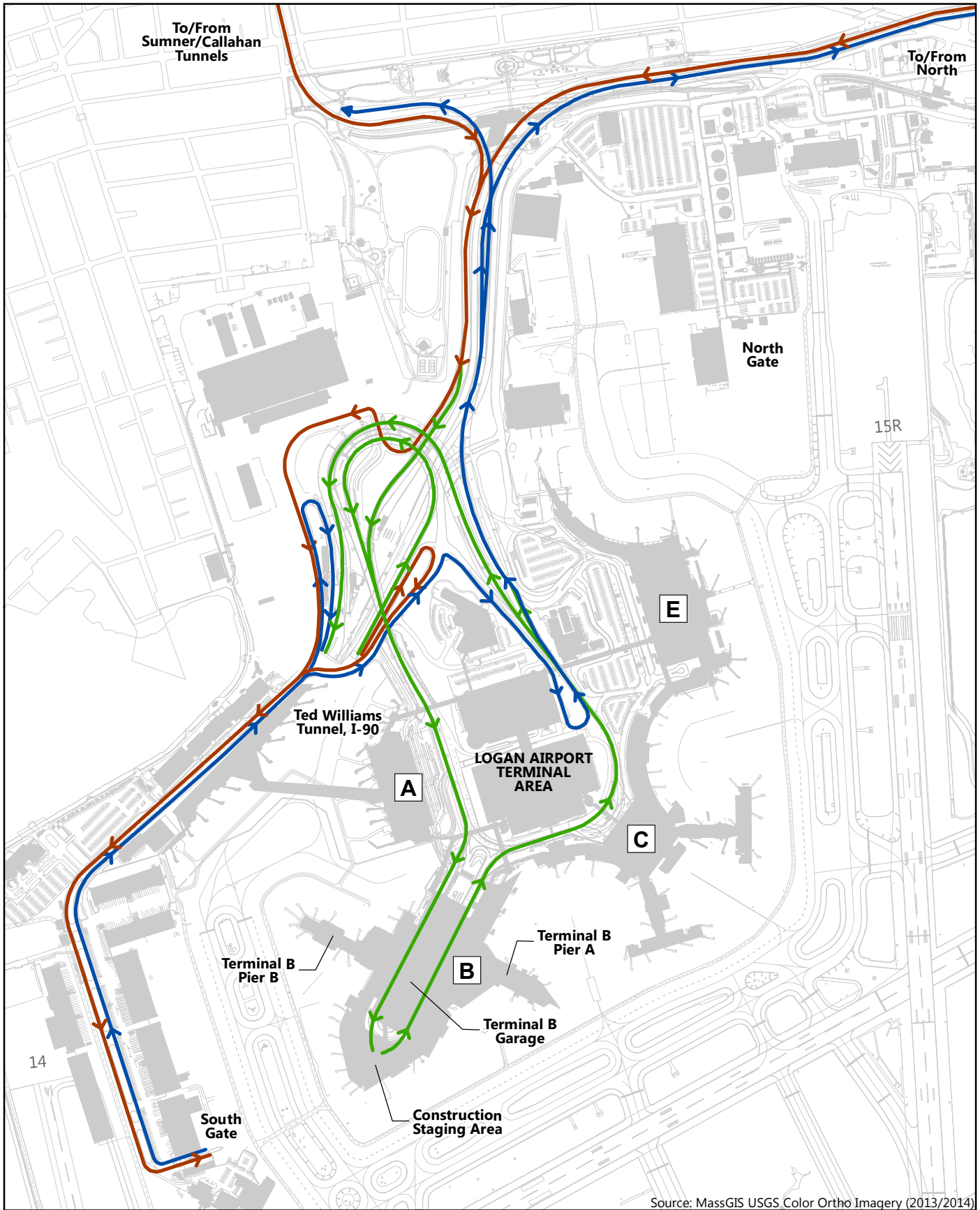


FIGURE 5-1 Temporary Construction Access/Egress Routes

Terminal B Optimization Project

- Access Routes
- Egress Routes
- Small Vehicle Contractor Access



Construction Traffic Maintenance

Vehicular traffic flow on the Airport roadway network during construction will be managed to maintain acceptable levels of service. If necessary, Massport has the ability to modify contractor schedules and access routes to minimize impacts.

Based on the maximum of 17 total daily construction truck trips and the access restrictions described above, the Terminal B Optimization Project would have minimal impact on Airport or regional roadways. The airport roadway infrastructure accommodates over 119,000 daily trips each weekday and can accommodate the anticipated 17 additional daily construction truck trips associated with the proposed renovations and improvements construction without causing capacity or delay problems.

Coordination with Other Construction Activities

The following projects are anticipated to be ongoing during construction of the proposed Project:

- Terminal B Gate 37/38 Connector – construction began in 2016 and should be complete in 2018
- Runway 4R Light Pier Replacement – construction is scheduled from mid-May 2017 through October 2017
- Central Heating and Cooling Plant Upgrade – construction is planned for 2017 and beyond
- Terminal E Modernization Project – construction is anticipated to begin in 2019
- Logan Airport Parking Project – the project is predicated on a regulatory change and Massport initiated the environmental review process in spring 2017

Due to the minimal impact of the proposed Project construction on the roadways and the location of the other construction activities in different areas of the Airport (South West Service Area and airside), the concurrent construction of these projects can be adequately accommodated by the Airport and regional roadway systems.

Surface Transportation Construction Mitigation

The Airport roadways can support the anticipated construction-related traffic; therefore, no specific mitigation is proposed and no Project-specific transportation access plan is proposed. Massport requires all contractors to limit construction-related traffic to access and egress through the South Gate via only state and federal highways and the Airport roadway network prohibiting construction-related traffic on the local East Boston roadways.

Massport also requires contractors to implement construction worker vehicle trip management, including requiring contractors to provide off-airport parking and using high-occupancy vehicle transportation modes for employees.