V.1 volume 1 – text

New Bedford Regional Airport Improvements Project

Final Environmental Impact Statement/
Final Environmental Impact Report

Massachusetts Aeronautics Commission

January 2009
EOEA #10316

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NEW BEDFORD REGIONAL AIRPORT IMPROVEMENTS PROJECT
NEW BEDFORD, MASSACHUSETTS

FINAL ENVIRONMENTAL IMPACT STATEMENT
FINAL ENVIRONMENTAL IMPACT REPORT

Submitted Pursuant to
32 USC S 4332(2)(C) of the National Environmental Policy Act; 49 USC S 47106 (c)(1)(C)
and the Massachusetts Environmental Policy Act, M.G.L. Chapter 30 Sections 61 – 62h

By the
United States Department of Transportation
Federal Aviation Administration,
Massachusetts Aeronautics Commission, and
New Bedford Airport Commission,

January 2009

Abstract: This Final Environmental Impact Statement (FEIS) concerns the potential environmental impacts associated with safety improvements to the New Bedford Regional Airport. The New Bedford Regional Airport currently does not have standard safety areas at the ends of the primary runway, Runway 5-23, and does not have a perimeter fence to control hazardous wildlife.

This FEIS examines a range of alternatives that have the potential to meet safety requirements, and provides an explanation of why alternatives were eliminated or carried forward for detailed evaluation. The FEIS evaluates the No-Action Alternative and the Airport's Preferred Alternative in detail. The Preferred Alternative would provide 1000-foot long, 400-foot wide Runway Safety Areas at each end of Runway 5-23, and would install approximately 6,000 linear feet of deer exclusion fencing at the Runway 5 end of the Airport. Both the No-Action and Preferred Alternative would implement a vegetation management plan to comply with FAA standards.

Each alternative was evaluated for potential impacts to the noise environment, existing land use, minority and low-income populations, air quality, the social and economic environment, historic and archaeological resources, water quality, wetlands, floodplains, biotic communities, endangered and threatened species, and the transportation system. The analysis provided in the DEIS showed that the proposed project would have no impact to land use, minority and low-income populations, air quality, the social and economic environment, historic and archaeological resources, and the transportation system. The FEIS therefore focuses on impacts to the noise environment, water quality, wetlands, floodplains, and state-listed endangered and threatened species. This FEIS provides an analysis of the affected environment and environmental consequences of the Preferred Alternative for each of these environmental resources, and includes proposed measures to mitigate potential project impacts.

After careful and thorough consideration of the facts contained herein and following consideration of the views of those Federal agencies having jurisdiction by law or special expertise with respect to the environmental impacts described, the undersigned finds that the proposed Federal action is consistent with existing national environmental policies and objectives as set forth in section 101(a) of the National Environmental Policy Act of 1969.

Required Environmental Findings and Conclusions

The New Bedford Regional Airport Improvement Project (the Preferred Alternative) will not result in a significant adverse impact. The Preferred Alternative will not involve the use of lands subject to Section 4(f) of the DOT Act, and will not require the displacement or relocation of people. The Preferred Alternative will result in the loss of approximately 7.33 acres of vegetated wetlands, 770 linear feet of waterways (the West Ditch), and floodplains. As documented in this FEIS, there are no practicable alternatives to such construction, and the proposed action includes all practicable measures to minimize harm. The proposed action requires placing fill in the mapped 100-year floodplain, but will conform to applicable state and local floodplain protection standards. and is consistent with the Massachusetts Coastal Zone Management (CZM) Program.

1/5/09
Date of Approval

Barry H. Ralph
For Federal Aviation Administration

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Comments: The Massachusetts Environmental Policy Act (MEPA) requires a 30-day public comment period on an Environmental Impact Report. The MEPA public comment period will close on February 20, 2009. Comments may be mailed or emailed to the Executive Office of Environmental Affairs (EOEA) at the address below.

Executive Office of Environmental Affairs,
Massachusetts Environmental Policy Act Office
100 Cambridge Street, Suite 900
Boston, MA 02114
Letters to EOEA must refer to EOEA No. 10316

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Acronyms

AGL – Above ground level
AIA – Airport Improvement Alternative
AIP – Airport Improvement Program
ALP – Airport Layout Plan
ALS – Approach Lighting System
ANRAD – Abbreviated Notice of Resource Area Delineation
ARC – Airport Reference Code
ARFF/SRE – Aircraft Rescue and Fire Fighting/Snow Removal Equipment
ATCT – Air Traffic Control Tower
ATR – Automatic Traffic Counters
AVGAS – Aviation Gasoline

BEC – Baystate Environmental Consultants, Inc.
BLSF – Bordering land subject to flooding
BMP – Best Management Practice
BOD – Biochemical oxygen demand
BRP – Bureau of Resource Protection
BVW – Bordering vegetated wetlands

CAA – Clean Air Act
Caltrans – California Department of Transportation
CBRA – Coastal Barrier Resources Act
CEQ – Council on Environmental Quality
CFR – Code of Federal Regulations
cfs – Cubic feet per second
CIP – Capital Improvement Program
CMP – Conservation and Management Plan
CMR – Code of Massachusetts Regulations
CWA – Clean Water Act
CZM – Coastal Zone Management
CZMA – Coastal Zone Management Act
CZMP – Coastal Zone Management Program

dB – decibel
dbh – diameter at breast height
DEIR – Draft Environmental Impact Report
DEIS – Draft Environmental Impact Statement
DNL – Day – Night Sound Level
DO – Dissolved Oxygen
DOA – Determination of Applicability
DOI – Department of the Interior
DOT – United States Department of Transportation

DPS – Department of Public Safety
DPW – Department of Public Works

EA – Environmental Assessment
E&S – Erosion and Sedimentation
EDMS - Emission and Dispersion Modeling System
EIR – Environmental Impact Report
EIS – Environmental Impact Statement
EMAS – Engineered Materials Arresting System
ENF – Environmental Notification Form
ENSR – ENSR International, Inc.
EO – Executive Order
EOEA – Executive Office of Environmental Affairs
EOT – Executive Office of Transportation
EPA – United States Environmental Protection Agency
ESA – Federal Endangered Species Act
EWB – New Bedford Regional Airport

FAA – Federal Aviation Administration
FAR – Federal Aviation Regulations
FBO – Fixed Based Operator
FEIR – Final Environmental Impact Report
FEIS – Final Environmental Impact Statement
FEMA – Federal Emergency Management Agency
FOD – Foreign object damage
FONSI – Findings of No Significant Impact
FTZ – Foreign Trade Zone

GA – General Aviation
GEIR – Generic Environmental Impact Report
GIS – Geographic Information System
GSE – Ground Service Equipment

HIRL – High Intensity Runway Lighting
HNM – Heliport Noise Model
Hz – Hertz

IFR – Instrument Flight Rules
ILS – Instrument Landing System
ILSF – Isolated land subject to flooding
INM – Integrated Noise Model

Kts – Knots

LEDPA – Least Environmentally Damaging Practicable Alternative
LID – Low Impact Development
Lmax – Maximum Noise Level
LT – Left
LTO – Landing and Takeoff Cycle
LUWW – Land Under Water bodies and Waterways

MassGIS – Massachusetts Geographic Information System
MAC – Massachusetts Aeronautics Commission

MA DCR – Massachusetts Department of Conservation and Recreation
MA DEP – Massachusetts Department of Environmental Protection
MALS – Medium Intensity Approach Light System
MALSR – Medium Intensity Approach Light System with Runway Alignment Indicator Lights
MBTA – Massachusetts Bay Transportation Authority
MEPA – Massachusetts Environmental Policy Act
MESA – Massachusetts Endangered Species Act
MGL – Massachusetts General Laws
MHC – Massachusetts Historical Commission
MIRL – Medium Intensity Runway Lighting
MOU – Memorandum of Understanding
MPU – Master Plan Update
MSL – Mean sea level

NAVAID – Navigational aid
NBAA – National Business Aviation Association
NBAC – New Bedford Airport Commission
NBML – New Bedford Municipal Landfill
NCDC – National Climatic Data Center
NCRS – Natural Resources Conservation Service
NEPA – National Environmental Policy Act
NFIP – National Flood Insurance Program
NHESP – Natural Heritage and Endangered Species Program
NHPA – National Historic Preservation Act
NIRS – Noise Integrated Routing System
NLR – Noise Level Reduction
NM – Nautical Mile
NOAA – National Oceanic and Atmospheric Administration
NOAA Fisheries – National Marine Fisheries Service
NOI – Notice of Intent
NPC – Notice of Project Change
NPDES – National Pollutant Discharge Elimination System
NPIAS – National Plan of Integrated Airport Systems
NPS – Non-Point Source
NRCS – Natural Resources Conservation Service
NRHP – National Register of Historic Places
NTSB – National Transportation Safety Board
NURP – National Urban Runoff Program
NWI – National Wetlands Inventory
NWS – National Weather Service

O&M – Operations and Maintenance
OBL – Obligate Wetland Species
OFA – Runway Object Free Area
OFZ – Runway Obstacle Free Zone
OOC – Order of Conditions
ORAD – Order of Resource Area Delineation
ORW – Outstanding Resource Water

PAPI – Precision Approach Path Indicators
PBA – Provincetown – Boston Airlines

PEM – Palustrine emergent wetlands
PFO – Palustrine forested wetlands
PSM – Partnership for Southeastern Massachusetts
PSS – Palustrine scrub-shrub wetlands
PVD – T.F. Green Airport
PZ – Protection Zones

R2UB – riverine lower perennial unconsolidated bottom wetland
RA – Riverfront area
RAIL – Runway Alignment Indicator Lights
RASI – Regional Air Service Initiative
RDA – Request for Determination of Applicability
REIL – Runway End Identifier Lights
RJ – Regional Jet
ROD – Record of Decision
ROW – right-of-way
RPZ – Runway Protection Zone
RSA – Runway Safety Area
RSSA – Runway Safety Standard Alternative
RT – Right
RW – Runway

SDEIR – Supplemental Draft Environmental Impact Report
SHPO – State Historic Preservation Officer
SOP – Standard Operating Procedure
SPCCC – Spill Prevention Control, Countermeasures, and Contingency Plan
SPL – Sound Pressure Level
SRE – Snow removal equipment
SRPEDD – Southeastern Regional Planning and Economic Development
SWPPP – Storm Water Pollution Prevention Plan

TA – Time Above
TAF – Terminal Area Forecast
TMDL – Total Maximum Daily Load
TSS – Total Suspended Solids

USACE – United States Army Corps of Engineers
USC – United States Code
USDA – United States Department of Agriculture
USFWS - United States Fish and Wildlife Service
USGS – United State Geological Survey
USPS – United States Postal Service

VASI – Visual Approach Slope Indicator
VES – Visual Encounter Surveys
VFR – Visual Flight Rules
VMP – Vegetation Management Plan
VOC – Volatile organic compound

WPA – Massachusetts Wetlands Protection Act MGL. c. 131 § 40
WQC – Water Quality Certificate

YOP — Yearly Operational Plan

Glossary

100-Year Floodplain – The portion of the floodplain submerged by the statistical flood event with a 1 percent probability of occurring in any year.

Advisory Circular (AC) – The AC provides a single, uniform, agency-wide system that the Federal Aviation Administration (FAA) uses to deliver advisory material to FAA customers, industry, the aviation community, and the public. They do not create or change a regulatory requirement.

Air Carrier – Aircraft operating under Certificates of Public Convenience and Necessity issued by the FAA authorizing the performance of scheduled air transportation over specified routes and a limited amount of non-scheduled operations.

Airport Layout Plan (ALP) – An ALP is a scaled drawing of existing and proposed land and facilities necessary for the operation and development of the airport. The ALP shows boundaries and proposed additions to all areas owned or controlled by the sponsor for airport purposes, the location and nature of existing and proposed airport facilities and structures, and the location on the airport of existing and proposed non-aviation areas and improvements thereon. The ALP requires FAA approval.

Air Quality – Ambient air pollutant concentrations and emissions, their temporal and spatial distribution; and their relationship to health-based standards and criteria.

Alkalinity – A measure of the capacity of water to neutralize acid. Alkalinity is primarily a function of the concentration of bicarbonate, carbonate, and hydroxide ions and is typically expressed in parts per million (ppm) of calcium or magnesium ions.

Alluvial – Relating to and/or sand deposited by flowing water.

Ambient, or Background, Noise Level – The level of noise that is all-encompassing within a given environment for which a single source cannot be determined. It is usually a composite of sounds from many and varied sources near to and far from the receiver.

Aquifer – Rock or sediment that is saturated with water and sufficiently permeable to transmit economically significant quantities of water to wells and springs.

Army Corps of Engineers (USACE) – A Federal agency that administers Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Its regulatory programs address wetlands and waterways protection.

Arrival – The act of an aircraft approaching and landing at an airport.

Bank – As defined in, 310 CMR 10.54(2), a Bank is the portion of the land surface, which normally abuts and confines a water body.

Best Management Practice (BMP) – A structural and/or management practice employed before, during, and after construction to protect receiving water quality. These practices either provide techniques to reduce soil erosion or remove sediment and pollutants from surface runoff.

Biodiversity – The diversity of genes, species, and ecosystems. This term includes the entire hierarchy of ecological organization, and encompasses regional ecosystem diversity (landscape diversity), local ecosystem diversity (community diversity), species diversity, and genetic diversity within populations of a species.

BioMap Core Habitat – Core Habitats are Natural Heritage and Endangered Species Program-mapped polygons that provide the most viable habitat for rare species and natural communities in Massachusetts. This layer is intended for planning purposes only.

BioMap Supporting Natural Landscape – Supporting Natural Landscape is a Natural Heritage and Endangered Species Program-mapped layer that buffers and connects Core Habitat polygons. Characteristics of Supporting Natural Landscape include natural vegetation patch size; relatively roadless areas; subwatershed integrity; and contribution to buffering BioMap Core Habitat polygons for plants and exemplary communities.

Biotic – Refers to living things and the influences and associations of other organisms.

Bordering Land Subject to Flooding (BLSF) – As defined in M.G.L. c. 131 s. 40, 310 CMR 10.57(2)(a), BLSF is an area with low, flat topography adjacent to and inundated by flood waters rising from creeks, rivers, streams, ponds or lakes. It extends from the banks of these waterways and water bodies; where a bordering vegetated wetland occurs, it extends from said wetland.

Bordering Vegetated Wetland (BVW) – As defined in M.G.L. c. 131 s. 40, 310 CMR 10.55(2), bordering vegetated wetlands are freshwater wetlands, which border on creeks, rivers, streams, ponds, and lakes. The boundary of BVW is determined by 50 percent or more wetland indicator plants and evidence of hydrology.

Commercial Aircraft – Smaller propeller-driven and jet aircraft, including smaller regional jets (*i.e.,* with less than 60 seats) comprising scheduled commercial passenger and cargo airlines as well as "on-demand" commercial operators. A typical commuter flight operates over a trip distance of less than 300 miles.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) – Also known as the Superfund. A law enacted by Congress on December 11,1980, which provides Federal authority to respond to releases of hazardous substances that may adversely affect public health or the environment.

Conductance – A rapid method of estimating the dissolved solids content of water supply by determining the capacity of a water sample to carry an electrical current. Conductivity is a measure of the ability of a solution to carry electrical current.

Day-Night Average Sound Level (DNL) – A measure of the average noise level over a 24-hour day. It is the 24-hour, logarithmic (or energy) average, A-weighted sound pressure level with a 10-decibel penalty applied to the nighttime event levels that occur between 10:00 PM and 7:00 AM.

Decibel (dB) – Logarithmic quantity reflecting the ratio of the pressure of the sound source of interest and a reference pressure. This logarithmic conversion of sound pressure to sound pressure level results in a sound pressure level of about 0 dB for the quietest sounds that we can detect and sound pressure levels of about 120 dB for the loudest sounds we can hear without pain. Many sounds in our daily environment have sound pressure levels on the order of 30 to 100 dB.

Deciduous – Refers to woody vegetation, such as oak or maple trees, that shed their leaves after the growing season.

Departure – The act of an aircraft taking flight and leaving an airport.

Determination of Applicability (DOA) – A written finding by a conservation commission or the Massachusetts Department of Environmental Protection as to whether a site or work proposed thereon is subject to the jurisdiction of the Massachusetts Wetlands Protection Act.

Dissolved Oxygen (DO) – The oxygen freely available in water, vital to fish and other aquatic life and for the prevention of odors. DO levels are considered a most important indicator of a water body's ability to support desirable aquatic life.

Draft Environmental Impact Report (DEIR) – The document prepared by a state agency or project proponent in accordance with the Massachusetts Environmental Policy Act regulations (*301 CMR 11.00 et seq*.).

Draft Environmental Impact Statement (DEIS) – The document prepared in accordance with National Environmental Policy Act (NEPA) regulations (*23 CFR Part 771.123*). These regulations require that the EIS evaluate all reasonable alternatives considered, discuss the reasons that alternatives have been eliminated from detailed study, summarize the studies, reviews, consultations, and coordination required by environmental laws and Executive Orders.

Endangered Species – A Federal and state classification referring to any species that is in danger of extinction throughout all or a significant portion of its range.

Engineered Material Arresting Systems (EMAS) – Collapsible blocks make of water, foam, and cement that deform readily under the weight of an aircraft tire. As the tires crush the material the drag forces decelerate the aircraft bringing it to a safe stop. EMAS is proposed for use in Alternative 2 for the Runway Safety Area (RSA).

Federal Emergency Management Agency (FEMA) – A Federal agency that regulates federal actions in floodplains.

Federal Aviation Administration (FAA) – The FAA constructs, operates, and maintains the National Airspace System and the facilities which are a part of the system; allocates and regulates the use of the airspace; ensures adequate separation between aircraft operating in controlled airspace; and through research and

development programs, provides new systems and equipment to improve utilization of the nation's airspace.

Federal Aviation Regulations (FAR) – The body of Federal regulations relating to aviation. Published as Title 14 of the Code of Federal Regulations (CFR).

Final Environmental Impact Report (FEIR) – The document prepared after the DEIR has been circulated and the Secretary of the EOEA determines that the DEIR has been prepared in accordance with the MEPA regulations (*301 CMR 11.00 et seq.*). The FEIR may contain a further analysis and/or description of the project's alternatives if determined by the Secretary of the EOEA, and must include responses to the comments received on the DEIR.

Final Environmental Impact Statement (FEIS) – The document prepared after circulation of a DEIS and consideration of comments received.

Fish and Shellfish Habitat – This function considers the effectiveness of seasonal or permanent water bodies associated with a wetland for fish and shellfish habitat.

Flight Track – The path along the ground followed by an aircraft in flight.

Floodflow Alteration – This function considers the effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events.

Floodplain – The level area adjoining a river channel inundated during periods of high flow.

Floodway – The channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order that the 100-year flood be carried without substantial increases in flood heights.

Fragmentation – Subdivision of a forest or other habitat into isolated patches by roads, land clearing, or other human or natural alterations of the landscape, accompanied by the loss of a certain portion of the original habitat.

Function – Self-sustaining properties of a wetland ecosystem that exist in the absence of society. Functions result from both living and non-living components of a specific wetland.

General Aviation (GA) – All civil aviation except passenger and cargo airlines.

Glacial outwash – Surficial sand and gravel sediments deposited ahead of a glacier by glacial meltwater.

Glacial till – Compact surficial sediments consisting of poorly sorted, mixed minerals and rocks, deposited by melting glaciers**.**

Gradient – A degree of incline or slope of a streambed that water falls while traveling a horizontal distance downstream.

Groundwater – Water below the earth's surface in the zone of saturation.

Groundwater Recharge/Discharge – Groundwater recharge refers to the addition of surface water to subsurface groundwater by infiltration through permeable soils. In

some locations, groundwater may also discharge to the surface through springs or into lakes, rivers, or streams, particularly where groundwater levels are high and surface soils are permeable.

Groundwater Recharge Protection Areas – Areas of land designated by water resource agencies through which rainwater or snowmelt percolate and replenish the underlying aquifer in the area of a public well. These areas require special protection because they directly affect the quality and safety of the public drinking water supply.

Hydrologic – Pertaining to the properties, distribution, and circulation of water.

Hydrologic regime – The frequency and duration of inundation or soil saturation of a given area.

Impervious surface – Relating to hydrology. A surface through which precipitation cannot penetrate, causing direct runoff or perching (examples include asphalt paving roofs, and densely compacted gravel).

Integrated Noise Model (INM) – A computer program developed, updated, and maintained by the FAA to evaluate aircraft noise exposure in the vicinity of airports.

Isolated Land Subject to Flooding (ILSF) – As defined in M.G.L. c. 131 s. 40, 310 CMR 10.57(2)(b), ILSF is an isolated depression or closed basin without an inlet or an outlet. If is an area that at least once a year confines standing water to a volume of at least ¼ acre-feet and to an average depth of at least six inches.

Knots (Kts) – Airspeed measured as the distance in international nautical miles covered in one hour.

Land Under Water Bodies and Waterways (LUWW) – As defined in, 310 CMR 10.56(2), LUWW is the land beneath any creek, river, stream, pond or lake.

Massachusetts Department of Conservation and Recreation (DCR) – Formerly the Massachusetts Department of Environmental Management (DEM), it is responsible for stewardship of the Acushnet Cedar Swamp State Reservation.

Massachusetts Environmental Policy Act (MEPA) – The state legislation that requires an interdisciplinary approach to projects requiring state aid or a state agency action. MEPA requires that state agencies evaluate alternatives to and impacts from projects that will cause damage to the environment, and that mitigation is provided to compensate for unavoidable impacts.

Massachusetts Natural Heritage and Endangered Species Program (NHESP) – The agency that oversees rare species protection in Massachusetts.

Massachusetts Wetlands Protection Act – The state legislation that sets forth a review and decision making process regarding wetland resource areas. Areas Subject to Protection are to be regulated in order to contribute to protection of the public and private water supply, protection of groundwater, flood control, storm damage protection, prevention of pollution, and protection of land containing shellfish, fisheries and wildlife habitat.

Maximum A-weighted Sound Level (Lmax) – The maximum sound level obtained during a noise event, such as an aircraft overflight.

Mitigation – Actions that avoid, minimize, or compensate for potential adverse impacts.

National Environmental Policy Act of 1969, as amended (NEPA) – The Federal legislation that requires an interdisciplinary approach in planning and decision-making for Federal-aid actions. The Act includes requirements for the contents of environmental impact statements that are to accompany every recommendation for major Federal actions significantly affecting the quality of the human environment.

National Natural Landmark – A natural area that provides the best example of a biotic community or geologic feature in the region in which it occurs. The Secretary of the Department of the Interior designates National Natural Landmarks.

National Pollutant Discharge Elimination System (NPDES) – As authorized by the Clean Water Act and administered by the Environmental Protection Agency (EPA), the NPDES permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States.

Nationwide Urban Runoff Program (NURP) – The Environmental Protection Agency (EPA) established the NURP as included in the 1977 Amendments to the Clean Water Act (PL 95-217) to expand the state of knowledge of urban runoff pollution by instituting data collection and applied research projects in selected urban areas throughout the country. The NURP studies were discontinued in the mid-1980s.

Natural Resources Conservation Service (NRCS) – Formerly the Soil Conservation Service, NRCS is a department within the United State Department of Agriculture and is responsible for administering the Farmland Protection Policy Act.

Nautical Mile (NM) – A measure of distance equal to a one-minute arc on the earth's surface (approximately 6,076 feet).

Noise – Unwanted sound.

Noise Contour – Continuous lines of equal noise level usually drawn around a noise source. Noise contours often are drawn in 5-decibel increments and are generally used in depicting the noise exposure around airports and other facilities.

Noise Exposure – The cumulative sound energy affecting a person over a specified period of time (e.g., a work shift, a day, a working life, or a lifetime).

Nutrient Removal/Retention/Transformation – This function relates to the effectiveness of a wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers or estuaries.

Nutrients – Nutrients are substances that provide nourishment and promote growth in plants and animals. Two nutrients important to estuaries are Nitrogen and Phosphorus. Human activity can cause an overabundance of these nutrients.

Operation – A single aircraft arrival or departure at an airport.

Order of Conditions – The document issued by a conservation commission under the Massachusetts Wetlands Protection Act, containing conditions which regulate or prohibit an activity.

Overwinter – The act of burrowing into soil or stream bottoms to escape winter cold. Also called estivation, though this term more commonly refers to summer burrowing to escape heat.

Palustrine – The group of freshwater vegetated wetlands traditionally called by such names as marsh, swamp, bog, fen, and prairie. Palustrine wetlands may be situated shoreward of lakes, river channels, or estuaries; on river floodplains; in isolated catchments; or on slopes.

Palustrine Emergent Wetland (PEM) – A palustrine wetland dominated by herbaceous species, typically cattails, sedges and grasses, commonly referred to as a marsh.

Palustrine Forested Wetland (PFO) – A palustrine wetland dominated by trees, commonly referred to as a swamp.

Palustrine Scrub-Shrub Wetland (PSS) – A palustrine wetland dominated by shrubs.

pH – pH is the measure of the acidity or alkalinity of water. Pure water has a pH of 7.0. Water with a pH less than 7.0 is acidic and water with a pH greater than 7.0 is alkaline. Most marine organisms prefer pH in the range of 6.5 to 8.5. The pH level in water is critical to the survival of aquatic plants and animals.

Phosphorus – A main nutrient for the critical survival of aquatic species. It is necessary for metabolic processes which involve the transfer of energy, but in high levels in water bodies can degrade water quality.

Pollutant – Substance in water that can cause disease or harm to the environment.

Pollution – Change in the physical, chemical, radiological, or biological quality of a resource (air, land, or water) caused by man or due to man's activities that is injurious to existing, intended, or potential uses of the resource.

Principal Function or Value – A function or value that demonstrates the presence of a majority of the considerations/qualifiers within a given wetland.

Priority Natural Community – Communities designated by the Natural Heritage and Endangered Species Program (NHESP) as worthy of additional study, but not afforded regulatory protection.

Production Export – This function relates to the effectiveness of a wetland to produce food or usable products for human, or other living organisms.

Receiver – The listener or measuring microphone that detects the sound generated by the source.

Receiving Water – A body of water such as a stream, river, lake, or ocean, which receives stormwater or wastewater.

Recreation – A value that considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities.

Regional Jet (RJ) – A small turbojet or turbofan powered aircraft with 30 to 90 seats and a range of 1,000 miles or more.

Request for Determination of Applicability (RDA) – A written request made by any person to a conservation commission or the Massachusetts Department of Environmental Protection for a determination as to whether a site or work thereon is subject to the Massachusetts Wetlands Protection Act.

Riparian – An area of land that encompasses and is contiguous to a stream or other water body.

Riverfront Area (RA) – As defined in, 310 CMR 10.58(2)(a)3., RA is the area of land between a river's mean annual high-water line measured horizontally outward from the river and a parallel line located 200 feet away. Except in New Bedford, where it is 25 feet.

Riverine – Of and relating to rivers.

Riverine Lower Perennial Unconsolidated Bottom Wetland (R2UB) – A riverine lower perennial wetland with an unconsolidated bottom substrate.

Runoff – The portion of rainfall, melted snow, or other precipitation that flows across the ground surface to a drain, sewer, stream, lake, pond or river.

Runway Protection Zone (RPZ) – An area off the runway end to enhance the protection of people and property on the ground.

Runway Safety Area (RSA) – The area extending horizontally from the runway centerline and the end of the runway that must be flat, free of objects, and capable of supporting the weight of an airplane. The RSA is intended to allow aircraft to safely come to a stop if an aircraft overshoots, undershoots, or veers off of the runway.

Secondary Function or Value – A function or value that demonstates the presence of enough of the considerations/qualifiers to support its existence within a given wetland.

Section 404 of the Clean Water Act (Section 404) – The Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 401 *et seq.*) is the enabling legislation for protection of waters of the United States by the Army Corps of Engineers (USACE) and the Environmental Protection Agency (EPA).

Sediment – Fragmental mineral particles from soil and rock materials by the process of erosion and transported by water, wind, ice, and gravity.

Sediment/Shoreline Stabilization – This function relates to the effectiveness of a wetland to stabilize stream banks and shorelines against erosion.

Sediment/Toxicant/Pathogen Retention – This function reduces or prevents degradation of water quality. It relates to the effectiveness of a wetland as a trap for sediments, toxicants or pathogens.

Sewer – An underground pipe or drain used to carry liquid wastes from homes, office buildings, stores, institutions and industries. Sewers should not carry stormwater, except in a combined system.

Species of Special Concern – A Federal and state designation. The Federal classification applies to species for which further studies are warranted, though no regulatory protection is provided. The state classification refers to those species that biological research has documented to have suffered a decline that could threaten the species if the decline continues unchecked, or those species that occur in such small numbers or with such a restricted distribution that they could easily become Threatened. Special Concern Species are state-regulated. Species of Special Concern are considered "rare wildlife" under the Massachusetts Wetlands Protection Act and its implementing regulations (310 CMR 10.00 *et seq.).*

Species Richness - The number of species in a community.

State-listed Species – Plant and vertebrate and invertebrate animal species officially listed as Endangered, Threatened, or of Special Concern by the Massachusetts Division of Fisheries and Wildlife. Also known as rare species.

Stormwater Runoff – The portion of precipitation that flows toward stream channels, lakes, or other water bodies as surface flow.

Successional Stage/Community – A vegetational community that is part of a unidirectional sequence of communities from abandoned field to forest.

Surface Water – Water that is open to the atmosphere and subject to runoff. It can include lakes, ponds, rivers, or streams.

Surface Water Supply Watershed – The watershed that contributes to a public drinking water supply.

Threatened or Endangered Species Habitat – This value relates to the effectiveness of a wetland or associated water bodies to support threatened or endangered species.

Threatened Species – A Federal and state classification referring to any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range and any species declining or rare as determined by biological research and inventory and likely to become Endangered in the foreseeable future.

Till – Glacial drift composed of an unconsolidated, heterogeneous mixture of clay, sand, pebbles, cobbles, and boulders.

Time Above (TA) – A noise metric providing the duration (usually in minutes) during which sound levels exceeded specified A-weighted sound levels. Typically TA refers to the duration within a 24-hour period that the sound level is exceeded.

Total Maximum Daily Load (TMDL) – A TMDL (total maximum daily loading) is a calculation of the total maximum amount of a pollutant that a body of water can receive each day and still meet water quality standards (i.e., a pollution budget).

Total Suspended Solids (TSS) – A measure of the suspended solids in wastewater, effluent, or water bodies, determined by tests for "total suspended non-filterable solids."

Transmissivity – Transmissivity is the rate in cubic feet per day per foot at which water at the prevailing kinematic viscosity is transmitted through a unit width of an aquifer under a unit hydraulic gradient. More simply stated, transmissivity is the product of saturated aquifer thickness in feet and the average hydraulic conductivity in feet/day.

Turbidity – A cloudy condition in water due to suspended silt or organic matter.

United States Department of Agriculture (USDA) – A Federal agency responsible for administering programs that address farming issues.

United States Environmental Protection Agency (EPA) – A Federal agency responsible for administering programs that address environmental issues.

United States Fish and Wildlife Service (USFWS) – A Federal agency responsible for addressing the protection of fish and wildlife including rare, threatened, or endangered species. The USFWS plays an advisory role in the Section 404 regulatory program administered by the U.S. Army Corps of Engineers (USACE).

Value – Benefits that derive from either one or more functions and the physical characteristics associated with a wetland.

Vegetation Cover Type – A biological community characterized by certain vegetation characteristics, such as hardwood forest, mixed forest, shrub, herbaceous, and urban or residential managed vegetation**.**

Vegetation Management Plan (VMP) – The plan sponsored by the Massachusetts Aeronautics Commission (MAC) and implemented by the airport to maintain vegetation and clear obstructions within airspace protection zones, including Air Traffic Control Tower line of sight, Runway Approaches, and Transition and Primary Surfaces.

Vernal Pool – A temporary pool of surface water that provides breeding habitat for many wildlife species. Some amphibian and invertebrate species rely solely on vernal pools for successful breeding. Not a wetland resource area.

Watershed – A region or area that contains all land ultimately draining to a water course, body of water, or aquifer.

Wetland – Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Wildlife Habitat – This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge.

Notice of Project Change Form

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Commonwealth of Massachusetts
Executive Office of Environmental Affairs ■ MEPA Office

For Office Use Only ***Executive Office of Environmental Affairs***
MEPA Analyst:
Phone: 617-626-

NPC

Notice of Project Change

The information requested on this form must be completed to begin MEPA Review of a NPC in accordance with the provisions of the Massachusetts Environmental Policy Act and its implementing regulations (see 301 CMR 11.10(1)).

Project Name: New Bedford Airport Improvements		EOEA #: 10316
Street: 1569 Airport Road		
Municipality: New Bedford	Watershed: Buzzards Bay	
Universal Tranverse Mercator Coordinates: N 4615669, E337107, Zone 19	Latitude: 41-40-34.11N Longitude: 70-57-24.99W	
Status of project construction: 0%complete		
Proponent: City of New Bedford, New Bedford Regional Airport Commission		
Street: 1569 Airport Road		
Municipality: New Bedford	State: MA	Zip Code: 02746
Name of Contact Person From Whom Copies of this NPC May Be Obtained: Lisa A. Standley, PhD.		
Firm/Agency: Vanasse Hangen Brustlin, Inc. (VHB)	Street: 101 Walnut Street, P.O. Box 9151	
Municipality: Watertown	State: MA	Zip Code: 02472
Phone: 617-924-1770	Fax: 617-924-2286	E-mail: lstandley@vhb.com

In 25 words or less, what is the project change? The project change involves . . .

See full project change description beginning on page 3.

Date of ENF filing or publication in the Environmental Monitor: April 10, 1995

Was an EIR required? ☒Yes ☐No; if yes,
was a Draft EIR filed? ☒Yes (Date: February 23, 2005) ☐No
was a Final EIR filed? ☒Yes (Date: January 15, 2009) ☐No
was a Single EIR filed? ☐Yes (Date:) ☐No

Have other NPCs been filed? ☒Yes ☐No

(Date(s): March 25, 2003 for taxiway project only; February 26, 2007 for safety project only)

If this is a NPC solely for lapse of time (see 301 CMR 11.10(2)) proceed directly to "**ATTACHMENTS & SIGNATURES"** on page 4.

PERMITS / FINANCIAL ASSISTANCE / LAND TRANSFER

List or describe all new or modified state permits, financial assistance, or land transfers not previously reviewed: *The project will not require any new or modified permits or financial assistance. No land transfers are part of the project*.

Are you requesting a finding that this project change is insignificant? (see 301 CMR 11.10(6))
☒Yes ☐No; if yes, attach justification.

Are you requesting that a Scope in a previously issued Certificate be rescinded?
☐Yes ☒No; if yes, attach the Certificate

Are you requesting a change to a Scope in a previously issued Certificate? ☐Yes ☒No; if yes, attach Certificate and describe the change you are requesting:

Summary of Project Size & Environmental Impacts	Previously reviewed	Net Change	Currently Proposed
LAND			
Total site acreage	846 acres		846 acres
Acres of land altered	158.96 acres	-127 acres	32 acres
Acres of impervious area	15.5 acres	-14.1 acres	1.4 acres
Square feet of bordering vegetated wetlands alteration	3.48 acres	+3.85 acres	7.33 acres
Square feet of other wetland alteration	1.67 acres	-1.67 acres	0 acres
Acres of non-water dependent use of tidelands or waterways	N/A		N/A
STRUCTURES			
Gross square footage	N/A		N/A
Number of housing units	N/A		N/A
Maximum height (in feet)	N/A		N/A
TRANSPORTATION			
Vehicle trips per day	104	-104	0
Parking spaces	Conceptual planning: 90 spaces	-90	0
WATER/WASTEWATER			
Gallons/day (GPD) of water use	N/A		N/A
GPD water withdrawal	N/A		N/A
GPD wastewater generation/ treatment	N/A		N/A
Length of water/sewer mains (in miles)	N/A		N/A

Does the project change involve any new or modified:

1. conversion of public parkland or other Article 97 public natural resources to any purpose not in accordance with Article 97? ☐Yes ☒No

2. release of any conservation restriction, preservation restriction, agricultural preservation restriction, or watershed preservation restriction? ☐Yes ☒No

3. impacts on Estimated Habitat of Rare Species, Vernal Pools, Priority Sites of Rare Species, or Exemplary Natural Communities? ☒Yes ☐No –*Impacts Reduced*

4. impact on any structure, site or district listed in the State Register of Historic Place or the inventory of Historic and Archaeological Assets of the Commonwealth?
☐Yes ☒No; if yes, does the project involve any demolition or destruction of any listed or inventoried historic or archaeological resources? ☐Yes ☐No

5. impact upon an Area of Critical Environmental Concern? ☐Yes ☒No

If you answered 'Yes' to any of these 5 questions, explain below:

PROJECT CHANGE DESCRIPTION (attach additional pages as necessary). The project change description should include:

(a) a brief description of the project as most recently reviewed

(b) a description of material changes to the project as previously reviewed,

(c) the significance of the proposed changes, with specific reference to the factors listed 301 CMR 11.10(6), and

(d) measures that the project is taking to avoid damage to the environment or to minimize and mitigate unavoidable environmental impacts. If the change will involve modification of any previously issued Section 61 Finding, include a proposed modification of the Section 61 Finding (or it will be required in a Supplemental EIR).

The previous Notice of Project Change (February 26, 2007) identified a preferred alternative that would meet the project purpose while avoiding impacts to the Acushnet Cedar Swamp State Reservation and minimizing wetland impacts. The preferred alternative identified in that NPC would have provided standard Runway Safety Areas at both ends of the primary runway (Runway 5-23) by shifting the runway to the north, regrading the safety areas, and by constructing a tunnel to convey New Plainville Road under the northern safety area. This alternative would have required 5.16 acres of wetland fill, including fill within vernal pools and rare species habitat (the coastal swamp amphipod), as well as impacts to upland habitat potentially used by eastern box turtles. Since the NPC, the City of New Bedford and the FAA have determined that it is not practicable to construct the tunnel because of cost, and that it is not practicable to shift the runway north because of impacts to New Plainville Road and the Acushnet Cedar Swamp. The Airport has identified a modified Preferred Alternative, based on the Runway Safety Standards Alternative documented in the DEIR, that meets the project purpose ("**to enhance the safety of aircraft and passengers using New Bedford Regional Airport by improving the Runway Safety Areas for RW 5-23 to meet FAA safety standards**"), maintains the existing 5,000-foot runway length, avoids New Plainville Road, and minimizes wetland impacts. This Preferred Alternative, described in detail in the FEIR, would shift the runway 200 feet to the south, and construct 400-foot wide by 1,000-foot long runway safety areas at each end. This would result in an increase in wetland filling (to 7.33 acres), but would avoid filling within vernal pools and rare wetland wildlife habitat. The proposed project includes compensatory wetland mitigation at a ratio of 2:1 for the filled wetlands, and has been designed to fully comply with the Massachusetts Stormwater Standards. Shifting the runway to the south will also reduce noise levels in residential areas north of the Airport. The FEIR provides a detailed description of the measures taken to avoid damage to the environment and to minimize and mitigate unavoidable environmental impacts, and includes a draft Section 61 Finding.

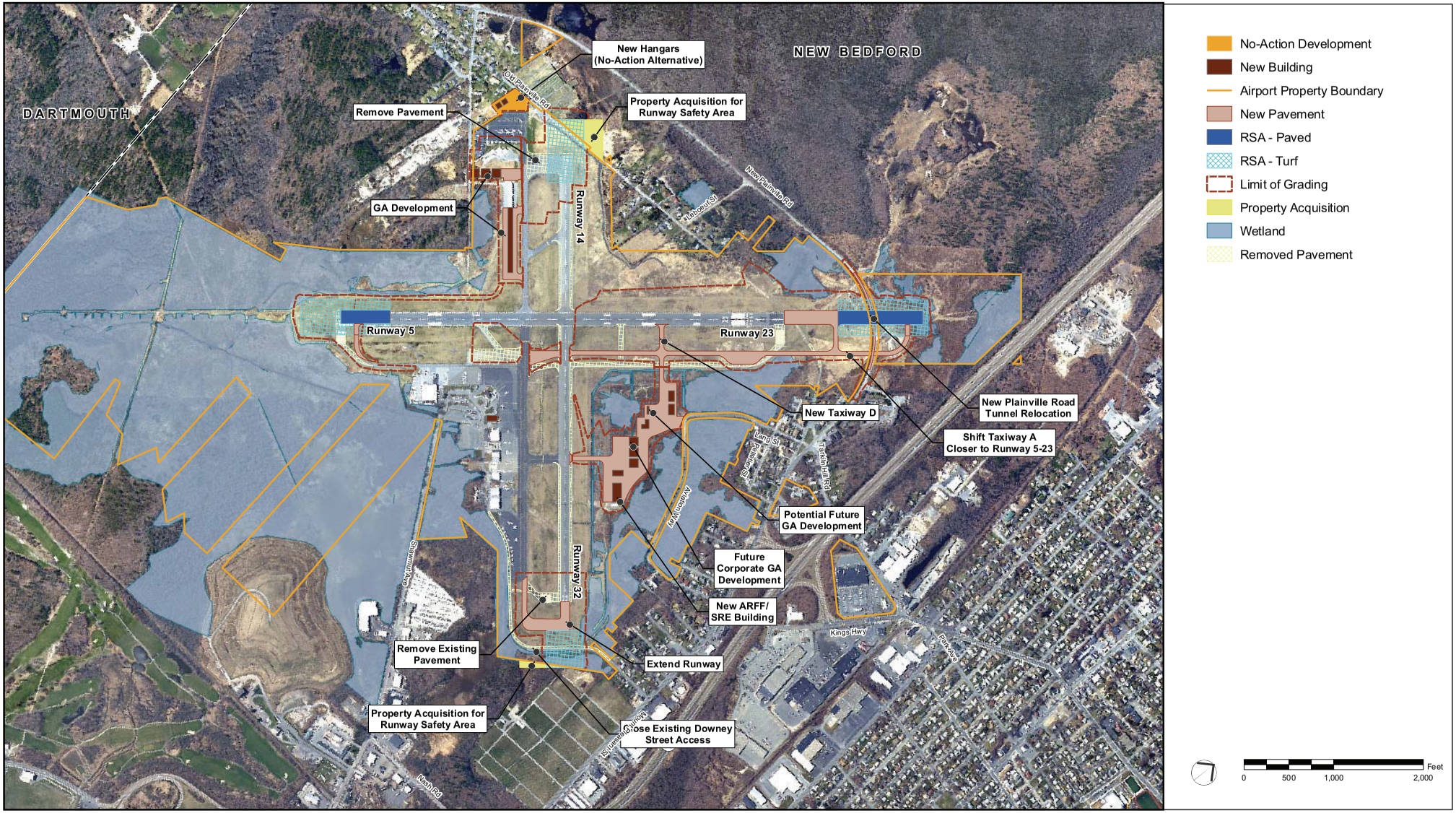
ATTACHMENTS & SIGNATURES

Attachments:

1. Secretary's most recent Certificate on this project - see Appendix A
2. Plan showing most recent previously-reviewed proposed build condition - see Figure NPC-1 (attached)
3. Plan showing currently proposed build condition - see Figure 3-1 in Volume 2
4. Original U.S.G.S. map or good quality color copy (8-1/2 x 11 inches or larger) indicating the project location and boundaries - see Figure 1-1 in Volume 2
5. List of all agencies and persons to whom the proponent circulated the NPC, in accordance with 301 CMR 11.10(7) - see Chapter 6, *Circulation List*

Signatures:

Date	Signature of Responsible Officer or Proponent	Date	Signature of person preparing NPC (if different from above)
		1/6/09	
Edward DeWitt		for Lisa A. Standley, PhD.	
Name (print or type)		Name (print or type)	
New Bedford Regional Airport Commission		Vanasse Hangen Brustlin, Inc.	
Firm/Agency		Firm/Agency	
1569 Airport Road		101 Walnut Street	
Street		Street	
New Bedford, MA 02746		Watertown, MA 02472-9151	
Municipality/State/Zip		Municipality/State/Zip	
508-991-6161		617-924-1770	
Phone		Phone	



New Bedford Regional Airport Improvements Project

Figure NPC-1
Alternative 1
Standard Safety Area

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Source: ASG, VHB, MassGIS

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1

Introduction and Background

1.1 Introduction

This Final Environmental Impact Statement/Final Environmental Impact Report (FEIS/FEIR) describes the proposed Safety Improvements Project at the New Bedford Regional Airport (Figure 1-1). This document was prepared by the Federal Aviation Administration (FAA) in consultation with the Massachusetts Aeronautics Commission (MAC). The project proponent is the New Bedford Regional Airport Commission. This combined FEIS/FEIR responds to the Secretary of EOEA's requirements under the Massachusetts Environmental Policy Act (MEPA) for a Final Environmental Impact Report, and fulfills the FAA's requirements for a Final Environmental Impact Statement under the National Environmental Policy Act (NEPA).

1.2 Project Description

The proposed project is limited to providing safety improvements to the primary runway, Runway 5-23.[1] Alternatives were evaluated that would meet the project purpose while minimizing impacts to sensitive environmental resources such as wetlands, state-listed rare species, and the Acushnet Cedar Swamp State Reservation.

Other projects evaluated in the DEIS/DEIR and NPC, including safety improvements to Runway 14-32, access changes, a new Airport Rescue and Firefighting (ARFF) facility, and new general aviation (GA) facilities, are unlikely to be funded within the next 5 years and are therefore not part of this planning process. However, this document evaluates all of these projects as part of the cumulative impacts of anticipated and required airport improvements. The Airport expects to prepare a Master Plan Update in 2011 that will evaluate the

1 Note that the New Bedford Regional Airport has two runways, Runway 5-23 and Runway 14-32. Runway 5-23 operates as two runways (Runway 5, for approaches from the south and departures to the north, and Runway 23, for approaches from the north and departures to the south) which have different airspace and navigational aids.

need for these and other improvements and facilities, and plan for their implementation. A separate NEPA/MEPA environmental review will be conducted for the Master Plan Update.

The proposed project evaluated in this FEIS/FEIR would reconstruct the existing primary Runway 5-23 to meet FAA safety standards. Chapter 3 of this document provides a more detailed description of the proposed project. The currently-proposed alternative was refined in response to public and agency comments on the Draft EIS, and does not differ substantially in environmental impact from the Runway Safety Standard Alternative (RSSA) evaluated in the DEIS. The FAA has therefore not prepared a Supplemental DEIS for this project.

The RSSA evaluated in the DEIS/DEIR included upgrading the runway safety areas at both ends of Runway 5-23, to construct standard 1,000-foot turf RSAs. The runway would have been lengthened slightly to provide a pavement length of 5,000 feet. To accommodate the RSA at the Runway 23 end, New Plainville Road would need to be relocated to the north. This alternative would have resulted in the loss of 5.63 acres of vegetated wetland for the Runway 5-23 safety improvements, including approximately 2,600 square feet of vernal pools.

Specific elements of the Preferred Alternative evaluated in the FEIS/FEIR include:

- Reconstructing each end of Runway 5-23 to retain 5,000 feet of usable runway length in either direction, with a total pavement length of 5,400 feet, and constructing a 1,000-foot long, 400-foot wide Runway Safety Area at each end. This includes:
  - Shifting RW 5 south by approximately 200 feet;
  - Constructing a new 1,000-foot long, 400-foot wide turf RSA at the RW 5 end;
  - Adding 200 feet of pavement at the north end of Runway 23;
  - Constructing a 1,000-foot RSA for the end of RW 23, including 400 feet of runway pavement and 600 feet of turf;
- Removing the existing VASI lights on RW 23;
- Installing Precision Approach Path Indicators (PAPIs) on RW 23;
- Relocating the MALSR on the ends of RW 5 and RW 23;
- Relocating or replacing the localizer on the RW 23 end;
- Extending Taxiway A to the RW 23 end;
- Extending Taxiway A to match the new RW 5 end;
- Clearing vegetation in accordance with a new Vegetation Management Plan to maintain FAA-required approach surfaces and visibility;

- Installing a new perimeter safety fence at the RW 5 end to reduce wildlife (deer and coyote) incursions onto the airfield;
- Constructing a drainage system to control and treat stormwater runoff in accordance with the Massachusetts Stormwater Policy Standards; and
- Constructing compensatory wetland and flood storage areas in accordance with the requirements of the Massachusetts Wetlands Protection Act regulations.

1.3 Project History

This section summarizes the project's background. Additional project history was available in Section 1.3 of the DEIS/DEIR.

A Draft Environmental Impact Statement/Draft Environmental Impact Report[2] (DEIS/DEIR) was released for public review in 2005, and the Certificate was issued on April 29, 2005. Changes to the project's purpose, need, and proposed activities were made in response to comments on the DEIS/DEIR by the public and by state and federal agencies. In accordance with the Massachusetts Environmental Policy Act (MEPA) Regulations (301 Code of Massachusetts Regulations (CMR) 11.10), the proponent filed a Notice of Project Change (NPC) on February 26, 2007 that responded to the Secretary's Certificate on the DEIR. The NPC included all relevant information requested by the scope outlined in the Certificate on the DEIR. On April 6, 2007, the Secretary issued a Certificate allowing the proponent to prepare a Final Environmental Impact Report (FEIR), and a scope detailing the requirements for that FEIR.

The purpose of the New Bedford Regional Airport Improvements Project was originally defined in the 1995 Environmental Notification Form (ENF) and 1998 Purpose and Need Statement[3] as, "To develop the New Bedford Regional Airport to serve the air cargo demand in Southeastern Massachusetts." Since that time, the aviation context in the region has changed significantly. As reported in the DEIS/DEIR and NPC, an evaluation of these and other current trends such as the continued growth in passenger demand, changes in the use of New England's airports, and population growth in southeastern Massachusetts, emphasized the need to improve, but not expand, airport facilities. The purpose of the project has evolved because of environmental concerns and issues, and because of changing financial constraints.

2 United States Department of Transportation, Federal Aviation Administration, et al., *New Bedford Regional Airport Improvements Project Draft Environmental Impact Statement, Draft Environmental Impact Report, and Draft Section 4(f) Evaluation*, February 2005.

3 *New Bedford Regional Airport Improvements Project; Purpose and Need Statement. 1998.* Submitted to the Army Corps of Engineers (USACE). Appendix C of the DEIS/DEIR contains copies of correspondence with the USACE accepting the Project's purpose.

1.3.1 DEIS/DEIR

The DEIS/DEIR redefined the purpose of the proposed project as, "To improve airport facilities in the Southeastern Massachusetts area in order to enhance the Southeastern Massachusetts region's aviation capacity, and to accommodate the long-term aviation demand in southeastern Massachusetts for passenger traffic, corporate jet traffic, air cargo, and general aviation (GA) traffic over the next 20 years." This purpose statement supported proposed activities that included improving each runway's safety areas, extending one of the runways, and other activities to increase the Airport's capacity to support general aviation operations. The DEIS/DEIR also clearly stated that the project purpose was not to promote air cargo operations, as had been stated in the original ENF.

This purpose, with supporting documentation on the need for improvements, was reviewed by state and federal resource agencies in March 2004. The purpose was subsequently adopted by the United States Army Corps of Engineers (USACE) as the 'basic project purpose' to be used in the Section 404 permitting process.

The Preferred Alternative in the DEIS/DEIR (February 2005) was the Airport Improvement Alternative (AIA) (Figure 1-2). The AIA proposed runway and taxiway extensions, airside facility and runway lighting improvements, and terminal and parking upgrades. Impacts were evaluated for three alternatives: the AIA, the Runway Standard Safety Alternative (RSSA), and the No-Action Alternative. The RSSA focused on safety area improvements only.

The Massachusetts Department of Environmental Protection (DEP), in their comment letter on the DEIS/DEIR (April 21, 2005) stated the purpose of the project did not meet the DEP's criteria of an "overriding public interest" and therefore could not meet the requirements for granting a variance under the Wetlands Protection Act or Water Quality Certification regulations.

1.3.2 Notice of Project Change

The Notice of Project Change was developed by the City of New Bedford after considering the DEP's position on the proposed runway extension, and other comments on the DEIS/DEIR. The City decided to reject the AIA but continue to advance the necessary safety improvements.

The revised purpose of and need for proposed activities was defined in the NPC as to enhance the safety of aircraft and passengers using New Bedford Regional Airport by improving the RSAs for Runways (RW) 5-23 and 14-32 to meet FAA safety standards. The purpose of the project was also defined as to provide aircraft hangar, apron, and support facilities for passenger, corporate jet, and general aviation users in order to meet current and future aviation demand.

Safety improvements are also important because the New Bedford Regional Airport is a Non-Hub Primary commercial service airport, as defined in the 2009-2013 *National Plan of Integrated Airport Systems* (NPIAS) prepared by FAA. The NPIAS cites, as one of FAA's guiding principles, that "airports shall be safe and efficient, located at optimum sites, and developed and maintained to appropriate standards."

As described in the NPC, the New Bedford Airport Improvements Project was defined as Runway Safety Area Improvements and Rehabilitation of Runway 5-23 and Runway 14-32; and new Aircraft Rescue and Fire Fighting (ARFF)/General Aviation (GA) facilities. These projects were designed to:

- Avoid impacts to Acushnet Cedar Swamp State Reservation;
- Minimize wetland and floodplain impacts;
- Minimize threatened and endangered species impacts;
- Provide detailed information on proposed mitigation measures; and
- Have a purpose and need that could satisfy the variance requirements for the Massachusetts Wetlands Protection Act (WPA).

Three new Runway Safety Area (RSA) alternatives were developed that focused on enhancing the safety of the Airport and meeting FAA safety standards while minimizing potential impacts to the environment. The NPC fully described and evaluated these safety alternatives. To minimize wetland impacts, each of the NPC alternatives included relocating part of New Plainville Road to an underpass beneath the Runway 23 (north) Runway Safety Area.

On April 6, 2007 the Secretary issued a Certificate on the Notice of Project Change that identified the additional information to be provided in the Final EIR (see Appendix A).

Following the public review of the Notice of Project Change, the City of New Bedford determined that it was not reasonable or practicable to construct the New Plainville Road tunnel due to funding constraints, and that the tunnel was not fiscally prudent. In addition, the proponent has determined that, due to funding constraints, the proposed project would be limited to providing safety improvements and rehabilitation of the primary runway, Runway 5-23.

1.4 Requirements of Secretary's Certificate

After the public comment period for the NPC, the Secretary issued a Certificate (Appendix A) requiring the project sponsor to prepare a Final EIR. This FEIR addresses each requirement of the Secretary's Certificate, as outlined in Table 1-1. Detailed responses to the Secretary's Certificate are also provided in Appendix A.

Table 1-1 Requirements of the Secretary's Certificate on the NPC issued April 7, 2007

Requirement	Reference in FEIR
Wetlands	
The FEIR should respond to DCR's comments (concerning the potential impacts to wetlands and uplands adjacent to the Acushnet Cedar Swamp State Reservation) and include a discussion of the proposed tunnel's potential impacts to surface and groundwater conditions located near the Acushnet Cedar Swamp.	No longer proposed
Identify additional opportunities for project design refinements that would result in additional reductions in wetlands impacts.	Section 4.4
Wetlands Replication Plan	
Provide additional information pertaining to the sequencing of the proponent's wetlands mitigation plan as it may relate to the proposed project construction phasing.	Section 4.4
Include cost estimates for the individual components of the mitigation plan, identify funding sources, and identify parties responsible for implementing the plan's individual mitigation components.	Chapter 5
Explain how the proposed mitigation program funding was calculated.	Section 4.4
Threatened and Endangered Species	
The proponent should work closely with NHESP to evaluate impacts to the Eastern box turtle habitat.	Section 4.5
Identify, on an appropriately-scaled map, land areas that may be designated as protected habitat translocation areas, habitat management areas, or habitat protection areas.	Section 4.5
Include a copy of the proponent's vegetation management plan and a detailed analysis of its impacts on the affected rare species habitats.	Section 4.5
Include a habitat management plan for all existing and proposed grassland and shrubland areas located on the Airport that reflects current conditions and knowledge of rare species. The habitat management plan should include a detailed monitoring plan that will enable the proponent and NHESP to evaluate the success of the proponent's proposed habitat mitigation activities.	Section 4.5
Include an investigation of additional opportunities to refine the proponent's preferred RSA alternative to further reduce the extent of proposed wetland fill and impacts to rare species habitat within the project area, and provide detailed plans for impact minimization and net-benefit mitigation.	Section 4.5
Respond to the comments and recommendations provided by NHESP.	Section 4.5, Appendix C
Stormwater and Drainage	
Provide a detailed discussion of the consistency of the proposed airport drainage and stormwater management system with the MassDEP Stormwater Management Guidelines for the 2, 10, and 100-year storm events.	Section 4.6
Include a drainage plan for the proponent's preferred RSA project alternative.	Sections 4.3, 4.6
Provide sufficient information on the location and types of proposed stormwater management facilities and structural BMPs included in the proponent's stormwater management plan to collect, treat, and provide total recharge of stormwater.	Section 4.3
The conceptual drainage plan should analyze both direct and indirect impacts on wetland resource areas.	Section 4.3
Address the Airport improvement project's potential impacts to the groundwater recharge areas serving the existing and proposed public and private water supplies in the Town of Dartmouth.	Section 4.3

Table 1-1 Requirements of the Secretary's Certificate on the NPC issued April 7, 2007 (continued)

Requirement	Reference in FEIR
Stormwater and Drainage (continued)	
The proponent should give serious consideration to installing one or more monitoring wells downgradient of the project site to monitor and evaluate the impacts of the proponent's stormwater management plan on adjacent wetland resource areas and local Town of Dartmouth groundwater resources.	Section 4.3
Include a copy of the proponent's Stormwater Pollution Prevention Plan (SWPPP) and Installation Spill Contingency Plan (ISCP) covering current operations.	Section 4.3
Respond to comments regarding the potential hydrologic impacts of the proposed tunneling of a portion of New Plainville Road on the Atlantic White Cedar Swamp natural wetland community located adjacent to the project site.	No longer proposed
Further investigate feasible methods of reducing impervious surfaces located within the Airport project site. Provide additional information comparing and contrasting the potential environmental impacts and life-cycle costs associated with the use of Engineered Materials Arresting Systems (EMAS) versus standard runway pavement in the construction of the proposed RSAs.	Sections 3.1, 3.2
Consult with DCR to consider incorporating low impact development (LID) measures such as permeable surface parking materials and landscaped bioretention areas to significantly reduce the total amount of impervious area and stormwater runoff from the proposed airport improvement project.	Section 4.3
Traffic	
Discuss the need for any traffic mitigation for the preferred RSA project alternative, including signalization, signage, and roadway improvements, for project area roadways located in the Town of Dartmouth and City of New Bedford.	Chapter 5
Consult with the Town of Dartmouth, City of New Bedford, MassHighway, and SRPEDD on transportation issues.	Chapter 5
Noise and Vibration	
Include a discussion of the proponent's commitment to regularly monitor and reevaluate the New Bedford Regional Airport noise environment to identify changes in the 65 dB DNL contour over time. The FEIR should describe the procedure for recording and addressing noise complaints from the community.	Chapter 5
Construction Period Impacts/Coordination	
Encourage the proponent to commit to reseed and replant those portions of the construction corridor located adjacent to Article 97 lands and endangered species habitat with appropriate native species of grasses, woody shrubs, and trees.	Chapter 5
Consult with MassDEP, NHESP, DCR, and the New Bedford Conservation Commission in the development and scheduling of reseeding and replanting activities.	Chapter 5
Require contractors to retrofit diesel-powered equipment with emissions controls such as particulate filters or traps, and use low-sulfur diesel fuel pursuant to MassDEP's Clean Construction Equipment Initiative.	Chapter 5
Mitigation/Section 61	
Include a proposed Section 61 Finding for all state permits required with a clear commitment to mitigation, costs, parties responsible, and schedule for implementation.	Chapter 5

1.5 Consultation and Coordination

This FEIS/FEIR was prepared based on coordination and consultation with federal, state, and local agencies, elected officials, community members, and other interested parties. Coordination was based on previous agency and public involvement conducted during the preparation of the DEIS/DEIR and NPC. This chapter discusses the public involvement and agency coordination that has occurred since the DEIS/DEIR and NPC were published. The basis for subsequent coordination was to inform interested parties of the proposed changes to the project and obtain information related to these changes.

1.5.1 Public Involvement

The FAA conducted public outreach to obtain information relevant to the changes proposed in this FEIS/FEIR from interested parties and agencies. The FAA used the coordination conducted as part of the DEIS/DEIR as their basis for this outreach. This involved coordination with local government, elected officials, and agencies, as well as non-governmental organizations (NGOs) and other interested parties.

When the DEIS/DEIR was published, the FAA conducted a public hearing and public information meetings. Information related to the project was available through public notifications and a project website. The public comment period yielded many comments regarding the alternatives analyzed in the DEIS/DEIR. These comments and FAA's responses are included as Appendix C.

Continued public outreach is important in order to inform the public that the project has changed since the DEIS/DEIR. Outreach during the preparation of this FEIS/FEIR has included discussions with the City of New Bedford's mayor, Mayor Scott Lang, the New Bedford City Council, and the New Bedford Conservation Commission, as well as other interested parties such as the New Bedford Chamber of Commerce and the New Bedford CEO Group. The proponent has also coordinated with the Humane Society of the United States, the Massachusetts Audubon Society, and the Coalition for Buzzards Bay.

The NPC was released for public review and circulated to all persons who had commented on the DEIR. The City of New Bedford held two public meetings on March 12, 2007, during the public comment period. The NPC was posted on the Airport's website (http://www.newbedfordairport.com). A total of 12 persons, including state and federal agencies, non-governmental organizations, and private citizens, commented on the NPC.

This FEIS/FEIR has been made available for public review and comment as required by MEPA and NEPA. A notice of availability was published in the Federal Register on January 23, 2009, and in the Environmental Monitor on

January 23, 2009. A public information meeting/workshop is scheduled during the public review period to provide information on the proposed project and enable the public to ask questions about potential impacts.

1.5.2 Consultation and Coordination

In order to answer all comments and the requests of permitting agencies, as well as inform all interested parties that the project has changed, the FAA conducted additional consultation for this FEIS/FEIR.

As described in Chapter 6 of the DEIS/DEIR, local, state, and federal agencies were consulted throughout the environmental study process. Additional consultation with a majority of these entities has continued. These include:

- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency (EPA)
- U.S. Fish and Wildlife Service (USFWS)
- U.S. Department of Agriculture Wildlife Services
- Department of Environmental Protection
- Department of Conservation and Recreation
- Massachusetts Executive Office of Energy and Environmental Affairs (EEA)
- MEPA Office
- Natural Heritage and Endangered Species Program
- New Bedford Conservation Commission
- Town of Dartmouth
- Massachusetts Audubon Society
- Massachusetts Association of Conservation Commissions
- Buzzards Bay Coalition

These parties have provided comments regarding the project's revised purpose and need, range of alternatives, environmental impacts, and mitigation proposal.

Coordination Meetings that occurred since the DEIS/DEIR include:

- December 7, 2005 (Purpose and Need Meeting – DEP)
- October 17, 2006 (Alternatives Meeting – state and federal agencies, Conservation Commission)
- November 3, 2006 (MEPA Office)
- November 8, 2006 (Natural Heritage and Endangered Species Program)
- January 23, 2007 (Mitigation meeting – state and federal agencies, Conservation Commission)

- February 21, 2008 (Revised Alternatives and Project Purpose – state and federal resource agencies, Conservation Commission)
- August 22, 2008 (Natural Heritage and Endangered Species Program)
- September 18, 2008 (Mitigation measures – state and federal agencies, Conservation Commission)
- October 16, 2008 (Mitigation measures – state and federal agencies, Conservation Commissions)
- November 6, 2008 (Mitigation measures, Corps of Engineers)
- December 16, 2008 (Department of Conservation and Recreation)

1.6 Permits and Approvals

Two alternatives are considered in detail in this FEIS/FEIR: the No-Action Alternative and the Preferred Alternative. The No-Action Alternative would require updating the existing vegetation management at the Airport. The Preferred Alternative would require local, state, and federal agency permits or approvals, as listed in Table 1-2, as it would result in the disturbance of land and impacts to wetlands and state-listed rare species, as described in Chapter 4 of this FEIS/FEIR.

Table 1-2 Required Permits and Approvals

Agency	Approval or Permit
U.S. Army Corps of Engineers	Section 404 Permit
U.S. Environmental Protection Agency Region I	NPDES Permit for stormwater discharges and construction period
MA Department of Environmental Protection	Variance, MA Wetlands Protection Act Section 401 Water Quality Certificate
Massachusetts Aeronatical Commisson	State funding approval Section 61 Finding
MA Natural Heritage and Endangered Species Program	Conservation and Management Permit under the Massachusetts Endangered Species Act
MA Coastal Zone Management Office	Coastal Zone Management Consistency Determination

1.7 Proposed Federal Actions

This EIS is required because the proponent is seeking FAA approval of the *Airport Layout Plan* (ALP) and potential federal funding for elements included in that ALP. This is a major federal action that would result in significant

environmental impacts, and therefore requires review pursuant to NEPA, as described in FAA Order 5050.4B.

FAA directives require that this EIS include evidence and required consultation to support any determinations applicable to the approval of the ALP and the potential of federal funding. FAA determinations that may be required for the proposed project include:

- Consistency with existing plans for development of the area;
- Finding of conformity with respect to the Clean Air Act (CAA) and the State Implementation Plan (SIP);
- Determination of effects upon safe and efficient utilization of airspace;
- Determination under U.S. Department of Transportation (DOT) Section 4(f) policy on lands, wildlife and waterfowl refuges, and historic sites;
- Consistency with the approved state Coastal Zone Management Program (CZMP); and
- ALP approval declaration. FAA's approval of the ALP will incorporate all the physical elements associated with the selected alternative.

The No-Action Alternative would require state agency permits and approvals for vegetation management within wetlands, as regulated by DEP under 310 CMR 10.53(n). This alternative would not require construction nor result in any other impacts to land, water, air quality, or other regulated resources. The Preferred Alternative would require state and federal agency permits or approvals, as listed in Table 1-2, as these alternatives would result in disturbance of land and impacts to water resources and threatened and endangered species habitat, as described in Chapter 4 of this FEIS/FEIR.

Those portions of the ALP that depict the proposed action and connected actions would be reviewed by FAA to:

- Assess operational factors affecting the safe and efficient control of air traffic;
- Establish conformance with FAA design criteria, federal regulations, and grant agreements (Federal Aviation Regulations [FAR] Parts 77, 139, 150, 152, 157, and 169); and
- Determine conformance with NEPA, the Council on Environmental Quality (CEQ) regulations, and other applicable federal environmental requirements, and ensure adequate mitigation of significant impacts, if any.

Appropriate federal findings would be required prior to FAA approval of the above-listed portions of the ALP, funding of the proposed action, and associated air traffic and airspace management actions.

1.8 Contents of this Final EIS/EIR

This FEIR/FEIS describes the requirements of the Secretary's Certificate, how the project changed since the DEIS and the subsequent Notice of Project Change, the Preferred Alternative, resource impacts that would occur, and the additional information and analysis requested in the Certificate.

This FEIS/FEIR identifies the proponent's Preferred Alternative, a modification of the DEIS/DEIR Runway Safety Standards Alternative (RSSA), which does not differ substantially in environmental impacts from the original RSSA alternative evaluated in the DEIS, or the alternatives evaluated in the NPC.

This FEIS/FEIR is comprised of six chapters. This document does not include information on environmental resources for which there are no changes to the ambient environment or no changes to impacts since the DEIS/DEIR.

- **Chapter 1, Introduction and Background,** provides an introduction to the proposed project and identifies the project's proponents. This chapter describes the history of the proposed project and the changes made to the improvements planned for the Airport since the DEIS and NPC. Chapter 1 also outlines the requirements of the Secretary's Certificate.
- **Chapter 2, Purpose and Need,** describes existing airport facilities and operations, and describes the current role of the Airport in the regional transportation system. Chapter 2 includes a description of the project's purpose and need and how this project is in the public interest.
- **Chapter 3, Alternatives Considered,** describes the alternatives considered and the screening process used to eliminate alternatives that did not meet the proposed project's purpose, or were not reasonable or feasible. This chapter describes the Preferred Alternative.
- **Chapter 4, Affected Environment and Environmental Consequences,** describes the potential adverse impacts and benefits to resources only for which the ambient environment has changed or impacts have changed.
- **Chapter 5, Summary of Proposed Mitigation and Proposed Section 61 Findings,** includes a description of the mitigation measures required during the construction phase and those mitigation measures to be incorporated into the design of the proposed project in order to reduce impacts during operation. The chapter also contains the Proposed Massachusetts Section 61 Finding required under MEPA.
- **Chapter 6, Circulation List,** lists the agencies, organizations, and persons who received copies of this FEIS/FEIR, in accordance with MEPA and NEPA requirements.
- **Appendix A** contains a copy of the Secretary's Certificate on the NPC and individual responses to the Secretary's comments.

- **Appendix B** contains the comment letters on the NPC and individual responses to those comments.[4]
- **Appendix C** contains a summary of the comment letters on the DEIS and FAA's narrative responses to the comments.
- **Appendix D** contains the comment letters on the DEIS/DEIR.
- **Appendix E, Noise Analysis,** contains additional supporting information on the noise analysis conducted for this project, including detailed methodology and results of the technical analyses.
- **Appendix F, Stormwater Pollution Prevention Plan,** contains a copy of the Airport's Stormwater Pollution Prevention Plan (SWPPP), which addresses the current management of stormwater at the Airport.
- **Appendix G, Vegetation Management Plan**, contains the new Yearly Operating Plan (2008-2012) for New Bedford Regional Airport.

4 Note that the NPC contained responses to comments on the DEIR.

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2

Purpose and Need

This chapter documents the need for safety and facility improvements at the New Bedford Regional Airport and substantiates the revised statement of project purpose, which is: **To enhance the safety of aircraft and passengers using New Bedford Regional Airport by improving the Runway Safety Areas for RW 5-23 to meet FAA safety standards.** The New Bedford Regional Airport does not have adequate RSAs for any of its runway ends. Improving the RSAs on Runway 5-23 would fulfill a public need to improve the safety and operational efficiency of the Airport.

2.1 Purpose and Need Statement and Regulatory Context

The Council on Environmental Quality (CEQ) regulations that implement the National Environmental Policy Act (NEPA) require in Section 1502.13 that an Environmental Impact Statement (EIS):

…briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action.

State and federal resource agencies responsible for issuing permits required by the proposed action each require a definition of the project purpose in order to evaluate alternatives or to meet criteria for issuing a permit. The revised statement of project purpose may be used by these resource agencies for permitting purposes.

The U.S. Army Corps of Engineers (USACE), in evaluating applications for a Clean Water Act (CWA) Section 404 Permit, is required to comply with the "Section 404(b)(1) Guidelines" (40 CFR Part 230.10). These guidelines state, "An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." The USACE, in consultation with the U.S. Environmental Protection Agency (EPA) and the U.S. Fish and Wildlife Service (USFWS),

determines the "basic project purpose" used to evaluate the alternatives analysis presented in the CWA Section 404 application. The USACE adopted this revised statement as its Basic Project Purpose on April 1, 2008.

The DEP, in evaluating applications for an Order of Conditions (OOC) under the variance process, 310 CMR 10.05(10)(b)(3), must determine that "the variance is necessary to accommodate an overriding community, regional, state, or national public interest." Fulfilling the need for the proposed action would serve the community's interest in safe runways and safe airport operations. DEP has reviewed this proposed purpose and need statement.

The DEP's regulations for issuance of Water Quality Certification, pursuant to Section 401 of the CWA, are similar to the requirements of the USACE. Massachusetts regulations (314 CMR 9.06) state that "no discharge shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic environment," and define a practicable alternative using the same language as the USACE. If a proposed project would require filling an Outstanding Resource Water (ORW) (a category that includes vernal pools), a variance from the regulations would be required. A variance is allowed (314 CMR 9.08) if it is "justified by an overriding public interest." The public interest is to provide adequate safety areas at runway ends.

The Massachusetts Natural Heritage Program (NHESP), for issuance of a Conservation and Management Permit, allows the Director (of the Division of Fisheries and Wildlife) to permit the taking of a species on the state list provided there is a long-term net benefit to the conservation of the impacted species. This permit requires that the applicant avoid, minimize, and mitigate impacts to state-listed species to the greatest extent possible, and requires NHESP to determine that an insignificant portion of the local population will be impacted. The regulations also require the applicant to adequately address alternatives to both temporary and permanent impacts. Alternatives can only be addressed in the context of the project's purpose and need.

2.2 Airport Facilities and Operations

The New Bedford Regional Airport is the regional airport serving southeastern Massachusetts. Scheduled commercial passenger service is provided by a regional carrier, Cape Air/Nantucket Airlines. The Airport also supports charter service, general aviation (GA), flight training, aircraft repairs, and corporate jet/turboprop services. This section describes the existing airport facilities and operations.

The National Plan of Integrated Airport Systems (NPIAS), which is prepared by the FAA and updated and published every two years, identifies public use airports considered necessary to provide a safe, efficient, and integrated national

system of airports that meet the needs of civil aviation, national defense, and the postal service. Under NPIAS, airports are categorized into main groups: general aviation and commercial service. New Bedford Regional Airport is classified as a "primary commercial service airport." Currently, the Airport enplanes approximately 15,000 passengers annually.

Being a primary commercial service airport does not exclude the Airport from robustly supporting general aviation (GA). Indeed, New Bedford Regional Airport supports a wide range of general aviation activities including being a flight training center for the entire New England region. Bridgewater State College aviation training academy is located at New Bedford Regional Airport. At any given time, 150 students are enrolled in the program. Additionally the Airport is home to two private flight schools typical of those commonly found at active GA airports.

2.2.1 Airfield

New Bedford Regional Airport has two runways, Runway 5-23 and Runway 14-32 (Figure 2-1). Runway 5-23 is 4,997 feet long and is the Airport's primary runway. Runway 14-32 is the Airport's visual crosswind runways and is 5,000 feet long. These two runways function as four directional runways. Runway 5 (northeast) is the only precision instrument runway; it also serves non-precision approaches. Runway 23 (southwest) is the most frequently used runway because of a prevailing southwesterly wind. It serves non-precision instrument approaches. In order to provide the necessary clearance from its attendant Medium Intensity Approach Lighting System With Runway Alignment Indicator Lights (MALSR), the RW 23 threshold is displaced by 400 feet;[1] only 4,598 feet are available for landings on RW 23. Neither Runway 14 nor 32 has an instrument approach for straight-in landings and aircraft desiring to land on Runway 14 or 32 during instrument meteorological conditions must fly an approach to either Runway 5 or Runway 23 and circle visually to land. None of the runways has an FAA approved or standard runway safety area (RSA) mandated for primary commercial service airports not later than 2015.

Runway safety areas are designed and engineered to accommodate undershoots, overshoots, and runway excursions and to minimize the likelihood of personal injury or death, as well as to minimize aircraft and property damage. As identified by the FAA, the absence of a runway safety area to the primary runways poses an unnecessary safety risk to people and property. Due to the fact that RW 5-23 (the primary runway) is less than 5,000 feet long, some charter and corporate jet pilots opt to use RW 14-32 to meet operational mandates and insurance requirements, even though RW 14-32 does not meet FAA's RSA

1 A displaced threshold is a threshold that is located at a point on the runway other than the designated beginning of the runway (end of the paved surface). The portion of pavement behind a displaced threshold may be available for takeoffs in both directions and landings from the opposite direction.

standards and does not provide optimal wind coverage. Jet pilots use RW 14-32 because it is published at 5,000 feet long, even though its safety areas are deficient. This decreases the utility of the Airport because, in many wind conditions, pilots are not able to use RW 14-32.

The airfield has six taxiways. Taxiways A and B are full-length taxiways parallel to RW 5-23 and RW 14-32, respectively. Taxiways C, D, E, and F connect the runways with their parallel taxiways.

2.2.2 Terminal

The terminal area includes the passenger terminal building, the aircraft parking apron, the automobile parking area, the Air Traffic Control Tower, the Airport's ARFF/SRE storage and maintenance building, and outside equipment storage areas. The terminal building is 10,000 square feet in size. Passenger services such as airline ticketing, passenger waiting, automobile rental, restaurant, and public restrooms are in the terminal. Airport management and FAA Air Traffic Control Tower (ATCT) offices are also in this building. There are no baggage claim facilities; passengers claim their bags on the apron.

The apron area has eight scheduled airline gate positions and one gate position used for either aircraft experiencing mechanical problems or for GA aircraft that need access to the airline terminal building.

A parking lot west of the terminal provides 645 short- and long-term parking spaces. In addition, there is a parking area south of the terminal building that accommodates 10 employee parking spaces and an area south of the terminal for 15 rental cars.

2.2.3 GA Facilities

The Airport has 15 T-hangars,[2] eight fixed base operator (FBO) hangars, and one private hangar. Currently, hangar space is not available and there is a waiting list for space as it becomes available. The Airport has 136,500 square feet of apron area and provides 116 tiedowns.[3]

Three FBOs own and operate the fuel storage facilities at the Airport. Mobile fuel trucks fuel aircraft at the aircraft parking positions. There are three aviation gas (Avgas) tanks: two with 10,000-gallon capacity and one with 15,000-gallon capacity for a total capacity of 35,000 gallons of Avgas. There are four Jet A fuel tanks: one 10,000-gallon tank, one 15,000-gallon tank, and two 10,000-gallon tanks for a total capacity of 45,000 gallons of Jet A fuel. All fuel tanks are located

2 A type of hangar used to store individual GA aircraft (as compared to a conventional hangar where multiple aircraft are stored). T-hangars can be 'nested' nose-to-tail to maximize capacity of hangar used for GA aircraft.
3 Tiedowns refer to outdoor aircraft parking spaces where the aircraft are physically tied down to the pavement.

above ground. Approximately 12,000 gallons of Avgas and 15,000 gallons of Jet A are delivered to the Airport each month. Due to the competition among FBOs, the Airport currently has some of the lowest jet fuel prices on the east coast, which has contributed to the number of corporate jets that now use New Bedford Regional Airport.

2.2.4 Navigational Facilities

The Airport has one precision and four non-precision published instrument approaches. RW 5 is the only runway equipped with a precision Instrument Landing System (ILS) approach, which allows aircraft to descend to as low as 200 feet above ground level (AGL) before visual contact must be established with the Airport, in visibility as low as one-half mile.

RW 5-23 is equipped with a High Intensity Runway Lighting (HIRL) system and RW 14-32 is equipped with a Medium Intensity Runway Lighting (MIRL) system. RWs 23 and 32 are equipped with Visual Approach Slope Indicator lights (VASI). RW 32 also has Runway End Identifier Lights (REIL). RWs 5 and 23 are equipped with a 2,400-foot Medium Intensity Approach Light System with Runway Alignment Indicator Lights (MALSR). The MALSR extends approximately 2,400 feet from the landing threshold at each runway end.

2.2.5 Operations

Scheduled airline service at the Airport peaked in the 1980s immediately after airline deregulation. Provincetown-Boston Airlines (PBA) served Nantucket, Martha's Vineyard, and New York City. Annual passenger levels reached 102,880 in 1984. The success of PBA was attributed to high levels of service, flight frequencies, and varied destinations. PBA ceased operations at New Bedford in 1989 due to the economic slowdown of the late 1980s. By 1992, Cape Air was the only airline serving the Airport and it currently serves approximately 30,000 passengers annually. The only cargo handled at the Airport is the limited amount of freight carried to the islands by Cape Air. Aircraft operations totaled 92,800 in 2004, a 40 percent increase over 2002 levels.[4] The number of aircraft operations for 2007 totaled 64,389. The decrease was the result of Delta Connection Academy ceasing operations at the Airport. Bridgewater State College (BSC) recently reestablished the flight academy and operations should return to 90,000 – 100,000 annually as soon as BSC begins operations.

Companies with business interests in the New Bedford area, such as Flex Jet, Wal-Mart, Coca Cola, Pepsi, Kitty Hawk Freight, Johnson and Johnson, Cox Cable, and Boston Scientific, all currently use the Airport. Pilots that fly from Europe to the U.S. have stated their preference to use New Bedford because of their ease with

4 New Bedford Regional Airport Records.

U.S. Customs and the Airport's low fuel prices. The New Bedford Airport has a U.S. Customs representative on-call at the facility. In 2002, the Delta Connection Academy, in conjunction with Bridgewater State College, opened a regional flight-training academy at the Airport. This flight training and education center, which was the only training facility of its kind in the New England region, increased the total number of Airport operations. Although the Delta Academy ceased operations in 2007, Bridgewater State College has resumed the flight training program in the fall of 2008, with approximately 150 students enrolled in the program. Students will return in late fall or early 2009 pending FAA recertification of the program. BSC has 7 aircraft at the Airport now and will expand to 11 when the students return.

The number of aircraft based at New Bedford Regional Airport increased from approximately 79 aircraft in 1996 to 135 aircraft in 2006 (with Delta Academy), to 111 in 2008.

2.2.6 Runway Safety Areas and Airfield Service Facilities

The RSAs, Runway Object Free Areas (OFAs) and safety service facilities are in need of improvements. The Airport is also in need of adequate airfield service facilities.

Runway Safety Areas

The FAA has developed object clearing standards in order to help ensure the safe operation of aircraft on or near the ground. Objects that remain in an airport's surfaces described below, other than those needed for air navigation, create a safety hazard for both the aircraft and persons inside the aircraft. The FAA[5] defines the object clearing criteria as:

- **Runway Safety Area (RSA)** – A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot (an aircraft landing short of the runway), overshoot (an aircraft leaving the far end of the runway), or excursion from the runway. The RSA should be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations.
- **Runway Object Free Area (OFA)** – A two-dimensional ground area surrounding the runway. The OFA clearing standard precludes parked airplanes and objects except those whose location is fixed by function such as a navigational aid.

5 Dimensional criteria are further described in FAA Advisory Circular 150/5300-13, as amended.

- **Runway Obstacle Free Zone (OFZ) –** The runway OFZ is a defined volume of airspace centered above the runway centerline. The runway OFZ is the airspace above a surface whose elevation at any point is the same as the elevation of the nearest point on the runway centerline. The OFZ clearing standard precludes taxiing and parked aircraft and object penetrations except for navigational aids placed in the OFZ because of their function.
- **Runway Protection Zone (RPZ) –** The RPZ's function is to enhance the protection of people and property on the ground. Such control includes clearing RPZ areas, and maintaining them clear, of incompatible objects and activities. Land uses prohibited from the RPZ are residences and places of public assembly, such as schools, hospitals, office buildings, and shopping centers. The RPZ dimension for a particular runway end is a function of the type of aircraft and approach visibility minimum associated with that runway end.

The runways' existing RSA and OFA distances are:

Runway 5-23

- 348-foot RSA at the south end (RW 5)
- 870-foot RSA at the north end (RW 23)
- 960-foot OFA at the south end (RW 5)
- 343-foot OFA at the north end (RW 23)

Runway 14-32

- 257-foot RSA at the east end (RW 32)
- 490-foot RSA at the west end (RW 14)
- No OFA at the east end (RW 32)
- 490-foot OFA at the west end (RW 14)

FAA determines dimensional standards based on the "critical" or "design" aircraft that either operates or is forecasted to operate at an airport. The application of object clearing and design standards and criteria is necessary in order to meet FAA safety standards.

Based on the critical design aircraft that currently uses New Bedford Regional Airport (the Cessna Citation X), FAA requires 1,000-foot long RSAs and OFAs on each end of RW 14-32 and RW 5-23. Consequently, none of the existing RSAs comply with FAA requirements.

2.3 Regional and Aviation Industry Trends

The following section describes the forecasted demand for the Airport and the aviation trends in the region, specifically southeastern Massachusetts.

One of the key considerations of any airport planning effort is to determine and evaluate the dimensional standards established by the FAA. The FAA determines dimensional standards based on the "critical" or "design" aircraft that is either currently using or forecasted to use an airport. Forecasts were developed as part of the DEIS/DEIR to identify the critical aircraft, which were presented in Appendix D, Technical Memorandum 1.3,[6] of the DEIS/DEIR and summarized here.

Forecasts were developed for the No-Action Alternative, the Runway Safety Standard Alternative (RSSA) proposed in the DEIS/DEIR, and a Revised RSSA. None of these alternatives would result in new scheduled airline service by large aircraft at the Airport. Therefore, the forecasts for the Preferred Alternative evaluated in this FEIS/FEIR are identical and presented as one forecast scenario.

The forecast incorporates several important local and regional factors and trends, including:

- In the past 20 years, population within the Study Area has grown 21 percent; income has grown more than 60 percent; and employment has grown more than 25 percent. Forecasts of future population growth indicate higher growth in southeastern Massachusetts when compared to the "inner core" Boston metropolitan area.
- Aircraft operations at New Bedford Regional Airport (EWB) increased by more than 40 percent between 2002 and 2004. This growth in activity was a result of the new Delta Connection Academy regional flight training facility, which began service at EWB in 2002, and continued growth in corporate jet operations. Bridgewater State College resumed the flight training program, which will be a valuable asset to New Bedford as it provides training and education opportunities for students entering the aviation field, and who intend to become pilots in the future. BSC has expanded its flight training focus and has added a flight training curriculum for aviation students not interested in pursuing an airline career.
- Corporate jet activity at EWB has doubled in the past few years and is expected to see continued growth through 2021.

6 New Bedford Regional Airport DEIS/DEIR Technical Memorandum 1.3 – Forecast of Aviation Activity, January 2005, Washington Group International.

- The number of aircraft operations for the next 10 years is estimated to increase by approximately 14 percent, based on the FAA's Terminal Area Forecast (TAF).[7] Corporate jet activity is the fastest growing component at the Airport and has more than doubled in the past three years.

- The number of aircraft based at the Airport has increased from approximately 79 aircraft in 1996 to 111 aircraft in 2008.

Proposed southeastern Massachusetts developments have the potential to generate increased population and employment and add more air travel activity in the long term. Some of these developments include the future commuter rail service to New Bedford, ferry service to Martha's Vineyard, business park developments, and expansion plans for the University of Massachusetts Dartmouth campus.

The Preferred Alternative would not result in new scheduled airline service at the Airport with large jet aircraft. The limited capacity of the existing passenger terminal facilities and supporting facilities at the Airport would preclude operations by larger passenger aircraft. Without a runway extension, passenger service from the Airport is expected to remain as it is, with direct air service to Martha's Vineyard and Nantucket only. While service is currently limited to these two destinations, passenger growth is forecasted to increase at a nominal average annual rate of 1.0 percent through 2021, as shown in Table 2-1 below. This forecast is consistent with the forecasted growth rates presented in the January 2004 FAA TAF.

Table 2-1 Forecast of Passenger Activity

Year	Passengers
Base Year (Actual)	
2004	39,914
Forecast	
2011	44,486
2016	46,755
2021	49,140

Source: New Bedford Regional Airport Records; Washington Group International, Inc.

Forecasted annual operations, presented in Table 2-2, are based on observed trends in aviation activity at the Airport. In the past year, there has been significant growth in GA activity at the Airport.

Corporate jet activity will also increase in the short term, but will also begin to level off due to the Airport's limited runway length and airfield facilities.

7 FAA Operational Network (OPSNET). http://www.apo.data.faa.gov/opsnet/entryOPSNET.asp. Accessed December 12, 2006.

Passenger aircraft operations are forecasted to grow at a nominal rate consistent with passenger activity growth for all alternatives.

Table 2-2 Forecasted Annual Aircraft Operations – No-Action Alternative and Runway Safety Improvement Alternatives

Year	Air Cargo	Passenger Operations	General Aviation Itinerant[2]	General Aviation Local[1]	Military	Total
Base Year (Actual)						
2004	0	11,791	38,430	41,587	992	92,800
Forecast						
2011	0	12,768	48,139	57,073	1,000	118,890
2016	0	13,419	49,600	58,805	1,000	122,824
2021	0	14,104	50,852	60,290	1,000	126,246

Source: New Bedford Regional Airport records, Washington Group International, Inc.
1 Local operations refer to aircraft operations performed within an approximate 20-mile radius of the Airport.
2 Itinerant operations are considered to be all operations (general aviation, military, air carrier, or air taxi) other than the following: Operations in the local traffic pattern or within sight of an airport; Operations departing for or arriving from flight in local practice areas located within a 20-mile radius of the Airport; or Operations executing simulated instrument approaches or low passes at an airport.

Table 2-3 shows a forecast of based aircraft by fleet mix through 2021. With anticipated increases in flight training and corporate jet activity over the next five years, increases in single-engine based aircraft are expected with a nominal increase in multi-engine and corporate jet aircraft through the year 2021.

Forecasting based aircraft gives an indication of future demand for hangars, aircraft parking spaces and tiedowns on the apron, and airport services. The number of based aircraft at New Bedford Airport has increased as a result of regional aviation growth. Much of this growth was due to the closure of the Fall River Airport in 1996. The majority of aircraft based at Fall River Airport relocated to New Bedford. The strongest growth is forecasted for single-engine aircraft. Additional multi-engine and smaller jet aircraft owned by local individuals and businesses could also relocate to New Bedford Airport in the future.

Table 2-3 Forecast of Airport Based Aircraft

Year	Single-Engine	Multi-Engine	Jet	Total
Base Year (Actual)				
2004	138	8	1	147
Forecast				
2011	152	9	2	163
2016	158	11	2	171
2021	163	13	3	179

Source: New Bedford Regional Airport Records; Washington Group International, Inc.

Based on forecasted operations for the 20-year planning horizon, FAA recommends the current design standards be maintained in order to accommodate the based and itinerant aircraft that are forecasted to use the Airport. Commuter aircraft operations currently serving the Airport operate the Cessna 402 (ARC B-I).[8] Companies with business interests in the area use a number of different corporate jets including the Dassault Falcon 20, 50, and 200 (ARC B-II), Cessna Citation III, V, and X (ARC B-II and C-II), Lear Jet (ARC C-I), and Gulfstream G-II and G-IV (ARC D-II). The critical, or design, aircraft is defined as the most demanding aircraft that operates at an airport on a regular basis. Typically, a type of aircraft must have 500 or more annual itinerant operations, or be based at the airport, to be considered the critical aircraft. Given the mix of aircraft expected to use the Airport throughout the planning period, the Cessna Citation X (ARC C-II) is the critical aircraft type. This aircraft type requires 1,000-foot standard RSAs.

2.4 Purpose and Need

The revised Purpose and Need statement focuses on improving the RSAs, particularly for Runway 5-23. Although there is also a need to improve the RSAs for Runway 14-32 and to improve airfield facilities to meet current and future demand, these elements are not part of the current project and are not the subject of this FEIS/FEIR.

2.4.1 Safety Standards

Providing adequate safety areas is critical for the safe operation of aircraft and protection of the public. The FAA has also placed the highest importance on enhancing safety at commercial airports to support construction of standard safety areas.[9] Standard safety areas are 1,000 feet long at the end of each runway and 500 feet wide. FAA regulations also require that airports take actions to enhance safety where wildlife can cause damage to aircraft. FAA regulations for airports (14 CFR Part 139, Section 139.337) require airports to take immediate action to alleviate wildlife hazards where wildlife of a size or numbers capable of causing strikes resulting in substantial damage are observed to have access to any aircraft movement area. The FAA Advisory Circular *Hazardous Wildlife Attractants On or Near Airports,*[10] requires airports receiving federal funding to implement standards and practices to comply with Part 139.

8 The FAA uses an Airport Reference Code (ARC) to determine safety criteria for airport planning and design. Two components are used to determine an airport's ARC: the aircraft approach category, designated by the letters A through E, and the airplane design group, designated by roman numerals I through V. The approach category refers to the aircraft approach speed, and the design group refers to the aircraft wingspan.

9 Federal Aviation Administration. Fact Sheet. *Engineered Materials Arresting System (EMAS)*. Released December 12, 2006. http://www.faa.gov/news/fact_sheets/news_story.cfm?newsId=6279.

10 AC 150/5200-33B, August 28, 2007.

Airport Deficiencies

The Airport does not have FAA standard RSAs for either RW 5-23 or 14-32. The Airport also does not have adequate facilities to serve the existing demand or the long-term demand for general aviation, commercial air service, corporate jets, and training activity over the next 20 years. This section describes the deficiencies in runways and other facilities, and the need for improvements.

Runway Safety Areas

As stated in FAA Order 5100-38B, "The highest aviation priority of the United States is the safe and secure operation of the airport and airway system… The FAA supports this policy by giving the highest priority to projects that enhance the safety and security of our airport system." The FAA's National Priority Rating system gives the highest priority to constructing, extending, or improving RSAs.

The RSA is a prepared surface surrounding the runway that is:

- Cleared and graded and does not have any potentially hazardous ruts, humps, depressions, or other surface variations;
- Drained by grading or storm sewers to prevent water accumulation;
- Capable under dry conditions of supporting SRE, ARFF equipment, and the occasional passage of aircraft without causing structural damage to the aircraft; and
- Free of objects, except for objects that need to be located in the RSA because of their function.

FAA determines dimensional standards based on the "critical" or "design" aircraft that operates or is forecasted to operate at an airport. As explained in Section 2.3, for ARC C-II aircraft, the minimum RSA required is 1,000 feet long and 400 feet wide. The application of object clearing and design standards and criteria is necessary in order to meet FAA safety standards. The Airport does not meet FAA standards for RSAs for either RW 5-23 or RW 14-32.

Runway 5-23

- The 348-foot RSA at the RW 5 end is 652 feet less than the FAA requirement.
- The 870-foot RSA at the RW 23 end is 130 feet less than the requirement.
- The 960-foot OFA at the RW 5 end is 40 feet less than the requirement.
- The 343-foot OFA at the RW 23 end is 657 feet less than the requirement.

Runway 14-32

- The 257-foot RSA at the RW 32 end is 743 feet less than the FAA requirement.
- The 490-foot RSA at the RW 14 end is 510 feet less than the requirement.
- The 0-foot OFA at the RW 32 end is 1,000 feet less than the requirement.
- The 490-foot OFA at the RW 14 end is 510 feet less than the requirement.

These deficiencies must be addressed before any future runway improvements can be undertaken at the Airport. If the Airport did not correct the RSA deficiency on either runway, the FAA would not provide funding to replace or rehabilitate the runway pavement. The added emphasis by the Airport on flight training adds to the necessity and urgency of runway safety areas.

Operations at the Airport have increased in recent years, due primarily to increased corporate jet activity and increases in flight training activity. With the increase in corporate jet and flight training operations at New Bedford, there are larger and faster aircraft using the Airport. This, in combination with the existing runway lengths of 5,000 feet or less, increases the potential for accidents or incidents to occur at the Airport.

The construction of standard RSAs is needed to meet FAA's safety standards established for the protection of aircraft, pilots, and passengers operating at EWB, and to allow the long-term continued operation of the Airport.

Runway Conditions

Asphalt runway pavements deteriorate over time and need to be replaced. Without federal financial assistance, the Airport would be unable to fund the approximate $6-8 million cost to reconstruct each runway. Despite recent pavement repair on each runway, the existing runway pavement will continue to deteriorate. Both runways are already 30 years old; within the next 5 to 10 years, the pavement could deteriorate to the point that it becomes unsafe for aircraft to use.

A Pavement Plan was produced for the Airport in 1996 to identify the age and condition of all airport pavements (runways, taxiways, and ramp areas). This plan shows that the last reconstructions of RW 5-23 and RW 14-32 occurred in 1977 and 1979, respectively. Pavement designed in accordance with FAA standards is only expected to have a structural life of 20 years.[11]

RWs 5-23 and 14-32 were in such poor condition due to cracking and disintegration of the pavement surfaces that both runways have recently been repaired in order to keep them in service. Until these repairs were made, both

11 Federal Aviation Administration. Advisory Circular Subject: Airport Pavement Design and Evaluation. AC No: 150/5320-6D. http://www.faa.gov/airports_airtraffic/airports/resources/advisory_circulars/media/150-5320-6D/150_5320_6d_chg3.doc.

runways had a significant foreign object damage (FOD)[12] problem. Pieces of loose asphalt on the runway can cause a safety hazard for aircraft, particularly to jet aircraft, as the debris can be sucked into an engine and cause it to fail.

The FAA considers asphalt pavements eligible for complete replacement every 20 years. Both runways have far exceeded their useful design lives and need to undergo full-depth reconstruction in the near future. Because the FAA requires airports to comply with their policy objectives and design standards, a project such as runway reconstruction would only be eligible for FAA funding if the Airport met FAA RSA design standards.

Therefore, if the RSAs remain in non-compliance with FAA safety standards, FAA will not fund the reconstruction of the runways. If the runways are not improved, the safety of aircraft operations will degrade over time.

General Aviation (GA) Facilities

Existing GA facilities need to be expanded and modernized as demand continues to grow. The Airport does not have adequate facilities to meet the existing demand and forecasted growth. GA areas would need to be expanded in order to accommodate existing and future based and itinerant aircraft. These facilities include additional aircraft tiedowns, hangars, and automobile parking spaces.

Corporate Jet Facilities

Currently, there is not enough hangar and aircraft parking space to accommodate either existing or future demand. Most corporate jet owners prefer to park their aircraft in a hangar, out of the elements. Additional hangar space and aircraft parking aprons will need to be constructed in order to accommodate the growing demand for corporate jet operations.

There are several operators of corporate jets currently based at the Airport that would like to hangar there but are unable to due to the lack of adequate hangar space available. Should future hangar facilities not be provided, the Airport will risk those operators leaving the Airport to store their aircraft somewhere else.

Support Facilities

The Airport needs a new ARFF/SRE building. The existing facilities are too small and inadequate, and cannot accommodate existing ARFF and SRE equipment. SRE vehicles are routinely kept outside in the elements, which accelerates wear and deterioration to the vehicles. This equipment helps maintain safety at the

12 FOD is defined as a substance, debris, or article alien to a vehicle or aircraft, which could potentially cause damage.

Airport and inadequate care and storage will diminish the effectiveness of this safety equipment.

Obstructions

Currently, there are numerous obstructions (trees, brush, reeds, etc.) located in various airspace surfaces including the approach and transitional surfaces of RW 5-23 and RW 14-32. Many off-airport obstructions are identified on Airport Obstruction Chart 644 published by the National Ocean Service in February 1995, however during preparation of this FEIS hundreds of acres of on-airport vegetative obstructions were identified for Runway 5-23. Last year, the MALSR for the RW 5 approach was shut down temporarily because of obstructions, which adversely impacted operations during inclement weather conditions. The Airport previously cleared some of the vegetative penetrations in order to regain use of the RW 5 approach lighting system and is in the process of removing additional vegetation surrounding both MALSR systems under an Order of Conditions from the New Bedford Conservation Commission. Nevertheless, this FEIR/FEIS seeks approval and appropriate permits to clear all such vegetative airspace penetrations associated with Runway 5-23. The Airport is in the process of updating its Vegetation Management Plan (VMP), which is required by DEP regulations due to the runway shift. Future vegetation management activity for EWB airspace will comply with this VMP Update.

Wildlife Hazards

The Airport does not have perimeter fencing protecting the aircraft movement areas on and adjacent to the southern part of Runway 5-23. This area, which includes Runway 5, Taxiway A, the Runway Safety Areas, and the MALSR system, is bordered by the extensive wetlands and uplands of the Apponganset Swamp, which provides habitat for hazardous wildlife species (deer and coyotes). As a result of this deficiency, deer and coyotes have access to the aircraft movement areas and are frequently observed on or near the runway.

2.4.2 Project Need

The RSAs at the Airport do not currently meet FAA design standards. As previous studies have shown, providing safety areas is critical for the safe operation of aircraft and protection of the public.[13]

The FAA administers funding of airport projects through the Airport Improvement Program (AIP). In administering funds to airports, the FAA determines those projects which are the highest priority. FAA Order 5100-38B

13 Although there was a fatal crash in 2007, this was determined to be due to pilot error and not any safety deficiencies at the Airport.

AIP Handbook provides guidance and sets forth policy for the administration of the AIP. As stated in FAA Order 5100-38B, "*The highest aviation priority of the United States is the safe and secure operation of the airport and airway system….The FAA supports this policy by giving the highest priority to projects that enhance the safety and security of our airport system.*" The FAA's National Priority Rating system gives the highest priority to constructing, extending, or improving RSAs.

Safety areas reduce the risk of damage to aircraft, and injury to persons inside the aircraft, should the aircraft undershoot, overshoot, or veer off the runway.

Several studies, which are discussed and summarized below, have been conducted on aircraft accident locations. The data contained in these reports reinforces the FAA's position that meeting runway safety standards at airports is essential for the safe operation of aircraft.

The United States Congress has the responsibility of reauthorizing program funds to the FAA. The most recent authorization, the 2003 "Vision 100 – Century of Aviation Reauthorization Act," which covers Fiscal Years 2004-2007, created an Aviation Project Review Process in order to streamline the environmental process for aviation safety projects.

Due to the numerous federal and state agencies involved in the preparation and review of an EIS, Congress has included specific language in the reauthorization that makes the FAA legally responsible for determining aviation safety and design standards.

Title III; Subtitle A, Sec 304(h) of the Vision 100 Act states:

> "(h) LEAD AGENCY RESPONSIBILITY—The Federal Aviation Administration shall be the lead agency for projects designated under subsection (b)(2)[14] and airport capacity enhancement projects at congested airports and shall be responsible for defining the scope and content of the environmental impact statement, consistent with regulations issued by the CEQ. Any other Federal agency or State agency that is participating in a coordinated environmental review process under this section shall give substantial deference, to the extent consistent with applicable law and policy, to the aviation expertise of the Federal Aviation Administration."[15]

The FAA's current RSA dimensional standards were adopted in the early 1990s after the FAA conducted a study to determine the location of aircraft accidents.

14 Subsection (b)(2) refers to Aviation Safety and Aviation Security projects.
15 H.R. 2115[108]: Flight 100--Century of Aviation Reauthorization Act.

FAA Accident/Incident Location Study

The FAA published a study in July 1990 titled *Location of Commercial Aircraft Accidents/Incidents Relative to Runways*. This study analyzed over 500 National Transportation Safety Board (NTSB) aircraft accident and incident records in order to determine the location of the accident or incident relative to the runway.

The study categorized applicable aircraft accident/incidents as follows:

- **Undershoot**: During landing, an aircraft touches down prior to the end of the runway within 2,000 feet of the runway threshold.
- **Landing off**: During landing, any part of the aircraft's landing gear touches down off the runway pavement after the aircraft has passed the runway threshold.
- **Veeroff**: During landing rollout, the aircraft runs off the side of the runway.
- **Overrun**: During landing rollout or takeoff roll, the aircraft runs off the end of the runway.
- **Other**: During landing, an aircraft that impacts the ground more than 2,000 feet from the runway end. During takeoff, an aircraft that becomes airborne, then impacts the ground prior to reaching an altitude greater than 1,000 feet above ground.

The purpose of the report was to factually present aircraft accident/incident locations. No conclusions or recommendations were made as part of the report. The FAA used the information contained in the study to revise runway dimensional standards. In Appendix 8 of FAA Advisory Circular 150/5300-13, FAA presents a graph that represents the approximate distance airplanes undershoot and overrun the runway end.[16] This graph, which was generated from data contained in the study, shows that approximately 90 percent of aircraft undershoots and overruns occur within 1,000 feet of the runway end. That information was used to determine the current RSA dimensional standard of 500 feet wide by 1,000 feet off the end of the runway for aircraft approach categories C and D.

NTSB GA Accident Review

The NTSB publishes an Annual Review of Aircraft Accident Data for each calendar year. The most recent was published in June 2004 for accidents occurring in CY 2000. One of the purposes of the Annual Review is to provide government agencies (such as the FAA) detailed aircraft accident information to support future safety improvement initiatives.

16 FAA Advisory Circular 150/5300-13 "Airport Design" pg. 140.

In 2000, there were 1,837 accidents, 345 fatal, involving GA aircraft in the United States. This accident level was a 4 percent increase over 1999. This database has records of 22 accidents occurring at the New Bedford Airport since 1967. The detail provided in the database, however, does not distinguish whether sub-standard RSAs were a contributing factor.

According to the accident data, about half of all accidents occurred on-airport and, "*Accidents on or near an airport or airstrip typically involve aircraft operating at relatively low altitudes and airspeeds while taking off, landing, or maneuvering to land*."

Indeed, 62 percent of all accidents in 2000 took place during the taxiing, take-off, approach, or landing phases of flight. This relatively high percentage of on-airport accidents remains consistent year after year.

California Land Use Planning Handbook

The California Department of Transportation (Caltrans) conducted a more detailed study of the location of on-airport aircraft accidents. In 2002, Caltrans published the *California Land Use Planning Handbook* to provide guidance on compatible airport land uses. Caltrans compiled aircraft arrival and departure accident data from NTSB aircraft accident reports between 1990 and 2000, and plotted the locations of those accidents. The Caltrans study noted that neither the FAA nor the NTSB routinely compiles this type of data.

Arrival Accident Patterns

- Arrival accident sites tend to be located beyond the end of the runway, close to the runway centerline.
- Some 40 percent fall within a narrow strip, approximately 500 feet wide and extending some 2,000 feet from the runway end.
- Over 80 percent of the arrival accident sites are concentrated within just 2,000 feet laterally from the extended runway centerline, but extending outward to approximately 11,000 feet (about 2 miles) off the runway end.

Departure Accident Patterns

- Departure accident sites also tend to be clustered near the runway end, but are not as concentrated close to the runway centerline as the arrival accident sites.
- Most accidents (40 percent) lie within an area 1,500 feet wide, extending approximately 2,000 feet beyond the runway end.

- Eighty percent of accidents occur within an area that extends approximately 6,000 feet beyond the runway end, and spreads laterally approximately 2,000 feet from the runway centerline.

This analysis confirms the data provided in the annual report from the NTSB that the majority of aircraft accidents occur on airport property, within 2,000 feet of the runway end.

Wildlife Strike Hazards

Wildlife strikes are a significant safety concern at airports. Between 1990 and 1999, wildlife strikes damaged 4,500 civilian aircraft, injured 91 people and killed 6 people, and caused $4 billion in damages.[17] White-tailed deer are considered by the FAA to be the most hazardous wildlife species.[18] Between January 1990 and July 2008, there were 731 white-tailed deer strikes in the United States, and 15 in Massachusetts. Between 1990 and 2004, over 650 deer-aircraft strikes were reported to the FAA. More than 500 of these resulted in damage to aircraft.[19] An aircraft striking a deer on landing or takeoff most often damages the nose gear, causing the nose gear to collapse and resulting in major damage to the aircraft. In one documented case, a Piper Cherokee struck a deer during takeoff and then collided with trees, destroying the aircraft and resulting in serious injury to the pilot. Deer strikes have also resulted in major damage to other small aircraft (Cessna 210, Dash-8, and LearJets).

According to MassWildlife, there are between 85,000 and 95,000 deer in Massachusetts, with densities ranging from 10 per square mile in the northwestern part of the state to 45 to 55 per square mile on Nantucket. In 2007, 2,147 deer were taken in southeastern Massachusetts. These data indicate that there is a substantial deer population in the vicinity of the New Bedford Airport and, without any perimeter fencing between the airport and the natural habitats of the Apponogansett Swamp, deer frequently access the airfield and pose a significant hazard. There is a need for the Airport to implement wildlife control measures, such as deer exclusion fencing, to reduce this hazard.

Summary

The RSAs at the New Bedford Regional Airport do not currently meet FAA design standards. As previous studies have shown, providing safety areas at runway ends is critical for the safe operation of aircraft and protection of the public.

17 Memorandum of Agreement between the Federal Aviation Administration, the U.S. Air Force, the U.S. Army, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the U.S. Department of Agriculture to Address Aircraft Wildlife Strikes. 2003.
18 Advisory Circular 150/5200-33B, August 28 2007.
19 FAA Certalert 04-16, issued December 13, 2004.

The FAA has also placed the highest importance on construction of standard safety areas. The Airport's runways do not have FAA standard safety areas. The runway pavement condition at the Airport also continues to deteriorate. Because funding for runway improvement depends on an airport's compliance with FAA standards, if the RSAs are not improved, the airfield pavements would not be reconstructed and would continue to deteriorate, affecting the safe operation of aircraft at the Airport.

Operations at the Airport have increased in recent years, due primarily to increased corporate jet activity and increases in flight training activity. With the increase of corporate jet and flight training operations at New Bedford Airport, there are larger and faster aircraft using the Airport. This, in combination with the existing runway lengths of 5,000 feet or less, increases the potential for accidents or incidents to occur at the Airport.
The construction of standard RSAs is needed to meet FAA's safety standards established for the protection of aircraft, pilots, and passengers operating at EWB, and to allow the long-term continued operation of the Airport.

There is also a need for the Airport to implement wildlife control measures, such as deer exclusion fencing, to meet FAA safety standards.

2.5 Overriding Public Interest

The proposed project would require a variance from strict compliance with the DEP Wetlands Protection Act regulations. According to state regulations, a variance can only be issued if it is necessary to accommodate an overriding community, regional, state, or national interest or that it is necessary to avoid a taking (310 CMR 10.05(10)).

This project would fulfill an overriding public interest of all who fly into and out of the Airport. The public interest served is safety. Safety improvements to the runway ends would reduce the potential for harm to passengers, Airport employees, and surrounding community members. Safety areas reduce the risk of damage to aircraft, and injury to persons inside the aircraft, should the aircraft undershoot, overshoot, or veer off the runway. They also provide additional safety during less than ideal weather conditions, when it is more likely that aircraft may need the additional distance that a standard RSA provides in order to land. This is particularly important given the use of New Bedford Airport for flight training and the large number of inexperienced, trainee pilots.

The proposed project also includes installing a perimeter safety fence to prevent deer, coyotes, and other hazardous wildlife from having access to the airfield. Because deer and coyotes are capable of causing substantial damage to aircraft and risk to pilots and passengers, the perimeter fence also would fulfill the overriding public interest of airport safety.

3

Alternatives Analysis

This chapter describes the project's revised alternatives analysis and summarizes the alternatives evaluated in the DEIS/DEIR and NPC. The chapter also identifies and describes the Preferred Alternative.

3.1 Alternatives Evaluated and Dismissed

The Council on Environmental Quality (CEQ) regulations that implement NEPA (40 C.F.R. Parts 1500-1508) state that the alternatives section is the heart of an EIS. Those regulations and accompanying guidance, titled *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations* (CEQ's Forty Questions) require a federal decision-maker, in this case the FAA, to:

- Develop and describe the range of alternatives capable of achieving the purpose and need (1505.1(e)), including alternatives not within the jurisdiction of the lead agency (Question 2 of CEQ's Forty Questions) and the No-Action Alternative (1502.14(d)); and
- Rigorously explore and objectively evaluate these alternatives, and provide reasons why the FAA eliminated certain alternatives from further study.

Several alternatives were evaluated and dismissed in earlier phases of the NEPA and MEPA review of the New Bedford Regional Airport Improvements Project. This section summarizes those alternatives and the reasons that they were dismissed.

3.1.1 DEIS/DEIR Alternatives

Three airport development alternatives were evaluated in the DEIS/DEIR: the Airport Improvements Alternative (AIA), the Runway Safety Standards Alternative (RSSA), and the No-Action Alternative. The AIA proposed airport expansion while the RSSA alternative proposed only improvements to the RSAs.

Table 3-1 summarizes the DEIS/DEIR alternatives. The DEIS/DEIR analysis was based on a different project purpose: "To improve airport facilities in the Southeastern Massachusetts area in order to enhance the Southeastern Massachusetts region's aviation capacity, and to accommodate the long-term aviation demand in southeast Massachusetts for passenger traffic, corporate jet traffic, air cargo, and general aviation traffic over the next 20 years." Since the DEIS/DEIR, the FAA has re-evaluated the purpose of, and need for, the proposed project.

The Airport Improvements Alternative (AIA) would have extended the 5,000-foot Runway 5-23 to 6,700 feet, with standard 1,000-foot turf safety areas. This alternative also included improving the safety areas of Runway 14-32, closing the Downey Street access road, constructing a new ARFF facility, and constructing new general aviation facilities. This alternative required relocating New Plainville Road and would have required acquiring property that is part of the Acushnet Cedar Swamp State Reservation. The AIA would have resulted in the loss of 35 acres of wetlands, losses of compensatory flood storage, and impacts to the habitat of several state-listed species. The AIA was identified as the preferred alternative in the DEIS/DEIR because it best met the project purpose.

The RSSA presented in the DEIS/DEIR would have provided standard 1,000-foot turf RSAs at both ends of Runway 5-23. This alternative also included improving the safety areas of Runway 14-32, closing the Downey Street access road, constructing a new ARFF facility, and constructing new general aviation facilities. This alternative required relocating New Plainville Road to the north. Relocating New Plainville Road would have required land acquisition from the Acushnet Cedar Swamp State Reservation, an action that would have required approval from the legislature under Article 97. The roadway relocation would also have affected several acres of wetland north of New Plainville Road, on the perimeter of the State Reservation. The RSSA resulted in approximately 7.44 acres of wetland impacts, including approximately 5.36 acres of wetland impacts for safety area improvements to RW 5-23. The RSSA was not selected as the preferred alternative in the DEIS/DEIR because it did not meet the project purpose.

Based on the comments received during the public review of the DEIS/DEIR and the CWA Section 404 Permit, the City of New Bedford determined that the environmental impacts of the AIA, particularly of the Runway 5-23 extension, were significant and outweighed the benefit to aviation. The City therefore decided to move forward only with alternatives that address the safety deficiencies of the Airport.

3.1.2 Notice of Project Change

Following the public review of the DEIS/DEIR, the proponent and the FAA identified the RSSA as the preferred alternative. However, because of the magnitude of the wetland impacts, and because the RSSA would impact the Acushnet Cedar Swamp State Reservation, three additional alternatives were developed that further reduced wetland impacts associated with improvements to the RSA for RW 5-23 and that would avoid the Acushnet swamp. The Notice of Project Change described these alternatives and evaluated their environmental impacts. Table 3-1 summarizes the three NPC alternatives.

The three alternatives differed from the original RSSA proposal in the DEIS/DEIR by providing different design concepts for RW 5-23 safety areas. All of these alternatives would require that a section of New Plainville Road be placed in a tunnel because it is not practicable to relocate New Plainville Road around the end of RW 23 without impacting the Acushnet Cedar Swamp (Section 4(f) land) located just north of airport property. The Acushnet Cedar Swamp has been designated a National Natural Landmark by the Department of the Interior, and is protected under MGL Chapter 97. The southeastern corner of the reservation is designated as a Unique Resource Zone, which requires the highest level of protection and is under a conservation restriction that prohibits alteration of the Reservation.

Alternative 1 included implementing safety improvements to RW 5-23 and RW 14-32, and ARFF/GA facilities. RSAs that are 1,000 feet long and 500 feet wide would be used for RW 5-23. The 1,000-foot safety areas would be partially paved to allow increased takeoff distances. New Plainville Road would be placed in a 700-foot long tunnel under the RW 23 end. This was identified as the preferred alternative of the project proponent because it met the project purpose and had the lowest construction cost.

Alternative 2 included implementing safety improvements to RW 5-23 and RW 14-32, and ARFF/GA facilities. A standard RSA was proposed at the RW 23 end and an Engineered Materials Arresting System (EMAS) bed would be used at the RW 5 end. New Plainville Road would be placed in a 700-foot long tunnel under the RW 23 end. This alternative was dismissed because it provided the same safety benefits as Alternative 1, yet had a substantially higher cost.

Alternative 3 included implementing safety improvements to RW 5-23 and RW 14-32, and ARFF/GA facilities. EMAS would be used for both ends of RW 5-23. New Plainville Road would be placed in a 700-foot long tunnel under the RW 23 end. This alternative was dismissed because it provided the same safety benefits as Alternative 1, but had the highest cost of the three NPC alternatives.

Table 3-1 compares the DEIR alternatives with the three NPC alternatives and summarizes their impacts.

Table 3-1 Comparison of Alternatives Evaluated and Dismissed

		DEIS/DEIR		NPC		
Impacts	No-Action	AIA	RSSA	Alternative 1	Alternative 2	Alternative 3
Noise	Operations increase, noise is offset by replacement of older, noisier planes	Significant noise impacts – 23 residences will experience 65 dB or greater	Similar to No-Action, no significant impacts	No significant noise impact	No significant noise impact	No significant noise impact
Water Quality	No new impacts to water quality, no improvement to water quality	Increase in impervious area, improved drainage system	Reduction in impervious area, improved drainage system	Improved drainage system	Improved drainage system	Improved drainage system
Wetlands and Waterways (Fill)	No fill	34.66 acres	7.44 acres	5.16 acres	3.82 acres	3.82 acres
Threatened and Endangered Species	No new impacts to special status species	Impact 1.88 acres of Coastal swamp amphipod habitat, 25.77 acres of American bittern habitat	Impact 0.06 acres of Coastal swamp amphipod habitat, 4.86 acres of American bittern habitat	Impact 0.72 acres of coastal swamp amphipod	No loss of habitat used by the coastal swamp amphipod or four-toed salamander	No loss of habitat used by the coastal swamp amphipod or four-toed salamander
Floodplains	No impact	30 acres, 4,664 cubic yards	7.5 acres, 607 cubic yards	1.5 acres, 1,605 cubic yards	1.5 acres, 1,643 cubic yards	1.5 acres, 1,643 cubic yards
Acushnet Cedar Swamp State Reservation	No acquisition or alteration	2.08 ac land acquisition; road would be relocated and result in the loss of 44 acres of wetlands	Acquisition for vegetation management and relocated new Plainville Road would be required	No acquisition or alteration	No acquisition or alteration	No acquisition or alteration

A summary of costs for each of the NPC alternatives is provided in Table 3-2. Proposed improvement costs for RW 14-32 are the same for each alternative. ARFF/GA costs are not included because these facilities are designed at the conceptual level and costs would be determined when the funding is available to advance development. The cost analysis presented in the NPC estimated that the New Plainville Road tunnel would cost approximately $10 million to construct (this cost is included in the RW 5-23 costs presented below).

Table 3-2 Preliminary Total Cost Estimates – NPC Alternatives

Improvements	Alternative 1	Alternative 2	Alternative 3
RW 14-32	$4,800,000	$4,800,000	$4,800,000
RW 5-23	$28,478,612	$34,754,846	$42,850,450
TOTAL	$33,278,612	$39,554,846	$47,650,450

Following the public review of the NPC, the City of New Bedford and the FAA determined that none of the NPC alternatives were practicable to construct due to the cost of the tunnel, conservatively estimated at $10 million. Funding

available for the Runway 5-23 Safety Improvements has been capped by the FAA at $15 million, which is not sufficient to construct any of the alternatives identified in the NPC.

3.2 Runway Safety Area Design Options

The Secretary's Certificate on the DEIR required that the SDEIR discuss obtaining a waiver from the FAA's requirements for maintaining a standard RSA and that the proponent should consult with FAA of the applicability of such a waiver.

The FAA requires that commercial airports have a standard RSA to the extent practicable. A standard RSA at New Bedford is either a prepared surface 1,000 feet long or a prepared area 600 feet long that includes an Engineered Materials Arresting System (EMAS) that is placed in this area. The FAA no longer allows modifications/waivers to this standard but does take into consideration what is practicable for each RSA, given individual site constraints.[1]

3.2.1 Standard Runway Safety Areas

The FAA has RSA requirements in the event that an aircraft overruns, undershoots, or veers off the side of a runway. Standard RSAs must be free of objects and must be able to accommodate an aircraft excursion and safety vehicles. These areas can be constructed of turf or paved.

Less than standard RSA areas are permitted for RW 14-32 because the proposed RSA length is the longest length practicable at each end due to the presence of cemeteries at each end. RW 14-32 is also not the primary runway, and does not have a straight-in instrument approach. A standard RSA is required for Runway 5-23 because this is the primary runway at the New Bedford Regional Airport and has navigational aids that allow instrument approaches in poor weather conditions.

3.2.2 EMAS

It is not practical for some airports to accommodate a 1,000-foot long and 500-foot wide RSA. Knowing this, FAA worked to determine how to ensure safety at airports where a 1,000-foot long and 500-foot wide RSA is not practicable. A technology was developed to provide an added measure of safety in these cases. An EMAS is composed of a bed of "customized cellular cement material" that will crush under the weight of an aircraft, should an aircraft exit off the end of a runway. When an aircraft rolls into an EMAS bed, the aircraft

1 U.S. Department of Transportation. Federal Aviation Administration. Advisory Circular No: 150/5300-13 and changes, Change 10. Effective October 13, 2006.

decelerates by rolling through the material. The FAA requires a site-specific cost evaluation to determine if EMAS is a practicable alternative.

In the New England area, EMAS is used at Boston Logan International Airport and Barnstable Municipal Airport (Hyannis, Massachusetts), and at Manchester-Boston Regional Airport. It is proposed for use at the Tweed-New Haven Regional Airport.

Currently, ESCO is the only manufacturer of EMAS. ESCO was contacted as part of this study to provide input on the design of the EMAS bed. The size of an EMAS bed is based on an airport's critical, or design, aircraft. The design aircraft identified for the DEIS/DEIR was used and is still applicable under the implementation of any of the alternatives presented. ESCO calculated the EMAS bed length to be 300 feet long by 170 feet wide. FAA states in Order 5200.9 that an equivalent level of safety of a standard RSA can be provided with a land-short distance of 600 feet that incorporates EMAS. FAA requires a cost evaluation to determine if this is practicable.

The proponent has conducted the required cost evaluation and determined that EMAS is not practicable for the Runway 5-23 Safety Improvements project. The estimated costs to install EMAS are based on two primary factors: the cost to install the system, and the cost to maintain the system over a 20-year period. The FAA refers to this as the "life-cycle" cost. FAA Order 5200.9 gives guidance on calculating the EMAS life-cycle cost. This cost accounts for periodic inspections, maintenance, and replacement of the EMAS material after 10 years. Based on the comparison of the life-cycle cost of EMAS to the cost to construct 1,000-foot long and 500-foot wide safety areas, the FAA makes a determination on which alternative is financially feasible.

Although EMAS at either the Runway 5 or the Runway 23 end would reduce impacts to bordering vegetated wetlands, a single EMAS bed would cost approximately $7.9 million to construct. FAA has determined that this is not practicable for a small commercial service airport.

3.3 FEIS/FEIR Alternatives

After determining that the NPC alternatives were not practicable to construct based on cost, the proponent developed a series of modifications to the DEIS/DEIR Runway Safety Standard Alternative (RSSA) that met these criteria:

- Fully complied with FAA safety standards;
- Were practicable to construct based on cost;
- Did not require relocating or tunneling New Plainville Road; and
- Maintained a paved runway length of 5,000 feet.

Twenty-two modifications of the RSSA alternative were developed and reviewed. These included modifications that would install a standard 1,000-foot RSA on each runway end; install a 1,000-foot RSA on the RW 5 end only; minimize wetland impacts by reducing runway length or RSA length; and use EMAS on one or both ends.

The evaluation of these alternatives considered construction costs, runway length, and wetland impacts. The FAA eliminated alternatives from further consideration that did not meet federal safety area standards applicable to the New Bedford Regional Airport. Based on these criteria, one alternative (Alternative 4E) was selected as the proponent's Preferred Alternative. This alternative was advanced from conceptual design to a 30 percent engineering design in order to fully evaluate environmental impacts.

This FEIS/FEIR evaluates the No-Action Alternative and the Preferred Alternative, as described below.

3.3.1 No-Action Alternative

The No-Action Alternative leaves the Airport in its existing configuration and no runway or RSA improvements would occur. Because the Airport would not meet FAA's design criteria, this alternative assumes that the Airport would no longer receive FAA funding for future improvements. Only maintenance projects planned in the Airport's Capital Improvement Program would be completed. This includes crack sealing the runways and approved vegetation management. The No-Action (No-Build) Alternative evaluated in this FEIS/FEIR is the same as in the DEIS/DEIR, with the addition of additional vegetation management outside of the previously approved management area.

The Airport is maintaining its current airspace pursuant to a recently-approved Vegetation Management Plan update associated with the RW 5-23 medium-intensity approach light system with runway alignment indicator lights (MALSR). The Airport recently received a new Emergency Order of Conditions to clear and maintain vegetation within specific airspace associated with both MALSR approach lighting systems. To fully comply with FAA requirements, the Airport would need to manage vegetation over a larger area, as described in Section 4.4, *Wetlands*. Under a new order of conditions, the Airport would implement its current Vegetation Management Plan (VMP), with the exception of additional tree removal on the RW 5 end. RW 5 is the only runway equipped with a precision Instrument Landing System (ILS) approach.

The No-Action Alternative does not fulfill the project's purpose and need because adequate RSAs would not be constructed and aviation safety would not be improved. Over time, the pavement would deteriorate, thereby causing unsafe operating conditions.

The No-Action Alternative assumes that operations at the New Bedford Regional Airport would increase as documented in Chapter 2, and would be approximately 126,246 annual operations by 2021, largely as a result of the flight school training program.

This alternative does not fulfill the Purpose and Need but is presented to establish a baseline to compare potential environmental impacts and mitigation measures of other alternatives.

3.3.2 Preferred Alternative

The Preferred Alternative (Figure 3-1) includes improvements to the safety areas of RW 5-23. It includes constructing FAA standard 1,000-foot safety areas for both ends of RW 5-23. However, FAA has approved a narrower 400-foot wide RSA for this runway to minimize environmental impacts. The Preferred Alternative includes the following elements:

- Constructing a new 1,000-foot long, 400-foot wide turf RSA at the RW 5 end;
- Shifting RW 5 south by 200 feet;
- Constructing a 1,000-foot RSA for the end of RW 23, including 400 feet of pavement and 600 feet of turf;
- Removing the existing VASI lights on RW 23;
- Installing Precision Approach Path Indicators (PAPIs) on RW 23;
- Relocating the MALSR on RW 5 and RW 23;
- Possibly replacing the localizer on the RW 23 end;
- Upgrading the drainage system at each runway end;
- Extending Taxiway A to the RW 23 end;
- Extending Taxiway A to match the new RW 5 end;
- Clearing vegetation (beyond the limits required for the No-Action Alternative) in accordance with a new Vegetation Management Plan to maintain FAA-required approach surfaces and visibility; and
- Installing a new perimeter safety/security fence at the RW 5 end to reduce wildlife incursions onto the airfield.

This alternative would cost approximately $16.1 million, as shown in Table 3-3. The Preferred Alternative is practicable to construct, and would fulfill the purpose and need of the project by providing adequate safety areas for the runway ends.

This alternative would not change the operations of the Airport, or its ability to support based aircraft. Because the Airport's capacity would not change, the operations would remain at the same levels as in the No-Action Alternative, documented in Chapter 2 of this FEIS/FEIR.

Table 3-3 Cost Estimate for Preferred Alternative

Item	Estimated Cost
Wetlands Mitigation	$4,229,000
Vegetation Removal	$1,668,000
RW 5-23 Construction	$7,426,000
Airfield Electrical/NAVAIDs	$1,675,000
Design, Permitting etc	$1,102,000
RW 5-23 TOTAL COST[1]	$16,108,000

1 Includes contingencies, construction administration, technical observation

Construction is anticipated to be phased over a three-year period:

- Year 1 – construct wetland mitigation areas, clear vegetation
- Year 2 – construct safety areas and install/relocate navigational aids (NAVAIDs)
- Year 3 – complete runway construction

Proposed Drainage System

Stormwater from the new RSAs would be managed by a combination of drainage ditches, water quality swales, and infiltration areas. Best Management Practices (BMPs) such as pavement sweeping, water quality swales, deep sump catch basins, and infiltration basins would all be used to control the quality, quantity, and rate of stormwater discharges.

At the RW 5 end, an infiltration basin would be constructed on the southern side of the runway near the new taxiway connection to receive runoff from the runway and taxiway. A swale on the north side of the runway would convey runoff to the West Ditch, and the West Ditch channel would be relocated around the foot of the RSA slope. The new channel would combine with the East Ditch at the same location as the existing West Ditch does.

At the RW 23 end, three infiltration basins would be constructed to receive runoff from the taxiway and runway. Water quality swales would convey additional runoff to infiltration basins on each side of the RSA.

Vegetation Management

Vegetation management would be necessary to remove penetrations by trees and fast-growing invasives into aircraft approach and NAVAID airspace surfaces. The vegetation management plan (VMP) involves alternating mechanical mowing, hand cutting, and foliar herbicide treatments. Mechanical mowing will be used to control plant community height in previously cut areas, thereby promoting safe, navigable airspace protection zones as well as airspace surfaces associated with various NAVAIDs. Stump sprouts that have grown since the previous phase of tree removal would be treated with direct applications of herbicide to prevent regrowth. Low-ground-pressure equipment (low-pressure tires or tracks resulting in less than 3 psi ground pressure) would be used for any mowing in wetlands to avoid damaging the soil surface. The Airport recently purchased a cutting machine designed for this purpose to control Phragmites.[2]

In time, mowing will result in the selection of native species with low growth habits. This will eventually lead to the development of a stable, low-growing plant community requiring less future maintenance. The Airport implemented this management measure in 2008, with initially favorable results. Maintenance mowing will be conducted on a bi-annual basis, primarily within the perimeter fence. Limited mowing outside the fenceline may also be required to maintain compatible plant communities and prevent new airspace surface penetrations.

Perimeter Fence

The Airport proposes to install a perimeter fence around the RW 5 end to reduce the incursions of deer and other hazardous wildlife onto the airfield. Currently, the northern perimeter of the airfield is fenced, but there is no fence between the end of Old Shawmut Road on the northwest and the Colonial Aviation hangar on the southeast. Deer frequently enter the airfield, and are a significant wildlife hazard to aircraft landing or taking off. The Airport has attempted to control deer using a sharpshooter, but proposes the fence as a permanent, more humane means of protecting airfield safety.

The perimeter fence is proposed to be a 10-foot high woven wire deer-exclusion fence. The fence would be approximately 6,300 feet long, as shown on Figure 3-1. The design specifications recommend clearing a 20-foot swath on either side of the fence line to allow fence installation and for future maintenance of the fence. The fence would be supported by pressure-treated wood poles or galvanized steel line posts, 20 feet apart, and would consist of a 10-foot high, high-tensile woven wire fence topped by two or three strands of high-tensile barbed wire. Poles would be driven or installed using an auger, or if possible, by driving posts directly into the soil with no excavation required. Swing gates or sliding gates would be installed as needed for access across the MALSR service road, the City

2 *Phragmites australis*, or common reed.

water line road, the gas easement, and to allow the Airport's Phragmites cutting machine to access both sides of the fence.

Small animal passages would be installed at intervals along the base of the fence. These "mousehole" openings would have a radius of approximately 8 inches to allow turtles and other small wildlife to traverse both sides of the fence. Wire fencing (hardware cloth or similar material) would be installed on the ground surface to discourage coyotes or other large mammals from digging to enlarge the opening.

3.3.3 Future Airport Improvement Projects

Several additional airport improvement projects were evaluated in the DEIS/DEIR and NPC. These projects, while needed to meet FAA safety standards and accommodate future aviation demand at the Airport, are not currently included in the Airport's Capital Improvement Plan (CIP) and are not anticipated to be constructed within the 5- to 10-year planning period. Proposed improvements for RW 14-32 would be pursued as a separate project (on a separate time frame for funding, design, permitting, and construction) due to funding availability. These projects are therefore not part of the proposed action, but are considered in the context of cumulative impacts. This section describes these potential future projects, as envisioned in the DEIS/DEIR. The Airport Master Plan Update may modify these projects, which will be the subject of future MEPA/NEPA reviews.

Runway 14-32 Safety Areas

This section describes proposed safety improvements to RW 14-32, which remain as described in the DEIS/DEIR (see Figure 1-2). The design of these safety areas is conceptual, and has not been advanced to the 30 percent design level.

The secondary (crosswind) RW 14-32 is 5,000 feet long and has substandard safety areas. FAA requires a 1,000-foot long RSA and Runway Object-Free Area (OFA) off the end of each runway. The RW 32 end (east end of runway) has a 490-foot RSA and OFA. The airport access road (extension of Downey Street) is within the RSA and OFA. The RW 14 end (west side of runway) currently has a 257-foot RSA and OFA. There are taxiways immediately adjacent to each RSA and within the OFA.

Secondary runways are typically used less often than primary runways because prevailing wind conditions favor use of the primary runway. Although RW 14-32 is physically only three feet longer than RW 5-23, many charter and corporate jet pilots use RW 14-32 more often than would typically occur because it has a published length of 5,000-feet long.

Several options were considered in addition to the proposed activities for RW 14-32 to avoid or minimize impacts while enhancing the RSAs. Options considered included realigning the runway, shortening the runway, changing runway designations, and using EMAS. These modifications were not considered to be reasonable or practicable.

Less than standard RSAs are proposed for RW 14-32 because it is not the primary runway and FAA has determined the proposed improvements are to the extent practicable. The FAA has determined, in the case of this secondary runway, the Airport cannot achieve the full standard RSA due to land constraints on these runway ends and indicated that they would approve a modification to standards for the RSAs on this secondary runway. Due to land constraints, FAA has determined this configuration provides safety areas to the extent practicable.

As described in the DEIS/DEIR, safety improvements for RW 14-32 would extend the RSAs to the maximum extent practicable, considering the proximity of cemeteries at each end. Improvements would include the following:

- Relocate the runway along its centerline to the southeast. The centerline of the runway would not change, rather both runway thresholds would shift 322 feet southeast along the centerline.
- The RSA at the RW 14 end would be extended from approximately 210 feet to 690 feet.
- The RSA at the RW 32 end would be decreased from approximately 490 feet to 400 feet. This is the maximum practicable length, based on location of the cemetery.
- Close the Downey Street access to the Airport to accommodate the RSA for RW 32. The Downey Street portion on Airport property would be demolished. Shawmut Avenue would provide access to the Airport.
- Close a portion of Old Plainville Road, approximately 680 feet, in the area to be acquired for the RW 14 end. This portion of Old Plainville Road would be demolished.
- Relocate navigational aids.

ARFF/GA Facilities

The existing ARFF/SRE building is too small and inadequate so it is scheduled to be replaced. Projected growth of GA activities at the Airport will, at some point in the future, require additional GA hangars and aprons, and potentially space for a new FBO. The Master Plan Update (anticipated in 2011) will develop an updated plan for improving airport facilities. The Master Plan Update will be reviewed in compliance with NEPA, and will include public participation.

3.4 Sustainable Design

The Secretary's Certificate on the NPC required that the proponent investigate feasible measures for reducing impervious surfaces, and to consult with the Department of Conservation and Recreation (DCR) to consider incorporating low impact development (LID) design measures into the design to improve the management of stormwater runoff from the project site.

The proponent (the New Bedford Airport Commission and City of New Bedford) is committed to incorporating environmental stewardship and sustainable design measures into the proposed safety improvements project, and to investigating additional measures that could be used at the Airport. For the proposed project, the opportunities are limited, as the work proposed is primarily grading and paving of runways and taxiways. FAA design standards for runways and taxiways specify the types of pavement that may be used, and do not allow permeable pavement mixtures. No new or modified parking areas, driveways, or buildings are included in the proposed project, other than structures associated with proposed NAVAID work.

Sustainable design and smart growth would be incorporated into the planning of the Airport's proposed safety improvements to provide environmental benefits, including:

- Efficient use of the primary runway: Adequate safety areas will encourage a fair distribution of aircraft between the runways, potentially reducing idling and taxi emissions.
- Increased aviation utility: Aircraft will be able to take off with appropriate pay and fuel loads.
- Improved water quality: an improved stormwater drainage system will allow efficient flow and filtering of stormwater from Airport facilities.
- Develop a recycling program for Airport tenants.
- Implement Spill Prevention, Control, Countermeasures, and Contingency Plan (SPCCC) and Stormwater Pollution Prevention Plan (SWPPP).

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4

Affected Environment and Environmental Consequences

4.1 Introduction

This chapter describes the ambient environment within the project area and describes the environmental consequences of the Preferred Alternative considered in this FEIS/FEIR. Information provided under each impact category includes consideration of direct and indirect effects and their significance, applicable permit or license requirements, and the status of interagency coordination.

The Preferred Alternative has been developed to avoid impacts to Massachusetts Department of Conservation and Recreation's (DCR's) Acushnet Cedar Swamp State Reservation and to meet practical and financial requirements for construction. This section responds to specific requirements of the Secretary's Certificate and describes the potential adverse impacts and benefits to resources that could be impacted by the project.

The environmental impact categories assessed include:

- Noise;
- Water quality;
- Wetlands and waterways;
- Floodplains; and
- State threatened and endangered species.

For each category, the Preferred Alternative is compared to the No-Action Alternative to determine the effect (beneficial or adverse) of the alternative. The analysis in this FEIS/FEIR also addresses state and federal regulatory (permit) requirements and thresholds for applicable categories of impacts.

4.1.1 Resources Not Affected

As documented in the DEIS/DEIR and NPC, the environmental impact categories listed below either do not exist in the vicinity of the Airport, or there would be no impacts associated with the proposed safety improvements. These resources include:

- Environmental justice;
- Socioeconomics;
- Traffic;
- Hazardous materials;
- Air quality;
- Historic and archaeological resources;
- Wild and scenic rivers;
- Federal endangered and threatened species; and
- Section 4(f) resources.

4.2 Noise

This section summarizes the existing noise environment from aircraft operations in the vicinity of the Airport. It provides an evaluation of the expected noise impacts of the No-Action Alternative and the Preferred Alternative. Appendix E, *Noise Analysis*, provides additional supporting information on detailed methodology and technical analyses. The noise analysis presented in this FEIS/FEIR provides new information on the Runway Safety Alternatives and responds to the requirements of the Certificate.

The Secretary's Certificate on the second NPC noted that the alternatives considered at that time would result in only moderate noise impacts in the neighborhood northeast of the Airport. The Certificate required that the FEIR discuss:

- The proponent's commitment to regularly monitor and evaluate the EWB noise environment to identify changes in the DNL 65 decibel (dB) contour over time; and
- The procedure for recording and addressing noise complaints from the community.

4.2.1 Introduction

Noise technical analyses were prepared for the following analysis years: 2003 (Baseline), 2011, and 2021. The future conditions were analyzed for the No-Action Alternative and the Preferred Alternative. These analyses include:

- Day-Night Average Sound Level (DNL)[1] noise exposure contours, which compare noise exposure levels.
- Specific DNL levels computed for noise-sensitive receptors.
- Supplemental measures of noise impact that evaluate the duration of noise experienced.
- Mitigation measures, as warranted.

The FAA requires that noise issues be evaluated in the context of FAA Order 1050.1E Change 1, *Environmental Impacts: Policies and Procedures*, issued in March 2006. The Order specified a number of requirements including which noise models are acceptable under various circumstances, what constitutes significant impact, and when supplemental noise analyses are needed. Order 1050.1E includes the following points:

- For aviation noise analysis, the FAA has determined that the cumulative noise energy exposure of individuals to noise resulting from aviation activities must be established in terms of yearly day/night average sound level (DNL) as FAA's primary metric.
- All detailed noise analyses must be performed using the most current version of the FAA's Integrated Noise Model (INM), Heliport Noise Model (HNM), or Noise Integrated Routing System (NIRS).
- The analysis will include DNL noise exposure contours, and estimates of the population within each contour interval.
- A significant noise impact would occur if analysis shows that the proposed action will cause noise sensitive areas (residences, schools, hospitals, and places of worship) to experience an increase in noise of DNL 1.5 dB or more at or above DNL 65 dB noise exposure when compared to the No-Action Alternative for the same time frame. For example, an increase from DNL 63.5 dB to 65 dB is considered a significant impact.[2]
- If there is a documented increase of 1.5 dB at or above DNL 65 dB, then the analysis should identify any 3-dB increases in the DNL 60 to 65 dB range.

In accordance with Order 1050.1E Change 1, Appendix A, Section 14.5e, this analysis will identify 3 dB and greater increases between DNL 60 and 65 dB and any DNL 5 dB and greater increases between 45 dB DNL to 60 dB DNL. Although these increases will be documented, the FAA does not consider noise increases outside DNL 65 dB as significant impacts.

1 DNL is a measure of the average noise level over a 24-hour day. It is the 24-hour, logarithmic (or energy) average, A-weighted sound pressure level with a 10-decibel penalty applied to the nighttime event levels that occur between 10:00 pm and 7:00 AM.

2 FAA Order 1050.1E, *Environmental Impacts: Policies and Procedures,* June 2004.

4.2.2 Methodology

As described above, the FAA requires the use of the INM for airport noise analyses prepared according to FAA Order 1050.1E. The INM identifies cumulative noise exposures, and identifies the estimated change in noise at specific noise-sensitive locations. This analysis provides an evaluation of project-related increases in noise of 1.5 dB above the DNL 65 dB contour pursuant to that Order, as well as an evaluation of increases in project-related noise of 3 dB between the DNL 60 and 65 dB contour at sensitive locations. The FAA's INM is discussed in further detail in the following section.

The general approach used to identify noise-affected areas included:

- Run the INM to compute noise exposure from aircraft operations and compare the Preferred Alternative to the future No-Action Alternative.
- Develop noise exposure contours. DNL noise exposure contours are a graphical representation of how the cumulative noise from the Airport's aircraft operations is distributed over the surrounding area on an average day of a given year.
- Compute differences at specific grid points for both scenarios and all years to identify:
  - Noise-sensitive areas that would experience a 1.5 dB increase or greater change in exposure at or above DNL 65 dB for the Preferred Alternative compared to the No-Action Alternative for the same timeframe.
  - Noise-sensitive areas of that would experience a 3 dB or greater increase change in exposure or greater between DNL 60 and 65 dB for the Preferred Alternative compared to the No-Action Alternative for the same timeframe.
  - Population, housing, and noise-sensitive land uses located in these areas.

FAA's Integrated Noise Model

The basic tool used to model aircraft flight operations is the INM developed by the FAA. The INM uses airport geometry, descriptions of aircraft operations, and an internal database of noise and performance characteristics to compute the noise of individual flights. The INM then adds noise of individual flights together and presents the accumulation as a set of contours and/or noise calculations at specific points.

Detailed operational inputs to the INM generally fall into three categories of information including:

- Daily numbers of daytime and nighttime takeoffs and landings by specific aircraft types;
- Typical flight path and runway geometry; and
- Average statistics on usage of each runway and flight path by various aircraft groups.

Historical data traceable to sources such as the New Bedford Airport's air traffic statistics are used to develop descriptions of past noise environments. Predicted aspects of an airport's operations are used to evaluate alternative assumptions regarding growth, future aircraft fleets, shifting of flight paths, new runway and taxiway configurations, delays, noise mitigation measures, and other critical planning efforts.

INM Version 6.1 was used for all noise exposure computations and specific point analyses for this project. The Version 6.0 Technical Manual provides the current technical description of the INM.

INM users do not normally alter the model's internal noise and performance databases as a part of the modeling process. However, when there is an identifiable need, such as a frequently used non-standard thrust setting or climb profile, the FAA requires that any changes to these databases be approved by it prior to use on any FAA-sponsored project. FAA also requires approval for certain substitutions of aircraft types that occasionally appear in historical radar data but are not represented within the INM database. In this noise study, because of the close proximity of airport taxiways to the community, taxi and pre-takeoff maintenance engine checks were also included in the noise analysis. Because this is considered a non-standard modeling protocol, FAA approval is required and was received on November 23, 2004. The letter requesting FAA approval of these non-standard modeling needs is included at the beginning of Appendix E, as is the FAA's response to the request.

Information calculated for the No-Action Alternative and the Preferred Alternative includes Day-Night Average Sound Level (DNL) contours as required by the FAA, and two supplemental noise metrics: Maximum Sound Level (Lmax) contours that depict noise exposure for individual events, and Time Above estimates at specific locations.

Noise Metrics

For aviation noise analysis, the FAA has determined that the cumulative noise energy exposure of individuals to noise resulting from aviation activities must be evaluated using yearly DNL as FAA's primary measure of noise assessment.

Noise levels are measured in decibels (dB), which are expressed logarithmically, to mirror how the human ear experiences noise on a range from barely audible to extremely loud. For a constant sound level, or a maximum sound level associated

with a single event, most people would readily detect a change of 3 dB or greater and would perceive a 10-dB increase to be about twice as loud.

The FAA's cumulative noise assessment measure, the DNL, is considered on an annual basis. The DNL penalizes noise occurring at night by increasing noise during those times by 10 dB to reflect the intrusiveness of nighttime noise events. The penalty is 10 dB because community background noise levels typically decrease by about this amount at night.

Annual DNL contours depict noise exposure in 5-dB increments from 60 to 75 dB. Both the U.S. Department of Housing and Urban Development (HUD) and the FAA define DNL 65 dB as the threshold of noise incompatibility with residential land uses.

While the FAA only requires consideration of the noise levels with the DNL metric, this analysis looked at other noise metrics to provide the reviewer with a more comprehensive assessment of noise conditions at the Airport and its surroundings. These include individual noise events such as one aircraft takeoff or landing, the noise perceived at one particular location or the highest noise generated by an event; and a cumulative noise measure – the time that noise is above a particular noise threshold. These metrics include:

- Maximum Sound Level (Lmax) Contours (or Single Event) contours for a range of existing and future aircraft operating at the Airport show the relative noise levels of existing and proposed aircraft.
- The predicted Time Above (TA) 65 dB A-weighted (dBA) provides a reasonable estimate of outdoor speech interference at residential locations near the Airport.

The FAA does not recognize a threshold of significance for Maximum Sound Level (Lmax) or Time Above (TA) metrics. However these are supplemental metrics can assist the reviewer with understanding the noise environment.

4.2.3 Affected Environment

This section presents the analysis of baseline noise levels surrounding the Airport.

Model Inputs

This section provides the data (aviation demand forecasts and runway utilization) that were used as inputs to the INM to model existing (Baseline) noise conditions.

Aviation Demand Forecasts

The INM requires annual average daily operations operational input for both base case and forecast scenarios. The forecasts are derived from aviation demand forecasts, described in Section 2.3 of this FEIS/FEIR. The detailed INM fleet mix developed from these data is provided in Appendix E.

Aircraft Operations

The INM requires annual average daily operational inputs for both base case and all forecast scenarios. The operational fleet mix must also differentiate between daytime (7 a.m. to 10 p.m.) and nighttime (10 p.m. to 7 a.m.) operations. The operational fleet mix scenario for the base case and all forecast scenarios are presented in Chapter 3, *Alternative Analysis*.

Runway Utilization

Runway use for existing conditions and the No-Action Alternative are based on current operational conditions, with assumptions regarding typical wind conditions. The New Bedford Air Traffic Control Tower (ATCT) reports that 10 percent of jets request RW 14-32 because the published length of RW 14-32 is greater than RW 5-23. Runway use for all other aircraft is based on wind conditions. Modeled runway use for the existing condition and No-Action Alternative is presented in Table 4.2-1.

Table 4.2-1 Runway Use: Existing and No-Action Alternative

	Percent Use by Aircraft Type	
Runway	Jets Only	All Other Aircraft
5	8%	10 %
23	42%	50 %
14	6%	5 %
32	44%	35 %
Total	100 %	100 %

Source: WGI, EWB ATCT, HMMH analysis.

Model Flight Tracks and Flight Track Usage

The INM simulates the operation of an airport by "flying" the aircraft along relatively small numbers of flight tracks that represent the large number of flight paths actually used by aircraft. Prototypical flight tracks are based on discussions with the EWB Air Traffic Control Tower (ATCT) and the Delta Connection Academy. The ATCT staff provided a description of arrival, departure, and touch-and-go corridors, while the previous discussions with Delta Connection Academy provided additional details concerning touch-and-go corridors. Although Delta Connection Academy no longer

operates at New Bedford, these touch-and-go corridors that they described are assumed to be representative of all touch-and-go tracks at the Airport.

ATCT staff state that departing aircraft typically fly runway headings approximately ½ to 1½ mile beyond the opposite end of the runway (or 1½ to 2½ miles from the start of take-off roll), and then turn towards their destination, using a standard rate turn (3 degrees per second). ATCT identified four primary destinations for aircraft departing EWB and provided the percentage of aircraft, by aircraft group, that head for each location. The four primary destinations are to the west, to the north, to the Islands, and to the Cape. The flight track use is provided in Table 4.2-2. All arrivals are assumed to be straight in.

Touch and go training operations are conducted in a pattern that is approximately 2 to 3 miles in length and about 1 mile across; approximately 95 percent of touch-and-go training activity uses left hand patterns; i.e., taking off from Runway 5, pattern work would occur to the west of the runway.

For all future alternatives, aircraft operations are expected to have the same flight track use as the existing conditions.

Table 4.2-2 Departure Flight Track Use (percent)

Aircraft Group	Destination			
	North	West	Cape	Islands
General Aviation Propeller Aircraft	15%	55%	12%	18%
Cape Air	2.5%	2.5%	0%	95%
Jets	2.5%	95%	0%	2.5%

Note: Destination for Island tracks modeled as the Martha's Vineyard VOR (MVY)
Note: Destination for Cape Cod tracks modeled as the Hyannis Airport (HYA)
Source: EWB Air Traffic Control Tower, June 4, 20004, WGI

Meteorological Data

The INM has several settings that affect aircraft performance profiles and sound propagation based on meteorological data. Meteorological settings include average annual temperature, barometric pressure, relative humidity at the Airport, and average headwind speed. Six and a half years of weather data (January 1997 to June 2004) from the National Climatic Data Center (http://www.ncdc.noaa.gov) for EWB were reviewed. Based on analysis of the NCDC data, the average annual conditions for EWB are an average annual temperature of 50.7 degrees Fahrenheit, sea level pressure of 30.09 in-Hg. The humidity and headwind speed were set to the INM default of 70 percent and 8.0 knots, respectively.

Results

Noise level results are presented below for the following:

- Day-Night Average Sound Level (DNL) Contours: depict noise exposure around the study area in 5-decibel increments from 60 to 75 dBA; the FAA considers DNL 65 dBA to be the threshold of compatibility with residential land use.
- Time Above: Estimates are provided for the predicted Time Above 65 dBA; this metric provides a reasonable estimate of outdoor speech interference at residential locations near EWB.
- Maximum A-weighted (Lmax) Sound Level Contours: Contours for a range of existing and future aircraft operating at New Bedford Regional Airport.
- Population estimates within each DNL 5-dB contour interval.

Day Night Sound Level (DNL) Contours

Aircraft noise exposure contours, described in terms of the 60, 65, 70, and 75 dB DNL contours and generated by the INM for 2003 Existing operations, are presented in Figure 4.2-1. DNL noise exposure contours are a graphical representation of how the cumulative noise from aircraft operations is distributed over the surrounding area on an average day of a given year.

Noise Levels at Noise-Sensitive Locations

In addition to the noise exposure contours that were presented in the previous section, the INM was used to compute aircraft noise levels at a variety of noise-sensitive locations. In all, aircraft noise levels were computed at 35 specific locations (Table 4.2-3, Figure 4.2-2). Noise computations completed at each of the noise-sensitive locations included Day-Night Sound Level (DNL) and TA Sound Levels of 65 dB for an average 24-hour day (TA). The full results are presented in Appendix E.

Table 4.2-3 Location and Type of Noise Sensitive Sites

Site	Municipality	Address	Type
1	New Bedford	Fisher Jr.College, 777 Church Street	School
2	New Bedford	31 Lang Street	Residence
3	New Bedford	The Willows, New Plainville Road	Residence
4	New Bedford	Campbell School, 145 Essex Street	School
5	New Bedford	Victoria Street & Wildwood Road	Residence
6	New Bedford	110 Amanda Avenue	Residence
7	New Bedford	1172 Old Plainville Road	Residence
8	New Bedford	1868 Shawmut Avenue	Residence
9	Dartmouth	58 High Hill Road	Residence
10	Dartmouth	635 Hixville Road	Residence
11	Dartmouth	500 Faunce Corner Road	Residence
12	Dartmouth	90 Shaker Road	Residence
13	New Bedford	Mt Pleasant School, 261 Mount Pleasant Street	School
14	New Bedford	Barrett Street & Mount Pleasant Street	Residence (NBHA)[1]
15	New Bedford	30 Cox Street	Residence
16	New Bedford	20 Holly Street	Residence
17	New Bedford	Abraham Lincoln School, 445 Ashley Boulevard	School
18	New Bedford	Phillips Avenue School, 249 Phillips Ave	School
19	New Bedford	St. Anthony Elementary, 106 Bullard Street	School
20	New Bedford	King Street & Belleville Road	Historic
21	New Bedford	1220 Old Plainville Road	Residence
22	New Bedford	1100 Old Plainville Road	Residence
23	New Bedford	New Bedford Housing Authority, New Plainville Road	Residence
24	New Bedford	Plainville Commons, Tarkiln Hill Road	Residence
25	New Bedford	1081-1113 Mount Pleasant St	Residence
26	New Bedford	Plainville Commons, Montigney Street & Lang Street	Residence
27	New Bedford	New Plainville Apartments, New Plainville Road	Residence
28	New Bedford	227 Downey Street	Residence
29	Dartmouth	Hixville Road & Normand Street	Residence
30	Dartmouth	540 Hixville Road	Residence
31	New Bedford	The Willows, New Plainville Road	Residence
32	New Bedford	34 Dana Street	Residence
33	New Bedford	Worcester Street and Lynn Street	Residence
34	New Bedford	Brockton Street and Church Street	Residence
35	New Bedford	The Willows, New Plainville Road	Residence

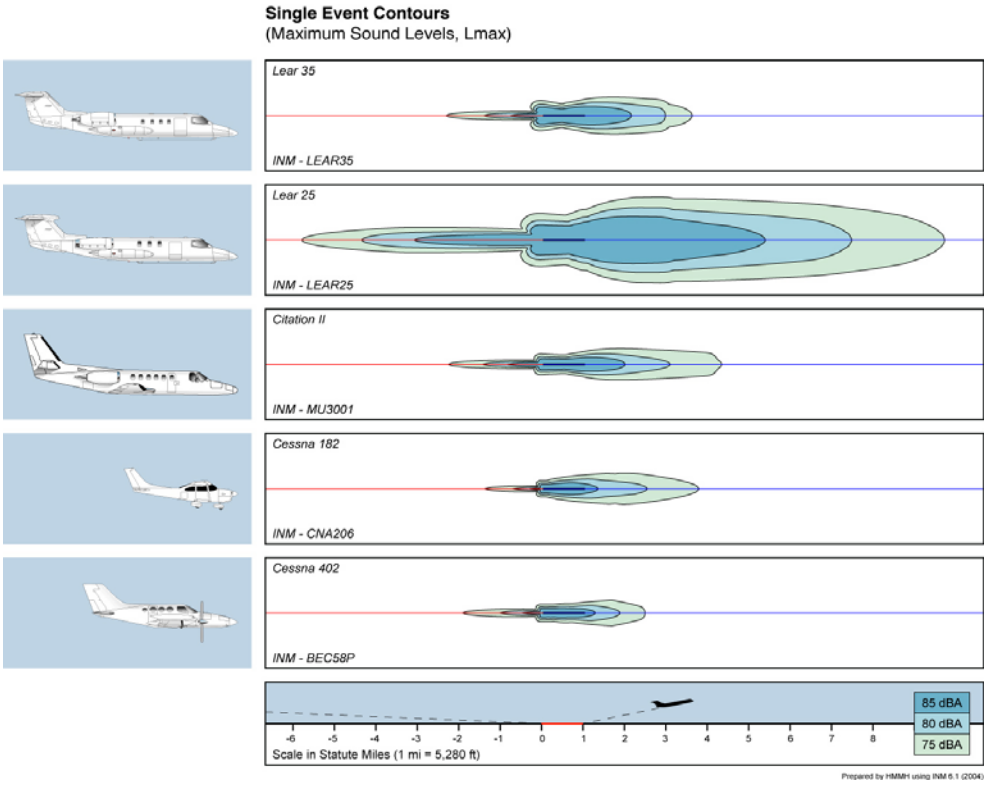
1 New Bedford Housing Authority

Single Event Contours

Maximum A-weighted Sound Level (Lmax) contours were prepared for a range of aircraft types currently in use at New Bedford Regional Airport. These are depicted in Figure 4.2-3. The noisiest aircraft currently operating at the Airport are Stage 2 corporate jets, represented in the figure by the Learjet 25 series. The Lear 25 is predicted to have fewer than 75 annual arrivals/departures at the Airport by 2021. Based on an Lmax value of 75 dBA, indoor speech interference from a single

departure by the Lear 25 would be possible as much as eight miles from start of takeoff roll, if the windows are open as well as distance between the speaker and listener. There is no FAA criterion for an Lmax analysis.

Figure 4.2-3 Maximum A-weighted Sound Levels for Aircraft Types Currently Operating at EWB



Population Estimates

Both HUD and the FAA define DNL 65 dB as the threshold of noise compatibility with residential land uses. Thus, the DNL 65 dB contour is important for population impact assessments. The City of New Bedford's Planning Office provided residential land use data, which was supplemented with project drawings, calendar year 2005 aerial photographs from the Commonwealth of Massachusetts's Office of Geographic and Environmental Information, and a windshield survey. The analysis assumes that 2.46 individuals live in each residence. Results are presented in Table 4.2-4.

Table 4.2-4 Baseline Affected Population

Day-Night Average Sound Level (DNL), in dBA	Number of Residential Units	Approximate Number of People
60-65 dBA	18	44
65-70 dBA	0	0
70-75 dBA	0	0
>75 dBA	0	0

Residences within the DNL 60 -65 dB contour interval are listed below (Figure 4.2-1):

- Plainville Commons (Site 24): There is one single-family home just north of the Plainville Commons site that would fall at or above DNL 60 dB.
- Single-family residences along Old Plainville Road (Sites 7, 21, and 22): While there are no homes at or above DNL 65 dB, there are eleven single-family residences at or above DNL 60 dB.
- Single-family residences along Old Plainville Road and New Plainville Road (Site 8) and toward Shawmut Avenue and Turner's Pond (Site 9). While there are no homes at or above DNL 65 dB, there are five single-family residences at or above DNL 60 dB.
- Single-family residences at the end of Cox Street (Sites 15 and 28). While there are no homes at or above DNL 65 dB, there is one single-family residence at or above DNL 60 dB.

4.2.4 Environmental Consequences

This section summarizes the noise impacts of the proposed alternatives. In summary, none of the alternatives would create significant noise impacts, according to the FAA criteria. In addition, none of the alternatives would create land use incompatibility.

No-Action Alternative

This section summarizes the noise exposure contours, specific point analysis, and population estimates for the No-Action Alternative in 2011 and 2021.

Model Inputs

The No-Action Alternative would have the same model inputs as the Baseline (2003) model inputs, adjusted for future fleet mix and operations as described in Chapter 3 and Appendix E.

Day-Night Sound Level (DNL) Contours

Aircraft noise exposure contours, described in terms of the DNL 60, 65, 70, and 75 dB DNL contours and generated by the INM for the No-Action Alternative, are presented in Figures 4.2-4 and 4.2-5 respectively, with the 2003 Baseline DNL contours for comparison purposes. DNL noise exposure contours are a graphical representation of how the cumulative noise from the New Bedford Airport's aircraft operations is distributed over the surrounding area on an average day of a given year. Comparing DNL contours for different alternatives for the same forecast year is required to evaluate proposed actions to FAA criteria.

In general, the No-Action Alternative DNL contours for both analysis years are similar to the Baseline (2003) contours on the east side of the Airport and smaller on the west side of the Airport. Although operations at the Airport are expected to increase over time, the increase is offset by the retirement and replacement of older, noisier corporate jets with newer aircraft. The effect of this trend is most prominent on the west side of the Airport because the greatest reduction in noise between older and newer aircraft is generally associated with aircraft departure operations as opposed to arriving or taxiing operations. As discussed in Appendix E, RWs 23 and 32 are used for departure more than RWs 5 and 14.

Population Estimates

Estimates of the numbers of people residing within each noise exposure contour are summarized in Table 4.2-5, while estimates of the numbers of residences, or households, within each noise exposure contour are summarized in Table 4.2-6. This analysis assumes that there will not be any new residential development within the DNL 60-65 dB contour interval.

The predicted residences within the DNL 60-65 dB contour interval for the No-Action Alternative are listed below:

- Plainville Commons (Site 24): There is one single-family home just north of the Plainville Commons site that would fall within the DNL 60-65 dB contour interval.
- Single-family residences along Old Plainville Road (Sites 7, 21, and 22): While there are no homes above DNL 65 dB, there are eleven single-family residences within the DNL 60-65 dB contour interval in 2011 and nine single-family residences above the DNL 60 dB contour in 2021.
- Single-family residences along Old Plainville Road and New Plainville Road (Site 8). While there are no homes above DNL 65 dB, there are three single family residences above the DNL 60 dB contour in 2011. There are no homes in this area that are predicted to be above the DNL 65 dB or DNL 60 dB contour in 2021.

- Single-family residences at the end of Cox Street (Sites 15 and 28). While there are no homes above DNL 65 dB, there is one single-family residence above the DNL 60 dB contour in 2011.

Table 4.2-5 Noise-Exposed Population within Various Values of DNL for the No-Action Alternative

Day-Night Average Sound Level (DNL), in dBA	Number of People 2011	Number of People 2021
60-65 dBA	39	25
65-70 dBA	0	0
70-75 dBA	0	0
>75 dBA	0	0

Table 4.2-6 Noise-Exposed Residences within Various Values of DNL for the No-Action Alternative

Day-Night Average Sound Level (DNL), in dBA	Number of Residential Units 2011	Number of Residential Units 2021
60-65 dBA	16	10
65-70 dBA	0	0
70-75 dBA	0	0
>75 dBA	0	0

Specific Point Analysis

In addition to the noise exposure contours that were presented in the previous section, the INM was used to compute aircraft noise levels at 35 noise-sensitive locations throughout the Study Area (Figure 4.2-2). Noise computations completed at each of noise-sensitive locations included Day-Night Sound Level (DNL) and Time Above Sound Levels of 65 dBA for an average 24-hour day (TA). The values at selected locations are presented in Table 4.2-7 and Table 4.2-8, respectively. The complete list is provided in Appendix E.

In general, the DNL values for the 2011 and 2021 No-Action Alternative are similar to the Existing conditions. No-Action Alternative DNL values at the specific points are not expected to vary by more than 1 dB at any point over time compared to the existing (2003) values. As discussed previously, the expected increase in operations with the No-Action Alternative is offset by the retirement and replacement of older, noisier corporate jets with newer aircraft. Schools within the study area would experience noise

levels at or less than DNL 50 dB, which is compatible according to FAA criteria. The residences with the highest predicted DNL are at Sites 21 and 22 (Old Plainville Road), and are close to the RW 14 and RW 23 ends. None of the levels are above DNL 65 dB, which is FAA's criterion for incompatible residential land use.

Table 4.2-7 Predicted Day-Night Average Sound Levels (DNL) at Noise-Sensitive Locations

Location	2011		2021	
	No-Action	Preferred Alternative	No-Action	Preferred Alternative
Schools				
1 - Fisher Jr. College	50.3	50.8	50.0	50.2
4 - Campbell School	48.7	49.1	48.7	48.9
13 - Mt Pleasant School	43.8	43.0	43.4	43.0
17 - Abraham Lincoln School	48.6	49.0	48.5	48.7
18 - Phillips Avenue School	47.6	46.8	47.0	46.7
19 - St. Anthony Elementary	51.0	50.8	50.8	50.8
Residences				
2 - 31 Lang St	53.5	54.2	53.0	53.3
3 - The Willows, New Plainville Rd	53.8	55.6	53.3	54.4
5 - Victoria St & Wildwood Rd	53.7	54.2	53.7	54.0
6 - 110 Amanda Ave	46.4	47.1	46.0	46.4
7 - 1172 Old Plainville Rd	59.4	59.3	59.0	58.9
8 - 1868 Shawmut Ave	57.5	56.2	56.9	55.9
9 - 58 High Hill Rd	57.1	55.0	55.8	54.4
10 - 635 Hixville Rd	42.8	43.3	42.6	42.9
11 - 500 Faunce Corner Rd	45.7	46.5	45.2	45.8
12 - 90 Shaker Rd	48.5	49.1	48.0	48.2
14 - Barrett St & Mount Pleasant St	50.2	49.2	49.6	49.1
15 - 30 Cox St	55.5	55.2	54.6	54.8
16 - 20 Holly St	47.5	47.0	47.2	47.0
21 - 1220 Old Plainville Rd	61.7	60.3	60.9	59.8
22 - 1100 Old Plainville Rd	61.3	62.0	60.6	60.9
23 - New Bedford Housing Authority, New Plainville Rd	56.7	58.8	56.0	57.4
24 - Plainville Commons, Tarkiln Hill Rd	59.5	61.5	59.0	60.5
25 - 1081-1113 Mount Pleasant St	53.3	54.1	52.9	53.5
26 - Plainville Commons, Montigney St & Lang St	56.5	57.3	56.2	56.8
27 - New Plainville Apartments, New Plainville Rd	54.3	55.6	53.9	54.9
28 - 227 Downey St	57.0	58.5	55.8	57.8
29 - Hixville Rd & Normand St	48.2	48.6	47.8	48.1
30 - 540 Hixville Rd	45.0	46.0	44.3	44.9
31 - The Willows, New Plainville Rd	54.5	56.4	53.9	55.2
32 - 34 Dana St	47.5	48.2	47.3	47.8
33 - Worcester St and Lynn St	47.2	47.6	47.1	47.2
34 - Brockton St and Church St	45.7	46.1	45.7	45.9
35 - The Willows, New Plainville Rd	52.9	54.4	52.4	53.4
Historic				
20 - King St & Belleville Rd	49.9	49.0	49.2	48.8

Table 4.2-8 Predicted Time Above 65 dBA (in minutes) at Noise-Sensitive Locations

Location	2011		2021	
	No-Action	Preferred Alternative	No-Action	Preferred Alternative
Schools				
1 - Fisher Jr. College	4.7	4.9	5.1	5.3
4 - Campbell School	4.8	4.9	5.2	5.3
13 - Mt Pleasant School	1.2	1.0	1.2	1.1
17 - Abraham Lincoln School	4.0	4.0	4.3	4.3
18 - Phillips Avenue School	3.3	3.3	3.5	3.5
19 - St. Anthony Elementary	4.3	4.3	4.6	4.6
Residences				
2 - 31 Lang St	10.0	10.3	10.7	11.0
3 - The Willows, New Plainville Rd	10.3	13.1	10.9	13.7
5 - Victoria St & Wildwood Rd	7.8	8.0	8.4	8.7
6 - 110 Amanda Ave	2.2	2.3	2.4	2.5
7 - 1172 Old Plainville Rd	29.8	30.1	31.4	31.6
8 - 1868 Shawmut Ave	27.5	18.6	28.4	19.4
9 - 58 High Hill Rd	14.9	13.3	15.8	14.1
10 - 635 Hixville Rd	1.2	1.2	1.2	1.2
11 - 500 Faunce Corner Rd	1.6	1.8	1.5	1.8
12 - 90 Shaker Rd	3.6	3.8	3.8	4.0
14 - Barrett St & Mount Pleasant St	4.3	4.0	4.5	4.2
15 - 30 Cox St	12.1	12.7	12.5	13.3
16 - 20 Holly St	3.4	3.3	3.6	3.5
21 - 1220 Old Plainville Rd	42.1	40.9	43.8	42.5
22 - 1100 Old Plainville Rd	35.2	35.7	37.4	37.7
23 - New Bedford Housing Authority, New Plainville Rd	17.3	24.6	18.1	23.5
24 - Plainville Commons, Tarkiln Hill Rd	33.2	48.0	34.9	45.9
25 - 1081-1113 Mount Pleasant St	10.4	12.2	10.6	12.4
26 - Plainville Commons, Montigney St & Lang St	23.3	26.8	23.9	22.9
27 - New Plainville Apartments, New Plainville Rd	12.2	16.5	12.6	15.3
28 - 227 Downey St	12.5	17.7	13.0	18.5
29 - Hixville Rd & Normand St	3.2	3.3	3.4	3.5
30 - 540 Hixville Rd	1.5	1.8	1.6	1.8
31 - The Willows, New Plainville Rd	11.6	14.5	12.2	15.2
32 - 34 Dana St	2.7	3.1	2.6	3.0
33 - Worcester St and Lynn St	2.9	2.9	3.0	3.0
34 - Brockton St and Church St	1.8	1.7	1.8	1.6
35 - The Willows, New Plainville Rd	8.5	10.6	8.9	11.1
Historic				
20 - King St & Belleville Rd	4.8	4.6	5.1	4.9

The DNL values in all three analysis years are similar, with 22 sites predicted to experience a slight (less than 2 dB) decrease in average sound levels between 2003 and 2021. Thirteen sites would experience a slight increase, with Site 5 (east of Route 140) experiencing a 0.9-dB increase.

Although the TA metric is not used to determine noise impacts, it is useful to assist with the description of the noise environment, particularly to describe speech interference. The TA 65 dBA values for the No-Action Alternative (Table 4.2-8) are expected to increase compared to the existing conditions (2003); this is likely to result in an increase in outdoor speech interference. Sites 7, 21, 22, and 24 would experience noise levels greater than 65 dBA ranging between 30 to 44 minutes a day under the

No-Action Alternative in both study years. These are the highest Time Above values predicted for the No-Action Alternative across both study years and for all 35 sites.

Preferred Alternative

This section describes the model inputs and results of the noise analysis for the Preferred Alternative. This analysis assumes that the proposed projects is completed by 2011.

Model Inputs

This section provides the data (aviation demand forecasts and runway utilization) that were used as inputs to the INM to model noise conditions for the Preferred Alternative.

Aviation Demand Forecasts

The INM requires annual average daily operations operational input for both base case and forecast scenarios. The forecasts are derived from aviation demand forecasts, described in Chapter 2 of this FEIS/FEIR. The detailed INM fleet mix developed from these data is provided in Appendix E.

Runway Utilization

Runway use for the Preferred Alternative assumes that the jet aircraft predicted to operate at the Airport would prefer to use RW 5-23 because the departure length will be longer than RW 14-32. This assumption is based on analysis of runway takeoff performance of the aircraft in the projected fleet mix, which suggests that it is reasonable to assume that these aircraft would on occasion use RW 14-32. The 5,000-foot runway length will not preclude the departures of these aircraft under strong northeast wind conditions. The Preferred Alternative also would have a 5,000-foot arrival runway length for both RW 5-23 and RW 14-32 and therefore jet arrival runway use will be likely dominated by wind conditions. Runway use for the Preferred Alternative is presented in Table 4.2-9.

Table 4.2-9 Runway Use: Preferred Alternative

Runway	Percent Use by Aircraft Type		
	Jets Only		All Other Aircraft
	Arrivals	Departures	
5	10%	14%	10 %
23	50%	66%	50 %
14	5%	2%	5 %
32	35%	18%	35 %
Total	100 %	100 %	100 %

Source: ASG, WGI analysis, HMMH analysis.

Day-Night Sound Level (DNL) Contours

Aircraft noise exposure contours, described in terms of the DNL 60, 65, 70, and 75 dB contours and generated by the INM for the Preferred Alternative are presented in Figure 4.2-6 and Figure 4.2-7, with DNL contours for the No-Action Alternative for comparison.

In general, the Preferred Alternative DNL contours differ considerably from the No-Action Alternative contours because the Preferred Alternative will affect runway locations by several hundred feet and will change runway use for jet aircraft. However, the Preferred Alternative will not create any significant noise impacts, according to FAA criteria. The Preferred Alternative will not change aircraft operational levels.

Population Estimates

Estimates of the numbers of people residing within each noise exposure contour associated with the Preferred Alternative are summarized in Table 4.2-10, while estimates of the numbers of households within each noise exposure contour are summarized in Table 4.2-11. The population estimate analysis assumes that there will not be any new residential developments within the 60 dB DNL contours.

The predicted residences within the DNL 60-65 dB contour interval for the Preferred Alternative are listed below. There are no residences predicted to be at or above DNL 65 dB for the Preferred Alternative for either forecast year.

- Single-family residences along Old Plainville Road (Sites 7, 21, and 22): There are eleven single-family residences at or above DNL 60 dB in 2011. Four of these single-family residences are also expected to be at or above DNL 60 dB in 2021.

- Plainville Commons (Site 24): There is one single-family home just north of the Plainville Commons site that would fall at or above DNL 60 dB in 2011 and 2021. The Plainville Commons complex has 48 market rate condominium/apartment complex units. Of those, 24 units in the two northeastern-most buildings are projected to be at or above DNL 60 dB in 2011. Only the northern-most building (12 units) is predicted to be at or above DNL 60 dB in 2021.
- Single family residence at Pelletier Street (Site 26): There is one single-family home at the northern end of Pelletier Street that would fall at or above DNL 60 dB in 2011 only.

Table 4.2-10 Noise-Exposed Population within Various Values of DNL for the Preferred Alternative compared to the No-Action Alternative

Day-Night Average Sound Level (DNL), in dBA	Number of People 2011		Number of People 2021	
	No-Action Alternative	Preferred Alternative	No-Action Alternative	Preferred Alternative
60-65 dBA	42	91	27	42
65-70 dBA	0	0	0	0
70-75 dBA	0	0	0	0
>75 dBA	0	0	0	0

Table 4.2-11 Noise-Exposed Residences within Various Values of DNL for the Preferred Alternative compared to the No-Action Alternative

Day-Night Average Sound Level (DNL), in dBA	Number of Residences 2011		Number of Residences 2021	
	No-Action Alternative	Preferred Alternative	No-Action Alternative	Preferred Alternative
60-65 dBA	17	37	11	17
65-70 dBA	0	0	0	0
70-75 dBA	0	0	0	0
>75 dBA	0	0	0	0

Specific Point Analysis

In addition to the noise exposure contours that were presented in the previous section, the INM was used to compute aircraft noise levels at 35 noise-sensitive locations throughout the Study Area. Noise computations completed at each of noise-sensitive locations included DNL and TA Sound Levels of 65 dB for an average 24-hour day (TA). The results of this analysis are presented in Table 4.2-7 and Table 4.2-8, respectively.

There are no residences with significant impact (an increase of DNL 1.5 dB or greater where the noise level is DNL 65 dB or greater) for the Preferred Alternative for either forecast year. Most residences would experience negligible changes in DNL in comparison to the No-Action Alternative, generally less than 2 dB, with decreases in some locations. All sites with increases of 1 to 2 dB are at levels of DNL 62 dB or less for the Preferred Alternative. Schools within the study area would also experience negligible changes in DNL, generally less than 1 dB, all with a noise level less than or equal to DNL 51 dB.

The TA analysis (Table 4.2-8) shows negligible differences from the No-Action Alternative at all schools and most residences; TA 65 would change by five minutes or more at four residential locations. At Site 8, TA 65 would decrease from 28 to 19 minutes a day in both 2011 and 2021. At Site 23, TA 65 would increase from 17 to 25 minutes a day in 2011 and from 18 to 24 minutes a day in 2021. At Site 24, TA 65 would increase from 33 to 48 minutes a day in 2011 and from 35 to 46 minutes a day in 2021. At Site 28, TA 65 would increase from 13 to 18 minutes a day in 2011 and from 13 to 19 minutes a day in 2021.

4.2.5 Mitigation Measures

FAA Order 1050.1E states that "significant impact" occurs when analysis shows that the proposed action will cause noise sensitive areas to experience an increase in noise of DNL 1.5 dB or more at or above DNL 65 dB noise exposure when compared to the No-Action alternative for the same timeframe. The Preferred Alternative would not result in a significant noise impact to any sensitive site, and would not warrant sound insulation or other mitigation.

The proponent will investigate additional voluntary mitigation measures as suggested in the Secretary's Certificate and discussed below.

Part 150 Study

The FAR Part 150 Noise Compatibility Program[3] is a voluntary program undertaken by airports that examines noise exposure levels and attempts to mitigate noise if the levels exceed DNL values of 56 dB in any residential areas around an airport. The noise analysis presented in this FEIS/FEIR is based on the forecast provided in Chapter 3 of this FEIS/FEIR. That forecast estimates a total of 118,890 annual operations by 2011 and 126,246 annual operations by 2021. At the time when actual annual operations exceed 118,000 prior to 2021 or 125,000 per year after (or during) 2021, or a new and substantially different long-range forecast is developed, the Airport will apply for FAA funding to complete a Part 150 study to identify noise

3 14 CFR Part 150, FICON, 1992. FAA Part 150 Noise Compatibility Programs examine noise exposure levels and attempt to mitigate noise if the levels exceed DNL values of 65 dB in any residential areas or at any noise-sensitive sites around an airport.

impacts and potential mitigation measures, which could include sound insulation, voluntary acquisitions, or operational noise abatement measures.

Noise Monitoring Program

The Airport currently does not monitor noise levels in the surrounding community, and does not maintain a log of noise complaints. The City plans to hold a series of public meetings through the FEIS/FEIR review period to discuss the proposed safety improvements and noise concerns. Following these meetings, the proponent will evaluate installing one or more permanent noise monitors in key locations, and developing a system to track noise complaints. The FAA has stated that permanent noise monitoring is not required for this project and the FAA would not fund noise monitoring at this Airport because of its limited noise impact. Any monitoring would be funded by the City of New Bedford.

Noise Working Group

The City of New Bedford will consider forming a Noise Working Group to study airport-related noise issues, including monitoring and reporting, in conjunction with the proposed safety improvements.

4.2.6 Summary

Noise contours were developed for baseline conditions (2003) and for the No-Action Alternative and the Preferred Alternative for the two build years (2011 and 2021). As shown in Table 4.2-10, the Preferred Alternative would not create significant noise impacts according the FAA criteria. In addition, none of the alternatives would create land use incompatibility.

The Preferred Alternative does have some noise increases, at less than the threshold of significance. As shown in Table 4.2-10, the Preferred Alternative would result in an increase in the number of people residing in the DNL 60-65 dB contour interval, however, there would be no residents with a noise exposure greater than DNL 65 dB.

4.3 Water Quality

The Secretary's Certificate on the second NPC stated that the FEIR should provide a detailed discussion of the consistency of the existing and proposed airport drainage and stormwater management system with the DEP Stormwater Management Guidelines (now the Stormwater Management Standards) and should include a drainage plan for the Preferred Alternative. The Certificate on the DEIR required that the SDEIR provide sufficient information on the location and types of proposed stormwater management facilities and structural Best Management Practices (BMPs) included in the proponent's stormwater management plan to collect, treat, and

provide total recharge of stormwater generated in the 2021 build scenario. The conceptual drainage plan should analyze both direct and indirect impacts on wetland resource areas resulting from the Airport full-build scenario.

The Certificate also required that:

- The proponent consider installing one or more monitoring wells downgradient of the project site to monitor and evaluate the impacts of the proponent's stormwater management plan on adjacent resource areas and Town of Dartmouth groundwater resources;
- The FEIR include a copy of the proponent's Stormwater Pollution Prevention Plan (SWPPP) and Spill Contingency Plan covering current operations;
- The FEIR provide a detailed description of the proponent's proposed mitigation measures to ensure compliance with DEP's Stormwater Management Guidelines (now the Stormwater Management Standards), including the full-build scenario;
- The FEIR should respond to comments regarding the potential hydrologic impacts to the Atlantic White Cedar Swamp natural wetland community adjacent to the project site; and
- The FEIR should further investigate feasible methods of reducing impervious surfaces within the Airport site for the Preferred Alternative and the Airport full-build scenario, including low-impact development design measures such as permeable surface parking materials and landscaped bioretention areas.

This section includes a summary of existing water quality conditions of surface water and groundwater resources in the Project Area. The existing environment has not changed since the DEIS/DEIR was published in 2005. These on-site and adjacent resources include wetlands, waterways, and drainage channels.

This section also describes the proposed drainage systems and expected hydrological and water quality impacts, including construction and operational impacts, for the No-Action Alternative and the Preferred Alternative. This section describes the measures proposed to comply with the Massachusetts Stormwater Management Standards and addresses the requirements of the Certificate. A copy of the Airport's current SWPPP is provided in Appendix F, *Stormwater Pollution Prevention Plan*.

4.3.1 Regulatory Context

Water quality within the Study Area is addressed for several reasons:

- Evaluating water quality is a necessary component of the National Environmental Policy Act (NEPA) document as required by the FAA NEPA

regulations. NEPA regulations that address water quality are discussed in the FAA *Airport Environmental Handbook* (*FAA Order 5050A*) in Chapter 5 at Paragraph 47e (6) and in the FAA *Environmental Impacts: Policies and Procedures* (*FAA Order 1050.1E*).

- Water quality must be addressed for compliance with the federal CWA of 1977, which provides the authority to establish water quality standards, control discharges into surface and subsurface waters, develop waste treatment management plans and practices, and issue permits for discharging, dredging or filling a water body.
- Due to the federal CWA, the EPA requires a National Pollutant Discharge Elimination System (NPDES) Stormwater Multi-Sector Industrial Permit for discharge of stormwater from conveyance systems at major airports to surface waters of the United States (*40 CFR Parts 122,123, and 124*). The multi-sector permit required falls under Standard Industrial Code (SIC) Group 45 "Transportation by Air" and Stormwater Permitting Sector S "Air Transportation Facilities."
- The EPA requires a NPDES Construction General Permit for discharge of stormwater to waters of the U.S. from construction sites disturbing greater than one acre of land.
- Massachusetts has a set of Stormwater Management Standards (*310 CMR 10.00*) that address both water quality and water quantity in order to prevent water pollution, flooding, and reduced groundwater recharge. The standards require numerous design, treatment, prevention, and maintenance measures used in combination to satisfy these goals. The specifics of each standard are addressed in Section 4.3.6.

4.3.2 Affected Environment

The following sections describe the surface and groundwater resources that receive discharge from the Airport, the layout of the Airport's existing stormwater management system, and water quality.

Watersheds and Drainage

The following section describes the local and regional watersheds and drainage patterns and the Airport's drainage system. The entire Airport drains to Wetland M (the Apponogansett Swamp) and the Paskamanset River, and has a single outfall point at the confluence of the East and West Ditches south of the RW 5 end.

Regional Study Area

The Airport is located in southeastern Massachusetts within the watershed of the Paskamanset River (Figure 4.3-1). This 26-square-mile watershed is located within

the 380-square-mile Buzzards Bay Basin. The river begins at Turner Pond in the southern portion of the Acushnet Cedar Swamp. The Airport is located directly east of the Paskamanset River, and both the swamp and the pond lie directly north, upstream of the Airport. Approximately 7.5 miles south-southwest of the Airport, the Paskamanset River discharges into Slocums River, a small, tidal embayment connected to Buzzards Bay. The upper portion of the watershed encompasses extensive wetland systems, including the Acushnet Cedar Swamp (approximately 1,000 acres) and the Apponogansett Swamp (over 1,000 acres) as well as the Airport property. The watershed includes portions of Route 140, a portion of the CSX Rail line, and approximately 2.5 miles of Interstate I-195, which bisects the watershed south of the Airport. A portion of Route 6 lies within the watershed south of Route 140 and I-195. The Town of Dartmouth public water supply wells are south of Route 6.

The Town of Dartmouth well fields lie in the aquifer downstream of the Airport. The closest public drinking water wells are owned by the Town of Dartmouth, with the closest wells approximately 3.3 miles south of the Airport. The area selected for analysis of water quality includes the entire watershed but specifically focuses on the watershed area upstream from the Town of Dartmouth's well fields. This encompasses the broadest area that contributes to, or may be affected by, improvements at Airport while focusing on concerns relative to Dartmouth's drinking water supply.

Local Study Area

The Airport property consists of approximately 765 acres in the northern half of the Paskamanset River watershed. Of that, approximately 696 acres form a contiguous parcel that includes developed land associated with Airport facilities and operations, land that is part of the former New Bedford Municipal Landfill, and undeveloped land. While the entire Airport parcel comprises approximately 4.8 percent of the Paskamanset River watershed, the developed land directly associated with airport operations is only 2.2 percent of the watershed. The Local Study Area (Figure 4.3-2) consists of Airport Drainage Areas A and B (Figure 4.3-3).

An un-named tributary of the Paskamanset originates in the southeastern portion of the Airport property and has two small upper branches, which are drainage ditches that flank the southern end of RW 5. These branches/ditches are identified as the "East Ditch of the Paskamanset River Tributary" and the "West Ditch" as shown on Figure 4.3-2. The two ditches join near the southwestern edge of the Airport property, where it then flows as a single tributary to the Paskamanset River.

Existing Drainage System

The two main stormwater outfalls from the Airport, as described, form the beginnings of the East and West ditches (Figure 4.3-3). The developed portion of the Airport is generally divided into two sub-watershed drainage areas (Areas A and B) discharging to these two outfalls as shown on Figure 4.3-3 and described below. The

existing drainage system does not have any detention or infiltration basins or other structural BMPs other than grassed swales.

Drainage Area A (Stormwater Outfall Number 1)

Drainage Area A is approximately 136.4 acres and occupies the northwestern quadrant of the Airport and discharges to the West Ditch in Wetland M. Portions of RW 5 and RW 14, and the associated RSAs within Drainage Area A comprise the majority of the land use in the watershed, with residential development comprising the balance. Commercial businesses in Building No. 9 (a hangar), and an aircraft maintenance and salvage business housed in Building No. 8, are also within Drainage Area A.

Fifteen percent (21 acres) of the area draining to Stormwater Outfall No. 1 includes off-Airport residential land and the remaining 85 percent (115.0 acres) drains Airport properties. The area includes a portion of the residential development along Old Plainville Road, while the Airport area includes most of RW 14 and its associated RSAs up to the RW 5-23/14-32 intersection. It includes Taxiways B, C, and D, and RW 5 and the area to the northwest of RW 5. Stormwater runoff from these areas is conveyed through a drainage system to the outfall at the West Ditch. There are two additional minor discharges to this swale, downstream of the primary discharge point.

Drainage Area B (Stormwater Outfall Number 2)

Drainage Area B is approximately 521 acres and encompasses the entire eastern portion of the Airport. This sub-watershed discharges to the Paskamanset River via the East Ditch, in Wetland M. Approximately 203 acres (39 percent) of the drainage area consists of off-Airport residential and commercial development along Mt. Pleasant Street and Shawmut Avenue, which form the eastern and western boundaries of the subdrainage area. The Airport component (318 acres, 61 percent) is comprised of a portion of RW 14-32, Taxiways A, E, and F, the terminal area, and the industrial complex housing the FBOs. The watershed also includes extensive wetland areas to the east, south, and west of RW 32. The New Bedford Municipal Landfill (NBML) is located outside Drainage Area B.

Stormwater drainage in this watershed is conveyed through a system of storm drains and catch basins to swales along the perimeter of RW 14-32 that in turn discharge to the East Ditch. The taxiway parallel to RW 5 and the Airport's terminal area are also served by a piped stormwater drainage system, which discharges directly to the East Ditch, which then flows to the Paskamanset River.

Surface Water Quality

The following sections describe the water quality classification of the Paskamanset River and summarize the findings of the Airport water quality sampling study described in the DEIS/DEIR.

Water Quality Classification

The Massachusetts Surface Water Quality Standards (314 CMR 4.00) have designated the water quality in the Paskamanset River from the outlet of Turner Pond to the confluence with Slocums River as Class B. Class B waters are designated as habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. They are suitable as a source of public water supply with appropriate treatment, for irrigation and other agricultural uses, and for compatible industrial cooling and process uses. Class B waters also have consistently good aesthetic value.

Under the CWA, the EPA requires that states develop and report information on the quality of their water resources. Under Section 303(d) and Section 305 (b) of the CWA, the MA DEP has published a "Massachusetts Year 2006 Integrated List of Waters" dated October 2007. This list groups water bodies into five categories. The Paskamanset River from the outlet of Turner Pond to the confluence with Slocums River is listed in Category 3. This category indicates that MA DEP lacks sufficient data to classify the river. Turner Pond is impaired due to excess mercury and is listed as Category 5, which is reserved for water bodies that need a Total Maximum Daily Load (TMDL) established to improve water quality. The Northeast Regional Mercury TMDL (covering water bodies in Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont) includes Turner Pond and was passed in December 2007. This TMDL focuses on reducing atmospheric deposition of mercury in order to reduce mercury concentrations downstream.

A water quality monitoring program was conducted from 1996 through 1999 to characterize the overall water quality of the Paskamanset system in the vicinity of the Apponogansett Swamp, and the general quality of the stormwater runoff and shallow groundwater at the Airport.

Results of the sampling program, which was described in detail in the DEIS/DEIR and in Appendix D.6, *Water Quality* of the DEIS/DEIR, indicate that water quality in the Paskamanset River drainage basin is generally adequate for public supply and industrial use. The water is soft (<60 mg/l hardness) and slightly acidic (average pH = 6.0).

The prevailing land uses in the watershed coupled with the proximity of highway sources and residual point sources indicate that the wet weather flows in the Paskamanset River are conditioned primarily by stormwater. Flow data indicate that Airport flow volume contributions to the Paskamanset River are significantly less than contributions made both upstream and downstream of the Airport.

Based on data collected on the six sampling dates occurring between 1996 and 1999, and the position of the Airport in the Paskamanset River watershed, the Airport is not a major source of stormwater-related pollutants in the watershed and hence not a major contributor impacting the water quality of the Paskamanset River system. The Paskamanset River flows through an expansive system of wetlands, receiving base flow from groundwater recharge and discharge, and wet weather stormflows from a combination of point and non-point sources (NPS) or urbanized surfaces with varying intensities of development. Hence, the mass loading pollutants to the overall system is less. When compared to the land uses evaluated for the National Urban Runoff Program[4] (NURP), the runoff from the Airport falls below the NURP Event Mean Concentrations for all the parameters sampled.

Groundwater

The following sections describe the surficial geology at the Airport, the Regional Study Area's aquifer and groundwater flow characteristics, groundwater quality, surface water – groundwater interactions, and the Town of Dartmouth public drinking water supply water quality and quantity data.

Surficial Geology

A description of the surficial geology at the Airport provides a basis for determining the potential for contaminants to infiltrate to the groundwater. In general, the sand and gravel deposits are much more permeable than floodplain alluvium or till deposits, and water infiltrates quickly. Paved areas of the Airport provide a semi-impermeable barrier to infiltration.

The surficial deposits at the Airport are generally sand and sand/gravel deposits. This indicates high infiltration capacity where pavement is not present. Floodplain alluvial deposits are north and south of the Airport, at the Acushnet Cedar Swamp. This indicates low infiltration capacity, although theses natural deposits may have been excavated at the landfill. Exposed till or bedrock is mapped east of RW 32. This indicates generally low infiltration capacity in these areas.

Aquifer and Groundwater Flow Characteristics

The stratified drift deposits beneath the Paskamanset River valley are classified as aquifers that have the potential to yield water to water supply wells. The United State Geological Survey (USGS) has classified the aquifers as low yield (potential

4 *Nationwide Urban Runoff Program: An Evaluation of the Water Quality Effects of Detention Storage and Source Control.* Hey, D.L., Schaefer, G.C. 1983.

yield 0 to 100 gallons per minute (gpm), medium yield (100 to 300 gpm) or high yield (more than 300 gpm)).

A portion of the aquifer beneath the Airport is classified as a medium yield aquifer. The deposits beneath the Airport consist of three units. The upper 10 to 20 feet is composed of well-sorted fine gravel and medium to coarse sand (hydraulic conductivity (K) ranging from 100 to 200 ft/day). The middle unit is composed of fine to coarse sand with some pebble gravel (K ranging from 40 to 200 ft/day). The lower unit consists of fine sand, silt, and clay (K ranging from 10 to 40 ft/day).

The area south of the Airport, including the Apponagansett Swamp, is composed of fine sands overlying silt and clay (K ranging from 10 to 40 ft/day). The aquifer is classified as a low yield aquifer. In general, groundwater flow through these fine grained deposits is much slower than through the medium to coarse sand deposits, which are under the Airport.

Farther south, toward the area where the Town of Dartmouth public water supply wells are located, the aquifer is classified as medium yield with a small area classified as high yield. The Town of Dartmouth public water supply wells are described later in the Public Drinking Water Supplies subsection.

Regional groundwater flow direction would be expected to generally be south toward Buzzards Bay and more locally toward the Paskamanset River. Local groundwater flow directions may be affected by small surface water bodies, topography, drainage ditches, utility bedding, and other subsurface structures. These factors tend to have more influence on groundwater flow direction when the topography and water table are relatively flat and the water table is relatively shallow as is the case in the aquifer beneath the Airport.

Long term groundwater measurements have been recorded since 1964 at a USGS well south of the Airport control tower building.[5] Those measurements indicate that the water level fluctuates less than three feet annually, with a maximum recorded high water level of 2.31 feet below ground surface in 1969 and a minimum level of 5.20 feet in 1964.

Groundwater Quality

Groundwater quality in the Buzzard's Bay basin is generally adequate for public supplies and industrial use, except in areas where iron, manganese, and color exceed recommended limits. Wells that show an increase in iron and manganese may have induced infiltration from surface water. In general, the groundwater is soft (less than 60 mg/l hardness) and acidic (average pH 6.0). [6]

5 *Water Quality Preliminary Draft*. Baystate Environmental Consultants. 1999.
6 *Water Quality Preliminary Draft*. Baystate Environmental Consultants. 1999.

A comparison of the range of values observed in surface water in the Airport watershed and the results of shallow groundwater analysis shows that the groundwater samples have elevated levels of nutrients, iron, and both biological and chemical oxygen demand. Nitrate concentrations and dissolved oxygen (DO) levels were lower in the groundwater samples than in the range of values observed for surface waters. Groundwater generally has lower DO values than surface water, because it is below ground. The lower DO levels most likely account for the higher ammonia concentrations and biochemical oxygen demand (BOD) levels and the lower nitrate concentrations. Groundwater observations were within the range of observed values for surface waters in the local Study Area watershed for pH, total alkalinity, specific conductance, and Cl.

Surface Water and Groundwater Interactions

The description of surface water – groundwater interactions is pertinent to understanding whether potential contamination from the Airport could affect surface water bodies in the vicinity. Surface water bodies that are hydraulically upgradient of groundwater flow at the Airport include Turner Pond and Acushnet Cedar Swamp. These surface water bodies would not be expected to be affected by groundwater.

Surface water bodies considered hydraulically downgradient of the Airport include Apponagansett Swamp and the adjacent portion of the Paskamanset River. Groundwater discharges to the upper reaches of the Paskamanset River, where the river is referred to as a "gaining stream."[7] Appendix D.6 *Water Quality* of the DEIS/DEIR describes groundwater discharge in this area, which includes the Apponagansett Swamp. Contaminants from the Airport that are potentially migrating with the groundwater have the potential to affect these downgradient surface water bodies; however, contaminant attenuation occurs in the subsurface and the surface water.

Further downstream, in the vicinity of the Dartmouth public water supply wells, the Paskamanset River is a "losing stream." The relationship between streamflow and groundwater withdrawal in the Paskamanset River Watershed was investigated in 1995 to determine the potential influence of groundwater withdrawals. Streamflow was measured upstream and downstream of the Dartmouth municipal water supply wells during times of baseflow conditions and compared with pumpage rates reported by the Dartmouth Water Department. The results of the measurements indicate that under baseflow conditions the rate of streamflow slows or even decreases with increasing drainage area approximately 3 miles south of the Airport. The Water Management Act Permit for the operation of the Dartmouth wells E-1 and E-2 (Permit #9P2-4-24-072.01; issued August 20, 1996) restricts pumping of the wells when river levels fall below 5.0 cubic feet per second (cfs) at the steam gage at

7 *Water Resources of the Coastal Drainage Basins of Southern Massachusetts*, Williams, John R., Tasker Gary D., 1998.

Russells Mill Road (USGS Station No. 01105933), because of the demonstrated link between surface and groundwater in this part of the watershed.

Public Drinking Water Supplies

The closest public drinking water supply wells are owned by the Town of Dartmouth, with the closest wells approximately 3.3 miles south of the southern edge of the Airport (Figure 4.3-1).

Wells A, B, and C are located closest to the Airport The Zone II areas for this well field[8] extend up to Route 6, approximately 1.5 miles downstream from the Airport and downstream of I-195. The Airport is therefore not within the defined recharge area of these wells. The other wells are more remote. The Violetta wells are not in the stratified drift associated with the River. Chase Road well E-1 and E-2 are in a semi-confined aquifer, indicating that the water is being drawn from a deeper portion of the aquifer, which is below a relatively impermeable layer. Consequently, the potential groundwater contamination originating at the Airport would not be directly migrating to the public drinking water supply wells. The most sensitive area for contamination of the groundwater wells is south of Route 6, within the Zone II areas.

Presently, more than half of the Dartmouth water supply (53.1 percent) is pumped from wells within the alluvial valley of the Paskamanset River. As described in the section on surface water – groundwater interactions, some of the municipal water supply wells induce flow from the portion of the Paskamanset River adjacent to the wells. A remote pathway from the Airport to the Town of Dartmouth public water supply wells could be through surface water runoff or groundwater discharge into the upper reaches of the Paskamanset River and then subsequent induced infiltration of Paskamanset River streamflow south of Route 6. This is supported by the Class B surface water quality in the Paskamanset River adjacent to the wells and the good drinking water quality produced by the wells.

Finished water is water that is discharged into the drinking water distribution system after any necessary treatment. Finished drinking water data on volatile organic compounds (VOCs), inorganics, secondary contaminants, nitrate, nitrite, and trihalomethanes indicate that levels were below EPA standards. Water quality monitoring by the Town of Dartmouth does not indicate any violation of state or federal limits for drinking water. Based on the limited data available for 1996 and 1999, no discernable trends in water quality were observed, other than an increase in VOCs that are likely to be disinfection byproducts generated by chlorination of the water prior to distribution.

8 The Zone II is the recharge area for the well or set of wells, pumping under extreme conditions (maximum pumping rate for 180 days with no rainfall).

Summary of Potential for Impact to the Dartmouth Well Field from the Airport

The Airport is located nearly 3.3 miles north of the Dartmouth well fields, and nearly 1.5 miles north of the northernmost extent of the Zone II boundary associated with the well fields (Figure 4.3-1). The Airport is not within the groundwater recharge area for the wells and would not directly affect the drinking water supply. A long, indirect pathway from the Airport to the Dartmouth wells was identified as a remote possible pathway. However, it is highly unlikely that any potential future contaminants from the Airport would reach the wells.

The observed surface water quality in the Paskamanset main stem appears to be good (i.e. Class B), and it does not appear that the Airport is currently generating any significant adverse impacts downstream of the Airport. Water quality monitoring by the Town of Dartmouth does not indicate any violation of state or federal limits for drinking water which could be attributable to pollution from the Airport.

4.3.3 Environmental Consequences

This section describes the potential direct and indirect impacts on water resources from construction and operation of the proposed project. Proposed changes that would affect water resources are described for each alternative. Potential impacts of the proposed project on both hydrology and water quality were considered based on changes in impervious area, land use, and discharge points in the Airport's drainage areas.

Conceptual drainage plans have been developed for the RW 5-23 project (the only element of the proposed program that is likely to advance to design and permitting within the next five years) that incorporate appropriate BMPs and comply with state Stormwater Policy Standards. This section illustrates the locations of the proposed stormwater management facilities and structural BMPs, and demonstrates how recharge would be provided. Drainage plans for the remaining two elements of the improvement program (the RW 14-32 Safety Improvements and ARFF/GA Development) will be developed at the time that these projects advance into design. Nonetheless, Section 4.3 describes how stormwater runoff from these areas would be handled and provides cumulative calculations of the total program's impacts on groundwater recharge and wetland hydrology.

Types of Direct and Indirect Impacts

Impacts to water resources were determined based on changes in grading, surface cover, and land use. The analysis evaluates potential direct impacts to water resources in two categories: hydrologic effects and water quality impacts.

Adding impervious surfaces to a watershed changes the natural hydrology by reducing infiltration and increasing the amount of runoff from precipitation. This can

increase the extreme flows in surface waters: low flows during dry weather become lower due to reduced groundwater supplies, and high flows during storms become higher due to increased volume and rate of runoff. Increased peak flows of runoff can also promote erosion. The amount of impervious surface within a given drainage area was used to estimate relative increases in runoff volume and peak flow for each of the receiving waters.

Increasing impervious surface can also affect water quality in several ways. Replacing vegetated areas with impervious surfaces reduces the natural filtering and settling benefits provided by vegetation. Water can also flow faster off impervious surfaces, which can increase erosion in receiving streams and therefore increase the amount of sediment in the water. Sediments block light from passing through the water and can also carry contaminants that attach easily to the surface of sediment particles. Impervious surfaces like asphalt also absorb heat and can therefore increase the temperature of runoff, affecting the temperature of the aquatic habitat in the receiving waters. An increase in impervious surfaces could have a minor effect on the temperature of runoff, just as the urbanized runoff from the surrounding neighborhoods may be somewhat warmer than runoff from vegetated areas. The travel of runoff through swales and surface channels prior to reaching any major water bodies would reduce the thermal impact via evaporation and infiltration.[9]

Pollutants can collect on impervious surfaces and contaminate runoff. Changes in land use and operations at the Airport may also change various potential pollutant sources, such as public roads, aircraft deicing areas, and fuel farms. The analysis considers the changes in potential pollutant loading from various sources. For example, a busy roadway can introduce hydrocarbons, salts, and heavy metals deposited by vehicles and road treatments into runoff, while an abandoned roadway that receives no traffic contributes negligible pollutants. Runways and taxiways receive little vehicular traffic compared to conventional roadways and are not salted or sanded during winter months. Runways and taxiways, therefore, do not contribute salt, sand, oil, or metals to stormwater discharge. However, these surfaces may contain other contaminants such as deicers (propylene glycol) blown off aircraft. For airports, impervious surface has little effect on water quality. The operations of the Airport would have more effect on water quality.

Proposed Changes to Drainage Systems and Hydrology

This section describes the changes proposed under each alternative that have the potential to affect hydrology and water quality.

9 Montgomery County Department of Environmental Protection, Montgomery County, Maryland. *Special Protection Area Program Annual Report 2004*. October 2005.

No-Action Alternative

The No-Action Alternative would not change the amount of impervious surface at the Airport and would not modify the stormwater drainage system (Figure 4.3-3). There would be no changes in operations or pollutant sources. Therefore, the No-Action Alternative is not expected to have any effect on water resources.

Preferred Alternative

The Preferred Alternative would modify the existing drainage system and distribution of impervious surfaces for RW 5-23, as described below.

Changes in Impervious Surfaces

Drainage areas for the RW 5-23 Safety Improvements were delineated based on the limits of improvement. Changes proposed for the RW 5 end are located in Drainage Area A, and changes proposed for the RW 23 end are located in Drainage Area B. Areas that were not changed were not included in the analysis to facilitate tabulating additional impervious surface for comparison with existing conditions. Each area has been separated based on logical divisions that recognize anticipated drainage patterns. The Preferred Alternative would shift the runway to the southwest, extend Taxiway A to each new runway end, and add pavement as described in Chapter 3.

The improvements at the RW 5 end would affect approximately 19 acres of land. However, most of the area would remain pervious, including the 10 acres altered for the new RSA. The proposed changes in runway, taxiway, and safety area pavement would increase the amount of impervious area at the RW 5 end by 0.7 acres.

The improvements at the RW 23 end would affect approximately 12.5 acres of land. However, most of the area would remain pervious, including the seven acres altered for the expanded RSA. The proposed changes in runway, taxiway, and safety area pavement would increase the amount of impervious area at the RW 23 end by 0.7 acres.

In total, the safety improvements to RW 5-23 would result in 1.4 acres of new impervious surface (approximately 0.2 percent of the 696-acre Airport site).

Changes in Hydrology

At the RW 5 end, an infiltration basin would be constructed on the south side of the runway near the new taxiway connection to receive runoff from the runway and taxiway. A vegetated swale on the north side of the runway would convey runoff to the West Ditch, and the West Ditch channel would be relocated around the foot of the RSA slope. Some runoff from the unpaved areas surrounding the RW 5 end would discharge to Wetland M via direct overland flow.

At the RW 23 end, three infiltration basins would be constructed to receive runoff from the taxiway and runway. Water quality swales would convey additional runoff

to infiltration basins on each side of the RSA. Some runoff from the unpaved areas surrounding the RW 23 end would discharge to Wetlands G and L via direct overland flow.

Figure 4.3-4 shows the proposed drainage design and identifies the modeling points that were used to determine changes in peak flows. Table 4.3-1 summarizes the changes in peak flow for each of these points. Peak flows would decrease or remain the same for all storms and study points.

Table 4.3-1 Peak Flows for Runway 5-23 Safety Improvements (cfs)

Study Point	2-year storm		10-year storm		100-year storm	
	No-Action Alternative	Preferred Alternative	No-Action Alternative	Preferred Alternative	No-Action Alternative	Preferred Alternative
Runway 5 end						
Point 1	2	0[1]	4	0[1]	7	0[1]
Point 2	11	8	30	25	55	49
Point 3	2	1	6	4	11	8
Runway 23 end						
Point 4	1	1	3	3	7	7
Point 5	2	2	9	8	19	17
Point 6	1	1	8	8	19	12

1 The channel segment that contains Point 1 would be filled and relocated under the Preferred Alternative. Therefore, Point 1 would have no flow under the Preferred Alternative.

The 1.4 acres of impervious surfaces proposed under the Preferred Alternative would have no impact on surface water or groundwater hydrology due to the use of the infiltration basins. As demonstrated in Table 4.3-1, peak stormwater flows would decrease or remain the same for all storms analyzed. Therefore, there would be no increase in flood potential downstream. The infiltration basins would provide stormwater infiltration, offsetting the reductions in groundwater recharge usually caused by new impervious surfaces. Therefore, no hydrologic impacts are anticipated.

The Preferred Alternative also would not affect the hydrology of the Atlantic White Cedar Swamp natural wetland community within the Acushnet Cedar Swamp State Reservation northwest of the Airport. All of the construction associated with the Runway 5-23 RSAs would be south of New Plainville Road, more than ½ mile south of the cedar swamp, and hydrologically downgradient of the swamp. This construction would not change surface flow patterns or groundwater infiltration. The only work proposed north of New Plainville Road, constructing Wetland Mitigation Sites 4, 5, 8, and 9, would create new wetlands in an area approximately 1,500 feet from the cedar swamp community and would not alter its hydrology.

Discharge of Pollutants

The proposed project is not anticipated to affect water quality in the receiving waters, even if mitigation measures were not included in the project design. As previously

described, water quality is primarily affected by contributions of suspended solids (with adsorbed hydrocarbons and metals), nutrients which may contribute to eutrophication, or substantial increases in runoff rates which cause channel erosion. The runways, taxiways, safety areas, and aprons of the airfield generate negligible amounts of contaminants or suspended solids, because these areas are not sanded and convey limited vehicular traffic (consisting only of safety and maintenance equipment). Runways, taxiways, and aprons are not sources of pollutants. As no fertilizers would be used on airfield grassed areas, and deicing compounds would be contained and not discharged to the stormwater system, there would be negligible contribution of nutrients to the downgradient receiving waters.

The proposed project would not result in an increase in airport operations, and therefore would not increase fueling operations or storage at the Airport. The likelihood of fuel spills and consequent discharges to surface or groundwaters would not increase relative to the No-Action Alternative.

The increased peak runoff rates would be minor and would be mitigated through the construction of infiltration basins. Groundwater recharge would be maintained by directing flows over grassed areas and through dry swales. Although there would be an increase in impervious area, runoff would continue to flow to the large wetland system which provides recharge for the aquifer underlying the Paskamanset River. The slight increase in runoff volumes would be likely to increase groundwater recharge in the lower reaches of the aquifer system.

4.3.4 Mitigation Measures

Mitigation measures would be implemented for the Preferred Alternative to reduce pollutant loading and meet state water quality and stormwater design standards. In a typical design, mitigation measures would include avoidance, minimization, and mitigation.

The Preferred Alternative has been designed with three types of mitigation to minimize changes to hydrology and water quality:

- Structural BMPs;
- Operations and Maintenance Measures; and
- Construction BMPs.

The Massachusetts Stormwater Management Standards require that the peak discharges from the 2- and 10-year storms remain at predevelopment (existing) levels and that a downstream analysis of the 100-year storm be performed. If the 100-year storm would cause significant downstream impacts, additional mitigation measures may be required. The system must convey the water non-erosively to the receiving waters, must be able to accommodate the runoff from the 10-year storm (at a minimum), and must be able to withstand the 100-year storm. For water quality

purposes, the system must remove at least 80 percent of the annual total suspended solids (TSS) load from runoff. The proposed design for RW 5-23 meets these standards.

All elements of the proposed project would be designed to comply with Massachusetts Stormwater Management Policy. Implementation of the following BMPs would ensure that the discharges of stormwater would not adversely affect the surface water or groundwater quality on, or in, the vicinity of the Airport. The BMPs are conceptual and would be advanced in conjunction with the design of the project.

Water Quantity Control

Mitigation of increases in peak discharge rates would be provided by constructing infiltration areas and surface stormwater detention facilities. The FAA would have to approve the final locations of some features, as there are limitations on the placement of surface water near runways because they can create a bird hazard. As much as possible, the design of detention basins would be in accordance with Airport guidance (AC 150/5200-33, Section 3-7) that recommends using "steep-sided, narrow, linearly shaped, rip-rap lined water detention basins rather than retention basins" to facilitate hazardous wildlife control. The basins are designed as detention facilities instead of retention facilities as the water drains more quickly and it is less likely to have long term standing water that may attract wildlife. Every effort would be made to place these away from aircraft movement areas to minimize aircraft-wildlife interaction. Vegetation in and around the basin would be eliminated to avoid providing habitat and/or cover for wildlife, which is hazardous to aircraft.

Proposed locations for the infiltration basins were based on consideration of the anticipated drainage patterns, avoidance of disturbance to wetlands, and the availability of land.

Water Quality Control

The following water quality control measures would be put in place:

- Proper implementation of all aspects of the SWPPP including the recommendations in annual updates based on new or improved procedures or changes to operations.
- Update the Operation and Maintenance (O&M) plan in the SWPPP to include a detailed outline of inspection and cleaning schedules for stormwater management practices, including detention areas and deep sump catch basins.

Operations and Maintenance

Protecting water quality would require ongoing maintenance of these control systems. Everyday procedures at the Airport would also be managed to reduce the impacts of operations on water quality.

The infiltration basins proposed for the Preferred Alternative would require specific maintenance procedures to ensure proper function. There will be seasonal inspections of the basins as well as inspections immediately following any large storms. These inspections will check for accumulated sediment and debris, invasive plants, erosion, standing water, and any other indication that the basin is not in proper condition. Replacement vegetation and soil may be required if these inspections find that the basins are clogged, eroded, or overrun with incompatible plant species. The maintenance requirements and inspection schedule will be stated in detail in the O&M plan to be included in the Airport's SWPPP.

Proper spill control procedures would be followed at the Airport to minimize operations-related contamination. The existing Spill Prevention, Control, and Countermeasures plan would be updated and followed to minimize the risk of accidental contamination.

Construction Mitigation

The minor construction activities (vegetation management) associated with the No-Action Alternative would have negligible water quality impacts.

Without the appropriate mitigation measures in place, construction of the Preferred Alternative could result in water quality impacts from soil erosion and deposition of sediment in nearby waterways. Oil or fuel leaks from construction equipment may potentially impact water quality. However, all required mitigation measures would be strictly implemented.

The Preferred Alternative would disturb greater than one acre of land and therefore would require a NPDES Stormwater General Permit for Construction Activities. This permit requires the development and implementation of a SWPPP that includes specific sedimentation and erosion control measures for the entire duration of the construction activities. Standard 8 of the Massachusetts Stormwater Management Policy also requires the use of erosion and sediment controls during construction. Proper implementation of the SWPPP would ensure no negative impacts would occur from construction related stormwater management. The types of mitigation measures listed below would be included in the SWPPP to minimize sedimentation and erosion:

- Applying water to dry soil to prevent dust production.
- Stabilizing any highly erosive soils with erosion control blankets and other stabilization methods, as necessary.

- Reinforcing slopes using a hydroseed mix with a resin base, native vegetation, or other approved methods.
- Using sediment control methods (such as silt fences, hay bales and temporary sedimentation basins), during excavation to prevent silt and sediment entering the stormwater system and waterways.
- Using dewatering controls, if necessary.
- Installing a gravel entrance to prevent sediment from being tracked onto roadways.
- Inspecting and maintaining construction equipment regularly, and repairing any leaks promptly in order to minimize potential impacts.

Water Quality Mitigation Measures – No-Action Alternative

The New Bedford Regional Airport uses a variety of mitigation measures to protect water quality. These measures would be used under the No-Action Alternative as well as the Preferred Alternative, and are primarily used in areas outside of the construction limits of the Preferred Alternative.

Stormwater Pollution Prevention Plan

The Airport has a SWPPP prepared by Baystate Environmental Consultants, Inc. (BEC) in March 1999 in accordance with EPA's NPDES Stormwater Regulations. The plan focuses on identifying potential pollutant sources at the Airport and eliminating or minimizing the potential for such pollutants to combine with stormwater and be discharged to local surface water bodies. The plan includes designated personnel for implementing the SWPPP and identifies Drainage Area B as the location where the majority of the "industrial activity" at the Airport occurs. The Airport is currently updating and revising this SWPPP. A copy of the current SWPPP is provided in Appendix F, *Stormwater Pollution Prevention Plan*.

Fueling, deicing, and vehicle and aircraft washing activities occur at the Airport. In addition to materials storage, these operations are considered industrial activities and are regulated under the NPDES rule.

There is no chemical deicing of pavement and negligible aircraft deicing at the Airport. Annually, less than 110 gallons of glycol-based deicing/anti-icing chemicals are used on aircraft. The monitoring thresholds for the NPDES program are 100,000 gallons of glycol-based chemicals and 100 tons of urea. Therefore, no monitoring or reporting is required for any deicing activities because the Airport uses substantially lower quantities of deicing compounds.

Stormwater Management Operations

The SWPPP defines procedures for proper storage, handling, and response in the event of a spill.

Maintenance, Cleaning, Storage

Airport tenants, including car rental companies, companies that perform ground vehicle and equipment maintenance, including cleaning, storage, repairs, painting, fueling, and servicing each are required to conduct stormwater pollution prevention in accordance with the SWPPP.

Vehicle washing is typically completed at the Airport's Maintenance Garage, Nor-East Aviation Services, and Colonial Air. Trucks maintained by the Airport maintenance garage are washed outside with a non-phosphate detergent on the pavement.

Fueling

Aircraft and vehicle fueling is conducted at the Airport's Maintenance Garage, Sandpiper Air, Nor-East Aviation Services, and Colonial Air. Loading and offloading of fuel occur at all of these facilities. Fuel tanker trucks transport fuel from the tanks to the aircraft stationed at the Airport's Terminal Apron, where fuel is pumped from the tanker trucks to the aircraft. Fuel storage areas are lighted and fuel identification markings are permanently displayed along with fire extinguishers. Loading stations are equipped with an emergency fuel shutoff switch located in a highly visible, continually accessible location. Fuel handlers are required to undergo annual training and pass a written exam that addresses topics such as spill response procedures.

Materials Storage

Practices to prevent stormwater contamination from the various materials used at the Airport, including paints, oils, solvents, and fuel, vary with each building and facility. All include sealed and protected containment with no outdoor exposure of hazardous materials.

Waste Management Practices

Wastes at the Airport include sanitary and rubbish from Airport facilities, waste oil products, and miscellaneous waste products generated from building and aircraft maintenance. All but Building No. 8 are connected to the municipal sanitary sewer. Building 8 has on-site subsurface disposal systems in compliance with Title V (310 CMR 15.00).

Waste oil and other miscellaneous waste materials are stored in labeled plastic or metal drums and disposed of by a licensed contractor. Prompt removal of small spills or leaks is completed by the on-site trained staff and the Fire Department is notified in the event of a large spill (710 gallons) or a fuel or oil spill that extends more than 10 feet in any direction.

Spill Prevention

Data from the MA DEP (comprehensive database from 1993 to January 8, 2004) indicate that there have been reported spills or leaking tanks associated with Airport activities (see Appendix D.6, *Water Quality* of the DEIS/DEIR for details on the

spills). Additional spills or leaks have also occurred on local roadways and adjacent properties. Only four spills occurred directly on Airport property, while 38 spills/ leaks occurred on nearby roadways and businesses in the area. These data support other findings indicating that not the Airport, but nearby roadways, railways, and uses along those corridors contribute to the water quality of the Paskamanset River.

Deicing

At the present time there is no chemical deicing of runways or taxiways at the Airport. Aircraft deicing is performed by storing aircraft indoors, using heaters to melt ice, and applying dilute propylene glycol in limited quantities at the Terminal Apron. Less than 110 gallons of glycol-based deicing agents are used on an annual basis.[10] Sand and salt are applied as needed to streets and to the terminal and maintenance parking areas. Table 4.3-2 summarizes the existing winter maintenance operations by use.

Table 4.3-2 Current Airport Deicing Operations

Surface Type	Snow Removal /Deicing Practice
Parking Areas	Plowing Sand and Salt application
Sidewalks and Terminal Areas	Plowing Sand and Salt application
Taxiways/Runways	Plowing
Aircraft	Inside storage Heaters Dilute propylene glycol (less than 110 gallons/year) at terminal apron

Monitoring Wells

The proponent does not propose to install monitoring wells within the Apponogansett Swamp downgradient of the airfield to measure the level or flow rates of surface water or groundwater. Given the highly developed watershed in which the Airport sits and the large developed areas downgradient of the Airport (along Faunce's Corner Road in Dartmouth and other areas), it is unreasonable to expect that a series of monitoring wells, installed and monitored over a relatively short time period, could provide statistically reliable data on the incremental effect of constructing small areas of new pavement at the Airport. The proposed Airport improvements will be designed in full compliance with the DEP Stormwater Standards and will maintain existing groundwater recharge rates. Therefore, monitoring wells are not necessary to protect water quality.

10 *Water Quality Preliminary Draft*. Baystate Environmental Consultants. 1999

Sustainable Design

Section 3.4 of the FEIS/FEIR addresses low-impact development measures that could be incorporated into the project design to improve the management of stormwater runoff, above-and-beyond the requirements of the Stormwater Management Standards.

4.3.5 Cumulative Impacts

The safety improvements to RW 14-32 and the ARFF and GA facilities proposed in the DEIS/DEIR are now regarded as future projects that will be implemented sometime after the RW 5-23 improvements and the Master Plan Update are complete. This section discusses the impacts of these future projects, as envisioned in the DEIS/DEIR, in order to assess the cumulative, long-term effects of the project. The anticipated Master Plan Update could result in different designs and impacts.

As described in the DEIS/DEIR, safety improvements to RW 14-32 would shift the runway to the south, reducing a 332-foot-long area of pavement at the RW 14 end, and would reduce the width of the runway from 150 to 100 feet. Pavement would be added at the RW 32 end, and Taxiway B would be relocated. A portion of Downey Street would be closed and the pavement removed. However, the Airport is currently evaluating other options and may select a different alternative to provide safety improvements to Runway 14-32.

Overall, the RW 14-32 improvements would result in a 4.1-acre decrease in impervious area. These modifications would result in a net decrease in stormwater discharge rates from both runway ends for all storm events. Reconfiguring this area would increase overland flow of runoff across grass infield areas. Catch basin inlet relocation and some pipe changes would be required in this area; however, the majority of the existing drainage system would remain.

The proposed ARFF/GA Development Area would create 17.2 acres of new impervious surface associated with taxiways, aprons, buildings, and vehicular parking areas. Runoff from these areas would be collected in a closed drainage system and discharged through a stormwater treatment system to Wetland K. A detention basin and groundwater recharge system would be designed and constructed upstream of this discharge point.

When considering the cumulative impacts of all three projects (Table 4.3-3), the Preferred Alternative would result in a net increase in 14.5 acres of impervious surfaces, approximately 2.1 percent of the Airport site.

Table 4.3-3 Cumulative Changes in Impervious Areas (acres)

Project	Change in Impervious Area
RW 5-23 RSAs	+ 1.4 ac
RW 14-32 RSAs	- 4.1 ac
ARFF/GA Area	+ 17.2 ac
Total Change	+ 14.5 ac

As per Massachusetts regulations, the overall peak runoff rate from the Airport property would be maintained under the selected alternative using appropriate mitigation measures such as detention basins. The detention design would control peak flows out of the Airport site, and the combined peak flow out of the Airport property would not increase. Although peak flows may increase at individual locations within the Airport site, these increases would be contained within the site and would not affect off-site areas. When the drainage design for the additional projects (RW 14-32 and the ARFF/GA area) is fully developed, all detention basins and other mitigation measures will be designed, and a peak flow analysis will be performed for the Airport property as a whole to ensure that peak discharges will not increase as a result of the proposed project.

4.3.6 Regulatory Coordination and Required Permits

Improvements to the Airport would require regulatory review with respect to water quality programs, as described below.

EPA NPDES Stormwater Permit

As previously discussed the Airport has a NPDES Stormwater Multi-Sector Industrial Permit for discharges of stormwater. This permit would be updated to reflect any changes in stormwater discharges or stormwater management practices as a result of the implementation of either of the alternatives.

Water Quality Certificate

The proposed project would require a Water Quality Certificate (WQC) (314 CMR 9.00). As stated in the *FAA Water Quality Requirements, Section 17.1.d - Permits/Certificates*, project proponents applying for an NPDES permit from the EPA or a Section 404 Army Corps Permit must obtain a Water Quality Certificate in order to comply with Section 401 of the CWA. The proposed project would require an NPDES General Permit for Construction Activities and thus requires a WQC. In addition, the proposed project includes the placement of fill in wetland resource areas, which also requires a WQC, as described in Section 4.4 of this FEIS/FEIR.

Massachusetts Stormwater Management Standards

The proposed project requires work within Wetland Resource Areas and buffer zones as defined and regulated under the Massachusetts WPA. Projects that fall under the jurisdiction of the WPA must comply with the Massachusetts *Stormwater Management Standards*.

The Stormwater Management Standards defines the requirements for proper stormwater management for new or re-development sites in the State of Massachusetts. The 10 performance standards and compliance for the proposed action are presented below:

1. *No new stormwater conveyances may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

   The Preferred Alternative would not result in the new discharge of untreated stormwater directly to a water of the Commonwealth or to a location that would result in erosion in wetlands or waterways.

2. *Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates.*

   The Preferred Alternative includes detention and infiltration that mitigates the peak discharge rates from the Airport to at or below the existing peak rates.

3. *Loss of annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures to the maximum extent practicable. The annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type.*

   Infiltration BMPs are proposed as part of the Preferred Alternative to approximate the annual recharge that occurs within the project limits under existing conditions.

4. *Stormwater management systems shall be designed to remove 80 percent of the average annual post-construction load of Total Suspended Solids (TSS).*

   The Preferred Alternative includes a combination of BMPs that will work together to remove at least 80 percent of the TSS generated by the proposed pavement.

5. *For land uses with higher potential pollutant loads, source control and pollution prevention shall be implemented to eliminate or reduce the discharge of stormwater runoff from such land uses to the maximum extent practicable.*

   The safety improvements do not propose uses that could potentially generate higher pollutant loads.

6. *Stormwater discharges within the Zone II or Interim Wellhead Protection Area of a public water supply, and stormwater discharges near or to any other critical area, require the use of the specific source control and pollution prevention measures.*

   There would be no direct discharges to critical areas and no impact to public drinking water supplies from the Preferred Alternative.

7. *Redevelopment of previously-developed sites must meet the Stormwater Management Standards to the maximum extent practicable: When it is not practicable to meet all the standards, new (retrofitted or expanded) sotrmwater management systems must be designed to improve existing conditions.*

   While the project takes place at an existing airport, the proposed improvements have been considered new construction with regards to the stormwater standards.

8. *Erosion, sedimentation, and other pollutant sources must be controlled during construction and land disturbance activities to prevent impacts.*

   Basic erosion and sediment controls are proposed at the project's limit of work. The proposed action would require the issuance of an EPA NPDES Stormwater Discharge Permit for Construction activities, which requires strict implementation of sedimentation and erosion controls. A comprehensive plan will be included in the project's Notice of Intent and Stormwater Pollution Prevention Plan.

9. *A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed.*

   A comprehensive Operation and Maintenance (O&M) Plan will be created as part of the project's Notice of Intent. The O&M requirements would be incorporated into the existing SWPPP currently in place for the Airport under the existing Sector S Multi-Sector Industrial NPDES Stormwater Permit.

10. *All illicit discharges to the stormwater management system are prohibited.*

    Illicit discharges are prohibited at the site and will be specified as such in the O&M Plan.

4.3.7 Summary

The potential impacts of the proposed project to surface water quality and groundwater supply have been evaluated for the Preferred Alternative. The Preferred Alternative would involve only a small increase (1.4 acres) in impervious surfaces for the RW 5-23

improvements. A larger increase (13.1 acres) could occur in the future, if the projects described in the Cumulative Impacts section are constructed.

Without mitigation, increasing the impervious area draining to the local wetland system could increase peak flows and erosion at the drainage outfalls and in the stream channels. Reducing the impervious area draining to a specific wetland would reduce peak flows and erosion there. Adding impervious surfaces would decrease groundwater recharge slightly. However, the small increases proposed for the RW 5-23 are approximately 0.2 percent of the Airport's total area and would have negligible hydrologic effects on the Paskamanset River at the combined Airport Outfall (the confluence of the East and West Ditches). The drainage design incorporates structural BMPs to control peak discharge rates and retain suspended sediments. Peak flows out of the Airport would be expected to decrease, reducing the potential for flooding and erosion downstream. With the specified mitigation measures, there would be no increase in peak discharge rates, and TSS controls would be used to meet all of the Massachusetts Stormwater Standards.

4.4 Wetlands and Waterways

This section describes existing wetlands and waterways in the Local Study Area and discusses their ecological functions and values. This section also describes the potential impacts of the No-Action Alternative and the Preferred Alternative on existing wetlands and waterways in the Project Area and discusses avoidance, minimization, and mitigation of impacts to wetlands and waterways.

As discussed in Chapter 1, *Introduction and Background*, changes to the project's purpose, need, and proposed activities occurred since publication of the DEIS/DEIR in February 2005. The proposed project, as defined in this FEIS/FEIR, would reduce wetland impacts compared to those estimated in the DEIS/DEIR. The proposed project eliminates impacts to the Acushnet Cedar Swamp and to other smaller wetland systems including all certified vernal pools that are classified as Outstanding Resource Waters (ORW). The proposed project also has a purpose and need that could satisfy the variance requirements for the WPA.

This section addresses the requirements of the Certificate of the Secretary of Environmental Affairs on the NPC dated April 6, 2007. These requirements included providing additional information pertaining to the project-related direct and indirect impacts to wetlands, rare species, and stormwater management. Specifically, these requirements included:

- Responding to comments from New Bedford Conservation Commission, DCR, and other commenters regarding wetlands and their impacts.

- Providing a complete and detailed description of the extent of the proposed project's direct and indirect wetlands resource impacts, and the functions associated with each impacted wetland resource area.

Section 4.4.4 describes existing wetlands and waterways in the Local Study Area and discusses their ecological functions and values. Section 4.4.5 discusses impacts to wetlands and waterways in the Local Study Area for the No-Action Alternative and the Preferred Alternative.

The Secretary's Certificate also required a more detailed description of measures to mitigate wetland impacts. These requirements included:

- Providing additional information pertaining to the sequencing of the proponent's wetlands mitigation plan as it may relate to the proposed project construction phasing.
- Providing cost estimates for individual components of the mitigation plan (and how the costs were calculated), identifying funding sources, identifying responsible parties, and including a schedule for the mitigation plan.

Section 4.4.8 discusses avoidance, minimization, and mitigation of impacts to wetlands and waterways in the Local Study Area.

The Secretary's Certificate also required a detailed discussion on the project's consistency with the variance requirements under the Wetlands Protection Act. This discussion is provided in Section 4.4.9.

Existing wetlands in the Local Study Area are fully described in *Technical Memorandum 1.10* which was provided in Appendix D.8, *Wetlands,* of the DEIS/DEIR.

4.4.1 Introduction

Federal and state policies, laws, and regulations recognize the importance of wetlands and waterways and protect against their loss and degradation. Wetlands are defined as areas inundated by surface water or groundwater sufficient to support a prevalence of vegetative or aquatic life that requires saturated soil conditions. Wetlands include swamps, marshes, bogs, sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds, as well as estuarine areas, tidal overflows, and shallow ponds with emergent vegetation. Water bodies and waterways include perennial streams, rivers, reservoirs, and lakes.

The USACE has jurisdictional authority over "Waters of the United States" through Section 404 of the CWA.[11] Waters of the U.S. include all waters which are used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; all interstate waters, including interstate wetlands; and all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, natural ponds, or drainage ditches leading to regulated Waters of the U.S., the degradation or destruction of which could affect interstate or foreign commerce; all impoundments of waters otherwise defined as waters of the U.S.; tributaries of waters [identified in preceding]; and the territorial sea.[12] In addition to the USACE, the MA DEP, along with municipal Conservation Commissions, have jurisdiction over freshwater and coastal resource areas, including rivers and floodplains, in Massachusetts.

4.4.2 Regulatory Context

Wetlands and waterways within the Local Study Area were addressed in accordance with the following federal laws, regulations, and policies:

- NEPA of 1969.[13]
- CWA of 1977, 105 Section 401 and 404. [14]
- Executive Order (EO) 11990, Protection of Wetlands.[15]
- EO 13112, Invasive Species.[16]
- DOT Order 5660.1A, Preservation of Wetlands.[17]
- FAA Order 5050.4B[18] and FAA Order 1050.1E.[19]
- USEPA/USACE Memorandum of Understanding (MOU)[20] Relating to Wetland Mitigation.
- USACE Guidance on Compensatory Mitigation Projects for Aquatic Resource Impacts.[21]

11 *Section 404 of the Clean Water Act, Title 33 - Navigation and Navigable Waters, Chapter 26 – Water Pollution Prevention and Control, Subchapter IV - Permits And Licenses*, January 1994.
12 *40 CFR Part 230, Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material.*
13 *National Environmental Policy Act of 1969, as amended:* 42 U.S.C. 4321-4335 (P.L. 91-190) (P.L. 94-83).
14 *Federal Water Pollution Control Act (1972), as amended by the Clean Water Act (1977 and 1987):* 33 U.S.C. 1251-1376 (P.L. 92-500) (P.L. 95-217) (P.L. 100-4).
15 *Executive Order 11990, Protection of Wetlands*, May 24, 1997.
16 *Executive Order 13112, Invasive Species*, February 3, 1999.
17 *U.S. Department of Transportation, DOT Order 5660.1A, Preservation of Wetlands.*
18 *FAA Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Actions*, April 28, 2006.
19 *FAA Order 1050.1E, Environmental Impacts: Policies and Procedures*, June 8, 2004.
20 *Memorandum of Agreement Between the Department of the Army and the EPA: The Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines*, February 6, 1990.
21 *Regulatory Guidance Letter, Number 02-2, Guidance on Compensatory Mitigation Projects for Aquatic Resource Impacts Under the Corps Regulatory Program Pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899*, USACE, December 24, 2002.

Executive Order 11990, issued May 24, 1977, emphasizes the importance of wetlands to the Nation. In compliance with *EO 11990* and *DOT Order 5660.1A*, federal agencies are to avoid destruction and modification of, or construction within, existing wetlands where there is a practical alternative. If a proposed project would impact existing wetlands, *DOT Order 5660.1A* requires federal transportation agencies to make a finding that there is no practicable alternative. The FAA has consulted with federal, state, and local agencies as necessary when applicable thresholds are exceeded or an agency expresses a special interest in an area or project. The impact analysis for unavoidable impacts in this FEIS/FEIR includes an opinion of the proposal's "overall effect on the survival and quality of the wetlands."[22]

NEPA regulations that address wetlands are discussed in the *FAA Order 5050.4B* and in *FAA Order 1050.1E, Appendix A, Section 18*. *FAA Order 5050.4B* identifies the significant impact thresholds for wetlands and describes the requirements of the wetlands analysis to be used to determine whether impacts on wetlands are significant.

The analysis must address: the considerations specified in *EO 11990*; the action's overall effect on the survival and quality of the remaining wetlands after project implementation; aeronautical safety, transportation objectives, economics, and other factors bearing on the problem; practicability of alternatives; inclusion of all practicable measures to minimize harm; and consultation under the *Fish and Wildlife Coordination Act*.[23] For any action which entails new construction located in wetlands, a specific finding should be made that there is no practicable alternative to construction in the wetlands, and that all practicable measures to minimize harm have been included.

Section 401 of the federal CWA specifies additional requirements for permit review on the state level. Any applicant for a federal license or permit to conduct any activity that may result in discharge into navigable waters must provide a certification from the state in which the discharge originates. If appropriate, an interstate water pollution control agency having jurisdiction over the navigable waters at the point where the discharge originates may issue a permit in lieu of the state. Section 401 certification also allows states to address associated chemical, physical, and biological impacts, such as low DO levels, turbidity, inundation of habitat, stream volumes and fluctuations, filling of habitat, impacts on fish migration, and loss of aquatic species as a result of habitat alterations that are specific to the needs of that state and/or region.[24] In Massachusetts, the MA DEP is responsible for reviewing projects over a threshold size for Section 401 compliance, through the *Massachusetts Surface Water Quality Standards Regulations*[25] and the *Massachusetts Section 401 Water Quality Certification Regulations*.[26]

22 *FAA Order 5050.4A*, *Airport Environmental Handbook*, October 8, 1985.
23 *Fish and Wildlife Coordination Act*, 16 USC §§661-666c.
24 *USACE Wetlands Regulatory Program*, *Regulatory Program*, January 1994, http://www.usace.army.mil/inet/functions/cw/cecwo/reg/index.htm, accessed April 2004.
25 *Massachusetts Surface Water Quality Standards Regulations*, 314 CMR 4.00.
26 *Massachusetts Section 401 Water Quality Certification Regulations*, 314 CMR 9.00.

Section 404 of the CWA, administered by the USACE, regulates the disposal of dredged or fill material within navigable waters and prohibits the use of any defined area as a disposal site whenever the discharge of such materials will have an unacceptable adverse effect on municipal water supplies, shellfish beds, fishery areas (including spawning and breeding areas), wildlife, or recreational areas.[27]

Section 404(b)1 Guidelines state that no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less of an adverse impact on the aquatic ecosystem or a special aquatic site, and they require that appropriate and practicable steps be taken to minimize potential adverse impacts on the aquatic ecosystem.

The EPA/USACE MOU[28] provides guidance on the type and level of mitigation required to demonstrate compliance with CWA Section 404(b)(1) guidelines. The MOU requires that proposed mitigation plans for impacts consider impact avoidance and minimization, prior to development of compensatory mitigation for unavoidable impacts.

The proposed project is also subject to review and approval under the Massachusetts WPA.[29] The WPA is administered by municipal Conservation Commissions, and in the case of variance requests, by the Commissioner of MA DEP.

The Massachusetts WPA Regulations establish performance standards for work proposed within each of the state wetland resource areas and require review of any work proposed within 100 feet of certain wetland resources to determine if that work would alter the resource area.

Construction of the Preferred Alternative would require the Commissioner of MA DEP to issue a variance from the WPA Regulations, as the proposed project would result in the loss of more than 5,000 square feet of Bordering Vegetated Wetland (BVW), would impact estimated rare species habitat, and would impact known habitat of one state-listed species. The proposed project can not be designed in accordance with all regulatory performance standards and would require a variance. The procedure for requesting a variance includes first submitting a Notice of Intent (NOI) to the New Bedford Conservation Commission and the Dartmouth Conservation Commission, which would be required to deny the proposed project in its OOC. The proponent would then request MA DEP Regional Office to issue a Superseding OOC. The MA DEP would also be required to deny the proposed project in its Superseding Order. The proponent would then request that the Commission issue a variance.

27 *U.S. Army Corps of Engineers, Wetlands Regulatory Program*, *Regulatory Program*, January 1994, http://www.usace.army.mil/inet/functions/cw/cecwo/reg/index.htm, accessed April 2004.
28 *EPA/USACE, Memorandum of Agreement, The Determination of Mitigation Under the Clean Water Act* Section 404(b)(1) Guidelines, February 6, 1990.
29 *310 CMR 10.00-10.99, Massachusetts Wetlands Protection Act Regulations.*

4.4.3 Methodology

The Local Study Area for wetlands is the Airport property plus some additional, adjoining areas where existing wetlands systems on the Airport extend beyond the Airport property line. These include the area between the Airport property and the railroad on the south side of the Airport; the area between Shawmut Avenue and the Airport property line to the south; a small area to the west of the RSA for the RW 23 end; and an area south of the intersection of Aviation Way and Jones Street.

All wetlands within the Local Study Area were field-identified using both federal and state standards. The wetland plant communities (vegetation cover type) in each wetland were described and then classified according to the wetland classification scheme developed by the United States Fish and Wildlife Service (USFWS).[30] Wetland Functions and Values were assessed using the *USACE Highway Methodology*.[31] Using both field-based delineation and photo-interpretation of recent ortho-photos, wetland areas and vegetation cover types were mapped and measured.

The boundaries of the state-defined BVW were approved by the New Bedford Conservation Commission in a June 16, 1998 Determination of Applicability (DOA), which was valid for three years. USACE reviewed and approved the wetland boundaries, slightly revised from those approved by the Conservation Commission, in a letter of February 8, 2000, which is valid for five years from the date issued. Subsequent to these approvals, wetland limits were verified in the field in 2003-2004. The data provided in this FEIS/FEIR are based on the 2000 USACE limits, refined by 2003-2004 field investigation. USACE and MA DEP would review the wetland limits during their review of permit applications. As requested by the Secretary's Certificate on the DEIR, an Abbreviated Notice of Resource Area Delineation (ANRAD) was filed with the New Bedford Conservation Commission to confirm wetland boundaries and jurisdictions, and on August 16, 2007 an Order of Resource Area Delineation (ORAD) was issued to confirm the wetland limits associated with Runway 5-23.

As previously noted, the three projects described in Chapter 3 of this FEIS/FEIR would be constructed over an extended time period and only the RW 5-23 improvements project is expected to be advanced within the next five years. Wetland resource area limits would be field-delineated and surveyed for each project at the time when funding for design and construction became available.

Several investigations were conducted to determine the presence of vernal pools in the Local Study Area. Field investigations were conducted in April 2003 to update previous field investigations conducted in the Local Study Area. Sites evaluated as part of the field investigation were chosen based upon the descriptions contained in

30 *Classification of Wetlands and Deepwater Habitats of the United States*, U.S. Fish and Wildlife Service, FWS/OBS-79/31, 103pp., Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe, 1979.

31 *The Highway Methodology Workbook Supplement: Wetland Functions and Values, A Descriptive Approach*, Technical Report NAEEP-360-1-30a, U.S. Army Corps of Engineers, New England District, Concord, MA, 39pp., 1999.

previous studies. Each area was investigated for the presence of vernal pool indicator species as listed in the Massachusetts Natural Heritage and Endangered Species Program (NHESP) Certification Criteria (dated Spring 2000).

Wetland and vernal pool boundaries were digitized and overlain onto the Airport base mapping using AutoCAD computer aided drafting software and GIS-based ARCVIEW software. Potential impacts to wetlands, waterways, and vernal pools were estimated by overlaying the proposed limits of grading for each alternative on a plan of existing conditions. Direct impacts to each wetland and vernal pool were calculated by measuring the size of the polygon created by the intersection of cut/fill limits associated with the proposed Alternatives and wetland and vernal pool boundaries. Tree-clearing impacts were estimated by overlaying proposed limits of tree-clearing on wetland limits.

4.4.4 Affected Environment

The Airport property is surrounded by forested, scrub-shrub, and emergent wetlands to the west, north, and south, with pockets of residential and commercial activities clustered along its eastern boundary (Figure 4.4-1). The Acushnet Cedar Swamp (approximately 1,000 acres), is north of the Airport and is owned and managed by the MA DCR. The National Park Service has designated it a National Natural Landmark. It contains extensive stands of Atlantic white cedar, a priority natural community associated with several state-listed rare wildlife species.

The Apponagansett Swamp is west and south of the Airport. It is an extensive wetland and riverine system that is drained by the Paskamanset River. The Apponagansett Swamp contains over 1,000 acres and extends from Turner Pond, the source of the Paskamanset River, south to the Smith Mills section of North Dartmouth near Route 6.

Existing wetland resource areas and waterways in the Local Study Area are described below using federally-defined categories first and state-defined categories second. There has been no change to wetlands or waterways in the Local Study Area since publication of the DEIS/DEIR in April 2005. Furthermore, the Certificate of the Secretary of Environmental Affairs on the NPC dated April 6, 2007 did not require any additional information on existing wetlands and waterways in the Local Study Area. As noted above the wetlands limits were verified in the field in 2003-2004 and an ORAD was issued on August 16, 2007.

Federal Wetlands

Federally defined wetlands in the Local Study Area are described below.

Wetland Identification

Twenty-two wetlands (A-X) that met the federal wetland definition were identified and delineated in the Local Study Area (Figure 4.4-1, Table 4.4-1). These wetlands total approximately 514 acres and range in size from less than one acre to over 400 acres. Ten wetlands (C, E, F, I, J, N, U, V, T, and X) are small, isolated wetlands. Nine wetlands (B, C, D, E, F, H, I, V, and W) were created by gravel mining operations. A portion of one wetland (A) is a constructed mitigation wetland. Each wetland was described in detail in the DEIS/DEIR Appendix D.8, *Wetlands*.

Vegetation Cover Type

Wetlands in the Local Study Area are comprised of four vegetation cover types: palustrine, emergent wetland; palustrine, scrub-shrub wetland; palustrine, forested wetland; and open water (Figure 4.4-2, Table 4.4-1).

Palustrine Emergent Wetlands

Palustrine emergent wetlands (PEM) are characterized by erect, rooted, herbaceous aquatic plants, and include marshes and wet meadows. They exist under water regimes ranging from permanently flooded to temporarily flooded. The dominant plant in emergent wetlands adjacent to the Airport runways is common reed (*Phragmites australis*). Subordinate plants identified in the emergent wetland communities include broad-leaf cattail (*Typha latifolia*), woolgrass (*Scirpus cyperinus*), soft rush (*Juncus effusus*), goldenrods (*Solidago* spp. and *Euthamia* spp.), asters (*Aster* spp.), joe-pye-weed (*Eupatoriadelphus dubius*), and climbing false buckwheat (*Polygonum scandens*). Plant cover is approximately 80 to 95 percent in the emergent wetlands.

Emergent wetlands occur adjacent to the service road and along the Algonquin Gas Company pipeline easement southwest of RW 5, and west of RW 5 (Wetland M). They also comprise portions of several other wetlands within the Study Area including Wetlands E-V, G, H, J-K, N, T, U, and W.

The emergent wetlands occur on seasonally saturated or irregularly flooded soil types. Standing water was observed in low areas within the emergent wetlands, particularly along the Algonquin Gas Company gas easement that bisects the emergent wetland approximately 1,300 feet south of the RW 5 end. The Paskamanset River also bisects the emergent wetland northwest of the gas easement.

Palustrine Scrub-Shrub Wetlands

Palustrine scrub-shrub wetlands (PSS) are dominated by woody vegetation less than 20 feet tall. Vegetation growing in PSS may include true shrubs, tree saplings, or mature trees and shrubs that are stunted due to environmental conditions. PSS may represent a successional stage leading to forested wetland, or they may be stable communities and exist under all inland freshwater hydrologic regimes.

The palustrine scrub-shrub communities within the Local Study Area consist predominantly of red maple (*Acer rubrum*) and bebb willow (*Salix bebbiana*) saplings, with a moderately dense shrub layer. Dominant species in the shrub layer are common winterberry (*Ilex verticillata*), highbush blueberry (*Vaccinium corymbosum*), arrow-wood (*Viburnum dentatum*), silky dogwood (*Cornus amomum*), speckled alder (*Alnus rugosa*), common elderberry (*Sambucus canadensis*), sweet pepperbush (*Clethra alnifolia*), meadowsweet (*Spiraea latifolia*), steeplebush (*Spiraea tomentosa*), and poison ivy (*Toxicodendron radicans*).

Palustrine scrub-shrub wetlands occur adjacent to RW 5 and along the access road extending southwest of RW 5 (Wetland M). Scrub-shrub wetlands also occur in all identified wetlands except for Wetlands I, N, O, T, U, and X. They occur where vegetative control practices have eliminated or discouraged the growth of tall woody vegetation within the RPZ.

The palustrine scrub-shrub wetland located in the RPZ at the approach to RW 5 is an early successional community that has been subjected to past clear cuttings and vegetation control measures. Based on an analysis of core samples removed with an increment borer from sapling specimens of red maple and willow, the canopy trees in this area were approximately 20 to 25 years old at the time of the most recent vegetation management.

Stem counts and dbh measurements recorded from permanent sample plots in the PSS within the managed area of the RPZ indicate a stem density of approximately 2,000 stems per acre with a basal area of approximately 60 square feet to 80 square feet per acre. The density and basal area measurements are in agreement with stem counts of red maple saplings recorded in regeneration stands.[32]

Mature red maples occur outside the RPZ to RW 5 where relatively undisturbed palustrine forested wetland communities occur due to the absence of recent vegetation control measures or site disturbances. Age estimates for mature red maple specimens are 45 to 50 years old.

Palustrine Forested Wetlands

Palustrine forested wetlands (PFO) are characterized by woody vegetation greater than 20 feet in height. They exist under all inland freshwater hydrologic regimes. In palustrine systems, forested wetlands normally consist of an overstory of trees, an understory of young trees, saplings, and/or shrubs, and an herbaceous layer. PFO, including those in the Local Study Area, occur in seasonally saturated to seasonally-flooded water regimes.[33]

32 *New England Wildlife: Management of Forested Habitats*, U.S. Forest Service General Technical Report NE-144, DeGraaf, R. M., M. Yamasaki, W. B. Leak, and J. W. Lanier, 1989.

33 *Ecology of Red Maple Swamps in the Glaciated Northeast: A Community Profile*, U.S. Fish and Wildlife Service Biological Report 12, Golet, F.C., A.J.K. Calhoun, W.R. DeRagon, D.J. Lowry and A.J. Gold, 1993.

PFO in the Local Study Area generally exhibit an overstory dominated by red maple and are characterized as red maple swamps. The canopy consists predominantly of stump sprout red maples, ranging from sapling (1.0 inch to 3.9 inches dbh) specimens to poletimber (4.0 inches to 11.9 inches dbh) specimens in a partially closed canopy (less than 70 percent closure). Common associates in the community are early successional species such as big-tooth aspen (*Populus grandidentata*), quaking aspen (*Populus tremuloides)*, and gray birch (*Betula populifolia*). Occasional specimens of yellow birch (*Betula allegheniensis*), eastern hemlock (*Tsuga canadensis*), eastern white pine (*Pinus strobus*), and swamp tupelo (*Nyssa sylvatica*) are also present.

Understory shrub species include bebb willow, highbush blueberry, sweet pepperbush, arrow-wood, common winterberry, and maleberry (*Lyonia ligustrina*). The shrub layer is moderately dense. Vines recorded in the palustrine forested community include poison ivy, Virginia creeper (*Parthenocissus quinquefolia*), and greenbrier (*Smilax rotundifolia* and *S. glauca*). Ground cover species recorded in the palustrine forested community include dewberry (*Rubus hispidus),* sensitive fern (*Onoclea sensibilis*), cinnamon fern (*Osmunda cinnamomea*), royal fern (*Osmunda regalis*), several wetland sedges (*Carex* spp.), and grasses. The PFO within Wetland M are associated with the floodplain of the Paskamanset River and are subject to irregular flooding or ponding in the shallow depressions within the forested wetlands. The soils are subject to seasonal saturation.

The most extensive forested wetlands within the Study Area are associated with the Apponagansett Swamp (Wetland M). Wetlands A, G, H, J-K, L, O, P, and X also include areas of palustrine forested wetland.

Mature red maples occur outside the RPZ to RW 5 where a relatively undisturbed palustrine forested community occurs due to the absence of recent vegetation control measures or site disturbances. Stem counts and dbh measurements recorded from permanent sample plots established in the PSS within the managed area of the RPZ indicate a stem density of approximately 2,000 stems per acre with a basal area of approximately 60 to 80 square feet per acre. The density and basal area measurements are in agreement with stem counts recorded in regeneration stands in the literature.[34] The palustrine scrub-shrub wetland located near the runway approach path is an early succession community that has been subject to past clear cuttings and vegetation control measures. The sample plot in the palustrine scrub-shrub wetland adjacent to the access road indicates that red maple regeneration in the plot is also principally from stump sprouts. Evidence of historic cutting and removal of infringing vegetation was present in the palustrine forested and palustrine scrub-shrub communities.

34 *New England Wildlife: Management of Forested Habitats*, U.S. Forest Service General Technical Report NE-144, DeGraaf, R. M., M. Yamasaki, W. B. Leak, and J. W. Lanier, 1989.

Table 4.4-1 Existing Wetlands within the Local Study Area

			Vegetation Cover Type[3] (acres)				Principal Wetland Functions and Values[4]												
Wetland ID	Size[1] (acres)	WPA Resource Areas[2]	PFO	PSS	PEM	Open Water	GWR/D	FFA	F/SH	S/T/PR	NR/R/T	PE	S/SS	WLH	REC	E/SV	U/H	VQ/A	ESH
A	*9.6*	*BVW, Bank*	*6.53*	*2.71*	*0*	*0.39*	*S[5]*	*S*		*P[6]*	*P*	*P*	*S*	*P*					*P*
B	*0.84*	*ILSF*		*0.84*				*S*		*P*	*P*	*P*		*S*					*P*
C	*0.31*	*None, Federal only*		*0.31*								*S*		*S*					
D	*1.63*	*ILSF*		*0.97*		*0.66*					*S*	*S*		*P*					*P*
E-V[7]	*0.51*	*None, Federal only*		*0.47*	*0.04*														
F	*0.04*	*None, Federal only*		*0.04*															
G	*12.71*	*BVW*	*9.81*	*0.64*	*1.84*	*0.41*						*S*		*S*					
H	*5.4*	*BVW, Bank*	*0.28*	*2.47*	*0.54*	*2.11*					*S*	*S*		*S*					
I	*0.09*	*None, Federal only*				*0.09*													
J-K[7]	*19.38*	*BVW, Bank*	*11.29*	*6.90*	*0.52*	*0.68*						*S*		*S*					
L	*12.45*	*BVW, Bank*	*5.49*	*6.93*		*0.04*		*S*		*S*	*P*	*P*		*S*					
M	*407.10*	*BVW, Bank, LUWW, RA[8], BLSF*	*198.18*	*79.43*	*124.12*	*5.37*	*S*	*S*	*P*	*P*	*P*	*P*	*S*	*P*					*P*
N	*0.23*	*None, Federal only*			*0.23*														
O	*19.22*	*BVW*	*19.22*									*S*		*S*					
P	*20.27*	*BVW, Bank*	*16.05*	*3.39*		*0.82*		*P*		*P*	*P*	*P*	*P*	*P*					*P*
Q	*0.18*	*ILSF*		*0.18*								*S*		*S*					
R	*2.79*	*ILSF*		*2.79*								*P*		*S*					
S	*0.46*	*BVW, Bank*		*0.34*		*0.12*		*P*		*P*	*P*	*S*	*P*	*S*					
T	*0.02*	*None, Federal only*			*0.02*														
U	*0.08*	*None, Federal only*			*0.08*														
W	*0.88*	*BVW, Bank*		*0.65*	*0.22*						*S*	*S*		*S*					*P*
X	*0.03*	*None, Federal only*	*0.03*								*S*	*S*		*S*					
TOTAL	*514.22[9]*		*266.88*	*109.06*	*127.61*	*10.69*													

1 Size of wetland within Local Study Area. Note that Wetland A, G, K, M, O, and P extend beyond the Local Study Area, and their actual size is larger than that shown.
2 WPA Resource Areas: BVW - bordering vegetated wetland, Bank – bank to water bodies and waterways, ILSF - isolated land subject to flooding, LUWW - land under water bodies and waterways, RA - riverfront area, BLSF - bordering land subject to flooding.
3 Vegetation Cover Types: PFO – palustrine forested wetland, PSS – palustrine scrub-shrub wetland, PEM – palustrine emergent marsh wetland.
4 Wetland Functions and Values: GWR/D – Ground water recharge/discharge, FFA - Floodflow alteration, F/SH – Fish and shellfish habitat, S/T/PR – Sediment/toxicant/pathogen retention, NR/R/T – Nutrient removal/retention/transformation, PE – Production export, S/SS – Sediment/shoreline stabilization, WLH – Wildlife habitat, REC – Recreation; E/SV – Educational/scientific value, U/H – Uniqueness/Heritage, VQ/A – Visual quality/aesthetics, ESH –Endangered species habitat.
5 S – Secondary function and value.
6 P – Primary function and value.
7 Originally delineated as two wetlands. During recent field investigation, it was determined that they are actually one wetland.
8 Riverfront area is 25 feet in New Bedford.
9 Of these 514 acres, 354 acres are within the Airport property.

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The sample plot located in the palustrine forested wetland adjacent to the service road at the end of RW 5 indicates that red maple regeneration in the plot is principally from stump sprouts. Evidence of historic cutting and removal of vegetation is present in both the palustrine forested and palustrine scrub-shrub communities located south of the RW 5 end of the Airport.

Open Water

Open water habitat is found primarily in Wetland M, where there are perennial streams. These include the perennial drainage ditches to the west of RW 5, the unnamed tributary to the Paskamanset River into which it flows, and the portion of the Paskamanset River in the Local Study Area. Other areas of open water include seasonally flooded depressions such as vernal pools and ditches that flow intermittently.

Functions and Values

Wetlands A, B, M, P, and S provide the most numerous ecological functions, and six wetlands (A, B, D, M, P, and W) provide suitable habitat for state-listed threatened and endangered species (Table 4.4-1). Due to its size, Wetland M is the largest contributor to wetland functions. Because the Airport property is generally not accessible to the public, none of the on-Airport wetlands have existing educational/scientific, recreational, or visual/aesthetic value.

The topography, position, underlying substrate, hydrology, vegetation, history, and size of each wetland determine the degree to which wetlands perform each of these functions or values. Although it may be assumed that all wetlands provide most of these functions or values, the individual characteristics of the wetland determine whether that wetland performs the function or value at a Primary, Secondary, or negligible level. The DEIS/DEIR Appendix D.8, *Wetlands*, provided a detailed assessment of functions and values in each wetland.

Five of the Study Area wetlands, (Wetlands A, B, M, P and S) have been identified as wetlands that provide a substantial number of the potential wetland functions and values as Principal Functions or Values.

State Wetland Resource Areas

Fourteen of the federal wetlands also met the criteria for wetland resource areas protected under the WPA (Table 4.4-1). WPA inland wetland resource areas that occur in the Local Study Area include BVW, Bank, Riverfront Area (RA), Land under Water Bodies and Waterways (LUWW), Isolated Land Subject to Flooding (ILSF), and Bordering Land Subject to Flooding (BLSF) (Figure 4.4-3). These resource areas are significant to some of the protected interests of the WPA, as described below.

As requested by the Secretary's Certificate on the DEIR, an ANRAD was filed with the New Bedford Conservation Commission to confirm wetland boundaries and jurisdictions, and on August 16, 2007 an ORAD was issued.

Bordering Vegetated Wetland (BVW)

BVW occurs in ten wetlands within the Local Study Area (Table 4.4-1, Figure 4.4-3). All BVW that is tributary to the Paskamanset River (Wetlands K, M, O, P, and S) is likely to contribute to the protection of public water supplies, as the surface waters from these wetlands may contribute to drinking water aquifers. Wetland M is the only BVW within the 100-year floodplain of the Paskamanset River, and therefore is likely to contribute to flood control and storm damage prevention. Because the Paskamanset River supports fish, the BVW of Wetland M is presumed to be significant to this interest. Wetland M provides the largest area of contiguous wetland wildlife habitat, containing several cover types, and supports perennial waterways. These features provide good quality wildlife habitat. Wetlands A, D, and P are determined to provide important wildlife habitat. Most other Study Area wetlands provide some habitat for wetland-dependent wildlife. Other wetland areas are generally small wetlands directly adjacent to disturbed areas and have limited wildlife value. None of the BVW within the Study Area is directly tributary to any known areas that support shellfish, although surface waters ultimately discharge to Buzzards Bay.

Bank

State-regulated Bank occurs in eight wetlands within the Local Study Area (Table 4.4-1, Figure 4.4-3). All Banks within the Study Area confine water draining to the Paskamanset River and are likely to contribute to the protection of public water supplies, because the Town of Dartmouth drinking water supply is located within the Paskamanset River watershed, downstream of the Study Area (Appendix D.6, *Water Quality,* of the DEIS/DEIR). However, the nearest Dartmouth wells are approximately 3.3 miles south of the southern boundary of the Airport, and the recharge Zone II and Zone III areas for these wells begin 1.5 miles south of the Airport. These on-airport Banks are not within the designated recharge areas of these wells.

The areas of Bank within the Study Area are generally well-vegetated, and protect water quality by reducing erosion and siltation. These are, therefore, significant to the prevention of pollution. It is not likely that the Banks in the Local Study Area function in ground water recharge. Generally, these Banks are bordered by wetlands and appear to be the sites of ground water discharge to surface waters (see Section 4.3, *Water Quality*). Most of the Banks serve to confine floods and

reduce storm damage by preventing water from spreading to adjacent uplands. Because the Paskamanset River supports fish, Bank in Wetland M is presumed to be significant to the protection of fish. However, none of the Banks within the Study Area are directly tributary to any known areas that support shellfish. All Banks within the Study Area are presumed to be significant to, and to provide, important wildlife habitat. All of these Banks are generally well-vegetated with shrubs and herbaceous vegetation, providing cover, burrowing habitat for wildlife, and potential nesting, feeding or basking sites.

Land under Water Bodies and Waterways (LUWW)

LUWW occurs in Wetland M, in the perennial drainage ditch, the unnamed tributary, and the Paskamanset River (Table 4.4-1, Figure 4.4-3). Because the Town of Dartmouth drinking water supply is located within the Paskamanset River watershed, downstream of the Local Study Area (Appendix D.6, *Water Quality,* of the DEIS/DEIR), the LUWW in Wetland M may contribute to the protection of public water supplies. It also provides surface water storage during periods of flooding, thereby protecting downstream areas. The LUWW in the Paskamanset River, which supports fish, is likely used by fish for nesting, feeding, or overwintering areas, and it supports aquatic vegetation, which is important habitat for other aquatic species.

The LUWW within Wetland M is not likely to be significant to the prevention of pollution because it is within streams, and provides little opportunity for the settling and removal of pollutants. Likewise, these streams are not expected to contribute to ground water recharge, as the area is generally an area of groundwater discharge.

Bordering Land Subject to Flooding (BLSF)

BLSF is land that lies between the upper elevational limit of BVW and the elevation of the 100-year flood (59.5 feet). BLSF occurs in three locations in the Local Study Area: along the Approach Lighting System (ALS) Road at the RW 5 end; north of New Plainville Road at the RW 23 end, near Wetland G; and on the portion of the NBML that is within the Airport property. This BLSF may provide temporary storage of floodwaters that overtop the banks of the Paskamanset River, and during peak runoff, the area may retain and detain floodwaters.

BLSF within the 10-year floodplain or within 100 feet of the Bank or BVW is normally presumed significant to wildlife protection except [310 CMR 10.57(1)(a)3] for "those portions that have been so extensively altered by human activity that their important wildlife habitat functions have been effectively eliminated. Such "altered" areas include paved and graveled areas, golf courses,

cemeteries, playgrounds, landfills, fairgrounds, quarries, gravel pits, buildings, lawns, gardens, roadways (including median strips, areas enclosed within highway interchanges, shoulders, and embankments), railroad tracks (including ballast and embankment), and similar areas lawfully existing on November 1, 1987 and maintained since that time." The BLSF adjacent to Wetland M is a mowed maintained area, and therefore does not provide important wildlife habitat.

Isolated Land Subject to Flooding (ILSF)

ILSF occurs in Wetlands B, D, Q and R (Table 4.4-1, Figure 4.4-3). These areas of ILSF are generally limited in size and are not likely to retain large volumes of floodwaters, but they are likely to be significant to local flood control and storm damage prevention. The ILSF in Wetlands B and D contain vernal pool habitat and are, therefore, significant to wildlife habitat protection.

None of the identified ILSF areas contain a mat of organic peat or muck to which pollutants might adhere or by which they might be absorbed or taken up. Therefore, they are not presumed to be significant to pollution prevention. The Local Study Area ILSF is not likely to provide significant contributions to public, private, or ground water supplies. Although some infiltration occurs, the nearest, downgradient, recharge zones (Zone II and Zone III for Town of Dartmouth wells) begin 1.5 miles south of the Airport (see Section 4.3, *Water Quality*). The Airport ILSF is not within the designated recharge areas of these wells.

Riverfront Area (RA)

RA, which in New Bedford extends 25 feet away from Bank, occurs along the perennial East Drainage Ditch that flows on the east side of RW 5, the unnamed Paskamanset River tributary, and the portion of the Paskamanset River that is in the Local Study Area, all of which are in Wetland M (Table 4.4 -1, Figure 4.4-3). RA also extends onto uplands adjacent to the Paskamanset River. These small areas occur in the gas easement and along the road south of RW 5 that provides access to the light system.

All RA within the Local Study Area are within the surface watershed of public water supply sources and are, therefore, likely to be significant to the protection of public water supply**.** Undisturbed RAs within the Study Area are likely to be significant to the prevention of pollution, because there is an opportunity for these areas to remove and transform pollutants. The undisturbed upland areas of the RA bordering the Study Area perennial waterways may be significant to ground water supply. The wetlands within the RA may be significant to ground water supplies, through ground water recharge. All relatively undisturbed RAs are likely significant to flood control and storm damage prevention. These areas

can mitigate flooding and damage from storms by dissipating the energy of storm flows, decreasing peak flows by storing flood waters, and contain soils with increased infiltration capacity.

The RA associated with the Paskamanset River, which supports fish, is likely to contribute to habitat suitability for fish. Most of the RAs within the Study Area are likely significant to the protection of wildlife habitat by providing food, shelter, breeding, migratory and over-wintering areas. All of the RA in the Local Study Area bordering the Paskamanset River is located within the Massachusetts NHESP estimated habitats of rare wildlife, and is considered significant to the protection of wildlife habitat. None of the RAs within the Local Study Area are directly tributary to any areas that support shellfish.

Vegetation Management Areas

FAA safety regulations require that runways and runway approach areas be free of visual and physical obstructions and attractions to hazardous wildlife. Accordingly, vegetation at the Airport is actively managed in the infield areas and in the runway approaches, including on some easements adjacent to the Airport. Management actions include mowing, selective cutting of shrubs and trees that are too tall, application of herbicides, and monitoring. Vegetation management is guided by the MAC *VMP for New Bedford Municipal Airport*[35] and by the 5-Year Operational Plan (YOP) as described in the OOC[36] that was issued by the New Bedford and Dartmouth Conservation Commissions on April 16, 1997. The OCC has expired and an NOI[37] was submitted on February 6, 2007 for new vegetation management within the resource areas. The VMP was approved by the New Bedford Conservation Commission in an OOC[38] issued in April 17, 2008 and was permitted for a period of three years (Appendix G).

The purpose of the Vegetation Management Plan (VMP) implemented at New Bedford Regional Airport, is to maintain safe airport operations and obtain permits to remove current and potential vegetative obstructions to FAA Part 77 airspace and approach lighting protection zones in an environmentally sensitive manner. The VMP was based on an analysis of the airspace and RPZs; location and extent of existing and potential future vegetation penetrations; ecology of the areas that would need vegetation management; environmentally sensitive methods for vegetation removal; and cost factors. The VMP identifies specific vegetation management areas that require active management; six types (zones)

35 *Vegetation Management Plan for New Bedford Municipal Airport*, Massachusetts Aeronautics Commission, April 1995.
36 *Order of Conditions (DEP File Number SE 49-226) to the Massachusetts Airports Commission on behalf of the New Bedford Regional Airport, New Bedford Conservation Commission, April 16, 1997.*
37 *Notice of Intent (DEP File Number SE 49-595) to the New Bedford Conservation Commission, February 6, 2007.*
38 *Order of Conditions (DEP File Number SE 49-595) to the Massachusetts Airports Commission on behalf of the New Bedford Regional Airport, New Bedford Conservation Commission, April 17, 2008.*

of desired vegetation composition and structure; specific vegetation removal methods for wetlands, uplands, and river areas; methods to control invasive species, including a Phragmites control plan; and a YOP. Vegetation removal methods include mowing; tree cutting using hand tools or low-impact equipment; lopping or chipping of woody debris from cut plants; "high-lead" clearing to remove cut trees from wetlands; herbicide applications on cut stumps to prevent regrowth and resprouting of brush, shrubs and trees; and foliar herbicide applications.

The first VMP was approved by the New Bedford Conservation Commission in an OOC[39] issued in April 1997 and was permitted for a period of five years. MAC reported[40] to MEPA in 1999 that 323 acres, plus an additional 226 trees, had been managed, including 178 acres of wetlands, at a total cost of $1,357,991. This included follow-up maintenance as well as the initial clearing.

Portions of Wetlands A, C, D, E-F, G, H, I, K, L, M, N, P, R, S, T, U, and W have been altered by vegetation management activities and are within the runway protection areas.

Monitoring by MAC of vegetation plots in 2001 and subsequent observations made in 2002 indicated that in general vegetation communities re-established as herbaceous and scrub/shrub communities.[41] Removal of saplings and canopy trees resulted in the release of groundcover and shrub species, with limited woody growth ranging from 2 to 8 feet in height. Decomposition of logging chips, wood slash, and standing dead woody material (from herbicide treatment) was still ongoing and its presence had limited regrowth to some extent.

In 2006, FAA was requiring emergency clearing in these areas in order to keep RW 5-23 and its approach lights operational. On February 6, 2007 an NOI was submitted proposing vegetation management to allow light lanes and approach areas to RW 5-23 to be maintained free of obstruction.

Since the NOI was submitted in 2007, the Airport has been coordinating with the Conservation Commission to cut vegetation to maintain safe airport operations under Emergency Certifications. The vegetation management was conducted in accordance with methods proposed under the VMP, within existing vegetation management areas as established in the 1997 VMP.

39 *Order of Conditions (DEP File Number SE 49-226) to the Massachusetts Airports Commission on behalf of the New Bedford Regional Airport, New Bedford Conservation Commission, April 16, 1997.*

40 *Generic Environmental Impact Report/Expanded Generic Environmental Notification Form, Airport Vegetation Management (EOEA Number 8978)*, Massachusetts Aeronautics Commission, November 1999.

41 *MEPA Status Report, 2002, Statewide Airport Vegetation Management Program (EOEA File Numbers 8978/12092)*, Massachusetts Aeronautics Commission, March 2003.

However, refinement of the allowable heights within the light lanes (the area 200 feet from the centerline approach lights) and changes in the vegetative communities resulted in additional required management in new areas of obstructions associated with the RW 5-23. The new YOP (2008-2012) was submitted to the New Bedford Conservation Commission in February 2008. [42] The proposed update of the YOP for New Bedford Airport is outlined in Table 4.4-6. The YOP, including a plan for Phragmites management, is provided in Appendix G, *Vegetation Management Plan*.

The cutting projects were also reviewed by NHESP, and no "take" of rare species determinations were issued in February 2007 and April 2008 (Appendix G).

Vernal Pools

Vernal pools are generally small, seasonally-inundated (sometimes permanent) wetlands that lack fish and that provide breeding habitat for obligate vernal pool species such as wood frogs (*Rana sylvatica*) and salamanders of the genus *Ambystoma*. There are six vernal pools in the Local Study Area wetlands. Five vernal pools are in the actively maintained, runway approach area north of RW 23 (in Wetlands A, B, D (two pools), and W). A sixth vernal pool is south of RW 5 in Wetland M, in the gas pipeline easement, in which vegetation (*Phragmites australis*) is also actively maintained. Consequently, none of the vernal pools have mature tree canopies. Shrub cover ranges up to 60 percent and ground cover up to 90 percent. One vernal pool (Wetland D) has submerged aquatic vegetation. The depth of water in these pools ranges from 2 to 48 inches, and average depth ranges from 10 to 36 inches. Additional areas in Wetland M contain seasonal standing water and support vernal pool amphibians.

4.4.5 Environmental Consequences

The Certificate of the Secretary of Environmental Affairs on the NPC dated April 6, 2007, specified that the FEIS/FEIR provide additional information pertaining to project-related direct and indirect impacts to wetlands. This section describes the potential direct and indirect impacts on federally-regulated wetlands and state wetland resource areas in the Local Study Area for the No-Action Alternative and Preferred Alternative. Direct impacts include impacts from wetland filling and impacts from vegetation management.

The safety improvements proposed in the Preferred Alternative would have significantly reduced wetland impacts compared to those estimated in the DEIS/DEIR. The Preferred Alternative eliminates impacts to the Acushnet Cedar

42 *New Bedford Regional Airport, Vegetation Management Plan, Yearly Operational Plan, 2008-2012, Baystate Environmental Consultants, Inc., February 2008.*

Swamp and to other smaller wetland systems including all certified vernal pools that are classified as ORWs.

Direct Impacts to Wetlands from Filling

This section describes the direct impacts from wetland filling that would result from the No-Action Alternative and Preferred Alternative. Impacts to federally-regulated wetlands and waterways and state-regulated wetland resource areas are described below.

In addition to the direct impacts of placing fill in a wetland (permanent impact) construction could result in additional temporary impacts at the toe of slope to allow construction. These temporary impacts depend on slope design and soil conditions and would be quantified during the preliminary design phase for each project.

The proposed project would only directly impact portions of Wetland L and M. The following is a detailed description of these wetlands.

Wetland L

Wetland L is located approximately 500 feet southeast of RW 23 and immediately across Aviation Way from Wetland O (Figure 4.4-4). Wetland L and O appear to have once been one large complex, but were bisected by the construction of Aviation Way. Wetland L exhibits hummock/hollow microtopography and consists of both PFO and PSS. Wetland L drains to Wetland H through a man-made drainage channel. The PFO includes red maple, pitch pine, and eastern white pine in the overstory canopy, and sweet pepperbush, highbush blueberry, greenbrier, swamp white oak (*Quercus bicolor*), sphagnum moss, wild lily-of-the-valley (*Maianthemum canadense*), hayscented fern (*Dennstaedtia punctilobula*), and cinnamon fern in the understory. The PSS includes red maple, sweet pepperbush, swamp azalea, greenbrier, leatherleaf, Virginia chain fern (*Woodwardia virginica*), and marsh St. John's wort. The intermittent channel that drains Wetland L is 3 to 4 feet wide and is vegetated with arrow-wood, swamp azalea, northern red oak (*Quercus rubra*), gray birch, sweet-fern (*Comptonia peregrina*), common reed, soft rush, spotted touch-me-not (*Impatiens capensis*), and goldenrods. An isolated man-made ditch in the southwestern portion of Wetland L contains standing water for portions of the year. No inlets or outlets were observed associated with this ditch. The Airport has actively managed vegetation within this wetland in accordance with the VMP.

Under the WPA, Wetland L contains BVW and Bank and is included in the approved USACE wetland boundary.

Functions and values for Wetland L were assessed using the USACE Highway Methodology Workbook. Wetland L was determined to provide the Principal

Function or Values of Nutrient Removal/Retention/Transformation and Production Export. Secondary Function or Values include Floodflow Alteration, Sediment/Toxicant/Pathogen Retention, and Wildlife Habitat. Hydrological and water quality functions are supported by Wetland L's apparent capability of retaining surface water within the wetland. The biological functions are enhanced by the presence of temporary surface water ponding areas and a diversity of vegetation.

Wetland M

Wetland M, part of the Apponagansett Swamp, is a large wetland system located south and southwest of the airport complex, bordering the Paskamanset River (Figure 4.4-4). Wetland M consists of PFO, PSS, PEM, and riverine lower perennial unconsolidated bottom (R2UB) wetlands. The PFO includes red maple, swamp tupelo in the overstory canopy, and sweet pepperbush, arrow-wood, common elder, poison sumac, common winterberry, northern spicebush (*Lindera benzoin*), greenbrier, sensitive fern, spotted touch-me-not, poison ivy, jack-in-the-pulpit (*Arisaema triphyllum*), and goldenrods in the understory. The PSS includes bebb willow, red maple, common elder, greenbrier, arrow-wood, steeplebush, common winterberry, highbush blueberry, glossy buckthorn (*Rhamnus frangula*), gray birch, sweet pepperbush, spotted Joe-Pye-weed, shallow sedge soft rush, rough-stemmed goldenrod, grass-leaved goldenrod (*Solidago graminifolia*), spotted touch-me-not, sensitive fern, purple loosestrife (*Lythrum salicaria*), woolgrass, broad-leaf cattail, and common boneset. The PEM includes large expanses of common reed as well as broad-leaf cattail, steeplebush, soft rush, sphagnum moss, goldenrods, spotted Joe-pye-weed, and sensitive fern. The R2UB is associated with two branches of the Paskamanset River that flow through the Airport property. The banks of the river are densely vegetated with red maple, bebb willow, common reed, and other grasses and sedges. Wetland M is located within the FEMA 100-year floodplain, and forms a portion of the floodplain of the Paskamanset River and its tributaries. The Airport actively manages vegetation within this wetland in accordance with the VMP and OOC.

Under the WPA Wetland M contains BVW, Bank, LUWW, RA, and BLSF and is included in the approved USACE wetland boundary.

Functions and values for Wetland M were assessed using the USACE Highway Methodology Workbook. Wetland M was determined to provide the Principal Function or Values of Fish and Shellfish Habitat, Sediment/Toxicant/Pathogen Retention, Nutrient Removal/Retention/Transformation, Production Export, Wildlife Habitat, and Endangered Species Habitat. Secondary Function or Values include Ground water Recharge/Discharge, Floodflow Alteration, and Sediment/Shoreline Stabilization.

Due to the presence of the floodplain of the Paskamanset River, Wetland M serves an important flood storage function by detaining floodwaters for prolonged periods following precipitation events. This temporary storage reduces flood levels and potential damage to downstream communities. Wetland M also serves to maintain surface water quality by slowing water movement and filtering sediment and nutrient/toxicant input from nearby impervious areas. Much of Wetland M is underlain by relatively impermeable fine sand, silt and clay, diminishing its value for ground water recharge.

The wildlife habitat value of Wetland M varies in relation to the cover type. The large portion of Wetland M is dominated by common reed that possesses relatively low value to wildlife. Adjacent habitat types comprised of a more varied assemblage of plants (PSS/PFO) likely serve a greater diversity of wildlife. Vernal pool habitat was identified within the Algonquin Gas Pipeline Easement PEM. The vast size of the Apponagansett Swamp and its physical connection to areas of protected open space and other undeveloped land enhances its value as wildlife habitat.

In addition, the Apponagansett Swamp, including Wetland M, serves as a link in a chain of riparian wetlands extending from the Paskamanset River's headwaters in Acushnet Cedar Swamp south to the mouth of the Paskamanset River in the Slocum River estuary. Access to the portion of the Apponagansett Swamp that lies on the Airport property is restricted and, therefore, its recreational value is limited. However, all of the Apponagansett Swamp serves as feeding, breeding or resting habitat for wildlife (e.g., fish, waterfowl) that support consumptive recreational activities that occur offsite, such as fishing and hunting.

Eastern box turtles (*Terrapene carolina*), a state-listed species of Special Concern, have been identified in uplands near Wetland M, and the coastal swamp amphipod (*Synurella chamberlainii*) also occurs in ditches and permanently wet areas within Wetland M. NHESP has designated much of the Apponagansett Swamp, including Wetland M, as estimated habitat of rare wetlands wildlife (NHESP Atlas, 2008). Section 4.6, *Threatened and Endangered Species*, presents a full discussion of rare species within the study area.

Wildlife habitat evaluations of affected wetland resources areas (per DEP Guidelines[43]) were completed and described in Section 4.4.6.

Impacts to Federal Wetlands

This section describes the direct impacts on federally-regulated wetlands from filling that would result from the No-Action Alternative and Preferred Alternative.

No-Action Alternative

The No-Action Alternative would not result in direct impacts to federally-regulated wetlands from filling, because no construction would occur within resource areas. There would be no direct impacts to the Functions and Values of federally-regulated wetlands from the No-Action Alternative due to the loss of wetlands.

Preferred Alternative

The proposed project (RW 5-23 safety improvements) would have unavoidable impacts to federal wetlands.

RW 5-23 safety improvements would place fill in two wetlands (L and M), for a total direct impact of approximately 7.33 acres (Table 4.4-2). The majority of this fill would be to construct the RSA at the RW 5 end (approximately 6.97 acres, 95 percent of the total impact). Wetland impacts would also result from constructing the RSA at the RW 23 end (approximately 0.36 acres). Impacts from filling to each wetland for RW 5-23 safety improvements are shown on Figure 4.4-5 and in Table 4.4-2. Approximately 0.92 acres of Wetland M would be temporarily altered to construct the relocated stream channel of the West Ditch.

For RW 5-23 safety improvements, wetland filling would primarily affect PEMs (approximately 5.72 acres) (Table 4.4-2). Safety improvements to RW 5-23 would also impact a small area of PSSs (approximately 1.45 acres), and open water (approximately 0.16 acres). These wetlands are within the Airport's existing vegetation management areas, which are maintained for runway safety in accordance with the Airport's VMP. Fill impacts to wetland types within each wetland are shown on Figure 4.4-5 and in Table 4.4-3.

Wetland filling for the RW 5-23 safety improvements would impact the principal functions of Nutrient Removal/Retention/Transformation and Production Export (approximately 7.33 acres each). Approximately 6.97 acres of Sediment/Toxicant/ Pathogen Retention functions would be impacted by the RW 5-23 safety

43 Department of Environmental Protection (March 2006). *Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands*.

improvements. The primary impact of the wetland filling would be the loss of Wildlife Habitat (approximately 6.97 acres). There would be no loss of function in Groundwater Recharge/Discharge, Floodflow Alteration, Sediment/Shoreline Stabilization or Fish/Shellfish Habitat. Impacts to primary Functions and Values within each wetland are shown on Figure 4.4-5 and in Table 4.4-2.

Table 4.4-2 Impacts (Filling) to each Wetland by Project Element (acres)

		Project Element Impacts (acres)		
Wetland	Type	RW 5 RSA	RW 23 RSA Total	
L	Permanent	0	0.36	0.36
M	Permanent	6.97	0	6.97
Subtotal		6.97	0.36	7.33
M	Temporary	0.92	0	0.92
TOTAL		7.89	0.36	8.25

Table 4.4-3 Impacts (Filling) on Vegetation Cover Type (acres) by Wetland

		Impacts on Vegetation Cover Type (acres)				
	Wetland	Forested Wetland (PFO)	Scrub-Shrub Wetland (PSS)	Emergent Wetland (PEM)	Open Water	Total
Permanent	L	0	0.36		0	0.36
	M	0	1.09	5.72	0.16	6.97
	Subtotal	0	1.45	5.72	0.16	7.33
Temporary	M	0	0.48	0.43	0.01	0.92
	TOTAL	0	1.93	6.15	0.17	8.25

Table 4.4-4 Impacts (Filling) on Primary Functions and Values (acres) by Wetland

	Impacts on Primary Functions and Values (acres)								
Wetland	GWR/D	FFA	F/SH	S/T/PR	NR/R/T	PE	S/SS	WLH	ESH
L	0	0	0	0	0.36	0.36	0	0	0
M	0	0	0	6.97	6.97	6.97	0	6.97	6.97
TOTAL	0	0	0	6.97	7.33	7.33	0	6.97	6.97

GWR/D Ground water recharge/discharge.
FFA Floodflow alteration.
F/SH Fish and shellfish habitat.
S/T/PR Sediment/toxicant/pathogen retention.
NR/R/T Nutrient removal/retention/transformation.
PE Production export.
S/SS Sediment/shoreline stabilization.
WLH Wildlife habitat.
ESH Endangered species habitat.

Impacts to State Wetland Resource Areas

This section describes the direct impacts on state-regulated wetland resource areas from filling that would result from the No-Action Alternative and Preferred Alternative. Impacts to BLSF are evaluated in Section 4.5, *Floodplains*.

No-Action Alternative

The No-Action Alternative would not result in direct impacts to state-regulated wetland resource areas from filling, because no construction would occur.

Preferred Alternative

The proposed project (RW 5-23 safety improvements) would have unavoidable impacts to state wetland resource areas.

RW 5-23 safety improvements would require placing fill in two state-regulated wetlands (L and M) for a total loss of approximately 6.97 acres of BVW, 770 linear feet of Bank, 0.1 acre of LUWW, 0.81 acre of RA and 3.45 acres of BSLF within Wetland M and a total loss of 0.36 acres of BVW within Wetland L. Impacts to state-regulated wetland resource areas within each wetland are shown on Figure 4.4-6 and in Table 4.4-5.

Table 4.4-5 Preferred Alternative Impacts (Filling) on State Wetland Resource Areas by Wetland

		Impacts on State Wetland Resource Areas					
	Wetland ID	Bordering Vegetated Wetland (acre)	Land under Water (acre)	Isolated Land Subject to Flooding (acre)	Bordering Land Subject to Flooding (acre)	Bank (linear feet)[1]	Riverfront Area (acre)[2]
Permanent	L	0.36	0	0	3.45	0	0
	M	6.97	0	0	0	770	0.81
	Subtotal	7.33	0	0	3.45	770	0.81
Temporary	M	0.92	0	0	0	0	0.06
	TOTAL	8.25	0	0	3.45	770	0.87

1 All bank impacts are to intermittent ditch.
2 Riverfront Area is 25 feet wide in New Bedford.

Direct Impacts to Wetlands from Vegetation Management

Vegetation management at the Airport would result in potential direct impacts to wetland functions, but would not result in the loss of wetlands.

No-Action Alternative

The No-Action Alternative would require continued implementation of the Airport's existing VMP (Figure 4.4-7). As noted above, an NOI was submitted on February 6, 2007 to the New Bedford Conservation Commission for new vegetation management in RA, Bank and BVW related to the ongoing VMP at New Bedford Airport. This management was proposed to allow light lanes and approach areas to RW 5-23 to be maintained free of obstruction.[44]

On February 2008, an updated YOP (2008-2012) was submitted to the New Bedford Conservation Commission. The YOP included immediate actions that would be required for additional vegetation management in new areas of obstructions associated with the RW 5-23 (the area 200 feet from the centerline approach lights). On June 18, 2008 the NBCC issued an Order of Conditions allowing the Airport to alter vegetation within 56.5 acres of BVW, 2.72 acres of Riverfront Area, two vernal pools, approximately 27,800 linear feet of Bank, and 41,700 s.f of Land under Waterways (the West Ditch and East Ditch).

44 *Order of Conditions (DEP File Number SE 49-595) to the Massachusetts Airports Commission on behalf of the New Bedford Regional Airport, New Bedford Conservation Commission, April 17, 2008.*45 http://www.mass.gov/dfwele/dfw/nhesp/nhbiomap.htm, Accessed on November 19, 2004.

The continued vegetation management would include mowing the infield areas, herbicide treatment of common reed stands, cutting woody plants that penetrate or would penetrate the protected space, and applying herbicide to cut stumps to prevent regrowth and sprouting.

Potential impacts to wetlands would include the continued suppression of tall, woody plants and the continued dominance of groundcover and shrubby species in wetlands that were forested prior to vegetation management. As debris from prior tree-clearing continues to decompose, vegetative cover may increase and may eventually form a closed cover, where it is not disturbed or covered with new debris from new cutting.

The cutting projects were reviewed by NHESP, and no "take" of rare species determinations were issued in February 2007 and April 2008.

The additional tree clearing proposed at the RW 5 and RW 23 ends at the Airport have been included as part of the No-Action Alternative. They have been included with the presumption that this tree clearing would be approved by the appropriate regulatory agencies and implemented regardless of whether additional safety improvements were undertaken. These areas would be cleared of any individual trees if they obstructed the safety areas. The proposed update of the YOP for New Bedford Airport is outlined in Table 4.4-6.

Wetland impacts from the proposed tree clearing at the RW 5 and RW 23 ends are anticipated to result in vegetation changes similar to those that occurred after the initial implementation of the VMP. These included changes from forested wetland to scrub/shrub wetland, infilling with groundcover and shrubby species, and some suppression of regrowth where woody debris was left behind.

As documented in Table 4.4-7 and shown on Figure 4.4-7, the No-Action Alternative would require vegetation management within approximately 180 acres of vegetated wetland. Approximately 56 acres of this management is currently permitted under the Wetlands Protection Act. Within the proposed wetland clearing area, approximately 90 acres has been previously cleared (prior to 2000), and approximately 90 additional acres would need to be cleared to meet FAA requirements for runway approach surfaces, light lanes, line-of-sight for approach lights, and object free areas.

Table 4.4-6 Proposed Update of Yearly Operational Plan (YOP)

Year	Maintenance Area	Treatment
2008	1,2,3,5,6	Area 1: Annual or more frequent mowing. Area 2: Selective hand cutting or mowing of low shrub zone including RW 23 light lane penetrations. Area 3: Selective hand cutting of the penetrations on the upland knoll adjacent to Rt. 140 (allowable tree heights <50ft, approximately 75% of the canopy cover). Area 5: Drop and lop tall shrubs penetrating light lane near ILSF in RW 23 approach. Area 6: Mowing of light lane area portion (June/August). Initial herbicide treatment of entire area, and spot treatment of any Phragmites in surrounding or recently cut areas.
2009	1,5,6	Area 1: Annual or more frequent mowing. Area 5: If needed, selective hand cutting of any penetrations within 10' of open water. Area 6: Mowing of light lane area portion (June/August). Follow-up herbicide treatment.
2010	1,2,6	Area 1: Annual or more frequent mowing. Area 2: Selective cutting or herbicide treatment of penetrations as needed. Area 6: Mowing of light lane area portion (August only, if penetrations not an issue). Follow-up spot herbicide treatment.
2011	1,2,3,4	Area 1: Annual or more frequent mowing. Selective cutting of Area 3 if needed. Area 4: Selective cutting of trees >50 ft taller than the runway elevation, as needed. Seek additional off Airport avigation easements if needed.
2012	1,2,3,6	Area 1: Annual or more frequent mowing. Areas 2, 3, 6: Selective foliar herbicide treatment, if needed.

Table 4.4-7 Vegetation Management Impacts (acres)

	Vegetation Management Areas[1] (acres)		
Proposed Tree Clearing	Wetland[2]	Upland	Total
No-Action Alternative	180.20	83.06	263.26
Additional Clearing For RW 5-23 Safety Improvements	21.97	4.95	26.92
Total	202.17	88.01	290.18

1 Does not include mowed areas near the Airport runways, which are included in the VMP.

Preferred Alternative

The Preferred Alternative would require new areas of vegetation management within the runway approach areas for RW 5-23. The total tree clearing or vegetation management required for the Preferred Alternative would be the area needed for the No-Action Alternative plus the incremental difference of the safety improvements.

RW 5-23 safety improvements would require clearing new areas of vegetation in Wetland M (areas additional to vegetation cleared as part of the No-Action Alternative). Because the Runway 5 threshold would shift to the south, the required 50:1 approach surface also shifts to the south and requires that additional clearing be implemented to meet FAA standards. An additional approximately 22 acres of forested wetlands would need to be cleared of any individual trees if they obstructed Airport safety areas (Table 4.4-7). Figure 4.4-8 shows the new limits within which vegetation management would be needed for RW 5-23 safety improvements.

New wetland impacts are anticipated to be similar to the vegetation changes that occurred after the initial implementation of the VMP. These included changes from forested wetland to scrub/shrub wetland, infilling with groundcover and shrubby species, and some suppression of regrowth where woody debris was left behind.

As described in Chapter 3, The Airport proposes to install a perimeter fence around the RW 5 end to reduce the incursions of deer and other hazardous wildlife onto the airfield. Currently, the northern perimeter of the airfield is fenced, but there is no fence between the end of Old Shawmut Road on the northwest and the Colonial Aviation hangar on the southeast. Deer frequently enter the airfield, and are a significant wildlife hazard to aircraft landing or taking off. The Airport has attempted to control deer using a sharpshooter, but proposes the fence as a permanent, more humane means of protecting airfield safety.

The perimeter fence is proposed to be a 10-foot high woven wire deer-exclusion fence. The fence would be approximately 6,300 feet long, as shown on Figure 3-1. The design specifications recommend clearing a 20-foot swath on either side of the fence line to allow fence installation and for future maintenance of the fence. This would require removing trees and shrubs in an approximately 2.9-acre area of wetland, contained within the Vegetation Management Area.

4.4.6 Impacts to Wetland Wildlife Habitat

This section describes the effects of the No-Action Alternative and the Preferred Alternative on vernal pools and wetland wildlife habitat, as required by the Secretary's Certificate.

Vernal Pools

This section describes direct impacts on vernal pools from filling that would result from construction of the No-Action Alternative and the Preferred Alternative. Vernal pools in the Local Study Area are MA WPA resource areas if

they are within BLSF or other resource areas. Vernal pool habitat includes the pool and 100 feet around the pool (where the surrounding 100 feet falls within the resource area) [310 CMR 10.57(1)(a)].

No-Action Alternative

The No-Action Alternative would not result in direct impacts to vernal pools from filling, because no construction would occur within the resource areas.

Preferred Alternative

RW 5-23 safety improvements would not impact any certified vernal pools as listed by NHESP.

The safety improvements proposed in the Preferred Alternative would significantly reduce vernal impacts compared to those estimated in the DEIS/DEIR and in the NPC. The NPC alternatives would partially fill two certified vernal pools located within Wetlands B and D.

The proposed RW 5-23 safety improvements would not impact any of the six certified vernal pools documented within the study area; however, it could impact potential vernal pools (pool pockets) in Wetland M that were observed during several field investigations.

The loss of potential vernal pools would not result in a loss of breeding habitat for vernal pool species. Therefore, the loss of potential vernal pool habitat from RW 5-23 safety improvements is not considered significant given the remaining certified vernal pool habitat in the Local Study Area (approximately 1.92 acres).

Wildlife Habitat Evaluation

The Massachusetts Wetlands Protection Act regulations require that wildlife habitat evaluations be conducted when a proposed project will alter certain resource areas beyond established thresholds [310 CMR 10.60(1)]. Habitat evaluations were completed to accurately survey the Project Area and to provide a basis for the mitigation design. Work associated with improvements of the New Bedford Airport Runway Safety Areas will impact Bordering Vegetated Wetland (BVW), Bordering Land Subject to Flooding (BLSF), Bank and Land Under Water Bodies and Waterways (LUWW), and Riverfront Area (RA). On July 29, 2008, Environmental Scientists with Vanasse Hangen Brustlin, Inc. (VHB), performed a wildlife habitat evaluation in conformance with the *Massachusetts Wildlife Habitat Protection Guidance for Inland Wetlands*, published and distributed by the Massachusetts Department of Environmental Protection (DEP) in March, 2006.

The wildlife habitat evaluation was performed to:

- assess the habitat characteristics present within the impacted resource areas;
- determine what species of amphibians, reptiles, birds, and mammals are known or expected to use the property for food, shelter, migratory and over-wintering areas, or breeding sites; and
- analyze whether each resource area provides "important wildlife habitat functions," as described in the WPA [310 CMR 10.60(1&2)].

Wildlife observations were made and field data was collected on the date described above. Data on the topography, hydrology, soils/substrate, plant communities, and wildlife habitat features were collected for all resource types within the proposed work areas. Wildlife habitat evaluations were performed only in specific areas where alterations are proposed to occur.

The proposed improvement work areas were evaluated using the DEP Appendix B form (*Detailed Wildlife Habitat Evaluation*). According to the most recent data distributed in the 2008 by the Massachusetts Natural Heritage and Endangered Species Program (NHESP), the Project Area is within land designated as Priority Habitat for State Listed Rare Species, or as Estimated Habitat of Rare Wildlife.

Bordering Vegetated Wetlands

According to the Wetlands Protection Act [310 CMR 10.55(1)], "Bordering Vegetated Wetlands are likely to be significant to…the protection of fisheries and to wildlife habitat"…because they "provide important food, shelter, migratory and overwintering areas, and breeding areas for many birds, mammals, amphibians and reptiles." There are two BVW areas found within the Project Area:

- BVW at the end of Runway Safety Area 5 (Wetland M); and
- BVW at the end of Runway Safety Area 23 (Wetland L).

All impact areas within Wetland M and L are limited to currently maintained portions of the runway safety areas (Figure 4.4-5). FAA safety regulations require that runways and runway approach areas be free of visual and physical obstructions and attractions to hazardous wildlife. Accordingly, vegetation at the Airport is actively managed in the infield areas, the RSAs, and the other defined surfaces to allow visibility of lights. Management actions include mowing, selective cutting of shrubs and trees that are too tall, application of herbicides, and monitoring. Table 4.4-8 provides a summary of the two wetlands and impacts of the Preferred Alternative.

Table 4.4-8 Existing Wetlands within the Project Area

Wetland ID	Size[1] (acres)	WPA Resource Areas[2]	Vegetation Cover Type[3] (acres)				Loss (Acres)
			PFO	PSS	PEM	Open Water	
L	12.45	BVW, Bank	5.49	6.93		0.04	0.36
M	407.10	BVW, Bank, LUWW, RA[4], BLSF	198.18	79.43	124.12	5.37	6.97
TOTAL	419.55		203.67	86.36	124.12	5.41	7.33

1 Size of wetland within the Project Area.
2 WPA Resource Areas: BVW - bordering vegetated wetland, Bank – bank to water bodies and waterways, ILSF - isolated land subject to flooding, LUWW - land under water bodies and waterways, RA - riverfront area, BLSF - bordering land subject to flooding.
3 Vegetation Cover Types: PFO – palustrine forested wetland, PSS – palustrine scrub-shrub wetland, PEM – palustrine emergent marsh wetland.
4 Riverfront area is 25 feet in New Bedford.

Wetland M

Wetland M is approximately 407 acres and a tributary to the Paskamanset River. One of its primary function and values is to provide wildlife habitat.

The impact area within Wetland M is approximately 6.97 acres and it is generally classified as palustrine emergent marsh (PEM) (Figure 4.4-5).

For purposes of the investigation, the impact area within Wetland M was divided into four quadrants, based upon their relative position to the existing Instrument Landing System (ILS) roadway that bisects the area and the linear depression.

- Within the northeast quadrant, the BVW consists of palustrine emergent marsh (PEM) and exhibited 6-12 inches of standing water.
- Both the southwest and southeast quadrants are PEM that had saturated soils with no standing water. The vegetation on the southeast quadrant had been recently mowed at the time of the investigation. The dominant vegetation in the PEM areas includes common reed (*Phragmites australis*), sensitive fern (*Onoclea sensibilis*), spotted Joe-Pye-weed (*Eupatorium maculatum*), smartweed (*Polygonum* sp.), and steeple bush (*Spiraea tomentosa*).
- The northwest quadrant is a Wet Meadow community that had saturated soils with no standing water. This quadrant also exhibited evidence of recent mowing. The wet meadow is vegetated with wool grass (*Scirpus cyperinus*), common reed, spotted Joe-Pye-weed weed, tussock sedge (*Carex stricta*), marsh fern (*Thelypteris palustris*) and *Sphagnum* moss.

Open water habitat occurs within the perennial stream running east-west at the end of Runway 5. Other areas of open water include seasonally flooded depressions that may function as vernal pools. On July 29, 2008 three turtle nest were observed on the ILS roadway. It could not be determined which species of turtle uses the area for nesting.

Wetland M provides a large area of contiguous wetland wildlife habitat, containing several cover types, and supports perennial waterways. These features provide good quality wildlife habitat. However, within the impact areas their value is degraded through regular mowing and adjacent human activities associated with Airport operations.

The impact area contains the following wildlife habitat features:

- Presence of seasonal standing water suitable for use by breeding and non-breeding (foraging) amphibians, turtles, and foraging waterfowl;
- Depressions that may serve as seasonal pools;
- Dense herbaceous cover that provides food and shelter for small mammals, amphibians, reptiles and birds; and
- Located within 100 feet of exposed areas and well drained sandy soils suitable for turtle nesting.

Such features are considered important to wildlife habitat as they may provide area for sheltering, feeding, breeding, migrating, and over-wintering. The herbaceous layer is predominantly covered by the exotic Phragmites, and to a much lesser extent by important wetland food plants such as smartweeds and berry producing plants such as *Polygonum* sp., *Rubus* sp., and winterberry (*Ilex verticillata*). However, due to significant invasion of *Phragmites* and other human disturbance (e.g., Airport operations) the proposed improvement work areas do not offer additional wildlife habitat features that are important for a variety of species.

Since 1995 there have been several field investigations conducted by ENSR International, Inc. (ENSR) and by VHB to inventory and assess wildlife habitat use and rare-species within the Study Area. Wildlife presence was documented through visual observations, auditory calls, and wildlife signs such as scat, tracks, nests, and/or burrows. Tables 4.4-9 through 4 .4-11 list wildlife species observed and likely to use the lost wetland areas.

During field surveys for state-listed species, general wildlife use at the EWB was also recorded. Investigations and species specific field surveys for rare species were conducted in 1996-1999 and in 2002-2004 in the Project Area and Local Study Area. Surveys were conducted where suitable habitat was present on-site

for rare species or where rare species were documented previously on-site. Some of the species surveyed included: spotted turtle (*Clemmys quttata*), eastern box turtle (*Terrapene Carolina*), Mystic Valley amphipod (*Crangonyx aberrans*), coastal swamp amphipod (*Synurella chamberlaini)* and four-toed salamander (*Hemidactylium scutatum*).

Intensive field surveys were also conducted in 2005 to determine the extent of the populations of state-listed species recorded previously on, and in the vicinity of, the Airport. Since these surveys, a few of the species are no longer listed (spotted turtle, four-toed salamander, and Mystic Valley Amphipod). Section 4.6 includes additional details about the rare species surveys and their status.

Several investigations were conducted to determine the presence of vernal pools in the local study area. On April 17 and 24, 2003, previous investigations were field updated in order to obtain current data. Sites evaluated as part of the field investigation were chosen based upon the descriptions contained in previous studies. Each area identified as providing vernal pool habitat was field-located with a hand-held GPS unit. All evidence of vernal pool species (spotted salamander, *Ambystoma maculatum,* and wood frog, *Rana sylvatica,* egg masses) use was documented with field notes and photographs. Each area was investigated for the presence of vernal pool indicator species as listed in the NHESP Certification Criteria (dated Spring 2000).

Even though there are no Certified Vernal Pools as listed by NHESP in the work areas there are Potential Vernal Pools (pool pockets) observed in Wetland M within the proposed RSA.

Breeding bird surveys were conducted in 2003 to assess the diversity of birds using wetlands in the local study area. The breeding bird surveys were conducted in two locations: north of RW 23 and south of RW 5. These locations were selected because they are the areas of potential impacts from runway expansion. South of RW 5, the breeding bird survey was conducted in the same general area as the spotted turtle surveys. This area encompasses emergent and scrub/shrub wetlands adjacent to the Algonquin Gas Pipeline easement and the ALS Road, and forested wetlands west of the ALS Road, south of the Water Road.

Bird use in the local study area was determined by conducting point-count observations at the three stations located along the transect. Observations included bird calls, songs, and visual sightings such as nesting/brooding, and birds in flight.

Table 4.4-9 Reptile and Amphibian Species Potentially Occurring Within the Impact Area

Common Name	Scientific Name	Habitat Use	Status[1]
Spotted salamander	*Ambystoma maculatum*	Moist deciduous/mixed woods, vernal pools	
Eastern American toad	*Bufo a. americanus*	Gardens, moist upland woods	
Northern spring peeper	*Hyla c. crucifer*	Wet woods, bogs, non-wooded lowlands near water	
Wood frog	*Rana sylvatica*	Wooded areas with s hallow ponds or vernal pools for breeding	
Spotted turtle	*Clemmys guttata*	Shallow streams with muddy bottoms, wet meadows, vernal pools	
Eastern box turtle	*Terrapene c. carolina*	Woodlands, field edges, marshes	SC
Painted turtle	*Chrysemys p. picta*	Shallow ponds, marshes, lakeshores, slow-moving streams	
Northern water snake	*Nerodia s. sipedon*	Streams, wet meadows, ponds, bogs, swamps	
Eastern garter snake	*Thamnophis s. sirtalis*	Moist areas, forest edges, streambanks, fencerows, vacant lots, weedy yards	

Source: DeGraaf, R.M., and M. Yamasaki. 2001. New England Wildlife: Habitat, Natural History, and Distribution. University Press of New England, Hanover, NH. 482 pages.

Bold: Species in bold represent those observed on Airport property.

1 Status: SE = State Endangered; ST = State Threatened; SC = Massachusetts Species of Special Concern. Status is state-wide only – no federally Threatened species are expected to occur in the regional or local study area.

Table 4.4-10 Mammal Species Potentially Occurring Within the Impact Area

Common Name	Scientific Name	Habitat Use	Status[1]
Eastern cottontail	*Sylvilagus floridanus*	Farmland, pastures, fallow fields, woodlands, thickets, wetlands, yards	
Meadow vole	*Microtus pennsylvanicus*	Fields, pastures, wet meadows, marshes, open and wooded swamps	
Coyote	*Canis latrans*	Forests near fields, woodland edges	
White-tailed deer	*Odocoileus virginianus*	Forest edges, open habitat interspersed w/woodland, suburban areas	

Source: DeGraaf, R.M., and M. Yamasaki. 2001. New England Wildlife: Habitat, Natural History, and Distribution. University Press of New England, Hanover, NH. 482 pages.

Bold: Species in bold represent those observed on Airport property.

1 Status: SE = State Endangered; ST = State Threatened; SC = Massachusetts Species of Special Concern. Status is state-wide only – no federally Threatened species are expected to occur in the regional or local study area.

Table 4.4-11 Bird Species Observed or Potentially Occurring Within the Impact Area

Common Name	Scientific Name	Habitat Use[1]	Habitat	Status[2]
Green heron	*Butorides virescens*	B, M	Ponds, lakes, streams, marshes, shrub swamps	
Mallard	*Anas platyrhynchos*	B, R	Ponds, lakes, streams, marshes	
Red-tailed hawk	*Buteo jamaicensis*	R	Open fields, forests	
Northern harrier	*Circus cyaneus*	M, W	Winters in coastal marshes, pastures, grasslands	ST
Ruffed grouse	*Bonasa umbellus*	R	Deciduous/mixed woods, clearings	
Killdeer	*Charadrius vociferous*	M	Open fields, shores	
Spotted sandpiper	*Actitis maculata*	B, M	Ponds, lakes, streams, pastures, fields	
Solitary sandpiper	*Tringa solitaria*	M	Marshes	
Common snipe	*Gallinago gallinago*	B, M	Marshes with short vegetation, lowlands near streams & rivers, wet thickets	
American woodcock	*Scolopax minor*	B, M	Moist second-growth woods, thickets	
Mourning dove	*Zenaida macroura*	R, B, M, W	Open woods, farmlands, yards	
Black-billed cuckoo	*Coccyzus erythrophthalmus*	B, M	Open woods, shrubby thickets	
Downy woodpecker	*Picoides pubescens*	R, B	Open woods, shade trees	
Northern flicker	*Colaptes auritus*	B, M	Open woods, yards, parks	
Willow flycatcher	*Empidonax traillii*	B, M	Open brushy fields, shrub wetlands, roadsides	
Eastern phoebe	*Sayornis phoebe*	B, M	Cliffs, bridges, buildings near streams	
Eastern kingbird	*Tyrannus tyrannus*	B, M	Forest edges, pastures & streams with shrubby borders	
Blue jay	*Cyanocitta cristata*	R	Woods, farms, yards	
American crow	*Corvus brachyrhynchos*	R	Open woods, farmland	
Tree swallow	*Iridoprocne bicolor*	B, M	Farmlands, beaver ponds, open wooded swamps	
Black-capped chickadee	*Parus atricapillus*	R	Mixed woodlands, dense thickets, orchards, parks	
Tufted titmouse	*Parus bicolor*	R	Deciduous and mixed woods, wooded swamps, shade trees	
Carolina wren	*Thryothorus ludovicianus*	R	Shrubby fields, edges, swampy areas, and thickets in open woodland	
American robin	*Turdus migratorius*	R, B, M, W	Open woods, fields, yards	
Gray catbird	*Dumetella carolinensis*	B, M, W	Dense thickets, woodland edges, yards	
Northern mockingbird	*Mimus polyglottus*	R	Shrubby fields, yards	
Brown thrasher	*Toxostoma rufum*	B, M	Woodland edges, thickets, shrubby fields	
Cedar waxwing	*Bombycilla cedrorum*	B, M, W	Open deciduous/coniferous woods, shade trees	
Yellow warbler	*Dendroica petechia*	B, M	Yards, streamside thickets	
Yellow-rumped warbler	*Dendroica coronata*	M, W	Winters in any type of woodland; thickets, gardens	
Common yellowthroat	*Geothlypis trichas*	B, M	Wet, shrubby meadows, wet thickets, marshes	
Eastern towhee	*Pipilo erythophthalmus*	B, M, R	Woodlands, thickets, shrubby fields	
Song sparrow	*Melospiza melodia*	B, M, W	Shrubby fields, edges, yards, streamsides	
Red-winged blackbird	*Agelaius phoeniceus*	B, M	Marshes, wet meadows, hayfields	
Common grackle	*Quiscalus quiscula*	B, M	Farmlands, fields, yards, forest edges	

Source: Veit, R.R. and W.R. Peterson. 1993. *Birds of Massachusetts*. Natural History of New England Series. Massachusetts Audubon Society, Lincoln, MA. DeGraaf, R.M., and M. Yamasaki. 2001. New England Wildlife: Habitat, Natural History, and Distribution. University Press of New England, Hanover, NH. 482 pages.

Bold: Species in bold represent those observed on Airport property

1 Habitat Use: R: Resident; B: Breeding; M: Migrant; W: Winter resident

2 Status: SE = State Endangered; ST = State Threatened; SC = Massachusetts Species of Special Concern; FE = Federal Endangered; FT = Federal Threatened

Wetland L

Wetland L is approximately 12.4 acres, much smaller than Wetland M, and it only provides secondary function and values as wildlife habitat.

The impact area within Wetland L is approximately 0.36 acres and it is generally classified as palustrine shrub swamp (PSS) and wet meadow (Figure 4.4-5). The dominant vegetation in the PSS areas includes steeple bush, red maple (*Acer rubrum*), sheep laurel (*Kalmia angustifolia*), S*phagnum* moss, P*olytrichum* moss, bebb willow (*Salix bebbiana*) and grape (*Vitis* sp). The wet meadow is regularly mowed and vegetated with poison ivy (*Toxicodendron radicans*), Atlantic mannagrass (*Glyceria obtusa*), and soft rush (*Juncus effusus*).

Wetland L provides a much smaller area of wetland wildlife habitat and it does not provide as good quality wildlife habitat as Wetland M.

The impact area contains dense shrub and herbaceous cover that provides food and shelter for small mammals, amphibians, reptiles, and birds. However, the herbaceous layer is predominantly covered by the invasive poison ivy, and to a much lesser extent by important wetland food plants such as fruit and berry producers plants such as grape, dewberry (*Rubus hispidus*), maleberry (*Lyonia ligustrina*) and Blueberry (*Vaccinium corymbosum*), However, due to its small size and human disturbance (e.g., Airport operations) the proposed improvement work areas do not offer additional wildlife habitat features that are important for a variety of species.

Bank and Land Under Water Bodies and Waterways

According to the Wetlands Protection Act [310 CMR 10.54(1)], "Bank is likely to be significant to the prevention of pollution and the protection of fisheries and wildlife." Additionally, Land Under Water Bodies and Waterways according to the Act [310 CMR 10.56(1), is "likely to be significant…to prevention of pollution and to protection of fisheries and wildlife." The Banks within the Project Area are found within Wetland M and adjacent to Wetland L and LUWW is found only within Wetland M.

The perennial streams within Wetland M are regulated as Bank and LUWW. At the time of the inspection in July 29, 2008, the stream (West Ditch) was filled with woody debris from mowing and there was no evidence of a hydraulic gradient or flow. After the site visit, the culvert was reopened and the flow was restored. Vegetation observed within the Bank and LUWW included pickerel weed (*Pontederia cordata*), *Phragmites,* smartweed, bebb willow, and winterberry.

Because the downstream Paskamanset River supports fish, Bank in Wetland M is presumed to be significant to the protection of fish. However, none of the Banks within the Project Area are directly tributary to any known areas that support shellfish. All of these Banks are generally well-vegetated with shrubs and herbaceous vegetation, providing cover, burrowing habitat for wildlife, and potential nesting, feeding or basking sites.

The wildlife features that exist within the Bank and LUWW along the perennial stream of Wetland M are comparable to that of the BVW.

Riverfront Area

The Wetlands Protection Act [310 CMR 10.58(1) states that "Riverfront Area are likely to be significant to protect the private or public water supply…to protect land containing shellfish; to protect wildlife habitat; and to protect the fisheries." RA, which in New Bedford extends 25 feet away from Bank, occurs along the perennial stream running east-west at the end of Runway 5, within Wetland M. RA also extends onto uplands adjacent to the Paskamanset River. These small areas occur in the gas easement and along the road south of RW 5 that provides access to the light system.

Only the RA associated with the Paskamanset River, which supports fish, is likely to contribute to habitat suitability for fish. Most of the RAs within the Project Area are likely significant to the protection of wildlife habitat by providing food, shelter, breeding, migratory and over-wintering areas. None of the RAs within the Project Area are directly tributary to any areas that support shellfish.

The wildlife features that exist within the RA along the perennial stream of Wetland M are comparable to that of the BVW.

Bordering Land Subject to Flooding

According to the Wetlands Protection Act [310 CMR 10.57(1)(a)3], "certain portions of the Bordering Land Subject to Flooding are also likely to be significant to the protection of wildlife habitat. These include all areas on the ten-year floodplain or within 100 feet of the Bank or BVW (whichever is further from the water body or waterway, so long as such area is contained within the 100-year floodplain), and all vernal pool habitat on the 100-year floodplain, except for those portions that have been so extensively altered by human activity that their important wildlife habitat functions have been effectively eliminated. Such "altered" areas include paved and graveled areas, golf courses, cemeteries, playgrounds, landfills, fairgrounds, quarries, gravel pits, buildings, lawns, gardens, roadways (including median strips, areas enclosed within highway

interchanges, shoulders, and embankments), railroad tracks (including ballast and embankment), and similar areas lawfully existing on November 1, 1987 and maintained since that time."

The portions of BLSF that fall within the work zones consist of maintained road and taxiway and mowed grass areas that are part of the runway safety areas. For these reasons state above, these areas do not provide important wildlife habitat.

Conclusions

The wetland resource areas provide habitat for a limited number of wildlife species. The physical characteristics of the areas and observed wildlife features provide cover for breeding, foraging, and overwintering habitat for a number of reptile and amphibian species, and to a limited number of common birds and mammals. Although the area does provide limited habitat, it is highly degraded by the presence of invasive species and regular human disturbance.

4.4.7 Indirect, Secondary, and Cumulative Impacts to Wetlands

In addition to the direct impacts on wetlands and waterways from the placement of fill, the proposed construction and operation of the Preferred Alternative may result in indirect, secondary, and/or cumulative impacts.

Indirect Impacts

Indirect impacts are impacts on wetlands and waterways that do not result in the loss of wetlands (conversion of wetlands to non-wetlands) but may affect wetland functions and values. Indirect impacts from the Preferred Alternative on wetlands and waterways in the Local Study Area are discussed below.

Disturbance to wetlands often increases habitat vulnerability to colonization by invasive species in the areas of disturbance, because invasive species re-colonize disturbed areas faster than the native species. Wetlands disturbed by the project may result in the colonization of invasive species such as purple loosestrife (*Lythrum salicaria*), reed canary grass (*Phalaris arundinacea*), common reed (*Phragmites australis*), and glossy buckthorn (*Rhamnus frangula*).

RW 5-23 safety improvements would have unavoidable indirect impacts to Wetland L and M because the partial filling of these wetlands would decrease wetland values and functions, primarily their ability to support wildlife habitat. Converting forested wetlands in Wetland M would also change the wildlife habitat value of this wetland.

Secondary Impacts

Secondary impacts are impacts that result from environmental changes caused by actions and developments related to, but subsequent to, the primary action (in this case construction and operations) or related to, but in the vicinity of, the primary action.

The purpose of the proposed project is to enhance safety at EWB by improving the RSAs for RW 5-23. The purpose of the proposed project is not to increase the capacity of the Airport. The Preferred Alternative would not have the potential to stimulate further Airport-related development in the immediate vicinity of the Airport. The Preferred Alternative would not be expected to result in secondary impacts to wetlands.

Cumulative Impacts

Cumulative impacts are impacts on the environment that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative impacts to wetlands and waterways were determined qualitatively by examining past actions that have resulted in the current baseline conditions and considering future potential development activities. Geographic and temporal limits of the analysis were determined by identifying prominent geographic boundaries, major temporal events, and availability of data.

Temporal Limit

The timeframe for the analysis of past actions was extended back to 1941, the time when the first available USGS topographic map was available.

Geographic Limit

The geographic area identified for the analysis of cumulative impacts is defined as the area that includes the direct and indirect effects of the Preferred Alternative. These areas include the Airport property plus additional, adjoining areas where existing wetlands systems on the Airport extend beyond the Airport property line. Generally, the geographic area for the analysis of cumulative impacts is the same as the wetlands and waterways Local Study Area.

Past Actions

According to the Mass Audubon Society, approximately 235 acres (22 percent) of the Apponagansett Swamp has been lost from filling. Past actions that have resulted in this filling include:

- Constructing the Airport;
- Installing water and sewer mains, the gas pipeline, and electrical utility service to the Airport runway approach lights;
- Constructing the New Bedford Municipal Landfill;
- Constructing the New Bedford Municipal Golf Club;
- Constructing Shawmut Avenue and subsequent development along Shawmut Avenue.

Other past actions that have altered the hydrology of the Apponagansett Swamp include:

- Constructing I-195, Route 140, Shawmut Avenue, and Aviation Way;
- Constructing the CSX railroad;
- Development in the watershed (New Bedford and Dartmouth);
- Constructing drainage channels, ditches, and culverts on the Airport; and
- Relocating New Plainville Road.

Other past actions that have affected wetland vegetation include the Airport's VMP. Current vegetation management practices at the Airport (and proposed new vegetation management as part of the No-Action Alternative) include active and periodic maintenance cutting of woody vegetation from the RPZs on the runway approaches, infield areas and to allow visibility of lights.

Cumulative Impacts with the Proposed Project

Reasonably foreseeable future actions at the Airport and in the Local Study Area include actions listed in the Airport's 5-Year Capital Plan (the No-Action Alternative) and actions planned or proposed by others. These actions are assumed to comply with the WPA and other regulatory programs and to have minimal impacts. Any other future actions carried out in the area would be implemented in compliance with relevant regulations for the protection of wetlands, waterways, and water quality; maintenance of floodplain functions; and stormwater management and would not result in a net loss of wetlands or impairment of protected wetland functions and values.

Construction of the Preferred Alternative would result in unavoidable filling of wetlands. The RW 5-23 safety improvements would place fill in approximately 6.97 acres of Wetland M (the Apponagansett Swamp) and approximately 0.36 acres of Wetland L. The proposed project would also result in an increase in the area requiring vegetation management. This future action has the potential to cause adverse cumulative impacts in the New Bedford area. However, because the potential impacts from the proposed project would be minimized to the extent practicable and mitigated with compensatory wetland replacement (2:1 ratio) and wetland restoration, there are not anticipated to be adverse cumulative impacts to wetlands from this action.

The proposed project, with minimization and mitigation measures, and when considered in the context of past and anticipated future actions, would not result in a significant cumulative impact to wetlands and waterways in the vicinity of the Airport.

Cumulative Impacts From Airport Future Improvement Projects

Table 4.4-12 summarizes the potential cumulative impacts caused by Runway 14-32 Safety Improvements and construction of the ARFF and future GA facilities, based on the design of these elements as provided in the DEIS/DEIR. The Airport has initiated a new Master Plan Update which may change the design and impacts of these future elements. .

Table 4.4-12 Potential Cumulative Impacts (Filling) to each Wetland by Project Element (acres)

	Project Element Impacts (acres)					
Wetland	RW14 RSA	RW 32 RSA	RW 5 RSA	RW 23 RSA	GSA/ARFF Facilities	
B	0	0	0	0	0	
C	0	0	0	0	0	
D	0	0	0	0	0	
E-F	0	0	0	0	0	
G	0	0	0	0	0	
H	0	0	0	0	0.24	
I	0	0	0	0	0.09	
J-K	0	0.37	0	0	0	
L	0	0	0	0.36	0.01	
M	0	0	6.97	0	0	
N	0	0	0	0	0.14	
P	0	1.63	0	0	0	
Subtotal	0	2.00	6.97	0.36	0.48	TOTAL: 9.81

RW 14-32 safety improvements may result in indirect impacts on wetlands and waterways in the Local Study Area. Installing a new or lengthened culvert parallel to Downey Street at the RW 32 end may indirectly affect hydrology. Filling a portion of the intermittent ditch at the RW 32 end and extending the length of the existing culvert there by 300 feet may decrease the habitat connectivity between Wetland K and others north of RW 32, and Wetlands P and M. Habitat connectivity can be diminished where culverts are installed or lengthened, because length, bottom elevation, depth of water, and amount of visible light within culverts have the potential to discourage travel through the culverts by both aquatic and terrestrial animals.

RW 14-32 safety improvements would not result in direct impacts to vernal pools in the Local Study Area from filling (Figure 4.4-5). Constructing the ARFF and

future GA facilities may result in indirect impacts on wetlands and waterways in the Local Study Area. Partial filling of small wetlands (I and N) would further isolate these wetlands. Installing new or lengthened culverts in segments of Wetland H may also indirectly affect hydrology and habitat connectivity. can be diminished where culverts are installed or lengthened, because length, bottom elevation, depth of water, and amount of visible light within culverts have the potential to discourage travel through the culverts by both aquatic and terrestrial animals. Construction of the ARFF and future GA facilities would not result in direct impacts to vernal pools in the Local Study Area from filling (Figure 4.4-5).

New vegetation clearing could be required for the RW 14-32 safety improvements or the ARFF and future GA facilities.

It is also unlikely that the provision of aircraft hangar, apron, and support facilities for passenger, corporate jet, and GA users would stimulate further Airport-related development in the immediate vicinity of the Airport. Additional GA facilities are required to accommodate future forecast demand only and there are also no additional upland areas at the Airport available for future development. Therefore these future improvements would not be expected to result in secondary impacts to wetlands.

4.4.8 Mitigation

The Secretary's Certificate on the NPC required that the FEIR include a detailed description of wetland mitigation measures proposed to minimize impacts and restore wetland resource area functions. The Certificate also required that the wetland mitigation plan identify specific on-site or off-site locations proposed to serve as suitable wetland resource mitigation areas, demonstrate its ability to successfully replicate wetland functions and ecological values, and provide wetland mitigation at a 2:1 ratio.

This section of the FEIS/FEIR also includes:

- Cost estimates for individual components of the mitigation plan;
- Funding sources;
- Parties responsible for implementing each mitigation component; and
- A schedule for implementing individual components of the proposed mitigation, based on the construction schedule.

This section describes the measures the proposed project would employ to mitigate impacts to wetlands. These measures include design choices made to avoid and minimize impacts; erosion and sedimentation (E&S) controls designed to minimize impacts from construction activities; and a plan for wetland mitigation to replace wetlands or wetland functions unavoidably lost.

Each alternative was evaluated to identify ways to avoid and minimize impacts to Waters of the U.S. and state-regulated wetland resource areas. The No-Action Alternative would have no impacts, because there would be no construction activity. Therefore, this section only discusses mitigation measures for the Preferred Alternative.

Avoidance and Minimization

Avoidance of all direct wetland impacts (the loss of wetlands) would only be possible by implementing the No-Action Alternative. The No-Action Alternative would affect wetland functions as a result of vegetation management in wetlands. Because the Airport was constructed by legally filling wetlands, there are currently wetlands immediately adjacent to the runways, taxiways, and existing runway and taxiway safety areas at the RW 5, RW 23, and RW 32 ends of the Airport. Any safety area improvements would affect wetlands due to their proximity to the existing limits of the runway and taxiway safety areas.

The design refinement process that the Airport has undertaken since publishing the ENF in 1995 for proposed airport improvements has sequentially reduced impacts to wetlands. As shown in Table 4.4-13, this design refinement process has reduced proposed wetland impacts from 75 acres to the 7.4 acres currently proposed. Specific avoidance and minimization measures are discussed below.

RW 5-23 is bordered by Wetland M to the south and west (RW 5 end), and is bordered on the east and west sides of the north (RW 23 end) by Wetlands L and G. Impacts to Wetland M were minimized by eliminating the runway extension (AIA) from further consideration, and modifying the DEIR RSSA. Because of the location and irregular edge of Wetland M, avoiding this wetland while constructing a standard safety area is not practicable.

Two avoidance alternatives were identified during this MEPA/NEPA process. Both avoidance alternatives would shift the runway substantially to the north, which would have a larger loss of wetlands and several vernal pools at the Runway 23 end, require land acquisition from the Acushnet Cedar Swamp State Reservation, and potentially have indirect impacts to Atlantic white cedar swamp communities in the State Reservation. To accommodate this shift to the north, New Plainville Road would either need to be relocated around the north side of the Object Free Area (extending impacts further into the State Reservation) or by constructing the northern end of the runway on an overpass, effectively placing New Plainville Road in a tunnel. These alternatives were dismissed as being not practicable because they would:

- Substantially increase impacts to wetlands
- Increase impacts to public recreational/conservation lands
- Substantially increase the project cost (by approximately $10M).

As described in Chapter 3 of this FEIR/FEIS, the proponent also investigated using an EMAS (Engineered Materials Arresting System) to reduce the length of the RSA. This option would have reduced but not avoided the loss of wetlands, and was determined to be impracticable because of the substantially higher cost (approximately $9.8M for installation).

Impacts to Wetland M have been minimized to the greatest extent practicable by reducing the width of the RSA from the standard 500 feet to only 400 feet, and by using the steepest allowable sideslopes. FAA also approved the use of a non-standard taxiway curve design to minimize wetland impacts associated with the RW 5 stub taxiway.

Safety improvements to RW 5-23 would also have unavoidable impact to Wetland L, which is within the limits of grading needed extend Taxiway A to the relocated runway threshold. The taxiway cannot be moved closer to the runway (which would avoid impacts to this wetland) because of FAA safety standards which require a separation of at least 400 feet. Impacts have been minimized by using the steepest sideslopes allowed by FAA at this location.

Table 4.4-13 Wetland Impact Minimization

Document	Alternative	Proposed Wetland Impacts
ENF (1995)	Plan B - 8,000-Ft RW 5-23, Taxiway F, Intermodal Access	58 Acres
	Plan A -RSA Improvements	9 Acres
	Plan C – RW Extension, Taxiway F, Intermodal Access	75 Acres
DEIR (2005)	Airport Improvement Alternative (6,700-ft RW 5-23, RW 14-32 safety, new Cargo Area)	34.66 acres
	Runway Safety Standards Alternative	7.44 acres
FEIR (2008)	Preferred Alternative	7.33 acres

Mitigation Measures

The proposed project would result in unavoidable wetland impacts that would require mitigation, based on the mitigation goals and guidance of the USACE and MA DEP. This FEIS/FEIR presents a mitigation strategy that articulates mitigation goals and objectives, approaches, site identification, site and mitigation priorities, site feasibility and selection, acquisition, design, implementation, performance standards, and monitoring. The location and design of the wetland mitigation measures must also be consistent with the FAA Wildlife Hazard Order (Advisory Circular 150/5200-33a).

Mitigation Goals and Objectives

The USACE has recently issued new rules for compensatory wetland mitigation (33 CFR Parts 325 and 332, 10 April 2008). This new guidance emphasizes a watershed approach to selecting compensatory mitigation measures and locations. Four types of compensatory mitigation are recognized:

- Restoring previously existing wetlands or other aquatic sites (this should be considered the first option);
- Enhancing an existing aquatic site's functions and values;
- Establishing a new wetland or aquatic site; or
- Preserving land that serves to protect aquatic resources by providing a buffer or corridor between aquatic resources.

Wetland mitigation banks, where available, and in-lieu fee programs, where available, may also be used to mitigate for unavoidable impacts. The regulations recognize that mitigation may be located on-site (at or adjacent to the impact site) or off-site (at another location in the same watershed).

These regulations recognize that compensatory mitigation must be commensurate with the amount and type of impact, and requires that the District Engineer determine what is practicable and capable of compensating for the aquatic resource functions that would be lost, and what is environmentally preferable. Considerations include:

- The likelihood for ecological success;
- The location relative to the impact site;
- The significance within the watershed; and
- The costs of the compensatory mitigation project.

These regulations require a watershed-based approach, ideally based on an existing watershed plan that provides information on the land uses, natural habitats, water quality, and aquatic resources within a watershed. The goal of using a watershed approach is to maintain and improve the quality and quantity of aquatic resources within a watershed, by strategically siting compensatory mitigation sites. The Rule also notes that compensatory projects should not be located where they will increase the risks to aviation by attracting wildlife near airports.

In setting mitigation requirements for Section 404 permits USACE considers watershed needs, mix of habitat types, and compatibility with adjacent land use. The USACE generally requires 1:1 functional replacement, measured as 1:1 acres and/or 1:1 linear feet of stream. A higher ratio may be required if USACE considers the likelihood of success to be less than 100 percent.

MA DEP has required on similar projects 2:1 replacement as part of a WPA variance. MA DEP typically seeks strict replication by requiring mitigation sites to be on-site or adjacent to the impacted site, in the same watershed, with the same elevation, habitat type, hydrological connection, ecological functions, and other key characteristics.

Based on the Secretary's Certificate and USACE and MA DEP requirements, a mitigation goal of 2:1 replacement of filled wetland has been established and has been accepted by the USACE and DEP. The project will also mitigate for the loss of other state-regulated resources in accordance with the performance standards of the WPA:

- Bank; and
- Bordering land subject to flooding

The proposed project (Preferred Alternative) will also alter areas of federal and state-regulated vegetated wetlands by removing vegetation. Although these activities (removing trees within the Part 77 surfaces, and removing vegetation to install the perimeter safety/security fence) will not result in the loss of wetlands, they may reduce the capacity of the wetland to support certain types of wildlife. The USACE has requested that the project's mitigation strategy address this loss of function as well as the loss of aquatic sites.

The preliminary mitigation goals are defined in Table 4.4-14.

Table 4.4-14 Wetland Mitigation Goals

Cover Type	Loss	Mitigation Goal[1]
Emergent marsh	5.72	0
Scrub-shrub	1.45	14.7
Bank	0.16 ac 770 lf	0.2 ac 800 lf
Bordering Land Subject to Flooding	3.4 ac 7,652 cy	7,652 cy

1 Only scrub-shrub wetlands are proposed for mitigation, for compatibility with the Airport's wildlife management plan.

The principal mitigation goal is to replace lost wetland area and function by creation of new wetlands or by restoration of historically filled wetlands, at a 2:1 replacement to loss ratio. As shown in Table 4.4-14, the total wetland impacts of the Preferred Alternative would be 7.33 acres of vegetated wetland loss. This will require 14.7 acres of restored replacement wetlands or new compensatory wetlands as mitigation for the loss of vegetated wetlands subject to the WPA, Section 404 or Section 401.

The project will also mitigate for the loss of Bank (at a 1:1 or greater ratio) and the loss of flood storage volume within Bordering Land Subject to Flooding (at a

1:1 volume ratio). Flood storage mitigation will be provided as requested by the MA DEP, even though, as documented in the DEIS/DEIR, the loss of flood storage associated with this project would not result in an increase in flood depth or lateral extent within the Apponogansett Swamp.

The primary losses of functions would be sediment retention, nutrient retention, production export, wildlife habitat, and state endangered species (Coastal Swamp Amphipod) habitat. Adjacent uplands provide habitat for eastern box turtle, protected as a state Species of Special Concern. Wetland mitigation areas would be designed to provide these functions.

Mitigation Approaches

Replacing wetlands and their important functions and values could be achieved with several approaches, including: restoring wetland from a filled, former wetland area that is now a non-wetland area; establishing new wetland from a non-wetland area; restoring functions to an existing, degraded wetland; enhancing wetland functions; and contributions to a mitigation bank or in-lieu fee program, if one were available in the same watershed.

Watershed Approach

The New Bedford Airport is within the Southeast Coastal Massachusetts Watershed, specifically within the Paskamanset Watershed. This 26± square mile watershed is located within the 380± square mile Buzzards Bay Basin. The river begins at Turner Pond in the southern portion of the Acushnet Cedar Swamp. The Airport is located directly east of the Paskamanset River, which flows under the MALSR road and southward through the vegetation management area. Both the swamp and the pond lie directly north, upstream of the Airport. The Paskamanset River ultimately discharges to Buzzards Bay via the Slocums River to the south.

In the Southeast Coastal Massachusetts watershed, wetlands have been lost through tidal restrictions (salt marshes), coastal filling for port development (salt marshes, mudflats), filling for improvements to agricultural land (freshwater wetlands, vernal pools), especially for the creation of cranberry bogs. Other wetlands have been lost to development and are unavailable for re-establishment, unless the sites have been abandoned and are available for re-development.

There is not a comprehensive watershed plan for the Paskamanset River, Slocum's River, or Buzzards Bay, although elements of a plan have been developed by several entities:

- NHESP developed a state-wide *Biodiversity Habitat Map*[45] and a *Living Waters Map*[46] that show core and supporting habitat for priority species and communities.
- With funding from the Massachusetts Wetlands Restoration Program, the Buzzards Bay National Estuary Program inventoried and prioritized freshwater and saltwater restoration sites in the Buzzards Bay watershed.[47, 48] The program also developed a conservation plan for Buzzards Bay.[49]
- The Massachusetts Wetlands Restoration Program also inventoried restoration sites in Dartmouth, New Bedford, Acushnet, and Fairhaven for potential funding through the New Bedford Harbor Trustees Council, as part of the New Bedford Harbor Superfund Site cleanup.[50]
- The Massachusetts Estuaries Project is undertaking embayment studies for three estuaries in the local watershed: Apponagansett Bay, Little River, and Slocums River. The goal of these studies is to determine the factors specific to each estuary that are causing eutrophication, and to assess and model water quality, nutrient loading and hydrodynamic information.[51]
- The Town of Dartmouth and the City of New Bedford have five-year open space plans[52] that, in part, describe their natural resources and set conservation priorities.

Types of Mitigation Being Considered

The evaluation of mitigation sites included establishing new wetlands (wetland creation, wetland replacement), wetland restoration, wetland functional enhancement, and wetland preservation. Restoration can be a valuable contribution to the quality of the ecological functions and values of the existing wetlands in the affected watershed. Wetland functional enhancements off-site may partially compensate for the benefits previously provided by the impacted site; however, there would still be a net loss in wetland area. Restoration of degraded wetlands can sometimes be paired with expanding the same wetland, which may be considered a creation or re-establishment, and may result in an increase in wetland area. Cranberry bogs that are no longer in production can be restored to higher value wetland habitat through relatively simple interventions, such as removal of perimeter and internal dikes and hydraulic structures. Salt marshes through the watershed have been degraded by tidal restrictions that

45 http://www.mass.gov/dfwele/dfw/nhesp/nhbiomap.htm, Accessed on November 19, 2004.
46 http://www.mass.gov/dfwele/dfw/nhesp/nhaqua.htm, Accessed on November 19, 2004.
47 *Atlas of Tidally Restricted Salt Marshes in the Buzzards Bay Watershed*, Buzzards Bay National Estuary Program, June 2002.
48 *Selected Inventory of Potential Wetland Restoration Sites in the Buzzards Bay Watershed, Phase I, Southern Area*, Buzzards Bay National Estuary Program, March 2004.
49 *Buzzards Bay Comprehensive Conservation and Management Plan, 2001*, Buzzards Bay National Estuary Program, http://www.buzzardsbay.org/ccmptoc.htm, Accessed on November 19, 2004.
50 *New Bedford Harbor Environment Wetlands Restoration Plan*, Massachusetts Wetlands Restoration Program, August 2002.
51 www.oceanscience.net/estuaries
52 *Open Space and Recreation Plan, 2002*, Town of Dartmouth, www.town.dartmouth.ma.us/openspace.htm, Accessed on 19 November 2004.

decrease the extent of tidal flushing to the marsh. This impaired hydrology may result in poor water quality, accelerated sediment accumulation, and displacement of salt marsh species by the invasive common reed.

Out-of-kind ecological enhancement may not qualify for mitigation credits but provides opportunities for stewardship. It may include creating, restoring, or enhancing ecological functions and values that are not present or impacted by the proposed project. Examples for the Southeast Coastal Massachusetts watershed include enhancement of eelgrass beds, shellfish beds, habitat for federally endangered roseate terns and piping plovers, measures to decrease non-point source pollution, improvements to anadromous fish runs, protection of aquifers, and protection of riparian corridors.

Mitigation banking is not currently a mitigation option in Massachusetts, although it is employed in some other states. However, in August 2004 language establishing a pilot wetlands mitigation banking program in the Taunton River watershed was included in the state's Transportation Bond bill. The Taunton River is not in the Southeast Coastal Massachusetts watershed, and therefore may not be appropriate for purchase of credits to mitigate for impacts at the Airport. If a wetland mitigation banking program were developed for the watershed, purchase of credits could be further explored.

Site Identification

The DEIS/DEIR evaluated a wide range of potential wetland restoration and creation sites within the Paskamanset and larger Buzzards Bay watersheds. This effort drew on several recent efforts to understand and prioritize conservation and restoration needs in the watershed.

Site Selection Parameters

The USACE regulations recognize that compensatory mitigation must be commensurate with the amount and type of impact, and require that the District Engineer determine what is practicable and capable of compensating for the aquatic resource functions that would be lost, and what is environmentally preferable. Considerations include:

- The likelihood for ecological success;
- The location relative to the impact site;
- The significance within the watershed; and
- The costs of the compensatory mitigation project.

The proponent has developed a set of criteria to help determine what compensatory mitigation would be considered practicable. These criteria are

locational, but also take into account the fiscal constraints of the proposed safety improvements project.

- Within watershed;
- On-site (land owned by the Airport);
- Off-site;
  - Land owned by the City
  - Land capable of being acquired by the City
  - Land that is "clean" – no soil or groundwater contamination that would escalate the cost
  - Land not supporting an active business or agricultural use
  - Land not requiring an Article 97 approval for a change in use
- Capable of mitigation for lost or reduced functions of freshwater palustrine wetlands; and
- Consistent with protecting eastern box turtle habitat.

Previous Mitigation Sites Evaluated

The DEIS/DEIR identified 23 mitigation sites within the Buzzards Bay watershed, as shown in Table 4.4-15 and Figure 4.4-9. As indicated in the table, sites were dismissed from consideration because they:

- Were off-site, out-of-kind restorations (generally salt marsh) that would not meet DEP's mitigation criteria, would not provide compensatory flood storage, and would not replace the lost functions.
- Were off-site, in-kind restorations or creations that would not provide compensatory flood storage, and would require land acquisition of vacant land, land that was part of an active business or agricultural use, or that was owned by DCR or a municipality and subject to Article 97.

The mitigation measures identified in the DEIS/DEIR also included a range of off-site, out-of-kind enhancements that were dismissed because they were out-of-kind, off-site measures that would not provide compensatory flood storage or replace lost functions. These included:

- Flora Pierce Conservation Area, City of New Bedford: develop and implement management plan, rehabilitate trail system.
- Turners Pond, DCR: repair or replace fish ladder at dam.
- Destruction Brook, Slocums River: Create a protected riparian corridor though land acquisition or easement.
- East Branch Westport River: Create a protected riparian corridor through land acquisition or easement.

- Russells Mills, Dartmouth: improve anadromous fish passage and access to upstream spawning habitat.
- Buzzards Bay, various sites: eelgrass bed restoration.
- Bird Island, Marion and Ram Island, Mattapoisett: rare species enhancement for roseate tern and piping plover.

Table 4.4-15 DEIS/DEIR Potential Wetland Mitigation Sites

Site No.	Type of Mitigation	Sub-watershed	Location	Ownership	Total Size (Ac)	Reason Dismissed
5	Stream Restoration	Paskamanset	New Bedford	Airport	6,000 LF	Retained
2	Creation	Paskamanset	New Bedford	New Bedford	18	Dismissed – Reserved for WWTP Sludge Disposal
1a	Creation	Paskamanset	New Bedford	Bristol County New Bedford Private	114	Part of this land is New Bedford Conservation Land. Remainder is an active private business, potentially with soils contamination
3	Creation	Paskamanset	New Bedford	State (DCR)	13.6	DCR property, Use Would Require Article 97 Transfer
4	Creation	Paskamanset	New Bedford	State (DCR)	69	Existing wetland mitigation site – has not met mitigation goals, but assessment indicates is not feasible to modify this area. DCR property, under restrictions.
6a	Creation	Paskamanset	New Bedford	Private, Airport	9.3	Retained
6d	Creation	Paskamanset	New Bedford	Private, Airport	4.7	Retained
6e	Creation	Paskamanset	New Bedford	Private	11.6	Would require land acquisition,potentially contaminated soils
15	Removal of fill	Acushnet River	New Bedford	Private	0.8	Insufficient area to meet mitigation goals
7	Removal of fill	Apponagansett Bay	New Bedford	New Bedford (Buttonwood Park)	1.3	Retained
9	Removal of fill	Paskamanset	New Bedford	New Bedford	2.5	Insufficient area to meet mitigation goals. Restoration may affect Industrial Park development
14	Removal of fill	Paskamanset	New Bedford	Private	0.25	Insufficient area to meet goals, would require land acquisition
22	Removal of fill	Paskamanset	New Bedford	Private	2.4	Would require land acquisition within Industrial Park
11	Removal of fill	Buzzards Bay	Dartmouth	Dartmouth	12.1	Out-of-kind, salt marsh restoration
10	Removal of fill	New Bedford Harbor	Fairhaven	Private	12.6	Former drive-in. Requires land acquisition – cost-prohibitive
8	Restoration of cranberry bog	Paskamanset	New Bedford	Private	27	Requires land acquisition – cost-prohibitive, affects local business
12	Restoration of cranberry bog	Acushnet River	Acushnet	Private	4.5	Require land acquisition – cost-prohibitive, affects local business

Table 4.4-15 DEIS/DEIR Potential Wetland Mitigation Sites (continued)

Site No.	Type of Mitigation	Sub-watershed	Location	Ownership	Total Size (Ac)	Reason Dismissed
18	Removal of tidal restriction	Slocums River	Dartmouth	Dartmouth (restriction)	181.3	Out-of-kind, salt marsh restoration
19	Removal of tidal restriction	Apponagansett Bay	Dartmouth	Dartmouth (restriction)	199.3	Out-of-kind, salt marsh restoration
20	Removal of tidal restriction	Apponagansett Bay	Dartmouth	Dartmouth (restriction)	11.0	Out-of-kind, salt marsh restoration
21	Removal of tidal restriction	Slocums River	Dartmouth	State	9.3	Out-of-kind, salt marsh restoration
17	Removal of tidal restriction	Buzzards Bay	Dartmouth	Private	38.81	Out-of-kind, salt marsh restoration
16	Removal of tidal restriction	Slocums River	Dartmouth	Private	24.22	Out-of-kind, salt marsh restoration

1 Except where noted.

Comments on the DEIS/DEIR by state and federal agencies as well as several non-profit advocacy groups indicated that salt marsh restoration projects would not be acceptable mitigation for the loss of freshwater wetlands within this watershed. In response to these comments, a new site selection process was undertaken to identify potential wetland mitigation sites that were on or adjacent to the Airport, and that would more directly replace the lost functions and values of the impacted wetlands.

Proposed Mitigation Sites

Six potential mitigation sites have been identified on the Airport (Figure 4.4-10). All six sites are owned by the Airport and are feasible to construct. The six sites would provide sufficient area to meet the project's mitigation goals (17.2 acres of potential compensatory mitigation, in excess of the required 14.7 acres). The proposed wetland restoration and replacement sites are presented in Table 4.4-16.

The site selection process documented in the NPC and this FEIS/FEIR re-evaluated the prior site selection process and focused on land that was available to the proponent, capable of providing compensatory flood storage within the Apponogansett Swamp reach of the Paskamanset River, and could replace the lost wetland functions. As described below, the proposed mitigation includes enhancement, establishment, and preservation.

- Restoration: No restoration is proposed. Although wetlands were historically filled within the Apponogansett Swamp, all filled areas are currently developed and in active use as the Airport, the landfill, or commercial businesses located along Shawmut Avenue south of the Airport. There are no available lands that could be used to restore historically filled wetlands.
- Enhancement: Enhancement includes both on-site and off-site enhancement of wetland functions. The Airport is actively managing the invasive common reed (Phragmites) in Wetland M to restore native vegetation and wildlife habitat. In addition, the proponent will restore wildlife habitat functions and shoreline stabilization functions to approximately two acres of riparian vegetation and wildlife habitat at Buttonwood Park in New Bedford.
- Establishment: At least 14.7 acres of wetland establishment is proposed at six sites on the Airport. This will replace lost area and functions, and replace lost flood storage. This element of the mitigation proposal includes creating 1,000 linear feet of stream to replace the lost segment of the West Ditch (770 linear feet).
- Preservation: The Airport will permanently preserve the 55-acre site south of the Airport.

Table 4.4-16 Proposed Wetland Restoration and Replacement Sites

Site	Adjacent to Wetland	Size (acres)	Cover Type	Functions
4	A	1.5	Shrub swamp (PSS), vernal pool (open water)	Wildlife habitat (amphibians, songbird nesting); threatened and endangered species (coastal swamp amphipod)
5	G	1.5	Shrub swamp (PSS)	Wildlife habitat (connectivity, songbird nesting), threatened and endangered species (eastern box turtle), sediment retention
6	M, R, S	2.9	Shrub swamp (PSS)	Wildlife habitat (connectivity, songbird nesting), threatened and endangered species (eastern box turtle), sediment retention, compensatory flood storage
8	A	2.4	Shrub swamp	Wildlife habitat
9	A	1.1	Shrub swamp	Wildlife habitat
10	M	7.8	Shrub swamp	Wildlife habitat, threatened and endangered species (eastern box turtle), flood storage
11	M	1,000 LF	Stream	Wildlife habitat, shoreline stabilization
12	M	55	Preservation	Permanent protection – wildlife habitat, flood storage, aquatic habitat, threatened and endangered species, shoreline stabilization, water quality, fisheries
13	M	50	Emergent Marsh (PEM) Enhancement	Enhance the wildlife habitat functions of the PEM within the vegetation management areas by reducing the dominance of Phragmites and encouraging native wetland herbaceous and shrub species
14		2	Forested Upland and Bank Enhancement	Wildlife Habitat – provide forest canopy habitat and natural shrub understory in riparian buffer areas. Protect water quality by reducing erosion and sedimentation.
Totals			Establishment	17.2 ac
			Establishment (Stream)	1,000 lf (0.2 ac)
			Enhancement (on-site)	50 ac
			Enhancement (off-site)	2 ac
			Preservation	55 ac

Each of these proposed mitigation areas are shown in Figures 4.4-11 to 4.4-16 and described below:

- Site 4 (Figure 4.4-11) would connect two lobes of Wetland A north of New Plainville Road, and would provide vernal pool habitat suitable for amphibians, spotted turtles, and the state-listed Coastal Swamp Amphipod. Each of these species occurs in proximity to this mitigation area and would be expected to expand their habitat usage into the mitigation site.
- Site 5 (Figure 4.4-11) would expand the size of Wetland G adjacent to New Plainville Road. This area would be constructed as a shrub swamp wetland, and would provide habitat for songbirds such as northern yellowthroat, yellow warbler, catbird, and song sparrow. Because of its proximity to the airfield and road, this wetland would also have the potential to provide sediment retention and pollutant attenuation.
- Site 6 (Figure 4.4-12), in the southwest corner of the runway intersection, would connect Wetland M, S, and R. This area would be constructed as a shrub swamp wetland, and would provide habitat for songbirds such as northern yellowthroat, yellow warbler, catbird, and song sparrow, as well as for eastern box turtle.
- Site 8 (Figure 4.4-13), north of New Plainville Road, is within the vegetation management area and adjacent to Wetland A. This area has an upland shrub community, and would be constructed as a shrub swamp with vernal pool habitat.
- Site 9 (Figure 4.4-13), north of New Plainville Road, is within the vegetation management area and adjacent to Wetland A. This area currently has an upland forest community, but is within the vegetation management area and will be cleared as part of the No-Action Alternative.
- Site 10 (Figure 4.4-14) is an upland within the Apponogansett Swamp south of the Runway 5 end, surrounded by Wetland M. This low upland is currently forested, but is within the vegetation management area and will be cleared as part of the No-Action Alternative. It will be constructed as a shrub swamp and compensatory flood storage area.
- Site 11 is the relocated and restored stream bed of the waterway within Wetland M referred to as the West Ditch. The stream is currently culverted under the MALSR road. Constructing the Runway 5 end safety area would fill 770 linear feet of the open channel of this stream. The replacement channel would create 1,000 linear feet of open channel, which would be vegetated with a shrub (alder) and would provide habitat for the coastal swamp amphipod.
- Site 12 (Figure 4.4-15), the 55-Acre Parcel, is south of the Airport in Dartmouth. This is a land-locked parcel with no upland access. Part of the property (approximately 10 acres) is within the vegetation management area and will be cleared as part of the No-Action Alternative. An additional 2 acres would be cleared as part of the Preferred Alternative. The remaining area is contains a variety of wetland habitats and upland inclusions and provides valuable functions because it contains approximately 1,200 linear feet of the Paskamanset River. This area would be preserved and a restriction granted to the Dartmouth Conservation Commission, which owns adjacent lands.

- Site 13 includes the emergent marsh in Wetland M that will be managed to control the growth of Phragmites. The Airport will mow this area using a special low-pressure vehicle to reduce damage to the wetland. A pilot project has demonstrated that this is effective in reducing the growth of Phragmites and increasing the cover of native herbaceous species such as sensitive fern, boneset, goldenrod, and other species that provide wildlife habitat.
- Site 14 (Figure 4.4-16); Buttonwood Park. One of two large parks in New Bedford, this public open space consists of vegetated wetlands and developed uplands bordering on Buttonwood Brook, a tributary of the Apponogansett River estuary. Several parts of this park that directly border Buttonwood Pond and the brook are lawn or degraded bare dirt. The proposed mitigation would restore these areas to a forested upland with dense shrub layer to provide forested canopy habitat and shrub habitat within the riparian buffer. In addition, this would also include Bank restoration (sediment/shoreline stabilization) and would protect water quality by reducing erosion from the bare areas. This would restore approximately 1,000 linear feet of Bank, and two acres of upland buffers.

These mitigation areas are feasible to construct, and are similar in size, scale, and topographic position to other wetland mitigation sites successfully constructed in Massachusetts (ranging from 1.5 to 7.5 acres) under DEP and USACE permits.

Mitigation Design and Construction

Wetlands can be newly created through excavation of a non-wetland area adjacent to an existing wetland or water body. Excavation of a non-wetland area requires excavation to groundwater and/or establishment of a hydrological connection to a water source of sufficient volume and duration to maintain wetland hydrology which will result in the support of wetland vegetation and hydric soils. Gravel-mining operations, common in the area, represent an opportunity to create wetlands from existing pits.

Final mitigation plans would be developed for each site based on updated topographic survey, groundwater monitoring, test borings, and soil sampling. The replacement wetlands would be designed to conform to the guidelines developed by the USACE[53] and MA DEP[54] and to meet the performance standards contained in the Massachusetts WPA Regulations.

53 *USACE, Regulatory Guidance Letter, Number 02-2, Guidance on Compensatory Mitigation projects for Aquatic Resource Impacts under the Corps Regulatory Program Pursuant to Section 401 of the Clean Water Act and Section 10 of the Rives and Harbors Act of 1899*, December 24, 2002.

54 *Massachusetts Inland Wetland Replication Guidelines*, Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Wetlands and Waterways Program, March 2002.

Vegetated Wetlands

Each mitigation site would be graded to match the elevation of the adjacent, existing wetland. By sharing the local hydrology and by approximating the elevations of existing wetlands, the replacement areas will have sufficient hydrology to support wetland plant communities. Each site would be graded with micro-topography to mimic the surface of the wetlands that will be impacted.

Each mitigation site would be vegetated with native wetland species in accordance with MA DEP and USACE guidance. The planting has been designed to avoid creating a wildlife hazard near the airfield. For this reason, the site design does not include open water that could attract waterfowl, emergent marshes that could attract flocks of red-winged blackbirds, or shrub swamps with berry-producing plants that could attract flocks of starlings, robins, or other fruit-eating birds. The proposed shrub swamp vegetation uses native shrub species that do not attract flocks of songbirds, and that are anticipated to remain low and not penetrate the airfield surfaces. Planting specifications for the wetland mitigation sites are provided in Table 4.4-17.

Table 4.4-17 Planting Specifications, Wetland Mitigation Sites

Common Name	Species	Size	Spacing/Quantity
Shrub Swamp			
Meadowsweet	*Spiraea alba*	18-24 in	100 per ac
Sweet pepperbush	*Clethra alnifolia*	18-24 in	100 per ac
Steeplebush	*Spiraea tomentosa*	18-24 in	100 per ac
Buttonbush	*Cephalanthus occidentalis*	18-24 in	100 per ac
Speckled alder	*Alnus serrulata*	18-24 in	100 per ac
Pussy willow	*Salix humilis or S. bebbii*	18-24 in	100 per ac

Mitigation for the lost area of Bank would be accomplished by creating a new channel connecting the remaining West Ditch with the East Ditch, upstream of the confluence with the Paskamanset River. This channel would be created by excavation in the wetland at the toe of slope of the new runway safety area. The channel banks would be stabilized by erosion control matting and vegetated with speckled alder and steeplebush to create a dense shrub border.

Mitigation for lost flood storage would be created within Areas 6 and 10, which are adjacent to the mapped 100-year floodplain of the Paskamanset River. These areas would provide approximately 6.8 acre-feet of flood storage below the 100-year flood elevation of 59.5 feet.

The mitigation areas would be designed and constructed in accordance with a final Mitigation Plan prepared as required by the USACE Mitigation Checklist and Guidelines (2006 Draft) and the Massachusetts Inland Wetland Replication Guidelines (March 2002). The

sections below provide additional information on wildlife habitat features, supervision, construction sequence, invasive species control, and post-construction monitoring.

Buttonwood Park Habitat Restoration

Habitat restoration in Buttonwood Park would restore native tree species, with a native shrub understory, in riparian and pondshore areas. The New Bedford Park Board supports this restoration, which would be a cooperative effort between the Airport, the Park Board, and the Conservation Commission. These areas, shown on Figure 4.4-16, would be planted in accordance with the specifications in Table 4.4-18.

Table 4.4-18 Planting Specifications, Buttonwood Park Habitat Restoration Areas

Common Name	Species	Size	Spacing/Quantity	
Forest Canopy				
White Pine	*Pinus strobus*	1 – 2 inch caliper	20 ft o-c[1]	50
Red oak	*Quercus rubra*	1-2 inch caliper	20 ft o-c	50
Red maple	*Acer rubrum*	1-2 inch caliper	20 ft o-c	50
Shrub Understory				
Highbush blueberry	*Vaccinium corymbosum*	18-24 in	100/ac	200
Sweet pepperbush	*Clethra alnifolia*	18-24 in	100/ac	200
Witch hazel	*Hamamelis virginiana*	18-24 in	100/ ac	200
Mountain laurel	*Kalmia latifolia*	18-24 in	100/ ac	200
Bank Restoration				
Speckled alder	*Alnus serrulata*	18-24 in	3 ft o-c	200
Pussy willow	*Salix humilis or S. bebbii*	18-24 in	3 ft o-c	200

1 on center

Wildlife Habitat Features

In addition to the wetland plantings and establishment of appropriate wetland hydrology within the Replacement Area, several wildlife habitat features are proposed to be established within the replacement areas. These features include creation of mound and pool microtopography, several deepened pool areas that may develop into vernal pools, the placement of decaying logs and other natural woody debris on the ground, and placement of rocks and small boulders.

Fallen logs and woody debris provide important cover and foraging habitat to a variety of wildlife species. In order to provide this benefit to the replacement area, woody debris will be established within the replacement area. Logs and smaller woody branches will identified and collected within the impact areas or upland areas scheduled to be altered. This material will be of varying stages of decay and will be randomly placed to provide

habitat features. Freshly cut logs will not be the primary source for this feature, but may be used if approved by the supervising wetland scientist.

Replacement Wetland Construction Supervision

The construction of successful replacement areas often requires minor field adjustments in grading or planting. When directly overseen by an experienced professional, these minor modifications can be made to provide the hydrologic conditions necessary to support wetland vegetation and functions. During planting, the supervising wetland scientist may relocate up to 50 percent of the plantings if as-built conditions would pose an unreasonable threat to the survival of plantings installed according to the mitigation plan. The plantings shall be relocated to locations with suitable hydrology and soils and where appropriate structural context with other plantings can be maintained.

Construction of the replacement areas, including fine grading, soils placement, and planting, will be done under the supervision of an experienced wetland scientist. The wetland scientist will monitor the replacement area construction work for compliance with all applicable local, state, and federal wetland permits.

Sequence of Construction

Construction of the Replacement Areas has been designed to minimize erosion, prevent sediment from entering adjacent wetlands, and to maximize the establishment of planted vegetation. The areas will be constructed per the following:

- The replacement areas will be cleared and grubbed, if not already, and will be excavated to a depth of 12 inches below the final design elevations. In response to subsurface hydrologic conditions, the wetland scientist may make minor modifications to this grading plan in the field. The supervising wetland scientist will inspect the sub-grade of the replacement areas to ensure that the proper hydrology has been established.
- The replacement areas will then be backfilled with the wetland soils and brought to final grade. Hydric soils will consist of prepared topsoil made up of a 1:1 mixture (or equal volumes) of organic and mineral materials that contains at least 12 percent organic carbon content by weight. Clean composted leaf mold or commercially available compost is the preferred amendment to achieve this standard, though other materials may be used if approved by the wetland scientist. Once final topsoil is in place, it will be graded to achieve a slight hummock/hollow microtopography, similar to that of a natural wetland substrate. Additionally, low spots will be created within the replacement area to provide temporary ponding of surface waters. The approximate size and shape of these low spots is shown on the attached detail sheet.
- Rocks and boulders, uncovered during the excavation, may be left in place provided that they do not significantly decrease the plantable area of the

replacement areas. These rocks and boulders will be placed in such a way as to provide crevices and cavities suitable for use by wildlife.

- Fallen logs, branches, and other natural debris existing within the proposed impact areas, or other upland areas proposed to be disturbed, will be relocated to the replacement areas to provide beneficial habitat features for wildlife. This material will be distributed to cover 2 percent of the area's substrate surface. Fallen logs should be of varying sizes and in varying degrees of decomposition. As shown on the detail sheet and as determined by the wetland scientist, snags will be established within or immediately adjacent to the replacement areas. These materials will not include species shown on the USACE draft list of invasive species.
- An erosion control barrier of staked hay bales will be placed around the upgradient edge of the replacement areas.
- Replacement area plantings will take place once the above listed tasks have been completed. The species, size, and quantity of the plantings will follow the Planting Schedule. Prior to delivery to the site, the supervising wetland scientist will visit the nursery providing the planting stock to ensure that the specimens are healthy, free from pests, and suitable for use within the replacement areas. Unsuitable specimens will be rejected and replaced with suitable specimens. The wetland scientist must approve any planting substitutions. All woody plant stock will either be bare-root or container-grown. Planting within the replacement areas and adjacent uplands will conform to the plans or will be completed in accordance with directions provided in the field. Only plant materials native and indigenous to the region shall be used. Species not specified in the mitigation plan shall not be used without written approval from the permitting agency.
- All plantings to be spaced randomly at the direction of the wetland scientist to simulate natural growth patterns.
- Upon completion of planting, the areas around each plant will be mulched with a 2- inch thick layer of leaf litter or other natural organic material.
- The erosion control barriers will be disassembled and properly disposed of before November 1st of the third full growing season after planting of the replacement areas. Sediment collected by these devices will be removed and disposed of in a manner that prevents erosion and transport to a waterway or wetland. If minor grading is required in this zone to provide surface hydrologic connection between the areas, it will be done by hand and stabilized with mulch.
- The replacement areas will be inspected each fall for invasive or unwanted plants. If invasive species are found, they will be uprooted and removed from the area, or treated with a glyphosate herbicide approved for wetland use. Invasive plants may include purple loosestrife, reed canary grass, common reed, and glossy buckthorn.

- Long-term monitoring of the replacement areas will be conducted as directed in the Monitoring section below.

Invasive Species Control Plan

Exotic invasive species present in the surrounding landscape, particularly Phragmites, may colonize the mitigation areas as the vegetation community develops. These species potentially include:

- *Alliaria petiolata*, Garlic mustard
- *Berberis thunbergii*, Japanese barberry
- *Lonicera* spp, shrub honeysuckle
- *Lysimachia nummularia*, moneywort
- *Lythrum salicaria*, purple loosestrife
- *Phalaris arundinacea*, reed canary-grass
- *Phragmites australis*, common reed
- *Rhamnus frangula*, glossy buckthorn
- *Rosa multiflora*, multiflora rose
- *Solanum dulcamara*, bittersweet nightshade

To protect the functions and integrity of the mitigation areas, each mitigation area will be inspected in the early growing season (June) of each monitoring year. If feasible, any exotic invasives will be pulled by hand and removed from the mitigation area.

The Airport is currently implementing an aggressive program to control Phragmites in the area immediately south of Runway 5 (the area of Wetland M that would be filled), using mowing rather than herbicide use, and anticipates expanding this program to other portions of the vegetation management area. In its initial phase, this program has successfully retarded the growth of Phragmites and encouraged the growth of native forbs. However, it may not be feasible to use this mowing technique in the proposed shrub swamp mitigation areas.

In the event that herbaceous species have become strongly established and mowing or hand removal is not feasible, a qualified pesticide applicator will be contracted to spray plants with the appropriate herbicide. Spraying will be done using a backpack unit and dye mixed with the liquid herbicide to minimize overspray and damage to native wetland species.

In the event that woody species have become strongly established and hand removal is not feasible, stems will be cut at ground level and a qualified pesticide applicator will be contracted to spray the cut stump with the appropriate herbicide.

Post-Construction Monitoring

This section provides a detailed monitoring and assessment plan for the wetland mitigation areas.

For each of the first three full growing seasons following construction of the mitigation sites, the sites will be monitored and monitoring reports will be prepared in the format required by the USACE Mitigation Guidance.

If there are problems that need to be addressed and if the measures to correct them require prior approval from the agencies, the Airport will contact the agencies as soon as the need for corrective action is discovered.

Each monitoring report will answer the following questions:

1. Does the site have at least 500 trees and shrubs per acre, of which at least 350 per acre are trees that are at least 18 inches tall in 75 percent of each planned woody zone and include at least the following number of non-exotic species including planted and volunteer species?
2. Does each mitigation site have at least 80 percent aerial cover, excluding planned open water areas or planned bare soil areas?
    a. Do planned emergent areas have at least 80 percent cover by noninvasive hydrophytes?
    b. Do planned scrub-shrub and forested cover types have at least 60 percent cover by non-invasive hydrophytes, of which at least 15 percent are woody species?
3. Are invasive species (including but not limited to common reed, purple loosestrife, Russian and autumn olive, buckthorn, and/or multiflora rose) being controlled?
4. Are all slopes, soils, substrates and constructed features within and adjacent to the mitigation area stabilized?

Each report will include a narrative that will address the following items:

1. Dates that work began and ended.
2. Description of monitoring inspections since the last report.
3. Soils and hydrology data.
4. Remedial actions done to meet success standards.
5. Status of erosion control measures.
6. Visual estimates of total percent cover, and visual estimate of percent cover of invasive species.
7. Fish and wildlife use of the mitigation site.
8. General health and vigor of each of the plant species in the mitigation site, with diagnosis of cause(s) of morbidity or mortality.

9. Remedial measures recommended to achieve or maintain success and improve the extent to which the mitigation site replaces the lost functions and values.

Each monitoring report will include four appendices:

1. A copy of the permit, with mitigation special conditions and mitigation goals.
2. An as-built planting plan showing the location and extent of the designed plant community type. This is required only in the first monitoring report.
3. A species list of volunteer plant species in each community type.
4. Representative photos of each mitigation site, taken from the same location for each monitoring event.

Assessment

A post-construction assessment of the condition of the mitigation sites will be performed by the end of the 5-year monitoring period. This assessment must be performed by a person other than the person(s) responsible for the annual monitoring reports, unless approved by the Corps. The assessment report will be submitted to the Corps by December 15 of the year the assessment is conducted. This assessment will:

1. Summarize the original or modified mitigation goals and discuss the level of attainment of these goals.
2. Describe significant problems and solutions during construction and post-construction.
3. Identify agency procedures or policies that encumbered implementation of the mitigation plan. The assessment will specifically note procedures or policies that contributed to lower success or effectiveness than anticipated.
4. Recommend measures to improve efficiency, reduce cost, or improve effectiveness of similar projects.

The assessment will include the following appendices:

1. Summary of the functions and values assessment of the mitigation areas.
2. Calculation of the area of wetlands in each site, accompanied by a scaled drawing showing the wetland boundary and representative transects, with data sheets supporting the delineation.
3. Comparison of the area and extent of delineated constructed wetlands (from Appendix 2 of same report) with the area and extent of created wetlands proposed in the mitigation plan.

4. Photos of each mitigation site taken from the same locations as the monitoring photos.

Implementation

Implementing these mitigation measures will be the responsibility of the City of New Bedford, through the New Bedford Regional Airport. As required by the Secretary's Certificate, this section provides information on the cost of the mitigation program, funding sources, and schedule.

Table 4.4-19 Estimated Mitigation Costs

Site	Area	Total Estimated Cost
4	1.5 ac	$300,000
5	1.5 ac	$300,000
6	2.9 ac	$580,000
8	2.4 ac	$480,000
9	1.1 ac	$220,000
10	7.8 ac	$1,560,000
11	1,000 lf	$20,000
14	2 ac, 1,000 lf	$400,000
Totals	17.2 ac establishment 2.0 ac enhancement	$3,860,000

As shown in Table 4.4-19, the wetland mitigation areas (establishment and restoration) are estimated to cost approximately $3.56M. This has been included in the total project cost. Funding for the project is anticipated to be shared by the FAA and the City of New Bedford.

The Secretary's Certificate also required an implementation schedule. The Airport proposes to construct the replacement wetland areas (Sites 4, 5, 6, 8, 9, 10), the replacement Bank, and to preserve Site 12 concurrently with constructing the Runway 5-23 safety areas, anticipated to start in 2010. A detailed construction schedule will be developed during the permitting process, once funding commitments are in place.

Summary of Proposed Mitigation

As described in this section, the loss of vegetated wetlands and state-regulated wetland resources areas (bordering vegetated wetland, bank, and bordering land subject to flooding) will be mitigated in accordance with federal and state regulations.

Mitigation goals were established following MA DEP Wetlands Regulations and guidance and USACE wetland mitigation Rules and guidance, and considering the FAA requirements for wildlife hazards. The mitigation goals established were:

- 2:1 replacement of lost vegetated wetlands (bordering vegetated wetlands), within the Paskamanset River watershed and, to the extent feasible, on land owned by the City of New Bedford, for a total of 14.4 acres of wetland replacement.
- Mitigation areas would be in-kind replacement of palustrine emergent and shrub-swamp wetlands, designed to not attract hazardous wildlife.
- 1:1 replacement of lost flood storage, within the same reach of the Paskamanset River as the lost flood storage.
- Loss of the tree canopy within forested wetlands would be mitigated by restoring trees and shrubs in wetlands or in buffer zones, to enhance wetland wildlife habitat functions.
- Loss of bank and stream open water would be mitigated by in-kind replacement, within the same reach of the stream.
- Loss of tree canopy would be mitigated by preserving forested wetlands and buffers to the Paskamanset River.
- Temporary impacts to wetlands would be restored in-situ by restoring vegetated wetland or bank.

The proponent will meet these mitigation goals by implementing the following measures:

- Constructing six compensatory mitigation areas within the Airport property, collectively providing up to 17.2 acres of replacement vegetated wetland.
- Replacement wetland areas have been designed as shrub swamp habitat, to replace and enhance lost wildlife habitat consistent with FAA wildlife hazard guidance.
- Site 10 would provide compensatory flood storage (6.8 acre-feet).
- The West Ditch would be relocated into a new channel, providing 1,000 linear feet of channel and open water.
- Permanent protection of 55 acres of wetland and upland bordering the Paskamanset River.
- Loss of tree canopy habitat would be mitigated by riparian forested buffer habitat enhancement at Buttonwood Park (2 acres).

4.4.9 Regulatory Coordination and Required Permits

Improvements to the Airport would require regulatory review with respect to state and federal wetlands regulatory programs, as described below. These include the

Massachusetts Wetlands Protection Act, Water Quality Certification, and Section 404 of the Clean Water Act. The project may also require a Consistency Determination from the Massachusetts Coastal Zone Management Office because the Preferred Alternative would fill wetlands within a designated Coastal Watershed.

Massachusetts Wetlands Protection Act

The Massachusetts WPA Regulations establish performance standards for work proposed within each of the state wetland resource areas and require review of any work proposed within 100 feet of a wetland resource to determine if that work would alter the resource area.

Construction of the Preferred Alternative would require the Commissioner of MA DEP to issue a variance from the WPA Regulations. RW 5-23 safety improvements would not meet the performance standards for BVW [310 CMR 10.55(4)] because the proposed safety improvements would result in the loss of more than 5,000 square feet of BVW and would impact known habitat of state-listed species.

The proposed project would not meet regulatory performance standards and would require a variance. The procedure for requesting a variance includes first submitting a NOI to the New Bedford Conservation Commission and Dartmouth Conservation Commission which would be required to deny the proposed project in their OOC. The proponent would then request MA DEP Regional Office to issue a Superseding OOC. The MA DEP would also be required to deny the proposed project in its Superseding Order. The proponent would then request that the Commissioner issue a variance.

Variances may be granted by the Commissioner of MA DEP only if the proposed project meets three criteria.[55] These criteria and the proposed project's compliance with them are presented below.

No Alternatives

> *"There are no reasonable conditions or alternatives that would allow the project to proceed in compliance with 310 CMR 10.21 through 10.60."*

An extensive alternatives analysis was undertaken for the proposed project, as described in Chapter 3, *Alternatives Analysis*. This analysis found that the proposed project's Purpose and Need cannot be met by improvements to other airports in the Southeastern Massachusetts Study Area, and that there are no practicable alternatives at the Airport that would meet the proposed project Purpose and Need and that could be constructed in compliance with the regulatory performance

55 *310 CMR 10.05 (10)(a), Wetlands Protection Act Regulations.*

standards for BVW. During the subsequent design phases of the proposed project, additional design modifications would be investigated to ensure that wetland impacts have been minimized to the extent practicable.

As noted on Chapter 3, based on the comments received during the public review of the DEIS/DEIR and the CWA Section 404 Permit, the City of New Bedford determined that the environmental impacts of the DEIS/DEIR were significant and outweighed the benefit to aviation and therefore were not feasible. Also, the NPC alternatives were not feasible and practicable to construct based on cost and deficiencies of the Airport.

Mitigating Measures

> *"Mitigating measures are proposed that will allow the project to be conditioned so as to contribute to the protection of the interests identified in M.G.L. c.131, §40."*

Unavoidable wetland impacts would be mitigated as described in Section 4.4.8. The proposed mitigation would replace lost wetland resource areas, lost ecological functions, and impacted wetland vegetation cover types. The proposed project in combination with the proposed mitigation would result in net positive effects on the protected interests of the WPA.

Overriding Public Interest

> *"The variance is necessary to accommodate an overriding community, regional, state or national public interest; or that it is necessary to avoid an Order that so restricts the use of the property as to constitute an unconstitutional taking without compensation."*

This report documents the need for safety and facility improvements at the EWB and substantiates the revised statement of project purpose, which is: **To enhance the safety of aircraft and passengers using EWB by improving the RSAs for RW 5-23 to meet FAA safety standards.**

As stated in FAA Order 5100-38B, "The highest aviation priority of the United States is the safe and secure operation of the airport and airway system." The FAA supports this policy by giving the highest priority to projects that enhance the safety and security of our airport system." The FAA's National Priority Rating system gives the highest priority to constructing, extending, or improving RSAs.

Providing RSAs enhance aircraft safety. The RSA is a prepared surface surrounding the runway that is:

- Cleared and graded and does not have any potentially hazardous ruts, humps, depressions, or other surface variations;

- Drained by grading or storm sewers to prevent water accumulation;
- Capable under dry conditions of supporting SRE, ARFF equipment, and the occasional passage of aircraft without causing structural damage to the aircraft; and
- Free of objects, except for objects that need to be located in the RSA because of their function.

FAA determines minimum dimensional standards for RSAs based on the "critical" or "design" aircraft that operates or is forecasted to operate at the Airport. The application of obstruction removal and design standards and criteria is necessary in order to meet FAA safety standards. As stated in Chapter 2, *Purpose and Need*, the Airport does not meet FAA standards for RSAs for either RW 5-23 or RW 14-32.

These deficiencies must be addressed before any future runway improvements can be undertaken at the Airport. Until the Airport corrects these RSA deficiencies, the FAA will not provide funding to replace or rehabilitate the runway pavement.

Operations have increased nearly 50 percent in the past five years at the Airport. This is due primarily to increased corporate jet activity and increases in flight training activity. With the increase of corporate jet operations at New Bedford, there are larger and faster aircraft using the Airport. The increased use of the Airport for flight training means that the pilots are less experienced. These factors increase the potential for accidents or incidents to occur at the Airport.

The construction of standard RSAs is needed to meet FAA's safety standards established for the protection of aircraft, pilots, student pilots, and passengers operating at the EWB, and to allow the long-term continued operation of the Airport.

As documented in Chapter 2, *Purpose and Need*, the proposed project also includes installing a perimeter safety fence to prevent deer, coyotes, and other hazardous wildlife from having access to the airfield. Because deer and coyotes are capable of causing substantial damage to aircraft and risk to pilots and passengers, the perimeter fence also would fulfill the overriding public interest of airport safety.

This project would fulfill an overriding public interest of all who fly into and out of this commercial service airport. The public interest served is safety. Safety improvements to the runway ends would reduce the potential for harm to passengers, airport employees, and surrounding community members. Safety areas reduce the risk of damage to aircraft, and injury to persons inside the aircraft, should the aircraft undershoot, overshoot, or veer off the runway. It also provides additional safety during less than ideal weather conditions, in the event that aircraft overrun the existing runway during landing or an aborted take-off.

Water Quality Certification (Section 401 of the Clean Water Act)

Projects that result in discharge or fill to a wetland or water body (any project that requires a Section 404 permit), require water quality certifications, pursuant to the *Massachusetts Clean Waters Act* (*M.G.L. c. 21 §§ 26 – 53*). This proposed project would require an individual Water Quality Certification because the proposed project would result in the loss of more than 5,000 square feet of wetlands subject to federal jurisdiction. There are seven criteria for the evaluation of applications for discharge of dredged or fill material (*314 CMR 9.06*). These criteria and the proposed project's compliance with them are presented below.

1. **"No discharge of dredged or fill material shall be permitted if there is a practicable[56] alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem."**

   Chapter 3 of the FEIS/FEIR demonstrates that there are no alternatives which would allow the EWB to comply with FAA safety standards that would not alter wetlands subject to jurisdiction under Section 401. The No-Action Alternative does not fulfill the project's purpose and need because adequate RSAs would not be constructed, the safety of the Airport and aircraft system would not be improved, and GA services would not change.

2. **"No discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will minimize potential adverse impacts to the bordering or isolated vegetated wetlands or land under water, including a minimum of 1:1 restoration or replication of isolated or bordering vegetated wetlands."**

   Wetland impacts to major wetlands systems such as Acushnet Cedar Swamp would be eliminated, and filled wetlands would be restored or replicated at a 2:1 ratio as described in Section 4.4.8.

3. **"No discharge of dredged or fill material shall be permitted to ORWs, except for the activities specified in 314 CMR 9.06(3)(a) through (i), which remain subject to an alternatives analysis and other requirements of 314 CMR 9.06."**

   The proposed project does not include the discharge of dredged or fill material to an ORW.

4. **"Discharge of dredged or fill material to an ORW specifically identified in 314 CMR 4.06(1)(d) (e.g., vernal pools, areas within 400 feet of a water supply**

56 Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Materials (40 CFR Part 230) defines practicable. "The term practicable means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes."

reservoir, and any other area so restricted) is prohibited as provided therein unless a variance is obtained under 314 CMR 9.08."

The proposed project does not include the discharge of dredged or fill material to an ORW.

5. **"No discharge of dredged or fill material is permitted for the impoundment or detention of stormwater for the purposes of controlling sedimentation or other pollutant attenuation."**

   No dredging or fill is planned in conjunction with the construction of the stormwater management systems proposed as part of this proposed project.

6. **"Stormwater discharges shall be provided with BMPs to attenuate pollutants and provide a set back from receiving water or wetland."**

   The proposed stormwater management system includes BMPs in compliance with MA DEP stormwater management policy, as described in Section 4.3 of this FEIS/FEIR.

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

The proposed project would not result in substantial adverse impacts to the surface waters of the Commonwealth. As described, wetland alteration would be minimized to the extent practicable, and unavoidable impacts would be mitigated. Stormwater management systems would meet all applicable regulations and performance standards, and stormwater runoff would not degrade surface water quality.

Department of the Army Permit (Section 404 of the Clean Water Act)

Section 404 of the CWA regulates the discharge of dredged or fill material into "Waters of the United States," which include vegetated wetlands and land under a water body. The proposed project would require the issuance of an Individual Section 404 Permit for the placement of fill in freshwater wetlands, because it would result in the loss of more than 1 acre of vegetated wetland.

Per USACE guidance, the proponent has followed the recommended "Highway Methodology Approach"[57] for addressing regulatory concerns for both NEPA and Section 404 compliance. As documented in the DEIS/DEIR, the USACE determined its Basic Project Purpose, concurred with the range of alternatives explored for the proposed project's alternatives analysis, and agreed on the procedures for evaluating and screening alternatives. In addition, impacts to wetlands and waterways have been assessed and described using the Highway Methodology.

The Section 404(b)(1) guidelines[58] are designed to avoid unnecessary filling of waters and wetlands. There are four criteria for the evaluation of compliance. These criteria and the proposed project's compliance with them are presented below.

1. **"There must be no practicable alternatives available which would have less adverse impact on the aquatic ecosystem and which do not have other significant adverse environmental consequences."**

   Chapter 3 of the FEIS/FEIR demonstrates that there are no alternatives which would allow the EWB to comply with FAA safety standards that would not alter wetlands subject to jurisdiction under Section 401. The No-Action Alternative does not fulfill the project's purpose and need because adequate RSAs would not be constructed.

2. **"The activity must not violate federal or state water quality standards or threaten a federally-listed threatened or endangered species."**

   The proposed project will include BMPs as part of the proposed stormwater management plan. This plan would mitigate potential impacts to water quality by controlling stormwater runoff volume and discharge rates and by treating stormwater by removing pollutants prior to discharge to downstream surface waters.

   The proposed project would have no impacts on federally-listed threatened and endangered species (Section 4.6, *Threatened and Endangered Species*).

3. **"There must not be significant degradation of waters and wetlands."**

   Although the proposed project would have unavoidable impacts on wetlands and waterways, these impacts would be mitigated as described in Section 4.4.8 of this FEIS/FEIR.

4. **"All reasonable steps must be taken to minimize adverse effects to the aquatic environment."**

57 *The Highway Methodology Workbook: Integrating Corps Section 404 Permit Requirements with Highway Planning and Engineering and the NEPA EIS Process*, NEDEP-360-1-30, U.S. Army Corps of Engineers, October 1993.

58 *40 CFR Part 230, Subpart B § 230.10, Section 404(b)(1) Guidelines for Specification of Disposal Sites for Dredged or Fill Material.*

The 1990 Memorandum of Agreement between the EPA and the Department of the Army[59] established policy and procedures for evaluating potential significant degradation and established standards for stepwise avoidance and minimization of adverse effects before consideration of mitigation.

Coastal Zone Management Consistency

The Preferred Alternative may require a Consistency Determination from the Massachusetts Coastal Zone Management Office, because it (a) requires federal funding from the FAA, (b) requires a federal permit from the Department of the Army, and (c) requires filling wetlands within a designated Coastal Watershed, although the project is not within the Coastal Zone.

The Coastal Zone Policies listed below are applicable to the New Bedford Regional Airport Improvement project, which is consistent with each specific policy.

•**WATER QUALITY POLICY #1** - Ensure that point-source discharges in or affecting the coastal zone are consistent with federally-approved state effluent limitations and water quality standards.

The safety improvements have been designed to comply with the Massachusetts Stormwater Standards, and the Massachusetts Water Quality Standards.

•**WATER QUALITY POLICY #2** - Ensure that nonpoint pollution controls promote the attainment of state surface water quality standards in the coastal zone.

The safety improvements have been designed to comply with the Massachusetts Stormwater Standards, and the Massachusetts Water Quality Standards.

•**HABITAT POLICY #1** - Protect coastal resource areas including salt marshes, shellfish beds, dunes, beaches, barrier beaches, salt ponds, eelgrass beds, and fresh water wetlands for their important role as natural habitats.

The proposed project will result in unavoidable impacts to freshwater wetlands, which have been minimized to the extent feasible. The proposed mitigation measures will result in no net loss of wetland areas or functions.

•**HABITAT POLICY #2** - Restore degraded or former wetland resources in coastal areas and ensure that activities in coastal areas do not further wetland degradation but instead take advantage of opportunities to engage in wetland restoration.

The proposed mitigation measures include restoring riparian buffers in coastal watersheds, and permanent protection of freshwater riparian wetlands.

•**GROWTH MANAGEMENT PRINCIPLE #2** - Ensure that state and federally funded transportation and wastewater projects primarily serve existing developed

59 *Memorandum of Agreement Between the Department of the Army and the Environmental Protection Agency: The Determination of Mitigation under the Clean Water Act Section 404(b)(1) Guidelines*, February 6, 1990.

areas, assigning highest priority to projects that meet the needs of urban and community development centers.

Although the proposed project is limited to providing safety improvements at the New Bedford Regional Airport to meet FAA safety standards, the Airport provides important transportation and economic benefits to urban New Bedford and its surrounding communities. The proposed safety improvements are essential to allowing the Airport to continue to serve this developed area.

4.4.10 Summary

The design refinement process that the Airport has undertaken since publishing the ENF for proposed Airport Improvements has sequentially and very substantially reduced impacts to wetlands. As shown in Table 4.4-13 (presented previously), this design refinement process has reduced proposed wetland impacts from 75 acres to the 7.33 acres currently proposed. Table 4.4-20 shows the total impacts of the proposed project to federal and state wetland resource categories.

Table 4.4-20 Summary of Wetland Impacts (Preferred Alternative)

Wetland	Federal	BVW	LUWW	ILSF	BLSF	Bank (lf)	RA
Permanent L	0.36	0.36	0	0	3.45	0	0
M	6.97	6.97	0	0	3.45	770	0.81
Subtotal	7.33	7.33	0	0	3.45	770	0.81
Temporary M	0.92	0.92	0	0	3.45	770	0.81
Total	8.25	8.25	0	0	3.45	770	0.81

The Preferred Alternative would result in unavoidable impacts on wetlands and waterways in the Local Study Area. The proposed project would result in approximately 7.33 acres of direct impact to wetlands from filling. Most of this filling would be required for constructing the RW 5-23 safety area at the RW 5 (6.97acres of BVW) and RW 23 (0.36acres of BVW) ends and would primarily impact palustrine emergent marsh wetland. The wetlands that would be impacted currently provide important wetland functions, especially wildlife, and state-listed rare species habitat; nutrient and organic matter production; and water quality improvement. The Preferred Alternative would not fill any certified vernal pool. In addition to the direct impacts from filling, the area of vegetation management in wetlands would increase compared to the No-Action Alternative. To meet FAA safety requirements, trees within this area that would penetrate the required obstruction-free areas would be cut. The actual number of trees within the vegetation management area that would be cut is not known at this time.

The Preferred Alternative would require new areas of vegetation management within the runway approach areas for RW 5-23. A total of approximately 22 acres of wetlands would need to be cleared of any individual trees if they obstructed Airport safety areas

Thirteen potential mitigation sites have been identified on, or in the vicinity of, the Airport. Section 4.4.8 provides detailed information on wetland mitigation site design and construction.

The proposed project would require a variance under the WPA, a variance under Section 401 of the CWA, and an individual CWA Section 404 permit. As documented in this section, the proposed project, with mitigation, would meet the criteria for the required variances and permits needed for wetland impacts. The project is necessary for public safety, and there are no alternatives that would satisfy the purpose and need of the project that would avoid wetland impacts.

4.5 Floodplains

This section addresses the existing floodplains and potential effects on existing flood elevations associated with the proposed project. It provides a description of engineering evaluations performed to establish the extent of the existing floodplain of the Paskamanset River in the Study Area, including estimated flood elevations for various frequency events and the boundaries of the 100-year floodplain. This section also describes additional engineering analyses conducted to establish impacts on the floodplain attributed to the proposed project and addresses mitigation measures and regulatory coordination/compliance. Additional detail on the calculation of the 100-year floodplain was provided in Appendix D.9, *Floodplains*, of the DEIS/DEIR.

Since the DEIS/DEIR, the alternatives have been redesigned to reduce impacts to sensitive resources. As documented in this section, impacts to the 100-year floodplain have been reduced from more than 78 acre-feet to approximately 19.6 acre-feet. Compensatory flood storage would be provided for all loss of flood storage within BLSF, as required by WPA regulations.

4.5.1 Regulatory Context

Floodplains are defined in *EO 11988, Floodplain Management*, issued May 24, 1977, as "the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands. Floodplains include, at a minimum, those areas with at least a one percent or greater chance of being inundated by a flood in any given year" (i.e., the area that the 100-year flood would inundate).

The Federal Emergency Management Agency (FEMA) is the federal agency with primary responsibility for mapping and regulating areas subject to flooding under the National Flood Insurance Program (NFIP). The 100-year flood, which is the standard used by most federal and state agencies, is used by the NFIP as the standard for floodplain management. This is the flood elevation that has a one percent chance of being equaled or exceeded each year.

All floodplain analyses were conducted in accordance with the following: *EO 11988, Floodplain Management,*[60] *U.S. DOT Order 5650.2, Floodplain Management and Protection,*[61] *FAA Order 1050.1E*; *FAA Order 5050.4B*, NFIP regulations, and applicable state and local regulations. Each regulation is defined below.

EO 11988, Floodplain Management, emphasizes the importance of minimizing impacts on floodplains and reducing the impact of floods on human safety, health, and welfare. *EO 11988* directs federal agencies to consider alternatives to avoid adverse effects and incompatible development in floodplains and design or modify actions in order to minimize potential harm to or within the floodplain.

At the federal level, FEMA has prime responsibility for regulating activities in floodplains. FEMA regulations prohibit alterations to the regulatory floodway that would increase base flood (100-year flood) elevations by one foot or more. Under these regulations, the regulatory floodway is defined as: "that portion of the floodplain which is effective in carrying flow, within which this carrying capacity must be preserved and where the flood hazard is generally highest, i.e., where water depths and velocities are the greatest. It is that area which provides for the discharge of the base flood so the cumulative increase in water surface elevation is no more than one foot."

U.S. DOT Order 5650.2, Floodplain Management and Protection, contains DOT policies and procedures for implementing EO 11988. The DOT order defines significant encroachments and the natural and beneficial values served by floodplains. The natural and beneficial values of floodplains include, but are not limited to, "natural moderation of floods, water quality maintenance, groundwater recharge, fish, wildlife, plants, open space, natural beauty, scientific study, outdoor recreation, agriculture, aquaculture, and forestry."

FAA Order 1050.1E outlines FAA responsibilities to conform to the requirements in *EO 11988*. The Order defines significant encroachments as: "(1) The action that would have a high probability of loss of human life; (2) The action that would have substantial, encroachment-associated costs or damage, including interrupting aircraft service or loss of a vital transportation facility (e.g., flooding of a runway or taxiway; important navigational aid out of service due to flooding, etc.); or (3) The action would cause adverse impacts on natural and beneficial floodplain values. *FAA Order 5050.4B* provides guidance on the NEPA process and structuring NEPA

60 *Executive Order 11988, Floodplain Management,* 42 FR 26971, 3 CFR, 1977, May 24, 1977.
61 *United States Department of Transportation Order 5650.2, Floodplain Management and Protection.*

documents such as EAs and EISs to demonstrate compliance with the responsibilities identified in *FAA Order 1050.1E*.

At the state level, floodplains are defined as protected resources under the Massachusetts WPA, which protects both bordering and isolated land subject to flooding (BLSF and ILSF). As defined by the Massachusetts WPA, the boundary of BLSF is the estimated maximum lateral extent of floodwater that would theoretically result from the statistical 100-year frequency flood.[62] BLSF is that portion of the 100-year floodplain that is upgradient of the limit of BVWs or Bank.

Under the Massachusetts WPA regulations, the permitting authority has the discretion to require compensatory flood storage. Performance standards for BLSF state that: "Compensatory storage shall be provided for all flood storage volume that would be lost as the result of a proposed project within BLSF, when in the judgment of the issuing authority said loss would cause an increase or would contribute incrementally to an increase in the horizontal extent and level of flood waters during peak flows."[63]

The City of New Bedford has also enacted zoning ordinances regulating development in the floodplain through designation of a Flood Hazard Overlay District.

4.5.2 Methodology

This section describes the methods used to characterize the affected environment for floodplains. Under the NFIP, FEMA established floodplain boundaries as part of the New Bedford Flood Insurance Study (July 5, 1983) and Dartmouth Flood Insurance Study (January 3, 1985). Floodplain boundaries in the Study Area were established by FEMA using approximate methods, and no detailed engineering evaluations were conducted as part of these studies. This FEIS/FEIR floodplain assessment study includes more detailed evaluations to establish the 100-year flood elevations in the Study Area using widely accepted hydrologic/hydraulic modeling techniques.

As part of the FEMA Flood Insurance Study, the Paskamanset River was studied by detailed methods from Smith Mill Pond (near U.S. Route 6 crossing in Dartmouth) downstream to the limits of the Dartmouth Flood Insurance Study. Detailed hydraulic analysis conducted for that portion of the Paskamanset River was requested and obtained from FEMA. The data provided by FEMA were the results of the HEC-2 backwater model of the Paskamanset River from Smith Mill Pond downstream to the limits of the Dartmouth Flood Insurance Study.

Flood elevations and flows for the floodplains in the Study Area were calculated for the 100-year frequency flood events using the USACE HEC-HMS computer

62 310 CMR 10.57(2)(a)). *Massachusetts Wetlands Protection Act.*
63 310 CMR 10.57(4)(a)). *Massachusetts Wetlands Protection Act.*

modeling methodology. The study limits for the floodplain analyses include the Paskamanset River from the dam at Smith Mill Pond to the dam at Turner Pond, and also included a tributary south of RW 5.

As noted in Section 4.4.1, the Massachusetts WPA addresses BLSF, which is the portion of the floodplain above the BVW line and is therefore smaller than the total floodplain defined by FEMA. The calculated 59.5 foot flood elevation was used to determine the extent of BLSF at the Airport. Floodplain impacts were determined by both area and volume as determined by the limits of disturbance for the proposed project and the differences between pre- and post-development grading within the floodplain and BLSF. Changes in peak flow, which can also affect flooding, are addressed in Section 4.3, *Water Quality*.

4.5.3 Affected Environment

The Airport is located within the Paskamanset River Watershed and is bordered to the west and south by the Apponagansett Swamp, encompassing over 1,000 acres between Turner Pond and Smith Mill Pond. The Acushnet Cedar Swamp State Reservation, encompassing approximately 1,000 acres, is north of New Plainville Road and the Airport property. Areas to the east include Route 140 and developed portions of New Bedford. The western and southern portions of the Airport property include areas within the 100-year floodplain for the Paskamanset River and its tributaries. West of the Airport, the Paskamanset River flows from Turner Pond, northwest of the Airport property, south to eventually outlet into Buzzards Bay.

The Paskamanset River and its associated floodplain (Apponagansett Swamp) and areas northwest of New Plainville Road (Acushnet Cedar Swamp) are mapped by FEMA as areas subject to the 100-year flood, with the base flood elevations and flood hazard factors not determined by FEMA. These large wetland/swamp areas are of particular significance to floodplains along the Paskamanset River. The Apponagansett Swamp that borders the RW 5 end in the Study Area and Acushnet Cedar Swamp to the north have significant impacts on flood flows, elevations and flooding in the area. The FEMA-mapped 100-year floodplain areas within Apponagansett Swamp surround the Airport to the west and south but do not encroach on the terminal areas or the runways. The reach of the Paskamanset River analyzed in this floodplain analysis extends through and includes the Apponagansett Swamp, a large flat area that essentially functions as floodplain and wetland. The total drainage area at Smith Mill Pond (downstream of the Airport) is 15.95 square miles. The total drainage area at Turner Pond (upstream of the Airport) is 8.38 square miles.

The estimated existing 100-year floodplain elevation (base flood) based on the HEC-RAS backwater model in the immediate vicinity of the RW 5 end is 59.5 feet. The lateral extent of this 100-year floodplain boundary appears to roughly correlate with the New Bedford Flood Insurance Rate Mapping. The existing 100-year

floodplain boundary established for the Study Area based on the 59.5 foot elevation is shown on Figure 4.5-1.

4.5.4 Environmental Consequences

Potential impacts of the proposed project on floodplains would be due to fill and construction within the floodplain at the Runway 5 end. Placing fill within the floodplain would reduce the volume of potential floodplain storage, potentially increasing the severity of future flood events. FEMA floodplain boundaries include the wetlands within the floodplain.

Filling of floodplains is considered to be a direct impact, as filling would occur during construction and would have an immediate local impact on flood risk. Table 4.5-1 presents the 100-year floodplain impacts at the Runway 5 end by alternative. Table 4.5-2 summarizes the impacts to BLSF by elevation. Figure 4.5-2 shows the footprint of floodplain impacts for the Preferred Alternative.

No-Action Alternative: The No-Action Alternative would not result in any impacts to floodplains as no change in grading would occur.

Preferred Alternative: The Preferred Alternative would impact 11.7 acres of floodplain, including 3.45 acres of BLSF. Due to the changes in grading at the RW 5 end, the Preferred Alternative would actually increase BLSF flood storage slightly between elevation 54.0 and elevation 56.0. Overall, however, a net total of 31,583 cubic yards (19.6 acre-feet) of floodplain storage, including 7,652 cubic yards (4.74 acre-feet) of BLSF storage, would be filled to create the RSA.

As documented in the DEIS/DEIR, this increment is negligible with respect to the large floodplain size, and would not result in a measurable change in the depth, lateral extent, or duration of flooding within the Apponogansett Swamp.

Table 4.5-1 Runway 5 100-Year Floodplain Impacts by Alternative

Alternative	Floodplain Impacted (acres)	BLSF Impacted (acres)	Floodplain Volume Filled		BLSF Volume Filled	
			(cubic yards)	(acre-feet)	(cubic yards)	(acre-feet)
No-Action Alternative	0.0	0.0	0	0.0	0	0.0
Preferred Alternative	11.7	3.45	31,583	19.6	7,652	4.74

Table 4.5-2 Runway 5 Incremental BLSF Impacts by Elevation

	BLSF Filled (cubic yards)						
Alternative	Elevation 54.0 - 55.0 ft	Elevation 55.0 - 56.0 ft	Elevation 56.0 - 57.0 ft	Elevation 57.0 - 58.0 ft	Elevation 58.0 - 59.0 ft	Elevation 59.0 - 59.5 ft	Total
No-Action Alternative	0	0	0	0	0	0	0
Preferred Alternative	-15.6	-14.9	197.7	1,047.8	3,946.3	2,491.8	7,652

4.5.5 Mitigation Measures

This section describes the measures that the Preferred Alternative would employ to mitigate impacts to the floodplain in the Project Study Area. These measures include design choices made to avoid and minimize impacts. Any unavoidable impacts would require mitigation. The Massachusetts WPA requires compensatory storage for any flood storage lost in BLSF.[64] Compensatory storage must match flood storage at each elevation, have an unrestricted hydraulic connection to the affected waterbody, and be located within the same reach of the river, stream, or creek involved. Work in BLSF must not restrict flood flows to cause an increase in flood elevation.

Avoidance and Minimization

Avoidance of the loss of floodplains would only be possible by implementing the No-Action Alternative. Because the Airport was constructed by legally filling floodplains, any safety area improvements would affect floodplains due to their proximity to the existing limits of the runway and taxiway safety areas.

The design refinement process that the Airport has undertaken since publishing the ENF in 1995 for proposed airport improvements has sequentially reduced impacts to floodplains. This design refinement process has reduced proposed wetland impacts from up to 78 acre-feet under the DEIS/DEIR to the total of 19.6 acre-feet currently proposed. Specific avoidance and minimization measures are discussed below.

Two avoidance alternatives were identified during this MEPA/NEPA process. Both avoidance alternatives would shift the runway substantially to the north, which would have a larger loss of wetlands and several vernal pools at the Runway 23 end, require land acquisition from the Acushnet Cedar Swamp State Reservation, and potentially have indirect impacts to Atlantic white cedar swamp communities in the State Reservation. To accommodate this shift to the north, New Plainville Road would either need to be relocated around the north side of the Object Free Area (extending impacts further into the State Reservation) or by constructing the northern end of the runway

64 310 CMR 10.57(4)(a)). *Massachusetts Wetlands Protection Act.*

on an overpass, effectively placing New Plainville Road in a tunnel. These alternatives were dismissed as being not practicable because they would:

- Substantially increase impacts to wetlands;
- Increase impacts to public recreational/conservation lands; and
- Substantially increase the project cost (by approximately $10M).

As described in Chapter 3 of this FEIR/FEIS, the proponent also investigated using an EMAS (Emergency Materials Arresting System) to reduce the length of the RSA. This option would have reduced but not avoided the loss of floodplains, and was determined to be impracticable because of the substantially higher cost (approximately $9M for installation).

Impacts to floodplains adjacent to Wetland M have been minimized to the greatest extent practicable by reducing the width of the RSA from the standard 500 feet to only 400 feet, and by using the steepest allowable sideslopes.

Mitigation Measures

The proposed project would place fill in 4.4 acres of BLSF for grading at the end of RW 5. This would result in the loss of 7,652 cubic yards of BLSF storage between the elevations of 54 feet and 59.5 feet. Compensatory flood storage would be provided on an incremental basis to replace the lost flood storage volume as required by the Massachusetts WPA. Mitigation Site 10 would create 11,027 cubic yards (6.83 acre-feet) of compensatory flood storage. Table 4.5-3 lists the flood storage to be provided at each elevation in contrast with the flood storage required under the WPA. Compensatory flood storage cannot be provided between elevations of 56 and 58 feet; therefore, the proposed flood storage would not meet the WPA requirements. As documented in Section 4.4.8, there are no other areas of upland with a hydraulic connection to the same waterbody, at the same elevation, that could be used to provide compensatory flood storage. Therefore, a variance from the WPA will be required. The proposed mitigation (Figure 4.4-14) meets the applicable WPA performance standards at 310 CMR 10.57(4)(a) to the greatest extent possible, as the compensatory storage:

- Has an unrestricted hydraulic connection to the same waterbody (West Ditch, Wetland M) and is within the same reach of the Paskamanset River as the lost flood storage volume;
- Will not restrict flood flows; and
- Is in an area that does not currently provide flood storage.

Table 4.5-3 Compensatory Flood Storage

	Incremental Flood Storage Provided (cubic yards)						
Type	Elevation 54.0 - 55.0 ft	Elevation 55.0 - 56.0 ft	Elevation 56.0 - 57.0 ft	Elevation 57.0 - 58.0 ft	Elevation 58.0 - 59.0 ft	Elevation 59.0 - 59.5 ft	Total
Mitigation Site 10	0	0	0	0	5,416.0	5,610.6	11,027
Required Under WPA	0	0	197.7	1,047.8	3,946.3	2,491.8	7,652

1 The Preferred Alternative would increase flood storage within these elevation ranges, which would not require mitigation.

4.5.6 Regulatory Coordination and Required Permits

Floodplain impacts are regulated under DOT Order 5650.2. As noted above, while there would be no significant environmental impact, there would be an encroachment on the base floodplain. DOT Order 5650.2 and the associated EO 11988 require that any project encroaching on the base floodplain show that there is no practicable alternative to placing the project in the floodplain and that all measures to minimize harm will be taken.

FAA Order 1050.1E, Appendix A, Section 9.3 defines significant floodplain impacts as those that have "notable adverse impacts on natural and beneficial floodplain values." While the project would require some degree of floodplain encroachment, the overall effect on floodplain values such as habitat and flood storage would be minimal.

In addition, FAA Order 1050.1E, Appendix A, Section 9.2.f provides three individual indicators of a significant encroachment. These criteria and the project's intended compliance with them are presented below.

1. **"The action would have a high probability of loss of human life."**

   The RSA itself is intended as a safety measure to prevent the loss of human life. The project would not involve enough fill under any of the alternatives to change floodplain levels enough to cause an increased risk to human lives. The construction of compensatory storage would mitigate any potential increases in flood risk.

2. **"The action would likely have substantial, encroachment-associated costs or damage, including interrupting aircraft service or loss of a vital transportation facility."**

   The project would not put the Airport or any other transportation facility at risk of flooding or damage. The Airport itself is elevated above the 100-year floodplain.

3. **"The action would cause adverse impacts on natural and beneficial floodplain values."**

   As noted above, the project would not cause notable impacts to floodplain values within the larger Paskamanset River floodplain. Although there would be a loss of flood storage associated with the Preferred Alternative, the construction of compensatory storage would mitigate any potential increases in flood risk.

The proposed mitigation would comply with the Massachusetts WPA performance standards to the greatest degree possible, as presented below.

1. **"Compensatory storage shall be provided for all flood storage volume that will be lost….Compensatory storage shall mean a volume not previously used for flood storage and shall be incrementally equal to the theoretical volume of flood water at each elevation. Such compensatory volume shall have an unrestricted hydraulic connection to the same waterway or water body… [and] shall be provided in the same reach of the river, stream, or creek."**

   The proposed mitigation provides compensatory flood storage, in areas not currently used for flood storage, and which provide the same compensatory storage volume as the lost volume. The area has the same unrestricted hydraulic connection to the Paskamanset River as the lost area, and is on the same reach of the river. Based on the preliminary topographic information shown on the conceptual mitigation plans, it may not be feasible to replace all storage losses on an incremental basis.

2. **"Work within BLSF…shall not restrict flows so as to cause an increase in flood stage or velocity."**

   The work within BLSF would not affect channels or restrict any flows and is at the upper edge of the large floodplain. The compensatory storage planned would prevent any increase in flood stage or velocity.

3. **"Work in those portions of BLSF found to be significant to the protection of wildlife habitat shall not impair its capacity to provide important wildlife habitat functions."**

   The area of BLSF affected by the proposed project is at the end of the existing runway and does not provide significant wildlife habitat, as defined under 310 CMR 10.57(1)(a)3, which includes lawns and similar areas in its definition of environments that "have been so extensively altered by human activity that their important wildlife habitat functions have been effectively eliminated." However, a wildlife habitat evaluation will be conducted to confirm this assessment.

4.5.7 Summary

The potential impacts of the proposed project to floodplains have been evaluated for the Preferred Alternative. The Preferred Alternative reduces the volume of proposed floodplain impact at the Airport from more than 78 acre-feet to approximately 19.6 acre-feet of floodplain storage. The Preferred Alternative would affect an 11.7-acre footprint within the floodplain and require placing 19.6 acre-feet of fill in that footprint, including 4.7 acre-feet in BLSF. This represents a substantial decrease from the 78 acre-feet of flood storage lost under the original design.

Compensatory flood storage would be constructed to replace the lost floodplain storage. With this mitigation in place, no increase in flood severity would be expected.

Overall, the Preferred Alternative would not have a significant impact on floodplains. All flood storage lost due to grading would be replaced on site. The Preferred Alternative would meet both FAA and state criteria for mitigation of floodplain impacts.

4.6 Threatened and Endangered Species

The Secretary's Certificate on the NPC dated April 6, 2007 required that the FEIS/FEIR include:

- Identification of land areas located within the project site that may be designated in the mitigation plan as protected habitat translocation areas, habitat management areas or habitat protection areas.
- A copy of the VMP and a detailed analysis of its impacts of the affected rare species habitats.
- A habitat management plan for all existing planned and proposed grassland and shrubland areas located within the project site to reflect current conditions and knowledge of existing rare species.
- A monitoring plan as part of the habitat management plan to evaluate the success of proposed habitat mitigation activities.
- Responses to comments and recommendations provided by Massachusetts Natural Heritage and Endangered Species Program (NHESP).

The following is a list of specific NHESP comments on the NPC. The NHESP noted that:

- The NPC does not provide an adequate quantification of the direct and indirect impacts to each state-listed species on an acre by acre basis. For example, how much eastern box turtle nesting, feeding, and overwintering

habitat will be directly impacted by the proposed ARFF/GA, and how much habitat will be indirectly impacted as a result of habitat fragmentation associated with this proposed project component.

- No formal eastern box turtle survey has been conducted to-date, in accordance with an NHESP-approved survey protocol; however, the NHESP noted that the proponent may be able to propose an adequate eastern box turtle mitigation plan without conducting such a survey.
- A time-sensitive survey during spring 2007 was recommended in order to avoid potential project delays.
- A detailed discussion of an acceptable impact minimization and net-benefit mitigation plan that adequately addresses endangered permitting issues associated with this proposed project be included in the FEIR.

An overall management plan with detailed discussion of assessment and proposed mitigation of potential environmental impacts to rare species habitat will be provided in a Conservation and Management Plan (CMP) that will be completed at a later date.

Section 4.6.4 describes threatened and endangered species in the vicinity of the Airport. This section presents updated information on threatened and endangered species since publication of the NPC in April 2007. In July 2006, the spotted turtle (*Clemmys guttata*) was de-listed, and in 2008 the four-toed salamander (*Hemidactylium scutatum)* was also de-listed as Species of Special Concern. In addition, intensive rare species surveys undertaken in 2005 for the American bittern (*Botaurus lentiginosus*), a state-listed endangered species, failed to record this species, indicating that there is no persistent American bittern population in the Project Area or Local Study Area.

Section 4.6.4 describes potential impacts of the No-Action Alternative and the Preferred Alternative on threatened and endangered species. As discussed in Chapter 1, *Introduction and Background*, changes to the project's purpose, need, and proposed activities occurred after publication of the NPC in April 2007. The proposed project, as defined in this FEIS/FEIR, would impact habitat of one state-listed Species of Special Concern.

Section 4.6.5 discusses avoidance, minimization, and mitigation of impacts to threatened and endangered species. Appendix D.7 of the DEIS/DEIR, *Biotic Communities/Threatened and Endangered Species,* contains information to support this section.

4.6.1 Regulatory Context

Threatened and endangered species analyses were conducted in accordance with the following requirements: NEPA of 1969;[65] *FAA Order 1050.1E*,[66] *FAA Order 5050.4B*;[67] Section 7 of the *Federal Endangered Species Act* (ESA) of 1973, as amended *16 U.S.C 1531 et seq.*;[68] *MESA: M.G.L. Chapter 131A*) of 1990 and its regulations *321 CMR 10.00*, and the Massachusetts WPA [310 CMR 10.00 et seq.]. Each regulation is defined below.

FAA Order 1050.1E[69] establishes FAA policies and procedures for the preparation of EISs, and for preparing and processing Environmental Assessments (EAs) of FAA actions. This order implements NEPA of 1969;[70] *Order DOT 5610.1C, Procedures for Considering Environmental Impacts*;[71] and 27 other statutes, directives, and orders.

FAA Order 5050.4B[72] provides instructions and guidance for preparing and processing EAs, Findings of No Significant Impact (FONSIs), and EISs for airport development proposals and other airport actions as required by various laws and regulations. NEPA regulations that address potential impacts on Endangered and Threatened species are discussed in the *FAA Airport Environmental Handbook* (5050.4B).

Section 7 of the *ESA* of 1973[73] authorizes the determination and listing of species as Endangered and Threatened and prohibits unauthorized taking, possession, sale, and transport of endangered species. Section 7 of the Act[74] requires federal agencies to ensure that any action authorized, funded, or carried out by a federal agency is not likely to jeopardize the continued existence of listed species or to modify their critical habitat. The USFWS administers the Act.

The USFWS defines an "Endangered" species as one that is in danger of extinction throughout all or a significant portion of its range. A "Threatened" species is one that is likely to become endangered in the foreseeable future.[75] The USFWS maintains a list of plants and animals native to the U.S. that are candidates or are proposed for possible addition to the federal list. Listings, including proposed additions and delistings, are announced through the Federal Register.

65 *National Environmental Policy Act of 1969, as amended.* Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, § 4(b), September 13, 1982.
66 *FAA* Order 1050.1E, June 8, 2004
67 *FAA Airport Environmental Handbook.* Order 5050.4B, April 28, 2006.
68 *ibid*.
69 *FAA.* Order 1050.1E, June 8, 2004.
70 *National Environmental Policy Act of 1969, as amended.* Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, § 4(b), September 13, 1982.
71 *FAA* Order 1050.1E, June 8, 2004.
72 *FAA Airport Environmental Handbook.* Order 5050.4B, April 28, 2006.
73 *Endangered Species Act of 1973, Section 7,* United States Fish and Wildlife Service.
74 *Ibid.*
75 *U.S. Fish and Wildlife Service, Species Information: Threatened and Endangered Animals and Plants* (http://Endangered.fws.gov/wildlife.html, accessed April 4, 2004).

MESA and its regulations (321 CMR 10.00) prohibit the "taking" of any state-listed rare plants and animals unless specifically permitted for scientific, educational, or propagation purposes, or where a Conservation Permit is issued.

The MESA Regulations (321 CMR 10.00) require that proponents of projects that undergo MEPA review allow the NHESP to make recommendations with respect to the avoidance, minimization, or mitigation of impacts on Endangered, Threatened, or Special Concern Species within a certain time frame. If recommendations are made, the project proponent should attempt to incorporate such recommendations into the project design.

The MESA defines "Endangered" as any species of plant or animal in danger of extinction throughout all or a significant portion of its range and species of plants and animals in danger of extirpation as documented by biological research and inventory. A "Threatened" species is any species of plant or animal likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range and any species declining or rare as determined by biological research and inventory and likely to become endangered in the foreseeable future.

MESA also classifies "Species of Special Concern" as any species of plant or animal that has been documented by biological research and inventory to have suffered a decline that could threaten the species if allowed to continue unchecked or that occurs in such small numbers or with such a restricted distribution or specialized habitat requirements that it could easily become threatened within Massachusetts.

A Conservation and Management Permit (321 CMR 10.04(3)(b)) is required if NHESP determines that the project will result in a "take" defined as follows:

- For animals – "to harass, harm, pursue, hunt, shoot, hound, kill, trap, capture, collect, process, disrupt the nesting, breeding, feeding, or migratory activity or attempt to engage in any such conduct, or to assist such conduct."
- For plants – "to collect, pick, kill, transplant, cut or process or attempt to engage or to assist in any such conduct."

The Director of the NHESP may issue a Conservation and Management Permit if the proponent:

1) Assesses alternatives to both temporary and permanent impacts to state-listed species.
2) Demonstrates that a proposed project will impact an insignificant portion of the local population of an affected state-listed species.
3) Designs and implements a CMP that provides a long-term net benefit to the conservation of the affected state-listed species.

MESA is applicable to the proposed project because state-listed species have been demonstrated to occur on and adjacent to the Airport.

The WPA regulations (WPA [310 CMR 10.00 et seq.]) state that proposed projects that alter estimated rare wildlife habitat shall not be permitted to have any short-term or long-term adverse effects on the habitat of the local population of that species. The regulations only apply to proposed projects that would alter the habitat of a rare species occurring in a wetland resource area for which an occurrence has been entered into the official NHESP database. Rare plants are not regulated under the WPA. The NHESP maintains an atlas of state-listed rare wildlife Estimated Habitat, which it updates every two years (most recently in 2006.)

The MA DEP delegates regulatory authority to the local conservation commission to ensure compliance with the WPA. If work is proposed within Estimated Habitat, a NOI for a proposed project must be submitted to NHESP concurrent with the conservation commission submittal. The written opinion of NHESP on whether a project will have adverse effect on rare species habitat shall be presumed to be correct by the conservation commission.

MA DEP *Wetlands Program Policy 90-2* clarified the WPA. It states that when work is proposed in a rare species habitat, the applicant shall have the burden of demonstrating that the alteration will not adversely affect the habitat of the local population of that species by:

- Identifying the relevant habitat requirements of the rare species;
- Identifying the habitat characteristics of the resource areas and the important wildlife functions provided for the rare species; and
- Demonstrating that the proposed work will not alter any habitat characteristics that are providing important wildlife functions (food, shelter, migratory or overwintering areas, or breeding areas) for the rare species.

4.6.2 Methodology

A Project Area and Local Study Area were defined to predict impacts to threatened and endangered species. The Project Area encompassed all areas of potential ground disturbances associated with the alternatives. The Project Area was developed to provide a more detailed understanding of the rare species present at the Airport.

The Local Study area is the area in which direct and indirect impacts to rare species may result from construction or operations of the alternatives considered in this FEIS/FEIR. The Local Study Area is within New Bedford and includes a portion of the Acushnet Cedar Swamp to the north, Apponagansett Swamp to the south, and includes the land between the Airport and the New Bedford/Dartmouth town line to the west, and Rt. 140 to the east.

Consultation with NHESP and the U.S. Fish and Wildlife Service (USFWS) was initiated to determine whether state and/or federal threatened or endangered species

occur in the Local Study Area. Copies of this correspondence are provided in Appendix D.7, Appendix C of the DEIS/DEIR.

Investigations of rare species in the Project Area and Local Study Area were conducted in 1996-1999 and in 2003-2004. Species specific field surveys for state-listed species documented by NHESP as potentially occurring on, or in the vicinity of, the Airport were undertaken. Surveys were conducted where suitable habitat was present on-site for rare species or where rare species were documented previously on-site.

Additional intensive field surveys were conducted in 2005 to determine the extent of the populations of state-listed species recorded previously on, and in the vicinity of, the Airport. These surveys were conducted to determine the impact of the No-Action Alternative and the Preferred Alternative on the local population of state-listed species recorded in the Local Study Area and to meet the requirements of the Secretary's Certificate on the DEIR. Survey results were provided to NHESP in May 2005.

4.6.3 Affected Environment

The Project Area and Local Study Area are in a predominantly developed region in which land uses include residential, light industrial, commercial, transportation, and undeveloped land. The Acushnet Cedar Swamp and the Apponagansett Swamp are important biotic communities in southeastern Massachusetts. The Acushnet Cedar Swamp State Reservation is a National Natural Landmark containing an Atlantic white cedar swamp and several state-listed species. This area and portions of the Apponagansett Swamp are also shown on the NHESP BioMap as an area of BioMap Core Habitat and Supporting Natural Landscape (Figure 4.6-1).

In 1995, NHESP identified seven state-listed species potentially occurring on, or in the vicinity of, the Airport:

- Eastern box turtle (*Terrapene carolina*) - state-listed Species of Special Concern;
- Attenuated bluet damselfly (*Enallagma daeckii*) - state-listed Species of Special Concern;
- Massachusetts clam shrimp (*Limnadia lenticularis*) - state-listed Species of Special Concern;
- Pale green pinion moth (*Lithophane viridipallens*) - state-listed Species of Special Concern;
- Swamp oats (*Sphenopholis pensylvania*) - state-listed Threatened;

- The Mystic Valley amphipod (*Crangonyx aberrans*) - state-listed Species of Special Concern; and
- Spotted turtle (*Clemmys guttata*) - state-listed Species of Special Concern.

Field investigations and surveys undertaken since 1995 determined that five state-listed species then under the jurisdiction of NHESP occurred in the Local Study Area:

- The Mystic Valley amphipod;
- Spotted turtle;
- Eastern box turtle - state-listed Species of Special Concern;
- Coastal swamp amphipod (*Synurella chamberlaini*) - state-listed species of Special Concern; and
- Four-toed salamander (*Hemidactylium scutatum*) - state-listed Species of Special Concern.

The Mystic Valley amphipod, the spotted turtle, and the four-toed salamander are no longer state-listed Species of Special Concern. The Mystic Valley amphipod was de-listed in 2004, the spotted turtle was de-listed in 2006, and the four-toed salamander was de-listed in 2008. These species are, therefore, not addressed further in this assessment.

In March 1995, NHESP also identified Atlantic white cedar swamp as occurring in the vicinity of the Airport. However it is actually located north of the Airport and outside the Project Area. This community is a state-listed priority community. Priority communities do not have any regulatory status. This community was discussed in the Biotic Communities section (Section 4.10) of the DEIS/DEIR.

The American bittern (*Botaurus lentiginosus*), a state-listed Endangered species, was recorded on two occasions during field surveys conducted in the spring of 2004. One bird and a nest were observed in Wetland M in common reed emergent habitat. Intensive field surveys conducted in 2005 failed to record this species indicating that there is no persistent American bittern population in the Local Study Area. This species, therefore, is not addressed further in this assessment.

Surveys for the attenuated bluet damselfly, Massachusetts clam shrimp, pale green pinion moth, and swamp oats (identified by NHESP in 1995 as potentially occurring in the Local Study Area) did not reveal any evidence of these species within the Local Study Area. In its comments on the ENF (see Appendix D.7, Appendix A of the DEIS/DEIR), the NHESP stated that the population of swamp oats in the Apponagansett Swamp would not be directly impacted by the extension of RW 5-23, but that the NHESP would need to review wetland replacement plans to ensure no impacts occur from wetland mitigation. These species are not addressed further in this

assessment; however, wetland replacement plans would be provided to NHESP to ensure no impacts occur to swamp oats from wetland mitigation.

No federally-listed species were identified to occur in the Project Area or Local Study Area, based on correspondence with the USFWS dated September 6, 2000 (see Appendix D.7, Appendix C of the DEIS/DEIR). However, the USFWS comment letter on the DEIS/DEIR dated May 2, 2005, identified that the proposed project may affect the New England cottontail rabbit, a federally-listed Species of Concern. According to this correspondence, potential New England cottontail rabbit habitat exists in the Local Study Area. The proponent has requested clarification from the USFWS that habitat for this species exists in the Local Study Area.

Listed Species in the Project Area

Coastal swamp amphipod and the eastern box turtle are the only two state-listed species found within the Local Study Area. The distribution of state-listed habitat is shown on Figure 4.6-2. The acreage of habitat in the Local Study Area for eastern box turtle is listed in Table 4.6-1. The eastern box turtle is a habitat generalist and is likely to occupy the majority of upland vegetated habitats in the Local Study Area.

Coastal Swamp Amphipod

The coastal amphipod can be found within the Local Study Area, which includes ditches, permanent pools, and emergent marshes. However it does not occur within the proposed areas of wetland fill; specifically, it was not found in the West Ditch. The coastal swamp amphipod is a state-listed Species of Special Concern found in heavily vegetated, slow, coastal wetland stream outlets of red maple and Atlantic cedar swamps in Buzzards Bay moraine deposits. It is also found in emergent marshes, bogs, ponds, and ditches. The status of the species in Massachusetts is uncertain due to the lack of investigation and the nocturnal behavior of this amphipod. Suitable habitat occurs on the Airport property and individuals have been identified in wetlands at the end of RW 5 and RW 23.

Eastern Box Turtle

The eastern box turtle is a state-listed Species of Special Concern. The eastern box turtle is found in both dry and moist woodlands, brushy fields, marshes, bogs, stream banks, and well-drained bottomlands, particularly in areas with large amounts of woody debris. It spends the majority of its life cycle on land, but will enter shallow pools and streams to avoid extreme summer temperatures. Females usually lay four or five eggs in well-drained soils in hay fields, gardens, lawns, and other open areas. Nesting occurs between May and July, and hatchlings emerge in September. The hatchlings may overwinter in the nest and emerge the following spring. Immediately after hatching the juveniles leave the nest and burrow in mud or sphagnum moss of a nearby marsh or pool.

Suitable habitat for eastern box turtle occurs throughout the Project Area and Local Study Area. The habitat map includes approximately 62 acres of unmaintained grass and/or shrub, upland shrub and/or sapling, and potential nesting areas of bare sandy soils and unmaintained grass found within the New Bedford Airport property line. There are a total of approximately 144 acres of maintained grass and 349 acres of wetlands within the Airport property that would not be suitable habitat for this species.

During 2004 investigations two box turtle shells were observed. One was observed along the fence line, northwest of RW 5 and southwest of RW 14. The second was observed on the ground east of RW 32 between Wetland K and a Wetland H ditch. No turtles were observed during the 2005 field surveys. In 2008 there were three confirmed sightings of this species in uplands at or near the RW 5 end.

Table 4.6-1 Eastern Box Turtle Habitat in the Local Study Area

Type	Eastern Box Turtle Habitat Area (Acres)
Unmaintained Grass	29.85
Upland shrub	27.73
Nesting - bare sandy soils	3.12
Nesting - Unmaintained Grass	1.57
Total	62.27

4.6.4 Environmental Consequences

Potential direct, indirect, and secondary impacts to state-listed species were evaluated for the No-Action Alternative and the Preferred Alternative.

Direct Impacts

Long-term direct effects include habitat loss or conversion from vegetation management. Indirect impacts may include habitat degradation associated with clearing, grading, and construction, habitat fragmentation, and the potential expansion of invasive species. Table 4.6-2 summarizes direct and indirect impacts to state-listed species.

There are no federally-listed species within the Project Area or Local Study Area. Therefore, there would be no direct effects on federally-listed threatened and endangered species.

No-Action Alternative

No direct environmental impacts to state-listed species are anticipated for the No-Action Alternative because the No-Action Alternative does not involve physical changes to the Airport. It is anticipated that there would be continuing mortality of turtles crossing roadways or runways. Incidental mortality in slow-reproducing species such as the eastern box turtle could have long term effects on their population.

The No-Action Alternative would require continued implementation of the Airport's VMP, which would include the proposed new tree clearing at the RW 5 and RW 23 ends, as discussed in Section 4.4 *Wetlands and Waterways* (Table 4.4-7 and Figure 4.4-8) and shown on Figure 4.6-3. Approximately 263 acres (180 acres of wetland vegetation and 83 acres of upland vegetation) are currently being managed at the Airport, or would be managed as part of the proposed additional tree clearing at the RW 5 and RW 23 ends (Table 4.4-7). Continued implementation of the Airport's VMP would maintain existing habitat characteristics in the Local Study Area and would not further impact state-listed species habitat. Since the eastern box turtle prefers more open early-successional habitats, vegetation management in uplands at the Airport is likely to benefit the species by maintaining optimal habitat characteristics. The Airport currently is required to "sweep" all vegetation management areas prior to using heavy equipment, to ensure that there is no incidental mortality of eastern box turtles.

Table 4.6-2 Potential Impacts to State-Listed Rare Species

Alternative	Species	Status[1]	Direct Impacts	Indirect Impacts
No-Action Alternative	Coastal swamp amphipod	SC	No impacts	Potential minor sedimentation impacts from vegetation management.
	Eastern box turtle	SC	Incidental mortality on roads or taxiways Improve habitat quality	No impacts
Preferred Alternative				
	Coastal swamp amphipod	SC	No impacts	Potential minor sedimentation impacts from vegetation management.
	Eastern box turtle	SC	Loss of habitat, incidental mortality during construction, or on roads or taxiways Habitat enhancement by removing trees and promoting shrub habitat	No impacts

1 State-listed Species of Special Concern under the jurisdiction of MA NHESP.

Preferred Alternative

Direct impacts to state-listed species for RW 5-23 safety improvements are described below for the Preferred Alternative.

The RW 5-23 safety improvements would likely result in a loss of nesting habitat potentially used by the eastern box turtle along the ILS road. The eastern box turtle is a habitat generalist, occurring in the majority of vegetated habitats in the Local Study Area. Constructing the RSAs at the RW 5 and RW 23 ends, and constructing Wetland Mitigation Areas 5 and 6 would likely result in the loss of a small amount of basking, foraging, and nesting habitat in the Local Study Area for this species. The loss of a small percentage of foraging, basking, and nesting habitat for eastern box turtle is not considered significant given the large area of suitable habitat for this species in, and in the vicinity of, the Local Study Area. The eastern box turtle is a habitat generalist and can use cleared and scrub-shrub areas as basking and foraging habitat. Figure 4.6-4 shows the impacts to eastern box turtle habitat.

Construction at the RW 5 and RW 23 ends in the absence of mitigation may result in temporary incidental mortality of eastern box turtle. As discussed in Section 4.4.4, *Wetlands and Waterways*, vegetation management for RW 5-23 safety improvements would require clearing new areas of vegetation (areas additional to vegetation cleared, or proposed to be cleared, as part of the No-Action Alternative). A total of approximately 21.97 acres of wetlands would be cleared of any individual trees if they obstructed airport safety areas (Table 4.4-7, Figure 4.4-8 and Figure 4.6-3). This tree clearing would be expected to benefit eastern box turtle populations because this species is a habitat generalist and prefers open and scrub-shrub areas as habitat. Tree clearing would not preclude eastern box turtle from continuing to use cleared areas as habitat.

RW 5-23 safety improvements would not result in a loss of habitat used by the coastal swamp amphipod. The coastal amphipod can be found within the Local Study Area; however it does not occur within the proposed Project Area. As discussed above, vegetation management for RW 5-23 safety improvements would include clearing new areas of vegetation (areas additional to vegetation cleared, or proposed to be cleared, as part of the No-Action Alternative). A total of approximately 21.97 acres of wetlands would be cleared of any individual trees if they obstructed airport safety areas (Table 4.4-7). These new areas of tree clearing would not occur in coastal swamp amphipod habitat.

Indirect and Secondary Impacts

Indirect impacts are defined as the consequences of an action's direct impacts. These are generally not quantifiable, and may occur over a larger area or over a longer time. For example, removal of the tree canopy may alter the microclimate or water temperature of an adjacent wetland, which could change the habitat suitability for endangered amphipods or amphibians, possibly resulting in change in availability of food resources or diminished reproduction success. Temporary, short-term impacts during the construction period were discussed in Section 4.19 of the DEIS/DEIR.

Secondary impacts are defined as reasonably foreseeable indirect consequences to the environment caused by a proposed action that would occur either in the future or in the vicinity of the direct impacts associated with an action. Generally, secondary impacts are regarded as the results of growth or development induced as a result of the action.

No-Action Alternative

No indirect and secondary impacts to state-listed species are anticipated for the No-Action Alternative. However, if increased incidental mortality of eastern box turtles continues, it could have a negative impact on their population in the Local Study Area. Eastern box turtle sexual maturity is reached later in age. In species that mature later, it is important to maintain a balanced population with a large number of juveniles to maintain a stable population.

Preferred Alternative

RW 5-23 safety improvements may have indirect impacts to state-listed species in the Local Study Area. If increased incidental mortality of eastern box turtles continues, it could have a negative impact on their population in the Local Study Area.

The use of herbicides for vegetation management may have a negative effect on the population of coastal swamp amphipods in the Local Study Area. However, any herbicide used for vegetation management would be one that is approved for aquatic use.

Cumulative Effects

The safety improvements to RW 14-32 and the ARFF and GA facilities proposed in the DEIS/DEIR are now regarded as future projects that will be implemented sometime after the RW 5-23 improvements are complete. This section discusses the impacts of these future projects in order to assess the cumulative, long-term effects of the project.

The RW 14-32 safety improvements would likely result in a loss of basking and foraging habitat potentially used by the eastern box turtle. The eastern box turtle is a habitat generalist, occurring in the majority of vegetated habitats in the Local Study Area. Constructing RSAs at the RW 14 and RW 32 ends would likely result in the loss of a small percentage of basking and foraging habitat in the Local Study Area for this species. This loss is considered minor given the large area of suitable habitat for this species in, and in the vicinity of, the Local Study Area. The eastern box turtle is a habitat generalist and can use cleared and scrub-shrub areas as basking and foraging habitat.

Construction at the RW 14 and RW 32 ends may result in temporary incidental mortality of eastern box turtle. Without mitigation, this may have a negative impact on eastern box turtle populations. Eastern box turtles reach sexual maturity later in

age. In species that mature later, it is important to maintain a balanced population with a large number of juveniles to maintain a stable population. As currently envisioned, RW 14-32 safety improvements would result in closing Downey Street, thereby eliminating the incidental mortality of eastern box turtles crossing this roadway.

Constructing the ARFF and future GA facilities would likely result in a loss of basking and foraging habitat potentially used by the eastern box turtle. In addition to a small loss of eastern box turtle basking and foraging habitat, constructing the ARFF and future GA facilities would result in the loss of two upland areas that potentially provide nesting habitat for eastern box turtle. These areas are located between RW 32 and RW 23.

4.6.5 Mitigation Measures

This section considers measures to avoid and minimize impacts eastern box turtle habitat. It identifies potential mitigation measures to protect their habitat during construction and in the long-term future operations of the Airport.

Measures to avoid and minimize state-listed rare species impacts within the Local Study Area would be pursued throughout the development process. Measures to minimize impacts would continue through final design, including coordination with the regulatory agencies.

Avoidance

Habitat used by state-listed Species of Special Concern is present in wetlands and uplands within the Local Study Area. Because of the close proximity of state-listed wildlife species habitat to the Airport's runways, there are no feasible or practicable alternatives that that would avoid the loss of habitat. An extensive alternatives analysis was undertaken for this proposed project, as described in Chapter 3, *Alternatives Analysis*.

Avoidance of all impacts to rare species habitat would only be possible by implementing the No-Action Alternative. Chapter 3 of the FEIS/FEIR demonstrates that there are no alternatives which would allow the Airport to comply with FAA safety standards that would not alter wetlands or other habitats subject to jurisdiction under MESA. The No-Action Alternative does not fulfill the project's purpose and need because adequate RSAs would not be constructed and the safety of the airport and aviation system would not be improved.

Minimization

The design refinement process that the Airport has undertaken since publishing the ENF for proposed Airport Improvements has sequentially reduced impacts to wetlands and rare species habitats. As shown in Table 4.4-13, this design refinement process has reduced proposed wetland impacts from 75 acres to 7.33 acres currently proposed. The proposed project avoids any impacts to the Acushnet Cedar Swamp State Reservation and Atlantic white cedar swamp communities.

The proposed perimeter fence at the RW 5 end would be constructed as described in Chapter 3, with passages beneath the fence to allow eastern box turtles and other small wildlife species to freely move across the barrier.

Mitigation

The mitigation measures described below are designed to provide a net benefit for the eastern box turtle by maintaining and increasing the population size and stability of these species. An overall management plan with detailed discussion of assessment and proposed mitigation of potential environmental impacts to rare species habitat will be provided in a CMP that will be completed at a later date. Standard Operating Procedures (SOPs) for proper handling and care of rare turtles, radio-telemetry procedures, and data collection will also be provided as an appendix to the CMP.

The proponent commits to protect eastern box turtles during RW 5-23 safety area improvements and construction of Wetland Mitigation Areas 5 and 6 by installing, maintaining, and monitoring siltation fences, and by searching the construction areas and removing animals. Prior to construction, the proponent commits to a trapping program intended to place radio-transmitters on eastern box turtles to facilitate tracking animals during construction.

Short-term adverse impacts to the eastern box turtle population would be avoided or minimized by the following construction period protection measures:

- Training field construction personnel about conservation practices and to recognize and capture eastern box turtles.
- Conducting an intensive field effort of turtle surveys prior to exclusion barrier installation.
- Outfitting captured turtles with radio-transmitters and conducting nesting surveys in accordance with SOPs.
- Installing silt fence barrier or similar turtle barrier over the entire limit-of-work and prior to the initiation of any work (between October 31 through April) to ensure turtles do not have access into the construction zone.
- Constructing one-way turtle gates to allow turtles to vacate the construction site.

- Submitting a letter-report to the NHESP within 21 days of completion of pre-construction eastern box turtle field work.
- Excluding all construction-related activities from outside the limits-of-work.
- Conducting a perimeter inspection of the turtle exclusion barrier immediately following installation.
- Removing turtles from work zones driven on by construction vehicles.
- Implementing field surveys (i.e., transect, meander, and radio-telemetry techniques) between April 1 and past October 31.
- Removing turtles without radio-transmitters that were inadvertently trapped within the limits of work.
- Conducting biweekly inspections of turtle barriers, and weekly radio-telemetry tracking of eastern box turtles during the construction period.
- Reporting any mortality of a state-listed rare species observed by the turtle ecologist or other onsite personnel to the NHESP within 24 hours of the observation.
- Completing daily construction oversight reports.
- Removing all silt fencing as soon as construction is complete and/or site stabilization has occurred.

The wetland mitigation areas constructed at the Airport would be designed to support eastern box turtle habitat, as described below.

- Site 5 would be designed with upland islands and to maintain peripheral areas of tall herbaceous species.
- Site 6 would be designed to maintain peripheral areas of tall herbaceous species and open soil.
- Site 10 would be designed to selectively remove white pine trees in the adjacent upland. This will provide a more open deciduous upland plant community that is more favorable to eastern box turtles.

4.6.6 Regulatory Coordination and Compliance

The proposed project would require review under MESA because it would impact the habitat of state-listed wildlife species. As required by the Certificate of the Secretary of Environmental Affairs on the DEIR dated April 29, 2005, this section demonstrates that the proposed project is permittable under MESA.

The proponents have coordinated with the relevant regulatory agencies (USFWS and NHESP) throughout preparation of the DEIS/DEIR and this FEIS/FEIR. A letter from the USFWS (Appendix D.7, Appendix C of the DEIS/DEIR) stated that no federally Threatened or Endangered species occur within Airport property or are

present in the Study Area of the proposed project. Letters from the NHESP (Appendix D.7 or the DEIS/DEIR) and comments made during the review of the DEIS/DEIR requested that the proponent work with the NHESP to mitigate impacts to wildlife habitat. Several meetings with these agencies have occurred to review existing data, survey data, and conduct site visits of potential habitat. In a memorandum dated February 28, 2001, the NHESP indicated that a Conservation Permit would be required for the proposed project. Additional coordination is anticipated during the permitting process.

The Director of the NHESP may issue a Conservation and Management Permit if the proponent:

1) Assesses alternatives to both temporary and permanent impacts to state-listed species.
2) Demonstrates that a proposed project will impact an insignificant portion of the local population of an affected state-listed species.
3) Designs and implements a CMP that provides a long-term net benefit to the conservation of the affected state-listed species.

As documented in this section and elsewhere in the FEIS/FEIR, the proposed project can be developed to meet these criteria:

1) Chapter 3 of the FEIS/FEIR documents that a wide range of alternatives have been evaluated. There are no off-airport alternatives that would meet the purpose and need of the project, which is to improve the RSAs to meet FAA standards. As demonstrated, because of the proximity of state-listed species habitats to the existing runway ends, there are no RSA improvements for RW 5-23 that would avoid impacts to habitat of eastern box turtle, and no alternative wetland mitigation sites that would be outside of box turtle habitat.
2) A small proportion of rare species habitat known and documented to be used by state-listed rare species (eastern box turtle) would be impacted by the proposed project.
3) A conservation plan would be developed and implemented for the proposed project that would provide a "net benefit" to affected eastern box turtle. Elements of the Conservation Plan include structural measures to reduce habitat fragmentation and incidental mortality, habitat management/enhancement, population monitoring.

The proponent is committed to providing mitigation for these unavoidable impacts, and, in concert with NHESP, will continue to develop a conservation plan that provides a long-term net benefit to the eastern box turtle populations at the Airport.

4.6.7 Summary

This section presents updated information on threatened and endangered species in the Project Area and Local Study Area since publication of the NPC and addresses the requirements of the Secretary's Certificate on the NPC.

The Project Area and Local Study Area contains suitable habitat for one state-listed Species of Special Concern, the eastern box turtle. No federally-listed threatened or endangered species occur within the Project Area or Local Study Area. The proposed RW 5-23 safety improvements and wetland mitigation area construction would result in the loss of a small percentage of basking, foraging, and nesting habitat for the eastern box turtle. Without mitigation, construction at the RW 5 and 23 ends could also result in temporary incidental mortality of eastern box turtle.

The proposed RW 5-23 safety improvements would require approximately 22 acres of additional tree clearing. Tree clearing would not adversely affect the habitat of eastern box turtle in the Local Study Area, and could enhance habitat by maintaining open, shrub-dominated uplands. The proposed perimeter fence would be constructed to allow turtle passage.

Mitigation measures, including further minimization of impacts, construction measures, and habitat enhancement, would be implemented to maintain and enhance the local populations of the impacted species. The alternatives evaluated in this FEIS/FEIR are not anticipated to result in long-term adverse effects to the population of eastern box turtle as the proposed project would affect a small proportion of habitat for this species, and mitigation is proposed for all potential adverse effects. The CMP would be developed in consultation with NHESP.

4.7 Summary of Environmental Consequences

This chapter describes the existing environmental conditions within the area potentially affected by the proposed project and the environmental consequences of each reasonable alternative considered (No-Action Alternative and the Preferred Alternative). The discussion of environmental consequences includes the environmental impacts of the alternatives and any adverse environmental effects that cannot be avoided. Information provided under each impact category includes consideration of direct and indirect effects and their significance; cumulative effects; possible conflicts between the proposed project and the objectives of federal, regional, state, tribal, and local land use plans and policies; applicable permit or license requirements; and the status of interagency coordination.

Table 4.7-1 Impact Thresholds for Significant Adverse Effects

Impact Category[1]	Impact Threshold: Significant Adverse Effects
Air Quality	Proposed project would result in emissions of pollutants that would exceed National Ambient Air Quality Standards.
Coastal Resources	State determination that the proposed project would not be consistent with the Coastal Zone Management Plan.
Compatible Land Use	Proposed project would result in a significant noise impact over a noise-sensitive area within the 65 dB Day-Night Average Sound Level (DNL) contour.
Construction Impacts	Construction would create significant impacts that could not be mitigated.
Department of Transportation Act, Section 4(f)	The proposed project would involve more than a minimal physical use of a Section 4(f) property or would substantially impair the 4(f) property, and where mitigation measures would not eliminate or reduce the effects below this threshold.
Farmlands	Significant impacts are determined by the Natural Resource Conservation Service (NRCS) Form AD 1006 method. The proposed project would result in the loss of farmland with a Form 1006 score higher than 200.
Endangered and Threatened Species	Determination by the US Fish and Wildlife Service or National Marine Fisheries Service that the proposed project would be likely to jeopardize the continued existence of a federally-listed species, or result in the destruction or adverse modification of federally-designated critical habitat.
Floodplains	The proposed project would result in notable adverse impacts to natural and beneficial floodplain values.
Hazardous Materials and Solid Waste	The proposed project could not be designed to meet the applicable local, state, tribal, or federal regulations on hazardous or solid waste management.
Historical, Architectural, Archaeological and Cultural Resources	An effect on a property listed or eligible for listing on the National Register of Historic Places may be considered a significant impact, depending on the nature and magnitude of the effect.
Light Emissions and Visual Impacts	The proposed project would have an adverse effect on human activity or the use or characteristics of properties protected under Section 4(f) that could not be mitigated.
Noise	The proposed project would cause noise-sensitive areas to experience an increase in noise of DNL 1.5 dB or more at or above DNL 65 dB, when compared to the No-Action Alternative.
Environmental Justice, Children's Health and Safety	The proposed project would have disproportionately high and adverse human health or environmental effects on minority or low-income populations or disproportionate health and safety risks to children.
Socio-economic Impacts	The proposed project may have a significant effect if it results in extensive relocation of residents; extensive relocation of community business that would create severe economic hardship for the community; disruption of local traffic patterns that would substantially reduce the LOS of roads serving the Airport and surrounding communities; or a substantial loss in the community tax base.
Water Quality	The proposed project would exceed state water quality standards, result in water quality problems that could not be avoided or mitigated, or would have difficulty in obtaining required permits.
Wetlands	The proposed project would adversely affect the function of a wetland to protect municipal water supplies or sole source aquifers; would substantially alter the hydrology needed to maintain wetlands; would threaten public health, safety or welfare by substantially reducing a wetland's ability to retain floodwaters; would adversely affect wildlife habitat or fish habitat; or would be incompatible with state wetland strategies.
Wild and Scenic Rivers	No specific thresholds have been developed. Significance is determined in consultation with the Department of the Interior.

Source: *FAA Order 1050.1E*

1 Not all of these categories were considered potentially significant for the proposed project. Some were eliminated from consideration in the scoping process.

4.7.1 Direct and Indirect Impacts

For each category, each reasonable alternative is compared to the No-Action Alternative to determine the effect (beneficial or adverse) of the alternative. Where a reasonable alternative would result in an environmental impact, the FEIS/FEIR provides an analysis of whether that impact is significant, based on FAA guidance on impact thresholds for significant adverse effects provided in *FAA Order 1050.1E, Appendix A* and summarized in Table 4.7-1.

As shown in Table 4.7-2, the analysis provided in the DEIS/DEIR showed that several resources are not present within the Airport or adjacent study area (historical and archaeological resources, hazardous materials, wild and scenic rivers, farmland soils, federally-listed endangered species), or are not affected by the proposed project (land use, social and economic resources, air quality, environmental justice populations, Section 4(f) properties). These resources are therefore not evaluated in this FEIS/FEIR.

As Table 4.7-2 shows, the Preferred Alternative would result in unavoidable impacts to wetlands, wildlife habitat, floodplains, and habitat of state-listed rare species. These impacts have been minimized to the extent feasible, and would be fully mitigated by constructing compensatory wetlands, replacement stream channel, and replacement flood storage areas, as well as by taking steps to protect and enhance habitat of eastern box turtles on and adjacent to the Airport.

The proposed project is necessary to comply with FAA safety requirements, and has an overriding public interest of protecting safety of the users of the New Bedford Regional Airport, which include the commercial passenger service provided by Cape Air, the Bridgewater State College flight training school, as well as business, medical, and recreational pilots and passengers. As shown in Chapter 5 of this FEIS/FEIR, the project has been designed with appropriate mitigation measures to comply with the regulatory requirements of the environmental permits and approvals required for construction.

Table 4.7-2 Comparison of the Environmental Consequences of the No-Action Alternative and the Preferred Alternative

Category	No-Action Alternative	Preferred Alternative
Noise	Continued minor increase in aircraft noise from growth in Airport operations, but no residential receptors would be exposed to incompatible sound levels	No significant impact. Noise changes do not exceed FAA criteria. Minor increases or decreases in noise in some areas.
Land Use	No impact.	No significant impact. Land acquisition is required for airspace protection. Noise levels at sensitive receptors would not exceed FAA criteria.
Social and Economic	No impact.	Minor beneficial impact associated with construction jobs and spending.
Air Quality	No impact.	No impact.
Environmental Justice	No impact.	No disproportionate significant impact to minority or low-income populations, or to children's health and safety risk.
Water Quality	No change from existing.	No significant impact. The Preferred Alternative would meet all state Stormwater Quality Standards. Water quality would be improved by implementing BMPs that would not be employed under the No-Action Alternative. Mitigation measures would be implemented to reduce temporary construction impacts.
Section 4(f) Properties	No direct or constructive use.	No direct or constructive use.
Historical and Archaeological Resources	No impact.	No impact.
Biotic Communities	No impact.	Loss of a small amount of common habitat types, conversion of some forested areas to shrub-dominated communities to eliminate airspace obstructions.
Endangered and Threatened Species	No impact. Vegetation management conducted in compliance with turtle protective measures.	Minor loss of upland habitat potentially used by eastern box turtles. Mitigation measures would enhance habitat values and protect turtles from incidental mortality. Perimeter fence would allow turtle passage.
Wetlands and Waterways	No impact.	Unavoidable loss of 7.33 acres of federal and state wetland would be fully mitigated with no loss of area or function.
Floodplains	No impact.	No significant impact. Placing fill in the 100-year floodplain would be mitigated and would not affect flood levels or duration.
Surface Transportation	Intersection level-of-service likely to degrade to unacceptable levels at seven intersections due to regional growth in vehicular traffic.	No change in LOS.
Hazardous Materials and Solid Waste	No impact.	No impact. Construction is not anticipated to encounter contaminated soils or groundwater, and would not generate solid waste.

Table 4.7-2 Comparison of the Environmental Consequences of the No-Action Alternative and the Preferred Alternative (continued)

Category	No-Action Alternative	Preferred Alternative
Construction Impacts	No impact.	No significant impacts. Temporary minor increases in noise, air quality emissions, temporary minor adverse effects on water quality, and construction traffic impacts would be mitigated by use of appropriate BMPs.
Cumulative Impacts	The No-Action Alternative would not result in a serious deterioration of environmental functions or exceed applicable significant thresholds.	The combination of the action's impacts with other impacts would not result in a serious deterioration of environmental functions or exceed applicable significant thresholds.

4.7.2 Construction Impacts

Resources that may be affected during construction include noise, air quality, water quality, biotic communities, threatened and endangered species, and wetlands.

Anticipated temporary/transient project-related impacts during construction, and anticipated mitigation measures are summarized below and are described for each resource in Chapter 4 of this FEIS/FEIR):

- A temporary increase in project-related noise levels would occur during the construction of the proposed safety improvements. Minimization measures to reduce temporary impacts would include measures to reduce noise from construction vehicle operations, vehicle loading/unloading, and routing construction vehicles on non-residential streets.
- Temporary air quality impacts could result from direct emissions from construction equipment and trucks, and from fugitive dust emissions from earthwork. These impacts would affect only the immediate vicinity of the construction sites and access routes. Mitigation measures include specifying truck routes, establishing staging areas for equipment and materials, and utilizing construction equipment that comply with emission standards. Best Management Practices (BMPs) would be implemented to minimize the impacts from fugitive dust, including street sweeping and tire washes for trucks leaving the site.
- Water quality impacts (soil erosion, deposition of sediment in Airport waterways, discharge of iron-contaminated water) would be minimized by implementing sediment and erosion controls and appropriately designed dewatering measures during construction phases of the proposed project.
- Subsurface contamination or waste materials encountered during construction would be first identified and then mitigated by conducting preliminary investigations; contaminated soil and groundwater management; asphalt paving

and demolition debris management techniques; erosion and sedimentation controls; construction worker health and safety planning; assessment and remediation of known releases; and other BMPs.

- Noise may temporarily impact wildlife; however, mitigation measures would be implemented if warranted, and the noise would not result in significant adverse effects to biotic communities.
- Construction may result in temporary, short-term impacts to the habitat of state-listed wildlife species due to temporary changes to water quality caused by increased erosion and sedimentation and operation of construction equipment. Mitigation measures could include employing BMPs, such as sediment traps and silt fences, to prevent water quality degradation; monitoring during construction; temporarily relocating turtles, if necessary; and erecting exclusion fencing to protect the turtles.

4.7.3 Cumulative Impacts

Under NEPA (*40 CFR 1508.7*), cumulative impacts are defined as "the impact on the environment which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." The analysis of cumulative impacts for each affected resource examined whether the incremental effect of the proposed project would result in a serious deterioration of the resource, cause the cumulative effect to exceed any regulatory threshold or threshold of significant adverse effect, or affect the structure or function of the human community within the Study Area. The analysis shows that the proposed project, in the context of recent or anticipated projects, would not adversely affect the natural, built, or social environment. The combination of the action's impacts with other impacts would not result in a serious deterioration of environmental functions or exceed applicable significant thresholds.

5

Summary of Proposed Mitigation and Proposed Section 61 Findings

5.1 Introduction

As required by the Certificate, this chapter:

- Includes a proposed Section 61 Finding for all state permits required for the proposed project;
- Contains a clear commitment to mitigation, an estimate of mitigation costs (where available), and identifies the party responsible for implementing each mitigation element; and
- Includes a schedule for implementing mitigation, based on the construction phases of the project.

5.2 Construction Period Mitigation

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 project. All construction activities would comply with FAA *Advisory Circular 150/5370-10 (latest edition), Standards for Specifying Construction of Airports*.[1] On-site resident engineers and inspectors will monitor construction activities to ensure that mitigation measures are properly implemented. The construction mitigation measures are summarized in Table 5-1 and were described in detail in Section 4.19 of the DEIS/DEIR. There have been no changes to these construction mitigation measures.

1 *Advisory Circular 150/5370-10, Standards for Specifying Construction of Airports.*

Table 5-1 Summary of Construction Mitigation Measures

Mitigation Measures
Noise ■ Maintain the mufflers on construction equipment. ■ Keep truck idling to a minimum. ■ Fit any air-powered equipment with pneumatic exhaust silencers.
Air Quality ■ Use water trucks to disperse water on exposed soil. ■ Use water for compaction in the fill areas and as a dust retardant in both the soil cut areas and haul roads. ■ Consider requiring contractors to use modified construction equipment to reduce diesel exhaust emissions.
Water Quality ■ Develop and implement a Construction SWPPP in accordance with NPDES and MA DEP standards. ■ Apply water to dry soil to prevent dust production. ■ Stabilize any highly erosive soils with erosion control blankets and other stabilization methods, as necessary. ■ Reinforce slopes using a hydroseed mix with a resin base, native vegetation, or other approved methods. ■ Use sediment control methods (such as silt fences, hay bales, and temporary sedimentation basins), during excavation to prevent silt and sediment entering the stormwater system and waterways. ■ Use dewatering controls, if necessary. ■ Install a gravel entrance to prevent sediment from being tracked onto roadways and potentially discharged to surface waters. ■ Maintain construction equipment to prevent oil and fuel leaks.
Threatened and Endangered Species ■ Implement erosion and sedimentation control measures according to the SWPPP. ■ Erect exclusion fencing to protect box turtles. ■ Monitor the construction area and relocate turtles on a temporary basis if nesting activities are being adversely impacted.
Wetlands ■ Implement erosion and sedimentation control measures according to the SWPPP.
Hazardous Materials and Solid Waste ■ Implement special management procedures for any hazardous, contaminated, or special wastes generated during construction. ■ Prepare a site-specific Health and Safety Plan.

These construction-period mitigation measures would be the responsibility of the City of New Bedford, through the Airport. Specific plans for each element (the SWPPP, locations of erosion and sedimentation controls, invasive species control, turtle monitoring programs) would be developed during the final design phase of the RW 5-23 Safety Areas project and would be reviewed by the appropriate regulatory agencies (the New Bedford Conservation Commission, DEP, NHESP) as part of the permit applications.

Construction-period mitigation requirements, as listed in Table 5-1 and required by permits issued, would be incorporated into the final plans and specifications that would be the basis for the construction contract.

5.3 Project Mitigation

Potential permanent impacts resulting from construction of the RW 5-23 safety areas would be mitigated as described in Chapter 4 of this DEIS/DEIR and summarized in Table 5-2.

Table 5-2 Project Mitigation Commitments

Environmental Categories	Mitigation Measure	Approximate Cost	Implementation Schedule	Implementation Responsibility
Noise	Consider forming a Noise Working Group.	NA[1]	Completion of construction	City of New Bedford
	Reevaluate the noise environment, and the need for additional mitigation, in 2021 or when annual operations exceed 118,000.	NA	Approximately 2021	City of New Bedford
Water Quality	Prepare a SWPPP.	NA	Prior to construction	City of New Bedford
	Implement all aspects of the SWPPP including recommendations in annual updates based on new or improved procedures or changes to operations.	NA	Ongoing	City of New Bedford
	Update the Operation and Maintenance (O&M) plan in the SWPPP to include a detailed outline of inspection and cleaning schedules for stormwater management practices, including detention areas and deep sump catch basins.	NA	Prior to construction	City of New Bedford
	Construct stormwater infiltration basins in accordance with MA DEP standards.	Included in construction cost	During construction of each project	City of New Bedford
Wetlands	Replace lost wetland area and function by creation of new wetlands or by restoration of historically filled wetlands, at a 2:1 replacement:/loss ratio.	$3.86 million	During construction	City of New Bedford
	Monitor compensatory wetlands for success.	$50,000	5-year period following construction	City of New Bedford
	Monitor wetlands within the vegetation management area for invasive plant species, and implement an invasive species control plan.	Included in Vegetation Management Costs	5-year period following completion of vegetation management	City of New Bedford
Floodplains	Provide compensatory flood storage.	Included in wetland mitigation cost	During construction	City of New Bedford
Threatened and Endangered Species				
Coastal Swamp Amphipod	Create new pools and ponds in wetland mitigation areas where coastal swamp amphipod are located.	Included in wetland mitigation costs	During construction	City of New Bedford
Eastern Box Turtle	Protect animals by installing and maintaining exclusion fencing, and by searching the construction areas and removing animals. Relocate turtles on a temporary basis if nesting activities are adversely impacted.	$100,000	During construction	City of New Bedford

1 Not Available

As mitigation is not required for ground transportation, air quality, socio-economic impacts, environmental justice, children's health and safety risks, historic resources, Section 4(f) resources, coastal resources, wild and scenic rivers, farmland, natural resources, light emissions, and energy supply, these resource categories are not included in Table 5-2.

5.4 Proposed Section 61 Findings

These Proposed Section 61 Findings for the proposed project have been prepared to comply with the requirements of Massachusetts General Laws, Chapter 30, Section 61, and in accordance with MEPA regulations at 301 CMR 11.07(6)(k), which requires state agencies and authorities to review, evaluate, and determine the impacts on the natural environment of all projects or activities requiring permits issued by the state, and to issue findings describing the environmental impacts, if any, and certifying that all feasible measures have been taken by the project proponent to avoid or minimize these impacts.

The Massachusetts Aeronautics Commission (MAC) is the lead state agency responsible for project funding. Section 61 Findings will also be required for those state agencies with permit-issuing responsibilities:

- Massachusetts DEP, for the Wetlands Protection Act permit (Variance) and Section 401 Water Quality Certification.
- Massachusetts Natural Heritage and Endangered Species Program, for the Conservation and Management Permit required under the MESA.

5.4.1 Project Description

The proposed project as described in the NPC was developed to satisfy the purpose of, and need for, the project: to enhance the safety of aircraft and passengers using the New Bedford Regional Airport by improving the RSAs for RW 5-23 to meet FAA safety standards.

With the current use and forecasted increase in operations at the Airport, the construction of adequate safety areas is necessary to meet FAA's safety standards. Enhancing the safety areas on the ends of the existing runways would reduce the potential for accidents or incidents to occur at the Airport. The project proposal is to construct safety areas at the ends of both runways that are required to meet FAA standards.

As described below, two alternatives are evaluated in this FEIS/FEIR:

- **No-Action Alternative —** Only maintenance-related projects currently in the Airport's FAA CIP would be completed under the No-Action Alternative. These projects include the purchase of SRE and crack sealing airfield pavement. Routine maintenance, such as vegetation maintenance, would also need to be conducted in order to keep the Airport operational.
- **Preferred Alternative —** The Preferred Alternative includes constructing standard Runway Safety Areas at both ends of Runway 5-23.

Detailed descriptions of the project alternatives are provided in Chapter 3 of this FEIS/FEIR, with an evaluation of other alternatives that were considered but rejected.

5.4.2 History of MEPA Review

In March 1995, the New Bedford Airport Commission submitted an ENF to the Massachusetts Executive Office of Environmental Affairs (EOEA) for a proposed expansion program (EOEA Number 10316). The expansion program consisted of extending RW 5-23 by 3,000 feet, for a total length of 8,000 feet, to provide sufficient length for larger aircraft such as cargo planes. The expansion program also included a number of other improvements such as improving RSAs, realigning and reconstructing Taxiway B, constructing a new taxiway, and constructing a new terminal building. Based on the potential adverse environmental impacts of the expansion program, the ENF (EOEA Number 10316) concluded that preparation of an EIR would be necessary. The Secretary of Environmental Affairs of the EOEA issued a certificate on the ENF (Secretary's Certificate) on May 10, 1995, confirming the need to prepare an EIR.

On January 22, 2003, an ENF (EOEA Number 12054) was submitted to the EOEA for construction of a GA ramp and a 430-foot extension of Taxiway B (see Appendix A of the DEIS/DEIR). The EOEA confirmed that these activities would not require further MEPA review.[2] On March 25, 2003, a NPC was filed with the EOEA requesting permission to proceed with the realignment and relocation of Taxiway B prior to completing the DEIS/DEIR for the proposed project as a whole. The realignment and relocation improvements described in the NPC were different than those originally proposed in the ENF dated May 10, 1995, requiring an increase of 4.8 acres of impervious area rather than an increase of 12.2 acres, as originally proposed. On April 8, 2003, a Phase One Waiver Final Record of Decision was issued by the EOEA allowing the Taxiway B improvements to go ahead. These improvements are not part of the proposed project components being examined in this FEIS/FEIR.

On February 15, 2005 a DEIR was submitted to the EOEA for the EWB Improvements Project. On April 29, 2005 the Secretary issued a Certificate finding that the DEIR did not adequately and properly comply with the requirements of MEPA, and required that a Supplemental Draft EIR (SDEIR) be prepared.

2 Letter from James Hunt of EOEA dated August 7, 2003.

On February 26, 2007 a Notice of Project Change was submitted to the MEPA office. The NPC was submitted in response to the DEIR Certificate, and describes the changes to the project to reduce impacts to sensitive resources and provide more detailed information on mitigation measures. The NPC addressed all requirements of the Certificate. On April 6, 2007 the Secretary issued a Certificate allowing the proponent to prepare a Final Environmental Impact Report, and provided a scope detailing the requirements of that FEIR.

5.4.3 Related Permits and Approvals

The proposed project will require permits and approvals from several local, state, and federal agencies. Table 5-3 lists the permits and approvals that are anticipated for the RW 5-23 safety improvements.

Table 5-3 Possible Permits or Approvals

Agency	Approval or Permit
FAA	Airport Layout Plan (ALP) approval NEPA Record of Decision Federal funding approval Section 4(f) Determination Section 106 Finding
USACE	Section 404 Permit
U.S. EPA Region I	NPDES Permit for stormwater discharges and construction period
MA DEP	Variance, MA Wetlands Protection Act Section 401 Water Quality Certificate
MAC	State funding approval Section 61 Finding
MA Natural Heritage and Endangered Species Program	Conservation and Management Permit
MA Coastal Zone Management Program	CZM Consistency Determination

5.4.4 Overview of Project Impacts and Mitigation Measures

The FEIS/FEIR demonstrates that the environmental impacts of the proposed project are unavoidable, have been minimized to the greatest extent practicable, and are amenable to mitigation. The following sections describe, by resource category, the impacts anticipated and associated mitigation measures. Tables 5-1 and 5-2

summarize the proponent's mitigation commitments and their implementation schedule.

Noise

FAA Order 1050.1E states that "significant impact" occurs when analysis shows that the proposed action will cause noise sensitive areas to experience an increase in noise of DNL 1.5 dB or more at or above DNL 65 dB noise exposure when compared to the No-Action alternative for the same timeframe. The proposed runway safety improvements would not result in a significant noise impact to any sensitive site, and would not warrant sound insulation or other mitigation.

The proponent will investigate additional voluntary mitigation measures as suggested in the Secretary's Certificate.

Noise Study

At the time when actual annual operations exceed 118,000 prior to 2021 or 125,000 per year after (or during) 2021, or a new and substantially different long-range forecast is developed, the Airport will apply for FAA funding to complete a Part 150 study to identify noise impacts and potential mitigation measures, which could include sound insulation, voluntary acquisitions, or operational noise abatement measures.

Noise Monitoring Program

The Airport currently does not monitor noise levels in the surrounding community, and does not maintain a log of noise complaints. The City plans to hold a public meeting during the FEIS/FEIR review period to discuss the proposed safety improvements and noise concerns. Following these meetings, the proponent will evaluate installing one or more permanent noise monitors in key locations, and developing a system to track noise complaints. The FAA has stated that permanent noise monitoring is not required for this project and the FAA would not fund noise monitoring at this airport because of its limited noise impact. Any noise monitoring would be funded by the City of New Bedford.

Noise Working Group

The City of New Bedford will consider forming a Noise Working Group to study airport-related noise issues, including monitoring and reporting, in conjunction with the proposed safety improvements.

Air Quality

Besides the suppression of fugitive dust during construction, no mitigation measures specifically addressing air quality are planned for the proposed action. This is appropriate because the net emissions increases will be insignificant. In addition, mitigation included to address other environmental concerns will not materially affect the basis for the characterization of future emissions associated with either of the alternatives considered.

Water Quality

The proposed action would result in an increased amount of impervious surfaces associated with the RW 5-23 Safety Areas. These areas would not generate contaminants, as the runway and taxiway areas would not be sanded and would not convey automobile traffic.

Mitigation of increases in peak discharge rates would be provided by constructing infiltration areas and water quality swales. Proposed locations for the infiltration basins were based on consideration of the anticipated drainage patterns, avoidance of disturbance to wetlands, and the availability of land.

Water Quality Control

The following water quality control measures would be put in place:

- Proper implementation of all aspects of the SWPPP including the recommendations in annual updates based on new or improved procedures or changes to operations.
- Update the Operation and Maintenance (O&M) plan in the SWPPP to include a detailed outline of inspection and cleaning schedules for stormwater management practices.

Operations and Maintenance

Protecting water quality would require ongoing maintenance of these control systems. Everyday procedures at the Airport would also be managed to reduce the impacts of operations on water quality.

The infiltration basins proposed for the Preferred Alternative would require specific maintenance procedures to ensure proper function. There will be seasonal inspections of the basins as well as inspections immediately following any large storms. These inspections will check for accumulated sediment and debris, invasive plants, erosion, standing water, and any other indication that the basin is not in proper condition. Replacement vegetation and soil may be required if these inspections find that the basins are clogged, eroded, or overrun with incompatible

plant species. The maintenance requirements and inspection schedule will be stated in detail in the O&M plan to be included in the Airport's SWPPP.

Proper spill control procedures would be followed at the Airport to minimize operations-related contamination. The existing Spill Prevention, Control, and Countermeasures plan would be updated and followed to minimize the risk of accidental contamination.

Construction Mitigation

The minor construction activities (vegetation management) associated with the No-Action Alternative would have negligible water quality impacts.

Without the appropriate mitigation measures in place, construction of the Preferred Alternative could result in water quality impacts from soil erosion and deposition of sediment in nearby waterways. Oil or fuel leaks from construction equipment may potentially impact water quality. However, all required mitigation measures would be strictly implemented.

The Preferred Alternative would disturb greater than one acre of land and therefore would require a NPDES Stormwater General Permit for Construction Activities. This permit requires the development and implementation of a SWPPP that includes specific sedimentation and erosion control measures for the entire duration of the construction activities. Standard 8 of the Massachusetts Stormwater Management Policy also requires the use of erosion and sediment controls during construction. Proper implementation of the SWPPP would ensure no negative impacts would occur from construction-related stormwater management. The types of mitigation measures listed below would be included in the SWPPP to minimize sedimentation and erosion:

- Applying water to dry soil to prevent dust production.
- Stabilizing any highly erosive soils with erosion control blankets and other stabilization methods, as necessary.
- Reinforcing slopes using a hydroseed mix with a resin base, native vegetation, or other approved methods.
- Using sediment control methods (such as silt fences, hay bales, and temporary sedimentation basins), during excavation to prevent silt and sediment entering the stormwater system and waterways.
- Using dewatering controls, if necessary.
- Installing a gravel entrance to prevent sediment from being tracked onto roadways.
- Inspecting and maintaining construction equipment regularly, and repairing any leaks promptly in order to minimize potential impacts.

Wetlands

The proposed action would result in unavoidable filling of wetlands under federal and state jurisdiction. The Preferred Alternative would result in direct impact from filling of approximately 7.33 acres of wetlands under federal and state jurisdiction. These impacts would be minimized to the extent practicable, and lost wetland functions, vegetation cover, and habitat types would require compensatory mitigation at a minimum ratio of 2:1 replacement (Table 5-2). The loss of vegetated wetlands and state-regulated wetland resources areas (bordering vegetated wetland, bank, and bordering land subject to flooding) will be mitigated in accordance with federal and state regulations.

Mitigation goals were established following the DEP Wetlands Regulations and guidance and the Corps of Engineers wetland mitigation Rules and guidance, and considering the FAA requirements for wildlife hazards. The mitigation goals established were:

- 2:1 replacement of lost vegetated wetlands (bordering vegetated wetlands), within the Paskamansett River watershed and, to the extent feasible, on land owned by the City of New Bedford, for a total of 14.7 acres of wetland replacement.
- Mitigation areas would be in-kind replacement of palustrine shrub-swamp wetlands, designed to not attract hazardous wildlife.
- 1:1 replacement of lost flood storage, within the same reach of the Paskamansett River as the lost flood storage.
- Loss of the tree canopy within forested wetlands would be mitigated by restoring trees and shrubs in riparian buffer zones, to enhance wetland wildlife habitat functions, or by preservation.
- Loss of bank and stream open water would be mitigated by in-kind replacement, within the same reach of the stream.

The proponent will meet these mitigation goals by implementing the following measures:

- Constructing six compensatory mitigation areas within the airport property, collectively providing at least 14.7 acres of replacement vegetated wetland.
- Replacement wetland areas have been designed as shrub swamp habitat, to replace and enhance lost wildlife habitat consistent with FAA wildlife hazard guidance.
- Site 10 would provide compensatory flood storage (at least 7.652 cy).
- The West Ditch would be relocated into a new channel, providing 1,000 linear feet of channel and open water.

- Permanent protection of 55 acres of wetland and upland bordering the Paskamansett River.
- Loss of tree canopy would be mitigated by riparian forested habitat enhancement at Buttonwood Park (approximately 2 acres).

Floodplains

The proposed project would place fill in 3.45 acres of bordering land subject to flooding for grading at the end of RW 5. This would result in the loss of 7,652 cubic yards (4.74 acre-feet) of BLSF storage between the elevations of 54 feet and 59.5 feet. Compensatory flood storage would be provided on an incremental basis to replace the lost flood storage volume as required by the Massachusetts WPA. Mitigation Site 10 would create 11,027 cubic yards (6.83 acre-feet) of compensatory flood storage, more than the total volume required. However, compensatory flood storage cannot be provided between elevations of 56 and 58 feet; therefore, the proposed flood storage would not meet the WPA requirements. As documented in Section 4.4.8, there are no other areas of upland with a hydraulic connection to the same waterbody, at the same elevation, that could be used to provide compensatory flood storage. Therefore, a variance from the WPA will be required. The proposed mitigation meets the applicable WPA performance standards at 310 CMR 10.57(4)(a) to the greatest extent possible.

Threatened and Endangered Species

The proposed action would result in the loss of habitat for the box turtle and would require vegetation management within habitat areas used by the coastal swamp amphipod. This direct loss of habitat for state-listed rare species would be compensated by providing replacement habitat (wetlands) as described in the wetland section below and using other mitigation measures as summarized in Table 5-2.

The proposed perimeter fence at the RW 5 end would be constructed as described in Chapter 3, with passages beneath the fence to allow eastern box turtles and other small wildlife species to move freely across the barrier. Vernal pools providing suitable habitat for the coastal swamp amphipod would be constructed in at least one of the wetland mitigation areas. The created pool would be monitored to determine if the amphipod population was successfully re-established.

The mitigation measures described below are designed to provide a net benefit for the eastern box turtle by maintaining and increasing the population size and stability of these species. An overall management plan with detailed discussion of assessment and proposed mitigation of potential environmental impacts to rare species habitat will be provided in a CMP that will be completed at a later date. Standard Operating

Procedures (SOPs) for proper handling and care of rare turtles, radio-telemetry procedures, and data collection will also be provided as an appendix to the CMP.

The proponent commits to protect eastern box turtles during RW 5-23 safety area improvements and construction of Wetland Mitigation Areas 5 and 6 by installing, maintaining, and monitoring siltation fences, and by searching the construction areas and removing animals. Prior to construction, the proponent commits to a trapping program intended to place radio-transmitters on eastern box turtles to facilitate tracking animals during construction.

Short- and long-term adverse impacts to the eastern box turtle population would be avoided or minimized by the following construction period protection measures:

- Training field construction personnel about conservation practices and to recognize and capture Eastern box turtles.
- Conducting an intensive field effort of turtle surveys prior to exclusion barrier installation.
- Outfitting captured turtles with radio-transmitters and conducting nesting surveys in accordance with SOPs.
- Installing silt fence barrier or similar turtle barrier over the entire limit-of-work and prior to the initiation of any work (between October 31 through April 1) to ensure turtles do not have access into the construction zone.
- Constructing one-way turtle gates to allow turtles to vacate the construction site.
- Submitting a letter-report to the NHESP within 21 days of completion of pre-construction Eastern box turtle field work.
- Excluding all construction related activities from outside of the limits-of-work.
- Conducting a perimeter inspection of the turtle exclusion barrier immediately following installation.
- Removing turtles from work zones driven on by construction vehicles.
- Implementing field surveys (i.e., transect, meander, and radio-telemetry techniques) between April 1 and past October 31.
- Removing turtles without radio-transmitters that were inadvertently trapped within the limits of work.
- Conducting biweekly inspections of turtle barriers, and weekly radio-telemetry tracking of Eastern box turtles during the construction period.

- Reporting any mortality of a State-listed rare species observed by the turtle ecologist or other onsite personnel to the NHESP within 24-hours of the observation.
- Completing daily construction oversight reports.
- Removing all silt fencing as soon as construction is complete and/or site stabilization has occurred.

Details of the plan, and funding commitments, will be completed in consultation with the NHESP and provided in the Record of Decision (ROD).

5.4.5 Proposed Section 61 Findings

Each state agency that issues a permit for the project shall issue a Section 61 Finding in connection with permit issuance, identifying mitigation that is relied on to satisfy the Section 61 requirement. The language in the following paragraphs is a proposed Section 61 Finding that extends to cover all potential impacts of the project.

Project Name:	New Bedford Regional Airport Improvements
Project Location:	New Bedford
Project Proponent:	City of New Bedford, New Bedford Airport Commission
EOEA Number:	10316

The potential environmental impacts of the project have been characterized and quantified in the ENF, DEIR, NPC, and FEIR, which are incorporated by reference into this Section 61 Finding. Throughout the planning and environmental review process, the proponent has been working to develop measures to mitigate significant impacts of the proposed action. With the mitigation proposed and carried out in cooperation with state agencies, the (agency) finds that there are no significant unmitigated impacts.

The proponent has prepared Tables of Mitigation (Tables 5-1 and 5-2 of the FEIS/FEIR) that specify, for both temporary and permanent impact and each potential state permit category, the mitigation that the proponent will provide.

Therefore, (agency), having reviewed the MEPA filings for the New Bedford Airport Improvements project, including the mitigation measures summarized in Chapter 5 of the FEIS/FEIR, finds pursuant to M.G.L. C. 30, S. 61 that, with the implementation of these mitigation measures, all practicable and feasible means and measures will have been taken to avoid or minimize potential damage from the project to the environment.

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Circulation List

This FEIS/FEIR is being distributed to federal, state, and city agencies and to the interested parties listed on the following pages. This list includes those entities that *FAA Order 5050.4B* and *FAA Order 1050.1E* require as part of the review of the document, including representatives of government agencies and community groups concerned with the proposed project and those entities required by MEPA (*301 CMR 11.00)* and includes those entities that commented on the ENF, the DEIS/DEIR, and the NPC. Copies of this report are available at the New Bedford Public Library and on the website (http://www.newbedfordairport.com) for the proposed project. For official inquiries on the FEIS, please contact:

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New England Region, Airports Division
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Burlington, MA 01803
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Agencies and Elected Officials

Federal

- United States Army Corps of Engineers
- United States Department of the Interior, Office of Environmental Policy and Compliance
- United States Environmental Protection Agency, Headquarters and Region 1
- United States Fish and Wildlife Service

State

- Massachusetts Department of Conservation and Recreation
- Massachusetts Department of Environmental Protection, Southeast Regional Office and Boston Office
- Massachusetts Division of Fisheries and Wildlife (National Heritage and Endangered Species Program)
- Massachusetts Office of Coastal Zone Management

Local

- City of New Bedford, Mayor's Office
- City of New Bedford, Conservation Commission
- New Bedford City Council
- Town of Dartmouth, Board of Health
- Town of Dartmouth, Conservation Commission
- Town of Dartmouth, Planning Board
- Town of Dartmouth, Select Board
- New Bedford Free Public Library
  - Main Library
  - Wilks Branch
  - Howland-Green Branch
  - Casa Da Saudade
  - Lawler Branch
- Dartmouth Public Library
  - Main Library
  - North Dartmouth Branch

Other Organizations

- Bridgewater State College
- Bristol County Convention and Visitor's Center

- Coalition for Buzzards Bay
- Dartmouth Natural Resources Trust, Inc.
- Environmental League of Massachusetts
- Fall River Area Chamber of Commerce
- Friends of the Airport
- Friends of the Blue Hills
- Greater New Bedford Industrial Foundation
- Massachusetts Association of Conservation Commissioners
- Massachusetts Audubon Society
- The Nature Conservancy
- New Bedford Chamber of Commerce
- New Bedford Economic Development Council
- New England Public Employees for Environmental Responsibility
- New Bedford Regional Pilots Association
- Sierra Club
- South Coast Development Partnership
- Southeastern Regional Planning and Economic Development District
- The 300 Committee
- University of Massachusetts at Dartmouth Aviation Club
- University Of Massachusetts Dartmouth

Interested Parties

The Interested Parties listed below and denoted with an asterisk received the full FEIS/FEIR. The remaining persons submitted general comments of support or opposition and received an Executive Summary with a CD-ROM of the full FEIS/FEIR.

- Andre, Wendy
- Baker, Chris
- Baker, Philip
- Bauman, Chet
- Bennett, Timothy
- Bethell, Helen
- Bisson, Lisa
- Bonney, Jaime
- Booker, Bruce*
- Booker, John*
- Brie, Kimberly
- Brightman, Salley
- Brooks, John
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