# Charles River Natural Valley Storage Area Master Plan

## Eastern Massachusetts

**July 2025** **DRAFT REPORT**

US Army Corps of Engineers®
New England District

*The Charles River Master Plan was produced by the U.S. Army Corps of Engineers Regional Planning and Environmental Center (RPEC) for the New England District (NAE).*


# EXECUTIVE SUMMARY

Charles River Master Plan
U.S. Army Corps of Engineers
Prepared by the Southwestern Division
Regional Planning and Environmental Center (RPEC)
July 2025

## ES.1 PURPOSE

The Charles River Natural Valley Storage Area (NVSA) Master Plan (hereafter Plan or Master Plan) is a complete revision of the 1984 *Charles River NVSA Master Plan*. The revision is a framework built collaboratively to guide appropriate stewardship of the U.S. Army Corps of Engineers (USACE) administered resources at Charles River NVSA over the next 25 years. The 1984 Master Plan has served well past its intended 25-year planning horizon and does not reflect the growing population around the project and regional recreation needs.

A study for Charles River NVSA was authorized in 1965 and authorization for the project was in 1974 for flood control in conjunction with the other projects in the basin. In addition to this primary mission, the project is managed to provide recreation opportunities and protect and manage natural resources. The USACE has an inherent mission for environmental stewardship of project lands while working closely with stakeholders and partners to provide regionally important outdoor recreation opportunities.

During the 2025 Master Plan revision, Geographic Information System (GIS) and Light Detection and Ranging (LiDAR) mapping technologies were utilized to digitize the 1984 maps. Due to these more precise measurement technologies, discrepancies were found between the acreages documented in the 1984 plan and the recalculated acres. Both the 1984 and the 2025 acres may differ from the acres on record with the USACE New England District Real Estate Office or those documented within the Water Control Manual for the Charles River NVSA, which is maintained by the USACE New England District. Any water control management and real estate studies or transactions should be coordinated with the appropriate USACE offices.

The Master Plan and supporting documentation provide an inventory and analysis of goals, objectives, and recommendations for USACE lands and waters at Charles River NVSA in Massachusetts with input from the public, stakeholders, and subject matter experts. The Master Plan is primarily a land use and outdoor recreation strategic plan that does not address the specific authorized purposes of flood risk management. The Master Plan acknowledges that fluctuating water levels for flood risk management can have a dramatic effect on outdoor recreation, especially at the Charles River NVSA Boat Ramp, but flood risk mission is outside the scope of the Master Plan.

The project location is shown within the State of Massachusetts in Figure ES.1.


**Figure ES.1 Vicinity Map of Charles River NVSA**

The mapping used for this Master Plan revision uses modern satellite imagery and GIS mapping, resulting in new acreage calculations. The 1984 Master Plan did not identify land classifications. Using recent GIS measurements and LiDAR, Charles River NVSA has approximately 3,178.2 acres of federally owned fee land.

## ES.2 PUBLIC INPUT

To ensure a balance between operational, environmental, and recreational activities, USACE requested both public and agency input on the Master Plan. An

Environmental Assessment (EA) was completed in conjunction with the Master Plan to evaluate the impacts of alternatives and can be found in Appendix B.

On October 8, 2024, a public open house was held at the Millis Public Library in Millis, Massachusetts to inform the public of the intent to revise the Master Plan. The public comment period remained open for 30 days from October 8, 2024 to November 9, 2024. At the public information meeting a presentation was given that included the following topics:

- What is a Master Plan?
- What a Master Plan is Not
- Why Revise a Master Plan?
- Overview of the National Environmental Policy Act (NEPA) process
- Master Planning Process
- Instructions for submitting comments

The USACE received 1 comment from the Dover Open Space Committee for Charles River NVSA. This comment and the USACE response can be found in Appendix E.

A second public open house will be held for the Charles River NVSA Draft Master Plan revision. The purpose of this open house will be to provide attendees with information regarding the proposed Master Plan revision as well as to provide an opportunity to provide comments on the proposed Charles River NVSA Master Plan. The open house will initiate a 30-day comment period where the public and stakeholders can provide comments on the Draft Master Plan. These comments will be reviewed and addressed as the USACE revises a final version of the Master Plan.

## ES.3 RECOMMENDATIONS

The following land and water classifications were a result of the inventory, analysis, synthesis of data, documents, and public and agency input. Since the 1984 Master Plan did not designate any land classifications, all of the proposed classifications in the 2025 Master Plan are new, and are required by regulation to identify actual and projected use as shown in Table ES.1. A majority of the project will be classified as Wildlife Management under Multiple Resource Management Lands, while a small area with a natural surface parking lot and area for launching small boats will be classified as Low Density Recreation, while an old rubble dam that pre-dates the project will be classified as Project Operations. Furthermore, because of the project's unique size and scale, it is divided into 17 "Management Units." Section 5.7 of this Master Plan describes these Management Units to effectively manage the resources within those areas, using the same 17 project areas used in the 1984 Master Plan.

**Table ES.1 Proposed 2025 Land Classifications**

| Proposed Land Classifications (2025) | Acres |
|---|---|
| Project Operations (PO) | 0.8 |
| Low Density Recreation (LDR) | 0.2 |
| Wildlife Management (WM) | 3,177.2 |
| **TOTAL Acres** | **3,178.2** |

The acreages were measured using satellite imagery and GIS technology and LiDAR. The GIS software allows for more finely tuned measurements and, thus, stated acres vary from official land acquisition records and acreage figures published in the 1984 Master Plan. A more detailed summary of changes and rationale can be found in Chapter 8.

## ES.4 PLAN ORGANIZATION

Chapter 1 of the Master Plan presents an overall introduction to Charles River NVSA. Chapter 2 consists of an inventory and analysis of Charles River NVSA and associated land resources. Chapters 3 and 4 lay out management goals, resource objectives, and land classifications. Chapter 5 is the resource management plan that identifies how project lands will be managed for each land use classification and management unit. This includes current and projected needs, an analysis of existing and anticipated resource use, and anticipated influences on overall project operation and management. Chapter 6 details special topics that are unique to Charles River NVSA. Chapter 7 identifies the public involvement efforts and stakeholder input gathered for the development of the Master Plan, and Chapter 8 gives a summary of the recommended land classifications. Finally, the appendices include information and supporting documents for this Master Plan revision, including Land Classification and Park Plate Maps (Appendix A).

An Environmental Assessment was developed with the Master Plan, which analyzed alternative management scenarios for Charles River NVSA, in accordance with federal regulations including the National Environmental Policy Act of 1969 (NEPA), as amended, and USACE regulations. The EA is a separate document that informs this Master Plan and can be found in its entirety in Appendix B.

The EA evaluated two alternatives as follows: 1) No Action Alternative, which would continue the use of the 1984 Master Plan, and 2) Proposed Action. The EA analyzed the potential impact these alternatives would have on the natural, cultural, and human environments. The Master Plan is conceptual and broad in nature, and any action proposed in the Plan that would result in significant disturbance to natural resources or result in significant public interest would require additional NEPA documentation at the time the action takes place.

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# CHAPTER 1 – INTRODUCTION

## 1.1 GENERAL OVERVIEW

The Charles River Natural Valley Storage Area (NVSA) Project is located in eastern Massachusetts within the Charles River Watershed. The watershed extends from Boston harbor southwesterly to near the Rhode Island border. The project consists of seventeen separate areas totaling 8,103 acres in two cities and fourteen towns in the middle and upper watershed. The project location is shown on Figure 1.1.

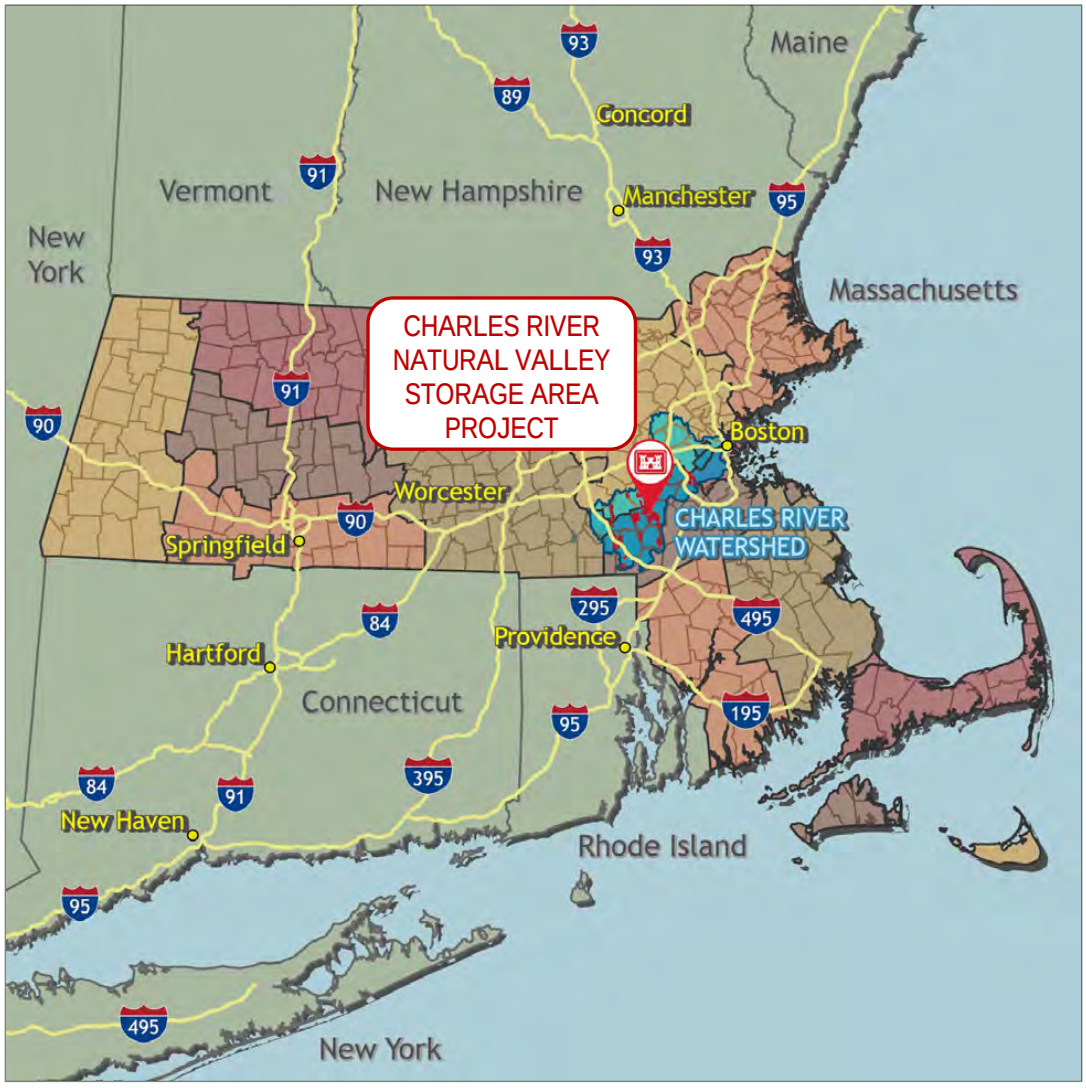



**Figure 1.1 Charles River NVSA Vicinity Map**

The Master Plan is intended to serve as a comprehensive land and recreation management guide with an effective life of approximately 25 years. The focus of the Plan is to guide the stewardship of natural and cultural resources and make provision for outdoor recreation facilities and opportunities on federal land associated with

Charles River NVSA. The Master Plan identifies conceptual types and levels of activities, but does not include designs, project sites, or estimated costs. All actions carried out by the USACE, other agencies, and individuals granted leases to USACE lands must be consistent with the Master Plan. The Master Plan does not address the flood risk management purpose of Charles River NVSA.

The 1984 Master Plan for Charles River NVSA was written as a Master Plan for Recreation Resources Development (Design Memorandum). There has not been a Master Plan revision completed since the original 1984 Master Plan which has served past the intended planning horizon of 25 years. In 1999, the USACE discontinued use of the Design Memorandum system as a means of organizing the many phases of civil works projects, therefore, the term “Design Memorandum” is not used in the title of this Master Plan revision. Furthermore, since Master Plans address a variety of land uses and classifications, the 1984 title “Master Plan for Recreation Resources Development” is not used and is just titled Master Plan as described in EP 1130-2-550. In 2017, Charles River NVSA and New England District staff began a revision of the Master Plan that was ultimately not completed.

National USACE missions associated with water resource development projects may include flood risk management, water supply, water quality, navigation, recreation, environmental stewardship, and hydroelectric power generation. Most of these missions serve to protect the built environment and natural resources of a region from the climate extremes of drought and floods. These multiple missions help to create a more resilient and sustainable region for the health, welfare, and energy security of its citizens. Mitigation, while not a formal mission at USACE lakes, may be implemented to achieve the stewardship and recreation missions. Maintaining a healthy vegetative cover, including native grassland or tree cover where ecologically appropriate on Federal lands within the constraints imposed by primary project purposes, helps reduce stormwater runoff and soil erosion, mitigates air pollution, and moderate temperatures.

## 1.2 PROJECT AUTHORIZATION

The initial study of the Charles River Watershed was authorized by a resolution of the House Committee on Public Works adopted June 24, 1965. This resolution requested that the Board of Engineers for Rivers and Harbors determine the advisability of providing "improvements in the interest of flood control, water supply, recreation, water quality control, navigation, tidal flood control, allied purposes and related land resources."

As a result of this study, the New England Division, in 1972, completed the Water Resources Development Plan for the Charles River Watershed Natural Valley Storage Project. This report recommended the implementation of a plan to acquire certain critical wetland areas in the Charles River Watershed for natural storage of flood waters, a plan termed the Charles River Natural Valley Storage Project. This plan/project was subsequently authorized by the passage of Public Law 93-251, the Water Resources Development Act of 1974. The approved project authorized the Federal acquisition of approximately 8,100 acres of wetland and floodplain as areas of natural valley storage

to provide flood protection to communities in the lower watershed. The natural storage capacity of these wetlands is aided by incidental manmade structures such as culverts and bridge openings which restrict runoff. Preservation of these key wetland areas in the upper and middle parts of the watershed will allow for their continued ability to retain and slow flood waters and thus reduce the flood crests in the more developed areas of the lower watershed.

## 1.3 PROJECT PURPOSE

Acquisition of project lands for Charles River NVSA began in May 1977 and was completed in September 1983 at a cost of $8,300,000. The primary authorized purpose of the project is flood risk mitigation for the Charles River Watershed that extends from Boston harbor southwesterly to near the Rhode Island border and is comprised of 17 separate areas of natural wetlands in the middle and upper portions of the Charles River Watershed. The areas are located in 2 cities and 14 towns within Middlesex, Norfolk, and Suffolk counties. Recreation opportunities and fish and wildlife conservation are additional benefits of the watershed.

In addition to these missions, the USACE has an inherent mission for environmental stewardship of project lands while working closely with stakeholders and partners to provide regionally important outdoor recreation opportunities. Other laws, including but not limited to Public Law 91-190, National Environmental Policy Act of 1969 (NEPA) and Public Law 86-717, Forest Cover Act, place emphasis on the environmental stewardship of Federal lands and USACE-administered Federal lands, respectively.

## 1.4 PURPOSE AND SCOPE OF MASTER PLAN

In accordance with Engineering Regulation (ER) 1130-2-550, Recreation Operations and Maintenance Policies, Change 07, dated 30 January 2013 and Engineering Pamphlet (EP) 1130-2-550, Recreation Operations and Maintenance Guidance and Procedures, Change 05, dated 30 January 2013, most USACE water resources development projects having a federally owned land base require a Master Plan. The Master Plan works in tandem with the Operational Management Plan (OMP), which is the task-oriented implementation tool for the resource objectives and development needs identified in the Master Plan. This revision of the Master Plan aims to bring the Master Plan up to date to reflect current ecological, socio-demographic, and outdoor recreation trends that are impacting the project, as well as those anticipated to occur within the next 25 years.

The Charles River Natural Valley Storage Area Master Plan (hereafter Charles River Master Plan, Master Plan, or just Plan) is the strategic land use management document that guides the efficient, cost-effective, comprehensive management, development, and use of recreation, natural resources, and cultural resources throughout the life of the Charles River NVSA project. It is a vital tool for responsible stewardship and sustainability of the project's natural and cultural resources for the

benefit of present and future generations. The Master Plan guides and articulates USACE responsibilities pursuant to federal laws to preserve, conserve, restore, maintain, manage, and develop the land, water, and associated resources. It is a dynamic and flexible tool designed to address changing conditions. The Master Plan focuses on carefully crafted resource-specific goals and objectives. It ensures that equal attention is given to the economy, quality, and needs in the management of resources and facilities, and that goals and objectives are accomplished at an appropriate scale.

The master planning process encompasses a series of interrelated and overlapping tasks involving the examination and analysis of past, present, and future environmental, recreational, and socioeconomic conditions and trends. With a generalized conceptual framework, the process focuses on the following four primary components:

- Regional and ecosystem needs
- Project resource capabilities and suitability
- Expressed public interests that are compatible with Charles River NVSA's authorized purposes
- Environmental sustainability elements

It is important to note what the Master Plan does not address. The Master Plan does not address details of design, management and administration, or implementation. The Charles River NVSA OMP instead covers these topics. In addition, the Master Plan does not address the specifics of regional water quality, shoreline management (a term used to describe primarily vegetation modification or permits by neighboring landowners), or water level management, nor does it address the operation and maintenance of prime project operations facilities such as the dam embankment, gate control outlet, and spillway. Additionally, the Master Plan does not address the flood control or water supply purposes of the Charles River NVSA or the greater Watershed.

The previous Master Plan was sufficient for prior land use planning and management; but changes in outdoor recreation trends, regional land use, population, current legislative requirements, and USACE management policy have occurred over the past decades. Additionally, broader factors such as increasing fragmentation of wildlife habitat, national policies related to land management, and growing demand for recreational access and protection of natural and cultural resources affect Charles River NVSA and the region in general. In response to these escalating pressures and trends, a full revision of the 1984 Charles River NVSA Master Plan is necessary as set forth in this Master Plan. The Master Plan revision will update land classifications and include new resource management goals and objectives.

## 1.5 BRIEF WATERSHED AND PROJECT DESCRIPTION

The Charles River Natural Valley Storage Area project is one part of a comprehensive watershed plan for flood management. This plan also includes a multi-purpose dam at the mouth of the Charles River in Boston. The Charles River Dam was authorized for construction in 1968, completed in 1978, and is now maintained and

operated by the Metropolitan District Commission (MDC). This new dam and three navigation locks replace an older dam and one navigation lock constructed in 1910, 2,250 feet upstream of the new facility. The old dam was constructed by the Commonwealth of Massachusetts to control the water level in the lower Charles River, impounding 8.6 miles of the river and creating a pool between the cities of Boston and Cambridge known as the Charles River Basin. (The term "Charles River Basin" is locally used in reference to this lower portion of the, river, while the "Charles River Watershed" refers to the entire drainage area of the river and its tributaries).

The Charles River Dam improves flood control and navigation in the Charles River Basin through use of three navigation locks and a pumping station. At times of high tide in Boston harbor and flood discharges into the lower basin, the pumping station is capable of maintaining the pool level of the Charles River Basin below flood stages. The MDC also maintains the Mother Brook Diversion in Dedham. This diversion was originally constructed in 1640 to augment flow of the nearby Neponset River for mills on that river. One third of the flow of the Charles River is diverted at this point. The MDC has also provided improvements to Silk Mill Dam in Newton Upper Falls and channel improvements along two miles of the river from the Silk Mill Dam upstream to the Kendrick Street Bridge.

## 1.6 PROJECT ACCESS

While the watershed is crossed by many major state and local highways, access to most of the project lands is limited due to lack of official parking and lack of direct road frontage of some areas. With the exception of the Charles River Boat Ramp, official parking areas are located on adjacent conservation lands that have foot trail or canoe/kayak access to project lands. For access information at specific NVSA areas, please see Chapter 5.

## 1.7 PRIOR DESIGN MEMORANDA AND PLANNING REPORTS

Design Memoranda (DM) and Project Reports approved and set forth design and development plans for all aspects of the project including real estate acquisition, and the master plan for recreation development and land management prior to 1979. The USACE prepared the DMs for Charles River NVSA between 1976 and 1984. These DMs include Hydraulic Analysis, General Design, and Real Estate – Priority 1 to 4. USACE completed the Master Plan for Recreation Resources Development in 1984. A list of the DMs for Charles River NVSA is listed in Table 1.1. Other manuals and reports for the Charles River NVSA are listed in Table 1.2.

**Table 1.1 Charles River NVSA Design Memoranda**

| DM No. | Design Memoranda Title | Date Approved |
|---|---|---|
| 1 | Hydraulic Analysis | November 1976 |
| 2 | General Design – Phase 1 and 2 | September1976 |

| DM No. | Design Memoranda Title | Date Approved |
|---|---|---|
| 3 | Real Estate – Priority 1 | December1976 |
| 3A | Real Estate – Priority 2 | May 1978 |
| 3B | Real Estate – Priority 3 | September 1978 |
| 3C | Real Estate – Priority 4 | June 1979 |
| 4 | Master Plan for Recreation Development | June 1984 |

**Table 1.2 Manuals and Reports for Charles River NVSA**

| Subject | Date |
|---|---|
| Interim Report on Charles River for Flood Control and Navigation, Lower Charles River, Massachusetts (House Document No. 370, 90th Congress) | May 1968 |
| Charles River Study Report | April 1972 |
| Final Environmental Statement, Charles River Study | July 1976 |
| Natural Valley Storage Project Management Guidelines Committee; Policies and Recommendations for the Management of Natural Valley Storage Project Properties | February 1978 |
| Operational Management Plan, Charles River NVS | May 1995 |
| Intensive (Locational) Archaeological Survey of Charles River Natural Valley Storage Area | 2011 |

## 1.8 PERTINENT PROJECT INFORMATION

Table 1.3 provides general pertinent information for the Charles River NVSA. Table 1.4 provides pertinent data regarding key project information.

**Table 1.3 General Pertinent Information for Charles River Natural Valley Storage Area**

| **Location** | |
|---|---|
| Basin | Charles River Watershed |
| Stream | Charles River |
| Counties | Middlesex, Norfolk, and Suffolk |
| State/Commonwealth | Massachusetts |
| **Drainage Area** | |
| Total drainage area | 307 square miles |
| **Real Estate Acquisition** | |

| | |
|---|---|
| Fee Purchase | 3,186.52 acres originally purchased |
| Flowage Easement* | 4,891.95 acres originally purchased |

* See Section 4.2.5 for more information about Flowage Easement Land.

# CHAPTER 2 – PROJECT SETTING AND FACTORS INFLUENCING MANAGEMENT AND DEVELOPMENT

## 2.1 HYDROLOGY

### 2.1.1 Surface water

Charles River NVSA is located within the Charles River Watershed. The Charles River Watershed is located entirely within the boundaries of the Commonwealth of Massachusetts, extending from Boston harbor southwesterly to near the Rhode Island border.

Surface waters are categorized by hydrologic units. Hydrologic units are classified by the United States Geologic Survey (USGS) using a Hydrologic Units Code (HUC) system. As shown in Figure 2-1, the units are classified from largest HUC with a two-digit region (i.e., the Mid-Atlantic Region), encompassing the largest area, to a twelve-digit sub-watershed HUC. Charles River NVSA is classified by sub-watersheds as follows:

- 01 (HUC 2: Region) – New England Region
- 0109 (HUC 4: Sub-region) – Massachusetts-Rhode Island Coastal
- 010900 (HUC 6: Basin) – Massachusetts-Rhode Island Coastal
- 01090001 (HUC 8: Sub-basin) – Charles River Watershed
- 0109000106 (HUC 10: Watershed) – Upper Charles River
- 0109000107 (HUC 10: Watershed) – Lower Charles River
- 010900010601 (HUC 12: Sub-watershed) – Headwaters Charles River
- 010900010602 (HUC 12: Sub-watershed) – Chicken Brook-Charles River
- 010900010603 (HUC 12: Sub-watershed) – Bogastow Brook
- 010900010604 (HUC 12: Sub-watershed) – Stop River-Charles River
- 010900010701 (HUC 12: Sub-watershed) – Fuller Brook-Charles River
- 010900010703 (HUC 12: Sub-watershed) – Beaver Brook-Charles River

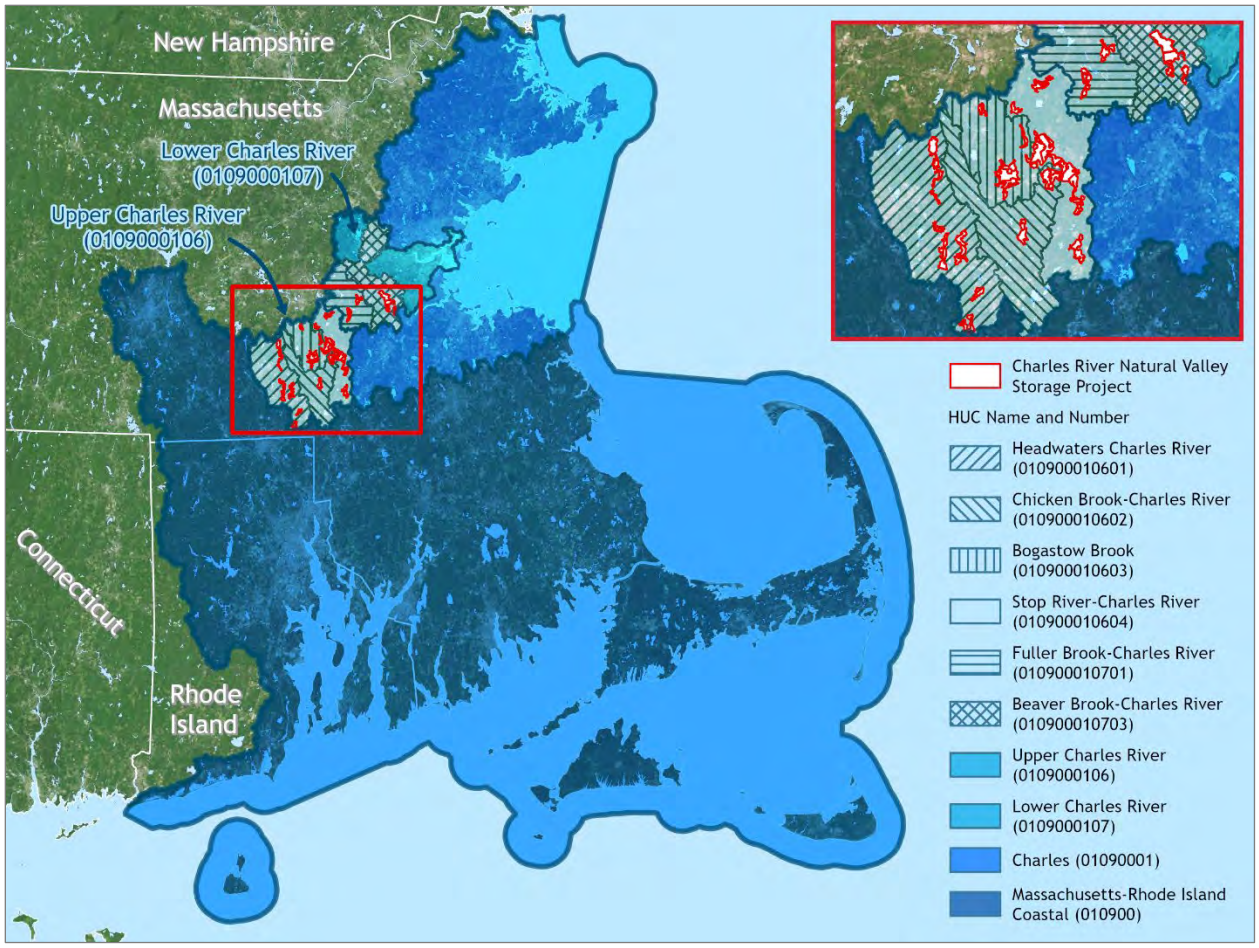



**Figure 2.1 Hydrology (HUC 6, 8, 10, 12) Map for Charles River NVSA (USGS, 2023)**

### 2.1.1 Ground water

The groundwater at Charles River NVSA is limited to New England crystalline-rock aquifers. Igneous and metamorphic rock characterize the aquifers in eastern Massachusetts. Glacial deposits of outwash, ice contact, and lacustrine sand and gravel fill ancient valleys cut into the bedrock surface and form the principal aquifers of the segment. However, in uplands and other areas where thin or barely permeable deposits of till blanket the bedrock, surficial aquifers are not readily available, and the bedrock itself is an important source of water. Most well depths range from less than 100 feet to 600 feet deep. Although the common range of well yields is only a few gallons per minute, yields from some wells may exceed 100 to 500 gallons per minute. Water in the crystalline-rock aquifers generally is suitable for most uses because crystalline rocks generally are composed of virtually insoluble minerals, water is in contact with a relatively small surface area in the joints and fractures, and water movement through the joints and fractures generally is rapid and along short flow paths. Most of the crystalline-rock aquifers in the area are interconnected with water flowing between cracks and spaces between rocks. Numerous high yield aquifers are located throughout the Charles River NVSA as shown in Figure 2.2.

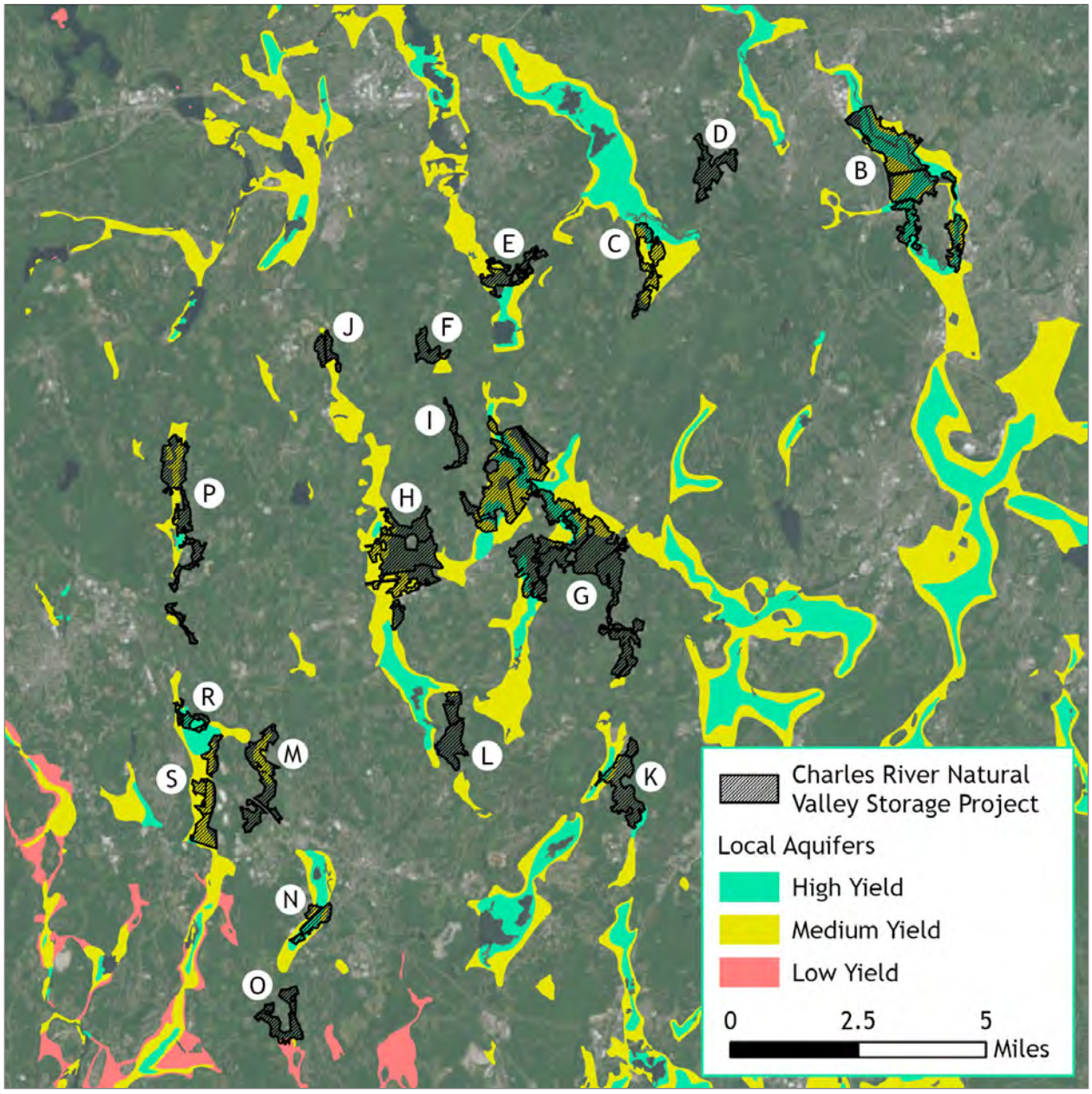



**Figure 2.2 Groundwater Map for Charles River NVSA (USGS, 2007, 2023)**

There are no water monitoring stations located on the Charles River NVSA project area, but there are several within the larger Charles River Watershed. Ground water is located in ice-contact deposits mostly within sand and gravel aquifers. Water supply tends to be fairly steady with water level fluctuating by tens of feet locally. Overall, some groundwater resources are available in the area. Areas outside of the aquifers mapped by the USGS and the state wells may have lower yields. The Charles River NVSA plays a large part of groundwater infiltration to maintain water recharge to local aquifers.

## 2.2 SEDIMENTATION AND SHORELINE EROSION

### 2.2.1 Sedimentation and Erosion

There are no U.S. Department of Agriculture sedimentation monuments installed within the Charles River NVSA. Sedimentation and erosion are part of the normal lifecycle of wetlands and river channels, and are common within the Charles River NVSA.

## 2.3 WATER QUALITY

The Massachusetts Surface Water Quality Standards (WQS) designate water quality criteria required for the designated uses of surface water. These standards allow for the protection of the chemical, physical, and biological integrity of the Nation's waters pursuant to the Clean Water Act. The Charles River NVSA contains surface waters, including the Charles River, designated as Class B warm water (MassDEP, 2025). Class B waters are designated as habitat for fish, aquatic life, and wildlife habitat, and for primary and secondary contact recreation. WQS for Class B waters include the following parameters: dissolved oxygen, temperature, pH, bacteria, solids, color and turbidity, oil and grease, and taste and odor (314 Code of Massachusetts Regulations (CMR) 4.05).

Some Class B surface waters are considered to be of high quality. The quality of these exceeds minimum levels necessary to support the national goal uses, low-flow waters, and other waters whose character cannot be adequality described or protected by traditional criteria (314 CMR 4.02(2)). The source of Mine Brook to the former Franklin Publicly Owned Treatment Works discharge is classified as high quality water. Additionally, an unnamed tributary (Sugar Brook) from the tributary's source in Millis, MA to its confluence with the Charles River is also designated as high quality water (314 CMR 4.06).

Massachusetts Department of Environmental Protection (MassDEP)'s Watershed Planning Program conducts water quality and benthic macroinvertebrate monitoring for surface waters throughout the state. Multiple stations are located along the Charles River and other surface waters within the basin. There are monitoring stations located along the Charles River, Stop River, Mill River, Mine Brook, and Dopping Brook that occur within or adjacent to the federal fee boundary. No recent sampling has occurred, for monitoring stations within the federal fee boundary (MassDEP, 2025).

The MassDEP's Integrated List of Waters identified waterbodies that do not meet surface WQS under Section 303(d) of the Clean Water Act. Impaired waters are those that do not meet the WQS. An entire waterbody may be impaired, or sub-sections of a waterbody may be listed under Section 303(d). Surface waters are designated for various use categories, such as: Fish, other Aquatic Life and Wildlife Use; Primary Contact Recreation Use; Secondary Contact Recreation Use; and Aesthetic Use. Impairments may affect uses of all or some use categories. Table 2.1 provides a summary of surface water pollutant impairments and affected uses within the federal fee

boundary. Non-pollutant impairments (e.g. aquatic invasive species, fish passage barriers, flow regime modifications) are present within the surface waters are not included in Table 2.1 (MassDEP, 2021).

**Table 2.1 Summary of impaired waterbodies within the Charles River Natural Valley Storage Area (MassDEP, 2021)**

| Waterbody Assessment Unit | Impairments | Affected Use Category |
|---|---|---|
| Charles River (MA 72-04) | Ambient Bioassays – Chronic Aquatic Toxicity; Chlordane in Fish Tissue; DDT in Fish Tissue; *Escherichia Coli (E. Coli)*; Fish assessments; Mercury in Fish Tissue; Nutrient Biological Indicators; Total Phosphorus; Temperature | Fish, other Aquatic Life and Wildlife Use |
| Charles River (MA 72-05) | Algae; Benthic Macroinvertebrates; Chlordane in Fish Tissue; DDT in Fish Tissue; Dissolved Oxygen; Dissolved Oxygen Supersaturation; Mercury in Fish Tissue; Nutrient Biological Indicators; Total Phosphorus; Turbidity | Fish, other Aquatic Life and Wildlife Use |
| Stop River (MA 72-09) | Ambient Bioassays – Chronic Aquatic Toxicity; Dissolved Oxygen; Total Phosphorus | Fish, other Aquatic Life and Wildlife Use |
| Stop River (MA 72-10) | Organic Enrichment (Sewage) Biological Indicators; Total Phosphorus | Fish, other Aquatic Life and Wildlife Use |
| Mine Brook (MA 72-14) | *Escherichia Coli (E. Coli)*; Temperature | Fish, other Aquatic Life and Wildlife Use |
| Mill River (MA 72-15) | Temperature | Fish, other Aquatic Life and Wildlife Use |
| Fuller Brook (MA 72-18) | *Escherichia Coli (E. Coli)*; Nutrient/Eutrophication Biological Indicators; Sedimentation/Siltation | Fish, other Aquatic Life and Wildlife Use |
| Trout Brook (MA 72-19) | Temperature; Nutrient/Eutrophication Biological Indicators | Fish, other Aquatic Life and Wildlife Use |
| Hopping Brook (MA 72-35) | *Escherichia Coli (E. Coli)* | Fully Supporting |

## 2.4 AIR QUALITY

The U.S. Environmental Protection Agency (EPA) has set National Ambient Air Quality Standards (NAAQS) for six principal pollutants. These include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter, and lead. An area is considered to be in attainment if it is meeting or below a given safe standard set by the EPA for the criteria pollutant.

The MassDEP monitors air quality to determine compliance with NAAQS. The Massachusetts's 2022 Air Quality Report determined that the Commonwealth of Massachusetts is currently in attainment for all six principal pollutants (MassDEP, 2023).

## 2.5 CLIMATE AND GREENHOUSE GASES (GHG)

### 2.5.1 Climate

Climatic regions are often described using Köppen Climate Classifications (KCCs) according to their main climate group, precipitation, and temperature. The Charles River NVSA has a KCC of Cfa, which is described as a humid subtropical climate (Belda et al., 2014; NOAA, 2023). This classification can be broadly described as having warm and humid summers with mild winters (Pidwirny, 2006). The Northeast region of the United States experiences extreme heat, flooding, droughts, and poor air quality (U.S. Global Change Research Program, 2023), as well as an increase in extreme precipitation events and more severe and long-lasting heatwaves.

The National Weather Service provides climatic data for weather stations through the Applied Climate Information System. The average monthly climate data was obtained using the Walpole 2 weather station, in Walpole, MA, which is in close proximity to the Charles River NVSA. Figure 2.3 includes the average precipitation for each month, as well as the average minimum, maximum, and daily average temperatures for each month.

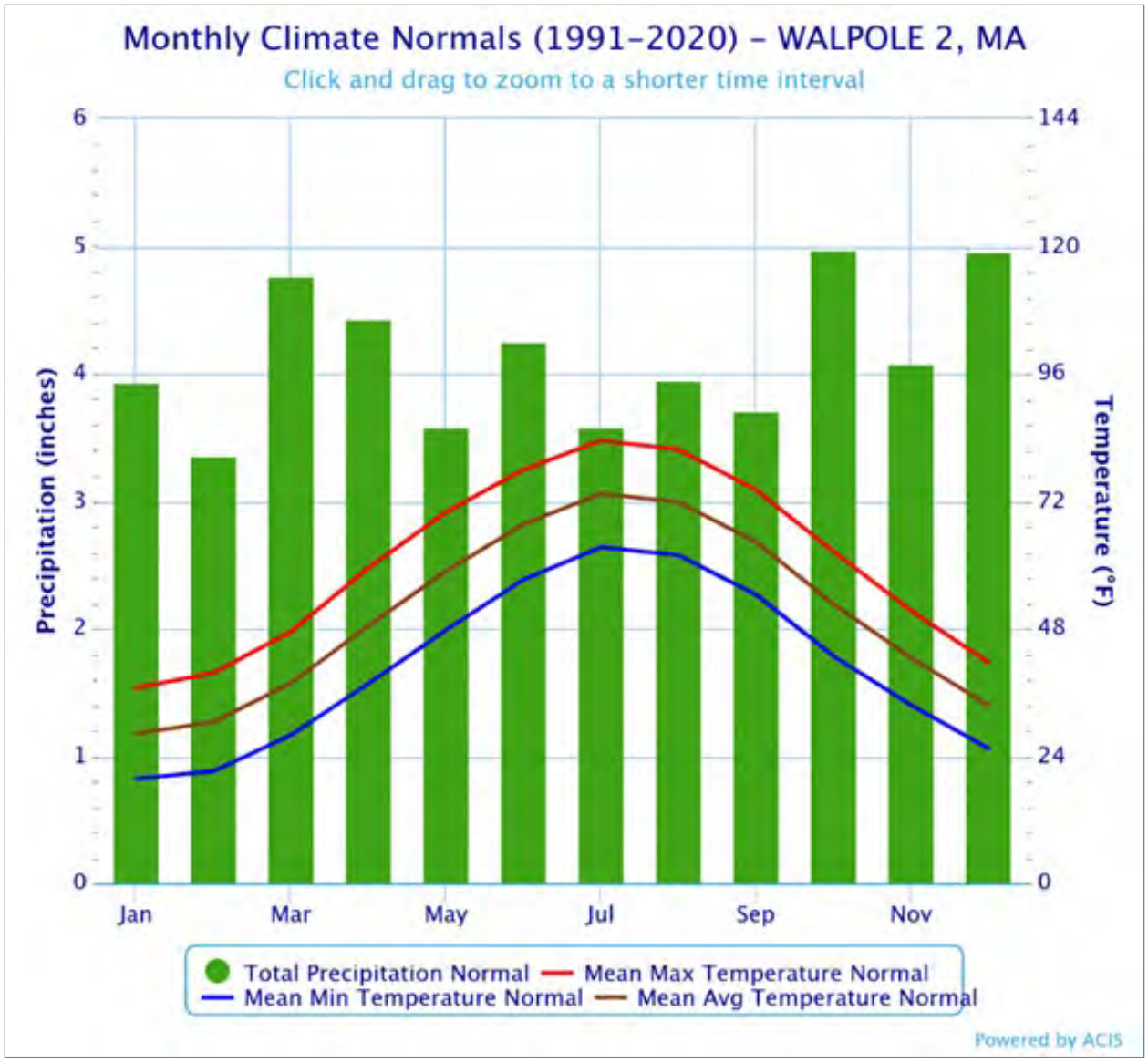



**Figure 2.3 Average monthly climate Walpole 2, Massachusetts, 1991-2020 (NOAA, 2025)**

### 2.5.2 Greenhouse Gases

The Charles River NVSA is primarily in Norfolk County, with a few federal fee lands in Middlesex County. There are 7 greenhouse gas (GHG) contributors in Norfolk County, in which 2 did not report emissions for the year 2023. There are 10 GHG contributors in Middlesex County, in which 6 did not reported emissions for the year 2023 (EPA, 2025). Tables 2.2, 2.3, and 2.4 describe reported GHG contributors in Norfolk, Middlesex, and Suffolk counties, Massachusetts. GHG emissions quantities are reported by EPA in metric tons of Carbon Dioxide equivalent ($CO_{2eq}$). The subpart column describes the type of industry the emitting facility participates in.

## Table 2.2 EPA Facility Level Information on Greenhouse Gases Tool (FLIGHT) facilities in Norfolk County, MA (EPA, 2025)

| Facility Name | City | Total Reported Emissions (mt CO2e) | Sector |
|---|---|---|---|
| Bellingham Power Generation, LLC | Bellingham | 1,217,538 | C,D |
| Bellingham | Bellingham | 444,270 | D |
| Fore River Energy Center | Weymouth | 886,337 | C, D |
| Medway Station | Medway | 96,770 | C,D |
| NSTAR Gas Company | Westwood | 78,722 | NN, W |
| Plainville Landfill | Plainville | 1,661 | C, HH |
| Potter | Braintree | 18,347 | C, D |

*Subpart Codes: D – Electricity Generation; C – General Stationary Fuel Combustion Sources; HH – Municipal Solid Waste Landfills; NN – Suppliers of Natural Gas and Natural Gas Liquids; W – Petroleum and Natural Gas Systems; I – Electronics Manufacturing

## Table 2.3 EPA Facility Level Information on Greenhouse Gases Tool (FLIGHT) facilities in Middlesex County, MA (EPA, 2025)

| Facility Name | City | Total Reported Emissions (mt CO2e) | Sector |
|---|---|---|---|
| Analog Devices, Inc./ Wilmington Manufacturing | Wilmington | 38,727 | C, I |
| Biogen Inc | Cambridge | 28, 268 | C |
| Boston Gas Company | Waltham | 343,375 | NN, W |
| Distrigas of Massachusetts, LLC | Everett | 11,382 | C, W |
| Kendall Green Energy | Cambridge | 788,060 | C, D |
| MIT Central Utility Plant | Cambridge | 163,804 | C |
| Mystic | Charlestown | 528,357 | C, D |
| The President and Fellows of Harvard University (Cambridge Allston Blackstone) | Cambridge | 79,476 | C |
| U.S. Air Force Hanscom Air Force Base | Hanscom Air Force Base | 34,054 | C |

*Sector Codes: D – Electricity Generation; C – General Stationary Fuel Combustion Sources; HH – Municipal Solid Waste Landfills; NN – Suppliers of Natural Gas and Natural Gas Liquids; W – Petroleum and Natural Gas Systems; I – Electronics Manufacturing

**Table 2.4 EPA Facility Level Information on Greenhouse Gases Tool (FLIGHT) facilities in Suffolk County, MA (EPA, 2025)**

| Facility Name | City | Total Reported Emissions (mt CO2e) | Sector |
|---|---|---|---|
| Boston University | Boston | 49,083 | C |
| Gillette Co. | Boston | 44,355 | C |
| Kneeland Station | Boston | 69,195 | C |
| Massport Logan Airport | East Boston | 19,750 | C |
| Medical Area Total Energy Plant | Boston | 263,148 | C |
| Northeastern University | Boston | 27,779 | C |

*Sector Codes: C – General Stationary Fuel Combustion Sources

## 2.6 TOPOGRAPHY, GEOLOGY, AND SOILS

### 2.6.1 Topography

The entire Charles River NVSA is part of a single physiographic province known as the Appalachian Highlands, an ancient range of igneous and metamorphic rock forming the mountains and hills of much of the northeastern United States. In recent geological time, this rugged landscape was blanketed by glaciers which covered all of New England. The southward movement of the ice sheet and subsequent melting left the area with a layer of glacial debris called till, a mixture of gravel, sand, silt and clay.

The result of this glacial activity is a landscape of gently rolling hills and wide valleys. Hills in the upper watershed range from 200 feet to 500 feet above sea level. In the middle and lower basin, the glacial till is generally deeper, particularly in the pre-glacial valleys where the quiet waters of glacial lakes produced wide, flat plains and terraces of well sorted sand gravel. These plains give the Charles River an importantly flat profile through much of its length and cause extensive meandering of the river channel.

The total fall of the river in its 85-mile length, from source to mouth, is 354 feet, yet nearly 200 feet of this fall occurs in the first 19 miles between Echo Lake and the Medway Dam. In the next 40 miles the river drops only 75 feet. Throughout its length, the major drop in river profile elevation occurs abruptly at falls or dams. This variable profile gives the river the contrasting characteristics of sometimes being a meandering channel in the midst of vast, wet meadow, and then flowing through narrow channels of exposed bedrock.

### 2.6.2 Geology

The results of glaciation can be seen today in the Charles River Watershed. Effects of glaciation such as till deposits have a very important ecological impact on the development of vegetation along the Charles River. Till landing on clay type soils held water allowing for more plants to grow i.e. wetlands, swamps and marshes. Whereas, till that fell on sandy soils was often washed away from the hilltops and filled in the ravines and valleys leading to upland forest and drier lowland areas. Elongated hills of glacial till called drumlins resulted from movements of glaciers during the Ice Age in New England. Large glaciers often rode or slid along large clay deposits shaping or smoothing the land mass forming these large rounded, rolling hills. Drumlins very seldom exceed 200 feet in height and do not have a solid bedrock core.

Within the entire Charles River Watershed, approximately 54% is composed of metamorphic rocks, 28% are igneous rocks, and 18% are sedimentary rocks. Within the smaller Charles River NVSA project area, approximately 42% are metamorphic rocks, 57% are igneous rocks, and less than 1% are sedimentary rocks. Within the Charles River NVSA, metamorphic formations are either undifferentiated or volcanic, igneous rocks are either intrusive or volcanic, and all sedimentary rocks are clastic.

### 2.6.3 Soils

Because the Charles River NVSA project extends across such a large area, it includes many different soil types. Lower areas tend to include silty and sandy loams and areas of higher elevation or greater slopes tend to have more sand or rocky/stony soils. The soil unit acres and farmland classifications for each Management Unit are included in Appendix G. Most soils are relatively nutrient poor and are typically Inceptisols with moderate soil development. Common surface water features of the ecoregion include perennial streams, lakes, ponds, and wetlands. There is diversity of stream networks due to variable geology and geomorphology. These areas are described in more detail in sections 2.1 and 2.6

The non-irrigated land capability classification from the Natural Resource Conservation Service (NRCS) shows there are 8 possible general classifications (Class I through Class VIII), all of which occur at the Charles River NVSA. The erosion hazards and plant cultivation limitations for use increase as the class number increases. Class I has few limitations, whereas Class VIII has many. The NRCS Web Soil Survey provided the soil class data for project lands in Table 2.5. This data is a standard component of natural resources inventories on USACE lands. This data, however, is not recorded in the USACE Natural Resource Management system (NRM).

**Table 2.5 Soil Classifications at Charles River NVSA**

| Soil Class | Acreage |
|---|---|
| Class I | 3 |
| Class II | 194 |
| Class III | 50 |
| Class IV | 229 |
| Class V | 1,206 |
| Class VI | 987 |
| Class VII | 77 |
| Class VIII | 433 |

(Source: NRI Level I Inventory)

The descriptions of the soils and land capability classifications below demonstrate the relative general potential for project lands. The NRCS maintains detailed information on all soil types surrounding Charles River NVSA in various websites and datasets.

- Class I soils have slight limitations that restrict their use.
- Class II soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.
- Class III soils have severe limitations that reduce the choice of plants or require special conservation practices, or both.
- Class IV soils have very severe limitations that restrict the choice of plants or require very careful management, or both.
- Class V soils have little or no hazard of erosion but have other limitations, impractical to remove, that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
- Class VI soils have severe limitations that make them generally unsuited to cultivation and that limit their use mainly to pasture, range, forestland, or wildlife food and cover.
- Class VII soils have very severe limitations that make them unsuited to cultivation and that restrict their use mainly to grazing, forestland, or wildlife.
- Class VIII soils and miscellaneous areas have limitations that preclude their use for commercial plant production and limit their use to recreation, wildlife, or water supply or for aesthetic purposes.

### 2.6.4 Prime Farmland

Section 1541(b) of the Farmland Protection Policy Act (FPPA) of 1980 and 1995, 7 U.S.C. 4202(b) requires federal and state agencies, as well as projects funded with federal funds, to (a) use the criteria to identify and take into account the adverse effects of their programs on the preservation of farmland, (b) consider alternative actions, as appropriate, that could lessen adverse effects, and (c) ensure that their programs, to the

extent practicable, are compatible with state and units of local government and private programs and policies to protect farmland.

## 2.7 NATURAL RESOURCE ANALYSIS

### 2.7.1 Fish and Wildlife Resources

Fish and wildlife within the Charles River NVSA are typical of Norfolk ,Middlesex, and Suffolk counties. Tables 2.3, 2.4, and 2.5, and 2.6 provide lists of common birds, reptiles, amphibians, and mammal, and species potentially present within the federal fee boundary (MassWildlife, 2025a; 2025c).

The Charles River and its tributaries support warm water fish species such as: Largemouth bass (*Micopterous salmoides)*, bullhead (*Ictalurus nebulosa)*, pickerel (*Esox niger)*, sunfish (*Lepomis auritus)*, and white sucker (*Catastomus commersoni)*. The Massachusetts Division of Fisheries and Wildlife (MassWildlife) stocks tributaries of the Charles River, including the following surface waters within the federal fee boundary: Trout Brook, Charles River, Mill River, Dix Brook, Miscoe Brook, Hopping Brook, and Stall Brook. MassWildlife stocks these waters with trout species including eastern brook trout (*Salvelinus fontinalis*), brown trout (*Salmo trutta*), and rainbow trout (*Oncorhynchus mykiss)* (MassWildlife, 2025b).

The Charles River NVSA includes terrestrial and aquatic habitat (*i.e*., vernal pools*)* suitable for common amphibian and reptile species. Species have been inventoried throughout various land management units. Tables 2.6, 2.7, and 2.9 provides a summary of common mammal, bird, and reptile and salamander species potentially present within the project area, while Table 2.8 provides a summary of reptile species observed during previous herptile surveys (MassWildlife, 2025c).

**Table 2.6 Common mammal species potentially present at the Charles River NVSA**

| Common Name | Scientific Name |
|---|---|
| Coyote | *Canis latrans* |
| American beaver | *Castor canadensis* |
| Virginia opossum | *Didelphis virginiana* |
| North American porcupine | *Erethizon dorsadum* |
| Southern flying squirrel | *Glaucomys volans* |
| River otter | *Lontra canadensis* |
| Bobcat | *Lynx rufus* |
| Groundhog | *Marmota monax* |
| Striped skunk | *Mephitis mephitis* |

| Common Name | Scientific Name |
|---|---|
| American mink | *Mustela vison* |
| White-tailed deer | *Odocoileus virginianus* |
| Muskrat | *Ondatra zibethicus* |
| Fisher | *Pekania pennanti* |
| White-footed mouse | *Peromyscus leucopus* |
| Raccoon | *Procyon lotor* |
| Eastern gray squirrel | *Sciurus carolinensis* |
| Eastern cottontail | *Sylvilagus floridanus* |
| New England cottontail | *Sylvilagus transitionalis* |
| Eastern chipmunk | *Tamias striatus* |
| Red squirrel | *Tamiasciurus hudsonicus* |
| Grey fox | *Urocyon cinereoargenteus* |
| Black bear | *Urus americanus* |
| Red fox | *Vulpes vulpes* |
| Meadow jumping mouse | *Zapus hudsonius* |

**Table 2.7 Common bird species potentially present at the Charles River NVSA**

| Common Name | Scientific Name |
|---|---|
| Common redpoll | *Acanthis flammea* |
| Cooper's hawk | *Accipiter cooperii* |
| Wood duck | *Aix sponsa* |
| Mallard | *Anas platyrhynchos* |
| American black duck | *Anas rubripes* |
| Great blue heron | *Ardea herodias* |
| Tufted titmouse | *Baeolophus bicolor* |
| Cedar waxwing | *Bombycilla cedrorum* |
| Canada goose | *Branta canadensis* |
| Great horned owl | *Bubo virginianus* |
| Northern cardinal | *Cardinalis cardinalis* |
| American crow | *Corvus brachyrhynchos* |
| Blue jay | *Cyanocitta cristata* |
| Mute swan | *Cygnus olor* |
| Downy woodpecker | *Dryobates pubescens* |

| Common Name | Scientific Name |
|---|---|
| Gray catbird | *Dumetella carolinensis* |
| Rusty blackbird | *Euphagus carolinus* |
| American kestrel | *Falco sparverius* |
| House finch | *Haemorhous mexicanus* |
| Purple finch | *Haemorhous purpureus* |
| Bald eagle | *Haliaeetus leucocephalus* |
| Evening grosbeak | *Hesperiphona vespertina* |
| Baltimore oriole | *Icterus galbula* |
| Dark-eyed junco | *Junco hyemalis* |
| Hooded merganser | *Lophodytes cucullatus* |
| Red-bellied woodpecker | *Melanerpes carolinus* |
| Wild turkey | *Meleagris gallopavo* |
| Common merganser | *Mergus merganser* |
| Osprey | *Pandion haliaetus* |
| House sparrow | *Passer domesticus* |
| Rose-breasted grosbeak | *Pheucticus ludovicianus* |
| Pine grosbeak | *Pinicola enucleator* |
| Rufous-sided towhee | *Pipilo erythrophthalmus* |
| Black-capped chickadee | *Poecile atricapillus* |
| Common grackle | *Quiscalus quiscala* |
| Eastern phoebe | *Sayornis phoebe* |
| American woodcock | *Scolopax minor* |
| Myrtle warbler | *Setophaga coronata* |
| Eastern bluebird | *Sialia sialis* |
| White-breasted nuthatch | *Sitta carolinensis* |
| Yellow-bellied sapsucker | *Sphyrapicus varius* |
| Pine siskin | *Spinus pinus* |
| American goldfinch | *Spinus tritis* |
| Common starling | *Sturnus vulgaris* |
| Brown thrasher | *Toxostoma rufum* |
| Mourning dove | *Zenaida macroura* |

## Table 2.8 Common reptile and amphibian species observed within the Charles River NVSA

| Common Name | Scientific Name |
|---|---|
| Blue-spotted salamander | *Ambystoma laterale* |
| Spotted salamander | *Ambystoma maculatum* |
| American toad | *Anaxyrus americanus* |
| Snapping turtle | *Chelydra serpentina* |
| Eastern painted turtle | *Chrysemys picta picta* |
| Spotted turtle | *Clemmys guttata* |
| North American racer | *Coluber constrictor* |
| Northern two-lined salamander | *Eurycea bislineata* |
| Four-toed salamander | *Hemidactylium scutatum* |
| Gray treefrog | Hyla versicolor |
| Milksnake | *Lampropeltis triangulum* |
| American bullfrog | *Lithobates catesbeianus* |
| Green frog | *Lithobates clamitans* |
| Pickerel frog | *Lithobates palustris* |
| Northern leopard frog | *Lithobates pipiens* |
| Wood frog | *Lithobates sylvaticus* |
| Northern watersnake | *Nerodia sipedon* |
| Eastern red-backed salamander | *Plethodon cinereus* |
| Spring peeper | *Pseudacris crucifer* |
| Eastern musk turtle | *Sternotherus odoratus* |
| Common ribbon snake | *Thamnophis sauritus sauritus* |
| Eastern garter snake | *Thamnophis sirtalis* |

## Table 2.9 Common reptile and amphibian species potentially present at the Charles River NVSA

| Common Name | Scientific Name |
|---|---|
| Fowler's toad | *Anaxyrus fowleri* |
| Spotted turtle | *Clemmys guttata* |
| Northern ringneck snake | *Diadophis punctatus* |
| Wood turtle | *Glyptemys insculpta* |
| Eastern hog-nosed snake | *Heterodon platirhinos* |

| Common Name | Scientific Name |
|---|---|
| Eastern milk snake | *Lampropeltis triangulum* |
| Red-spotted newt | *Notophtalmus viridescens* |
| Smooth greensnake | *Opheodrys vernalis* |
| Dekay's brownsnake | *Storeria dekayi* |
| Redbelly snake | *Storeria occipitomaculata* |

### 2.7.2 Vegetative Resources

The Charles River NVSA is located in the EPA Level IV Southern New England Coastal Plains and Hills and Boston Basin ecoregions.

The Southern New England Coastal Plains and Hills ecoregion spans across much of Rhode Island, eastern Connecticut, and southeastern Massachusetts. Vegetation includes deciduous forests, mesic forests, swamps, and some mixed and evergreen forests. Land uses include deciduous forest, urban, suburban, rural residential land, hay/pasture, cropland, mixed and evergreen forest, woody wetlands, public state forest, and state park lands (Griffith et al., 2009). Before the arrival of chestnut blight (*Cryphonectria parasitica)*, the American chestnut (*Castanea dentata)* was one of the dominant tree species across the ecoregion.

Appalachian oak-pine forests are the dominant forest type in the Southern New England Coastal Plains and Hills ecoregion. Various combinations of hardwood species may include red oak (*Quercus rubra*), white oak (*Quercus alba*), scarlet oak (*Quercus coccinea*), black oak (*Quercus velutina*), chestnut oak (*Quercus montana*), white pine (*Pinus strobus*), red maple (*Acer rubrum*), pignut hickory (*Carya glabra*), shagbark hickory (*Carya ovata*), and mockernut hickory (*Carya tomentosa).* Different variations may occur on upper slopes, shallow dry rocky soils, or on midslopes. (Griffith et al., 2009).

The Boston Basin ecoregion includes areas of the Cambridge argillite and Roxbury conglometerate rock units. The ecoregion includes urban and suburban lands, with estuaries, bays, and islands along the eastern edge. Most natural vegetation has been removed from this ecoregion, with some oak-hickory forests or white pine (*Pinus strobus)*-oak forests. Variations may occur on midslopes and shallow dry rocky soils. A few areas contain mesic forests, forested swamps, or small river floodplains (Griffith et al., 2009).

The predominant vegetation community throughout the Charles River NVSA is red maple swamp. Red maple swamps are dominated by red maple trees and include common wetland (hydrophytic) vegetation such as skunk cabbage (*Symplocarpus foetidus)*, false hellebore (*Veratrum viride*), cinnamon fern (*Osmundastrum cinnamomeum*), and sensitive fern (*Onoclea sensibilis*). Other dominant vegetation communities include deep emergent marsh, white pine-white oak forest, and shrub

swamp. Deep emergent marshes are seasonally flooded, and various grass species that may form tussocks. Characteristic species of shrub swamps may include highbush blueberry (*Vaccinium corymbosum)*, maleberry (*Lyonia ligustrina*), smooth alder (*Alnus serrulata)*, and buttonbush (*Cephanthalus occidentalis)*.

### 2.7.3 Threatened and Endangered Species

#### Federal

The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) system was consulted to review project area resources and evaluate project compliance. An IPaC report was generated to indicate federal conservation species and other resources under the jurisdiction of USFWS (Appendix B). Birds of Conservation Concern (BCC) are identified through IPaC alongside species protected under the Endangered Species Act. BCC species are migratory and non-migratory bird species which have the highest conservation priority as identified by USFWS (USFWS, 2021). Table 2.10 and 2.11 provide lists of federal conservation species listed under the Endangered Species Act and the Migratory Bird Treaty Act (USFWS, 2025a).

**Table 2.10 Federal Listed Species Potentially Occurring at the Charles River NVSA**

| Common Name | Scientific Name | Federal Status |
|---|---|---|
| Small Whorled Pogonia | *Isotria medeoloides* | Threatened |
| Tricolored Bat | *Perimyotis subflavus* | Proposed Endangered |

**Table 2.11 Federal Listed Migratory Birds Potentially Occurring at the Charles River NVSA**

| Common Name | Scientific Name | Federal Status |
|---|---|---|
| Grasshopper sparrow | *Ammodramus savannarum perpallidus* | BCC |
| Saltmarsh sparrow | *Ammospiza caudacuta* | BCC |
| Eastern whip-poor will | *Antrostomus vociferus* | BCC |
| Ruddy turnstone | *Arenaria interpres morinella* | BCC |
| Long-eared owl | *Asio otus* | BCC |
| Pectoral sandpiper | *Calidris melanotos* | BCC |
| Semipalmated sandpiper | *Calidris pusilla* | BCC |
| Canada warbler | *Cardellina canadensis* | BCC |
| Chimney swift | *Chaetura pelagica* | BCC |
| Black-billed cuckoo | *Coccyzus erythropthalmus* | BCC |
| Bobolink | *Dolichonyx oryzivorus* | BCC |
| Kentucky warbler | *Geothlypis formosa* | BCC |

| Common Name | Scientific Name | Federal Status |
|---|---|---|
| Bald eagle | *Haliaeetus leucocephalus* | BCC |
| Wood thrush | *Hylocichla mustelina* | BCC |
| Short-billed dowitcher | *Limnodromus griseus* | BCC |
| Red-headed woodpecker | *Melanerpes erythrocephalus* | BCC |
| Whimbrel | *Numenius phaeopus hudsonicus* | BCC |
| Scarlet tanager | *Piranga olivacea* | BCC |
| Prothonotary warbler | *Protonotaria citrea* | BCC |
| Cerulean warbler | *Setophaga cerulea* | BCC |
| Prairie warbler | *Setophaga discolor* | BCC |
| Least tern | *Sternula antillarum antillarum* | BCC |
| Lesser yellowlegs | *Tringa flavipes* | BCC |
| Willet | *Tringa semipalmata* | BCC |
| Blue-winged warbler | *Vermivora cyanoptera* | BCC |

### State

A list of state threatened and endangered species was obtained from MassWildlife's Natural Heritage and Endangered Species Program through the use of MassWildlife's Heritage Hub. State-listed species potentially occurring within the project area are listed within Table 2.12 (MassWildlife, 2023).

**Table 2.12 State listed conservation species occurring at the Charles River NVSA**

| Common Name | Scientific Name | State Status |
|---|---|---|
| Blue-spotted salamander | *Ambystoma laterale* | Special Concern |
| Britton's violet | *Biola brittoniana* | Threatened |
| Hessel's Hairstreak | *Callophrys hesseli* | Special Concern |
| Blanding's Turtle | *Emydoidea blandingii* | Threatened |
| Eastern pondmussel | *Ligumia nasuta* | Special Concern |
| Long's bulrush | *Scirpus longii* | Threatened |
| Coppery emerald | *Somatochlora georgiana* | Endangered |
| Mocha emerald | *Somatochlora linearis* | Special Concern |
| Eastern box turtle | *Terrapene carolina* | Special Concern |

### 2.7.4 Invasive Species

EO 13112, as amended by EO 13751, defines an invasive species as a non-native organism whose introduction causes or is likely to cause economic or environmental harm, or harm to human, animal, or plant health. These species are characteristically adaptable, aggressive, and have high reproductive capacity. Invasive species can change community structure, composition, and ecosystem processes. Careful management can minimize these negative impacts. Table 2.13 lists known invasive species found at Charles River NVSA.

**Table 2.13 Invasive Species present within the Charles River NVSA**

| Common Name | Scientific Name |
|---|---|
| Norway maple | *Acer platanoides* |
| Sycamore maple | *Acer pseudoplatanus* |
| Garlic mustard | *Alliaria petiolata* |
| Japanese barberry | *Berberis thunbergii* |
| Carolina fanwort; fanwort | *Cabomba caroliniana*[1] |
| Oriental (Asiatic) bittersweet | *Celastrus orbiculatus* |
| Autumn olive | *Elaeagnus umbellata* |
| Winged euonymus; Burning bush | *Euonymus alatus* |
| Japanese knotweed | *Fallopia japonica* |
| Glossy buckthorn | *Frangula alnus* |
| Yellow iris | *Iris pseudacorus* |
| Japanese honeysuckle | *Lonicera japonica* |
| Morrow's honeysuckle | *Lonicera morrowii* |
| Bell's honeysuckle | *Lonicera x bella [morrowii x tatarica]* |
| Purple loosestrife | *Lythrum salicaria* |
| Variable-leaved water-milfoil | *Myriophyllum heterophyllum*[1] |
| Eurasian water-milfoil | *Myriophyllum spicatum*[1] |
| Common reed | *Phragmites australis* |
| Curly-leafed pondweed | *Potamogeton crispus L.*[1] |
| Common buckthorn | *Rhamnus cathartica* |
| Black locust | *Robinia pseudoacacia* |
| Multiflora rose | *Rosa multiflora* |
| Water chestnut | *Trapa natans*[1] |

| Common Name | Scientific Name |
|---|---|
| Black swallow-wort | *Vincetoxicum nigrum* |

[1] Aquatic invasive species

Careful management of invasive species can minimize negative impacts on the ecosystem and immediate natural community. There are five main methods USACE utilizes to manage invasive species:

- Biological: use of other living organisms to suppress invasive species
- Chemical: application of registered pesticides for control of targeted species
- Manual: hand pulling, digging, weed wrenching, cutting
- Mechanical: mechanized removal or control of invasive species including mowing, forestry equipment, chainsaws, aquatic harvesting equipment, and/or the use of traps
- Cultural: education, outreach, and other activities to improve public practices on lands and reduce spread of invasive species and/or manipulation of habitats to increase mortality

Chemical and mechanical methods are used by staff and volunteers at Charles River NVSA and include the following:

- Hand pulling
- Cutting
- Mowing
- Digging
- Brush hogging/cutting
- Chemical treatment

These methods are effective if repeated frequently during a growing season to exhaust a plant's root reserves, or if used in combination with other techniques.

An invasive species management plan for the project will be developed in the future as funding becomes available. This plan would then be directly incorporated into the Master Plan during future updates or revisions.

### 2.7.5 Ecological Setting

Ecoregions are used to describe areas with similar ecosystems and in type, quality, and quantity of environmental resources (EPA, 2024b). Ecoregions are classified through a hierarchical scale, which ranges from general to detailed ecoregions**.** Level IV ecoregions describe localized vegetation, whereas Level III describe the regional ecosystems. Refer to Section 2.7.2 for a description of Level IV ecoregions at Charles River NVSA. This section uses Level III ecoregions to describe the broad ecological setting at Charles River NVSA (Wiken et al., 2011; Griffith et al., 2009).

The Charles River NVSA is a part of the Northeastern Coastal Zone Level III ecoregion. This is the predominant Level III ecoregion in Massachusetts alongside the Northeastern Highlands ecoregion which is found in the western and north-western areas of Massachusetts. The Northeastern Coastal Zone is found throughout southern New England and coastal areas of New Hampshire and southern Maine.

Landforms in the Northeastern Coastal Zone include irregular plains, plains with low to high hills, and open hills. Elevations in this ecoregion range from sea level to over 984 feet. This ecoregion has a humid continental climate with warm summers and severe winters.

Common surface water features of the ecoregion include perennial streams, lakes, ponds, and wetlands. Glacial lakes are concentrated in this ecoregion. There is a diversity of stream networks due to variable geology and geomorphology.

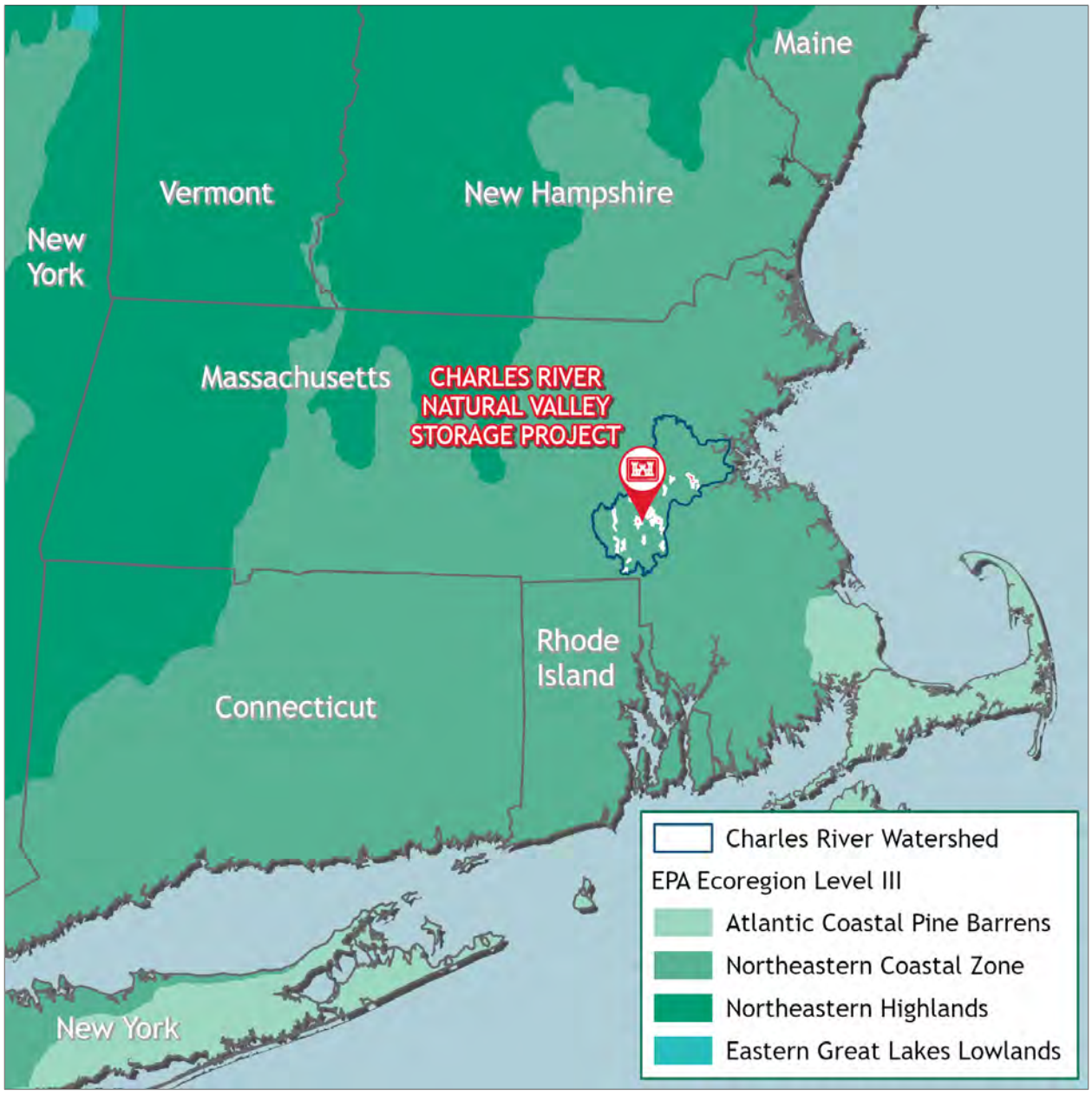



**Figure 2.4 EPA Level III Ecoregions at Charles River NVSA (EPA, 2015)**

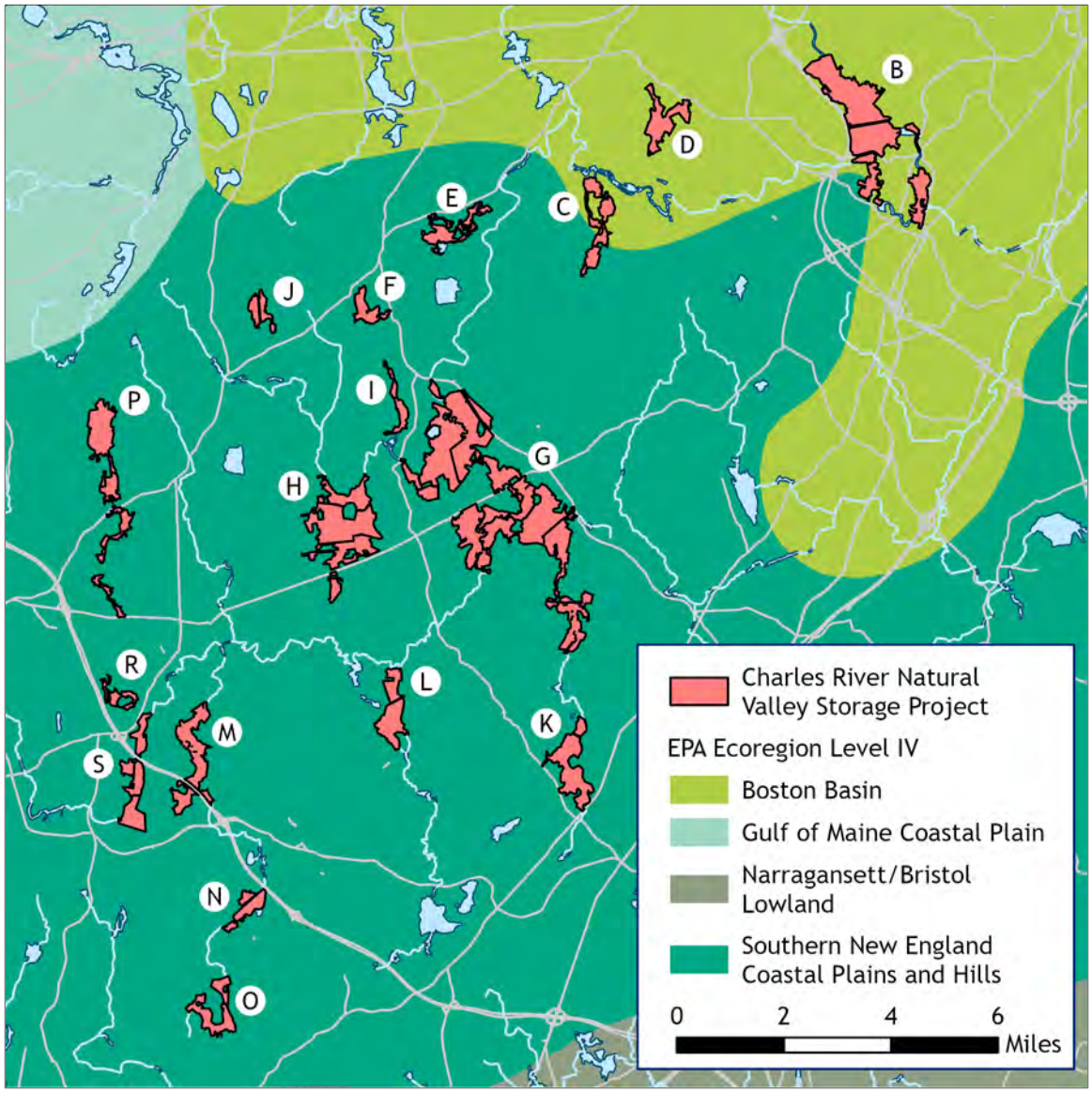



**Figure 2.5 EPA Level IV Ecoregions at Charles River NVSA (EPA, 2015)**

### 2.7.6 Wetlands

The USFWS maintains the National Wetlands Inventory (NWI), which is a wetlands database across the United States. Using the NWI's GIS data, there are approximately 2,459 acres of wetlands present within the fee boundary for Charles River NVSA. This equates to approximately 77% of the Charles River NVSA fee property. Table 2.14 summarizes the wetlands by NWI wetland type and mapped in Figure 2.6 (USFWS, 2025b).

**Table 2.14 NWI Wetlands by Type at Charles River NVSA (NWI, 2023)**

| NWI Wetland Type | Acres |
|---|---|
| Freshwater Forested/Shrub Wetland | 1903.0 |
| Freshwater Emergent Wetland | 428.0 |
| Freshwater Pond | 8.0 |
| Riverine | 120.0 |

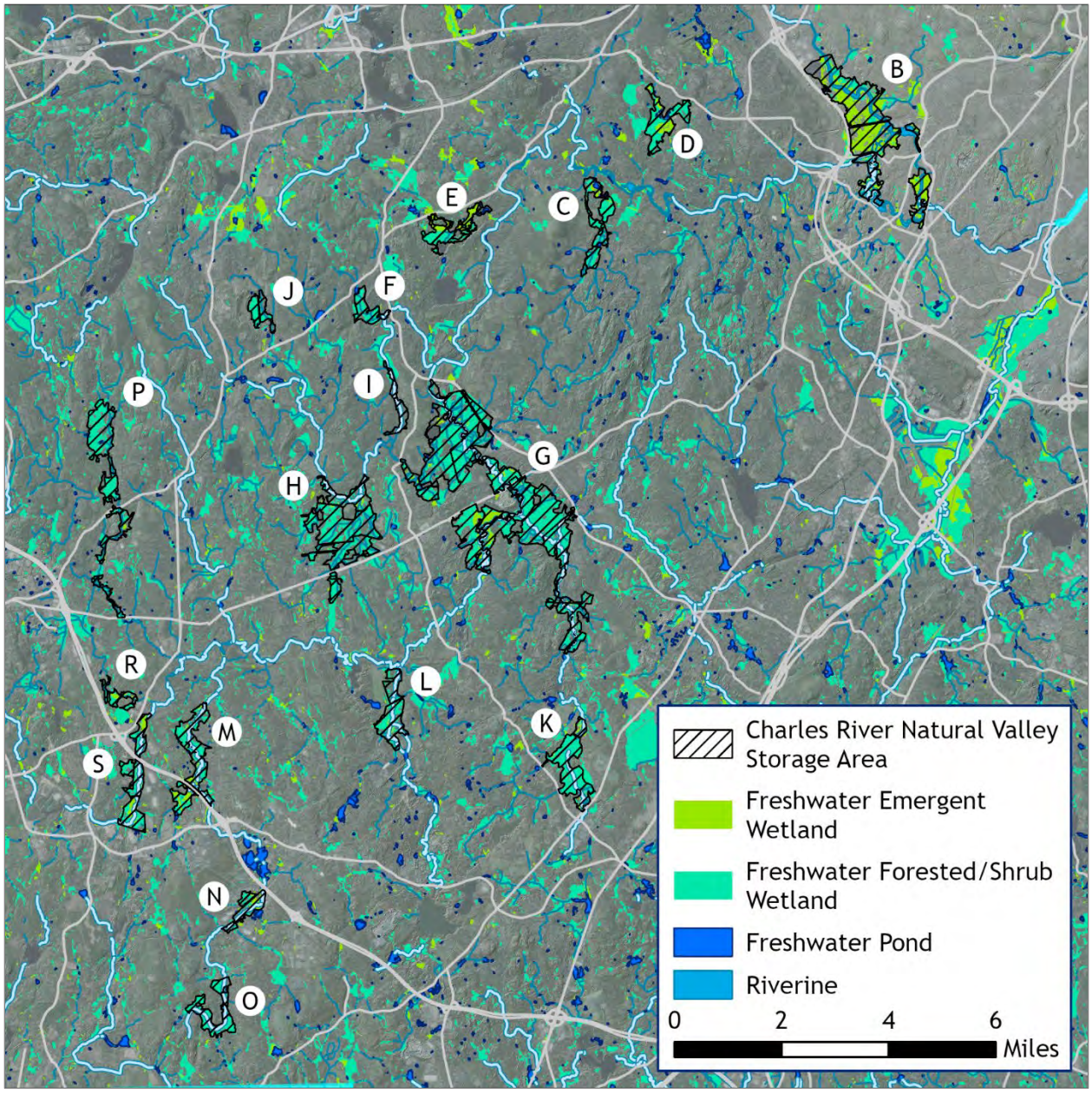



**Figure 2.6 NWI Wetlands at Charles River NVSA (NWI, 2023)**

## 2.8 HAZARDOUS, TOXIC AND RADIOACTIVE WASTE

EPA's EnviroMapper was used to identify hazardous, toxic, or radioactive waste (HTRW) sites that occur within the project area. The EnviroMapper includes facilities from: Resource Conservation and Recovery Act (RCRA) sites; National Pollutant Discharge Elimination System (NPDES) sites; Toxic Release Inventory (TRI) sites; Assessment, Cleanup, and Redevelopment Exchange System (ACRES) sites; and Integrated Compliance Information System for Air (ICIS-Air) sites. There are no HTRW resources or sites within the Charles River NVSA Project Area. There are numerous sites located within 5 miles of the Management Units that have potential to affect the local community and environment and are subject to federal, state, and local regulations.

## 2.9 HEALTH AND SAFETY

USACE staff work in conjunction with state agencies to provide public outreach programs on conservation of natural resources. The USACE also ensures compliance with rules and regulations governing solid waste, wastewater, and potable water management in place for USACE fee land, including those areas operated by lessees.

The Project Manager at Charles River NVSA is responsible for developing plans and programs designed to implement and enforce safety regulations and requirements. A hazard-free environment for both USACE personnel and the visiting public is essential. Project personnel are required to identify hazards and unsafe conditions that occur in all areas of their operation. Once identified, they take steps to prevent, reduce, or control such hazards. In areas with lease or license agreements, partners are responsible for ensuring a safe environment.

Hunting and angling are controlled by the Massachusetts fish and game laws, which generally prohibit activities which would damage vegetation or government property or which would threaten the safety of hunters or other project users.

## 2.10 AESTHETIC RESOURCES

The Charles River NVSA is part of the major physiographic province known as the Appalachian Highlands, an ancient range of igneous and metamorphic rock forming the mountains and hills of much of the northeastern United States. In recent geological time, this rugged landscape was blanketed by glaciers which covered all of New England. The southward movement of the ice sheet and subsequent melting left the area with a layer of glacial debris, called till. Till is a mix of gravel, sand, silt and clay.

The result of this glacial activity is a landscape of gently rolling hills and wide valleys. Hills in the upper watershed range from 200 to 500 feet above sea level. In the middle and lower basin the glacial till is generally deeper, particularly in the preglacial valleys where the quiet waters of glacial lakes produced wide flat plains and terraces of well-sorted sand and gravel. These plains give the Charles River an importantly flat profile through much of its length and cause extensive meandering of the river channel.

The total fall of the river in its 80 mile length from source to mouth is 354 feet, yet nearly 200 feet of this fall occur in the first 19 miles between Echo Lake and Medway Dam. In the next 40 miles the river drops only 75 feet. Throughout its length, the major drops in river profile elevation occur abruptly at falls or dams. This variable profile gives the river the contrasting characteristics of sometimes being a meandering channel in the midst of vast wet meadow, such as in Cutler Park in Dedham or the Medfield-Millis marshes, and then flowing through narrow channels of exposed bedrock, creating scenic gorges and waterfalls such as at Hemlock Gorge in Newton and the Rocky Narrows in Sherborn.

The eastern portion of the watershed is situated in the Boston Basin, a distinct coastal lowland area. This flat basin is punctuated by small but distinct glacially formed hills called drumlins. These smooth, elongated hills are generally 100 to 150 feet high. Beacon Hill and Bunker Hill are two famous Boston area drumlins. Here the Charles River once opened out into extensive coastal marshlands and mudflats. These shallows have now virtually disappeared under three and one half centuries of urban development.

## 2.11 CULTURAL, HISTORICAL, AND ARCHAEOLOGICAL RESOURCES

Cultural resources preservation and management is an equal and integral part of all resource management at USACE-administered operational projects. The term “cultural resources” is a broad term that includes, but is not limited to, historic and prehistoric archaeological sites, deposits, and features; burials and cemeteries; historic and prehistoric districts comprised of groups of structures or sites; cultural landscapes; built environment resources such as buildings, structures (such as bridges), and objects; traditional cultural properties; and sacred sites. These property types may be listed on the National Register of Historic Places (NRHP) if they meet the criteria specified by the NRHP (36 CFR 60), reflecting significance in architecture, history, archaeology, engineering, and culture. Cultural resources that are identified as eligible for listing in the NRHP are referred to as “historic properties,” regardless of category. A Traditional Cultural Property (TCP) is a property that is eligible for inclusion in the NRHP based on its associations with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community. Ceremonies, hunting practices, plant-gathering, and social practices which are part of a culture’s traditional lifeways, are also cultural resources.

Stewardship of cultural resources on USACE Civil Works water resources projects is an important part of the overall federal responsibility. Numerous laws pertaining to identification, evaluation, and protection of cultural resources, Native American Indian rights, curation and collections management, and the protection of resources from looting and vandalism, establish the importance of cultural resources to our Nation’s heritage. With the passage of these laws, the historical intent of U.S. Congress has been to ensure that the federal government protects cultural resources. Additionally, as stewards of cultural resources and in compliance with federal laws, it is incumbent upon the USACE to consult with the State Historic Preservation Officer (SHPO), Tribal Nations, the Advisory Council on Historic Preservation (ACHP), and

other interested stakeholders in the preservation and management of cultural resources.

Guidance is derived from a number of cultural resources laws and regulations, including but not limited to Sections 106 and 110 (54 U.S.C. 306101-306114) of the National Historic Preservation Act (NHPA) of 1966 (as amended); Archaeological Resources Protection Act (ARPA) of 1979; Native American Graves Protection and Repatriation Act (NAGPRA); and 36 CFR Part 79, Curation of Federally-Owned and Administered Archeological Collections. Implementing regulations for Section 106 of the NHPA and NAGPRA are 36 CFR Part 800 and 43 CFR Part 10, respectively. All cultural resources laws and regulations should be addressed under the requirements of the National Environmental Policy Act (NEPA) of 1969 (as amended), as applicable. USACE summarizes the guidance provided in these laws in ER and EP 1130-2-540.

### 2.11.1 Summary of Resources and Previous Investigations

The cultural history of New England spans approximately 12,500 years of human occupation. This history is generally divided into pre-contact (prior to Native American contact with Europeans) and post-contact (after Native American contact with Europeans) frameworks that are further subdivided into more specific time periods based on technological variation, settlement patterns, land use, and subsistence and consist of (Gall 2010; Lothrop et al. 2018):

Pre Contact Periods

- Paleo-Indian Period (10,500 to 8,000 BC)
- Early Archaic Period (8,000 to 5,500 BC)
- Middle Archaic Period (5,500 to 3,000 BC)
- Late Archaic Period (3,000 to 1,000 BC)
- Early Woodland Period (1,000 BC to 300 AD)
- Middle Woodland Period (300 to 950 AD)
- Late Woodland Period (950 to 1500 AD)

*Post-Contact Periods*

- Contact and Early Historic (1500 to 1675 AD)
- Colonial (1675 to 1775 AD)
- Federal (1775 to 1830 AD)
- Early Industrial (1830 to 1870 AD)
- Late Industrial (1870 to 1915 AD)
- Modern (1915 AD to Present)

Cultural resources within the Charles River NVSA (CRNVSA) project include a record of occupations by indigenous populations from as early as the Middle Archaic Period (ca. 5,500 BC) through the Contact period (1500 to 1675 AD) and into the present day. There are 44 pre-contact, 8 post-contact, and 4 multi-component (pre-

contact and post-contact) archaeological sites recorded within the project area. Out of these 56 sites, 19 have been determined to be not eligible for inclusion in the NRHP. Pre-contact archaeological sites in the project area range from primarily small scatters of chipped stone tools with some campsites or small villages representing multiple episodes of occupation. Sites are typically found on low terraces overlooking ponds, wetlands, and streams. Pre-contact artifacts include stone projectile points, chipped stone tools, shell, bone, ceramics, and burned rock. Notable pre-contact sites in the project area include the Winston Road Site, the Rogers Site (Early Archaic to Late Woodland), the Bellingham Shoppes Site (Middle Archaic), the Long Shadow Site (Middle Archaic to Middle Woodland), Site 19-NF-165 (Late Archaic to Early Woodland), the Spring Pond Site (Late Archaic to Early Woodland), the Bear Site (Early Woodland and Contact), and the Hill 1 Site (Middle Woodland). Larger campsites identified in the project area include the Causeway Street Site (Middle to Late Archaic), the Charles View Site (Middle Woodland), the Spring Pond 2 Site, the Jackson Circle Site, the Mine Brook 1 Site (Late Archaic to Late Woodland), the S5 Site (Middle to Late Archaic), and the Power Line Site (Gall 2010; Sewell and Lee 2011).

Post-contact settlement in the project area begins in the Contact and Early Historic period and extends into the present day. Post-contact sites in the region are represented by farmsteads, mills (nail, textile, paper), dams, quarries, and transportation infrastructure. Within the Charles River NVSA project area post-contact settlement is low density with refuse and architectural features associated with farmsteads, an icehouse, a dam, and hunting cabin. Six post-contact sites in the project area are refuse/dump sites and include the Main Street Site (Late 19$^{th}$ century), the Village Street Site (Early to Middle 19$^{th}$ century), the Clay Pit Road Site (Early to Late 19$^{th}$ century), the North Meadows Road Site (Middle to Late 19$^{th}$ century), the Causeway Terrace Site (Early to Middle 20$^{th}$ century), and the Hartford Avenue 2 Site (Late 19$^{th}$ to Middle 20$^{th}$ century). Two industrial sites are represented by the Clark Ice House (19$^{th}$ century) and the Bellingham Dam (19$^{th}$ century) (associated with a cotton mill complex outside of the project area). Farm and home sites are represented by the Bridge Street Site (1820s to 1830s), the North Meadows Road 2 Site (Late 18$^{th}$ to Early 19$^{th}$ century), and Site S5 (Late 18$^{th}$ to Early 19$^{th}$ century). The Noon Hill Site (Middle to Late 20$^{th}$ century) is the remains of a hunter's cabin (Gall 2010; Sewell and Lee 2011).

There have been three previous cultural resources investigations within the Charles River NVSA project area. The first of these investigations was a reconnaissance survey conducted by Public Archaeology Laboratory, Inc. (PAL) in 2000 (Cherau et al. 2000). This investigation identified archaeological sensitivity areas and identified 20 previously recorded archaeological sites and revisited four sites within the Charles River NVSA project area. A second investigation was conducted by Richard Grubb & Associates, Inc. in 2010 (Gall 2010) and expanded on the reconnaissance by PAL to include additional archival research, the excavation of 4,767 shovel tests across 318 acres, and the identification of 44 pre-contact, 8 post-contact sites, and 4 mixed-component sites. The last investigation was conducted by Hardlines Designs Company (Sewell and Lee 2011) and involved NRHP evaluation testing on six pre-contact and post-contact sites identified during the previous during the RGA survey (Gall 2010). This evaluation included the excavation of shovel tests and 2-meter by 1-meter excavation

units. It is important to note that archaeological investigations have only been conducted within specific areas and not over the entirety of the project area. Locations within the project area that are inundated, marshlands, or steep slopes have a low potential for the recovery of archaeological deposits.

### 2.11.2 Long-Term Cultural Resource Objectives

Cultural and environmental formation processes have affected cultural resources within the Charles River NVSA project. These formation processes include the displacement of pre-contact archaeological sites by European settlement of the region that included deforestation, agriculture, and the construction of dams, houses, and roads. Subsurface looting has not been documented in the project area, but archaeological sites are vulnerable to the surface collection of artifacts. Impacts from surface collection are often exacerbated by increased access to site locations. The primary ongoing threat to cultural resources within the lake area is erosion resulting from surface runoff, inundation, and recreation.

A Historic Properties Management Plan (HPMP) was created by USACE for Charles River NVSA project (Atwood 2001), but it predates the 2010 investigations by RGA (Gall 2010) and the 2011 investigations by HDC (Sewell and Lee 2011). The HPMP should be updated to incorporate the latest cultural resources information and expanded into a comprehensive Integrated Cultural Resources Management Plan (ICRMP) to cover both archaeological and above-ground resources. Additionally, the USACE has acquired an abundance of data from previous investigations for the Charles River NVSA project but lacks a robust synthesis of these data. It is recommended that the USACE develop a comprehensive ICRMP in consultation with the Massachusetts SHPO, Native American Tribes, and other stakeholders to synthesize the existing data, address the effects of cultural and environmental processes on cultural resources and recommendations for managing these impacts, and outline procedures for management of these resources during construction and operations activities. Until an ICRMP is developed, future activities that have a potential to affect cultural resources should look to the 2010 and 2011 investigations (Gall 2010; Sewell and Lee 2011) and the existing HPMP for guidance. Finally, any future activities that have a potential to affect cultural resources must comply with Section 106 and 110 of the NHPA, NAGPRA, and ARPA.

## 2.12 CURRENT SOCIAL AND ECONOMIC CONDITIONS

### 2.12.1 Zone of Interest

The Charles River NVSA lies throughout 16 eastern Massachusetts communities in the middle and upper areas of the Charles River Watershed comprising of 2 cities and 14 towns. The zone of interest for the socio-economic analysis covers portions of Massachusetts and Rhode Island.

**Table 2.15 Zone of Interest Counties**

| Zone of interest Counties |
|---|
| Middlesex County, MA |
| Suffolk County, MA |
| Norfolk County, MA |
| Worcester County, MA |
| Bristol County, MA |
| Providence County, RI |

### 2.12.2 Population

The total population in the zone of interest in 2023 was 5,228,685 (Table 2.16). Approximately 31% of the zone of interest's population resides in Middlesex County, MA, and 16.5% in Worcester County, MA, and 15% in Suffolk County, MA. Providence County, RI makes up approximately 12.6% of the population.

**Table 2.16 2010, 2020, 2023, 2030 Population Estimates, and Projections**

| Geographical Area | 2010 | 2020 | 2023 Population Estimate | 2030 Population Projection Estimates |
|---|---|---|---|---|
| Massachusetts | 6,547,629 | 7,029,917 | 6,992,395 | 7,115,199 |
| Rhode Island | 1,052,567 | 1,097,379 | 1,095,371 | 1,070,677 |
| Middlesex County, MA | 1,503,085 | 1,632,002 | 1,622,896 | 1,648,360 |
| Suffolk County, MA | 722,023 | 797,936 | 782,172 | 857,103 |
| Norfolk County, MA | 670,850 | 725,981 | 724,540 | 740,929 |
| Worcester County, MA | 798,552 | 862,111 | 861,664 | 869,956 |
| Bristol County, MA | 548,285 | 579,200 | 578,436 | 570,164 |
| Providence County, RI | 626,667 | 660,741 | 658,977 | 613,518 |
| **Zone of Interest Total** | **4,869,462** | **5,257,971** | **5,228,685** | **5,300,030** |

Source: U.S. Census Bureau, 2023 American Community Survey 5-Year (2019-2023), U.S. Census Bureau, 2020 and 2010 U.S. Census Bureau. UMass Donahue Institute, UMDI-V2024 Massachusetts Population Projections, Rhode Island Statewide Planning Program, Rhode Island Population Projections 2010-2040.

From 2023 to 2030, the population in the zone of interest is expected to increase from 5,228,685 to 5,300,030. In comparison, the forecasted populations of Massachusetts and Rhode Island are expected to increase by 1.76% and decrease 2.25% respectively. All of the counties within the zone of interest that are expected to

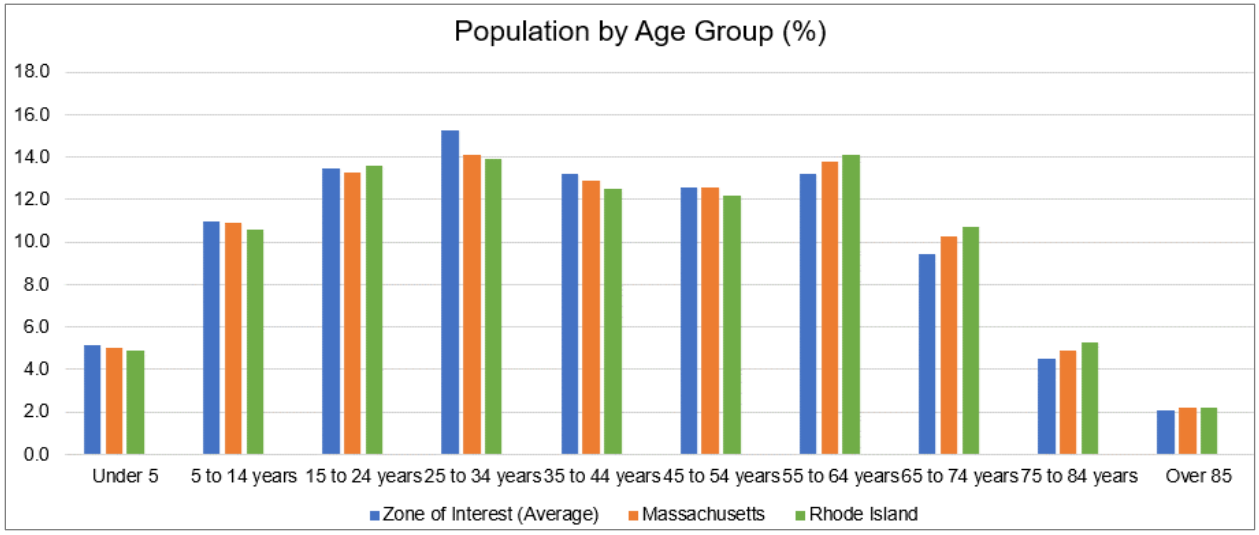
grow except for Bristol County, MA and Providence County, RI. Population for the years 2010 and 2020 are included for historical reference.

The distribution of the population by gender (Table 2.17) is approximately 49% male and 51% female. Figure 2.7 shows the population by age group for Massachusetts and Rhode Island, and the entire zone of interest. The zone of interest is consistent by age group when compared to the two states.

**Table 2.17 2023 Population Estimate by Gender**

| Geographical Area | Male | Female |
|---|---|---|
| Massachusetts | 3,416,765 | 3,575,630 |
| Rhode Island | 537,173 | 558,198 |
| Middlesex County, MA | 800,913 | 821,983 |
| Suffolk County, MA | 377,757 | 404,415 |
| Norfolk County, MA | 351,264 | 373,276 |
| Worcester County, MA | 427,601 | 434,063 |
| Bristol County, MA | 282,434 | 296,002 |
| Providence County, RI | 323,751 | 335,226 |
| Zone of Interest Total | 2,563,720 | 2,664,965 |

Source: U.S. Census Bureau, 2023 American Community Survey 5-Year (2019-2023)




Source: U.S. Census Bureau, 2023 American Community Survey 5-Year Estimates (2019-2023)

**Figure 2.7 2023 Percent of Population by Age Group**

Population by race and Hispanic Origin is displayed in Table 2.18. The zone of interest is approximately 64.6% White, 8.7% Asian, 13.4% Hispanic or Latino,7.2% Black, and 4.8% two or more races The other race categories each account for less than 1.5%. By comparison, the population in the state of Massachusetts is 67.8% White, 12.9% Hispanic or Latino, 7.2% Black, 0.08% American Indian or Alaskan Native, 7% Asian, 0.03% Native Hawaiian/Other Pacific, 1.2% Some Other Race, and 4.5% Two or More Races. Rhode Island is 69.1% White, 17.1% Hispanic or Latino, 5% Black, 0.16% American Indian or Alaskan Native, 3.4% Asian, 0.04% Native Hawaiian/Other Pacific, 0.8% Some Other Race, and 4.4% Two or More Races.

## Table 2.18 2023 Population Estimate by Race/Hispanic Origin

| Area | White | Hispanic or Latino | Black | American Indian and Alaska Native | Asian | Native Hawaiian and Other Pacific Islander | Some other race | Two or more races |
|---|---|---|---|---|---|---|---|---|
| Massachusetts | 4,738,848 | 904,679 | 455,145 | 5,837 | 491,861 | 1,964 | 80,134 | 313,927 |
| Rhode Island | 756,498 | 187,503 | 55,222 | 1,721 | 37,493 | 475 | 8,472 | 47,987 |
| Middlesex County, MA | 1,081,878 | 145,868 | 78,074 | 1,127 | 213,224 | 571 | 21,502 | 80,652 |
| Suffolk County, MA | 345,199 | 178,286 | 140,137 | 929 | 69,797 | 411 | 8,502 | 38,911 |
| Norfolk County, MA | 507,345 | 40,130 | 50,218 | 417 | 87,086 | 180 | 7,120 | 32,044 |
| Worcester County, MA | 618,267 | 114,759 | 40,024 | 711 | 44,647 | 213 | 8,563 | 34,480 |
| Bristol County, MA | 443,459 | 56,800 | 22,894 | 505 | 13,645 | 43 | 9,418 | 31,672 |
| Providence County, RI | 379,663 | 164,093 | 47,246 | 1,219 | 27,169 | 367 | 6,971 | 32,249 |
| **Zone of Interest** | **7,711,591** | **2,151,899** | **2,022,498** | **12,312** | **866,488** | **2,916** | **67,041** | **357,993** |

Source: U.S. Census Bureau, 2023 American Community Survey 5-Year (2019-2023)

### 2.12.3 Education and Employment

Table 2.19 displays the highest level of education attained by the population ages 25 and over. In the zone of interest, 4.75% of the population have less than a 9th grade education; another 4.59% have between a 9th and 12th grade education; 22.2% have at least a high school diploma or equivalent; 13.8% have some college education; 7% have an associate degree; 25.5% have a bachelor's degree; and 22.2% have a graduate or professional degree.

In Massachusetts, 4.24% of the population have less than a 9th grade education; another 4.36% have between a 9th and 12th grade education; 22.8% have at least a high school diploma or equivalent; 14.4% have some college education; 7.53% have an associate degree; 25.3% have a bachelor's degree; and 21.4% have a graduate or professional degree.

In Rhode Island, 4.81% of the population have less than a 9th grade education; another 5.71% have between a 9th and 12th grade education; 26.5% have at least a high school diploma or equivalent; 17.6% have some college education; 8.1% have an associate degree; 22.3% have a bachelor's degree; and 15% have a graduate or professional degree.

**Table 2.19 2023 Population Estimate by Highest Level of Educational Attainment, Population 25 Years of Age and Older**

| Area | Population 25 years and over | Less than 9th grade | 9th to 12th grade, no diploma | High school graduate (includes equivalency) | Some college, no degree | Associate's degree | Bachelor's degree | Graduate or professional degree |
|---|---|---|---|---|---|---|---|---|
| Massachusetts | 4,945,630 | 209,811 | 215,398 | 1,129,802 | 712,343 | 372,377 | 1,249,640 | 1,056,259 |
| Rhode Island | 776,505 | 37,355 | 44,321 | 205,862 | 136,460 | 62,840 | 172,759 | 116,908 |
| Middlesex County, MA | 1,149,018 | 38,403 | 37,019 | 200,893 | 129,075 | 65,860 | 330,513 | 347,255 |
| Suffolk County, MA | 550,949 | 40,716 | 27,562 | 112,975 | 66,708 | 28,107 | 147,849 | 127,032 |
| Norfolk County, MA | 512,818 | 15,260 | 13,666 | 89,085 | 63,416 | 35,774 | 153,763 | 141,854 |
| Worcester County, MA | 602,409 | 21,131 | 31,218 | 159,762 | 101,817 | 53,387 | 135,457 | 99,637 |
| Bristol County, MA | 409,203 | 28,359 | 27,915 | 123,280 | 66,966 | 37,336 | 79,826 | 45,521 |
| Providence County, RI | 458,321 | 31,055 | 31,814 | 131,506 | 80,827 | 35,535 | 90,198 | 57,386 |
| **Zone of Interest** | **3,682,718** | **174,924** | **169,194** | **817,501** | **508,809** | **255,999** | **937,606** | **818,685** |

Source: U.S. Census Bureau, 2023 American Community Survey 5-Year (2019-2023)

Employment by sector is presented in Figure 2.8 and Table 2.20. The largest percentage of the zone of interest is employed in Educational services, and health care and social assistance at 27.9%. 16.4% of the population works in professional, scientific, and management, and administrative and waste management services,9.5% work in retail trade, 9.3% work in manufacturing, 7.5% work in arts, entertainment, and recreation, and accommodation and food services, 7.4% work in finance and insurance, and real estate and rental and leasing and 5.8% in construction. The remainder of the employment sectors each comprise approximately 16% of the zone of interest's labor force.

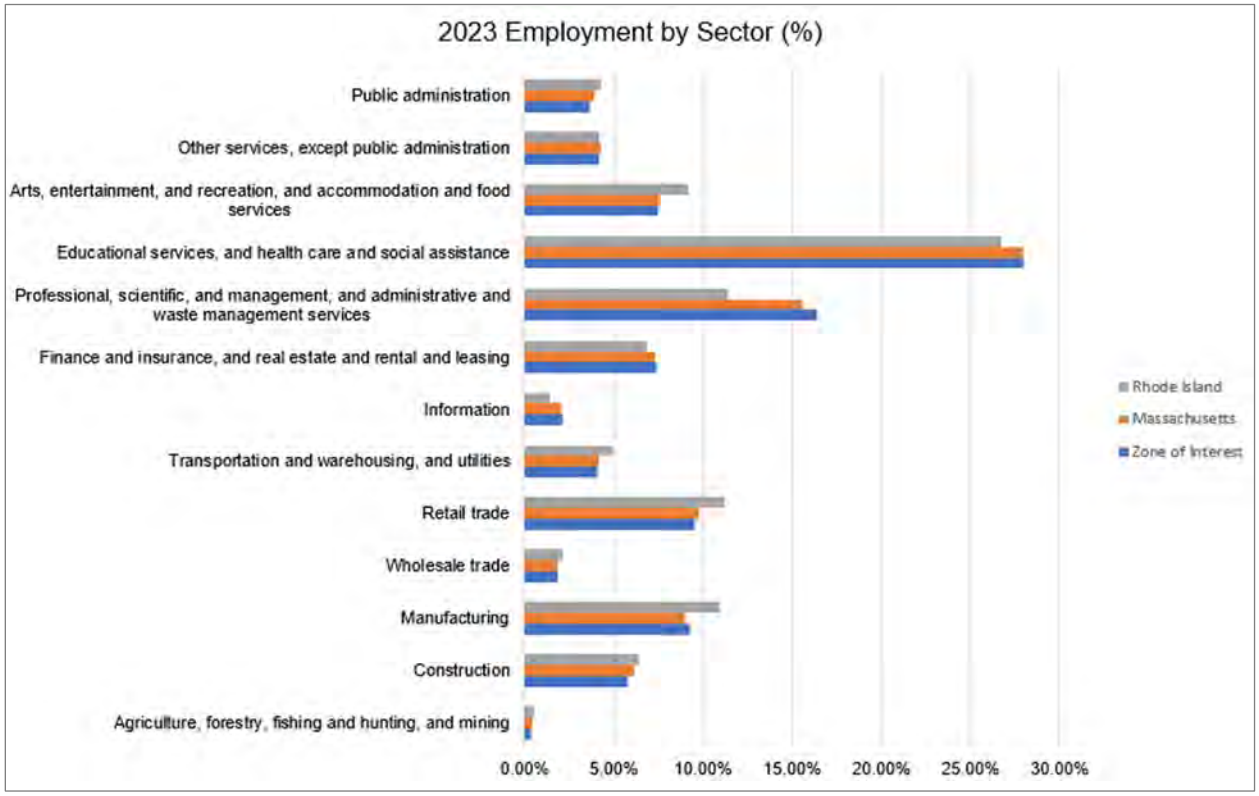



**Figure 2.8 Zone of Interest Employment by Sector (2023)**
Source: U.S. Census Bureau, 2023 American Community Survey 5-Year Estimates (2019-2023)

**Table 2.20 Annual Average Employment by Sector (2023)**

| Employment Sector | Massachusetts | Rhode Island | Middlesex County, MA | Suffolk County, MA | Norfolk County, MA | Worcester County, MA | Bristol County, MA | Providence County, RI |
|---|---|---|---|---|---|---|---|---|
| Civilian employed population 16 years and over | 3,687,020 | 555,915 | 897,476 | 439,980 | 390,797 | 443,268 | 291,377 | 331,010 |
| Agriculture, forestry, fishing and hunting, and mining | 16,034 | 2,938 | 2,618 | 633 | 968 | 2,351 | 1,873 | 1,126 |
| Construction | 224,881 | 35,528 | 47,169 | 17,273 | 20,535 | 30,983 | 24,756 | 20,789 |
| Manufacturing | 331,446 | 60,762 | 92,955 | 22,191 | 25,773 | 51,407 | 30,449 | 36,953 |
| Wholesale trade | 69,760 | 11,879 | 13,472 | 6,330 | 6,874 | 9,373 | 8,640 | 7,309 |
| Retail trade | 361,140 | 62,314 | 73,157 | 35,956 | 33,930 | 49,636 | 35,499 | 38,151 |
| Transportation and warehousing, and utilities | 155,398 | 26,958 | 27,118 | 20,027 | 13,448 | 20,468 | 14,270 | 18,246 |
| Information | 75,547 | 7,817 | 25,030 | 9,475 | 9,545 | 6,668 | 3,762 | 4,270 |
| Finance and insurance, and real estate and rental and leasing | 269,181 | 37,850 | 61,336 | 37,754 | 42,152 | 27,106 | 17,035 | 21,501 |
| Professional, scientific, and management, and administrative and waste management services | 573,593 | 63,445 | 187,432 | 83,120 | 65,132 | 54,513 | 30,639 | 37,266 |

| Employment Sector | Massachusetts | Rhode Island | Middlesex County, MA | Suffolk County, MA | Norfolk County, MA | Worcester County, MA | Bristol County, MA | Providence County, RI |
|---|---|---|---|---|---|---|---|---|
| Educational services, and health care and social assistance | 1,030,165 | 148,337 | 245,333 | 131,334 | 114,452 | 123,991 | 76,077 | 88,987 |
| Arts, entertainment, and recreation, and accommodation and food services | 278,268 | 50,814 | 57,650 | 40,413 | 28,242 | 30,603 | 22,409 | 28,950 |
| Other services, except public administration | 157,833 | 23,432 | 35,595 | 18,175 | 15,435 | 19,573 | 13,715 | 14,524 |
| Public administration | 143,774 | 23,841 | 28,611 | 17,299 | 14,311 | 16,596 | 12,253 | 12,938 |

A summary of the civilian labor force in the zone of interest is displayed in Table 2.21. In 2023, the zone of interest had an unemployment rate of 5.42%, higher than the unemployment rates of Massachusetts (5.1%) and lower than the state of Rhode Island (5.7%).

**Table 2.21 Labor Force, Employment and Unemployment Rates, 2023 Annual Averages**

| Geographic Area | Civilian Labor Force | Number Employed | Number Unemployed | Unemployment Rate |
|---|---|---|---|---|
| Massachusetts | 3,886,902 | 3,687,020 | 199,882 | 5.10% |
| Rhode Island | 589,549 | 555,915 | 33,634 | 5.70% |
| Middlesex County, MA | 937,222 | 897,476 | 39,746 | 4.20% |
| Suffolk County, MA | 469,142 | 439,980 | 29,162 | 6.20% |
| Norfolk County, MA | 411,077 | 390,797 | 20,280 | 4.90% |
| Worcester County, MA | 468,291 | 443,268 | 25,023 | 5.30% |
| Bristol County, MA | 308,652 | 291,377 | 17,275 | 5.60% |
| Providence County, RI | 353,274 | 331,010 | 22,264 | 6.30% |
| **Zone of Interest** | **2,947,658** | **2,793,908** | **153,750** | **5.42%** |

Source: U.S. Census Bureau, 2023 American Community Survey 5-Year (2019-2023) (2023 averages)

### 2.12.4 Households, Income and Poverty

Table 2.22 displays the number of households and average household sizes in the state and zone of interest. There were approximately 2,056,511 households in the zone of interest with an average household size of 2.45.

**Table 2.22 2023 Households and Household Size**

| Geographic Area | Total Households | Average Household Size |
|---|---|---|
| Massachusetts | 2,762,070 | 2.45 |
| Rhode Island | 436,902 | 2.40 |
| Middlesex County, MA | 630,939 | 2.48 |
| Suffolk County, MA | 322,184 | 2.29 |
| Norfolk County, MA | 281,408 | 2.51 |
| Worcester County, MA | 333,273 | 2.50 |
| Bristol County, MA | 232,202 | 2.43 |
| Providence County, RI | 256,505 | 2.46 |
| **Zone of Interest** | **2,056,511** | **2.45** |

Source: U.S. Census Bureau, 2019-2023 American Community Survey 5-Year Estimates (2023 Estimate)

The median household income in the zone of interest ranged from $78,204 in Providence County, RI to $123,779 in Middlesex County, MA in 2023, as displayed in

Table 2.23. Per capita income in the zone of interest was $54,353 in 2023, higher than the per capita income of the state of Rhode Island ($45,919) and lower than the state of Massachusetts ($56,284).

**Table 2.23 2023 Median and Per Capita Income**

| Geographic Area | Median Household Income (All) | Per Capita Income |
|---|---|---|
| Massachusetts | $101,341 | $56,284 |
| Rhode Island | $86,372 | $45,919 |
| Middlesex County, MA | $126,779 | $67,471 |
| Suffolk County, MA | $92,859 | $56,920 |
| Norfolk County, MA | $126,497 | $69,508 |
| Worcester County, MA | $93,561 | $47,780 |
| Bristol County, MA | $84,198 | $43,752 |
| Providence County, RI | $78,204 | $40,689 |
| **Zone of Interest** | **$100,350** | **$54,353** |

Source: U.S. Census Bureau, 2019-2023 American Community Survey 5-Year Estimates (2023 Estimate)

Table 2.24 displays the percentage of persons and families whose incomes fell below the poverty level in the past twelve months as of 2023. Within the zone of interest, Suffolk County, MA had the greatest share of people with incomes below the poverty level at 16.5%, followed by Providence County, RI at 13%. In terms of families below the poverty level, Norfolk County, MA has the lowest percentage with 4.2% and Suffolk County, MA has the highest with 11.6%.

**Table 2.24 Percent of Families and People Whose Income in the Past 12 Months is Below the Poverty Level (2023)**

| Geographic Area | All Families | All People |
|---|---|---|
| Massachusetts | 6.60% | 10.00% |
| Rhode Island | 7.00% | 10.90% |
| Middlesex County, MA | 4.70% | 7.50% |
| Suffolk County, MA | 11.60% | 16.50% |
| Norfolk County, MA | 4.20% | 6.60% |
| Worcester County, MA | 7.00% | 10.30% |
| Bristol County, MA | 9.00% | 11.60% |
| Providence County, RI | 9.00% | 13.00% |
| **Zone of Interest** | **7.58%** | **10.92%** |

Source: U.S. Census Bureau, 2023 American Community Survey 5-Year Estimates (2019-2023)

## 2.13 RECREATION FACILITIES, ACTIVITIES, AND NEEDS

### 2.13.1 Visitation Profile

Visitors of all ages enjoy canoeing, kayaking, and hiking. Hunting and fishing are seasonally popular. The diverse habitat and some remote locations makes it one of the finest birding locations in the area. The peak visitation months are mid-May through mid-September, with July typically being the highest visitation month.

**Zone of Interest**

The visitation market area, or zone of interest, is the area from which the majority of visitors to the project originate. The study team determined the majority of visitors travel from a 25-mile radius based on visitation records for Charles River NVSA. Most users are members of the local communities.

### 2.13.2 Recreation Areas and Facilities

Although the primary use of the project area is for short term flood water retention, the USACE's policy of managing land for multiple use has allowed passive recreation to develop on site. The entire project, except for areas restricted for public safety, is open to the public. However, many of the locations are fairly inaccessible due to their remote locations or being surrounded by private property, water, or major transportation routes.

Charles River NVSA provides numerous opportunities for recreational pursuits. The natural beauty and scenery provided by the project area continues to attract nearby residents and visitors. Although the project does not contain a major developed recreation area, there is a small, boat launch and parking lot in Millis, as well as many miles of trails traversing the area, often connecting to larger, regional trails. The area is also open to the public for hiking, cross-country skiing, horseback riding, hunting, and fishing.

Of great importance to the zone of interest are the existing and future recreational opportunities. Table 2.25 lists the various recreational facilities near Charles River NVSA.

**Table 2.25 Regional Recreation Facilities within 25 mile radius of the Charles River NVSA**

| | Boating | Camping | Fishing | Hiking | Hunting | Picnicking | Ski-touring | Swimming |
|---|---|---|---|---|---|---|---|---|
| Charles River Reservation | X | | X | X | | X | | X |
| Hopkinton State Park | X | | X | X | X | X | X | X |
| Ashland State Park | X | | X | X | | X | | X |

**Fishing and Hunting**

Hunting, fishing, and trapping are permitted on project lands in accordance with applicable federal, state, and local laws. Section 5.7 describes the resource plan for the 17 Management Units, and each has different descriptions of fishing and hunting opportunities across the Charles River NVSA.

MassWildlife has a real estate license agreement for many of the areas to manage wildlife and provide access with natural surface trails. All lands at Charles River NVSA with the exception of a small rubble dam in Bellingham that predates the project and the boat launch and parking lot in Millis are managed for wildlife management. The stocked species draw many hunters and anglers to the project. Stocked trout are the primary game fish in the upland streams and brooks in the project. Hunting is allowed only where expressly permitted.

**Trails**

Hiking is extremely popular in the areas around the Charles River NVSA used for hiking, hunting, cross-country skiing, snowshoeing, and exploring nature. These trails wind through the woodlands and skirt along the wetlands of the project with no systematic arrangement. Many of the trails are inaccessible after rains due to flooding and moving water.

### 2.13.3 Recreation Analysis

The 2024 Massachusetts Statewide Comprehensive Outdoor Recreation Plan (SCORP) was prepared by the Executive Office of Energy and Environmental Affairs' (EEA) Division of Conservation Services (DCS). The SCORP serves to address emerging issues in Massachusetts outdoor recreation and set priority areas to serve as the foundation for action over the next five years. According to the 2024 Massachusetts SCORP, the following goals were identified:

1. Improve access to beaches and other water-based recreation facilities
2. Support trail projects

3. Create and renovate neighborhood parks, especially to benefit the underserved
4. Create opportunities, especially for the underserved, to enjoy protected natural areas

To implement these priorities the SCORP identified 3 detailed objectives for each goal, for a total of 12 objectives. In order to gain an understanding of statewide participation trends several surveys were conducted to support the development of the SCORP. Some highlights of the participation trends include:

- 44% of respondents indicated that outdoor recreation is “extremely important” and 37% indicated it is “somewhat important”
- Walking was identified as the most popular activity with 9.6% of respondents and reported as most frequently with 68% of respondents who walked more than once a week. The following most popular activities included visiting the beach (6.1%), hiking (5.7%), visiting farmers markets (4.7%), visiting outdoor historic sites or museums (3.9%), swimming in outdoor pools (3.6%), swimming in natural water bodies, (3.6%), camping (3.3%), bird watching or wildlife viewing (3.2%) and running or jogging (3.0%) and basketball (3.0%).
- 46% of respondents live within 5 miles of an outdoor recreation area or facility they use most often with another 35% of respondents living between 5 and 10 miles away. Racial-ethnic disparities showed that Black or African American and Hispanic or Latino respondents were more likely to live 5 to 10 miles away from the outdoor recreation area of facility they use more often.
- Beaches were at the top of the list of outdoor recreational areas that respondents would like to see more of in Massachusetts with 10.6% of respondents. Picnic facilities were at the top of the list for Asian/ Pacific Islander respondents.
- Factors that most limited the use of outdoor recreational areas and facilities is lack of time (15%), lack of restrooms/ locker rooms (12.3%), and lack of parking (11.1%).

Table 2.26 depicts the activities that outdoor recreation enthusiasts in Massachusetts were most interested in participating in and results are presented with different activities identified by race. Walking consistently ranked on the top of the list for all races, with running or jogging and hiking being other activities that are popular among a diversity of respondents in Massachusetts. Charles River NVSA provides opportunities for the public to participate in their favorite activities by making use of the numerous hiking trails.

**Table 2.26 Top Five Activities by Race**

| White | Black/African American | Hispanic/Latino | Asian/Pacific Islander |
|---|---|---|---|
| Walking | Walking | Walking | Walking |
| Running or jogging | Running or jogging | Hiking | Visiting the beach |
| Hiking | Basketball | Basketball | Hiking |

| White | Black/African American | Hispanic/Latino | Asian/Pacific Islander |
|---|---|---|---|
| Visiting the beach | Dance | Visiting the beach | Visiting the farmers markets |
| Dance | Visiting the beach | Visiting the farmers markets | Swimming in natural water bodies |

(Source: 2024 Massachusetts Outdoor Recreation Plan)

The USACE recognizes the importance of recreation to the local community and the Commonwealth of Massachusetts, and the importance that USACE managed land can play in providing access. Information from the SCORP including the survey results and the statewide goals and objectives were considered when developing the goals and objectives for this Master Plan. See Chapter 3 for the resource goals and objectives developed for the Charles River NVSA Master Plan.

### 2.13.4 Recreation Carrying Capacity

The Plan formulated herein proposes to provide a variety of activities and to encourage optimal, safe use of present public use areas without causing irreparable harm to natural resources. The carrying capacity of the land is determined primarily by the distinct characteristics of the site including but not limited to soil type, steepness of topography, and available moisture. In spite of the widespread wetlands, there is not a conservation pool or impounded water surface within the Charles River NVSA. Because the river channel is fairly inaccessible with numerous obstacles. These characteristics, both natural and manmade, are development constraints that often determine the type and number of facilities that should be provided.

No recreation carrying capacity studies have been conducted at Charles River NVSA. Presently, the USACE manages recreation areas using historic visitation data combined with best professional judgment to address recreation areas considered to be overcrowded, overused, underused, or well balanced. Compared to other USACE Projects of similar size, Charles River NVSA experiences low visitation. This trend is expected to continue based on regional population projections. The USACE will apply appropriate best management practices including site management, regulating visitor behavior, and modifying visitor behavior as needed to adapt to changes in usage.

## 2.14 REAL ESTATE

A total of 3,186.52 acres of fee simple land and 4,891.95 acres of easements were acquired for the Charles River NVSA. Of those original acres, 3.76 acres of fee simple and 0.10 easement acres were disposed leaving the current total of 3,182.76 acres of fee simple and 4,891.85 easement acres. Easement acres reflect all easements on the project and not solely flowage easements. These are the official acres and may differ from those in other parts of this plan, which are for planning purposes only, due to improved measurement technology, erosion, and sedimentation.

### 2.14.1 Outgrants

The term “outgrant” is a broad term used by the USACE to describe a variety of real estate instruments wherein an interest in real property has been conveyed by the USACE to another party. Current outgrants at Charles River NVSA include leases, licenses, easements, consents, permits, and others which include the following:

- 23 Easements
- 0 Leases
- 3 Licenses
- 34 Consents
- 0 Permits

The demand for real estate outgrants at Charles River NVSA ranks fairly high among USACE projects in terms of the total number of real estate outgrants due to the large number of tracts across 17 management units spread across the Charles River Watershed. Management actions related to outgrants include routine inspections to ensure compliance with the terms of the outgrant, public safety requirements, and environmental compliance. The management of outgrants is a major responsibility shared by the Operations and Real Estate Divisions of New England District.

### 2.14.2 Guidelines for Property Adjacent to Public Land

It is the policy of the USACE to manage the natural, cultural, and developed resources of Charles River NVSA to provide the public with safe and healthful recreational opportunities, while protecting and enhancing those resources. While private exclusive use of public land is not permitted, property owners adjacent to public lands do have all the same rights and privileges as any other citizen on their own property. Therefore, the information contained in these guidelines is designed to acquaint the adjoining landowner and other interested persons with the types of property involved in the management of government land at Charles River NVSA. See Section 6.4 for more information about private activities on property owned by the USACE.

### 2.14.3 Trespass and Encroachment

Government property is monitored by USACE personnel to identify and correct instances of unauthorized use, including trespasses and encroachments. The term “trespass” includes unauthorized transient use and occupancy, such as mowing, tree cutting and removal, livestock grazing, cultivation and harvesting crops, and any other alteration to Government property done without the USACE approval. Unauthorized trespasses may result in a Title 36 citation requiring violators to appear in Federal Magistrate Court, which could subject the violator to fines or imprisonment (See 36 C.F.R. Part 327 Rules and Regulations Governing Public Use of Water Resources Development Projects Administered by the Chief of Engineers). More serious trespasses will be referred to the USACE Office of Counsel for enforcement under state

and federal law, which may require restoration of the premises and collection of monetary damages.

The term “encroachment” pertains to an unauthorized structure or improvement on Government property. When encroachments are discovered, project personnel will attempt to resolve the issue at the project level. Where no resolution is reached, or where the encroachment is a permanent structure, the method of resolution will be determined by the USACE Real Estate Division, with recommendations from Operations Division and Office of Counsel. The USACE’s general policy is to require removal of encroachments, restoration of the premises, and collection of appropriate administrative costs and fair market value for the term of the unauthorized use. Incidents of unauthorized tree removal and mowing have occurred at the project, as well as placement of unauthorized structures or material.

The most common trespass are unauthorized mowing and paths, unauthorized structures such as fences and temporary structures, storage of personal property on USACE lands, and tree and vegetation removal. Trash dumping is a difficult and expensive problem at many USACE projects. Efforts are continuously underway to resolve these unauthorized acts, but the sheer volume creates a workload that is difficult to accomplish. Encroachments can be prevented. Identifying the USACE fee boundary line and flowage easement designation are critical elements for the public who are planning for any type of activity near a USACE boundary. See Appendix A for general maps showing the project boundary or visit the project office with questions or concerns.

# CHAPTER 3 – RESOURCE GOALS AND OBJECTIVES

## 3.1 INTRODUCTION

The terms “goal” and “objective” are often defined as synonymous, but in the context of this Master Plan goals express the overall desired end state of the Master Plan whereas resource objectives are specific task-oriented actions necessary to achieve the overall Master Plan goals.

## 3.2 RESOURCE GOALS

The following statements, paraphrased from EP 1130-2-550, Chapter 3, express the goals for the Charles River NVSA Master Plan:

**GOAL A.** Provide the best management practices to respond to regional needs, resource capabilities and capacities, and expressed public interests consistent with authorized project purposes.

**GOAL B.** Protect and manage the project’s natural and cultural resources through sustainable environmental stewardship programs.

**GOAL C.** Provide public outdoor recreation opportunities that support project purposes and public interests while sustaining the project’s natural resources.

**GOAL D.** Recognize the project’s unique qualities, characteristics, and potentials.

**GOAL E.** Provide consistency and compatibility with national objectives and other State and regional goals and programs.

In addition to the above goals, USACE management activities are guided by USACE-wide Environmental Operating Principles as follows:

- Strive to achieve environmental sustainability. An environment maintained in a healthy, diverse, and sustainable condition is necessary to support life.
- Recognize the interdependence of life and the physical environment. Proactively consider environmental consequences of USACE programs and act accordingly in all appropriate circumstances.
- Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.
- Continue to accept corporate responsibility and accountability under the law for activities and decisions under our control that impact human health and welfare and the continued viability of natural systems.
- Seek ways and means to assess and mitigate cumulative impacts to the environment; bringing systems approaches to the full life cycle of our processes and work.

- Build and share an integrated scientific, economic, and social knowledge base that supports a greater understanding of the environment and impacts of our work.
- Respect the views of individuals and groups interested in USACE activities; listen to them actively and learn from their perspective in the search to find innovative win-win solutions to the nation's problems that also protect and enhance the environment.

## 3.3 RESOURCE OBJECTIVES

Resource objectives are defined as clearly written statements that respond to identified issues and that specify measurable and attainable activities for resource development and/or management of the lands and waters under the jurisdiction of the New England District, Charles River NVSA Project Office. The objectives stated in this Master Plan support the goals of the Master Plan, the USACE Environmental Operating Principles (EOPs), and applicable national performance measures. They are consistent with authorized project purposes, federal laws and directives, regional needs, resource capabilities, and they take public input into consideration. Recreational and natural resources carrying capacities are also accounted for during development of the objectives found in this Master Plan, as well as regional and state planning documents including:

- Massachusetts Wildlife Action Plan
- Massachusetts Statewide Comprehensive Outdoor Recreation Plan

The objectives in this Master Plan are intended to provide project benefits, meet public needs, and foster environmental sustainability for Charles River NVSA to the greatest extent possible. Tables 3.1 through 3.5 list the objectives for Charles River NVSA.

**Table 3.1 Recreational Objectives**

| Recreational Objectives Goals: | A | B | C | D | E |
|---|---|---|---|---|---|
| Consider partnering with the Commonwealth of Massachusetts or local stakeholders to provide recreational opportunities for multiple user groups with barrier free access while ensuring visitor safety. | * | | * | * | * |
| Seek out partnerships and provide technical guidance to lease partners on the management of recreation facilities in accordance with public demand. | * | | * | | |
| Ensure consistency with USACE Natural Resource Management (NRM) Strategic Plan. | | | | | * |
| Continue to monitor the Massachusetts SCORP to ensure that the USACE is responsive to outdoor recreation trends, public needs, and resource protection within a regional framework. All | | | * | | * |

| Recreational Objectives Goals: | A | B | C | D | E |
|---|---|---|---|---|---|
| plans by others will be evaluated considering USACE policy and operational aspects of Charles River NVSA. | | | | | |
| Seek out partnerships for potential improvements to trails including connections to regional trail networks. | * | * | * | | * |
| Continue to work with the state to manage the trails that connect to state property. | * | * | * | | * |
| Support the state fish and pheasant stocking programs and use of project lands for these activities. | * | * | * | | * |

*Denotes that the objective helps to meet the specified goal.

**Table 3.2 Natural Resource Management Objectives**

| Natural Resource Management Objectives Goals: | A | B | C | D | E |
|---|---|---|---|---|---|
| Give priority to the preservation and improvement of open space in public use planning, design, development, and management activities. | * | * | | * | |
| Work with Tribal Nations to provide access to any culturally significant natural resources. | | * | | * | |
| Actively manage and conserve fish and wildlife resources, especially threatened and endangered species and Species of Greatest Conservation Need, by implementing ecosystem management principles. Key among these principles is the use of native species adapted to the Southern New England Coastal Plains and Hills ecoregion in restoration and mitigation plans. | * | * | | * | |
| Manage recreation lands in ways that balances visitor use with natural resource management. | | | * | | |
| Optimize resources, labor, funds, and partnerships for protection and restoration of fish and wildlife habitats. | | * | | | |
| Minimize activities which disturb the scenic beauty and aesthetics of the project. | * | * | * | * | |
| Work with the partners on prescribed fire, timber harvests, and removal of targeted species as a management tool to promote the vigor and health of forests, woodlands, and grasslands. | * | * | | | |
| Deter unauthorized use and damage of public lands through utilization of Title 36 CFR authorities, as well as state and local rules and regulations related to the protection of natural resources. | * | * | * | * | |
| Manage lands and waters to reduce the spread of invasive, non-native, and aggressively spreading native species. | * | * | | * | |

| Natural Resource Management Objectives Goals: | A | B | C | D | E |
|---|---|---|---|---|---|
| Protect and restore important native habitats such as grasslands, forests, riparian zones, and wetlands where they occur or historically occurred on project lands. Special emphasis should be placed on protection and/or restoration of special or rare plant species. Emphasize promotion of pollinator habitat, migratory bird habitat, and habitat for birds listed by MassWildlife and USFWS as Birds of Conservation Concern. | * | * | | * | |
| Manage the inventory of timber resources as part of the Forest Management Plan. | * | * | | * | |
| Protect and conserve wetlands, rare plant and animal habitats such as vernal pools. Wetlands are highly productive sites for a variety of ecological functions, as well as for the enhancement of water quality. All forest management operations in or adjacent to wetlands will be planned and conducted in a manner that protects these functions. Forest management activities in wetlands will take place on frozen ground during the winter to minimize rutting and erosion. | * | * | * | * | * |
| Maintain the health and biodiversity of the forest ecosystem. Provide a range of species, age classes, and structural diversity intended to enhance and maintain the biological diversity of species, communities, and ecosystems. | * | * | * | * | * |

*Denotes that the objective helps to meet the specified goal.

**Table 3.3 Visitor Information, Education, and Outreach Objectives**

| Visitor Information, Education, and Outreach Objectives Goals: | A | B | C | D | E |
|---|---|---|---|---|---|
| Create opportunities for communication with partner agencies, special interest groups, and the general public. Utilize social media as a platform to share information with visitors and stakeholders. | * | | | * | * |
| Provide educational, interpretive, and outreach programs at the project. Topics to include history, project purposes (flood risk management, natural resource management, and recreation), safety, cultural resources, ecology, and USACE missions. | * | * | * | * | * |
| Educate adjacent landowners on real estate requirements in order to reduce encroachment actions. | * | * | * | * | * |
| Work with local communities to engage the public and provide educational and informational opportunities. | * | * | * | * | * |

*Denotes that the objective helps to meet the specified goal.

**Table 3.4 Cultural Resources Management Objectives**

| Cultural Resources Management Objectives Goals: | A | B | C | D | E |
|---|---|---|---|---|---|
| Maintain the Cultural Resources Management Plan to manage cultural resources at Charles River NVSA. | * | * | | * | * |

| Cultural Resources Management Objectives Goals: | A | B | C | D | E |
|---|---|---|---|---|---|
| Monitor and enforce Title 36 and ARPA to prevent unauthorized excavation and removal of cultural resources. | | * | | * | * |
| Provide access to Tribal Nations to any cultural resources, sacred sites, or other Traditional Cultural Properties. | * | * | | | |
| Preserve and protect cultural resources sites in compliance with existing federal statutes and regulations. | * | * | * | * | * |
| Work with the State Historic Preservation Office to inventory and protect historic and archeological resources. | * | * | | * | * |

*Denotes that the objective helps to meet the specified goal.

# CHAPTER 4 – LAND ALLOCATION, LAND CLASSIFICATION, WATER SURFACE, AND PROJECT EASEMENT LANDS

## 4.1 LAND ALLOCATION

All lands at USACE water resource development projects are allocated by the USACE into one of four categories in accordance with the congressionally authorized purpose for which the project lands were acquired: Operations, Recreation, Fish and Wildlife, and Mitigation. At Charles River NVSA, the only land allocation category is Operations. Operations is defined as those lands that are required to construct and operate the project for the primary authorized purpose, which at Charles River NVSA is flood risk management. The remaining allocations of Recreation, Fish and Wildlife, and Mitigation would apply only if lands had been acquired specifically for these purposes.

## 4.2 LAND CLASSIFICATION

### 4.2.1 General

The objective of classifying project lands is to identify how a given parcel of land shall be used now and in the foreseeable future. Land classification is a central component of this plan, and once a particular classification is established any significant change to that classification would require a formal process including public review and comment. In addition to the land classifications, Charles River NVSA is further managed by distinct management units, as further described in the Chapter 5 Resource Plan.

### 4.2.2 Land Classifications

The previous version of Charles River NVSA did not include any land classifications. Table 4.1 identifies land classifications in the proposed 2025 Master Plan Revision.

**Table 4.1 Proposed 2025 Land Classifications**

| Proposed Land Classifications (2025) | Acres |
|---|---|
| Project Operations (PO) | 0.8 |
| Low Density Recreation (LDR) | 0.2 |
| Wildlife Management | 3,177.2 |
| **LAND TOTAL** | **3,178.2** |

USACE regulations require project lands and waters to be classified in accordance with the primary use for which project lands are managed. There are six categories of classification identified in USACE regulations as follows:

- Project Operations
- High Density Recreation

- Mitigation
- Environmentally Sensitive Areas
- Multiple Resource Management Lands
- Water Surface

The land and water surface classifications for Charles River NVSA were established after considering public comments and input from key stakeholders, including elected officials, city and county governments, and lessees operating on USACE land. Additionally, information from the 2024 Massachusetts SCORP, public comments, wildlife habitat values, and trends analysis were used in decision making. Maps showing the various land classifications can be found in Appendix A. The following paragraphs provide acreages and descriptions of allowable uses for each of the land classifications.

## Project Operations (PO)

The PO classification includes the lands managed for operations and maintenance of the Charles River NVSA project required to carry out the authorized purpose of flood risk management. In addition to the operational activities taking place on these lands, limited recreational use may be allowed for activities such as public access to the river shoreline. Regardless of any limited recreation use allowed on these lands, the primary classification of PO will take precedent over other uses. There is 0.8 acre of PO land specifically managed for this purpose.

## High Density Recreation (HDR)

HDR lands are developed for intensive recreational activities for the visiting public, including day use areas, campgrounds, marinas, and related concession areas. Recreational areas operated by lessees on USACE lands must follow policy guidance contained in USACE regulations at ER 1130-2-550, Chapter 16. That policy includes the following statement:

> "*The primary rationale for any future recreation development must be dependent on the project's natural or other resources. This dependency is typically reflected in facilities that accommodate or support water-based activities, overnight use, and day use such as marinas, campgrounds, picnic areas, trails, swimming beaches, boat launching ramps, and comprehensive resort facilities. Examples that do not rely on the project's natural or other resources include theme parks or ride-type attractions, sports or concert stadiums, and standalone facilities such as restaurants, bars, motels, hotels, non-transient trailers, and golf courses. Normally, the recreation facilities that are dependent on the project's natural or other resources, and accommodate or support water-based activities, overnight use, and day [use] are approved first as primary facilities followed by those facilities that support them. Any support facilities (e.g., playgrounds, multipurpose sports fields, overnight facilities, restaurants, camp stores, bait shops, comfort stations, and boat repair facilities) must also enhance the recreation experience, be dependent*

*on the resource-based facilities, [and] be secondary to the original intent of the recreation development…"*

Lands classified for HDR are suitable for the development of comprehensive resorts. The regulation cited above defines Comprehensive Resort as follows:

"*Typically, multi-faceted developments with facilities such as marinas, lodging, conference centers, golf courses, tennis courts, restaurants, and other similar facilities."*

There are currently no areas with intensive recreation facilities or plans for such facilities on fee land. There are no (zero) acres at Charles River NVSA classified as HDR.

**Mitigation (MG)**

The Mitigation classification is used only for lands allocated by Congress for mitigation for the purpose of offsetting losses associated with the development of the project. There are no (zero) acres at Charles River NVSA with this classification.

**Environmentally Sensitive Areas (ESA)**

ESAs include scientific, ecological, cultural, and aesthetic features identified and in need of preservation. At Charles River NVSA, there are no (zero) acres with this classification.

**Multiple Resource Management Lands (MRML)**

This land classification is divided into four sub-classifications: Low Density Recreation, Wildlife Management, Vegetative Management, and Future/Inactive Recreation Areas. A given tract of MRML land is classified using one of these sub-classifications, with the primary sub-classification reflective of the dominant use of the land. Typically, MRMLs support only passive, non-intrusive uses with very limited facilities or infrastructure. Where needed, some areas may require basic facilities that include, but are not limited to, minimal parking spaces, a small boat ramp, and/or primitive sanitary facilities. There are 3,177.4 acres of MRML lands at Charles River NVSA. The following sections describes each sub-classification, the number of acres, and primary uses for each designation.

***Low Density Recreation (LDR)***

LDR lands support passive public recreational use (e.g., fishing, hunting, wildlife viewing, natural surface trails, hiking, etc.). There is 0.2 acre under this land classification at Charles River NVSA.

### *Wildlife Management (WM)*

The WM land classification applies to lands managed primarily for the conservation of fish and wildlife habitat. These lands generally include comparatively large contiguous parcels of land that allow passive recreation uses such as natural surface trails, fishing, hunting, and wildlife observation, unless restrictions are necessary to protect sensitive species or features or to promote public safety. There are 3,177.2 acres of land included in this classification at Charles River NVSA.

### *Vegetative Management (VM)*

VM lands designated for stewardship of forest, grasslands, and other native vegetative cover. Passive recreation activities previously described may be allowed in these areas. There are no (zero) acres of land included in this classification at Charles River NVSA.

### *Future or Inactive Recreation (FOIR)*

Future or Inactive Recreation lands have site characteristics compatible with HDR development. These are areas where HDR development was anticipated in prior land classifications, but the development either never took place or was minimal, or areas where intensive recreation facilities may be permitted in the future, but there are no current facilities. These areas are typically closed to vehicular traffic and are managed as MRML until development takes place. There are no (zero) acres of land included in this classification at Charles River NVSA.

## 4.2.3 Water Surface Classifications

Charles River NVSA does not impound a permanent or recreation pool but is primarily managed for flood control. However, there are both permanent and intermittent ponds at Charles River NVSA which are managed under the land classifications described above. USACE regulations specify the possible classifications for the water surface, which are intended to promote public safety, protect resources, or protect project operational features such as the dam and spillway. These areas are typically marked by the USACE with navigational or informational buoys, signs, or denotations on public maps and brochures. There are no (zero) acres of permanent water surface classified at Charles River NVSA.

### **Restricted**

Restricted water surface includes those areas where recreational boating is prohibited or restricted for project operations, safety, and security purposes. There are no (zero) acres of Restricted water surface at Charles River NVSA.

### Designated No-Wake

Designated No-Wake areas are intended to protect sensitive shorelines and improve boating safety near key recreational water access areas such as boat ramps. There are no (zero) acres of No Wake water surface at Charles River NVSA.

### Fish and Wildlife Sanctuary

This water surface classification applies to areas with annual or seasonal restrictions to protect fish and wildlife species during periods of migration, resting, feeding, nesting, and/or spawning. Charles River NVSA has no (zero) water surface areas designated as a Fish and Wildlife Sanctuary.

### Open Recreation

Open Recreation includes all water surface areas available for year-round or seasonal water-based recreational use. This classification typically would encompass the majority of a permanent pool water surface and is open to general recreational boating. Because there is no permanent pool, there are no (zero) water surface acres of open recreation water surface at Charles River NVSA.

## 4.2.4 Project Easement Lands

Project Easement Lands are primarily lands on which easement interests were acquired. Fee title was not acquired on these lands, but the easement interests convey to the federal government certain rights to use and/or restrict the use of the land for specific purposes. Easement lands are typically classified as Operations Easement, Flowage Easement, and/or Conservation Easement. At Charles River NVSA, Flowage Easement lands are the only type of easements present. A flowage easement, in general, grants to the government the perpetual right to temporarily flood/inundate private land during flood risk management operations including a prohibition on any structure for human habitation, and no other structures or excavating or filling without written approval of the Government. There are 4,891.85 acres of Flowage Easement lands at Charles River NVSA.

# CHAPTER 5 – RESOURCE PLAN

## 5.1 MANAGEMENT BY CLASSIFICATION

This chapter describes the management plans for each land use classification within the Master Plan. The classifications that exist at Charles River NVSA are Project Operations and Multiple Resource Management Lands, which consist of the Wildlife Management and Low Density Recreations sub-classifications. The management plans describe how these project lands will be managed in broad terms. In addition, the resource plan also manages each management unit in further detail as described in Section 5.6.

## 5.2 PROJECT OPERATIONS (PO)

PO is land associated with dams, dikes, levees, project office, maintenance facilities, and other areas solely for the operation of the project. There is 0.8 acre of land under this classification, all of which are managed by the USACE. The management plan for the PO area is to continue providing physical security necessary to ensure sustained operations of the project and related facilities, including restricting public access in hazardous locations.

Recommended future actions for PO areas include projects required for operations and maintenance as well as activities to meet USACE sustainability objectives as funding and personnel allow. Opportunities to incorporate environmental stewardship objectives for land management such as invasive species control and wildlife management will be implemented as appropriate.

## 5.3 HIGH DENSITY RECREATION (HDR)

This classification is used for lands for intensive recreation. There are no acres at Charles River NVSA under this classification.

## 5.4 MITIGATION (MG)

This classification is used for lands that were acquired specifically for the purpose of offsetting losses associated with development of the project. There are no acres at Charles River NVSA under this classification.

## 5.5 ENVIRONMENTALLY SENSITIVE AREAS (ESA)

The USACE acknowledges that there are many features including scientific, ecological, cultural, and aesthetic in need of preservation at Charles River NVSA. However, there have been insufficient inventories to designate precise areas as ESA, and no areas were classified as ESA since sensitive features will be included in areas classified as Multiple Resource Management Lands – Wildlife Management. Those areas will be managed by their specific management unit, as described in Section 5.7,

and the USACE will continue to protect those features deemed significant to ensure those features will not be adversely impacted.

## 5.6 MULTIPLE RESOURCE MANAGEMENT LANDS

The 3,177.4 acres of Multiple Resource Management Lands are within two sub-classification at Charles River NVSA – WM and LDR. The following is a description of the resource objectives, acreages, and description of use.

### 5.6.1 Wildlife Management (WM)

These are lands designated for the stewardship of fish and wildlife resources and are managed by the USACE and key partners. There are currently 3,177.2 acres of land under this classification at Charles River NVSA. The broad objective of fish and wildlife management is to conserve, maintain and improve the fish and wildlife habitat to produce the greatest dividend for the benefit of the general public. Implementation of a fish and wildlife management plan is the first step toward achieving the goals of the Fish and Wildlife Coordination Act (Public Law 85-624). Future management plans for wildlife areas include continued cooperation with partners and managing and improving wildlife management units under this land classification, maintaining and improving trails, connecting to regional trail networks, and providing additional access including small, natural surface parking where feasible. Additional management is described for each respective management unite in Section 5.7.

There are 2 known federally listed species, along with 24 federally listed migratory birds, and 9 known state-listed species that could utilize habitat within the Charles River NVSA project area. Therefore, any work conducted on this project will be in accordance with the Endangered Species Act and will be appropriately coordinated with the USFWS and State resource agencies. These species (Tables 2.8, 2.9, and 2.10) will continue to receive attention to ensure they are managed in accordance with their habitat needs.

Non-game wildlife is also managed. The following list of non-game programs is being or will be pursued as funds become available.

- Early detection, prevention, and removal of invasive species
- Native vegetation restoration where needed
- Fish spawning and habitat structures
- Food/habitat plots for native wildlife
- Pollinator plots
- Wildlife friendly fencing
- Trail maintenance and improvements to ensure access to natural resources

### 5.6.2 Low Density Recreation (LDR)

At Charles River NVSA, LDR lands are associated with the natural surface parking lot and Charles River boat access at Forest Street in Area G in Millis. Users typically launch non-powered boats (such as canoes or kayaks) as well as access the river shoreline for fishing. No camping is permitted in this area. The area is connected to land managed by MassWildlife, but there are no formal trails from the parking lot to those adjacent lands. Future management of these lands call for minimal development to allow access to the Charles River, reduce erosion, and improve aesthetics. Future uses may include improving access to adjacent WM land via natural surface trails. There are 0.2 acres classified as LDR.

## 5.7 MANAGEMENT UNITS

The Resource Plan is developed and organized in compliance with EP 1130-2-550, Section 3-6 2761 for Management by Unit for each area individually. Each Management Unit includes a description of the area, the land classifications and acreages within the area, the rationale for each classification, and development needs for each area. These resource plans are broad in nature and reflect the 25-year planning horizon of the Master Plan. The Management Units are mapped in more detail in Appendix A showing the areas owned in fee and flowage easement and the land classifications. These units are described in the following sections. Note that there is no Area A or Q, as these areas were part of initial project planning, but were later excluded from project requirements. Many of these areas have land under lease or license agreements and will be managed according to the terms of those agreements consistent with the WM land classification.

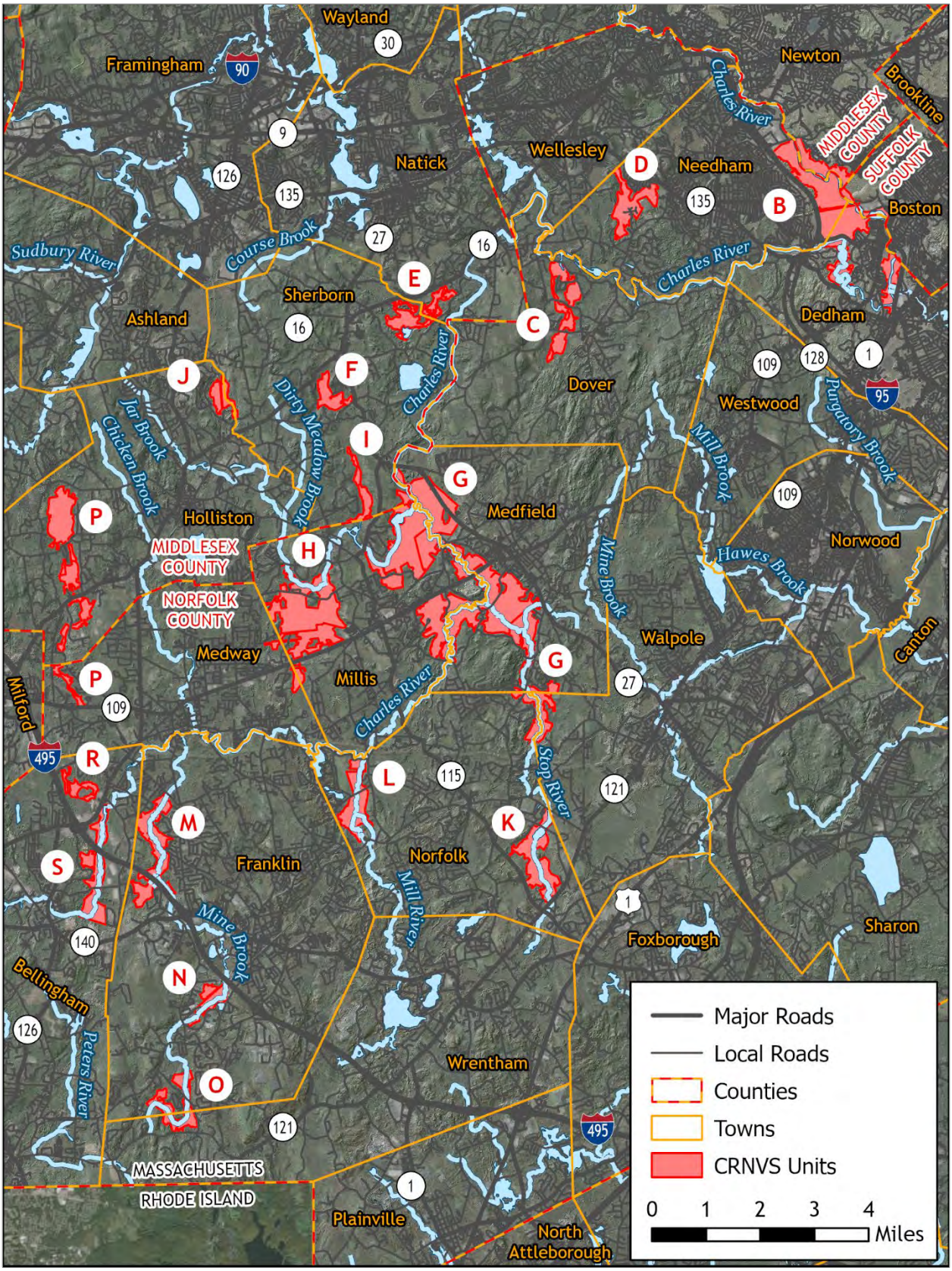



**Figure 5.1 Location of Management Units**

### 5.7.1 Area B

Area B is located in the Towns of Dedham, Needham, Newton and the City of Boston. It consists of 132.2 acres in fee and 1,033.9 acres of easement. This area protects the large wetlands along the main stem of the Charles River upstream of the Nahanton Street Bridge, and up to elevation 95 feet (NGVD29). The northern section of this area, north of Needham Street, is primarily flowage easement on a large state park known as Cutler Park. This park has many resources for passive recreation, including a nearly 10-mile nature trail loop known as the Great Blue Heron Trail. Parking for this trail, which is a popular place for hiking and nature viewing, can be found at lots on both Kendrick Street in Needham and Needham Street in Dedham. This trail and the access lots are maintained by the Massachusetts Department of Conservation and Recreation.

The river in this section is wide and flat, making it a very popular section of the river for canoeing and kayaking. Launches are located on Needham Street in Dedham, at the Dedham Recreation Complex on Common Street in Dedham, at the Mother Brook Diversion on Providence Highway in Dedham, at Millennium Park in Boston, and at Nahanton Park in Newton. All of these launch sites are maintained by the respective towns and city. In addition, a section of the river in Dedham and Boston has been named as a National Recreation Trail by the National Park Service for its excellent qualities as a paddling route. This trail is marked by interpretive signage and forms a loop, utilizing the Long Ditch (a flood control channel that dates back to the earliest settlement of the region in the late 1600s) to connect the two ends of the trail. This trail is maintained by the Town of Dedham. Use of this area for fishing is also popular, though hunting on this area is not allowed due to the urban surroundings of the area and in consistency with the hunting prohibition on the state park owned lands. Fee owned parcels are currently managed directly by USACE. In the future, it may be desirable to license these areas to the Massachusetts Department of Conservation and Recreation for management as part of the larger Cutler Park. All USACE owned land in Area B is classified as WM and will be managed for multiple uses including the protection of sensitive wetland habitat, but will permit passive recreation such as natural surface trails. Area B is shown on the map in Figure 5.2.

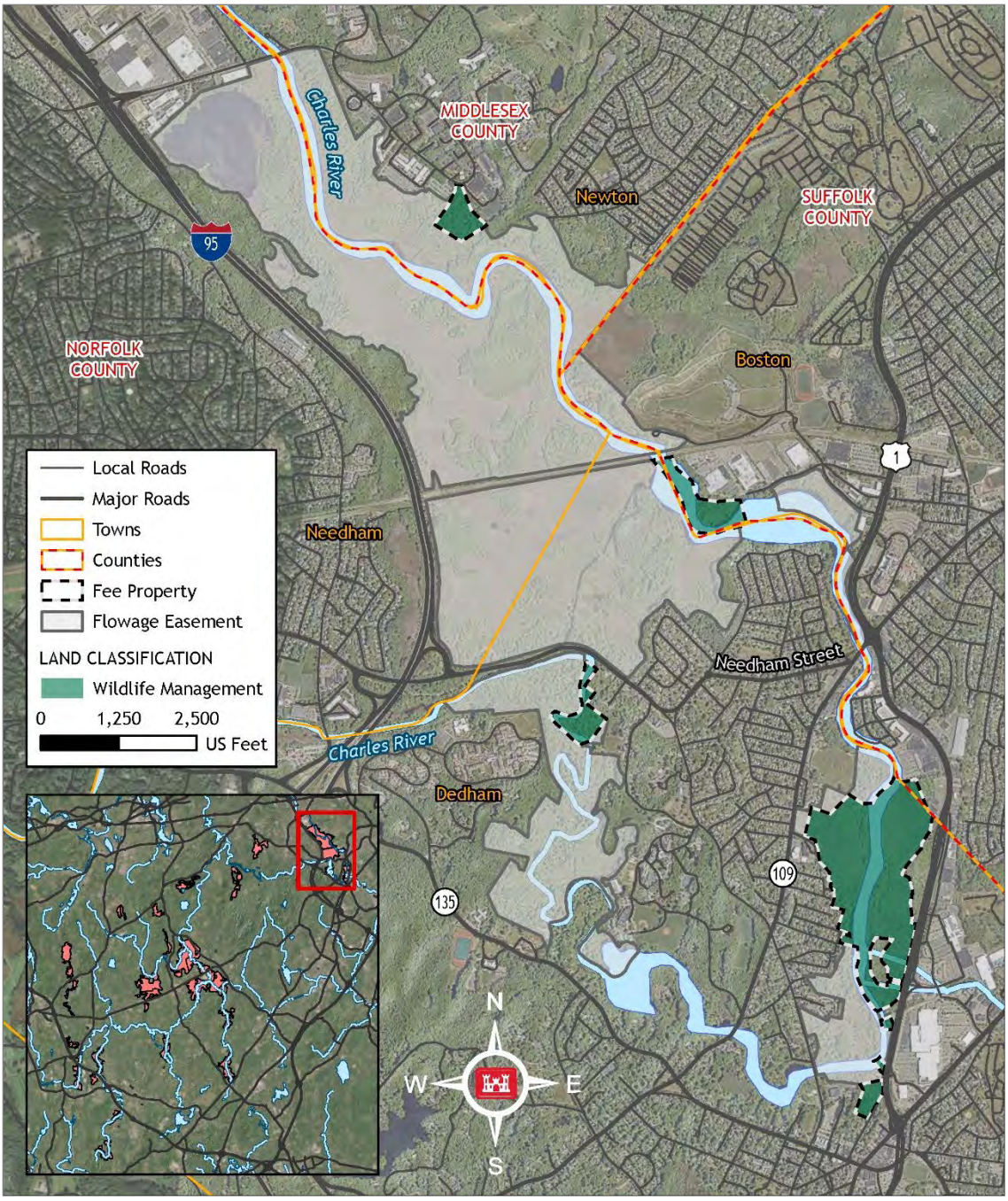



**Figure 5.2 Map of Area B**

From Mapbook in Appendix A

### 5.7.2 Area C

Area C is located in the Town of Dover and consists of 92.8 acres in fee and 170.4 acres of easement. This area protects the wetlands along Trout Brook, a tributary of the Charles River. Approximately 62 acres of the easement land are owned by the town as conservation land. The fee owned parcels are managed directly by the USACE.

There are no formal, developed recreation facilities or trails in this area. Trout Brook is stocked by MassWildlife every spring for fishing season, and informal parking areas can be found alongside Haven Street and Springdale Avenue where they border the project area. Hunting is generally prohibited in this area in accordance with local by-laws. Limited deer hunting is allowed in season with a special permit issued by the Town of Dover Board of Health. All USACE fee land in Area C is classified as WM and will be managed for multiple uses including the protection of sensitive wetland habitat, but will permit passive recreation such as natural surface trails. Area C is shown on the map in Figure 5.3.

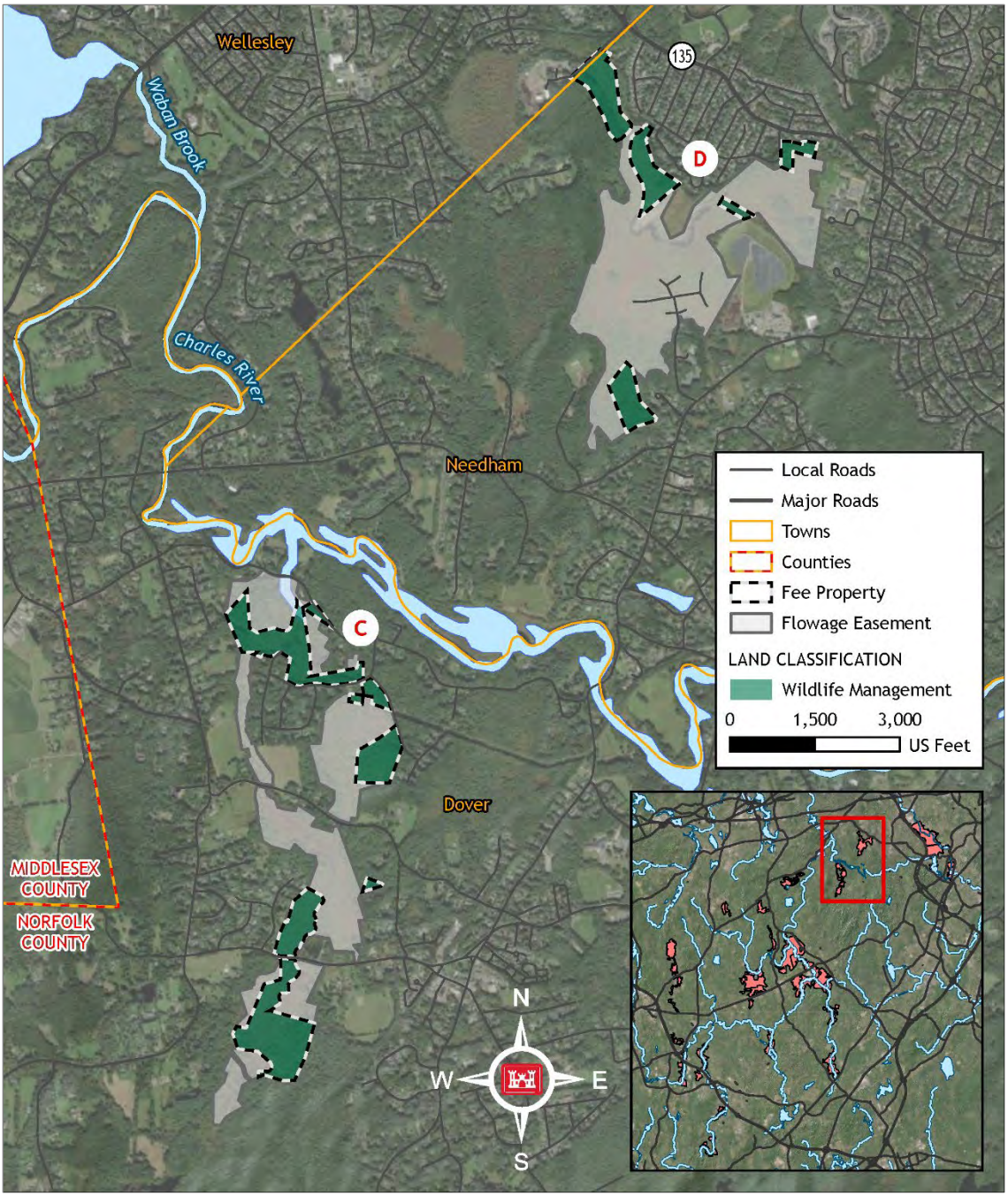



**Figure 5.3 Map of Area C and Area D**

From Mapbook in Appendix A

### 5.7.3 Area D

Area D is located in the Town of Needham and consists of 45 acres in fee and 212 acres of easement. The area protects wetlands along Fuller Brook, a tributary of the Charles River. Approximately 76 acres of the easement area is conservation land owned by the town. Another 257 acres of easement is owned by TV station WHDH for the site of their transmission towers and is closed to public access.

The town of Needham maintains a short nature trail on an easement parcel known as the Eastman Conservation Area, located behind the adjacent Newman Elementary School. Located to the west of Area D, but not on project lands, is a larger town-owned conservation land known as Ridge Hill Woods, which has hiking trails. The fee owned tracts are managed by USACE. They are small and scattered and do not have easy direct public access. Hunting is not permitted on this area due to local town by-laws and the small size of USACE fee parcels. All USACE fee land in Area D is classified as WM. Area D is shown combined with Area C on the map in Figure 5.3.

### 5.7.4 Area E

Area E is located in the towns of Natick and Sherborn and consists entirely of 203.7 acres of easement land. There is no USACE fee owned property in this area. The area protects the wetlands along Indian Brook, which flows to the Charles River. The majority of this area is owned and managed by the Massachusetts Audubon Society as part of their Broadmoor Wildlife Sanctuary. They maintain miles of nature trails that crisscross the area and operate a nature center and visitor center. As USACE does not own any fee tracts, there is no direct USACE management of this area. All land in Area E is Flowage Easement. Area E is shown on the map in Figure 5.4.

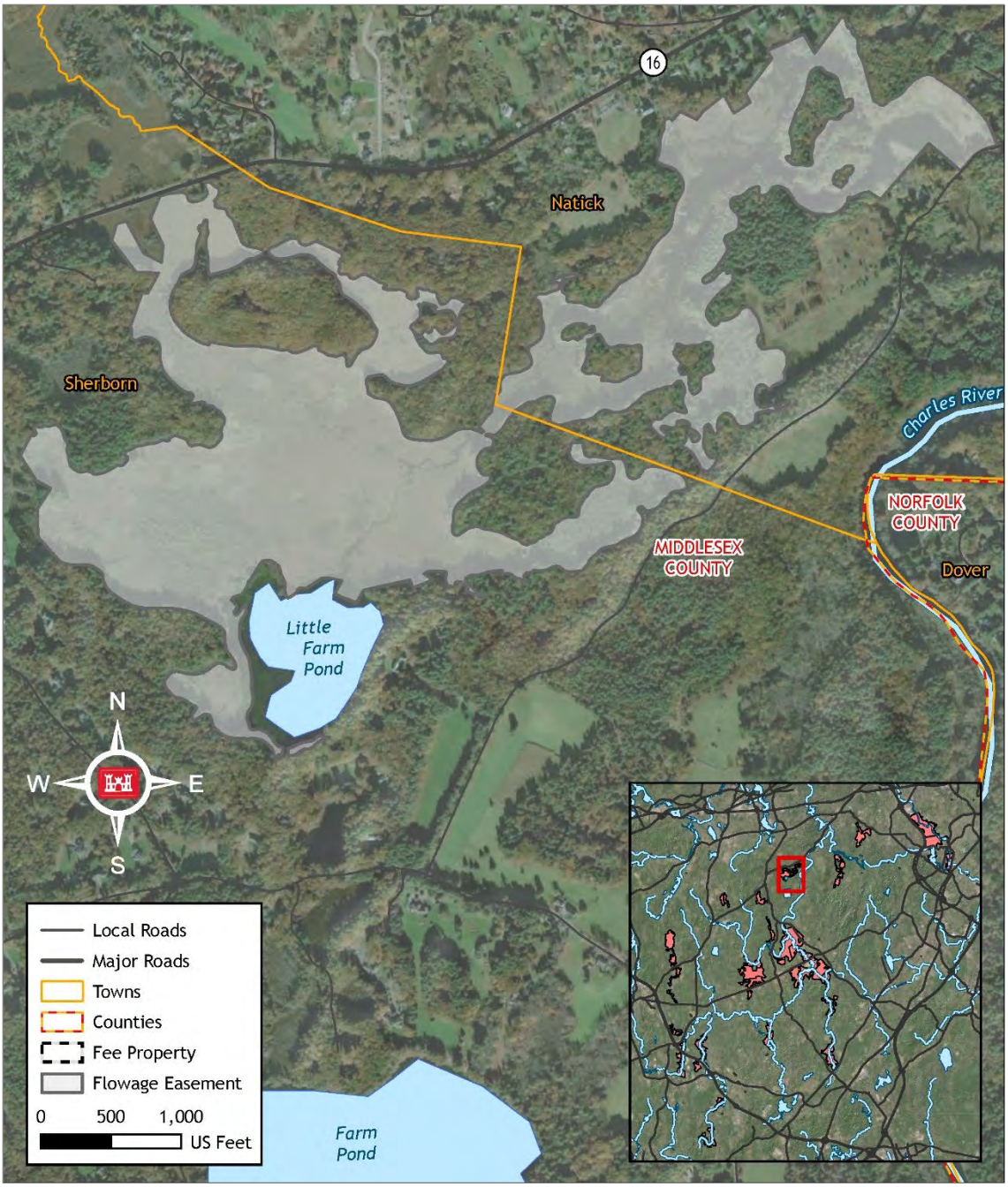



**Figure 5.4 Map of Area E**

From Mapbook in Appendix A

### 5.7.5 Area F

Area F is located in the Town of Sherborn and consists of 68.5 acres in fee and 55.19 acres of easement land. This area protects the wetlands at the headwaters of Sewall Brook, a tributary of the Charles River. There are no developed recreation facilities or trails in this area, and hunting is not allowed by town by-laws and due to the size and proximity to development in this area. The fee owned tracts are managed by USACE. There is very little public access to the fee owned properties, which are very wet and mostly surrounded by easement or private property. All USACE fee land in Area F is classified as WM. Area F is shown on the map in Figure 5.5.

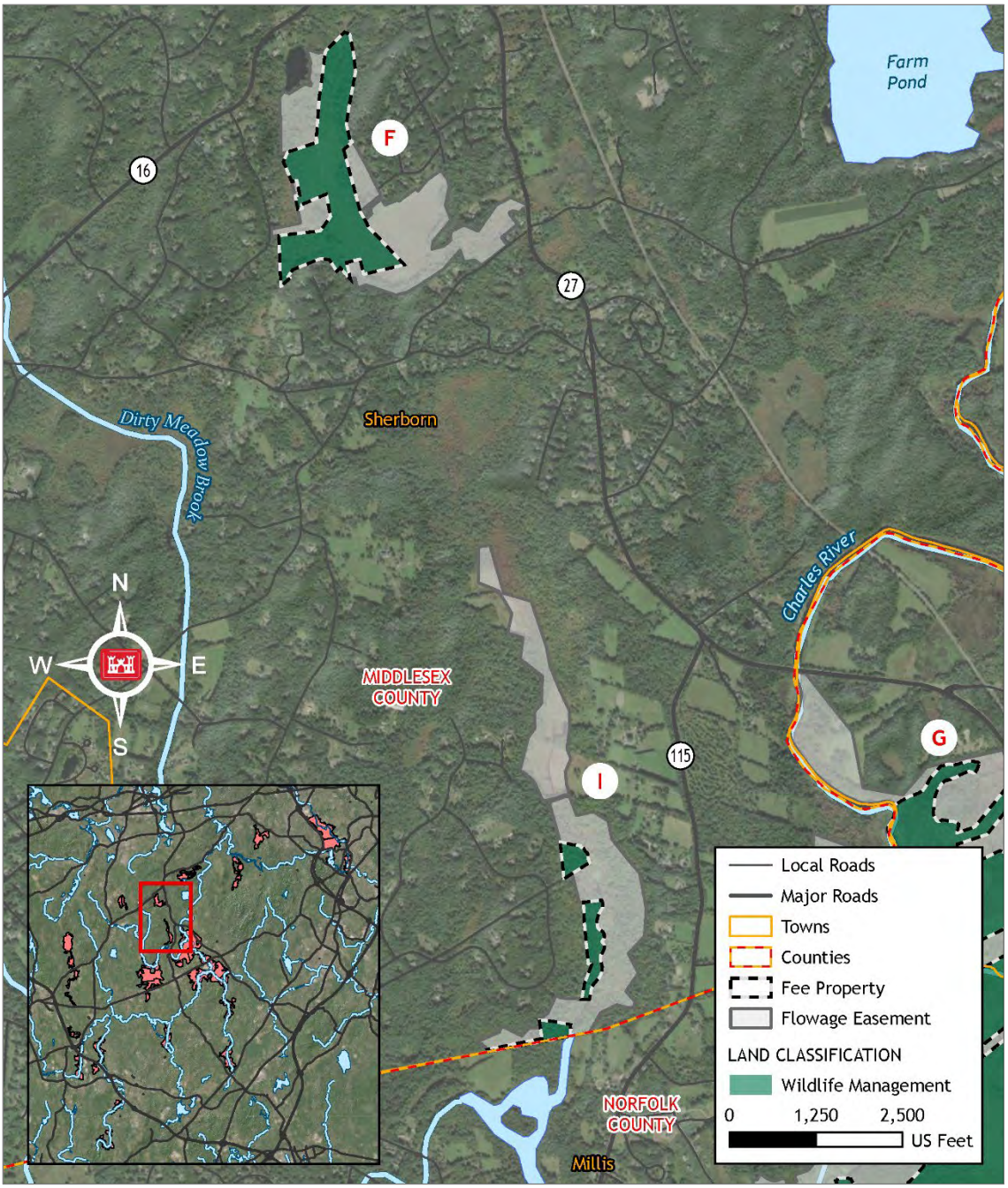



**Figure 5.5 Map of Area F and Area I**

From Mapbook in Appendix A

### 5.7.6 Area G

Area G is the largest of the Charles River NVSA management units, consisting of 1,149 acres in fee and 1,507 acres of flowage easement. This area is located in the towns of Medfield, Millis, Norfolk, Sherborn, and Walpole. It protects the large wetlands along the main stem of the Charles River, as well as wetlands along the Stop River and Bogastow Brook, which flow into the Charles. Of the Easement tracts, approximately 900 acres are owned by other conservation groups including the Massachusetts Department of Conservation and Recreation, the non-profit Trustees of Reservations, and the local towns themselves.

This section of the river is very popular for paddling trips, as it is a wide, slow section of the river with excellent fishing and wildlife viewing opportunities. Canoe and kayak launch sites are located on the Charles River and tributaries at the following locations:

- Forest Street, Millis (maintained by the USACE)
- Causeway Street, Medfield (maintained by Town of Medfield)
- West Street, Medfield (maintained by Town of Medfield)
- Route 27 bridge, Medfield (maintained by Town of Medfield)

Formerly, a launch was located on private property at the Route 109 bridge in Millis. At this time, that launch has been closed by the property owners, but may reopen in the future. In addition to the Charles River launches, a canoe and kayak launch is available on the shore of South End Pond. Maintained by the town of Millis, it is located at the end of the Water Department access road off of Route 115 in Millis.

The town-maintained launches are located on project flowage easement or are off project lands. The USACE maintains one launch in Millis at the upstream end of Area G. It was constructed jointly by the USACE and the Massachusetts Public Access Board in 2004. Day to day maintenance of the launch is currently conducted by the Fin Fur and Feather Club of Millis, as part of a license agreement with the USACE allowing them to use some USACE fee land for their club shooting range. Their maintenance activities at the launch are overseen directly by the USACE project staff.

Numerous hiking trails are located on project easement lands. The Trustees of Reservations property known as Shattuck Reservation has multiple trails, including a section of the regional Bay Circuit Trail, that crosses project easement property north of Causeway Street in Medfield. They also maintain a trail to the Medfield Rhododendron Reservation, located west of Route 27 just south of the center of Medfield. The town of Medfield itself has walking trails that cross project lands on various parcels located west of South Street and at the end of Lakeview Street. These trails are minimally maintained by the town and/or local volunteer groups. The state maintains a short section of the Bay Circuit Trail on a segment of the project that they own, off of Route 27 near the north end of Area G. Access to these trails is from roadside parking lots located along the numerous public streets that cross this area.

The fee owned lands in this area are under license to MassWildlife. They are responsible for management of the fish and wildlife resources of the fee tracts and for the resolution of all encroachment and trespass issues. Annually, the state stocks the Charles River in this area with trout, and stocks pheasant in this area for upland bird hunting. All forms of hunting are allowed in accordance with state regulations. The USACE remains responsible for boundary line marking and other management issues not related to fish and wildlife. Approximately 0.2 acre where the Charles River NVSA boat ramp off of Forest Street is located is classified as Low Density Recreation and will be managed to include natural surface parking lot for hand launched boats such as canoes and kayaks and access to the Charles River. All remaining fee lands are classified as WM and will be managed for multiple uses including the protection of sensitive wetland habitat, but will permit passive recreation such as natural surface trails and access to the Charles River. Area G is shown on the map in Figure 5.6.

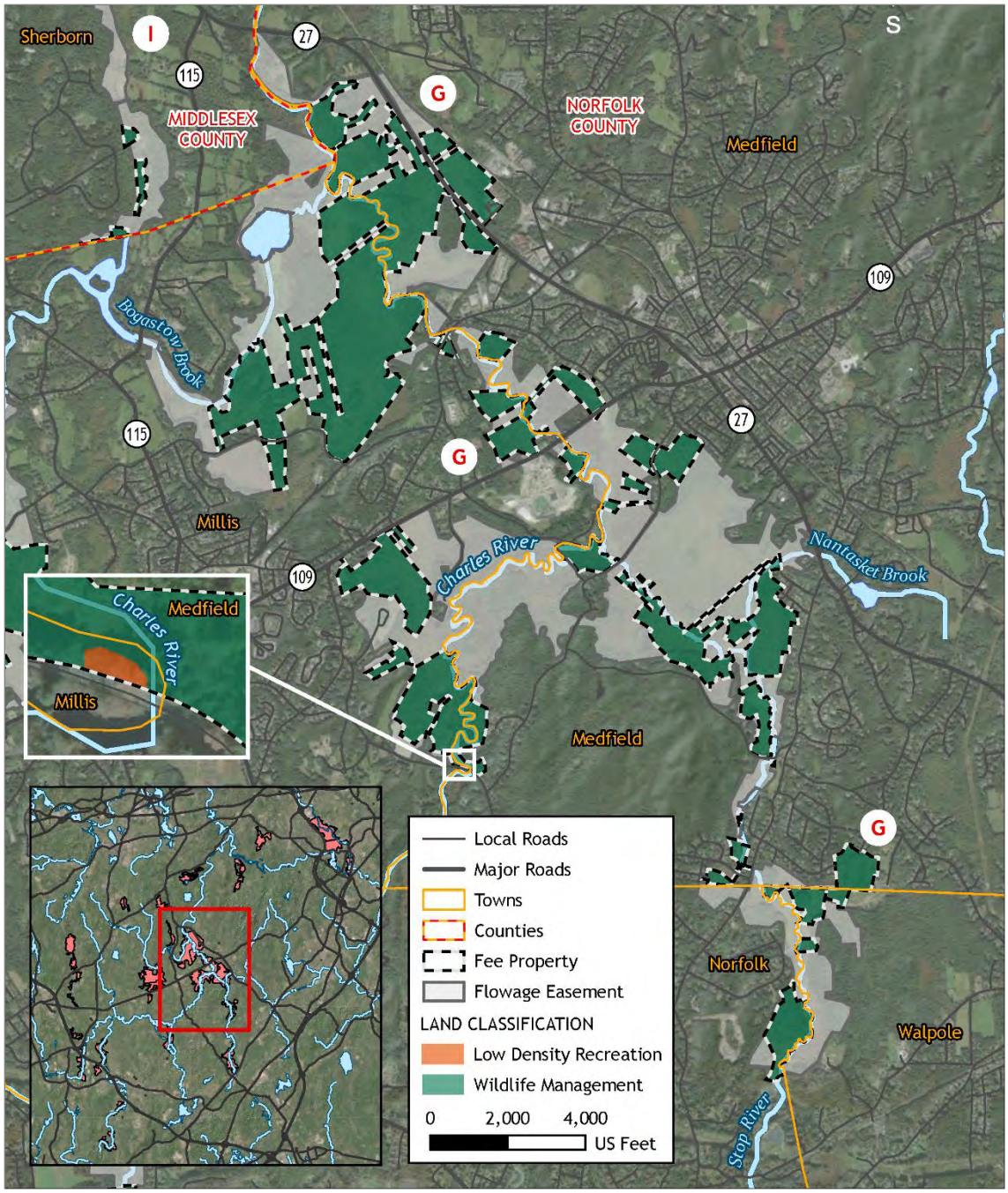



**Figure 5.6 Map of Area G**

From Mapbook in Appendix A

### 5.7.7 Area H

Area H is located in the towns of Medway and Millis, consisting of 341.9 acres in fee and 531.2 acres of easement. This area protects a large, forested wetland along Bogastow Brook that is locally known as the Great Black Swamp. There are no developed recreation facilities or trails in this area. The tracts owned in fee are scattered and oddly shaped, with no easy public access. Most of the flowage easement is on private property that is not open to public use.

The fee tracts are under license to the MassWildlife, who are responsible for management of the fish and wildlife resources of the area and for resolution of all encroachment and trespass issues. Hunting is permitted on the fee tracts, in accordance with all state regulations. The USACE remains responsible for boundary line marking and other issues not related to fish and wildlife. All USACE fee land in Area H is classified as WM. Area H is shown on the map in Figure 5.7.

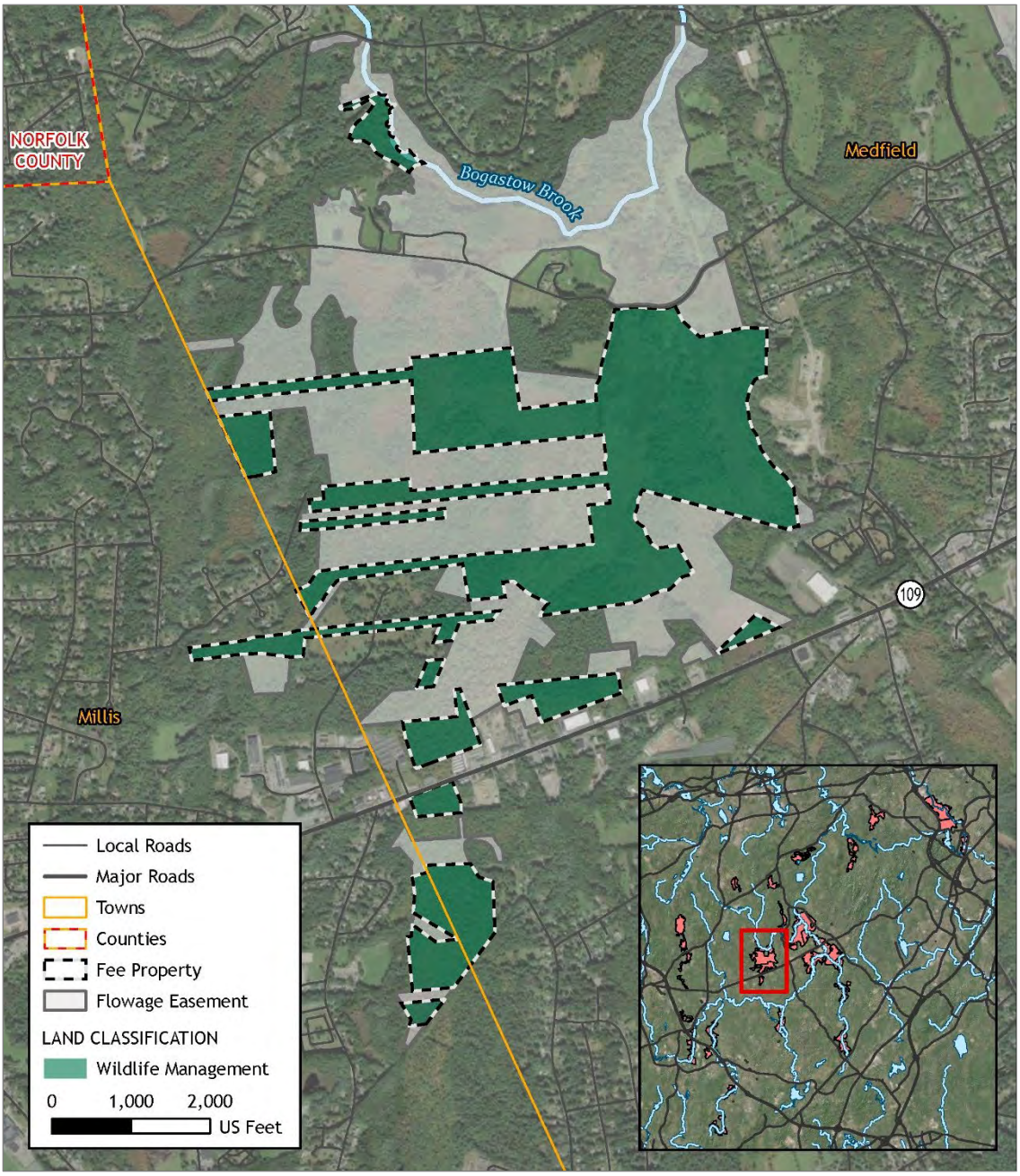



**Figure 5.7 Map of Area H**

From Mapbook in Appendix A

### 5.7.8 Area I

Area I is located in the town of Sherborn and consists of 12.3 acres of fee and 86.5 acres in easement. This area protects the wetlands near the headwaters of Bogastow Brook, a tributary of the Charles River. The tracts owned in fee are very small and have no direct public access. The majority of the flowage easement is on private lands with no public access. The fee owned tracts are managed by USACE. Hunting is not allowed, in accordance with local by-laws. There are no developed recreation facilities or trails due to lack of public access. All USACE fee land in Area I is classified as WM. Area I is shown combined with Area F on the map in Figure 5.5.

### 5.7.9 Area J

Area J is located in the towns of Holliston and Sherborn and consists of 95.4 acres in fee and 15.0 acres of easement. This area protects a wooded wetland along Dopping Brook, a tributary of the Charles River. There are no developed recreation facilities or trails in this area, though the abandoned railroad bed that bisects the area is planned by the town for development into a multi-use trail, part of the Upper Charles River Rail Trail. The rail bed is surrounded on either side by, but does not cross over, any project lands.

The fee owned tracts are managed by USACE. One small area on the west side is designated as a restricted area and has been licensed to the town of Holliston for a public water supply well. This area is fenced off and marked. Hunting is not allowed on this section due to local by-laws and the closeness of nearby homes to the west of the area. All USACE fee land in Area J is classified as WM. Area J is shown on the map in Figure 5.8.

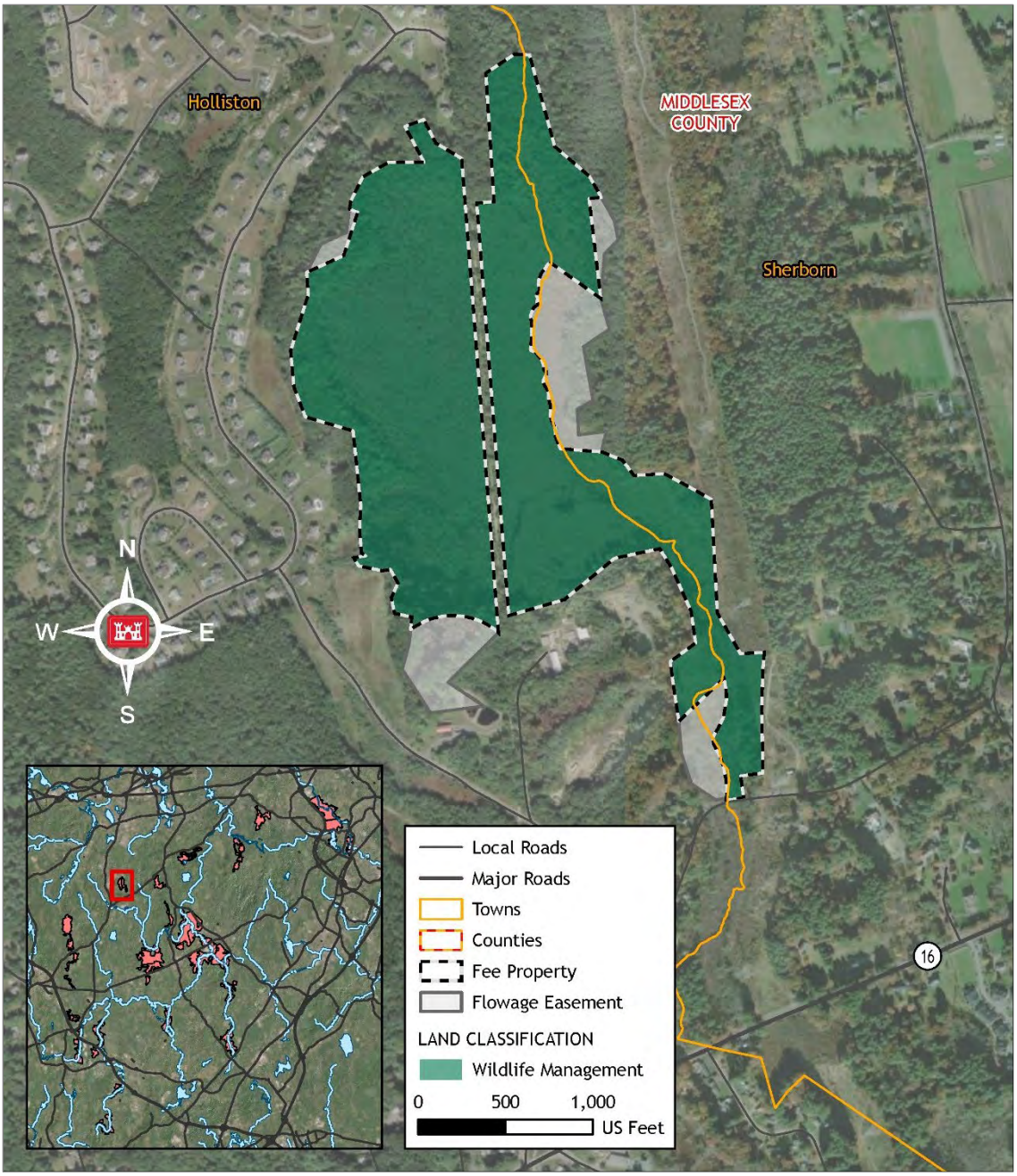



**Figure 5.8 Map of Area J**

From Mapbook in Appendix A

### 5.7.10 Area K

Area K is located in the towns of Norfolk and Walpole and consists of only 8.4 acres in fee and 355.8 acres of easement. The small fee parcel is mostly thick wetland with limited access, although there is a about 250 feet that adjoins Dedham Street. The easement lands are owned by the Massachusetts Department of Corrections as part of the property surrounding the Walpole and Cedar Junction prison complex. As such public access to the easement land is restricted. Hunting is not permitted due to the close proximity of developments to the fee parcel, which is managed directly by USACE. This area protects the large wetlands along the Stop River, a major tributary of the Charles River. All USACE fee land in Area K is classified as WM. Area K is shown on the map in Figure 5.9.

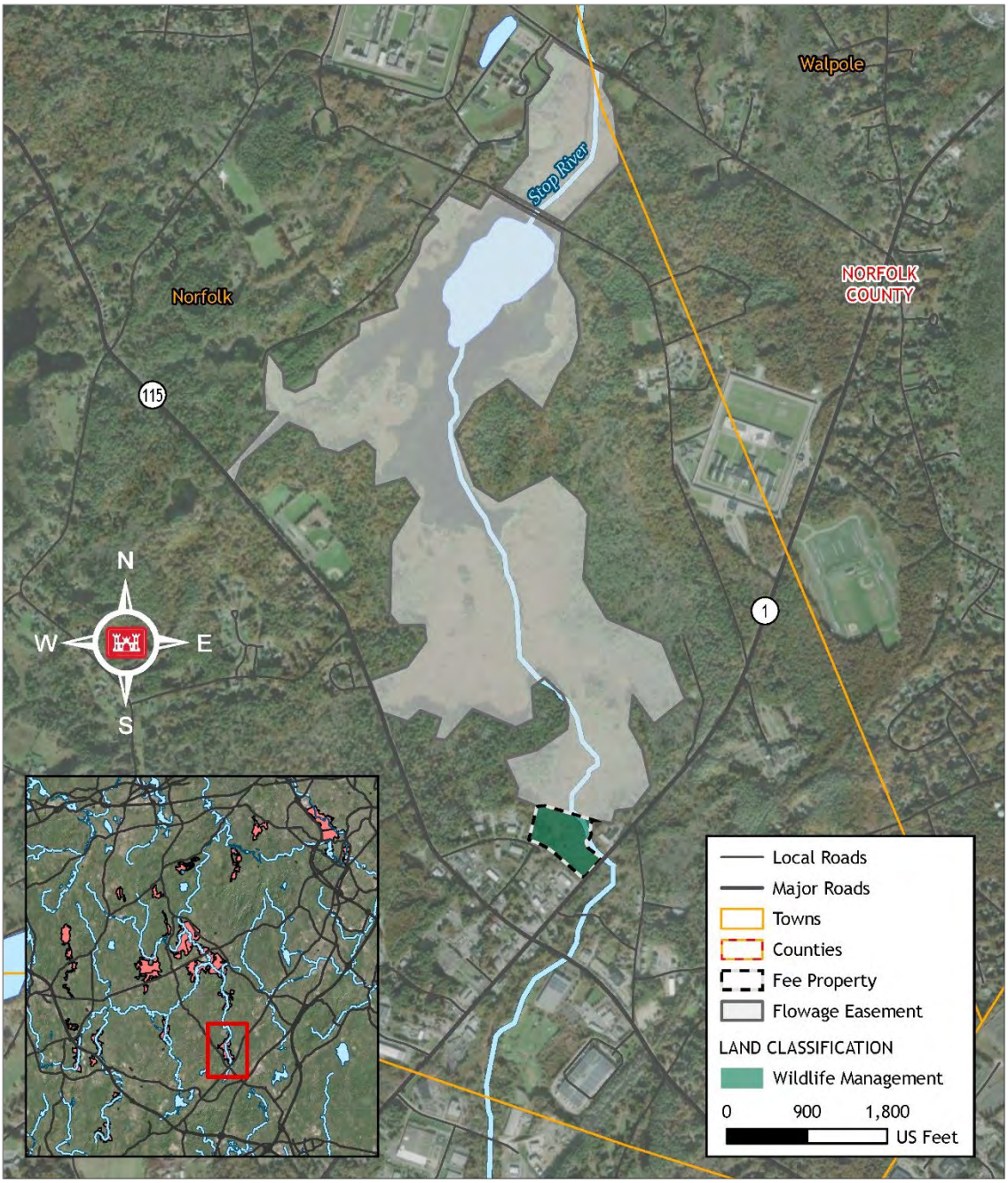



**Figure 5.9 Map of Area K**

From Mapbook in Appendix A

### 5.7.11 Area L

Area L is located in the town of Norfolk and consists of 185.5 acres in fee and 114.1 acres of easement. It protects the wetlands along the Mill River, just above its confluence with the Charles River. The fee area is located in one large parcel, bisected by Miller Street which provides good public access and has an informal parking area just west of the Mill River Bridge. No formal trails or recreation facilities have been developed due to the wet conditions found on most of the area. The state stocks the Mill River in this area with trout during the spring season.

The fee tracts are under license to MassWildlife, who are responsible for management of the fish and wildlife resources of the area and for resolution of all encroachment and trespass issues. Hunting is permitted on the fee tracts, in accordance with all state and local regulations. The USACE remains responsible for boundary line marking and other issues not related to fish and wildlife. All USACE fee land in Area L is classified as WM. Area L is shown on the map in Figure 5.10.

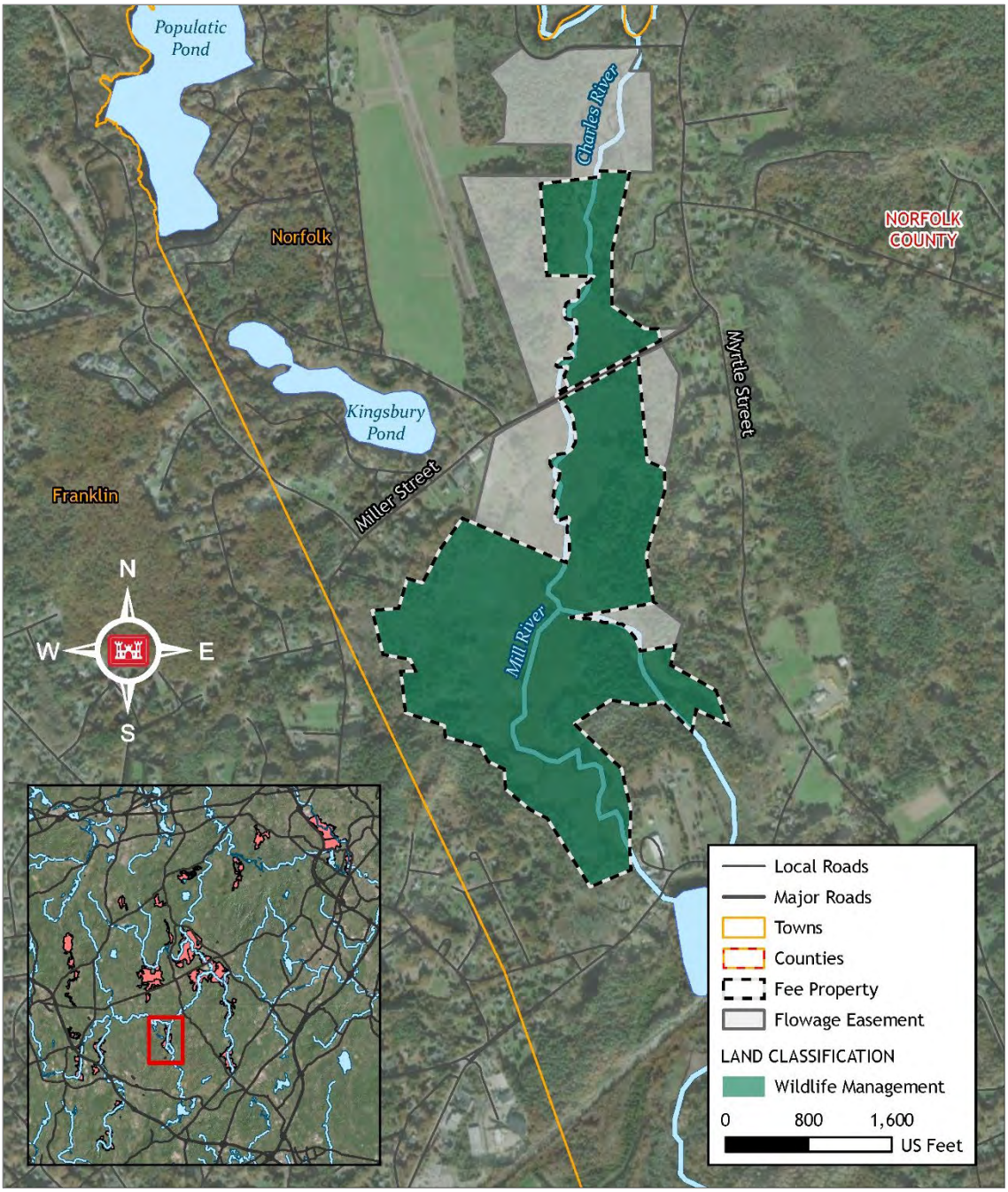



**Figure 5.10 Map of Area L**

From Mapbook in Appendix A

### 5.7.12 Area M

Area M is located in the town of Franklin and consists of 338.6 acres in fee and 49.9 acres of easement. This area protects a series of wetlands along Mine Brook. The majority of this area is owned by the USACE in fee and has several access points. Though no formal trails or recreation facilities have been developed, there are numerous informal trails that cross some upland parts of this area. One area along the north side of Interstate 495 has numerous trails, many of which were created by illegal off-road vehicle activity entering the area from abutting town owned property. Access to this area is from Pond Street, via a gated dirt road that led to a now abandoned sewer department facility. Coordination with the town for control of this illegal vehicle use is ongoing, with the town installing barriers on their land where necessary. Public access is also available from the end of Oak Street Extension, where the abandoned road right of way enters USACE property. This access is not frequently used due to the wet nature of the property in that area.

The fee tracts are under license to MassWildlife, who are responsible for management of the fish and wildlife resources of the area and for resolution of all encroachment and trespass issues. Hunting is permitted on the fee tracts, in accordance with all state regulations. USACE remains responsible for boundary line marking and other issues not related to fish and wildlife. All USACE fee land in Area M is classified as WM. Area M is shown on the map in Figure 5.11.

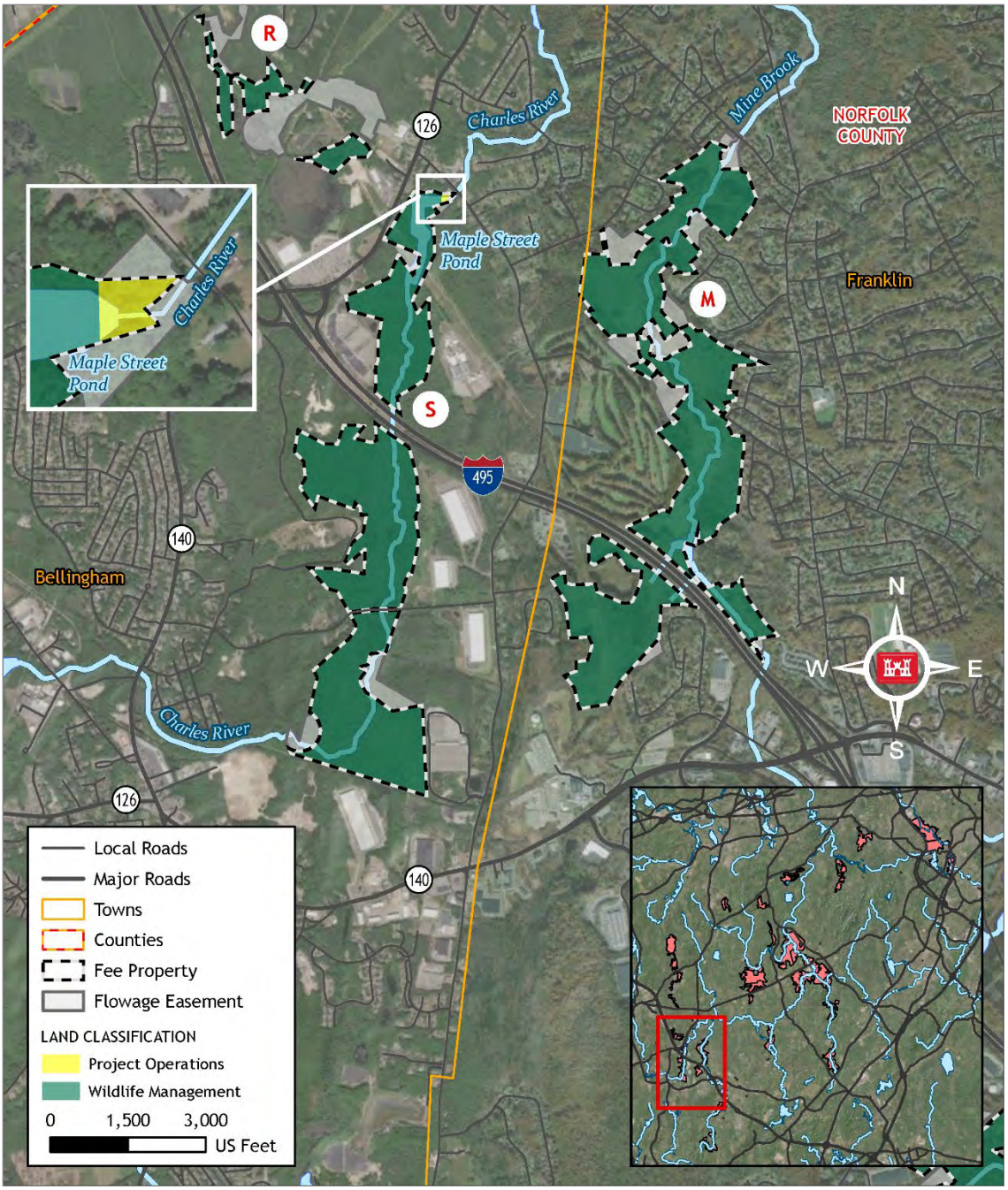



**Figure 5.11 Map of Area M, Area R, and Area S**

From Mapbook in Appendix A

### 5.7.13 Area N

Area N is located in the town of Franklin and consists of 79.0 acres in fee and 57.1 acres of easement. It protects a wetland area at the confluence of Mine Brook and Dix Brook. There are no developed recreation facilities or trails in this area, which is surrounded by an industrial park and is bisected by an active freight railroad line. Public access to the fee areas is limited but can be accessed from Washington Street.

The fee tracts are under license to MassWildlife, who are responsible for management of the fish and wildlife resources of the area and for resolution of all encroachment and trespass issues. Hunting is permitted on the fee tracts, in accordance with all state and local regulations. Dix Brook, just upstream of this area, is stocked with trout in the spring fishing season. The USACE remains responsible for boundary line marking and other issues not related to fish and wildlife. All USACE fee land in Area N is classified as WM. Area N is shown on the map in Figure 5.12.

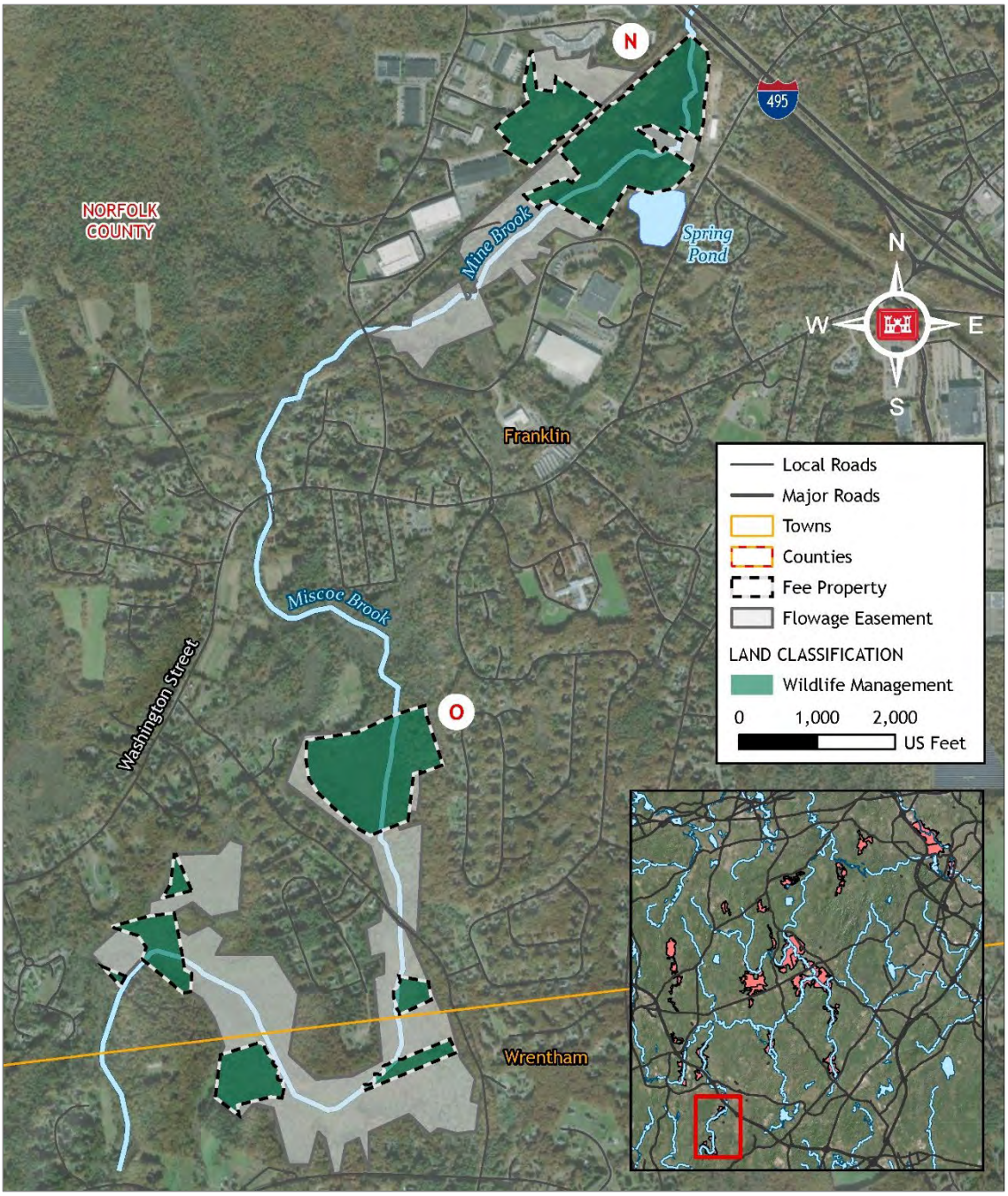



**Figure 5.12 Map of Area N and Area O**

From Mapbook in Appendix A

### 5.7.14 Area O

Area O is located in the towns of Franklin and Wrentham and consists of 70.3 acres in fee and 158.3 acres of easement, much of which is owned by the state as part of Franklin State Forest. This area protects wooded wetlands along Miscoe Brook. There are no developed trails or recreation facilities in this area. Access to the largest fee tract is through adjacent state forest lands. The remaining fee areas are small and scattered with little public access.

The fee tracts are under license to MassWildlife, who are responsible for management of the fish and wildlife resources of the area and for resolution of all encroachment and trespass issues. Hunting is permitted on the fee tracts, in accordance with all state regulations. Miscoe Brook in this area is stocked with trout during spring fishing season. The USACE remains responsible for boundary line marking and other issues not related to fish and wildlife. All USACE fee land in Area O is classified as WM. Area O is shown combined with Area N on the map in Figure 5.12.

### 5.7.15 Area P

Area P is located in the towns of Holliston and Medway and consists of 266.6 acres in fee and 242.8 acres of easement. It protects the extensive wetlands along Hopping Brook, a tributary of the Charles River. There is a developed trail system located on fee and easement land at the north end of the area, north of Gorwin Drive. These trails are maintained by the town of Holliston and the easement tracts are on town owned land known as the Brentwood Conservation Area. These trails start from a gated trailhead on Gorwin Drive and loop through the area, accessing now-flooded cedar swamp and reaching an upland area home to numerous old-growth beech trees.

South of Gorwin Drive, the fee areas are very wet and surrounded by private property, offering only limited public access. The abandoned railroad bed that crosses the area south of Route 16 is planned for development of a multi-use trail, to be part of the Upper Charles Rail Trail. This trail, to be maintained by the town, will offer great views of, but will not cross onto, project lands. Weston Pond Recreation Area, managed by the town of Holliston, a popular ice skating area, is located adjacent to project easement.

The fee tracts south of Gorwin Drive are under license to MassWildlife, who are responsible for management of the fish and wildlife resources of the area and for resolution of all encroachment and trespass issues. Hunting is permitted on the fee tracts, in accordance with all state and local regulations. Hopping Brook in Medway, near the southern part of this area, is stocked with trout during spring fishing season. The USACE remains responsible for boundary line marking and other issues not related to fish and wildlife. Fee tracts north of Gorwin Drive are currently managed directly by the USACE, and hunting is not permitted in this area in accordance with town conservation land rules. In the future, management of this area by the town under a license should be considered to provide uniform management with the existing town

conservation lands that are intermingled with USACE fee tracts. All USACE fee land in Area P is classified as WM. Area P is shown on the map in Figure 5.13.

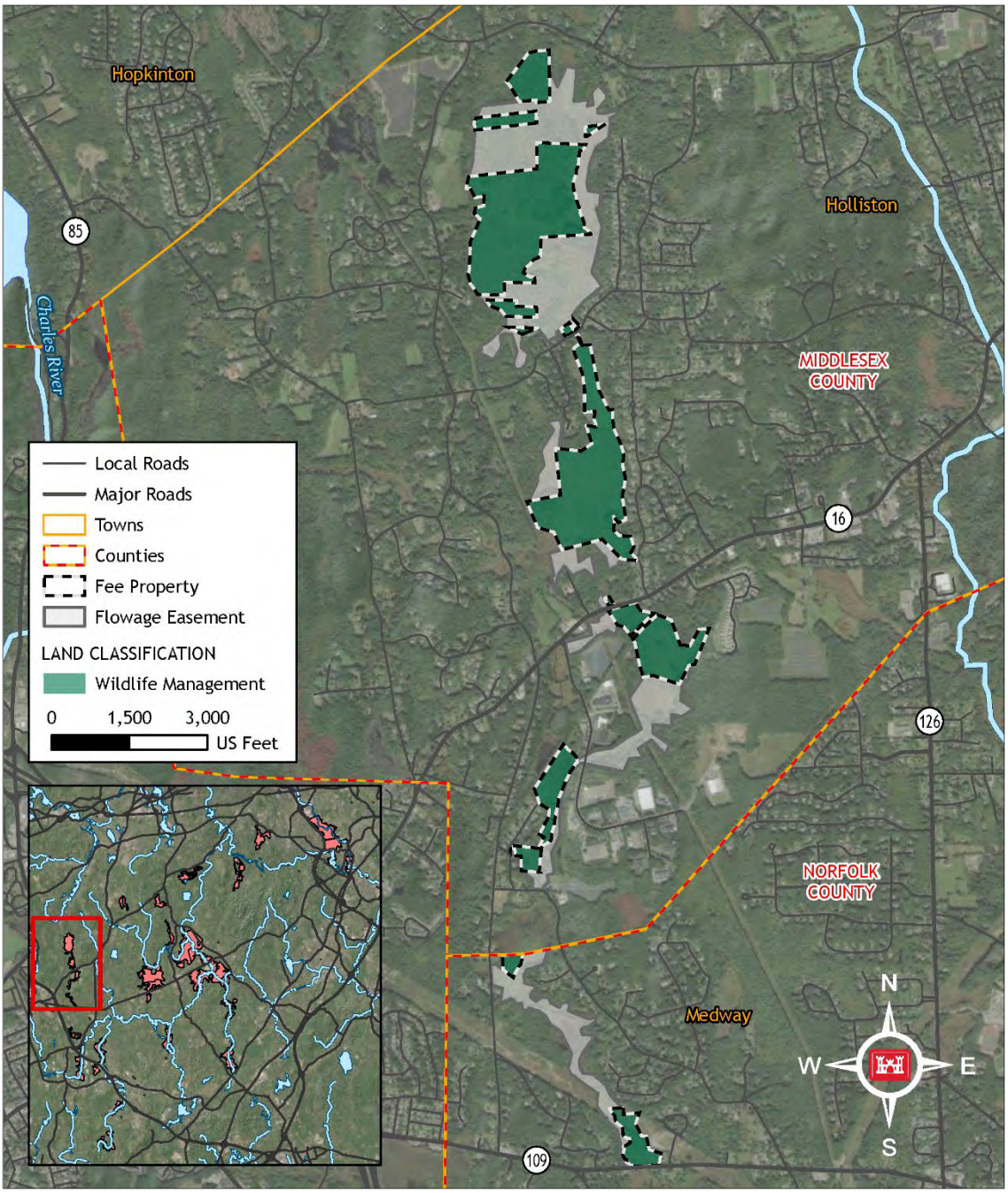



**Figure 5.13 Map of Area P**
From Mapbook in Appendix A

### 5.7.16 Area R

Area R is located in the town of Bellingham and is the smallest of the NVS areas, consisting of 30.3 acres in fee and 49.4 acres of easement and protects a wetland along Stall Brook. The fee tracts are small and scattered with little public access, and much of the easement lands are owned by the town as part of their drinking water supply wellhead area, with restricted public use. No developed trails or recreation facilities are in this area.

The fee tracts are under license to MassWildlife, who are responsible for management of the fish and wildlife resources of the area and for resolution of all encroachment and trespass issues. Hunting is permitted on the fee tracts, in accordance with all state regulations. Stall Brook, near this area, is stocked with trout during spring fishing season. USACE remains responsible for boundary line marking and other issues not related to fish and wildlife. All USACE fee land in Area R is classified as WM. Area R is shown combined with Area M and Area S on the map in Figure 5.11.

### 5.7.17 Area S

Area S is located in the town of Bellingham and consists of 310.6 acres in fee and 22.8 acres of easement. This area protects the wetlands along the main stem of the Charles River, upstream of the North Bellingham Dam. The fee owned tracts form one large block, bisected by Interstate 495 and High Street. The surrounding land is mostly private property or restricted water department well property, granting little public access to most areas. Some public access to the southern sections is available off High Street, where there is informal parking on the road shoulder. An old rubble dam that predates the Charles River NVSA project exists at the most northern end of fee land near Maple Street.

The fee tracts are under license to MassWildlife, who are responsible for management of the fish and wildlife resources of the area and for resolution of all encroachment and trespass issues. Hunting is permitted on the fee tracts, in accordance with all state regulations. The USACE remains responsible for boundary line marking and other issues not related to fish and wildlife. Approximately 0.8 acres around the old dam have been classified as PO to allow operations and maintenance associated with the mission of the project. All other fee land in Area S is classified as WM. Area S is shown combined with Area M and Area R on the map in Figure 5.11.

## 5.8 SUSTAINABILITY

Sustainability is a multi-pronged aspect of responsible stewardship of USACE lands. The outcome of sustainability initiatives is to have a program that is able to adapt to fiscal challenges, safeguards the environment, and continues to provide high quality recreational opportunities for the public. As the nation’s largest provider of outdoor recreation, managing 12 million acres of lands and waters across the country, the USACE is committed to implementing initiatives that link people to water.

The recreational mission of the USACE is to manage and conserve natural resources, while providing quality public outdoor recreation opportunities to serve the needs of the present and future generations. This is in line, and indeed the underpinning, of all the goals and objectives for Charles River NVSA resources and management. The national USACE 2021 Natural Resources Management Strategic Plan identifies several goals and related objectives designed to build a more robust environmental and recreational program on USACE managed lands. The four primary goals are Workforce Development; Improved Communication; Resourcing; and Program Delivery. Under the umbrella goal of Program Delivery, several objectives center specifically on promoting environmental sustainability in all aspects of natural resources management. This includes integrating EOPs and other environmental regulations and initiatives into day-to-day decision making and long-range planning. Other objectives include using Leadership in Energy and Environmental Design (LEED) certified personnel and projects in facility design and maintenance where applicable on land-based recreation areas, and updating project Master Plans to include environmental sustainability elements.

Meeting the public's needs and continuing to provide a full range of outdoor recreation opportunities will require collaboration. In support of that, the USACE will maintain and enhance existing rapports while seeking new and innovative types of relationships with federal, state, and local agencies, volunteers, non-government organizations, cooperators, and others to provide certain recreation services and opportunities to the public. Besides pursuing and maintaining partnerships, it is important to continue to identify, analyze, and evaluate authorities and policies such as fee collection and retention, and increased partnership capabilities. Areas identified for changes to meet the goals and objectives of this strategy include authorities for fee collection and retention without budgetary offset, and policies that pertain to funding schedules for partnership projects.

Through creativity, innovation, strong partnerships, and environmentally sustainable stewardship, quality recreational opportunities will continue to be available to the public. This will be done while simultaneously protecting the water, environment, and cultural resources for current and future generations.

# CHAPTER 6 – SPECIAL TOPICS/ISSUES/CONSIDERATIONS

## 6.1 COMPETING INTERESTS OF NATURAL RESOURCES

Charles River NVSA is a multi-purpose project with numerous authorized purposes. The authorized purposes accommodate the needs of federal, state, and municipal users which have developed over time. The benefits provided by virtue of authorized purposes are critical to the local and regional economies and are of great interest to the public. Aside from operating the reservoir to meet the needs of those entities with contractual rights, there are many competing interests for the utilization of federal lands including recreational users, adjacent landowners, utility providers, and all entities that provide and maintain public roads. A growing population and increasing urbanization places additional stress on these competing interests through increased demand for water resources and recreation spaces as well as diminishing quality and space for natural habitat and open spaces. Balancing the interests of each of these groups to ensure that valid needs are met while at the same time protecting natural and cultural resources is a challenge. The purpose of this Plan is to guide management into the foreseeable future to ensure responsible stewardship and sustainability of the project's resources for the benefit of present and future generations.

## 6.2 UTILITY CORRIDORS

USACE policy encourages the establishment of designated corridors on project lands, where feasible, to serve as the preferred location for future outgrants such as easements for roads or utility lines. After obtaining public input and examining the location of existing roads and utility lines on project lands, the USACE determined that utility corridors would not be designated at Charles River NVSA. Any utility seeking an easement to cross USACE property will need to consider alternate routes around USACE property and demonstrate that a feasible alternative does not exist. Additionally, any newly proposed utility corridors would need to undergo the required NEPA permitting process.

## 6.3 CULTURAL RESOURCES AND CONSULTATION WITH TRIBAL NATIONS

It is required for federal agencies to consult with affiliated Federally Recognized Tribes on various activities that take place on federal land under federal guidance including but not limited to Sections 106 and 110 of the NHPA; ARPA; NAGPRA; and 36 CFR Part 79, Curation of federally-owned and administered archeological collections. Implementing regulations for Section 106 of the NHPA and NAGPRA are 36 CFR Part 800 and 43 CFR Part 10, respectively. All cultural resources laws and regulations should be addressed under the requirements of NEPA as amended. USACE summarizes the guidance provided in these laws in ER and EP 1130-2-540.

Additionally, Executive Order 13007 states that each federal agency with responsibility for the management of federal lands shall accommodate access to and

ceremonial use of Native American sacred sites by religious practitioners and avoid adversely affecting the physical integrity of such sacred sites.

The New England District takes its responsibilities for consultation on a government-to-government basis very seriously and consulted extensively with Federally Recognized Tribes on the Charles River NVSA Master Plan. The Tribes the USACE consults with are the Wampanoag Tribe of Gay Head (Aquinnah), Mashpee Wampanoag Tribe, and Narragansett Tribe. The New England District consulted with Tribes primarily on developing best practices and ensuring areas of Tribal concern were addressed. This exchange of knowledge from developing the Master Plan will allow USACE staff to better engage with Tribes on future projects at the Charles River NVSA and will likely lead to more efficient reviews and better outcomes meeting objectives for both parties.

## 6.4 PRIVATE ACTIVITIES AND SHORELINE MANAGEMENT

It is the policy of the USACE to protect and manage shorelines of all civil works water resource development projects to promote the safe and healthful use of these shorelines by the public while maintaining environmental safeguards to ensure a quality resource for use by the public. The objectives of all management actions will be to achieve a balance between permitted private uses and resource protection for public use. Public pedestrian access to and exit from these shorelines shall be preserved. The New England District generally does not permit private exclusive uses by adjacent landowners. Private exclusive use (often called private shoreline use) is defined in ER 1130-2-406 as “Any action, within the context of this rule Title [36 CFR 327.30], which gives special privilege to an individual or group of individuals on land or water at a Corps project, that precludes use of those lands or waters by the general public, is considered private shoreline use.” The Master Plan does not concern private use of federal property; instead private use is managed per guidance in ER 1130-2-406 at the discretion of the New England District and project manager. See Section 2.15 for more information about Real Estate including outgrants, trespass, and encroachment.

# CHAPTER 7 – PUBLIC AND AGENCY COORDINATION

## 7.1 PUBLIC, AGENCY, AND TRIBAL COORDINATION OVERVIEW

The USACE is dedicated to serving the public interests in support of the overall development of land uses related to land management of cultural, natural, and recreational resources of Charles River NVSA. An integral part of this effort is gathering public comment and engaging stakeholders in the process of planning. USACE policy guidance in ER and EP 1130-2-550 requires thorough public involvement and agency coordination throughout the Master Plan revision process including any associated NEPA process. Public involvement is especially important at Charles River NVSA to ensure that future management actions are environmentally sustainable and responsive to public outdoor recreation needs. The following milestones provide a brief look at the overall process of revising the Charles River NVSA Master Plan.

The USACE began planning to revise the Charles River NVSA Master Plan in the fall of 2024. The objectives for the Master Plan revision are to (1) adopt land classifications to reflect USACE land management policies, (2) prepare new resource goals and objectives, (3) implement a resource plan with details for all respective management units, and (4) revise the Master Plan to reflect new agency requirements for Master Plan documents in accordance with ER 1130-2-550, Change 7, January 30, 2013 and EP 1130-2-550, Change 5, January 30, 2013.

## 7.2 INITIAL STAKEHOLDER AND PUBLIC MEETINGS

On October 8, 2024 a public open house was held at the Millis Public Library in Millis, Massachusetts to inform the public of the intent to revise the Master Plan. Five members of the public and stakeholders attended the open house. The Open House started a public comment period for 30 days from October 8, 2024 to November 9, 2024. At the open house, a presentation was running that included the following topics:

- What is a Master Plan?
- What a Master Plan is Not
- Why Revise a Master Plan?
- Overview of the National Environmental Policy Act (NEPA) process
- Master Planning Process
- Instructions for submitting comments

The USACE received 1 comment from the public. This comment and USACE response can be found in Appendix E.

## 7.3 PUBLIC AND AGENCY REVIEW OF DRAFT MP, EA, AND FONSI

A public open house will be held for the Charles River NVSA Master Plan revision, and this section will be completed after the close of the comment period, prior to publishing the final Master Plan.

## 7.4 TRIBAL CONSULTATION

In 2024, the USACE consulted with the appropriate Tribal Nations on the notice of availability for the scoping effort for this Master Plan and Environmental Assessment seeking their comments and confirmation of interest. A sample letter is included in Appendix B.

The following recognized Tribal Nations were consulted in 2024 prior to the initial Open House:

- Wampanoag Tribe of Gay Head (Aquinnah)
- Mashpee Wampanoag Tribe
- Narragansett Tribe

For the Draft Master Plan and Environmental Assessment, the same group of recognized Tribal Nations were consulted to notify of the Open House the availability of the draft documents.

# CHAPTER 8 – SUMMARY OF RECOMMENDATIONS

## 8.1 SUMMARY OVERVIEW

The preparation of this Master Plan for Charles River NVSA followed the USACE master planning guidance in ER 1130-2-550 and EP 1130-2-550, both dated 30 January 2013. Three major requirements set forth in the guidance include the preparation of contemporary Resource Objectives, Classification of project lands using the approved classification standards, and the preparation of a Resource Plan describing in broad terms how the land in each of the land classifications will be managed into the foreseeable future. Additional important requirements include rigorous public involvement throughout the process, consideration of regional recreation and natural resource management priorities identified by other federal, state, and municipal authorities, and consultation with local Tribal Nations.

The study team endeavored to follow this guidance to prepare a Master Plan that will provide for recreational opportunities for the public, improve environmental quality, and foster a management philosophy conducive to existing and projected USACE staffing levels at Charles River NVSA as also reflected in ER 1130-2-540 change 2 dated July 2005. Factors considered in the Plan development were identified through public involvement and review of regional and statewide planning documents including the current Massachusetts SCORP prepared by the Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs (EEA) 2024, EPA Ecoregion Handbook and descriptions, and the USFWS IPaC website. This Master Plan will guide the long-term sustainability of the outdoor recreation program and natural resources associated with Charles River NVSA.

## 8.2 LAND CLASSIFICATION

A key component in preparing this Master Plan was examining how lands are being managed now and will be managed in the foreseeable future. The proposed land classification standards will also comply with current USACE standards. Public comment was solicited to assist in making these land classification decisions. Consultation was also conducted with Tribal Nations to provide input on cultural and natural resources to help inform the land classification decisions. Chapter 7 of this Plan describes the public involvement process and Appendix E provides a summary of public comments received. After analyzing public comment, examining recreational trends, and taking into account regional natural resource management priorities, USACE team members classified the Federal lands and waters associated with Charles River NVSA as described in Table 8.1 and explained in Table 8.2. See the Land Classification map in Appendix A to see detailed land classifications across the entire project.

**Table 8.1 Proposed 2025 Land Classifications**

| Proposed Land Classifications (2025) | Acres |
|---|---|
| Project Operations (PO) | 0.8 |
| Low Density Recreation (LDR) | 0.2 |
| Wildlife Management | 3,177.2 |
| **LAND TOTAL** | **3,178.2** |

**Table 8.2 Justification for Land Classifications**

| Proposed Land Classifications (2025) | Justification |
|---|---|
| Project Operations (PO) | All lands classified as PO are managed and used primarily in support of critical operational requirements related to the primary missions of flood risk management and water conservation. The only area classified as PO is at the north end of Area S. At the time of the 1984 Master Plan, this area was owned as flowage easement, but was purchased in fee to allow access to the Charles River from Maple Street and due to requirements for the flood risk mission. |
| Low Density Recreation (LDR) | There is only a small area classified as LDR comprised of a very small boat launch at the south end of Area G that allows access to the Charles River from Forest Road. Future management of this area will include regular maintenance to the unpaved parking lot, mitigating shoreline erosion and invasive species, and continuing to allow less intensive recreation access to the Charles River. |
| Wildlife Management (WM) | A majority of fee lands in the Charles River NVSA are classified as WM. This change reflects the existing uses which include less intensive activities such as hiking, fishing, hunting, observing nature, and access to the natural resources. Some areas are managed in partnership with key partners including the MassWildlife which are described in detail in the resource management plans for each respective project area. |

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# APPENDIX A – LAND CLASSIFICATION, MANAGING AGENCIES, AND RECREATION MAPS

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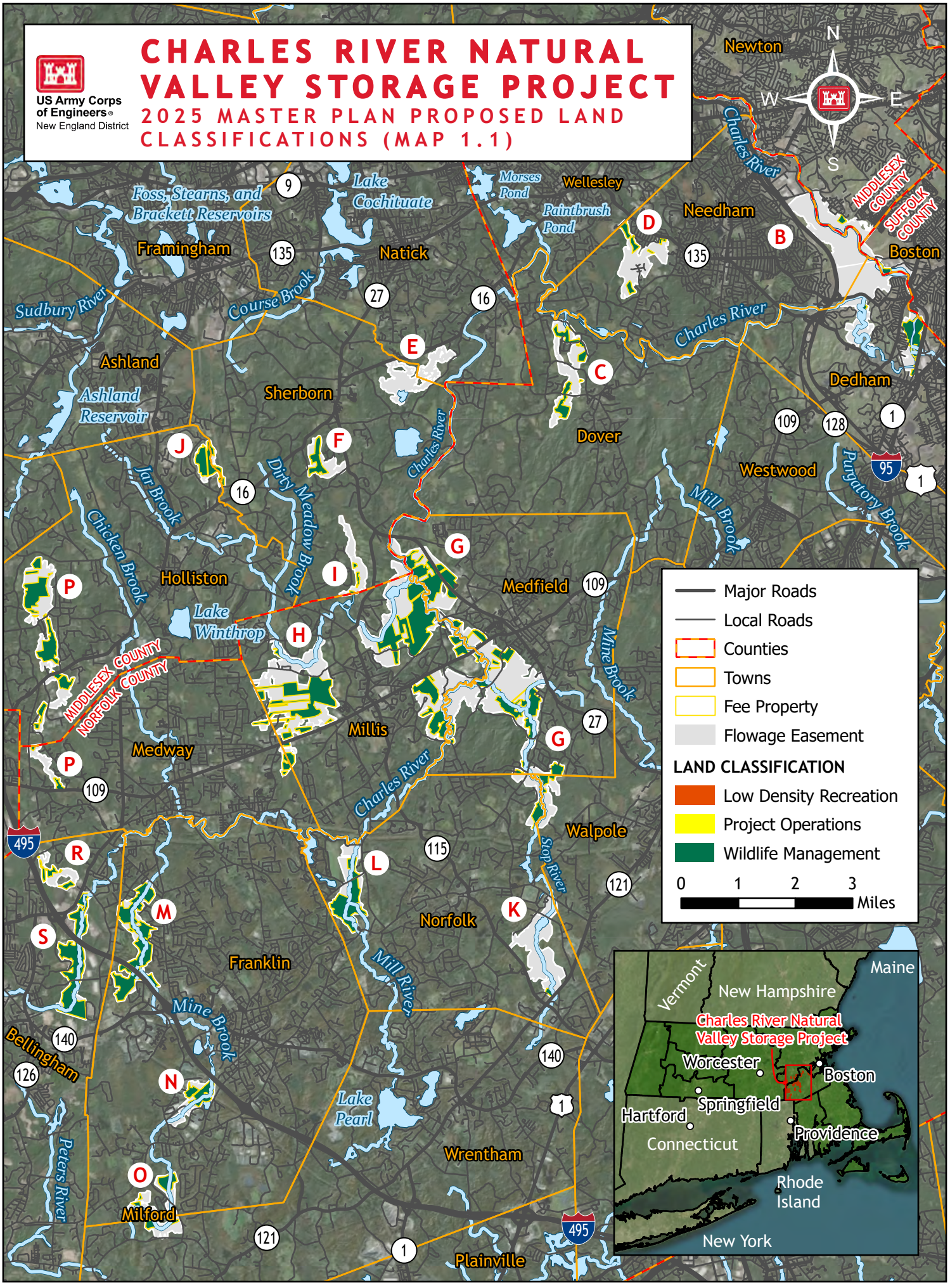
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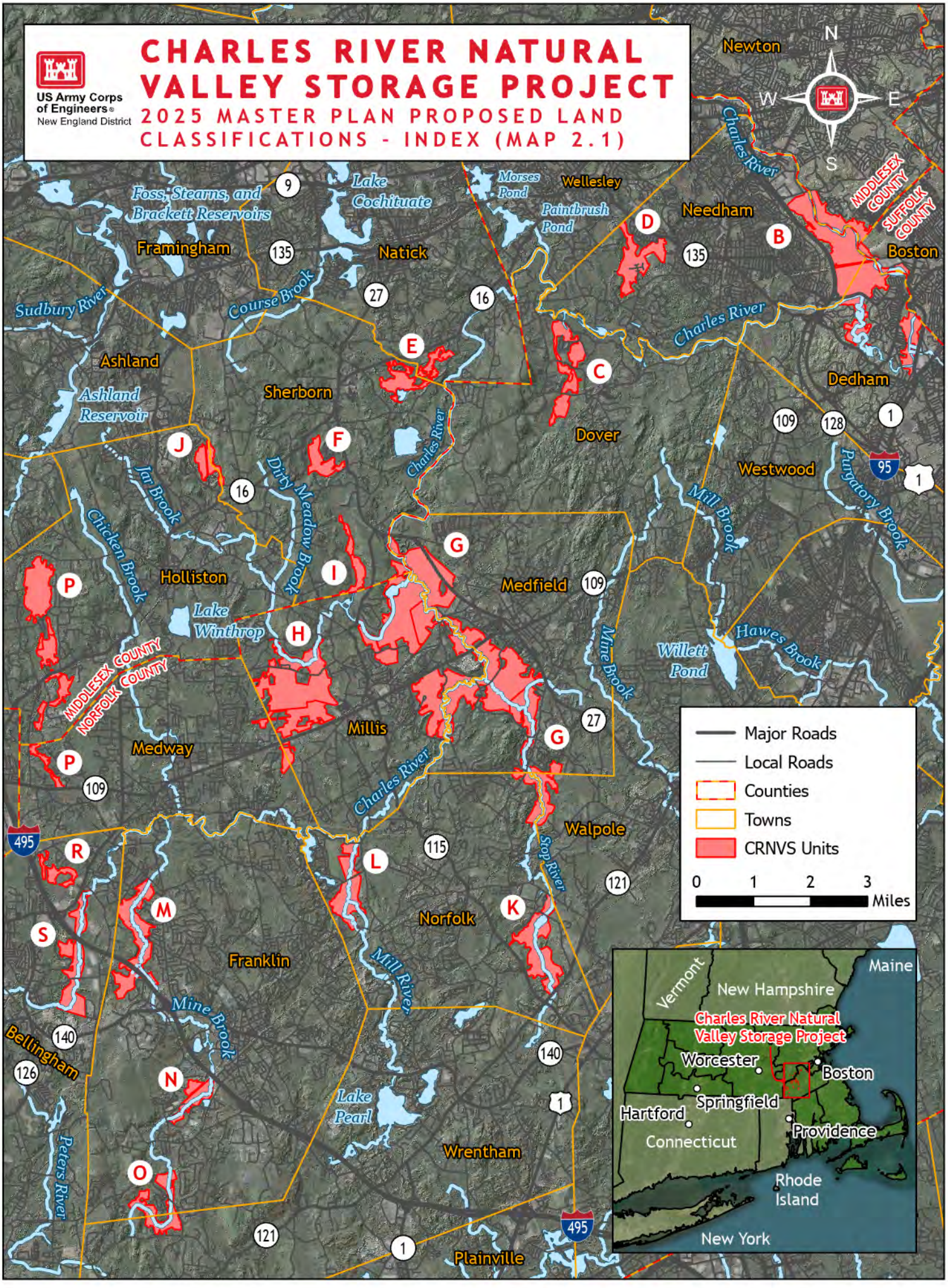
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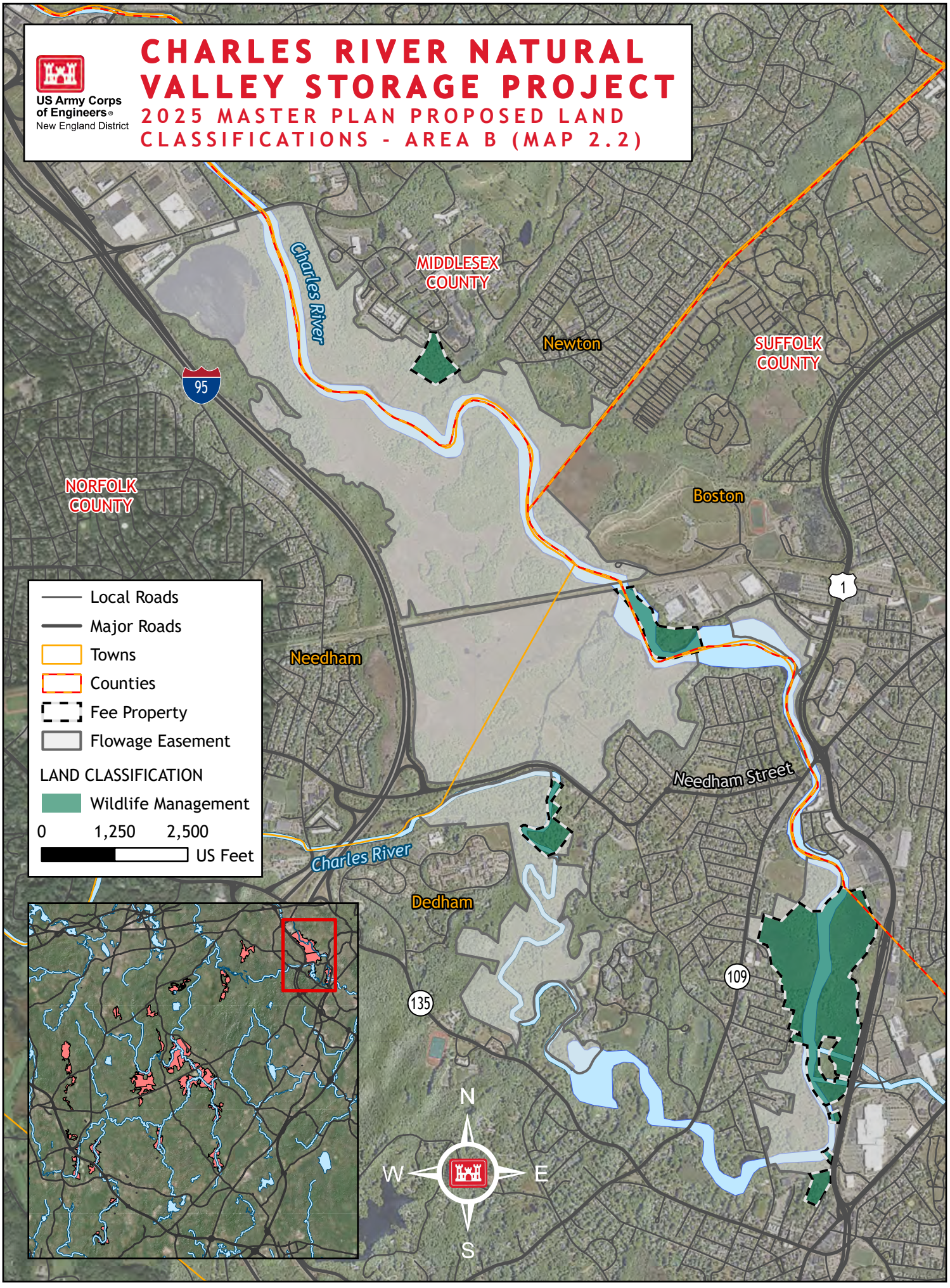
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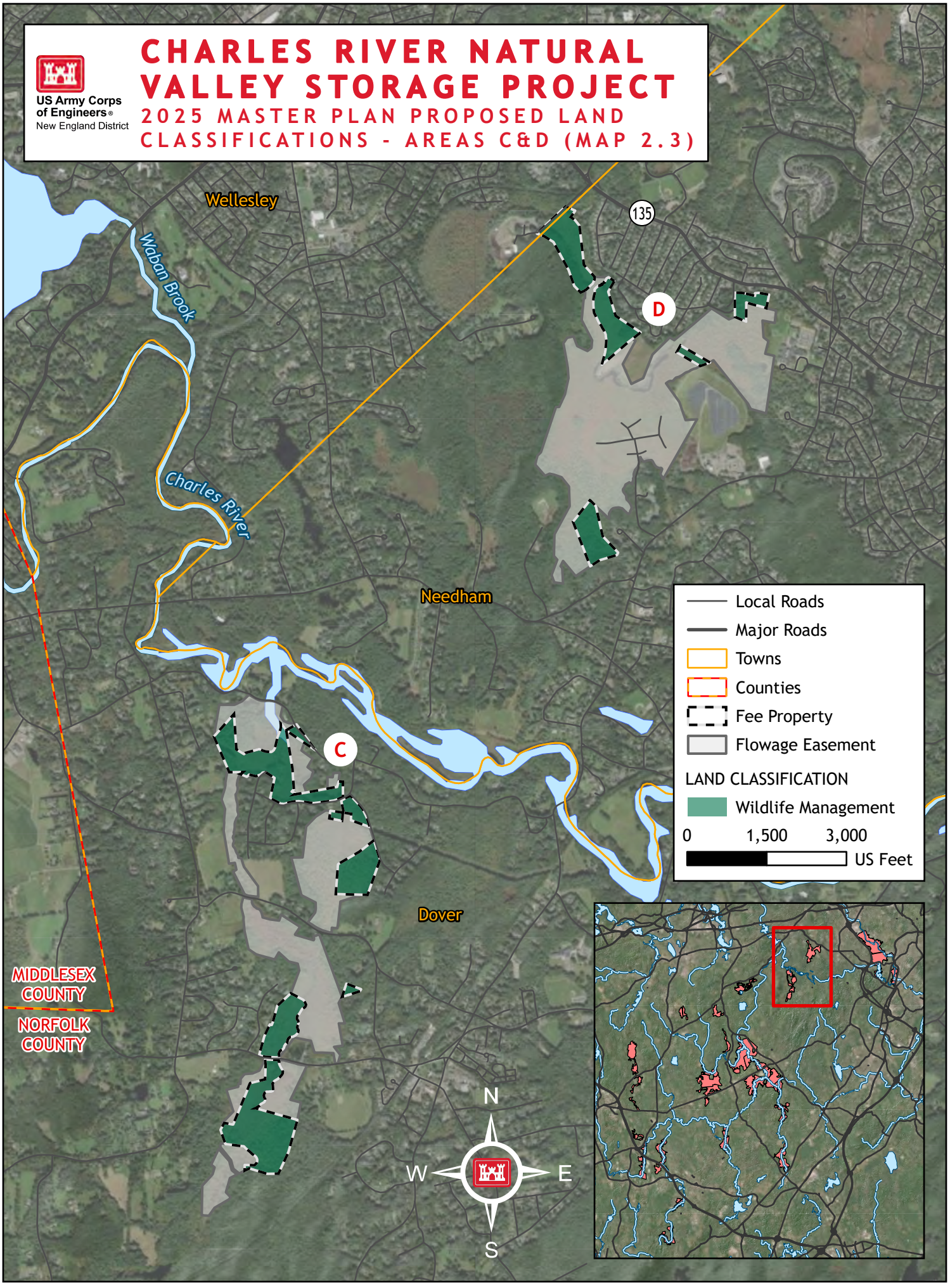
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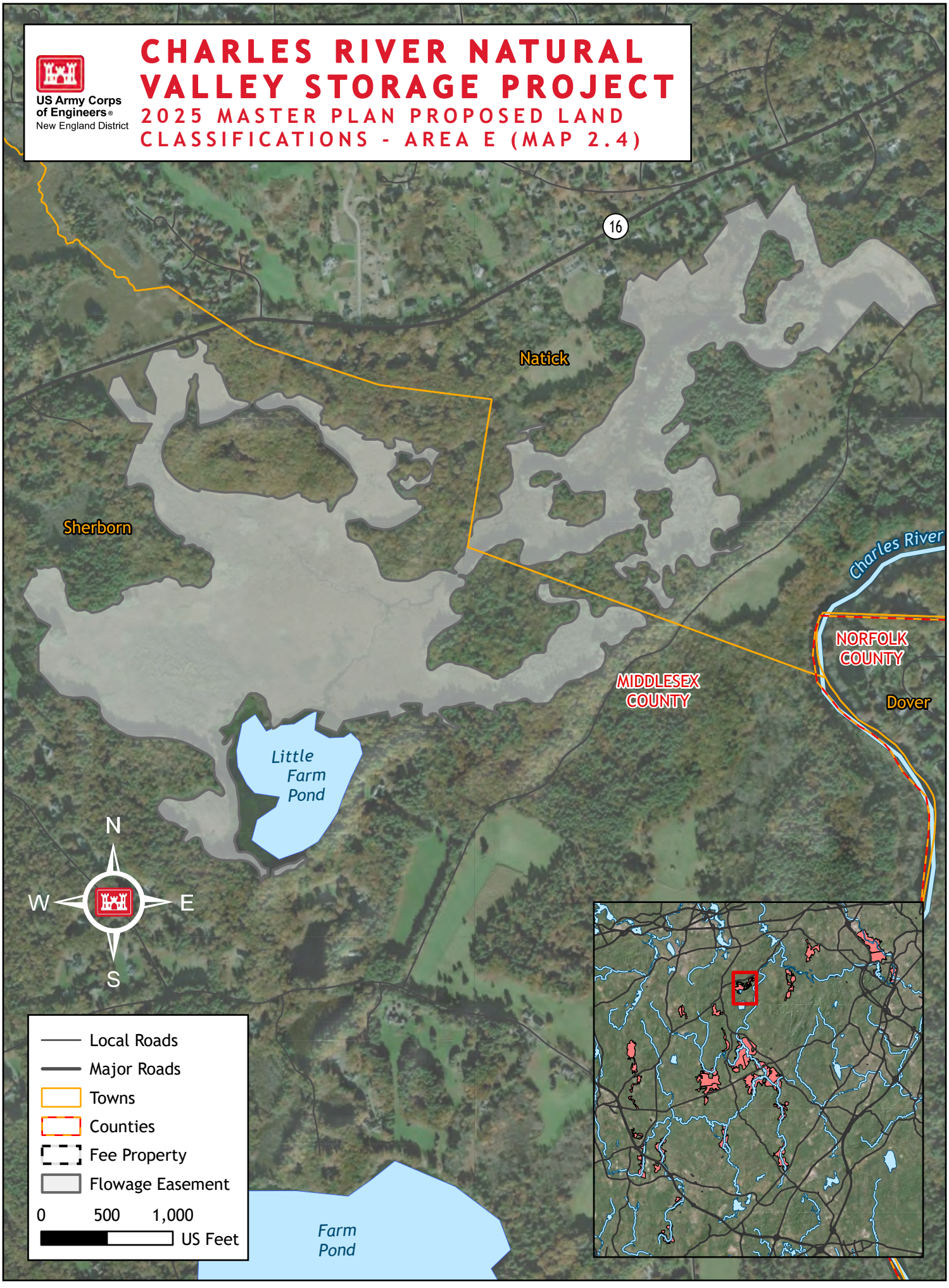
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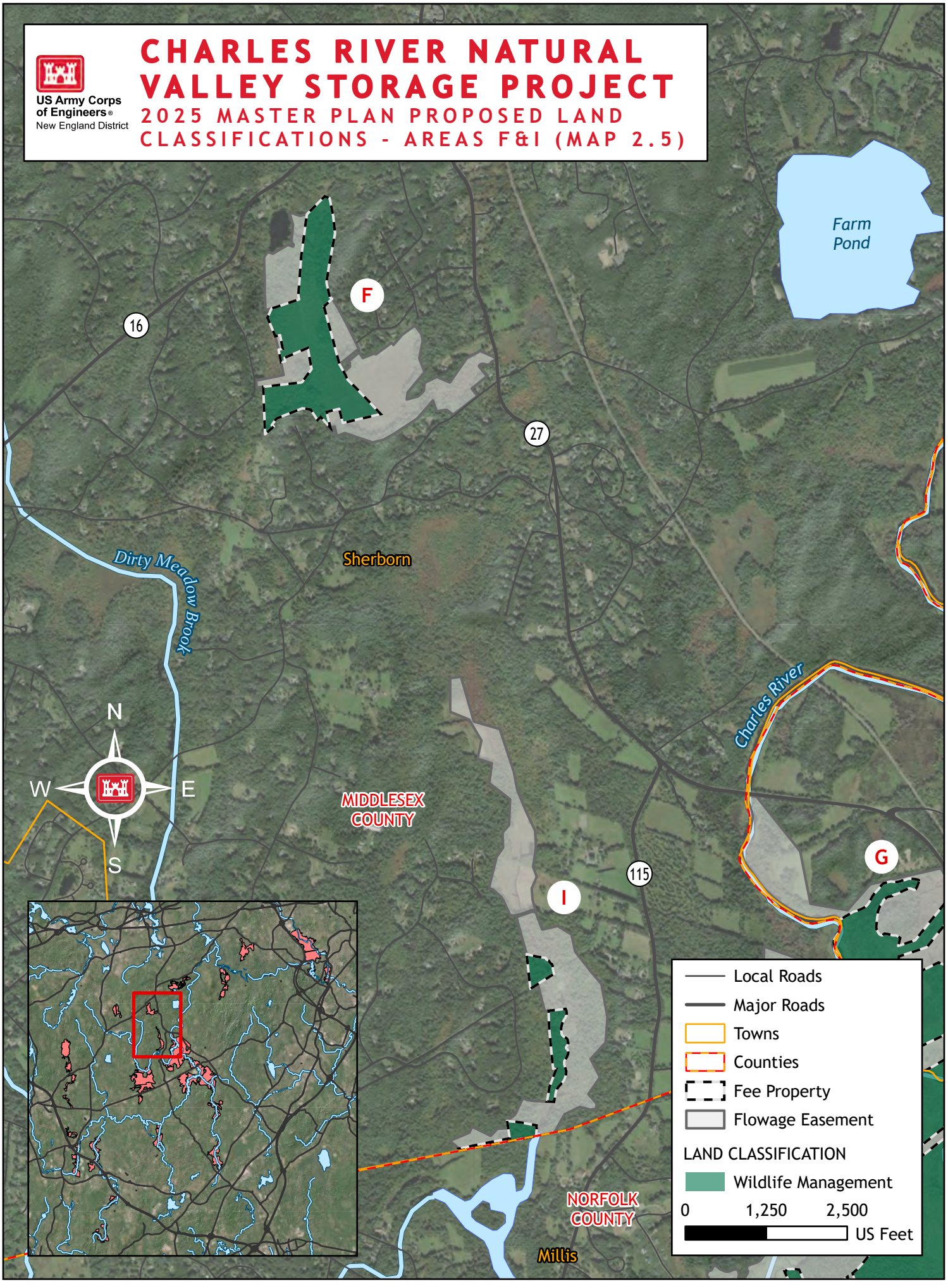
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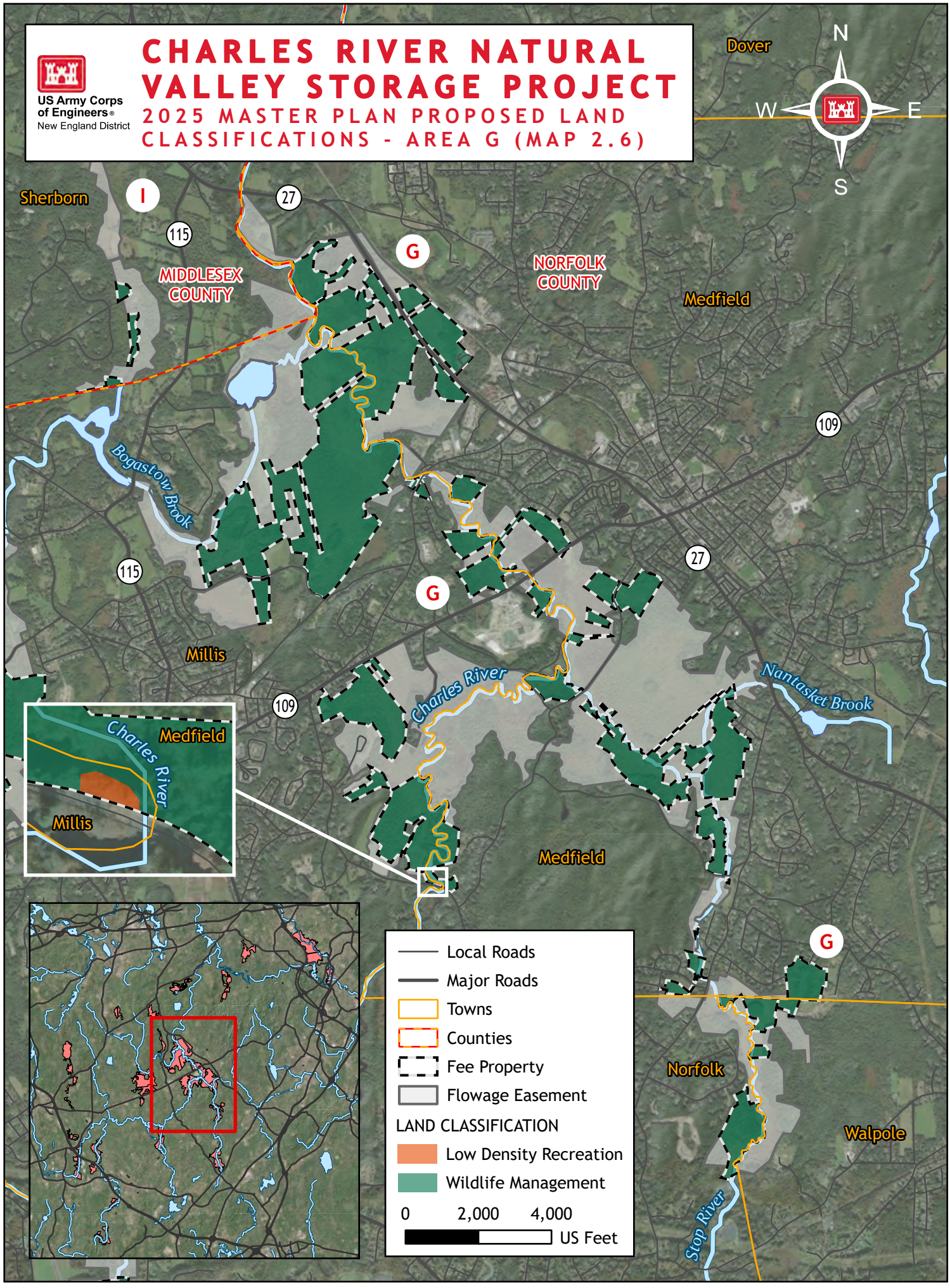
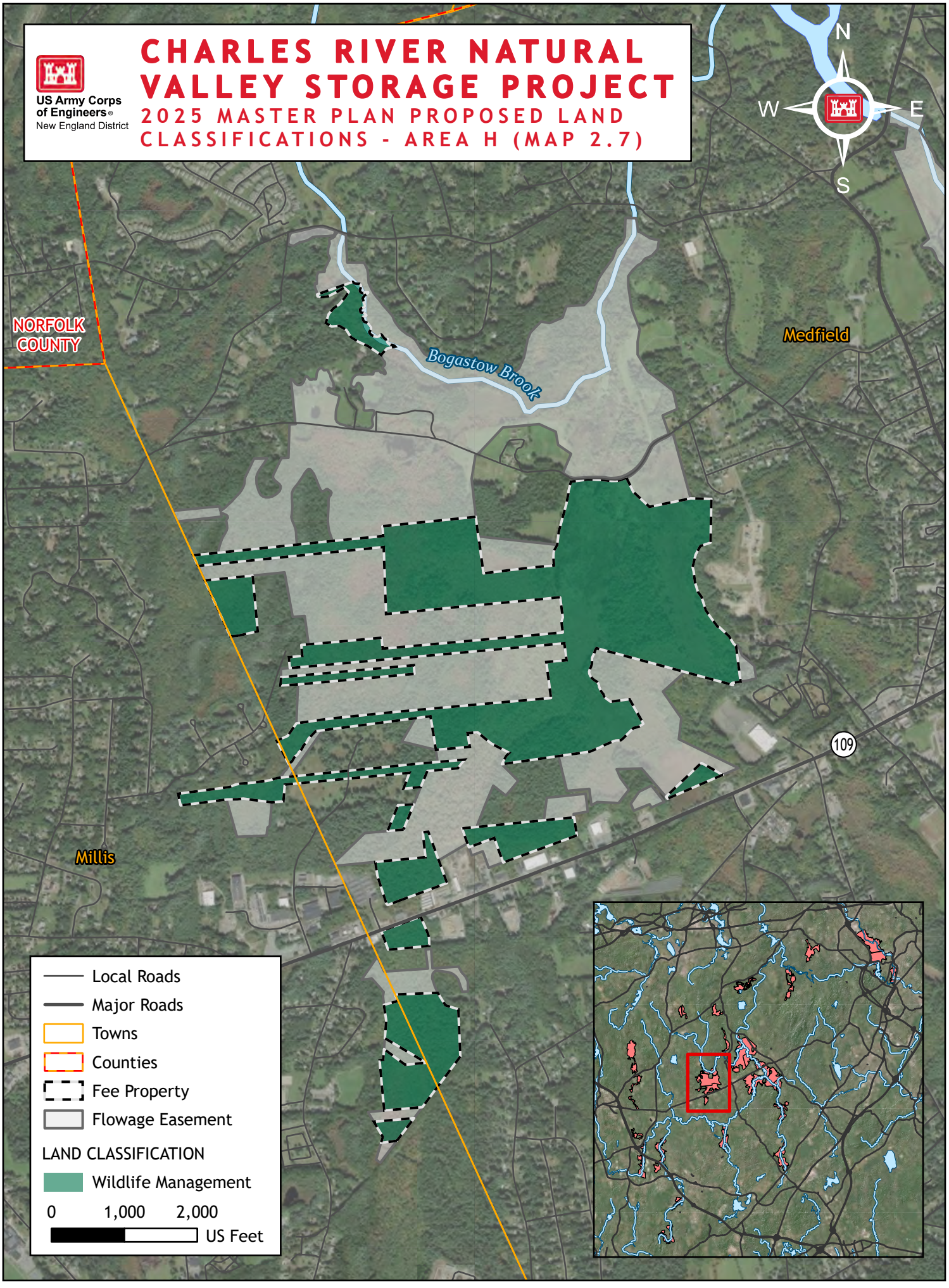
US Feet


CHARLES RIVER NATURAL VALLEY STORAGE PROJECT
2025 MASTER PLAN PROPOSED LAND CLASSIFICATIONS - AREA G (MAP 2.6)
US Army Corps of Engineers®
New England District
N
W
E
S
Dover
Sherborn
I
27
115
G
MIDDLESEX COUNTY
NORFOLK COUNTY
Medfield
109
Bogastow Brook
115
27
G
Millis
Charles River
Nantasket Brook
109
Medfield
Millis
Charles River
Medfield
G
Norfolk
Walpole
Stop River
Local Roads
Major Roads
Towns
Counties
Fee Property
Flowage Easement
LAND CLASSIFICATION
Low Density Recreation
Wildlife Management
0
2,000
4,000
US Feet


CHARLES RIVER NATURAL VALLEY STORAGE PROJECT
2025 MASTER PLAN PROPOSED LAND CLASSIFICATIONS - AREA H (MAP 2.7)
US Army Corps of Engineers®
New England District
N
W
E
S
NORFOLK COUNTY
Bogastow Brook
Medfield
109
Millis
Local Roads
Major Roads
Towns
Counties
Fee Property
Flowage Easement
LAND CLASSIFICATION
Wildlife Management
0
1,000
2,000
US Feet

# CHARLES RIVER NATURAL VALLEY STORAGE PROJECT

## 2025 MASTER PLAN PROPOSED LAND CLASSIFICATIONS - AREA J (MAP 2.8)

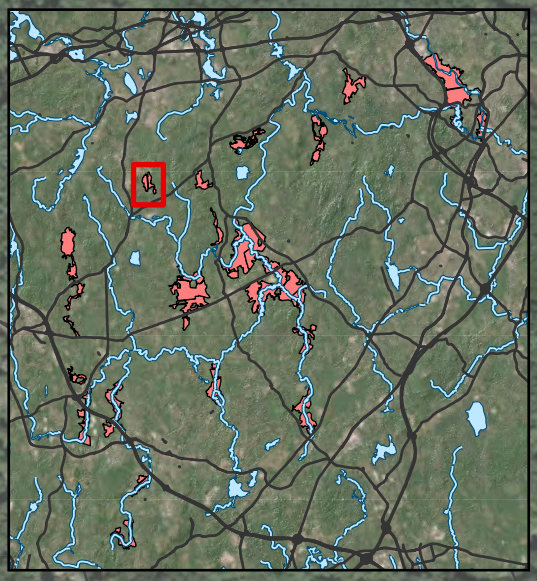
US Army Corps of Engineers®
New England District

Holliston

MIDDLESEX COUNTY

Sherborn

N
W
E
S

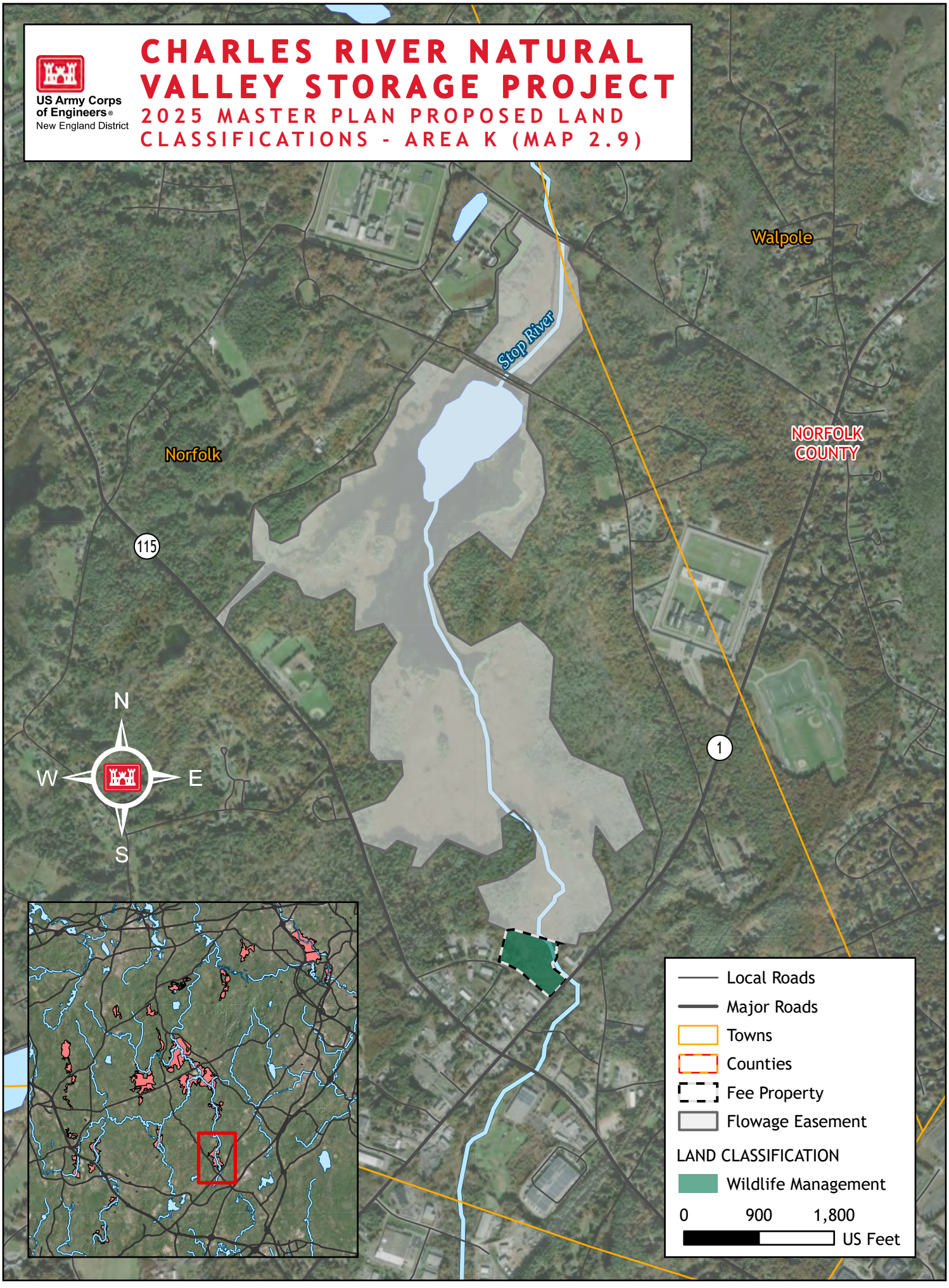


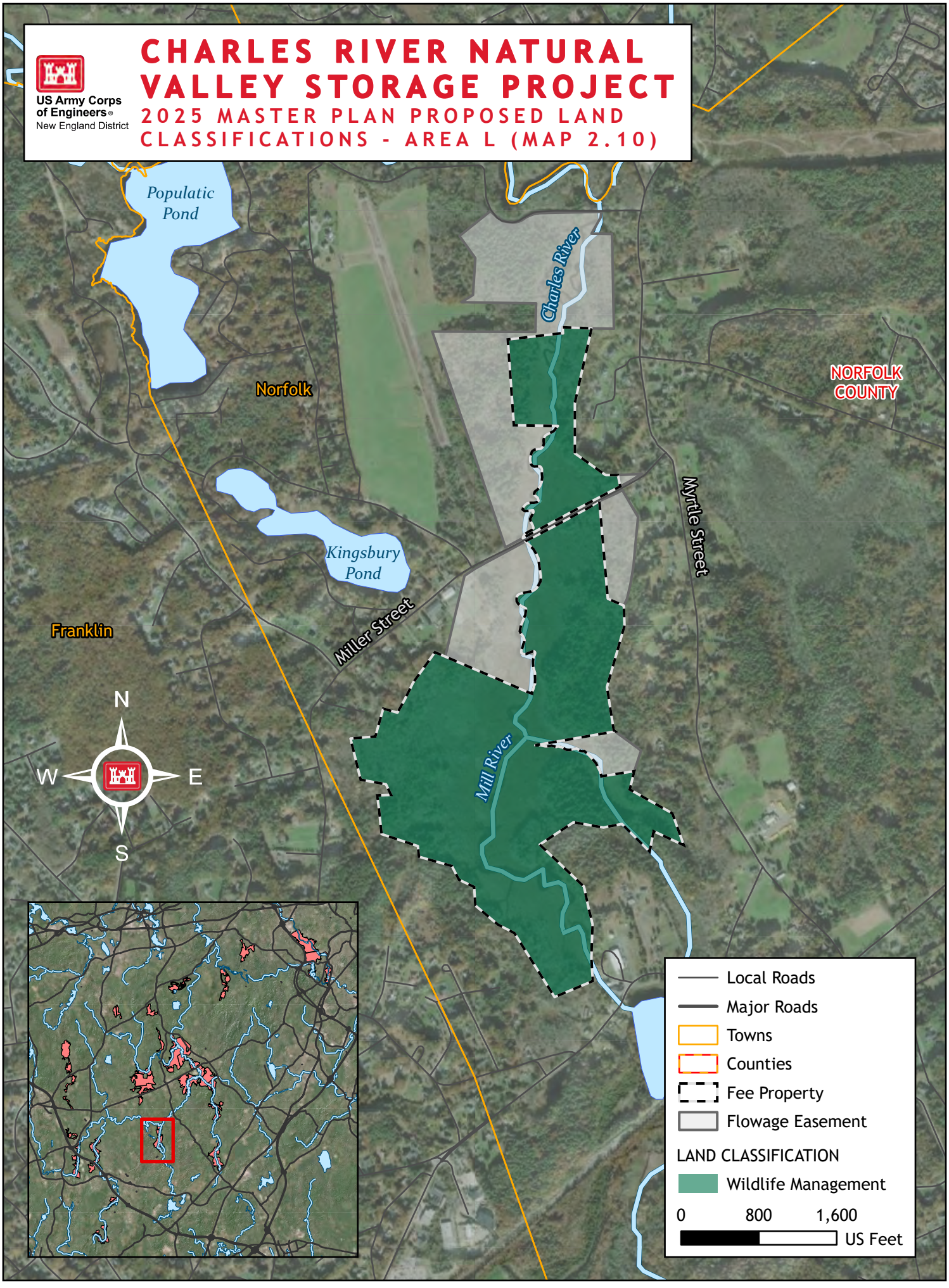
Local Roads
Major Roads
Towns
Counties
Fee Property
Flowage Easement

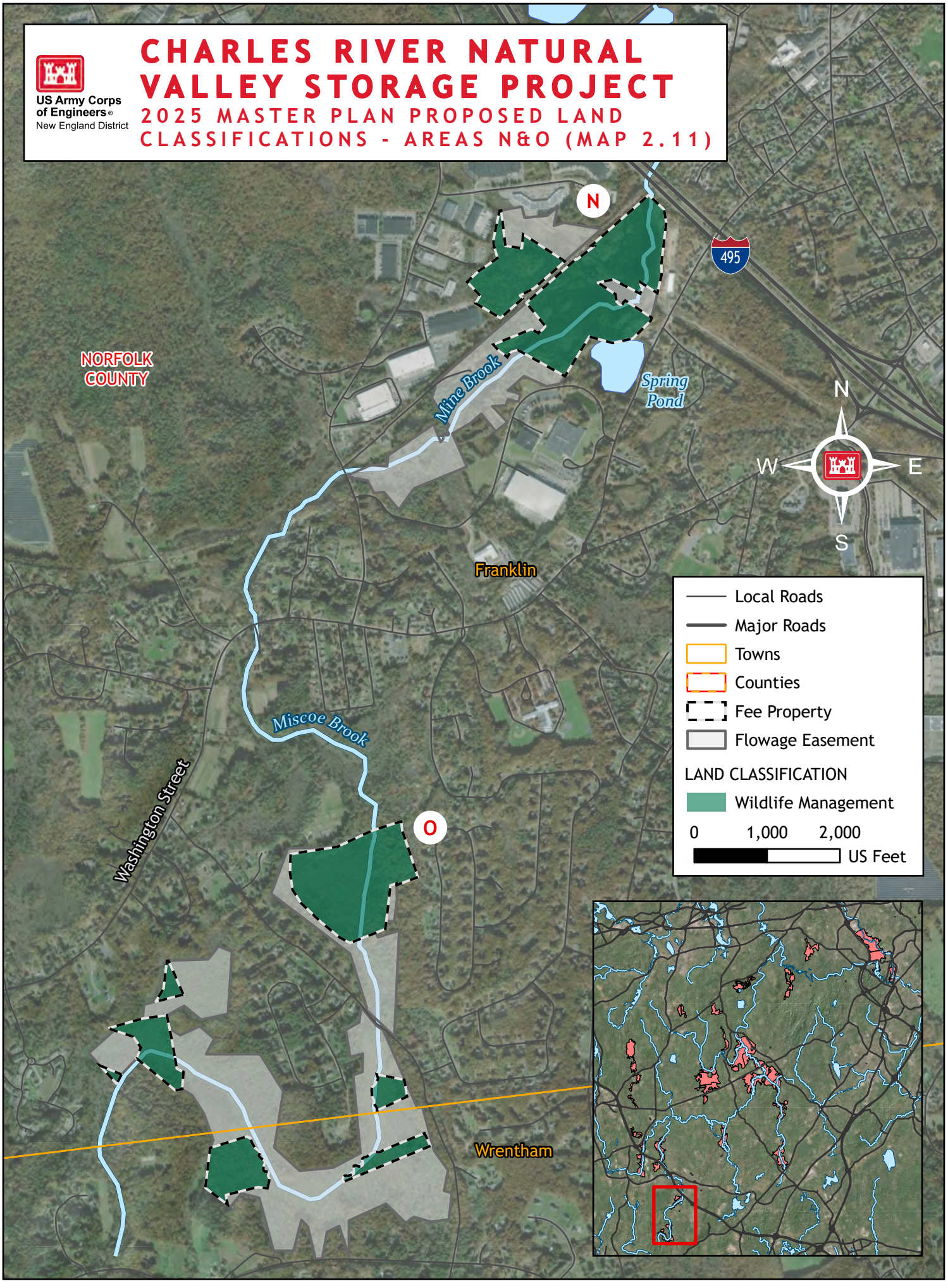
LAND CLASSIFICATION
Wildlife Management

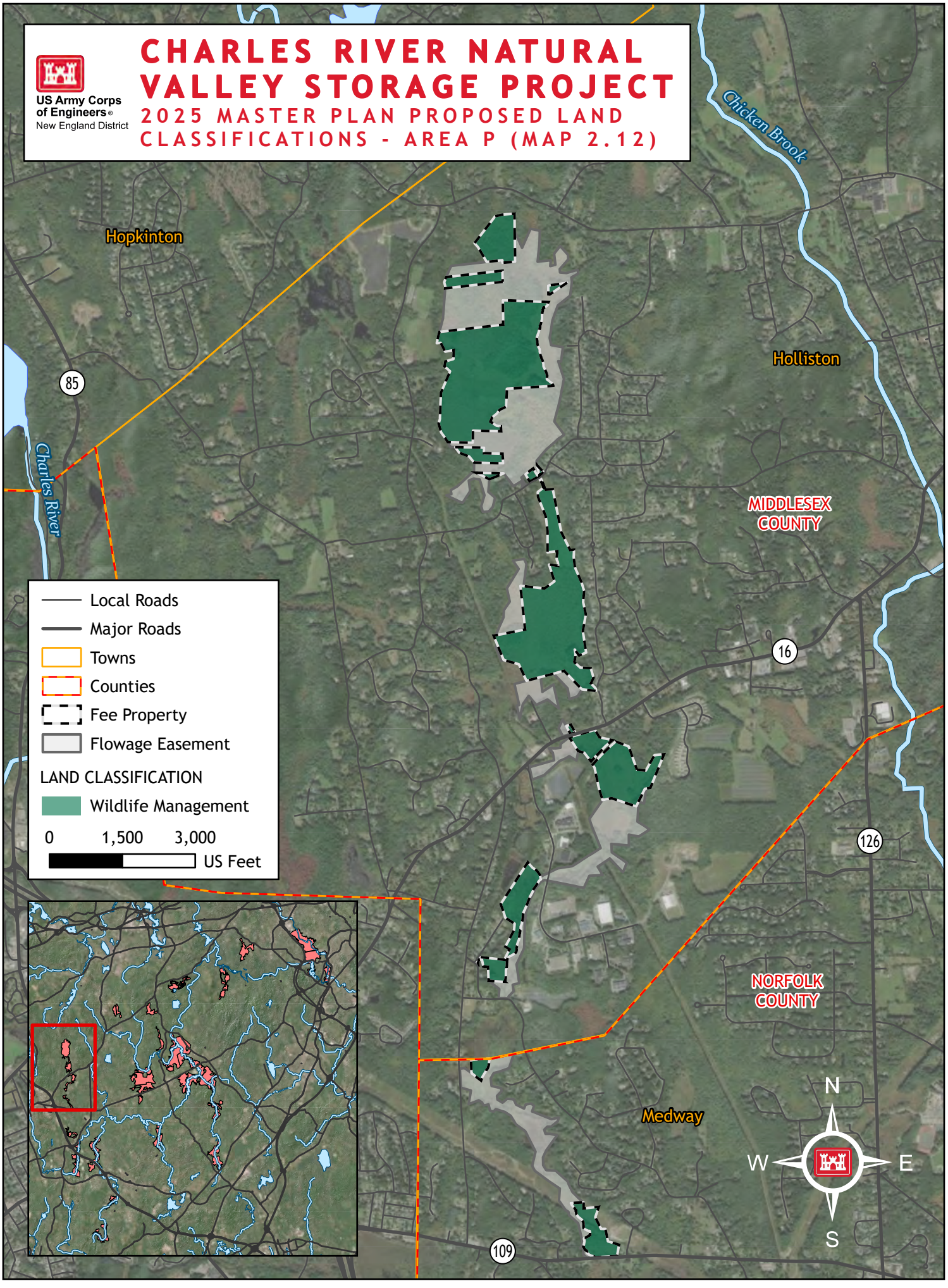
0 500 1,000
US Feet

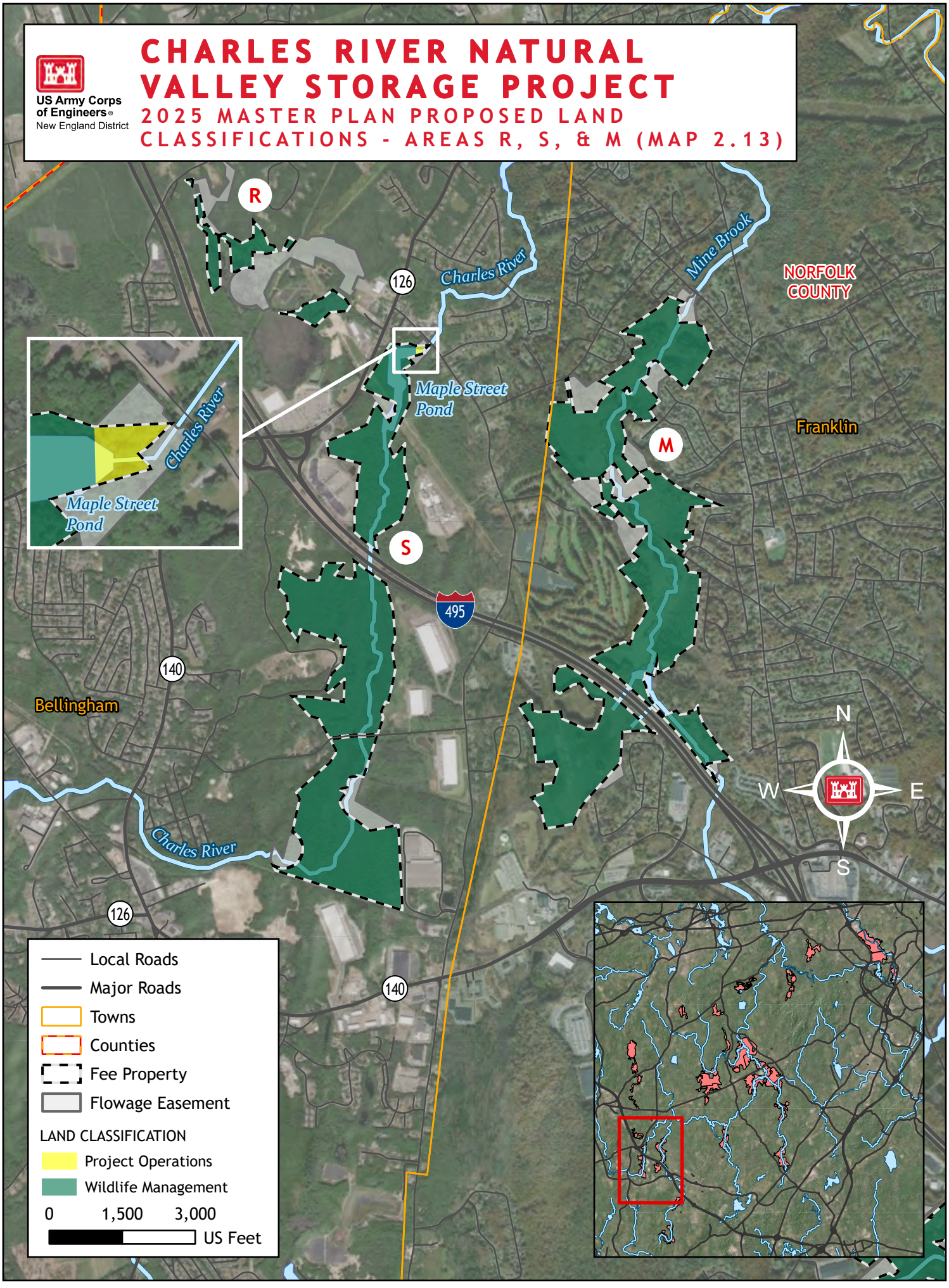
16


US Army Corps of Engineers®
New England District
CHARLES RIVER NATURAL VALLEY STORAGE PROJECT
2025 MASTER PLAN PROPOSED LAND CLASSIFICATIONS - AREA K (MAP 2.9)
Walpole
Stop River
Norfolk
NORFOLK COUNTY
115
1
N
W
E
S
Local Roads
Major Roads
Towns
Counties
Fee Property
Flowage Easement
LAND CLASSIFICATION
Wildlife Management
0
900
1,800
US Feet


CHARLES RIVER NATURAL VALLEY STORAGE PROJECT
2025 MASTER PLAN PROPOSED LAND CLASSIFICATIONS - AREA L (MAP 2.10)
US Army Corps of Engineers®
New England District
Populatic Pond
Charles River
Norfolk
NORFOLK COUNTY
Myrtle Street
Kingsbury Pond
Miller Street
Franklin
Mill River
N
W
E
S
Local Roads
Major Roads
Towns
Counties
Fee Property
Flowage Easement
LAND CLASSIFICATION
Wildlife Management
0
800
1,600
US Feet


CHARLES RIVER NATURAL VALLEY STORAGE PROJECT
2025 MASTER PLAN PROPOSED LAND CLASSIFICATIONS - AREAS N&O (MAP 2.11)
US Army Corps of Engineers®
New England District
N
O
495
NORFOLK COUNTY
Mine Brook
Spring Pond
Franklin
Miscoe Brook
Washington Street
Wrentham
N
W
E
S
Local Roads
Major Roads
Towns
Counties
Fee Property
Flowage Easement
LAND CLASSIFICATION
Wildlife Management
0
1,000
2,000
US Feet


US Army Corps of Engineers®
New England District
CHARLES RIVER NATURAL VALLEY STORAGE PROJECT
2025 MASTER PLAN PROPOSED LAND CLASSIFICATIONS - AREA P (MAP 2.12)
Chicken Brook
Hopkinton
Holliston
85
Charles River
MIDDLESEX COUNTY
16
126
NORFOLK COUNTY
Medway
109
Local Roads
Major Roads
Towns
Counties
Fee Property
Flowage Easement
LAND CLASSIFICATION
Wildlife Management
0
1,500
3,000
US Feet
N
W
E
S


CHARLES RIVER NATURAL VALLEY STORAGE PROJECT
2025 MASTER PLAN PROPOSED LAND CLASSIFICATIONS - AREAS R, S, & M (MAP 2.13)
US Army Corps of Engineers®
New England District
R
S
M
126
140
495
Charles River
Mine Brook
Maple Street Pond
NORFOLK COUNTY
Franklin
Bellingham
N
W
E
S
Local Roads
Major Roads
Towns
Counties
Fee Property
Flowage Easement
LAND CLASSIFICATION
Project Operations
Wildlife Management
0
1,500
3,000
US Feet

# APPENDIX B – NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) DOCUMENTATION

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Finding of No Significant Impact (FONSI) And Environmental Assessment

# Charles River
# Natural Valley Storage Area
# Master Plan

## Eastern Massachusetts
## E6-O-1748332287

**July 2025**

US Army Corps of Engineers ®
New England District

## ENVIRONMENTAL ASSESSMENT ORGANIZATION

This Environmental Assessment (EA) evaluates the potential environmental and socioeconomic impacts of the Charles River Natural Valley Storage Area Master Plan.

| | |
|---|---|
| *SECTION 1* | *INTRODUCTION* of the Proposed Action summarizes the purpose of and need for the Proposed Action, provides relevant background information, and describes the scope of the EA. |
| *SECTION 2* | *PROPOSED ACTION AND ALTERNATIVES* examines alternatives for implementing the Proposed Action and describes the recommended alternative. |
| *SECTION 3* | *AFFECTED ENVIRONMENT* describes the existing environmental and socioeconomic setting. |
| | *ENVIRONMENTAL CONSEQUENCES* identifies the potential environmental and socioeconomic effects of implementing the Proposed Action and alternatives. |
| *SECTION 4* | *COMPLIANCE WITH ENVIRONMENTAL LAWS* provides a listing of environmental protection statutes and other environmental requirements. |
| *SECTION 5* | *PUBLIC AND AGENCY COORDINATION* provides a listing of individuals and agencies consulted during preparation of the EA. |
| *SECTION 6* | *REFERENCES* provides bibliographical information for cited sources. |
| *APPENDIX A* | *COORDINATION* National Environmental Policy Act (NEPA) Coordination and Scoping |
| *APPENDIX B* | *WILDLIFE DOCUMENTATION* provides information on USFWS resources (including threatened and endangered species). |

# Table of Contents

## List of Tables



## List of Acronyms

| | |
|---|---|
| CFR | Code of Federal Regulations |
| EA | Environmental Assessment |
| EO | Executive Order |
| FONSI | Finding of No Significant Impact |
| HTRW | Hazardous, Toxic, and Radioactive Waste |
| IPaC | Information for Planning and Consultation |
| LDR | Low Density Recreation |
| MassWildlife | Massachusetts Division of Fisheries and Wildlife |
| MP | Master Plan |
| MRML | Multiple Resource Management Lands |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NRHP | National Register of Historic Places |
| NVSA | Natural Valley Storage Area |
| PO | Project Operations |
| SHPO | State Historic Preservation Office |
| USACE | U.S. Army Corps of Engineers |
| USFWS | U.S. Fish and Wildlife Service |
| WM | Wildlife Management |

**FINDING OF NO SIGNIFICANT IMPACT**
**Charles River Natural Valley Storage Area Master Plan**
**Worcester County, Massachusetts**

The U.S. Army Corps of Engineers (USACE), New England District, proposes to revise, adopt, and implement the Charles River Natural Valley Storage Area (NVSA) Master Plan, as required by Engineer Regulation 1130-2-550 and Engineer Pamphlet 1130-2-550. The Charles River NVSA is authorized by the Water Resource Development Act of 1974. The project is authorized as a multi-purpose project for flood control, recreation, and natural resources management.

The Charles River NVSA Master Plan is a strategic land use management document that guides the efficient, cost-effective, comprehensive management, development, and use of recreation, natural resources, and cultural resources throughout the life of the Charles River NVSA project. The Master Plan and supporting documentation provide an inventory and analysis of goals, objectives, and recommendations for USACE lands and waters within the Charles River NVSA with input from the public, stakeholders, and subject matter experts.

USACE has completed an Environmental Assessment (EA) for this action in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended. USACE is fully revising the 1984 Master Plan to reflect current ecological, socio-demographic, and outdoor recreation trends that are impacting the project, as well as those anticipated to occur within the next 25 years.

The revised 2025 Master Plan includes the classification of federal fee lands, and resource goals and objectives. The proposed land classifications include Project Operations, Low Density Recreation, and Wildlife Management.

I find that based on the evaluation of environmental effects discussed in the EA, this action is not a major federal action significantly affecting the quality of the environment. The EA includes an evaluation of the affected environment and the geographical context and intensity of the direct, indirect, and cumulative long-term and short-term effects of the action. The effects of the proposed action relative to significance criteria are summarized below. None are implicated to warrant a finding of NEPA significance.

(i) <u>The degree to which the action may adversely affect public health and safety.</u> The action is expected to have no effects on public health and safety.

(ii) <u>The degree to which the action may adversely affect unique characteristics of the geographic area such as historic or cultural resources, parks, Tribal sacred sites, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.</u> The action will have no potential for adverse effects to unique characteristics of the geographic area such as Tribal sacred sites, prime farmlands, wild and scenic rivers,

or ecologically critical areas. The project will have no potential for adverse effects on historical and cultural resources.

(iii) Whether the action may violate relevant Federal, State, Tribal, or local laws or other requirements or be inconsistent with Federal, State, Tribal, or local policies designed for the protection of the environment**.** The action will not violate federal, state, tribal or local laws or policies for the protection of the environment.

(iv) The degree to which the potential effects on the human environment are highly uncertain. The effects are not uncertain. USACE has revised numerous master plans, and the potential effects are well known.

(v) The degree to which the action may adversely affect resources listed or eligible for listing in the National Register of Historic Places (NRHP)**.** The action has no adverse effects on historic properties eligible or listed on the NRHP.

(vi) The degree to which the action may adversely affect an endangered or threatened species or its habitat, including habitat that has been determined to be critical under the Endangered Species Act of 1973. The action will have no effect on any federal or state threatened or endangered species or designated critical habitat for such species.

(vii) The degree to which the action may adversely affect rights of Tribal Nations that have been reserved through treaties, statutes, or Executive Orders. The action will not adversely affect rights of Tribal Nations that have been reserved through treaties, statutes, or Executive Orders.

Based on my review and evaluation of the environmental effects as presented in the EA, I have determined that the revisions to the implementation and adoption of the 2025 Charles River NVSA Master Plan is not a major federal action significantly affecting the quality of the environment and is therefore exempt from requirements to prepare an Environmental Impact Statement.

_____ _____

Date

Justin R. Pabis, P.E.
Colonel, Corps of Engineers
District Engineer

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# SECTION 1: INTRODUCTION

The U.S. Army Corp of Engineers (USACE), New England District, has prepared this Environmental Assessment (EA) to analyze the potential environmental effects associated with the adoption and implementation of the 2025 Charles River Natural Valley Storage Area (NVSA) Master Plan (MP). This MP is a programmatic document subject to evaluation under the National Environmental Policy Act (NEPA) of 1969, as amended, and all appropriate federal and state environmental regulations, laws, and executive orders.

The 2025 MP is a strategic land use management plan that provides direction to preserve, conserve, restore, maintain, manage, and develop all natural, cultural, and recreational resources of a USACE water resource project, which includes all government-owned lands in and around a reservoir. It is a vital tool for responsible stewardship and sustainability of the project's natural, cultural, and recreational resources. The 2025 MP identifies conceptual types and levels of activities, but does not include designs, project sites, or estimated costs. All actions carried out by the USACE, other agencies, and individuals granted leases to USACE lands must be consistent with the 2025 MP.

## 1.1 PROJECT LOCATION AND SETTING

USACE studied the Charles River watershed in 1972 and recommended that the federal government purchase and preserve natural valley storage areas within the watershed for flood control purposes. The study was authorized by a resolution of the House Committee on Public Works adopted June 24, 1965. The Charles River NVSA includes approximately 8,103 acres of natural valley storage areas as authorized by the Water Resource Development Act of 1974. The Charles River NVSA is a multi-purpose project authorized for flood control, recreation, and natural resources management.

The Charles River NVSA includes USACE lands within the Charles River watershed in eastern Massachusetts. Lands are located in the towns of Millis, Medford, Norfolk, Franklin, Holliston, Needham, Sherborn, Bellingham, Dedham, Dover, Medway, Newton, Wrentham, Walpole, Natick, and Boston. These lands include wetland and floodplain areas as which provide flood risk mitigation to communities in the Charles River watershed. In addition to flood storage areas, stormwater features such as culverts and bridge openings reduce runoff.

The Charles River NVSA includes management units for federal fee lands within the project. There are seventeen management units throughout the Charles River NVSA. A map of all management units is shown below, in Figure 1. Refer to Section 5.7 of the 2025 MP for additional information on the management units.

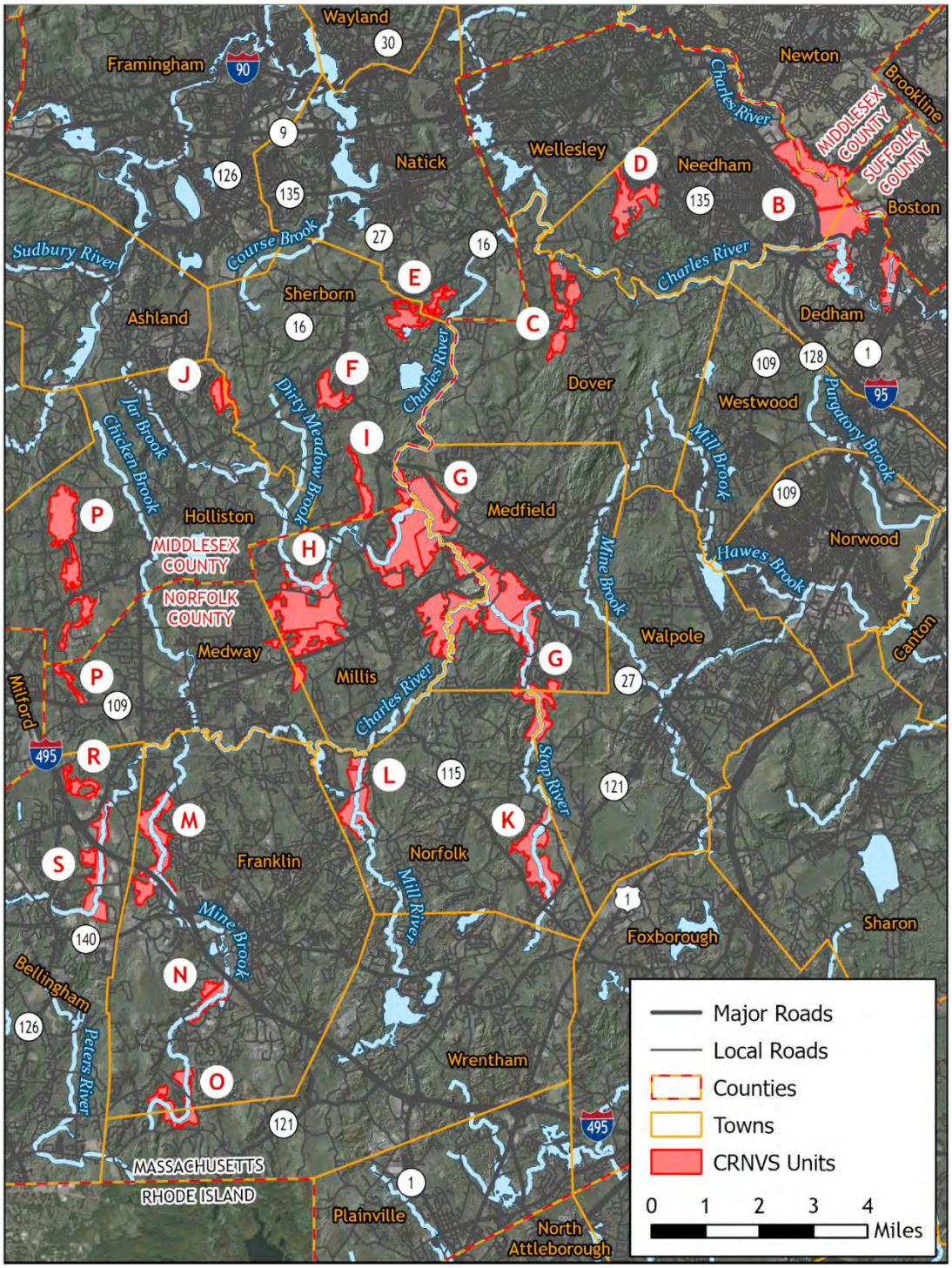


**Figure 1. Management units for the Charles River NVSA**

### 1.1 PURPOSE AND NEED

The 2025 MP is intended to serve as a comprehensive land and recreation management plan with an effective life of approximately 25 years. The purpose of the 2025 MP is to ensure that the conservation and sustainability of the land, water, and recreational resources at Charles River NVSA comply with applicable environmental laws and regulations and to maintain quality lands for future public use. Engineer Pamphlet (EP) 1130-2-550 requires a revision of an MP that no longer serves its intended purpose due to a combination of age and substantial changes to the project. Therefore, the revised MP is being adopted and implemented to provide effective guidance in USACE decision-making.

## SECTION 2: PROPOSED ACTION AND ALTERNATIVES

During the alternative development process, different land classifications were evaluated for each parcel of USACE land at Charles River NVSA. Land classifications were determined by primary use alongside the consideration of the multiple Congressionally authorized missions of the Project, public and agency comments, USACE staff knowledge, and potential impacts to the social, cultural, and environmental resources. The goals for the 2025 MP include the following:

**GOAL A.** Provide the best management practices to respond to regional needs, resource capabilities and suitability, and expressed public interests consistent with authorized project purposes.

**GOAL B.** Protect and manage the project's natural and cultural resources through sustainable environmental stewardship programs.

**GOAL C.** Provide public outdoor recreation opportunities that support project purposes and public demands created by the project itself while sustaining the project's natural resources.

**GOAL D.** Recognize the particular qualities, characteristics, and potentials of the project.

**GOAL E.** Provide consistency and compatibility with national objectives and other State and regional goals and programs.

In addition to the above goals, USACE management activities are guided by USACE-wide Environmental Operating Principles as follows (USACE, n.d.):

- Foster sustainability as a way of life throughout the organization.
- Proactively consider environmental consequences of all USACE activities and act accordingly.
- Create mutually supporting economic and environmentally sustainable solutions.
- Continue to meet our corporate responsibility and accountability under the law for activities undertaken by USACE, which may impact human and natural environments.
- Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.
- Leverage scientific, economic, and social knowledge to understand the environmental context and effects of USACE actions in a collaborative manner.
- Employ an open, transparent process that respects views of individuals and groups interested in USACE activities.

Resource objectives were developed to support the goals of the Master Plan, USACE Environmental Operating Principles, and applicable national performance measures. Resource objectives are consistent with authorized project purposes, federal laws and directives, regional needs, resource capabilities, and public consideration. Recreational and natural resources carrying capacities were considered alongside state planning documents, including the Massachusetts Wildlife Action Plan and the Massachusetts Statewide Comprehensive Outdoor Recreation Plan. Refer to Chapter 3 of the 2025 MP for a description of the resource objectives.

During the alternative development workshop, project lands were classified to identify how a given parcel of land shall be used now and in the foreseeable future. Land classifications to be used are defined as follows:

- **Project Operations (PO):** Lands managed for operations and maintenance of the Charles River NVSA project required to carry out the authorized purpose of flood risk management. In addition to the operational activities taking place on these lands, limited recreational use may be allowed for activities such as public access to the river shoreline. Regardless of any limited recreation use allowed on these lands, the primary classification of PO will take precedent over other uses.

- **Multiple Resource Management Lands (MRML):** Allows for the designation of a predominate use with the understanding that other compatible uses may also occur on these lands.

    - Low Density Recreation (LDR): Lands with minimal development or infrastructure that supports passive recreational use (fishing, hunting, wildlife viewing, natural surface trails, hiking, etc.)
    - Wildlife Management (WM): Lands designated for stewardship of fish and wildlife habitat that permit passive recreation unless restrictions are necessary to protect sensitive species or promote public safety.

## 2.1 NO ACTION ALTERNATIVE

The No Action Alternative serves as a basis for comparison to the anticipated effects of the action alternatives. Under the No Action Alternative, USACE would not adopt and implement the 2025 MP. Instead, USACE would continue to manage Charles River NVSA's natural resources as set forth in the 1984 MP. The 1984 MP would continue to be the only source of comprehensive management guidelines and philosophy. No land classifications would exist within the Charles River NVSA.

## 2.2 PROPOSED ACTION ALTERNATIVE

Under the Proposed Action, USACE will adopt and implement the 2025 MP, replacing the 1984 MP. The 1984 MP did not classify fee land into land classifications. The 2025 MP will classify all of Charles River NVSA's fee land into management categories. The Proposed Action Alternative will meet regional stewardship goals associated with good stewardship of land, water, and recreational resources, address identified recreational trends; and allow for continued use and development of project lands without violating national policies or public laws.

Table 1 provides a summary of the proposed 2025 MP land classifications and associated management units. No land classifications are proposed for Area E, as only easement lands occur and there is no federal fee boundary. The 1984 MP did not classify fee lands; therefore, no prior land classifications are shown.

**Table 1. Existing and proposed Land Classification changes**

| Proposed Land Classifications (2025) | Management Unit(s) | Acres |
|---|---|---|
| Project Operations (PO) | Area S | 0.8 |
| Low Density Recreation (LDR) | Area G | 0.2 |
| Wildlife Management (WM) | All areas, excluding Area E[1] | 3,177.2 |
| **LAND TOTAL** | | **3,178.2** |

[1] No federal fee lands are present within Area E, with the area containing only flowage easements lands. Therefore, Area E was not classified.

## SECTION 3: AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes the natural, cultural, and social resources found within the Charles River NVSA fee boundary and the environmental consequences of the No Action and Proposed Action Alternative. A description of the existing conditions of resources can be found in Chapter 2 of the 2025 MP. Only those resources that have the potential to be affected by implementation of either alternative will be analyzed in this EA. Impacts are evaluated in terms of type, context, intensity, and duration. The type of impacts can be either beneficial or adverse and can be either directly or indirectly related to the action.

### 3.1 LAND USE

Please refer to Chapter 4.2 of the 2025 MP for existing land use information in and around the Charles River NVSA.

#### 3.1.1 No Action Alternative

The No Action Alternative will result in moderate, adverse long-term impacts on land use. Under the No Action Alternative, the 2025 MP would not be implemented. No land classifications would be implemented, and no classifications would occur at the Charles River NVSA. Existing land use management would not reflect current and future needs. The operation and maintenance of the Charles River NVSA would continue to follow the 1984 MP. As a result, land use management would be inefficient.

#### 3.1.2 Proposed Action

The Proposed Action will result moderate, long-term beneficial impacts to land use. Under the Proposed Action the 2025 MP would be implemented. The objectives for the 2025 MP describe current and foreseeable land uses while considering expressed public opinion, regional goals and trends, and USACE policies that have evolved to meet day-to-day operational needs. The majority of the reclassifications will maintain and improve current land use management.

The 1984 MP land classifications included multiple operation land classifications, including Recreation – Low Density Area, Projection Operations, and Wildlife Management lands. The Proposed Action includes classification of unclassified lands at Charles River NVSA. Descriptions of the 2025 MP land classifications can be found below, and Table 1 shows the land classification differences expressed as acreages.

<u>Project Operations (PO)</u>

The Proposed Action will result in the classification of 0.8 acres of PO lands. These lands are managed and used primarily in support of critical operational requirements related to the primary missions of flood risk management and water conservation. PO lands are those adjacent to an old dam in Area S. Potential future

actions for PO lands include routine operations & maintenance and facility upgrades. Future opportunities will meet USACE sustainability objectives and environmental stewardship objectives (e.g. invasive species control, wildlife management) as appropriate.

MRML – Low Density Recreation (LDR)

The Proposed Action will result in the classification of 0.2 acres of LDR lands. The Proposed Action classifies these lands to reflect the existing and projected use of these areas for natural resource management. LDR lands include those associated with the natural surface parking lot and Charles River access at Forest Street in Area G. Potential future actions include improving access to adjacent WM lands through natural surface trails. This may include the development of a natural surface parking lot for hand launched boats (e.g. canoes, kayaks) and to provide access to the Charles River. Minimal development would occur within LDR lands to reduce erosion and improve aesthetics.

MRML – Wildlife Management (WM)

The Proposed Action will result in the classification of 3,177.2 acres of WM lands. The proposed classification reflects the primary management objectives, current, and projected uses for natural resources management (e.g. wildlife management). WM lands are designated for the stewardship of fish and wildlife resources. These lands are found throughout all management units, excluding Area E where no federal fee lands occur. Potential future actions for WM lands include continued cooperation with partners and managing, maintaining and improving trails, connecting to regional trail networks, and providing additional access including small, natural surface parking where feasible.

## 3.2 WATER RESOURCES

Please refer to Chapters 2.1, 2.3, and 2.7.6 in the 2025 MP for more information on existing conditions for hydrology (including surface and ground water), water quality, and wetlands, respectively.

### 3.2.1 No Action Alternative

The No Action Alternative will result in no impacts to water resources. Under the No Action Alternative, the 2025 MP would not be implemented. As a result, there would be no changes to existing water resources.

### 3.2.2 Proposed Action

The Proposed Action will result in minor, beneficial impacts associated with land reclassification. Implementation of the 2025 MP would result in natural resource management objectives that directly or indirectly impact water resources. Direct impacts include objectives that beneficially impact surface waters or wetlands (e.g. riparian zones, wetlands). Indirect impacts to water resources may occur from increased

preservation and management of lands to reduce hydrologic disturbances. The following natural resource management objectives may provide minor, beneficial impacts:

- Give priority to the preservation and improvement of open space in public use planning, design, development, and management activities.
- Manage designated recreation lands/waters in ways that balance visitor use with protection of natural resources.
- Protect and restore important native habitats such as grasslands, forests, riparian zones, and wetlands where they occur or historically occurred on project lands. Special emphasis should be placed on protection and/or restoration of special or rare plant species. Emphasize promotion of pollinator habitat, migratory bird habitat, and habitat for birds listed by the Massachusetts Division of Fisheries and Wildlife (MassWildlife) and the U.S. Fish and Wildlife Service (USFWS) as Birds of Conservation Concern.
- Protect and conserve wetlands, rare plant and animal habitats such as vernal pools. Wetlands are highly productive sites for a variety of ecological functions, as well as for the enhancement of water quality. All forest management operations in or adjacent to wetlands will be planned and conducted in a manner that protects these functions. Forest management activities in wetlands will take place on frozen ground during the winter to minimize rutting and erosion.

## 3.3 AIR QUALITY

For more information on existing conditions for air quality at Charles River NVSA, please refer to Chapter 2.4 in the 2025 MP.

### 3.3.1 No Action Alternative

The No Action Alternative will result in no changes to existing air quality at Charles River NVSA. The 1984 MP would remain in compliance with the Clean Air Act as no project activities would result in the contribution of criteria pollutants.

### 3.3.2 Proposed Action

The Proposed Action will result in no changes to existing air quality at the project and in the region. The 2025 MP would not implement any actions (i.e. ground disturbing activities) that will result in impacts to criteria pollutants and would therefore remain in compliance with the Clean Air Act.

## 3.4 CLIMATE AND GREENHOUSE GASES

For more information on existing conditions for climate and greenhouse gases at Charles River NVSA, please refer to Chapter 2.5 in the 2025 MP.

### 3.4.1 No Action Alternative

The No Action Alternative would result in no changes or impacts to existing climate or greenhouse gas management at Charles River NVSA. There would be no impact on existing or future climate conditions from continued management under the 1984 MP.

### 3.4.2 Proposed Action

The Proposed Action will result in minor, beneficial long-term impacts to existing air quality at the project and in the region. Impacts would result from promotion of land management practices and design standards promoting sustainability. The 2025 MP does not include activities which would contribute to a detectable change in emissions, including greenhouse gases, in the region.

## 3.5 TOPOGRAPHY, GEOLOGY, AND SOILS

Please refer to Chapter 2.6 of the 2025 MP for more information on existing conditions for topography, geology, and soils at Charles River NVSA.

### 3.5.1 No Action Alternative

The No Action Alternative will have no impacts to topography, geology, or soils. Under the No Action Alternative, the 1984 MP would remain effective and no benefits to topography, geology, and soils would result from land reclassification. No ground disturbing activities would take place that could potentially affect topography, geology, or soils resources.

### 3.5.2 Proposed Action

The Proposed Action will have minor, beneficial long-term impacts to topography, geology, or soils. No ground disturbing activities would take place that could potentially affect topography, geology, or soils at Charles River NVSA. Potential future actions include the maintenance and improvement of trails, and additional access to LDR and WM lands, including natural surface trails and small parking areas. Development within LDR lands would be limited to reduce soil erosion. These actions could result in minor, short-term impacts to soils, from minor trail maintenance and limited development, but would be support the overall land management plans.

## 3.6 NATURAL RESOURCES

For existing conditions on natural resources (including fish and wildlife resources and vegetative resources), refer to Chapters 2.7.1, 2.7.2, 2.7.5, and 2.7.6 of the 2025 MP.

### 3.6.1 No Action Alternative

The No Action Alternative will result in minor, adverse long-term impacts to natural resources. Under the No Action Alternative, the 2025 MP would not be implemented, and land management would not be updated to reflect current natural resources management policies and needs at Charles River NVSA.

### 3.6.2 Proposed Action

The Proposed Action will result in moderate, long-term beneficial impacts to natural resources. Under the Proposed Action, the 2025 MP would be implemented, land classifications and land management policies would be updated to reflect current needs and natural resource requirements at the Charles River NVSA. The 2025 MP resource goals and objectives aim to further enhance, conserve, and protect natural resources, including state and federally listed species. Natural resource management objectives include the protection, restoration, and maintenance of important native habitats such as grasslands, forests, riparian zones, and wetlands. For a description of natural resource management objectives, refer to Table 3.2 in Section 3.3 of the 2025 MP.

The proposed action includes the classification of WM (3,177.2 acres) and LDR (0.2 acres) lands. WM lands will be managed for the stewardship of fish and wildlife habitat, resulting in direct, beneficial impacts to natural resources. Multiple management units are licensed to MassWildlife (e.g. Areas G, H, and L-S). Potential future actions will include continued cooperation with partners; managing, maintaining and improving trails; connecting to regional trail networks; and providing additional access including small, natural surface parking where feasible. LDR lands will be managed for minimal development to reduce erosion and improve aesthetics. This may result in indirect beneficial impacts to natural resources from limited habitat disturbance.

## 3.7 THREATENED AND ENDANGERED SPECIES

The Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.) provides a means to conserve threatened and endangered species. An endangered species is a species in danger of extinction throughout all or a significant portion of its range. A threatened species is a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Species may be considered endangered or threatened because of any of the following factors (16 U.S.C 1533(a)(1)):

(1) the present or threatened destruction, modification, or curtailment of its habitat or range;
(2) overutilization for commercial, recreational, scientific, or educational purpose;
(3) disease or predation;
(4) the inadequacy of existing regulatory mechanisms; and
(5) other natural or human-induced factors affecting continued existence.

In addition to threatened and endangered designations, the USFWS identifies species that are candidates for listing as a result of identified threats to their continued existence. Proposed species are those that have been proposed in the Federal Register to be listed under Section 4 of the Endangered Species Act.

Section 7(a)(2) of the Endangered Species Act requires Federal agencies to ensure that any action authorized, funded, or carried out by such agency is not likely to 1) jeopardize the continued existence of any endangered or threatened species, or 2) result in the destruction or adverse modification of critical habitat. An official species list was obtained from the USFWS's Information for Planning and Consultation tool (IPaC) on November 18, 2024 (Appendix B). Threatened and endangered species as well as Migratory Bird Treaty Act, and Bald and Golden Eagle Act species are described in Table 2 and Table 3.

**Table 2. Federally listed species potentially occurring at the Charles River NVSA**

| Common Name | Scientific Name | Federal Status |
|---|---|---|
| Northern long-eared bat | *Myotis septentrionalis* | Endangered |
| Tricolored bat | *Perimyotis subflavus* | Proposed Endangered |

**Table 3. Federal listed migratory birds potentially occurring at the Charles River NVSA**

| Common Name | Scientific Name |
|---|---|
| Grasshopper sparrow | *Ammodramus savannarum perpallidus* |
| Saltmarsh sparrow | *Ammospiza caudacuta* |
| Eastern whip-poor will | *Antrostomus vociferus* |
| Ruddy turnstone | *Arenaria interpres morinella* |
| Long-eared owl | *Asio otus* |
| Pectoral sandpiper | *Calidris melanotos* |
| Semipalmated sandpiper | *Calidris pusilla* |
| Canada warbler | *Cardellina canadensis* |
| Chimney swift | *Chaetura pelagica* |
| Black-billed cuckoo | *Coccyzus erythropthalmus* |
| Bobolink | *Dolichonyx oryzivorus* |

| Common Name | Scientific Name |
|---|---|
| Kentucky warbler | *Geothlypis formosa* |
| Bald eagle[1] | *Haliaeetus leucocephalus* |
| Wood thrush | *Hylocichla mustelina* |
| Short-billed dowitcher | Limnodromus griseus |
| Red-headed woodpecker | Melanerpes erythrocephalus |
| Whimbrel | Numenius phaeopus hudsonicus |
| Scarlet tanager | *Piranga olivacea* |
| Prothonotary warbler | *Protonotaria citrea* |
| Cerulean warbler | *Setophaga cerulea* |
| Prairie warbler | *Setophaga discolor* |
| Least tern | *Sternula antillarum antillarum* |
| Lesser yellowlegs | *Tringa flavipes* |
| Willet | Tringa semipalmata |
| Blue-winged warbler | *Vermivora cyanoptera* |

*[1] Species protected under the Bald and Golden Eagle Act*

A list of state threatened and endangered species was obtained from MassWildlife's Natural Heritage and Endangered Species Program through the use of MassWildlife's Heritage Hub. State-listed species potentially occurring within the project area are listed within Table 4 (MassWildlife, 2023).

**Table 4. State-listed threatened and endangered species potentially occurring at Charles River NVSA**

| Common Name | Scientific Name | State Listing Status |
|---|---|---|
| Blue-spotted salamander | *Ambystoma laterale* | Special Concern |
| Britton's violet | *Biola brittoniana* | Threatened |
| Hessel's hairstreak | *Callophrys hesseli* | Special Concern |
| Blanding's turtle | *Emydoidea blandingii* | Threatened |
| Eastern pondmussel | *Ligumia nasuta* | Special Concern |
| Long's bulrush | *Scirpus longii* | Threatened |
| Coppery emerald | *Somatochlora linearis* | Special Concern |
| Mocha emerald | *Somatochlora linearis* | Special Concern |
| Eastern box turtle | *Terrapene carolina* | Special Concern |

### 3.7.1 No Action Alternative

The No Action Alternative will result in no impacts to federal or state-listed species. The No Action Alternative would have no effect on threatened and endangered species. No impacts are anticipated to species protected under the Migratory Bird Treaty Act or the Bald and Golden Eagle Act. State and federal threatened and endangered species would continue to be managed under the existing 1984 MP and in accordance with federal and state laws including the Endangered Species Act, the Migratory Bird Treaty Act, the Bald and Golden Eagle Act, and the Massachusetts Endangered Species Act (321 CMR 10.00).

### 3.7.2 Proposed Action

The Proposed Action will result in minor, direct beneficial impacts to federal and state-listed species. The implementation of the 2025 MP will allow for improved management that will help to preserve, enhance, and protect vegetation and wildlife habitat resources that support threatened and endangered species that may be occur within Charles River NVSA.

USACE has made a no effect determination for the Proposed Action for any federally listed or proposed threatened, endangered, or candidate species that may occur within the Charles River NVSA (Project Code No. 2025-0085499). The implementation of the 2025 would not result in construction or ground-disturbing activities. No direct or indirect impacts would occur to federal and state-listed species. The proposed action would not affect any species or suitable habitat that may occur within the Charles River NVSA. Any future activities that could potentially result in impacts to federally listed species will be coordinated with USFWS under Section 7 of the Endangered Species Act.

## 3.8 INVASIVE SPECIES

Refer to Chapter 2.7.4 for information on the existing condition of invasive species at Charles River NVSA in the 2025 MP.

### 3.8.1 No Action Alternative

The No Action Alternative will have a minor, long-term adverse effect on invasive species management. The 2025 MP would not be implemented, and the project would continue to utilize the 1984 MP. As a result, no changes to existing conditions would occur and land management would not be compatible with current invasive species management needs.

### 3.8.2 Proposed Action

The Proposed Action will result in minor, long-term beneficial impacts from increased invasive species management. The classifications of lands, improvement of resource management objectives, and improvement of the 2025 MP will allow for more effective invasive species management. Invasive species management, including early

detection and prevention, will be implemented in WM and PO lands where applicable.

## 3.9 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

For information on the existing conditions of Hazardous, Toxic, and Radioactive Waste (HTRW) at Charles River NVSA, please refer to Chapter 2.8 of the 2025 MP.

### 3.9.1 No Action Alternative

The No Action Alternative will result in no impacts to HTRW resources. Under the No Action Alternative, the 2025 MP would not be implemented and there would be no changes to the existing 1984 MP. No impacts to HTRW resources would occur as no HTRW resources or facilities are located within or in the immediate vicinity of Charles River NVSA.

### 3.9.2 Proposed Action

The Proposed Action will result in no impacts to HTRW resources. Under the Proposed Action, the 2025 MP would be implemented, and no construction or ground-disturbing activities would occur. No impacts to HTRW resources would occur as no HTRW resources or facilities are located within or in the immediate vicinity of Charles River NVSA.

## 3.10 HEALTH AND SAFETY

For information on the existing conditions of health and safety at Charles River NVSA, please refer to Chapter 2.9 of the 2025 MP.

### 3.10.1 No Action Alternative

The No Action Alternative will result in no impacts to health and safety. Under the No Action Alternative, the 2025 MP would not be implemented and there would be no changes to the existing 1984 MP.

### 3.10.2 Proposed Action

The Proposed Action will result in no impacts to health and safety. The implementation of the 2025 MP will result in no construction or ground-disturbing activities that may impact health and safety

## 3.11 AESTHETIC RESOURCES

For information on the existing conditions of aesthetic resources at Charles River NVSA, please refer to Chapter 2.10 of the 2025 MP.

### 3.11.1 No Action Alternative

The No Action Alternative will result in no impacts on aesthetic resources. No revisions to the 1984 MP would occur, and no changes would occur to existing aesthetic resources.

### 3.11.2 Proposed Action

The Proposed Action will result in negligible, long-term beneficial impacts to aesthetic resources. The proposed action includes the classification of WM and LDR lands. Future WM land management may result in beneficial impacts from the production, maintenance, and improvement of native fish and wildlife habitat. Future management of LDR lands will have minimal development to improve aesthetics of these areas.

## 3.12 CULTURAL, HISTORICAL, AND ARCHAEOLOGICAL RESOURCES

For information on the existing conditions of Cultural, Historical, and Archaeological Resources at the Charles River NVSA, please refer to Chapter 2.11 of the 2025 MP.

### 3.12.1 No Action Alternative

The No Action Alternative will result in no impacts to existing cultural, historical, or archaeological resources. The 2025 MP would not be implemented. No updated historical monitoring and protection would occur under the 1984 MP.

### 3.12.2 Proposed Action

The Proposed Action will result in no impacts to existing historical, or archaeological resources. USACE determined that the 2025 MP would result in no adverse effects to historic properties eligible or listed on the National Register of Historic Places (NRHP). USACE will consult with the Massachusetts's State Historic Preservation Officer (SHPO), Wampanoag Tribe of Gay Head (Aquinnah), Mashpee Wampanoag Tribe, and Narragansett Indian Tribe, under Section 106 of the National Historical Preservation Act (NHPA). Any future proposed activities that could result in impacts to historic properties will be coordinated and reviewed under Section 106 of the NHPA.

## 3.13 SOCIOECONOMICS AND DEMOGRAPHICS

For more information on the existing conditions of socioeconomics and demographics, please refer to Chapter 2.12 of the 2025 MP.

### 3.13.1 No Action Alternative

The No Action Alternative will result in no impacts to existing socioeconomics or demographics. The 2025 MP would not be implemented, and Charles River NVSA would continue management under the 1984 MP.

### 3.13.2 Proposed Action

The Proposed Action will result in no impacts to existing socioeconomics or demographics. Under the Proposed Action the 2025 MP would be implemented. The 2025 MP would result in no construction or changes that would affect local socioeconomic or demographic factors. No activities proposed in the 2025 MP would impact the changes the local economy or local populations in any perceivable way.

## 3.14 RECREATION

For information on the existing conditions of recreation and the zone of influence for Charles River NVSA, please refer to Chapter 2.13 of the 2025 MP.

### 3.14.1 No Action Alternative

The No Action Alternative would result in moderate, long-term adverse impacts to recreation. The 2025 MP would not be implemented, and the 1984 MP land classifications would not reflect current and future recreation needs at Charles River NVSA

### 3.14.2 Proposed Action

The Proposed Action would result in minor, beneficial impacts to recreation from WM and LDR lands. These land classifications are subclassifications for MRML lands, which allow for multiple uses alongside the primary classification (*e.g.* LDR). WM lands include various recreational opportunities (*e.g.* trails, fishing). WM lands will be managed for the stewardship of fish and wildlife resources. Indirect benefits to recreation may occur from the management of fisheries resources. Potential future actions for WM lands include routine operation & maintenance and development of trails, that would result in direct. beneficial impacts to recreation. LDR lands are those associated with recreation access and include a natural surface parking lot and Charles River access. Potential future actions would improve recreation access through natural surface trails, resulting in direct, beneficial impacts.

## SECTION 4: COMPLIANCE WITH ENVIRONMENTAL LAWS

This EA has been prepared to satisfy the requirements of all applicable federal environmental laws, regulations, and executive orders. The adoption and implementation of the 2025 MP is consistent with USACE's Environmental Operating Principles. The following is a list of applicable environmental laws and regulations that were considered in the planning of this project and the status of compliance with each:

Federal Statutes

1. *Archaeological Resources Protection Act of 1979, as amended, 16 U.S.C 470aa et seq.*

   Compliance: In compliance. Prior to any work being done as part of this project, the area will be surveyed for the presence of any archaeological resources.

2. *Preservation of Historic and Archeological Data Act of 1974, as amended,* 54 U.S.C 312501-312508

   Compliance: In progress. A copy of the draft EA will be released to the SHPO, Wampanoag Tribe of Gay Head (Aquinnah), Mashpee Wampanoag Tribe, and Narragansett Indian Tribe SHPO concurrence will be obtained for USACE's no effect determination. Prior to any work being done as part of this project, the area will be surveyed for the presence of any archaeological resources.

3. *American Indian Religious Freedom Act of 1978, 42 U.S.C 1996.*

   Compliance: This project will not impede access by Native Americans to sacred sites, possession of sacred objects, and the freedom to worship through ceremonials and traditional rites.

4. *Clean Air Act, as amended, 42 U.S.C 7401 et seq.*

   Compliance: Existing O&M of project is compliant with the Clean Air Act and will not change with the 2025 MP. A General Conformity Determination is not required since the emissions of the Proposed Action are negligible at best or are otherwise de minimis.

5. *Clean Water Act of 1977 (Federal Water Pollution Control Act Amendments of 1972), 33 U.S.C 1251 et seq.*

   Compliance: A state water quality certification pursuant to Section 401 of the Clean Water Act is not required for the 2025 MP. There will be no change in the existing management of the project that will impact water quality, but minor, long-term benefits to water quality are expected from

the Proposed Action.

6. *Endangered Species Act of 1973, as amended, 16 U.S.C. 1531 et seq.*

   Compliance: Current lists of threatened or endangered species were obtained through the USFWS IPaC. USACE made a no effect determination for the tri-colored bat and northern long-eared bat, and a determination letter was obtained through IPaC on May 9, 2025. Therefore, no further consultation with USFWS is required.

7. *Fish and Wildlife Coordination Act, as amended,16 U.S.C. 661 et seq.*

   Compliance: The USACE initiated public involvement and agency scoping activities to solicit input on the 2025 MP EA, and to identify significant issues related to the Proposed Action. Coordination with USFWS and MassWildlife signifies compliance with this Act.

8. *Migratory Bird Treaty Act of 1918, as amended, 16 U.S.C. 703 et seq.*

   Compliance: The timing of resource management activities at the Charles River NVSA will be coordinated to avoid impacts on migratory and nesting birds.

9. *National Historic Preservation Act of 1966, as amended, 54 U.S.C. 300101 et seq.*

   Compliance: USACE determined that the Proposed Action does not affect historic properties directly or indirectly at the Charles River NVSA. Massachusetts's SHPO was sent a letter on XXX and concurred with the No Effect determination on XXX. *Native American Graves Protection & Repatriation Act (NAGPRA), 25 U.S.C 3001-3013, 18 U.S.C 1170*

   Compliance: Regulations implementing NAGPRA will be followed if discovery of human remains and/or funerary items occur during implementation of this project.

10. *National Environmental Policy Act of 1969, as amended, 42 U.S.C 4321 et seq.*

    Compliance: Preparation of an EA signifies partial compliance with NEPA. Full compliance shall be noted at the time the FONSI is issued.

11. *Bald and Golden Eagle Protection Act, 16 U.S.C. 688 et seq.*

    Compliance: The project does not involve take, sale, purchase, or transport of any Bald or Golden Eagles.

12. *National Invasive Species Act (NISA), as amended, 16 U.S.C. 4701 et seq.*

Compliance: The project will not promote or cause the introduction or spread of invasive species into waters of the United States within the Charles River NVSA.

Executive Orders (EO)

1. *EO 11593, Protection and Enhancement of the Cultural Environment, 13 May 1971*

   Compliance: In-progress. A copy of the draft EA will be released to the Massachusetts's SHPO.

2. *EO 11988, Floodplain Management, 24 May 1977 amended by EO 12148, 20 July 1979.*

   Compliance: The proposed project will have no impacts to existing floodplains at the Charles River NVSA.

3. *EO 11990, Protection of Wetlands, 24 May 1977*

   Compliance: This project does not propose construction or future activities in wetlands.

4. *EO 13007, Indian Sacred Sites, 24 May 1996*

   Compliance: Access to and ceremonial use of Indian sacred sites by Indian religious practitioners will be allowed and accommodated. No adverse effects to the physical integrity of such sacred sites will occur.

5. *EO 13045, Protection of Children from Environmental Health Risks and Safety Risks. 21 April, 1997; amended by EO 13296, 18 April 2003*.

   Compliance: The proposed action will not create a disproportionate environmental health or safety risk for children.

6. *EO 13112, Invasive Species, 8 December 2016.*

   Compliance: The proposed action will not promote or cause the introduction or spread of invasive species.

7. *EO 13175, Consultation and Coordination with Indian Tribal Governments, 6 November 2000.*

   Compliance: Consultation with Indian Tribal Governments, where applicable, and consistent with executive memoranda, DOD Indian policy, and USACE Tribal Policy Principles signifies compliance.

8. *EO 13186, Migratory Bird Habitat Conservation, 10 January 2001.*

   Compliance: The 2025 MP would not result in a measurable negative effect on migratory bird populations.

Executive Memoranda

1. *Memorandum for the Heads of Agencies from CEQ, Analysis of Impacts on Prime or Unique Agricultural Lands in Implementing NEPA, 11 August 1980*

   Not applicable. The project does not impact Prime Farmland present on Charles River NVSA fee lands.

2. *Memorandum for the Heads of Executive Departments and Agencies from the President of the United States, Memorandum on Government-to-Government Relations with Native American Tribal Governments, 29 April 1994.*

   Compliance: Consultation with Federally Recognized Indian Tribes signifies compliance.

## SECTION 5: PUBLIC AND AGENCY COORDINATION

In accordance with NEPA of 1969, as amended, the USACE initiated public involvement and agency scoping activities to solicit input on the proposed revision of the 1984 MP, as well as identifying any issues related to the Proposed Action.

A public open house was held for the Charles River NVSA MP revision at the Millis Public Library Roche Bros. Community Room, 961 Main Street, Millis, MA 02054 on October 8, 2024, from 5:00-7:00 p.m. The purpose of this open house was to provide attendees with information regarding the proposed Master Plan revision as well as to provide them with the opportunity to provide initial comments on the MP revision process. The open house included the following topics:

- What is a Master Plan?
- What a Master Plan is Not
- Why Revise a Master Plan?
- Overview of the National Environmental Policy Act (NEPA) process
- Master Planning process
- Proposed Changes to the Master Plan
- Instructions for submitting comments

The public comment period remained open for 30 days from October 8, 2024, to November 9, 2024. During the 30-day comment period, USACE received 1 comment. This comment and the USACE response can be found in Appendix E of the 2025 MP.

A second public open house will be held for the draft Charles River NVSA MP and draft EA. The purpose of this open house will be to provide attendees with information Coordination letters will be sent to the following federal and state agencies, Tribes, and local stakeholders. Attachment A to this EA includes the news release, initial coordination letters, and the distribution list. Attachment A will be updated to include coordination and comments received during the draft MP and EA public and agency comment period. The EA will be coordinated with the following agencies and stakeholders:

<u>Federal</u>

U.S. Environmental Protection Agency (EPA)
U.S. Fish and Wildlife Service (USFWS)

<u>State</u>

Massachusetts Department of Fish and Game, Division of Fisheries and Wildlife (MassWildlife)
Massachusetts Historical Commission, State Historic Preservation Officer (SHPO)

Local

Towns of:

Bellingham; Boston; Dedham; Dover; Franklin; Holliston; Medfield; Medway; Millis; Natick; Needham; Newton; Norfolk; Sherborn; Walpole; and Wrentham

Tribes

Wampanoag Tribe of Gay Head (Aquinnah)
Mashpee Wampanoag Tribe
Narragansett Indian Tribe

## SECTION 6: REFERENCES

U.S. Army Corps of Engineers (USACE). n.d. *Environmental Operating Principles*. U.S. Army Corps of Engineers Headquarters. Retrieved on April 2, 2025, from https://www.usace.army.mil/Missions/Environmental/Environmental-Operating-Principles/

U.S. Army Corps of Engineers (USACE). 2025. Charles River Natural Valley Storage Area Master Plan.

U.S. Army Corps of Engineers (USACE). 1984. Charles River Natural Valley Storage Project Master Plan for Recreation Resources Development.

U.S. ARMY
US Army Corps of Engineers®
New England District

# NEWS RELEASE

**BUILDING STRONG®**

For Immediate Release:
Sept 9, 2024
Release No. MA 2024-29

Contact:
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Cenae-pa@usace.army.mil

## USACE hosts open house October 8th in Millis, Mass., for Charles River Natural Valley Storage Area Master Plan revision

**CONCORD, Mass. (Sept 9, 2024) –** The U.S. Army Corps of Engineers, New England District will host an open house October 8, 2024, in Millis, Mass., to kick off the process to revise the 1984 Charles River Natural Valley Storage Area (CRNVSA) Master Plan for the CRNVSA located in Millis, Medfield, Norfolk, Franklin, Holliston, Needham, Sherborn, Bellingham, Dedham, Dover, Medway, Newton, Wrentham, Walpole, Natick, and Boston.

The open house will be held from 5 to 7:00 p.m. at the Millis Public Library Roche Bros. Community Room at 961 Main Street in Millis. There will be no formal presentation during the session, but USACE members will be on hand to share information about the revision process, provide the general schedule and gather initial feedback from the public.

The master plan serves as the strategic land use management document that guides the comprehensive management and development of all recreational, natural and cultural resources throughout the life of the water resource development project. It defines how USACE will manage the resources for public use and conservation.

The current Charles River Natural Valley Storage Area Master Plan was last approved in 1984 and needs revision to address changes in regional land use, population, outdoor recreation trends, and the USACE management policy. Key topics to be discussed in the revised master plan include updated land use classifications, new natural and recreational resource management objectives, recreation facility needs, and special issues such as invasive species management and threatened and endangered species habitat. The revision does not address the technical and operational aspects of the Charles River Natural Valley Storage Area project related to flood risk management or the water conservation missions of the project.

An initial 30-day public comment period will begin October 8 and end November 9. During this time, members of the public can submit comments, suggestions, and concerns about the master plan. Comments must be submitted in writing at the open house or digitally via the comment link on the Charles River Natural Valley Storage Area Master Plan revision website at https://www.nae.usace.army.mil/Missions/Civil-Works/Flood-Risk-Management/Massachusetts/Charles-River-NVS/.

The website also contains a presentation which will be available during the open house that provides details about an additional comment period that will open after the draft report is released (currently scheduled for December 2025).

The Charles River Natural Valley Storage Area lies throughout 16 Eastern Massachusetts communities in the middle and upper areas of the Charles River. The Charles River extends inland from Boston Harbor and meanders for approximately 80 miles to Hopkinton, a straight distance of about 30 miles. Thousands of acres of undeveloped wetlands, which normally appear dry, lie along the river and form a natural reservoir that store floodwaters in times of excess precipitation. These wetlands make up huge volumes of natural storage that soak up water like sponges. Potential development on these wetland areas threatened to eliminate the storage area of the natural reservoir. If development had been left unchecked, floodwaters that would normally settle in the natural water storage area would rush downstream, causing flood damage to existing development in the lower reaches of the river. The natural valley storage areas reduce flood levels by retaining this excess water.

A 1972 study of the Charles River watershed showed a need to protect the natural valley storage areas from further development. The study recommended that the federal government purchase and preserve these lands as a viable means of flood control. The Corps purchased the first acres in May 1977 and made its most recent acquisition in September 1983. Resolutions to acquire remaining lands are continuing. To date, the Corps has purchased land in 17 different areas at a cost of $8.3 million.

The Charles River Natural Valley Storage areas total approximately 8,095 acres. These lands are located in Millis, Medfield, Norfolk, Franklin, Holliston, Needham, Sherborn, Bellingham, Dedham, Dover, Medway, Newton, Wrentham, Walpole, Natick, and Boston. Note: Although there are no storage lands in Cambridge, Waltham, Watertown, Wellesley, and Weston, the Charles River Natural Valley Storage areas protect land and property in these communities also. The watershed of the Charles River covers 307 square miles.

In addition to its primary role of flood damage reduction, project lands are used for recreation and fish and wildlife management. Hiking, canoeing, fishing, hunting, and cross-country skiing are some of the more popular activities. Of the 8,095 acres, the Massachusetts Division of Fisheries and Wildlife manages 2,640 acres affecting nine parcels.

For more information about the Charles River Natural Valley Storage Area, visit the project website at https://www.nae.usace.army.mil/Missions/Civil-Works/Flood-Risk-Management/Massachusetts/Charles-River-NVS/.

# AGENCY AND TRIBAL COORDINATION

Federal

The U.S. Environmental Protection Agency (EPA)

The U.S. Fish and Wildlife Service (USFWS)

The U.S. Geological Survey (USGS)

The National Oceanic and Atmospheric Administration (NOAA)

State

The Massachusetts Department of Environmental Protection (MA DEP)

The Massachusetts Division of Fish & Wildlife (MassWildlife)

The Massachusetts Department of Conservation & Recreation

The Massachusetts Historical Commission, State Historic Preservation Officer (SHPO)

The Central Massachusetts Regional Planning Commission

Congressional

U.S. Senate

U.S. House of Representatives

The Governor of Massachusetts

Town

Town of Bellingham

Town of Boston

Town of Dedham

Town of Dover

Town of Franklin

Town of Holliston

Town of Medfield

Town of Medway

Town of Millis

Town of Natick

Town of Needham

Town of Newton

Town of Norfolk

Town of Sherborn

Town of Walpole

Town of Wrentham

Local

The Charles River Watershed Association

Tribal

Mashpee Wampanoag Tribe

Wampanoag Tribe of Gay Head (Aquinnah)

Narragansett Tribe

# APPENDIX C – WILDLIFE DOCUMENTS

TRUST RESOURCES REPORT – USFWS

OFFICIAL SPECIES LIST – USFWS

LIST OF MASS SGCN SPECIES

# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.



## Location

Middlesex , Norfolk , and Suffolk counties, Massachusetts


## Local office

New England Ecological Services Field Office

(603) 223-2541
(603) 223-0104

70 Commercial Street, Suite 300
Concord, NH 03301-5094

# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

# Mammals

| NAME | STATUS |
|---|---|

| NAME | STATUS |
|---|---|
| Northern Long-eared Bat Myotis septentrionalis<br>Wherever found<br>No critical habitat has been designated for this species.<br>https://ecos.fws.gov/ecp/species/9045 | Endangered |
| Tricolored Bat Perimyotis subflavus<br>Wherever found<br>No critical habitat has been designated for this species.<br>https://ecos.fws.gov/ecp/species/10515 | Proposed Endangered |

## Insects

| NAME | STATUS |
|---|---|
| Monarch Butterfly Danaus plexippus<br>Wherever found<br>There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat.<br>https://ecos.fws.gov/ecp/species/9743 | Proposed Threatened |

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.



## Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds

- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are Bald Eagles and/or Golden Eagles in your project area.

**Measures for Proactively Minimizing Eagle Impacts**
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

**Ensure Your Eagle List is Accurate and Complete**
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

**Review the FAQs**
The FAQs below provide important additional information and resources.

| NAME | BREEDING SEASON |
|---|---|
| Bald Eagle Haliaeetus leucocephalus<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds Oct 15 to Aug 31 |

# Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and

Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

**Probability of Presence** (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

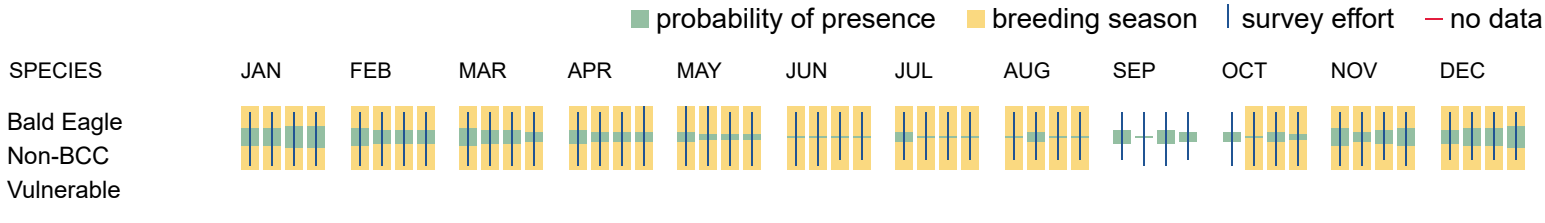
**Breeding Season** (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

**Survey Effort** (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

**No Data** (–)
A week is marked as having no data if there were no survey events for that week.

**Survey Timeframe**
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



# Bald & Golden Eagles FAQs

**What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?**

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle (Bald and Golden Eagle Protection Act requirements may apply).

**Proper interpretation and use of your eagle report**

On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

**How do I know if eagles are breeding, wintering, or migrating in my area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

**Interpreting the Probability of Presence Graphs**

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

***How is the probability of presence score calculated? The calculation is done in three steps:***

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

**Breeding Season ()**

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

**Survey Effort ()**

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

**No Data ()**
A week is marked as having no data if there were no survey events for that week.

**Survey Timeframe**
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

# Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service). The incidental take of migratory birds is the injury or death of birds that results from, but is not the purpose, of an activity. The Service interprets the MBTA to prohibit incidental take.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

**Measures for Proactively Minimizing Migratory Bird Impacts**

Your IPaC Migratory Bird list showcases birds of concern, including Birds of Conservation Concern (BCC), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the Nationwide avoidance and minimization measures for birds document, and any other project-specific avoidance and minimization measures suggested at the link Measures for avoiding and minimizing impacts to birds for the birds of concern on your list below.

**Ensure Your Migratory Bird List is Accurate and Complete**

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles document, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

**Review the FAQs**

The FAQs below provide important additional information and resources.

| NAME | BREEDING SEASON |
|---|---|
| Bald Eagle Haliaeetus leucocephalus<br>This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. | Breeds Oct 15 to Aug 31 |
| Black-billed Cuckoo Coccyzus erythropthalmus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/9399 | Breeds May 15 to Oct 10 |
| Blue-winged Warbler Vermivora cyanoptera<br>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA | Breeds May 1 to Jun 30 |
| Bobolink Dolichonyx oryzivorus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 20 to Jul 31 |
| Canada Warbler Cardellina canadensis<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 20 to Aug 10 |
| Cerulean Warbler Setophaga cerulea<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/2974 | Breeds Apr 29 to Jul 20 |
| Chimney Swift Chaetura pelagica<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds Mar 15 to Aug 25 |
| Eastern Whip-poor-will Antrostomus vociferus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 1 to Aug 20 |
| Grasshopper Sparrow Ammodramus savannarum perpallidus<br>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA<br>https://ecos.fws.gov/ecp/species/8329 | Breeds Jun 1 to Aug 20 |

Kentucky Warbler  Geothlypis formosa — Breeds Apr 20 to Aug 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Least Tern  Sternula antillarum antillarum — Breeds Apr 25 to Sep 5

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Lesser Yellowlegs  Tringa flavipes — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Long-eared Owl  asio otus — Breeds Mar 1 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3631

Pectoral Sandpiper  Calidris melanotos — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Prairie Warbler  Setophaga discolor — Breeds May 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Prothonotary Warbler  Protonotaria citrea — Breeds Apr 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Red-headed Woodpecker  Melanerpes erythrocephalus — Breeds May 10 to Sep 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Ruddy Turnstone  Arenaria interpres morinella — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Rusty Blackbird  Euphagus carolinus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

| | |
|---|---|
| Saltmarsh Sparrow  Ammospiza caudacuta<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/9719 | Breeds May 15 to Sep 5 |
| Scarlet Tanager  Piranga olivacea<br>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA | Breeds May 10 to Aug 10 |
| Semipalmated Sandpiper  Calidris pusilla<br>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA | Breeds elsewhere |
| Short-billed Dowitcher  Limnodromus griseus<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br>https://ecos.fws.gov/ecp/species/9480 | Breeds elsewhere |
| Whimbrel  Numenius phaeopus hudsonicus<br>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA | Breeds elsewhere |
| Willet  Tringa semipalmata<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds Apr 20 to Aug 5 |
| Wood Thrush  Hylocichla mustelina<br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. | Breeds May 10 to Aug 31 |



# Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

**Probability of Presence** (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
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3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

**Breeding Season** (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

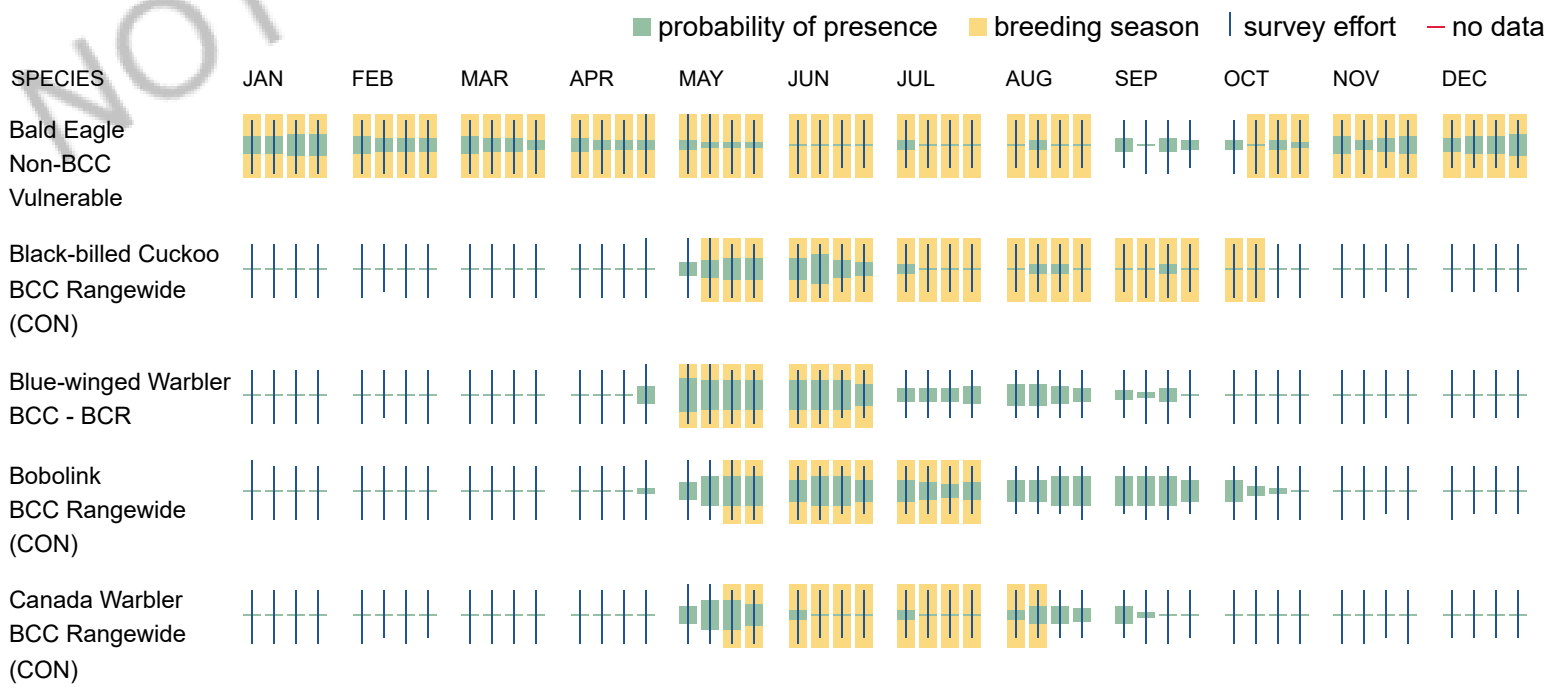
**Survey Effort** (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

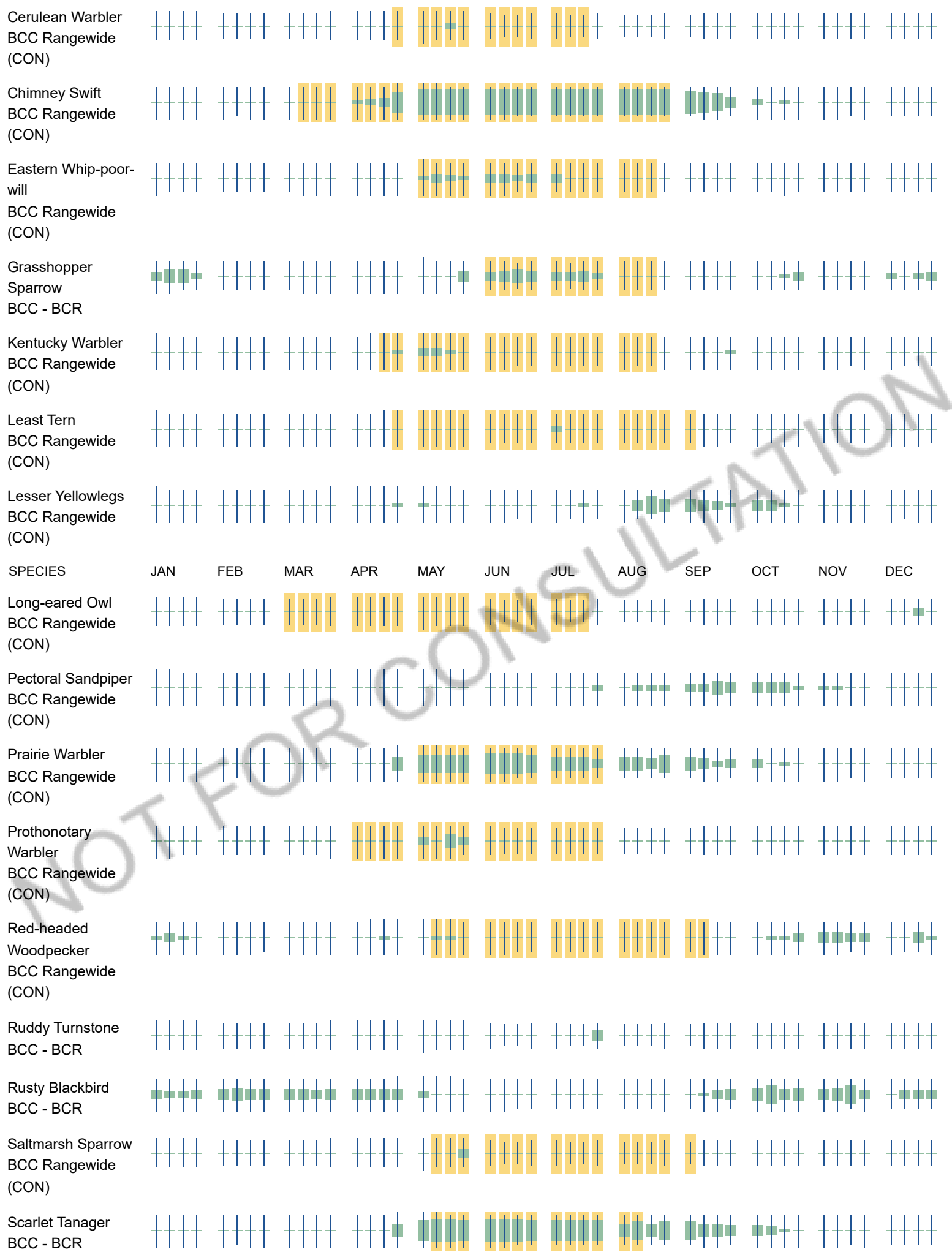
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

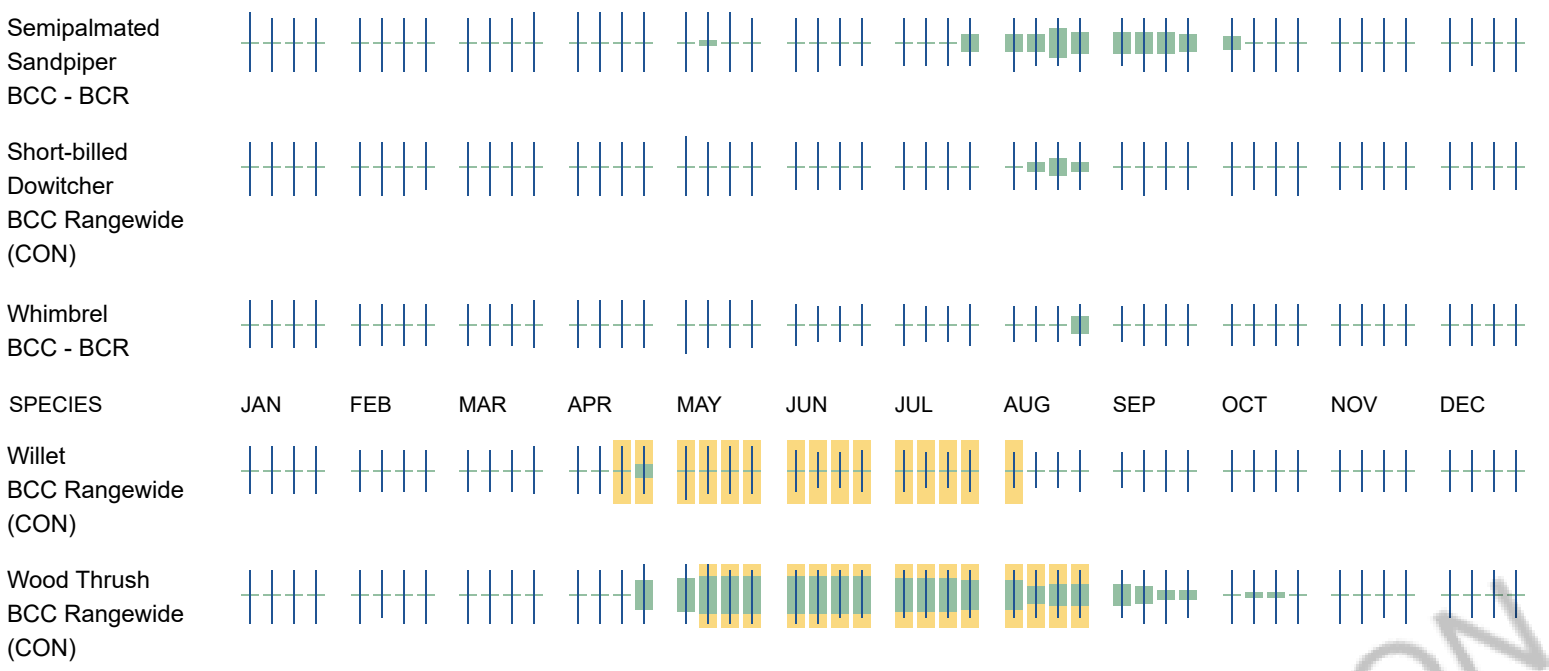
**No Data** (–)
A week is marked as having no data if there were no survey events for that week.

**Survey Timeframe**
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.










## Migratory Bird FAQs

**Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.**

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?**

The Migratory Bird Resource List is comprised of Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as “Vulnerable”. See the FAQ “What are the levels of concern for migratory birds?” for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

**Why are subspecies showing up on my list?**

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

**How do I know if a bird is breeding, wintering, or migrating in my area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

**What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Bald and Golden Eagle Protection Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ “Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds”.

**Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

**Proper interpretation and use of your migratory bird report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the

species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

**Interpreting the Probability of Presence Graphs**
Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

***How is the probability of presence score calculated? The calculation is done in three steps:***
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

**Breeding Season ()**
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

**Survey Effort ()**
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

**No Data ()**
A week is marked as having no data if there were no survey events for that week.

**Survey Timeframe**
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



# Facilities

## National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

### There are no refuge lands at this location.

# Fish hatcheries

There are no fish hatcheries at this location.

# Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND

- PEM1E
- PEM1C
- PEM1F
- PEM1Ed
- PEM1/SS1F
- PEM1B
- PEM1/UBF
- PEM1/SS1C

FRESHWATER FORESTED/SHRUB WETLAND

- PFO1E
- PFO1Ed
- PSS1/EM1Ed
- PSS1E
- PSS1Ed
- PFO1/4E
- PFO4Eg
- PFO1C
- PFO1/4B
- PFO4E
- PFO4/1E
- PFO1Fd
- PSS1F
- PFO1/4C
- PSS1/EM1E
- PSS1C

PSS1/4E
PFO1Ad
PFO1A
PFO4/1B
PFO1B
PSS1/4B
PSS1A
PSS1B
PSS1/3Ba
PSS3Ba
PFO1F

FRESHWATER POND
PABH
PAB/EM1F
PAB/FO1F
PUBF
PUBH
PUBHx
PUBHh
PUBFb
PABHx

RIVERINE
R2UBHx
R2UBH
R4SBC
R4SBCx
R5UBH

A full description for each wetland code can be found at the National Wetlands Inventory website

**NOTE:** This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

**Data limitations**

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

**Data exclusions**

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

**Data precautions**

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

# United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104

In Reply Refer To: 04/18/2025 20:01:46 UTC
Project Code: 2025-0085499
Project Name: Charles River Natural Valley Storage Area

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

*Updated 4/12/2023 - Please review this letter each time you request an Official Species List, we will continue to update it with additional information and links to websites may change.*

## About Official Species Lists

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Federal and non-Federal project proponents have responsibilities under the Act to consider effects on listed species.

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested by returning to an existing project's page in IPaC.

## Endangered Species Act Project Review

Please visit the "**New England Field Office Endangered Species Project Review and Consultation**" website for step-by-step instructions on how to consider effects on listed

species and prepare and submit a project review package if necessary:

https://www.fws.gov/office/new-england-ecological-services/endangered-species-project-review

***NOTE*** Please do not use the **Consultation Package Builder** tool in IPaC except in specific situations following coordination with our office. Please follow the project review guidance on our website instead and reference your **Project Code** in all correspondence.

**Northern Long-eared Bat -** (**Updated 4/12/2023**) The Service published a final rule to reclassify the northern long-eared bat (NLEB) as endangered on November 30, 2022. The final rule went into effect on March 31, 2023. You may utilize the **Northern Long-eared Bat Rangewide Determination Key** available in IPaC. More information about this Determination Key and the Interim Consultation Framework are available on the northern long-eared bat species page:

https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis

For projects that previously utilized the 4(d) Determination Key, the change in the species' status may trigger the need to re-initiate consultation for any actions that are not completed and for which the Federal action agency retains discretion once the new listing determination becomes effective. If your project was not completed by March 31, 2023, and may result in incidental take of NLEB, please reach out to our office at newengland@fws.gov to see if reinitiation is necessary.

*Additional Info About Section 7 of the Act*
Under section 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether projects may affect threatened and endangered species and/or designated critical habitat. If a Federal agency, or its non-Federal representative, determines that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Federal agency also may need to consider proposed species and proposed critical habitat in the consultation. 50 CFR 402.14(c)(1) specifies the information required for consultation under the Act regardless of the format of the evaluation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/service/section-7-consultations

In addition to consultation requirements under Section 7(a)(2) of the ESA, please note that under sections 7(a)(1) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Please contact NEFO if you would like more information.

**Candidate species** that appear on the enclosed species list have no current protections under the ESA. The species' occurrence on an official species list does not convey a requirement to

consider impacts to this species as you would a proposed, threatened, or endangered species. The ESA does not provide for interagency consultations on candidate species under section 7, however, the Service recommends that all project proponents incorporate measures into projects to benefit candidate species and their habitats wherever possible.

**Migratory Birds**

In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see:

https://www.fws.gov/program/migratory-bird-permit

https://www.fws.gov/library/collections/bald-and-golden-eagle-management

Please feel free to contact us at **newengland@fws.gov** with your **Project Code** in the subject line if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat.

Attachment(s): Official Species List

Attachment(s):

- Official Species List

# OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

**New England Ecological Services Field Office**
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

# PROJECT SUMMARY

Project Code: 2025-0085499
Project Name: Charles River Natural Valley Storage Area
Project Type: Land Management Plans - NWR
Project Description: Master plan revisions including updated land classifications and resource objectives and goals.
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.1711533,-71.33978078047676,14z


Counties: Middlesex , Norfolk , and Suffolk counties, Massachusetts

# ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

## MAMMALS

| NAME | STATUS |
|---|---|
| Northern Long-eared Bat *Myotis septentrionalis*<br>No critical habitat has been designated for this species.<br>Species profile: https://ecos.fws.gov/ecp/species/9045 | Endangered |
| Tricolored Bat *Perimyotis subflavus*<br>No critical habitat has been designated for this species.<br>Species profile: https://ecos.fws.gov/ecp/species/10515 | Proposed Endangered |

## INSECTS

| NAME | STATUS |
|---|---|
| Monarch Butterfly *Danaus plexippus*<br>There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat.<br>Species profile: https://ecos.fws.gov/ecp/species/9743 | Proposed Threatened |

# CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

# IPAC USER CONTACT INFORMATION

Agency: Army Corps of Engineers
Name: Kelsie Dakessian
Address: 696 Virginia Road
City: Concord
State: MA
Zip: 01742
Email kelsie.dakessian@usace.army.mil
Phone: 9783188685

# APPENDIX D – PERTINENT LAWS

- Antiquities Act of 1906, Public Law 59-209, 34 Stat. 225, 54 U.S.C. Sections 320301-320303: The first Federal law established to protect what are now known as "cultural resources" on public lands. It provides a permit procedure for investigating "antiquities" and consists of two parts: An act for the Preservation of American Antiquities, and Uniform Rules and Regulations.
- Flood Control Act of 1938, Public Law 75-761: This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.
- Bald and Golden Eagle Protection Act, as amended, 16 U.S.C. Sections 668-668d: This Act prohibits anyone, without a permit issued by the Secretary of the Interior, from taking bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who take, possess, sell, purchase, barter, offer to sell, transport, export or import, at any time or any manner, any bald eagle [or any golden eagle], alive or dead, or any part, nest, or egg thereof. The Act defines “take” as pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb.
- Flood Control Act of 1944, Public Law 78-534: Section 4 of the act as last amended in 1962 by Section 207 of Public Law 87-874 authorizes USACE to construct, maintain, and operate public parks and recreational facilities in reservoir areas and to grant leases and licenses for lands, including facilities, preferably to Federal, State or local governmental agencies.
- River and Harbor Act of 1946, Public Law 79-525: This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.
- Flood Control Act of 1954, Public Law 83-780: This act authorizes the construction, maintenance, and operation of public parks and recreational facilities in reservoir areas under the control of the Department of the Army and authorizes the Secretary of the Army to grant leases of lands in reservoir areas deemed to be in the public interest.
- Fish and Wildlife Coordination Act, Public Law 85-624: This act, as amended, sets down the general policy that fish and wildlife conservation shall receive equal consideration with other project purposes and be coordinated with other features of water resource development programs. Opportunities for improving fish and wildlife resources and adverse effects on these resources shall be examined along with other purposes which might be served by water resources development.
- An Act to provide for the protection of forest cover for reservoir areas under the jurisdiction of the Secretary of the Army and the Chief of Engineers, Public Law 86-717: This act provides for the protection of forest and other vegetative cover for reservoir areas under this jurisdiction of the Secretary of the Army and the Chief of Engineers.

- River and Harbor Act of 1962, Public Law 87-874: This act authorizes the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes.

- Land and Water Conservation Fund Act of 1965, Public Law 88-578: This act established a fund from which U.S. Congress can make appropriations for outdoor recreation. This law makes entrance and user fees at reservoirs possible by deleting the words "without charge" from Section 4 of the 1944 Flood Control Act, as amended.

- Outdoor Recreation Planning and Development Act, Public Law 88-29: Authorized the Secretary of the Interior to inventory and classify outdoor recreation needs and resources and to prepare a comprehensive outdoor recreation plan taking into consideration the plans of the various Federal agencies, State, and other political subdivisions. It also states that the federal agencies undertaking recreational activities shall consult with the Secretary of the Interior concerning these activities and shall carry out such responsibilities in general conformance with the nationwide plan.

- Federal Water Project Recreation Act, Public Law 89-72: This act requires that not less than one-half the separable costs of developing recreational facilities and all operation and maintenance costs at Federal reservoir projects shall be borne by a non-Federal public body. A HQUSACE/OMB implementation policy made these provisions applicable to projects completed prior to 1965.

- Water Resources Planning Act, Public Law 89-80: This act established the Water Resources Council and gives it the responsibility to encourage the development, conservation, and use of the Nation's water and related land resources on a coordinated and comprehensive basis.

- National Historic Preservation Act of 1966, Public Law 89-665, 54 U.S.C. Sections 300101 et seq.: This act provides for: (1) an expanded National Register of significant sites and objects; (2) matching grants to states undertaking historic and archeological resource inventories; and (3) a program of grants-in aid to the National Trust for Historic Preservation; and (4) the establishment of an Advisory Council on Historic Preservation. Section 106 requires that the President’s Advisory Council on Historic Preservation have an opportunity to comment on any undertaking which adversely affects properties listed, nominated, or considered important enough to be included on the National Register of Historic Places.
- Flood Control Act of 1968, Section 210, Public Law 90-483: Restricted collection of entrance fee at USACE lakes and reservoirs to users of highly developed facilities requiring continuous presence of personnel.
- National Environmental Policy Act of 1969 (NEPA), Public Law 91-190, 42 U.S.C. Sections 4321 et seq.: NEPA declared it a national policy to encourage productive and enjoyable harmony between man and his environment, and for other purposes. Specifically, it declared a “continuing policy of the Federal Government... to use all

practicable means and measures...to foster and promote the general welfare, to create conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans." Section 102 authorized and directed that, to the fullest extent possible, the policies, regulations and public law of the United States shall be interpreted and administered in accordance with the policies of the Act. It is Section 102 that requires consideration of environmental impacts associated with Federal actions. Section 101 of NEPA requires the federal government to use all practicable means to create and maintain conditions under which man and nature can exist in productive harmony.

Specifically, Section 101 of NEPA declares:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations
- Assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings
- Attain the widest range of beneficial uses of the environment without degradation risk to health or safety or other undesirable and unintended consequences
- Preserve important historic, cultural, and natural aspects of our national heritage and maintain wherever possible an environment which supports diversity and variety of individual choice
- Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources

- River and Harbor Act of 1970 and Flood Control Act of 1970, Public Law 91-611: Establishes the requirement for evaluating the economic, social, and environmental impacts of projects.
- To restore the Golden Eagle program to the Land and Water Conservation Fund Act, Public Law 92-347: This act revises Public Law 88-578, the Land and Water Conservation Fund Act of 1965, to require Federal agencies to collect special recreation user fees for the use of specialized sites developed at Federal expense and to prohibit the USACE from collecting entrance fees to projects.
- Federal Water Pollution Control Act Amendments of 1972, Public Law 92-500: The Federal Water Pollution Control Act of 1948 (PL 845, 80th U.S. Congress), as amended in 1961, 1966, 1970, 1972, 1977, and 1987, established the basic tenet of uniform State standards for water quality. Public Law 92-500 strongly affirms the Federal interest in this area. "The objective of this act is to restore and maintain the chemical, physical and biological integrity of the Nation's waters."
- To amend certain provisions of the Land and Water Conservation Fund Act of 1965 relating to the collection of fees in connection with the use of Federal areas for outdoor recreation purposes, Public Law 93-81: This law amends Section 4 of the Land and Water Conservation Fund Act of 1965, as amended, to require each

Federal agency to collect special recreation use fees for the use of sites, facilities, equipment, or services furnished at Federal expense.

- Endangered Species Act of 1973, Public Law 93-205, 16 U.S.C. Sections 1531 et seq.: This law repeals the Endangered Species Conservation Act of 1969. It also directs all Federal departments/agencies to carry out programs to conserve endangered and threatened species of fish, wildlife, and plants and to preserve the habitat of these species in consultation with the Secretary of the Interior. This Act establishes a procedure for coordination, assessment, and consultation.
- Water Resources Development Act of 1974, Public Law 93-251: Section 107 of this law establishes a broad Federal policy which makes it possible to participate with local governmental entities in the costs of sewage treatment plan installations.
- Archeological and Historic Preservation Act of 1974, Public Law 93-291: The Secretary of the Interior shall coordinate all Federal survey and recovery activities authorized under this expansion of the 1960 act. The Federal Construction agency may transfer up to one percent of project funds to the Secretary with such transferred funds considered non-reimbursable project costs. This amends the Reserve Salvage Act of 1960 (PL-86-523).
- An act to amend the Land Water Conservation Fund Act, as amended, to provide for collection of special recreation use fees at additional campgrounds, and for other purposes, Public Law 93-303: This law amends Section 4 of the Land and Water Conservation Fund Act of 1965, as amended, to establish less restricted criteria under which Federal agencies may charge fees for the use of campgrounds developed and operated at Federal areas under their control.
- Safe Drinking Water Act, Public Law 93-523: The act assures that water supply systems serving the public meet minimum national standards for protection of public health. The act (1) authorizes the Environmental Protection Agency to establish Federal standards for protection from all harmful contaminants, which standards would be applicable to all public water systems, and (2) establishes a joint Federal-State system for assuring compliance with these standards and for protecting underground sources of drinking water.
- An Act to amend the Land and Water Conservation Fund Act of 1965, as amended, to establish the National Historic Preservation Fund, and for other purposes, Public Law 94-422: Expands the role of the Advisory Council on Historic Preservation. Section 201 amends Section 106 of the National Historical Preservation Act of 1966 to say that the Council can comment on activities which will have an adverse effect on sites either included in or eligible for inclusion in the National Register of Historic Places.
- Clean Water Act of 1977, as amended, Public Law 95-217: This Act amends the Federal Water Pollution Control Act Amendments of 1972 and extends the appropriations authorization. The Clean Water Act is a comprehensive Federal water pollution control program that has as its primary goal the reduction and control of the discharge of pollutants into the nation's navigable waters. The Clean Water Act of 1977 has been amended by the Water Quality Act of 1987, Public Law 100-4.

- American Indian Religious Freedom Act, Public Law 95-341: The Act protects the rights of Native Americans to exercise their traditional religions by ensuring access to sites, use and possession of sacred objections, and the freedom to worship through ceremonials and traditional rites.
- Endangered Species Act Amendments of 1978, Public Law 95-632: This law amends the Endangered Species Act of 1973. Section 7 directs agencies to conduct a biological assessment to identify threatened or endangered species that may be present in the area of any proposed project. This assessment is conducted as part of a Federal agency's compliance with the requirements of Section 102 of NEPA.
- Archeological Resources Protection Act of 1979, Public Law 96-95: This Act protects archeological resources and sites that are on public and tribal lands and that fosters increased cooperation and exchange of information between governmental authorities, the professional archeological community, and private individuals. It also establishes requirements for issuance of permits by the Federal land managers to excavate or remove any archeological resource located on public or Indian lands.
- Supplemental Appropriations Act, 1983, Public Law 98-63: This Act authorized the USACE Volunteer Program. The United States Army Chief of Engineers may accept the services of volunteers and provide for their incidental expenses to carry out any activity of the USACE, except policymaking or law or regulatory enforcement.
- Water Resources Development Act of 1986, Public Law 99-662: Provides for the conservation and development of water and related resources and the improvement and rehabilitation of the Nation's water resources infrastructure.
- North American Wetland Conservation Act of 1989, Public Law 101-233: This act directs the conservation of North American wetland ecosystems and requires agencies to manage their lands for wetland/waterfowl purposes to the extent consistent with missions.
- Americans with Disabilities Act of 1990 (ADA), PL101-336, as amended by the ADA Amendments Act of 2008 (PL110-325): This law prohibits discrimination based on disabilities in, among others, the area of public accommodations and requires reasonable accommodations for persons with disabilities.
- Native American Graves Protection and Repatriation Act, Public Law 101-601: This act requires Federal agencies to return Native American human remains and cultural items, including funerary objects and sacred objects, to their respective peoples.
- Water Resources Development Act (WRDA) of 1992 PL 102-580: This act authorizes the USACE to accept contributions of funds, materials and services from non-Federal public and private entities to be used for managing recreational sites and facilities and natural resources.
- Omnibus Reconciliation Act of 1993, Public Law 103-66: Day use fees - authorizes the USACE to collect fees for the use of developed recreational sites and facilities, including campsites, swimming beaches and boat ramps.

- WRDA 1996, PL 104-303: authorizes recreation and fish and wildlife mitigation as purposes of a project, to the extent that the additional purposes do not adversely affect flood control, power generation, or other authorized purposes of a project.
- Omnibus Parks and Public Lands Management Act of 1996, Public Law 104-333: This act created an advisory commission to review the current and anticipated demand for recreational opportunities at lakes or reservoirs managed by the Federal Government and to develop alternatives to enhance such opportunities for such use by the public.
- Neo-tropical Migratory Bird Conservation Act of 2000, Public Law106-147: This act promotes the conservation of habitat for neo-tropical migratory birds

# APPENDIX E – PUBLIC COMMENT

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# INITIAL PUBLIC SCOPING (October 8, 2024 – November 9, 2024)

## COMMENT AND USACE RESPONSE

**COMMENT from Dover Open Space Committee**

Just thought the CRNVSA update planners might benefit from some information on the Town of Dover that is relatively unusual for Eastern MA.

All of the water for the households in Dover is from groundwater or drilled wells within Dover. About 20-25% of the households are supplied by a private PWS, Aquarion (subsidiary of Eversource) but all of Aquarion's wells are relatively shallow, gravel wells that are situated in Dover. The rest of the households each have their own wells. The towns of Natick & Needham both draw from well fields in Elm Bank (owned by MA DCR) that is in Dover. While Dover technically can draw water from Elm Bank too, it never has and has no water distribution infrastructure under its roads to do this. The town is not part of MWRA and has no plans to become part of it. There is NO infrastructure (water, sewer, natural gas, electric, internet/cable) below the vast majority of Dover's roads. In addition, the ledge prevalent in this area makes it very difficult to conceive it would be possible, even if it were financially feasible to put in. As a result of the town's reliance on our own well water, our wetlands bylaw is more restrictive than the MA Wetlands & Rivers Acts and we have protective stormwater management and irrigation bylaws as well.

Like water, Dover does not have any town sewage and every household has its own septic system. In a couple of cases, affordable developments (40B) have share septic or, in only one case, a package system. We have a Transfer Station for residents only open W/Sat/Sun and no trash pick up. Much of town government is volunteer and we have an annual Town Meeting (one person-one vote, not representative). Our schools represent the majority of our taxes and our focus, resulting in top ranking with the real estate values following suit.

The CRNVSA fee land and easement land is almost 100% wetlands and protects this resource that is particularly important to the quality and quantity of our well water. In addition, Dover has always been a proactive community when it comes to land protection for the benefit of both people and wildlife. The CRNVSA is an important abutter to a number of these protected properties which all offer public access for passive recreation - DLCT's Bartlett Pines, Conservation Commission's Valley Farm, Park & Rec's Channing Skating Pond, DLCT's Springdale Field, etc. This also makes it part of an important wildlife corridor for resilience & adaption as climate change stresses habitats. Unless it is a drought, very little of the Army Corp fee land has any recreational potential. To the extent that minimal uplands exist on it, the habitat for wildlife is the most likely highest & best use.

As noted in the below note on your 1984 Master Plan, the CRNVSA protects the Trout Brook which an important cold water fishery entering the Charles. A number of beaver now dam several sections of Trout Brook as well. This makes Trout Brook only minimally passable as a recreational resource. To the extent that it is, kayakers can access it from the Charles as there is a Dover Park & Rec boat landing just downstream on Riverside Drive.

If you have any questions or would like further detail on how the CRNVSA fee land abuts current conservation lands, etc., please contact me. As you can see below, I wear many hats, as one does in a small town (6K residents, 2K households).

**USACE Response**

Concur. The goals and objectives of the Charles River NVSA Master Plan will continue to prioritize passive (non-intensive) recreation focused on the appreciation of natural resource as well as wildlife management within the entire project area. These goals and objectives should continue to function in concert with its operations and management purpose for flood control, while providing areas for water infiltration that provides water to members of the Dover community.

## DRAFT MASTER PLAN PUBLIC COMMENTS (Dates TBD)

Comments from Draft Public Open House and Comment Period and USACE Responses will be listed here in the final Master Plan.

# APPENDIX F – ACRONYMS

| | |
|---|---|
| ACHP | Advisory Council on Historic Preservation |
| ARPA | Archeological Resources Protection Act of 1979 |
| BCC | Bird of Conservation Concern |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | U.S. Code of Federal Regulations |
| CO2e | Carbon Dioxide equivalent |
| CRMP | Cultural Resources Management Plan |
| DM | Design Memorandum |
| EA | Environmental Assessment, NEPA Document |
| EEA | Massachusetts Office of Energy and Environmental Affairs |
| EO | Executive Order |
| EOP | Environmental Operating Principles |
| EP | Engineering Pamphlet |
| EPA | United States Environmental Protection Agency |
| ER | Engineering Regulation |
| ERGO | Environmental Guide for Operations |
| ES | Executive Summary |
| ESA | Environmentally Sensitive Area |
| °F | Degrees Fahrenheit |
| FONSI | Finding of No Significant Impact |
| FPPA | Farmland Protection Policy Act |
| GIS | Geographical Information Systems |
| HDR | High Density Recreation |
| HPMP | Historic Properties Management Plan |
| HTRW | Hazardous, toxic, or radioactive waste |
| HUC | USGS Hydrological Unit Code |
| IPaC | Information for Planning and Consultation |
| KCC | Köppen Climate Classifications |
| LDR | Low Density Recreation |
| LEED | Leadership in Energy and Environmental Design |
| LiDAR | Light Detection and Ranging, remote sensing technology |
| MA | Massachusetts |
| MassDEP | Massachusetts Department of Environmental Protection |
| MassWildlife | Massachusetts Division of Fisheries and Wildlife |
| MG | Mitigation |
| MP | Master Plan or Master Planning |
| MRML | Multiple Resource Management Lands |
| MSL | Mean sea level |
| NAAQS | National Ambient Air Quality Standards |
| NAGPRA | Native American Graves Protection and Repatriation Act |
| NEPA | National Environmental Policy Act, 1970 |
| NGVD/NGVD29 | National Geodetic Vertical Datum (1929) |
| NHPA | National Historic Prevention Act |

| | |
|---|---|
| NRHP | National Register of Historic Places |
| NOA | Notice of Availability |
| NOAA | National Oceanic and Atmospheric Administration |
| NRCS | Natural Resource Conservation Service |
| NRM | USACE Natural Resource Management system |
| NWI | National Wetland Inventory |
| OMB | Office of Management and Budget |
| OMP | Operations Management Plan for a specific lake Project |
| PDT | Project Development Team |
| PL | Public Law |
| PO | Project Operations |
| RPEC | Regional Planning and Environmental Center |
| SCORP | Statewide Comprehensive Outdoor Recreation Plan |
| SGCN | Species of Greatest Conservation Need |
| SH | State Highway |
| SHPO | State Historical Preservation Office |
| USGCRP | U.S. Global Change Research Program |
| USACE | United States Army Corps of Engineers |
| USFWS | U. S. Fish and Wildlife Service |
| USGS | U.S. Geological Survey |
| VM | Vegetative Management Area |
| WM | Wildlife Management |

# APPENDIX G – SOIL SERIES AND FARMLAND CLASSIFICATION AT THE CRNVSA MANAGEMENT UNITS

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**Table G.0.1 Soil Series and Farmland Classification at the CRNVSA Management Units (Acres)**

| Soil (Map Unit) Symbol | Soil (Map Unit Name) | Farmland Classification | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | R | S | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Water | Not prime farmland | 26.77 | | | | | 3.08 | | | | | | 1.65 | | | | 0.13 | 12.98 | **44.62** |
| 10 | Scarboro and Birdsall soils, 0 to 3 percent slopes | Not prime farmland | | 11.07 | 1.52 | | | 83.87 | 47.15 | 0.01 | | | 29.00 | 46.72 | 9.48 | 0.57 | | | 10.73 | **240.13** |
| 103B | Charlton-Hollis-Rock outcrop complex, 3 to 8 percent slopes | Not prime farmland | | | <0.01 | | | 11.63 | | | | 0.03 | | | | | | | | **11.66** |
| 103C | Charlton-Hollis-Rock outcrop complex, 8 to 15 percent slopes | Not prime farmland | | | | | | 9.39 | | | | | 0.32 | 2.59 | | 0.52 | | | | **12.82** |
| 103D | Charlton-Hollis-Rock outcrop complex, 15 to 25 percent slopes | Not prime farmland | | | | | | 3.22 | | | | | 0.73 | | | 3.23 | | | | **7.17** |
| 104C | Hollis-Rock outcrop-Charlton complex, 0 to 15 percent slopes | Not prime farmland | 0.21 | | | | | 0.33 | | | | | | | | | | | | **0.54** |
| 104D | Hollis-Rock outcrop-Charlton complex, 15 to 25 percent slopes and 15 to 35 percent slopes | Not prime farmland | | | | | 0.13 | | | | | | 2.80 | 0.52 | | | | | | **3.45** |
| 223A | Scio very fine sandy loam, 0 to 3 percent slopes | All areas are prime farmland | | | | | | | | 2.07 | | | | | | | | | | **2.07** |
| 223B | Scio very fine sandy loam, 2 to 5 percent slopes | All areas are prime farmland | | | | | | 5.74 | | 0.02 | | | 1.81 | | | | | | | **7.58** |
| 245B | Hinckley loamy sand, 3 to 8 percent slopes | Farmland of statewide importance | | 0.68 | | | | 18.63 | 0.55 | | | | | | 0.12 | | | 2.03 | 13.98 | **35.98** |
| 245C | Hinckley loamy sand, 8 to 15 percent slopes | Farmland of statewide importance | | | | | | 16.66 | 1.45 | | | | | | 9.25 | 0.44 | | | | **27.80** |
| 251A | Haven silt loam, 0 to 3 percent slopes | All areas are prime farmland | | | | | | | | | | | | 0.04 | | | | | | **0.04** |
| 251B | Haven silt loam, 3 to 8 percent slopes | All areas are prime farmland | | | | | | | | | | | | | | | 0.27 | | | **0.27** |
| 253B | Hinckley loamy sand, 3 to 8 percent slopes | Farmland of statewide importance | 0.26 | | | | | | | | | | | | | | 0.27 | | | **0.53** |
| 253C | Hinckley loamy sand, 8 to 15 percent slopes | Farmland of statewide importance | | | | | | | | | 0.04 | | | | | | 5.89 | | | **5.93** |
| 253D | Hinckley loamy sand, 15 to 25 percent slopes and 15 to 35 percent slopes | Not prime farmland | | 0.12 | 4.88 | | | 8.46 | 0.62 | | 0.21 | | 0.02 | 1.71 | 8.17 | 0.07 | 0.38 | 0.49 | 13.62 | **38.73** |

| Soil (Map Unit) Symbol | Soil (Map Unit Name) | Farmland Classification | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | R | S | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 253E | Hinckley loamy sand, 25 to 35 percent slopes | Not prime farmland | | | | | | | | | 0.03 | | | | | | 11.56 | | | **11.59** |
| 254A | Merrimac fine sandy loam, 0 to 3 percent slopes | All areas are prime farmland | | | | | | 3.02 | | | | | | | | | | | | **3.02** |
| 254B | Merrimac fine sandy loam, 3 to 8 percent slopes | All areas are prime farmland | 1.69 | 1.07 | 1.67 | | | 16.18 | | | | | 0.65 | | 1.49 | | 10.33 | 1.62 | 4.38 | **39.08** |
| 254C | Merrimac fine sandy loam, 8 to 15 percent slopes | Farmland of statewide importance | | | | | <0.01 | | | | | | 0.13 | 0.92 | | | 0.05 | | | **1.10** |
| 255B | Windsor loamy sand, 3 to 8 percent slopes | Farmland of statewide importance | | 6.72 | | | | 0.33 | 8.14 | | 2.02 | | 2.39 | 3.95 | | | | | 5.24 | **28.79** |
| 255C | Windsor loamy sand, 8 to 15 percent slopes | Farmland of statewide importance | | | | | | | | | | | | | | | 2.65 | | | **2.65** |
| 256A | Deerfield loamy fine sand, 0 to 3 percent slopes | Farmland of statewide importance | | | | | 2.37 | | 27.99 | | | | | 0.14 | | | | | | **30.49** |
| 256B | Deerfield loamy fine sand, 3 to 8 percent slopes | Farmland of statewide importance | | 2.94 | | | | | 2.61 | | | | | | | | | | 4.61 | **10.15** |
| 260B | Sudbury fine sandy loam, 2 to 8 percent slopes and 3 to 8 percent slopes | All areas are prime farmland | | 2.58 | 1.08 | | | 8.28 | 13.69 | 0.23 | 0.58 | | 8.82 | 1.41 | | | 6.77 | 0.55 | | **43.98** |
| 261A | Tisbury silt loam, 0 to 3 percent slopes | All areas are prime farmland | | | | | | | | | | | | | | | 3.30 | | | **3.30** |
| 30 | Raynham silt loam, 0 to 3 percent slopes | Not prime farmland | | 8.32 | | | | 35.19 | | | | | 12.36 | 4.44 | | | | | | **60.31** |
| 300B | Montauk fine sandy loam, 3 to 8 percent slopes | All areas are prime farmland | | | | | | 2.03 | 0.08 | | | | | 4.47 | | | | | | **6.59** |
| 302B | Montauk fine sandy loam, 0 to 8 percent slopes, extremely stony | Not prime farmland | | | | | | | | | | | | 3.64 | | | | | 1.70 | **5.34** |
| 302C | Montauk fine sandy loam, 8 to 15 percent slopes, extremely stony | Not prime farmland | | | | | | 3.19 | | | | | | 1.27 | | | 0.39 | | 1.69 | **6.53** |
| 305B | Paxton fine sandy loam, 3 to 8 percent slopes | All areas are prime farmland | | | | | | 0.11 | 0.31 | | | | | | | | | | | **0.42** |
| 305C | Paxton fine sandy loam, 8 to 15 percent slopes | Farmland of statewide importance | | | | | | | | | | | | 0.97 | | | | | | **0.97** |
| 305D | Paxton fine sandy loam, 15 to 25 percent slopes | Not prime farmland | | | 5.45 | | | | | | | | | | | | | | | **5.45** |

| Soil (Map Unit) Symbol | Soil (Map Unit Name) | Farmland Classification | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | R | S | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 307C | Paxton fine sandy loam, 8 to 15 percent slopes, extremely stony | Not prime farmland | | | | | | 0.31 | | | | | | | | | 0.02 | | | **0.34** |
| 307D | Paxton fine sandy loam, 15 to 25 percent slopes, extremely stony | Not prime farmland | | | | | 1.00 | | | | | | | | | | | | | **1.00** |
| 310B | Woodbridge fine sandy loam, 3 to 8 percent slopes | All areas are prime farmland | | | | | | 0.26 | | | | | | 0.48 | | | | | | **0.74** |
| 311B | Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony | Farmland of statewide importance | | | | | 1.53 | | | | | | | | | | 1.40 | | | **2.93** |
| 312B | Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony | Not prime farmland | | | | | 1.05 | | | | | | | 0.10 | | | | | | **1.16** |
| 315B | Scituate fine sandy loam, 3 to 8 percent slopes | All areas are prime farmland | | | | | | 1.98 | | | | | | 7.29 | | | | | | **9.27** |
| 317B | Scituate fine sandy loam, 3 to 8 percent slopes, extremely stony | Not prime farmland | | | | | | | | 0.11 | | | | 13.41 | | | | | 2.91 | **16.43** |
| 31A | Walpole sandy loam, 0 to 3 percent slopes | Not prime farmland | | | | | | 10.20 | 48.92 | | | 1.58 | 11.74 | 2.13 | | | | | | **74.57** |
| 32B | Wareham loamy fine sand, 0 to 5 percent slopes | Not prime farmland | | | | | | | | 0.22 | 19.38 | | | | | | 0.70 | | | **20.30** |
| 36A | Saco mucky silt loam, 0 to 1 percent slopes | Not prime farmland | 6.92 | | | | | | | | | | | | | | | | | **6.92** |
| 4 | Rippowam silt loam, 0 to 3 percent slopes | Not prime farmland | | | | | | 0.86 | 9.65 | | | | | 16.24 | | | | | | **26.75** |
| 420B | Canton fine sandy loam, 3 to 8 percent slopes | All areas are prime farmland | | | 0.27 | | | 5.42 | | | | | | | | | | | | **5.68** |
| 420C | Canton fine sandy loam, 8 to 15 percent slopes | Farmland of statewide importance | | | | | | 6.18 | | | | | | | | 1.58 | | | | **7.76** |
| 422B | Canton fine sandy loam, 0 to 8 percent slopes, extremely stony | Not prime farmland | | | | | | 1.26 | | | | | | 0.16 | | 3.33 | 1.58 | | | **6.33** |
| 422C | Canton fine sandy loam, 8 to 15 percent slopes, extremely stony | Not prime farmland | | | | | | 0.98 | | | | | | | | 1.10 | | | | **2.07** |
| 422D | Canton fine sandy loam, 15 to 35 percent slopes, extremely stony | Not prime farmland | | | | | | 2.23 | | | | | | | | 0.17 | | | | **2.40** |
| 5 | Saco silt loam, 0 to 3 percent slopes | Not prime farmland | 89.93 | | | | | 427.25 | 67.31 | | | | 66.72 | 40.41 | | | 2.95 | | 129.23 | **823.79** |

| Soil (Map Unit) Symbol | Soil (Map Unit Name) | Farmland Classification | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | R | S | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 51 | Swansea muck, 0 to 1 percent slopes | Not prime farmland | | 34.78 | 0.48 | | | 147.04 | 55.18 | | | 6.66 | 44.13 | 14.80 | 0.87 | 29.33 | 2.70 | 0.20 | | **336.17** |
| 51A | Swansea muck, 0 to 1 percent slopes | Not prime farmland | | | | | | | | 7.70 | 72.53 | | | | | | 6.67 | | | **86.90** |
| 52 | Freetown muck, 0 to 1 percent slopes | Not prime farmland | | 10.88 | 30.54 | | | 235.51 | 58.12 | | | | | 152.96 | | 23.11 | | 24.20 | 92.88 | **628.18** |
| 52A | Freetown muck, 0 to 1 percent slopes | Not prime farmland | | | | | 47.13 | | | | | | | | | | 193.59 | | | **240.71** |
| 53 | Freetown muck, ponded, 0 to 1 percent slopes | Not prime farmland | | 13.71 | | | | | | | | | | | 44.92 | | | 0.21 | | **58.84** |
| 600 | Pits, gravel and pits, sand and gravel | Not prime farmland | | | | | | 22.51 | 1.75 | | 0.61 | | | | | | 2.40 | | | **27.27** |
| 602 | Urban land, 0 to 15 percent slopes | Not prime farmland | 0.40 | | | | | | 0.54 | | | | | | | | | | | **0.94** |
| 603 | Urban land, wet substratum and wet substratum, 0-3 percent slopes | Not prime farmland | 3.17 | | | | | | | | | | | | | | | | | **3.17** |
| 626B | Merrimac-Urban land complex, 0 to 8 percent slopes | Not prime farmland | 0.36 | | 0.04 | | | | | | | | | | | | | | | **0.40** |
| 652 | Udorthents, refuse substratum | Not prime farmland | 0.01 | | 0.41 | | | 0.09 | | | | | | | | | 0.31 | | | **0.82** |
| 653 | Udorthents, sandy | Not prime farmland | | | 0.12 | | | 15.97 | 0.18 | | 0.03 | | | 7.32 | 0.01 | | 0.47 | | 11.43 | **35.53** |
| 654 | Udorthents, loamy | Not prime farmland | | | | | | | | | | | | 0.06 | | | | 0.89 | 2.65 | **3.60** |
| 655 | Udorthents, wet substratum | Not prime farmland | 0.66 | | | | | | | | | | | 4.98 | | | | | | **5.64** |
| 656 | Udorthents-Urban land complex | Not prime farmland | | | | | | | | | 0.01 | | | | | | | | | **0.01** |
| 6A | Scarboro mucky fine sandy loam, 0 to 3 percent slopes | Not prime farmland | | | | | | | | 1.92 | | | | | | | 5.95 | | | **7.86** |
| 70A | Ridgebury fine sandy loam, 0 to 3 percent slopes | Not prime farmland | | | | | | 0.22 | | | | | | | | | | | | **0.22** |
| 71B | Ridgebury fine sandy loam, 3 to 8 percent slopes, extremely stony | Not prime farmland | | | | | | 5.97 | | 0.47 | | | 0.18 | | | 1.76 | | | | **8.39** |
| 73A | Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony | Not prime farmland | | | | | | 1.87 | 0.34 | | | | 5.41 | | | 9.07 | 5.22 | | | **21.90** |
| 73B | Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony | Not prime farmland | | | | | 1.97 | | | | | | | | | | 2.09 | | | **4.07** |
| **TOTAL ACREAGE PER UNIT** | | | **130.38** | **92.85** | **46.46** | **0.00** | **55.18** | **1115.45** | **344.58** | **12.77** | **95.43** | **8.27** | **187.21** | **334.81** | **74.31** | **74.25** | **267.89** | **30.33** | **308.03** | **3178.21** |