

USACE Update Report



US Army Corps
of Engineers®

Massachusetts



Current as of April 30, 2023

BUILDING STRONG®

Mission

The missions of the New England District (District) of the U.S. Army Corps of Engineers (USACE) include flood risk management protection, emergency preparedness and response to natural disasters and national emergencies, environmental remediation and restoration, natural resource management, streambank and shoreline protection, navigation maintenance and improvement, support to military facilities and installations, and engineering and construction support to other government agencies. The six New England states cover 66,000 square miles, with 6,100 miles of coastline, 170 federal navigation projects (13 deep draft commercial waterways), 13 major river basins, and thousands of miles of navigable rivers and streams. The District operates and maintains 31 dams, three hurricane barriers and the Cape Cod Canal.

Through its Regulatory program, the District processes nearly 2,500 applications per year for work in waters and wetlands of the six-state region. We employ about 500 professional civilian employees with about 300 stationed at our headquarters in Concord, Massachusetts. Other USACE employees serve at project sites and offices throughout the region.

For more information, visit our website at: www.nae.usace.army.mil; or check us out on Twitter at: twitter.com/corpsnewengland or on Facebook at: facebook.com/CorpsNewEngland.

Navigation

BOSTON HARBOR (7th & 8th CDs) – USACE announced in August 2022 that the completed Boston Harbor Deep Draft Navigation Improvement Project was finished four months ahead of schedule. The project was a \$350 million partnership between USACE, non-federal sponsors the Commonwealth of Massachusetts and Massport, and a multitude of project stakeholders. Boston Harbor is the largest seaport in New England and the principal distributing point for regional commerce. The Port of Boston supports \$8.2 billion in economic impact, resulting in 66,000 jobs for the Commonwealth and New England region. This project, combined with Conley Terminal infrastructure improvements made by Massport, has resulted in significant navigational improvements to Boston Harbor, allowing larger container ships and tankers for both dry bulk and petroleum to access the various terminals, ultimately reducing transportation costs and improving efficiency of maritime transportation of goods to the New England Region.

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The ability for larger vessels to call on Boston is critical to New England's economy and supports USACE's core navigation mission. As a result of the dredging project and Massport's recent upgrades to Conley Container Terminal, including a brand-new berth and three new ship-to-shore cranes, the Port of Boston now serves 12,000 TEU vessels and has increased its direct global connectivity to reach 18 additional ports in China, Southeast Asia, India, the Mediterranean, the Middle East, Northern Europe and Latin America. These new global connections will benefit more than 2,500 businesses that utilize Conley Container Terminal to import and export goods.

The Boston Harbor Deep Draft Improvement Project involved three major phases. The first contract, maintenance dredging of the inner harbor and construction of a Confined Aquatic Disposal cell, was completed in December of 2017. The second contract was awarded to a joint venture of Cashman Dredging and Dutra Dredging Group in 2018 for \$122 million and involved mechanically dredging approximately 11.7 million cubic yards clay, gravel, sand and fractured rock within Boston Harbor's North Channel, Main Ship Channel, Turning Basin, Reserved Channel and Presidents Road Anchorage. The second contract work began July of 2018 and was completed in November 2020, an astounding year ahead of schedule. Most of the dredged material was placed in the Massachusetts Bay Disposal Site, approximately 20 miles offshore of Boston Harbor, with a small fraction of the material used as a cap to the Main Ship Channel Confined Aquatic Disposal cell just downstream of the inner confluence of the Chelsea and Mystic Rivers.

The third and final contract involved dredging, drilling and removal of hard rock to complete the deepening project work. That phase of the project was completed in June 2022 by Great Lakes Dredge and Dock LLC, who were awarded the contract in March 2021 for \$61.8 million. The company began work in June 2021 by mechanically dredging rock in localized areas of the harbor and removing the remaining rock by drilling, removal and dredging the rock material.

CAPE COD CANAL BOURNE AND SAGAMORE HIGHWAY BRIDGES (9th CD) –The District conducted a multiyear Major Rehabilitation Evaluation study of the Bourne and Sagamore highway bridges to determine whether major rehabilitation or replacement of either or both bridges is justified. The existing bridges were constructed more than 84 years ago and require increasingly frequent maintenance, which is costly and causes significant impact to traffic crossing the Cape Cod Canal. The Major Rehabilitation Evaluation Report (MRER) evaluated the risk and reliability of the structures as well as the economic impacts/benefits of several major rehabilitation and bridge replacement alternatives versus continuing to repair the bridges as needed. The MRER is comprised of four elements: 1) structural risk and reliability analysis of the bridges; 2) cost estimates for rehabilitation and/or replacement alternatives; 3) economic benefits of the alternatives; and 4) environmental effects of the alternatives. The Major Rehabilitation Evaluation Report is available for review at <https://www.CapeCodCanalBridgesStudy.com> under the "Documents" tab.

ESSEX RIVER, ESSEX (6th CD) – The town of Essex requested the District evaluate the beneficial use of material from the anticipated maintenance dredging of the Essex River. A federal interest determination was developed and approved by North Atlantic Division in December 2016. A Section 204 study was initiated in the fall of 2018 to examine the beneficial use of dredged material from the next maintenance of the Essex River federal navigation project (FNP). The District terminated the study at the request of the town of Essex.

GLOUCESTER HARBOR & ANNISQUAM RIVER (6th CD) –The Congressionally authorized FNP is eight feet deep Mean Lower Low Water (MLLW) and 60 feet wide from Western Harbor to the MBTA Bridge, and then 100 feet wide to the river's mouth, and 200 feet wide across the bar in Ipswich Bay. It also includes an anchorage area eight feet deep MLLW and approximately 17 acres at the entrance to

Lobster Cove. Approximately 140,000 cubic yards of sediment are required to be dredged from the project to return the project to authorized and maintained dimensions. Dredge material will be placed at either the Massachusetts Bay disposal site (MBDS), Ipswich Bay Nearshore disposal site (IBNDS), or the Gloucester Harbor disposal site (GHDS). The work was performed by a private contractor utilizing a mechanical bucket dredge with scows under contract to the government. Construction was completed in 2021.

GREEN HARBOR, MARSHFIELD -- At the request of the Town of Marshfield, federal funds were made available to examine the feasibility of making improvements to the harbor entrance and reduce the amount of shoaling that occurs and negatively impacts harbor vessel traffic. Currently, the existing conditions in the harbor require that USACE performs maintenance dredging on an annual basis to remove shoaled deposits from the harbor entrance and narrows. A federal interest determination is underway.

LYNN HARBOR, LYNN (6th CD) – At the request of the City of Lynn, federal funds were made available to examine the feasibility of creating a new federal channel and anchorage along the Lynn Harbor shoreline. The proposed channel would connect the existing Lynn Harbor and Saugus River channels, reducing commercial navigation delays and providing boat access to the commercial properties along the Lynn Harbor shoreline targeted for redevelopment. An Initial Appraisal Report of navigation improvements at Lynn Harbor found that sufficient benefits likely exist to warrant continuation of the feasibility study. The Army Corps' North Atlantic Division gave approval to proceed with the feasibility study on March 5, 2013. A feasibility cost share agreement (FCSA) was negotiated with the city of Lynn and executed on May 23, 2019. The study is ongoing and could be completed within about 36 months of FCSA execution.

NEW BEDFORD AND FAIRHAVEN HARBOR (9th CD) – The District is currently preparing a dredged material management plan (DMMP) for maintenance dredging of the New Bedford and Fairhaven Harbors federal navigation project (FNP). The main deep-draft channel to New Bedford has an authorized depth of 30 feet, while the shallow draft channels for the fishing fleet at Fairhaven have depths of 15 and 10 feet. Following dredging performed under contract to the Commonwealth of Massachusetts, an updated hydrographic survey of the FNP identified a total dredge volume requirement of 751,000 cubic yards of shoal material to restore the project to authorized dimensions. The District is evaluating if any of the identified shoal material outside the hurricane barrier and within the FNP is suitable for disposal in open waters outside the harbor. The material inside the hurricane barrier is unsuitable for open water disposal, so the District is considering constructing a confined aquatic disposal (CAD) cell within New Bedford inner harbor. Potential cell locations in the harbor are very limited as most areas were already taken by EPA's superfund project and the city/state berth dredging projects. A Massachusetts state DMMP completed in 2004 by the Massachusetts Office of Coastal Zone Management (MACZM) made a comprehensive review of disposal alternatives before determining that CAD cells were a least costly environmentally acceptable disposal option for the harbor.

PLUM ISLAND NORTH POINT, NEWBURYPORT (6th CD) – A Section 204 study was initiated in March 2019 to examine the beneficial use of dredged sand from the next maintenance of the Newburyport Harbor entrance channel to nourish the beach on the south side of the inlet. A final detailed project report and environmental assessment was approved in June 2021. A project partnership agreement was executed with the MA DCR, the project sponsor, in July 2021. A solicitation was issued in August 2021, but only one bid was received and that was for about twice the project estimate. A new solicitation was issued in May 2022 for construction in the fall/winter of 2022/2023. The MA DCR and the City of Newburyport will provide the necessary easements for construction of the

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project. Construction of the project has begun and the work is being primarily funded through the USACE O&M program.

PLYMOUTH HARBOR (9th CD) – The District is proposing to reconstruct a 2,350-foot-long section of Plymouth Long Beach Dike along the barrier beach known as Plymouth Long Beach. Preliminary investigations are underway. Proposed reconstruction will take place during the year(s) funding becomes available. The District is preparing a contract to make repairs to the timber foot bridge over the Plymouth Breakwater at the northwest corner of the harbor. Bridge repairs are anticipated to be conducted in the fall of 2021.

SCITUATE HARBOR (9th CD) – A section of the nose of the north jetty was damaged during winter storm Juno and subsequent winter Nor'easters; \$1 million was identified in the fiscal year 2016 work plan to effect repairs. A contract was awarded May 8, 2018, and was completed in 2019.

WELLFLEET HARBOR, WELLFLEET (9th CD) – At the request of town representatives, the District completed a conditions survey of the FNP in April 2015. Results of the survey show that areas of the 10-foot-deep channel and the 6-foot-deep anchorage are significantly shoaled; with some parts of the project, specifically the 6-foot-deep anchorage having less than 0.5 feet of draft in large reaches of the project. District staff met with local officials in conjunction with state/federal resource agencies to discuss potential disposal alternatives and permit requirements for completing a maintenance event as soon as funds were authorized by Congress. A public notice of the project was issued on Dec. 20, 2017. A draft Environmental Assessment was prepared in December 2017 and coordinated with the federal and state resource agencies in February 2018. A water quality certification permit application was submitted Dec. 19, 2017, and is currently under review by the Massachusetts Department of Environmental Protection. Funding in the amount of \$150,000 was identified in the fiscal year 2017 work plan and is being used to complete plans and specifications of the dredging project.

Disposal Area Monitoring System (DAMOS) Program

The DAMOS program supports the U.S. Army Corps of Engineers' navigation mission by providing monitoring and management of dredged material disposal sites in New England waters to document compliance with the environmental and operational conditions placed on aquatic disposal of dredged material. The program also supports the beneficial re-use of dredged material through the development of placement techniques and monitoring. The DAMOS program conducted monitoring surveys at the Massachusetts Bay Disposal Site (MBDS) multiple times since 2018 in support of the restoration effort for the historic Industrial Waste Site with dredged material from the Boston Harbor Navigation Improvement Project. In addition, the DAMOS program performed a survey of a potential new nearshore beneficial use site off Horseneck Beach in Westport, MA. Final reports are available on the DAMOS website at <https://www.nae.usace.army.mil/Missions/Disposal-Area-Monitoring-System-DAMOS/Reports/>.

Shoreline/Streambank Protection

CHELSEA RIVER, EAST BOSTON (7th & 8th CDs) – The city of Boston has requested that USACE undertake a streambank protection project, authorized under Section 14 of the 1946 Flood Control Act, as amended, for a reach of the Chelsea River in East Boston. Approximately 300 linear feet of riverbank requires stabilization. The Design and Implementation phase is currently on hold due to soil sample results requiring further investigation.

Coastal Storm Damage Reduction

CAPE COD CANAL, SANDWICH (9th CD) – An investigation into the erosion along the shoreline in Sandwich identified the east jetties of the Cape Cod Canal as the cause of the interruption in sediment transport, which effectively starves the beaches of sand. The study quantified the extent to which sediment starvation and erosion can be directly attributed to the Canal FNP and developed solutions that could mitigate the effects through Section 111 of the Continuing Authorities Program. The study was approved by the USACE North Atlantic Division Commander on March 21, 2022. Efforts are underway to mitigate the damages with a beach nourishment plan that will borrow sand from a near shore location updrift of the jetties, near Scussett Beach. An opportunity exists to achieve an economy of scale by combining this scope of work with routine O&M dredging and avoid mobilization and demobilization costs. A Public Partnership Agreement will be drafted by USACE HQs for the design and implementation of the Section 111 project.

PLUM ISLAND SOUTH BEACH, NEWBURY (6th CD) – A feasibility cost-sharing agreement was executed on April 12, 2019, with the town of Newbury to conduct a Section 103 feasibility study of the section of Plum Island located south of the center island turnpike groin. This is an area where five homes were lost to winter storm erosion in 2015. The feasibility study was completed within two years. A site visit was conducted in June 2019. H&H modeling and alternatives for beach fill placement have been evaluated. The results of the study have shown that further federal participation in an improvement project there is not warranted and it was terminated in early 2022.

BOSTON METROPOLITAN AREA STUDY (5th & 8th CDs) -- In 2021, federal funds were appropriated by Congress in the USACE work plan to initiate a study for the Boston Metropolitan area in the coastal flood damage reduction business line. The broad goal of the study is to conduct a regional assessment of coastal flood risk to populations, property, ecosystems, and infrastructure; develop potential strategies to reduce risk; and identify the recommended risk reduction strategy(s). The study is anticipated to provide a framework and timeline for regional adaptation investments. The conclusions and recommendations of the report will have implications for decision makers at all levels of government.

The non-federal sponsor is the Massachusetts Executive Office of Energy and Environmental Affairs. The agreement was signed on Dec. 16, 2022, and the study is cost-shared 75 percent federal/25 percent non-federal with an estimated study cost of \$3 million. The study work plan to achieve the USACE "Shared Vision" milestone has been developed in coordination with the non-federal sponsor and outreach efforts to communities were conducted in November and December 2022.

Flood Damage Reduction

MUDDY RIVER FLOOD RISK MANAGEMENT PROJECT (4th, 7th & 8th CDs) – In response to an October 1996 storm event that resulted in severe flooding along the Muddy River as well as several tributary areas, particularly Stony Brook, the city of Boston, town of Brookline and the Commonwealth of Massachusetts proposed a plan called "the Emerald Necklace Environmental Improvements Master Plan, Phase I Muddy River Flood Control, Water Quality and Habitat Enhancement," dated January 1999. The objectives were to increase flood control, improve water quality and enhance aquatic/riparian habitat within the Muddy River by dredging accumulated sediment, providing flood damage reduction through improvements to restrictive drainage culverts, removing nuisance vegetation, improving

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fisheries/wildlife habitat and water quality, bank stabilization and promoting and enhancing recreational use of emerald necklace parklands.

Section 522 of the Water Resources Development Act (WRDA) of 2000 authorized the District to, "carry out the project for flood damage reduction and environmental restoration, Muddy River, Brookline and Boston, Massachusetts," substantially in accordance with the plans, and subject to concurrence it met federal guidelines. District headquarters prepared a Chief's report recommending federal participation and forwarded the report to the Assistant Secretary of the Army (ASA) for Civil Works on Dec. 29, 2003. The ASA approved federal participation in the flood damage reduction component of the project. However, due to its high unit cost, the environmental restoration portion of the project is not recommended for federal implementation. The District completed design efforts and prepared plans and specifications for the Phase 1 effort. A project partnering agreement was signed with the project sponsors. A \$30.9-million contract for Phase 1 was awarded on Aug. 10, 2012. A groundbreaking ceremony was held in October 2012 and construction started in early 2013. The construction of Phase 1 of the project is complete. In July and August 2016, final inspection and correction of punchlist items were completed throughout the project. A ribbon cutting ceremony was held by sponsors and stakeholders on April 21, 2017, in Boston to mark Phase 1 completion of the project. Contract for the construction of Phase 2 was awarded Feb. 26, 2020. Since that time, the contractor has been steadily working on administrative and technical submittal submissions. The contractor mobilized on site in early July to perform site preparations – construction trailers; temporary fencing; temporary access roads; and sedimentation control; etc. Dredging began in early October 2020 and the project will last for three years.

For more information on this project, visit <https://www.nae.usace.army.mil/Missions/Projects-Topics/Muddy-River/>.

Ecological Restoration/Watershed Management

BURRAGE POND, HANSON AND HALIFAX (9th CD) – The Massachusetts Division of Fisheries and Wildlife requested USACE assistance to restore Atlantic white cedar swamps and aquatic ecosystem habitat at the Burrage Pond Wildlife Management Area under the Section 206 authority of the Continuing Authorities Program. A federal interest determination is underway.

CHATHAM STAGE HARBOR SEDIMENT MANAGEMENT (9th CD) – The Town of Chatham requested a study to evaluate beneficial reuse of Stage Harbor channel sediment to lessen impacts of beach erosion and restore endangered bird habitat. The District initiated the study under the authority of Section 204 of the Water Resource Development Act (WRDA) 1992 as amended, which authorizes USACE to carry out projects for the protection, restoration, and creation of aquatic and ecologically related habitats, including wetlands, in connection with dredging for construction, operation, or maintenance of an authorized navigation project. The study evaluated beneficial use of dredged sand from Chatham Stage Harbor maintenance to provide potential habitat improvement for protected birds, including piping plover and roseate tern, and other coastal species on Chatham-owned shoreline. As of 2022, the team has formulated alternative actions involving dredged sand placement on Hardings Beach, owned by the Town of Chatham, to improve shoreline bird habitat.

GULF OF MAINE INITIATIVE – The District is a member of the Gulf of Maine working group, providing this joint U.S./Canadian committee with water resource planning expertise. Technical support in applications of sediment chemical mapping for Boston Harbor is being provided. District staff members

are participating in Gulf of Maine workshops and these workgroups are discussing ways in which the United States and Canada can partner through the Gulf of Maine program.

HAYWARD CREEK, QUINCY/BRAINTREE – The Town of Braintree requested District assistance with restoring fish passage in the Hayward Creek and Eaton Pond watershed under Section 1135 – Project Modifications to Improve the Environment Program. A federal interest determination is underway.

LONG POINT DIKE ECOSYSTEM RESTORATION (9th CD) – The Town of Provincetown requested District assistance with restoring ecological resources in the West End Marsh under Section 1135 – Project Modifications to Improve the Environment Program. The District completed a federal interest determination in May of 2014. The study is considering creating openings in Long Point Dike to restore the connection between Cape Cod Bay and West End Marsh for fish and invertebrates and to improve salt marsh and estuarine habitats. A draft report was completed and reviewed in 2015; however, concerns raised during the public comment period have resulted in the need to conduct additional hydrodynamic modeling of the system relative to potential dune breaching. Consequently, a feasibility cost sharing agreement needs to be established in order to continue the effort. A scope of work was prepared in order to establish a study cost and sign an agreement. The town did not choose to continue the study and it has since been terminated.

MERRIMACK RIVER WATERSHED STUDIES (SECTION 729) (3rd & 6th CDs) – The overall purpose of the watershed study was to conduct a comprehensive field program and data collection effort combined with watershed and river modeling to provide information to stakeholders to guide local water resource management decisions. The study of the Merrimack River and its watershed was a multi-phase effort that was conducted in collaboration with multiple partners and stakeholders. This study was conducted under the authority provided in Section 729 of WRDA 1986 as amended and titled “Water Resources Needs of River Basins and Region.” The Section 729 study requires (75 percent federal/25 percent non-federal) cost sharing. Study termination is in process including a summary of study efforts report.

MILL POND AQUATIC ECOSYSTEM RESTORATION, LITTLETON (3rd CD) – The Town of Littleton requested that USACE conduct a study of Mill Pond and its tributaries to investigate alternatives to restore the ecology and health of this 48-acre degraded freshwater pond. This study is being conducted under the USACE Aquatic Ecosystem Restoration Program, Section 206 of WRDA of 1996. The aquatic habitat of Mill Pond is degraded as a result of sedimentation and excessive nutrient loads into the pond from the surrounding 4,500-acre watershed. An estimated volume of 200,000 cubic yards of soft sediment has accumulated in the pond, reducing its average depth from six feet deep to three feet. The current shallowness of the pond and excessive nutrient concentrations contribute to extensive growth of aquatic weeds and degraded fish habitat. The objectives of the restoration study are to address methods to remove and dispose of accumulated sediment from the pond to reduce the recycling of phosphorous, reduce nutrient influx, increase water depth, and address invasive aquatic plants. USACE and the town of Littleton, as non-federal sponsor, executed a feasibility cost sharing agreement on Sept. 27, 2016, to proceed with the study. The District is assessing the environmental benefits and costs of several restoration alternatives to determine the most cost-effective and acceptable solution and plans to complete the analysis in 2022.

NATIONAL ESTUARY PROGRAM – The District is currently supporting implementation of the comprehensive conservation and restoration plans of the Massachusetts/Cape Cod Bays and the Buzzards Bay National Estuary Programs (NEP). Activities include attendance at committee meetings and transfer of our data to the NEP Geographic Information Systems (GIS). Additionally, we continue to work to identify habitat restoration opportunities.

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SANTUIT RIVER AQUATIC ECOSYSTEM RESTORATION, MASHPEE (9th CD) – The Mashpee Wampanoag Tribe requested that USACE conduct a study of Santuit River basin to investigate alternatives to restore the aquatic ecosystems of this 1,400-acre watershed. The study will focus on improving anadromous fish habitat in the Santuit Pond and stream channel. This study is being conducted under the USACE Aquatic Ecosystem Restoration Program, Section 206 of WRDA of 1996, as amended. The aquatic habitat of Santuit Pond is degraded as a result of sedimentation and excessive nutrient loads into the pond. USACE and the Mashpee Wampanoag Tribe executed a feasibility cost sharing agreement (FCSA) on Jan. 30, 2019, to conduct a feasibility study to formulate and assess measures to restore the aquatic ecosystem of the Santuit River basin. In 2021, the District study team collected and analyzed the Santuit Pond sediments, and the team will formulate alternatives to restore the aquatic ecosystems of the pond and stream corridor. The study team plans to prepare a draft detailed project report for public review in 2022.

SMELT BROOK, WEYMOUTH/BRAINTREE (8th CD) – The towns of Weymouth and Braintree requested District assistance with restoring fish passage in Smelt Brook tributary to the Weymouth-Fore River under Section 1135 – Project Modifications to Improve the Environment Program. USACE has evaluated an array of potential solutions and plans to release a draft Detailed Project Report to reconnect rainbow Smelt with their historic spawning habitat in Smelt Brook in the Fall of 2022 for public comment.

Planning Assistance to States Program

WAMPANOAG TRIBE OF GAYHEAD (AQUINNAH), TECHNICAL ASSISTANCE, ENVIRONMENTAL & WATER STUDY – Study start on hold pending signing of the agreement documents with the Tribe. This project will assist the Wampanoag Tribe of Gay Head, Aquinnah, in conserving its water-based resources and assessing environmental vulnerabilities, stressors, and interventions to best mitigate consequences of environmental degradation and adapt to climate change. The study will be conducted in alignment with the interests of the Natural Resource Department of the Tribe with emphasis on culturally important natural resources. Researchers and planners from USACE HQs and the New England District, and the Engineer Research and Development Center (ERDC), will provide technical assistance to the Natural Resource Department of the Tribe in coordination with local experts and other collaborating researchers. Identified natural resources within the Aquinnah territory that are of interest include eelgrass, shellfish (e.g., quahogs and scallops), and herring, along with the accompanying habitat. The goal of the study is to support the management of culturally significant natural resources to maintain and improve long-term sustainability.

NEW CHARLES RIVER DAM, SCOPING STUDY, BOSTON (8th CD) – The New Charles River Dam is located on the Charles River, between the Charlestown and North End sections of Boston. The Charles River Dam Project was authorized by the Flood Control Act of August 13, 1968 (PL 90-483). Project purposes included flood control, navigation, fish passage, and recreation. The project was completed by USACE in May 1978 at a cost of \$61.3 million. The Massachusetts Department of Conservation & Recreation (DCR) has been operating and maintaining the project successfully over the past 40 years. The project provides critical flood risk management to about 2,440 acres of urban property along the banks of the Charles River. Much of this property is located in Boston, Brookline and Cambridge.

The dam forms a tidal barrier between Boston Inner Harbor and the Charles River. The impoundment upstream of the dam is known as the Charles River “Basin”. The Basin extends 8.6 miles upstream to

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the Watertown Dam. Water level of the Basin is maintained within targeted elevations through dam operation. Water levels in the harbor vary with the tides. When the water level is lower in the harbor than in the Basin, the two submerged flood control sluiceways are used to drain Basin waters (gravity drainage). When the water level is higher in the harbor than in the Basin, one or more flood control pumps may be used to drain Basin waters.

The purpose of this study is to provide technical assistance to the non-federal sponsor DCR in the assessment of the adequacy of the New Charles River Dam to meet changing climate conditions. This technical assistance is in support of the Commonwealth's water resources management planning associated with changing hydrologic conditions, climate change, long-term sustainability, and resilience. The first phase, a scoping study includes gathering background information on the Charles River Dam and identifying and selecting, tasks, methodologies and models to be used for the adequacy assessment. The Phase 1 scoping study was completed in summer 2021. Phase 2 includes consideration of sea level rise and coastal storms, current and future rainfall and runoff conditions in the watershed, and evaluation of dam/reservoir operations under these changing conditions. Phase 2 started in September 2022.

For more information on the USACE Planning Assistance to States program, visit the District website at <https://www.nae.usace.army.mil/Missions/Public-Services/Planning-Assistance-to-States/>.

Flood Plain Management Services/Silver Jackets

Under the authority provided by Section 206 of the 1960 Flood Control Act (PL 86-645), as amended, the Army Corps of Engineers can provide the full range of technical services and planning guidance that is needed to support effective flood plain management. General technical assistance efforts under this program include determining: site-specific data on obstructions to flood flows, flood formation, and timing; flood depths, stages or floodwater velocities; the extent, duration, and frequency of flooding; information on natural and cultural flood plain resources; and flood loss potentials before and after the use of flood plain management measures. Types of studies that have been conducted under the Flood Plain Management Services (FPMS) program include: flood plain delineation/hazard, dam failure analyses, hurricane evacuation, flood warning, floodway, flood damage reduction, stormwater management, flood proofing, and inventories of flood prone structures.

The Massachusetts **Silver Jackets** team has been funded for the fiscal year 2022 FPMS nonstructural interagency projects for assessment of nonstructural floodproofing options for historical buildings on Cape Cod. The field work has been completed and the project is currently in the report phase. The FY21 High Water Mark Sign project has been completed with the unveiling of signage at McConnell Park in the Savin Hill neighborhood. More signs will be installed after completion of resiliency upgrades to other city parks.

Defense Environmental Restoration Program/Formerly Used Defense Sites

This Congressionally directed effort (PL 98-212) provides for expanded work in environmental restoration. It emphasizes the identification, investigation and prompt cleanup of hazardous and toxic waste; unexploded ordnance (UXO); and unsafe buildings, structures and debris at current and former military facilities. A total of 325 formerly used defense sites (FUDS) have been authorized in Massachusetts. There is the potential for several other properties to be eligible for the program. Site

and project eligibility will be scheduled in the future when funding priorities and resource availability allow. Of the 119 sites where work was needed, the following efforts are underway:

Camp Wellfleet (9th CD) – The District continues to work with the National Park Service (NPS) to promote a program for the identification of ordnance related items as part of the institutional controls for the site. The District awarded a contract in July 2016 to conduct an investigation of the former Camp Wellfleet FUDS site for residual munitions constituents (MC) and/or munitions of explosive concern (MEC) related to the use of military munitions. Remedial investigation was conducted during the 2018 field season. The final Remedial Investigation (RI) report documenting the results of the investigation was completed in April 2019. The RI concluded there were no unacceptable MC risks. The feasibility study (FS) report to evaluate remedial alternatives to address MEC was completed in June 2021. The purpose of the FS was to develop alternatives to mitigate potential unacceptable explosive risks that may remain. It is based on information and conclusions documented in the RI. The alternative recommended for implementation in the final FS was Land Use Controls (LUC). The Proposed Plan was prepared based on FS recommended alternative. After the Proposed Plan was prepared, the NPS advised of plans to demolish a facility within the site and construct new. USACE determined the path forward was to separate the area to be disturbed from the rest of the site. The DD for the current site less the area to be disturbed is underway. A separate FS, PP and DD will be prepared for the area to be disturbed considering the “new” reasonably anticipated future use.

Hingham Former Burning Ground (Wompatuck State Park, 8th CD) – The project consists of investigating military munitions and munitions constituents where the Navy formerly burned/detonated explosive materials. Contracts were awarded March 31 and June 30, 2008, and Aug. 27 and Dec. 1, 2009, to conduct additional investigations at the site to fill data gaps. Field work was completed in October 2009. Groundwater, soil and sediment sampling were conducted as well as subsurface soil sampling using multi-increment sampling. Samples were collected at depths of 1-6 feet below ground surface for munitions constituents. Subsurface soil sampling also was conducted in a specific area to characterize diesel contamination and to determine the areal extent of soil that potentially needs to be excavated. Excavation of the diesel contaminated soil has been put on hold pending evaluation of sampling results which will determine whether excavation is required. A data gaps analysis was performed in 2012, with additional field work to install nine additional wells and perform additional sampling (groundwater, surface water, surface and subsurface soil and sediment sampling and geophysical work) was conducted in 2013, 2014 and 2015. All additional data collected was incorporated into the draft final RI/FS report in 2016. The draft final RI/FS report is being revised and the risk assessments updated to comply with CERCLA. Both the proposed plan and decision document will be updated accordingly as well.

Hingham Naval Ammunition Depot (8th CD) – USACE awarded a contract in July 2016 to conduct an investigation of the former Hingham Naval Ammunition Depot FUDS site for residual munitions constituents (MC) and/or munitions of explosive concern (MEC) related to the former depot operations. The objective of the project is to conduct a sufficient investigation and if warranted remediation to demonstrate that residual contamination at the site does not pose an unacceptable risk to human health or the environment. A signed decision document will be prepared at the conclusion of the project to close out the site.

Intrusive investigations were completed during the 2018 field season. No MEC was discovered. Site specific and background sampling was completed in 2019. Based upon Remedial Investigation Report (RI) findings, all six sites are recommended for no further action. Results of the remedial investigation were documented in six separate site-specific RIs. MassDEP approved the final RIs for all six sites. A

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feasibility study report is not required. The proposed plan was prepared and presented to the public in March 2021. The Decision Document was signed Nov. 23, 2021.

Lonczak Drive Downgradient Area (LDDA) Site at the Former Westover Air Force Base, Chicopee (1st CD) – Studies and remediation of the site found that light non-aqueous phase liquid (LNAPL) present at the site was not mobile and there was no risk to human health or the environment from its presence. The District’s contractor completed and submitted to the MassDEP a combined Massachusetts Contingency Plan (MCP)-compliant release abatement measure (RAM) completion report and response action outcome (RAO) statement in the fall of 2011. In the summer of 2012, MassDEP responded that approval of site closure would require the following items: 1) a feasibility study be completed at the site to demonstrate that a permanent solution is not feasible; 2) an activity and use limitation (AUL) be completed for the site; and 3) additional characterization work be completed to define the extent of impact; subsequently, a new firm (FS Engineers) was retained to address MassDEP’s three comments.

Between August and October 2018, FS Engineers conducted a supplemental investigation to conclusively define the extent of the LNAPL impact, including conducting soil borings, analyzing soil samples, and installing groundwater wells. A Technical Memorandum for Supplemental “Nature and Extent Characterization” was finalized in August 2020, presenting the results of this recent quarterly sampling and summarizing the findings of remedial investigations performed to date.

A new contract to continue and complete the work initiated by FS Engineers was established with a new consulting firm, CEI-PARS, in March 2021. The Licensed Site Professional (LSP) of Record has determined that additional field work is warranted in 2022 to achieve site closure under the MCP, including transmissivity testing, soil borings, monitoring well installation, and soil and groundwater sampling. The additional work associated with the preparation of site closure documentation will continue in 2022 and 2023, with an objective of moving the project into long-term monitoring or closure in 2023. Documentation is anticipated to include a MCP-compliant combined Phase II Site Assessment, Phase III Evaluation, and Permanent Solution Statement, in addition to an Activity and Use Limitation (AUL).

Martha’s Vineyard Projects (9th CD) – (Cape Poge Little Neck, South Beach Moving Target Machine Gun Range, and Tisbury Great Pond): A Time Critical Removal Action (TCRA) was completed on the Cape Poge Little Neck project and the South Beach Moving Target Machine Gun Range project from April to September 2009. The TCRA resulted in the removal of many inert ordnance items. A site investigation was performed at the Tisbury Great Pond project site under the Military Munitions Response program. All three sites required additional investigation to delineate the extent of the munitions. Due to the close proximity of these sites, coupled with the fact that they are all ordnance related projects, all three projects are currently being executed simultaneously by the District. Field work started in November 2010 and ended in March 2012. An environmental security technology certification program (ESTCP) demonstration project using innovative geophysical technology to perform geophysical surveys offshore to locate munitions was conducted in June 2010 at South Beach by Tetra Tech. The data from this demonstration project have been incorporated into the overall RI/FS. The final RI and FS reports have been reviewed/approved for Cape Poge, Tisbury Great Pond and South Beach. Public meetings for all three projects were held in 2015. The final decision documents for Cape Poge, South Beach and Tisbury Great Pond have been completed and are available for review at <https://www.nae.usace.army.mil/Missions/Projects-Topics/Marthas-Vineyard-RIFS/>.

Nantucket, Former Tom Nevers Facility (9th CD) – A contract was awarded in September 2011 to conduct a remedial investigation on the former Tom Nevers facility, an ordnance project under the

Military Munitions Response program. The first technical project planning (TPP) meeting was held on Nantucket on Oct. 27, 2011. Field work was conducted from March through July 2012. Follow on TPP meetings were held in 2013 and 2014. The final RI report has been reviewed/approved along with the proposed plan (PP). The final PP was released to the general public for comment through Dec. 4, 2014. Long term monitoring is the chosen remedy. A scope of work is being developed for the Nantucket Beach Long Term Monitoring program. Signs also have been installed at designated beach access locations. The final decision document and other reports are available for review at <https://www.nae.usace.army.mil/Missions/Projects-Topics/Nantucket-Beach/>.

Nantucket Memorial Airport Area Formerly Used Defense Site (FUDS) (9th CD) – A contract was awarded in September 2014 to conduct a Remedial Investigation on the former Nantucket Memorial Airport, an ordnance project under the Military Munitions Response program. The first site visit and technical project planning meeting were held on Nantucket on Sept. 24, 2014. The work was completed in October 2015. The contractor developed the RI report which can be viewed at <https://www.nae.usace.army.mil/Missions/Projects-Topics/Nantucket-Memorial-Airport/>.

Osborne Pond (9th CD) – The District completed field investigations in the pond in July 2008. The final remedial investigation report was issued in March 2010. The feasibility study was issued in January 2011. The proposed plan was released for public review and comment on Sept. 6, 2013, and a public meeting was held Sept. 26, 2013, in Bourne. The plan is available for view on the District website at <https://www.nae.usace.army.mil/Missions/Projects-Topics/Osborne-Pond/>. A public meeting was held May 13, 2015 in Bourne to discuss implementing the proposed plan. The site-specific final report (SSFR) was approved by EPA and MassDEP in June 2016, a public meeting and safety awareness training (UXO education) was conducted on July 12, 2016, at Joint Base Cape Cod (JBCC), signage was installed in July 2016 and long-term monitoring is on-going. The first five-year review was completed May 2020. The review confirmed selected remedy (subsurface munitions clearance and public education) is still protective. In accordance with the Final Community Relations Plan, annual public education review and safety inspections were conducted in September 2020 and 2021, and August 2022. The 2023 annual inspection will be conducted later this year.

POL Terminal at the Former Westover Air Force Base, Chicopee (1st CD) – A Final Phase I/II Comprehensive Site Assessment for the Westover Bulk Petroleum, Oil, and Lubricant (POL) Terminal and Salvage Yard site was sent to MassDEP in December 2007. Follow-up field efforts took place in the fall of 2008 to address data gaps resulting in a supplemental remedial investigation/ feasibility study being submitted to MassDEP in the summer of 2010, proposing the use of enhanced fluid recovery (EFR) to reduce the amount of LNAPL at the site. Four consecutive quarterly groundwater gauging events were then conducted in which no LNAPL was observed.

In 2015, TIE and CDM Smith were retained by USACE to continue investigation work under the MCP. Additional field characterization work was conducted in autumn/early winter of 2016 and quarterly groundwater sampling events were conducted in 2017. As a result of the extreme regional drought conditions in the northeast in 2017, the lower water table resulted in the appearance of LNAPL in locations previously characterized as clean, necessitating another round of characterization to define the nature and extent of petroleum contamination. This work was awarded in spring 2018, carried out in summer 2018, and included investigative work at off-site (privately owned) real estate parcels. The field work fully characterized the extent of free product petroleum contamination, including the delineation of a small plume extending south of the POL site, so that an MCP-compliant closure report may be submitted leading to an approved RAO statement. The extent of dissolved phase contamination extended past the furthest down gradient monitoring well and required limited additional field work to fully delineate the down gradient extent.

Eight additional monitoring wells were installed in 2019, followed by two rounds of groundwater sampling. In July 2021, the Final Revised Phase II Comprehensive Site Assessment Report was submitted to MassDEP.

Additional field work was conducted in May and September 2021 to collect data related to Natural Source Zone Depletion (NSZD) to determine if the LNAPL is attenuating at an acceptable rate with no additional remediation efforts. Data collected will be used to support the Phase III Feasibility Study and Permanent Solution Statement (PSS). The MCP-compliant Phase III Feasibility Study will be prepared and submitted to MassDEP in late 2022. The PSS is anticipated to be finalized in 2023.

In the past number of years, dating back to the program's start in the mid-1980s, construction contracts have been completed at the following locations:

First District

Westover Light Annex #2, **Granby**
Springfield Armory-Rail, **Springfield**
Chapman Valve Exp, **Springfield**
Westover AFB, **Chicopee and Ludlow**

Second District

Hadley Nike Site
Westover Light Annex #3, **Amherst**
New Salem Gap Filler Annex, **New Salem**
Westover Remote Site, **Shutesbury**

Fourth District

Needham Nike Site
Nike Site PR-19, **Rehoboth**
Swansea Nike Site

Fifth District

Lincoln Nike Site
Fort Strong, **Winthrop**

Sixth District

Beverly Nike Site
Nike Site BO-84, **Burlington**
Danvers/Topsfield, Nike Site
Fort Ruckman, **Nahant**
Nike Site BO-17, **Nahant**
Ipswich Data Collection Lab Annex, **Ipswich**
Nike Site BO-03, **Reading/Wakefield**

Eighth District

East Boston Naval Fuel Annex
Charlestown Navy Yard
Charlestown Navy Yard, Tank Removal
Fort Standish, **Boston**
Fort Warren, **Boston**

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South Boston Naval Annex
Hingham School Property, **Hingham**
Fort Andrews, **Hull**
Hingham Army Reserve Training Center
Hingham Naval Ammunition Depot & Annex
Hingham Nike Site
Hingham/Cohasset Naval Ammunition Depot
Nike Site BO-37, **Quincy**
Nike Site BO-40, **Quincy**
Fort Revere, **Hull**
Point Allerton Military Reservation, **Hull**
Point Allerton Surface Craft Detector Site, **Hull**
Squantum Electronics Research Center, **Quincy**
Strawberry Point Fire Control Station, **Scituate**

Ninth District

Camp Candoit, **Cotuit**
Martha's Vineyard Airport
Martha's Vineyard South Beach Moving Target Machine Gun Range and Cape Poge
Little Neck
Camp Wellfleet
Mishaum Point Electronics Research Annex, **Dartmouth**
Holly Hill Radar Station, **Marshfield**
Nantucket NAVFAC, Tom Nevers Naval Base
Camp Edwards, **Sandwich**
Campbell School, **Bourne**

Work for the U.S. Environmental Protection Agency

The District provides support to the U.S. Environmental Protection Agency (EPA) Region I (New England) Superfund program. This includes responsibility for site investigations, design work, construction execution, and some operation and maintenance at federal lead sites. In addition, the District provides other technical assistance (five-year reviews, real estate support, etc.) at removal and national priority list sites being addressed by EPA Region 1.

Superfund Assistance

NEW BEDFORD (9th CD) – The District began supporting the EPA at this site in the mid-1980s. Subtidal dredging to remove PCB contaminated sediment was completed in early 2020. Demobilization and decontamination of the water treatment plant used for treatment of dredged material is complete and the facility was turned over to the City of New Bedford in December of 2020. Remediation and restoration of contaminated wetland areas is continuing with an estimated completion date of spring 2024. At the Sawyer Street facility, material in cell 1 will be removed and disposed of off-site in 2023-2024 and the Pilot Confined Disposal Facility will be capped in 2024-2025. Final demobilization is planned by December 2025, when the site will be turned over to the City of New Bedford for redevelopment.

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Support to the Military

JOINT BASE CAPE COD (9th CD) – Support to the Impact Area Groundwater Study Program - In 2000, the National Guard Bureau (NGB) announced its decision to use the District as supervisory contractor for the Impact Area Groundwater Study program (IAGWSP). Investigations and remedial actions are being conducted in accordance with administrative orders issued by EPA under the Safe Drinking Water Act. The work is estimated to cost \$300-\$350 million, take 30 years and involves groundwater, soil and UXO investigations and remedial actions and the operation and maintenance of treatment facilities. Avoidance and/or removal of ordnance is incidental to all field work conducted at JBCC. Ongoing work consists of site investigations, report preparation, operation and maintenance of the groundwater treatment facilities and source/UXO removal actions.

The following significant actions have been completed.

- **2004-2005:** A significant soil cleanup at the Southeast Ranges and Demolition Area 1 was completed in late 2004. Soil was treated on site in a mobile thermal treatment unit. Contaminated soil from other sites also was excavated and treated at this time. All soil was treated by January 2005 and the treatment unit was demobilized in April 2005.
- **2004:** Construction of a temporary treatment system to address the Demo-1 plume. The interim pump and treat system treated groundwater through June 2007. The permanent Demo-1 groundwater treatment facility came on line in late June 2007. The base boundary went on line in June 2011. The leading-edge Demo-1 Offsite Treatment Facility was completed in July 2016.
- **2004:** Connected three private residences in Bourne to town water. Contamination was a result of past military training at JBCC.
- **2005:** The construction of two groundwater treatment facilities in the Southeast Ranges of JBCC; the J3 facility, an upgrade/retrofit of an existing groundwater treatment facility, and the construction of a facility at the J2 North Range. Both have been operational since July 2006.
- **2007:** Construction of a groundwater treatment facility at the J1S Range was completed in October 2007. An additional extraction well and piping off-site was installed in December 2012.
- **2007:** Construction of a groundwater treatment facility at the J2 East, was completed in September 2008.
- **2013:** Construction of the J1 Range North Treatment was completed in December 2013.
- **2013:** Construction of the Central Impact Area Groundwater Treatment Facility was completed in January 2014.
- **2015:** Construction of a Leading-Edge Central Impact Area Groundwater Treatment Facility was completed in April 2016.
- **2015:** Construction of the Demolition Area 1 Off-Site Leading Edge Groundwater Treatment Plant was completed in June 2016.

The following OUs have decision documents in place:

- Demolition Area 1 GW OU 2006
- Demolition Area I Source Area 2009
- BA-4 Disposal Area 2009
- Demolition Area 2, Northwest Corner and Western Boundary 2010
- Former A Range and Gun and Mortar Positions 2012
- L Range 2010
- J1 Range 2011
- Central Impact Area 2012
- J2 Range 2013
- J3 Range 2015
- Small Arms Ranges 2015

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- Training Areas 2018

The following OUs have demonstration of compliance reports in place:

- Western Boundary 2016
- Former A Range 2016

The program partnered with the Air Force Research Laboratory (AFRL) to conduct a robotics technology demonstration and with the Environmental Security Technology certification program (ESTCP) to conduct a classification technology demonstration to evaluate the ability of geophysical tools to discriminate between potential UXO items and frag. The ESTCP demonstration led to the partnering with USACEs' Baltimore District and the Huntsville Center for continued advanced geophysical classification (AGC) at JBCC using the MetalMapper. MetalMapper AGC was self-performed by the Army Corps from 2014-2017. In 2017, a contract was issued by the District to Parsons to continue MetalMapper under the DoD Advanced Geophysical Classification Accreditation Program (DAGCAP). A follow-on AGC contract was awarded in September 2020 to IE-Weston. Field investigation for this contract commenced in April 2021. Weston has been awarded 40 acres with a potential for 50 total acres. To date, approximately 118 acres have been investigated using MetalMapper technology. Use of the MetalMapper technology has reduced the number of anomalies intrusively investigated (dug) by approximately 70 percent.

HANSCOM AIR FORCE BASE (6th CD) – The construction contract for the **MIT Lincoln Laboratory Compound Semiconductor Laboratory-Microelectronics Integration Facility (CSL-MIF)** was awarded Jan. 27, 2022. The contract award totaled \$276.6 million and construction is expected to be complete in approximately three years.

The design-build construction contract for the **Vandenberg (Sartain) Gate Complex** was awarded Feb. 11, 2022. The contract award amount was \$16.1 million. Construction activities are ongoing, including new roadways, parking areas, visitor center, and all necessary security features associated with the access control point. Construction is expected to be complete in February 2024.

U.S. ARMY SOLDIER SYSTEMS CENTER, NATICK (5th CD) – A contract was awarded in FY 2020 for construction of a new \$35 million Soldier and Squad Performance Research Institute (S2PRINT) facility at Soldier Systems Center, Natick. A groundbreaking ceremony was held on Nov. 12, 2020. Construction of the facility includes the 3-story laboratory building, including numerous individual labs, soldier monitoring area(s), office space, conference rooms, and supporting electrical, mechanical, and administrative space, as well as site development/landscaping, utilities, parking and demolition. Currently, the building envelope is largely complete, construction is ongoing throughout the interior of the facility, and finish work has begun in some areas. Construction completion is projected for August 2023.

Base Realignment and Closure (BRAC)

FORT DEVENS, AYER (3rd CD) – Fort Devens was selected for closure under the Department of Defense BRAC of 1990 (Public Law 101-50). The fort is located in the towns of Ayer and Shirley (Middlesex County), and Harvard and Lancaster (Worcester County), approximately 35 miles northwest of Boston. In 1991, the District began implementing BRAC 91 related environmental restoration work at Fort Devens (Devens). Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, otherwise known as CERCLA or Superfund, Fort Devens was placed on the National Priorities List (NPL) on Dec. 21, 1989, because of environmental contamination at several locations.

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CERCLA provides a consistent, science-based approach across the nation for cleanup and includes environmental regulators and public participation. DoD follows the CERCLA process to fully investigate a release and determine the appropriate cleanup actions based on risk.

The contamination at Devens is associated with historic underground storage tanks/fuel depots and contaminated soils containing petroleum products and chemicals. Since its placement on the NPL, the Army BRAC Environmental Restoration Program has cleaned up numerous contaminated sites and transferred 4,000 acres of Former Fort Devens for property reuse and redevelopment. The remaining cleanup sites include ongoing groundwater remediation at the former Moore Army Airfield and the former Shepley's Hill Landfill in addition to the long-term groundwater monitoring at four historic petroleum contaminated sites.

In 2016, the Army initiated the CERCLA process to evaluate the emerging contaminants known as per- and polyfluoroalkyl substances or PFAS, which were detected in groundwater and in the municipal water supply wells for Devens and the Town of Ayer. The remedial investigation and cleanup of Army releases of PFAS under CERCLA at Former Fort Devens is the focus of information available on this web site. Following CERCLA's consistent, science-based approach, Army uses toxicity information from the EPA when assessing risk to human health under CERCLA. Under the EPA's longstanding risk assessment and hierarchy of toxicity value policies, the EPA Health Advisory (HA) toxicity information is used to determine a site-specific risk-based cleanup level. The Army uses clarifying technical guidance to ensure a consistent approach to investigating PFAS and using EPA's toxicity values for perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA), and perfluorobutanesulfonic acid (PFBS) within the DoD cleanup program.

This work continues. Updated information on the Former Fort Devens Environmental Cleanup Website can be found on the website at <https://www.nae.usace.army.mil/Missions/Projects-Topics/Former-Fort-Devens-Environmental-Cleanup/Environmental-Cleanup/>.

SUDBURY TRAINING ANNEX (5th CD) – The District completed environmental cleanup of the site in September 2000 and EPA deleted the site from the NPL on Jan. 28, 2002. The District conducts annual field sampling and inspections as part of the Army's long-term responsibilities at this site. Sampling and analyses of the groundwater from the monitoring wells began in June 1997 and is presently completed annually in the fall. The District also completes spring and fall inspections of the landfill cap to monitor its protectiveness. The annual reports prepared by the District capture the annual results of all groundwater monitoring results and site inspections. In 2016, the Army initiated the CERCLA process to evaluate the emerging contaminants known as per- and polyfluoroalkyl substances or PFAS at the Former Sudbury Training Annex. The work is ongoing at two sites.

Interagency and International Support

SUPPORT TO THE U.S. DEPARTMENT OF VETERANS AFFAIRS – The District has teamed up with a sister federal agency in an effort to improve the care Soldiers receive at military hospitals. The U.S. Department of Veterans Affairs (VA) and USACE entered into an interagency agreement in 2001 for the goods and services the USACE may provide to the VA when needed. These include project management, design services, construction management services, environmental services, preliminary technical investigations, surveying, and historical presentation compliance at VA facilities. In 2008, the VA started exercising the agreement with the District is now supporting the VA with services at several VA facilities in New England.

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In Massachusetts, the District completed in 2012 an exterior masonry rehabilitation to Building #2 at the Edith Nourse Rogers Memorial Veterans Hospital in Bedford; renovation of Wards 78F, 78G and Ward 2C in 2013-2014; and repairs to the HVAC system in the renovated Wards 78F & G in 2016. The District completed a \$3.4 million renovation in 2014 of the Community Based Outpatient Clinic at the VA Medical Center in New Bedford; and completed design and construction projects in Brockton, West Roxbury, Jamaica Plain and Northampton in 2013.

SUPPORT TO THE FOOD AND DRUG ADMINISTRATION (FDA) – The District has teamed up with a sister federal agency in an effort to provide a new facility to perform analyses in support of medical device program and conduct radionuclide, chemical, and microbiological analyses for the Winchester Engineering and Analytical Center (WEAC). The FDA and USACE entered into an interagency agreement in 2016 for a design-build (DB) project to construct a new approximately 75,000-square-foot facility. In addition to preparing the request for proposal (RFP) package for the requirements of the new building, USACE performed an Environmental Assessment (EA) and the resultant Finding of No Significant Impact (FONSI) was executed in September 2017. The RFP for the DB project was issued in December 2016. A contract was awarded on July 31, 2018. Construction completion of the \$54.1 million project is scheduled for Aug. 21, 2021.

Regulatory Activities

Department of the Army permits are required from USACE under Section 10 of the Rivers and Harbors Act of 1899, Section 404 of the Clean Water Act, and Section 103 of the Marine Protection, Research and Sanctuaries Act. The District reviews permit applications for work affecting navigable waters under its Section 10 authority and the discharge of fill material into all waters, including inland wetlands, under Section 404. A list of Monthly General and Individual Permit Authorizations is available on the District website at <https://www.nae.usace.army.mil/Missions/Regulatory/Permits-Issued/>. Relevant environmental documents are available upon written request. To request information on District jurisdiction and whether a permit is required for work, contact the Regulatory Division at (978) 318-8338 or (978) 318-8335; email cenae-r@usace.army.mil; or visit <https://www.nae.usace.army.mil/Missions/Regulatory/>.

GENERAL PERMITS – The District has comprehensive Regional General Permits (RGPs) in place for each of the six New England states that authorize work with no more than minimal adverse effect on the aquatic environment. Up to 98 percent of all permits issued in New England are RGPs. Work eligible under the RGPs is generally approved in less than 60 days. The District revised the statewide Massachusetts General Permits in 2018. The Massachusetts GPs are available for viewing and download on the District website at <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/>.

THIRD PARTY MITIGATION – In April 2008, USACE and the EPA issued regulations (33 CFR Part 332 Compensatory Mitigation for Losses of Aquatic Resources; Final Rule) on mitigation which became effective in June 2008. These regulations established a “soft” preferential order for mitigation types with mitigation banking and in-lieu fee (ILF) programs preferred over permittee-responsible mitigation. This is the reverse of previous guidance, now obsolete. These new regulations have provided impetus to potential sponsors of banks and ILF programs.

MA ILF Project Summary for 2020-2021

The Massachusetts Department of Fish and Game (DFG), the sponsor for the Massachusetts In-Lieu Fee program, sent out a request for proposals in the summer of 2020 and invited six project proponents to submit full proposals. Ultimately, the following projects were funded in early 2021: 1) The Plymouth Cranberry Bog project that will permanently protect 228+/- acres of aquatic resources and upland buffers from development impacts. This project also has the potential for future wetland restoration of inactive cranberry bogs located on-site. 2) The Nantucket Oyster Reef Installation project that involves 0.17 acres of direct intertidal zone enhancement, 1.1 acres of direct salt marsh enhancement, and 14.6 acres of indirectly enhanced salt marsh. 3) The Mashpee Cranberry Bog Restoration project that will restore 6.5 acres of inactive cranberry bogs to self-sustaining freshwater wetlands. 4) The Barre Land Preservation project that will permanently protect 40 acres of land containing wetlands and upland buffer that drains to the Ware River Watershed Protection Area and the Burnshirt River. 5) The Plum Brook Culvert Replacement project that will replace two undersized 36-inch round corrugated metal culverts with a box culvert that meets Massachusetts Stream Crossing Standards. The project will also include bank and wetland restoration in the vicinity of the new box culvert. The goal of this work is to restore stream continuity and health to enhance aquatic and terrestrial wildlife passage in the Plum Brook.

In the spring 2021, four more project proponents submitted proposals to the Massachusetts DFG for funding. Ultimately, two projects were approved: 1) The Ipswich River Watershed Association will be removing two hydraulic barriers in the Pye Brook system in order to restore fish passage for species that include river herring and eastern brook trout. First, a concrete weir in Pye Brook will be removed. Secondly, an undersized culvert at the outlet of Hood Pond will be removed and replaced with a bridge that meets the Massachusetts Stream Crossing Standards. The project will incorporate a nature-based hydrologic feature to ensure that the pond continues to support the existing wetlands associated with it. 2) The Nantucket Land Council will restore two ½-acre plots of eelgrass in Nantucket Harbor using seeding and hand-transplanting techniques.

Operating Flood Risk Management Projects & Recreation / Natural Resource Management

The District provides flood risk management project benefits and, in cooperation with state agencies, provides diverse quality outdoor recreational opportunity at the 11 flood risk management reservoirs it has constructed in the Bay State, the Cape Cod Canal, and the Charles River Natural Valley Storage Area. Information on each is provided below. For information on USACE recreation in New England, visit www.nae.usace.army.mil and select "recreation." Due to COVID-19 some of the facilities listed below might have closures or restrictions still in place. Please check the dam's web page, or call the project office, for status updates.

BARRE FALLS DAM (2nd CD), on the Ware River in Barre, was completed in 1958 at a cost of \$2 million. The 885-foot-long, 62-foot-high dam with three dikes totaling 3,215 feet can store 7.8 billion gallons of water. Since being constructed it has prevented \$54.9 million in flood damages. Activities available include canoeing, picnicking, picnic shelter rental, volleyball, 18-hole disc golf course, fishing, geocaching, hiking, bike riding and horseback riding (in restricted areas), wildlife observation, scenic viewing and cross-country skiing in season from sunrise to sunset. Hunting is permitted in accordance with the Massachusetts Division of Fisheries and Wildlife (MassWildlife) rules and regulations. Activities that are coordinated with the Massachusetts Department of Conservation and Recreation (MassDCR) include rules, regulations, and designated trails for the 26,000-acre Upper Ware River Watershed. For

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scheduling events, call (978) 318-8905. To arrange a group tour, contact Park Manager Daniel Lapolla (Daniel.G.Lapolla@usace.army.mil) or Park Ranger Brianna Green (brianna.j.green@usace.army.mil).

For more information, visit the Barre Falls Dam website at <https://www.nae.usace.army.mil/Missions/Recreation/Barre-Falls-Dam/>.

BIRCH HILL DAM (2nd CD) is situated on the Millers River in Royalston. Completed in 1942 at a cost of \$4.8 million, the 1,400-foot-long, 56-foot-high dam can store 16.2 billion gallons of water. To date, damages amounting to more than \$80.3 million have been prevented. Popular activities onsite include walking, biking, fishing, paddling and picnicking. Most of the 4,400-acre property is leased to the state for recreation, and fish and wildlife purposes. A baseball field located in Baldwinville is operated by the Narragansett Area Youth Baseball. About 25 miles of snowmobile trails are maintained by the Coldbrook Snowmobile Club. The Lake Dennison Recreational Area, managed by the MassDCR, provides camping, swimming, picnicking, boating and fishing. MassWildlife manages much of the remaining reservoir as part of the Birch Hill wildlife management area. Popular activities include hiking, hunting, fishing, mountain biking, snowmobiling, and cross country skiing. There is a fish consumption advisory on the Millers and Otter Rivers due to polychlorinated biphenyls (PCBs) from past paper mill pollution. The Birch Hill Dam and reservoir area attract more than 185,000 visitors annually. For details, call (978) 318-8224 or visit <https://www.nae.usace.army.mil/Missions/Recreation/Birch-Hill-Dam/>.

The Lake Dennison Campground is operated under a lease by the MassDCR. The campground offers 150 drive-in campsites, restrooms with showers and drinking water. For details, call (978) 939-8962 or visit <https://www.mass.gov/locations/lake-dennison-recreation-area>.

BUFFUMVILLE LAKE (1st CD) on the Little River in Charlton was completed in 1958 at a cost of \$3 million. The 11,300 acre-feet of storage at Buffumville is equal to 5.2 billion gallons of water and is impounded by a 3,255-foot-long, 57.5-foot-high earthen dam. Buffumville Dam has prevented more than \$133.7 million in cumulative damages, through December 2018. Picnicking, swimming, boating, fishing, hunting, a 27-hole disc golf course, volleyball, horseshoes, two rental shelters and sight-seeing are just some of the activities visitors can enjoy at Buffumville Lake. A replacement generator and electrical upgrades contract for the project has been completed for a total cost of \$470,147. Construction is ongoing at Buffumville Lake Park to improve ADA parking and restroom access. The work is scheduled to be completed by May 31, 2023. The contract will also improve emergency vehicle access to the beach at a cost of \$530,732. In addition to the parking improvements, the staff is working to make necessary repairs to the failing water system and well head at the park. Looking forward, Buffumville received \$565,000 in federal funding to replace a rapidly deteriorating tool shed with a new storage garage. Repairs to the concrete spillway apron was also funded in a special work package totaling \$200,000. Volunteer information and interpretive events details can be found at <https://www.nae.usace.army.mil/Missions/Recreation/Buffumville-Lake/> or call (508) 248-5697 for more information.

CAPE COD CANAL (9th CD) – The Cape Cod Canal, one of the widest sea-level canals in the world, extends 17.4 miles across the narrow neck that joins Cape Cod to the mainland. The District operates and maintains the Canal from a field office in Buzzards Bay, about 50 miles south of Boston. The canal, with a 32-foot-deep by 700-foot-wide approach channel, saves commercial and recreational vessels 65-150 miles from the route around Cape Cod and the Nantucket shoals, where shoals and treacherous currents have made navigation hazardous for centuries. The toll-free waterway, with two mooring basins, is open for passage to all vessels that are properly equipped and seaworthy. Private interests sold the Canal to the U.S. government in 1921 for \$11.5 million (title obtained in 1928). Responsibility for operating and maintaining the Canal was assigned to the Army Corps, which has maintained and

improved it since then. In 1933, three bridges were authorized and constructed over the Canal – the Sagamore and Bourne highway bridges and the Railroad Bridge at Buzzards Bay. The District operates and maintains all three bridges. More than three million visitors annually enjoy the Canal and its adjacent lands for diverse outdoor activities, including interpretive programs run by Army Corps rangers, and the Canal Visitor Center. Service roads are popular for biking, hiking, roller blading and walking. The Marine Traffic Control Center monitors and controls vessels transiting the canal and monitors vessels in Buzzards Bay in accordance with a memorandum of agreement with the Coast Guard. For details, call (978) 318-8816 or the Visitor Center at (508) 833-9678, or visit <https://www.nae.usace.army.mil/Missions/Recreation/Cape-Cod-Canal/>.

CHARLES RIVER NATURAL VALLEY STORAGE AREA (CRNVS) (2nd, 4th, 5th & 8th CDs) was authorized by Congress in March 1974. Federal funds of \$8.3 million were used to purchase 3,210 acres of fee land and 4,891 acres of restrictive easement. The CRNVS is located in 16 towns (Bellingham, Dedham, Dover, Franklin, Holliston, Medfield, Medway, Millis, Natick, Needham, Newton, Norfolk, Sherborn, Walpole, West Roxbury and Wrentham) and lies within three counties. The CRNVS area acts as a flood control project by using the natural flood attenuation characteristics of the over 8,000 acres of wetlands purchased. The project attracts over 60,000 visitors a year. Visitors can bike, boat, fish, hike, hunt, view wildlife and partake in other passive recreational uses. The field office for the CRNVS area is located at the West Hill Dam project office in Uxbridge. Staff patrol, investigate and resolve real estate inquiries, boundary inquiries, and requests for leases, licenses and easements. Staff provide the town and other agencies with assistance in the CRNVS area. Current activities include property boundary marking and clearing performed under contract with USACE. For details, call (508) 278-2511 or visit <https://www.nae.usace.army.mil/Missions/Civil-Works/Flood-Risk-Management/Massachusetts/Charles-River-NVS/>.

CONANT BROOK DAM (1st CD), on the brook of the same name in Monson, can store 1.2 billion gallons of water behind the 1,050-foot-long, 85-foot-high impoundment. Completed in 1966 at a cost of \$3 million, the project annually attracts about 20,000 visitors to its scenic trails for hiking, horseback riding, cross-country skiing and for its fine trout fishing. Since placed in operation, Conant Brook has prevented damages of more than \$3.3 million. For details, call (508) 347-3705 or visit <https://www.nae.usace.army.mil/Missions/Recreation/Conant-Brook-Dam/>.

EAST BRIMFIELD LAKE (1st CD) on the Quinebaug River in Sturbridge was constructed at a cost of \$7.1 million. The 520-foot-long, 55-foot-high dam can impound a 29,900-acre-foot reservoir, which is equivalent to 9.7 billion gallons of water. Since placed in operation in 1960, it has prevented damages of \$132.2 million. The reservoir area offers recreational opportunities, including swimming, picnicking, fishing, hunting, canoeing, boating and nature study and attracts more than 124,000 visitors annually. Chemical treatment of 60 acres of lake waters for reduction of invasive plant populations will occur in late May 2023. This should improve the recreational experience for all users. A second major contract is underway which entails removal and replacement of a non-functioning restroom at Lake Siog. This should be completed by 2024. Also underway is the first phase of bridge installation over the Quinebaug River on the Grand Trunk Trail. This is a shared effort between USACE and the Town of Brimfield, Massachusetts. A Challenge Partnership Agreement, valued at \$839,000, was signed by the USACE District commander and the Brimfield Board of Selectman Chairman. For more information, call (508) 347-3705 or visit <https://www.nae.usace.army.mil/Missions/Recreation/East-Brimfield-Lake/>.

HODGES VILLAGE DAM (2nd CD), across the French River in Oxford, was constructed at a cost of \$4.5 million. The 2,140-foot-long, 55-foot-high dam can impound a 13,200-acre-foot reservoir, which is equivalent to 4.2 billion gallons of water. Since placed in operation in 1959, it has prevented more than \$162.7 million in cumulative damages, through December 2018. The reservoir area offers fine

recreational opportunities, including dirt biking, fishing, hunting, mountain biking, horseback riding and nature study to its visitors. There is also a 13-hole disc golf course. Several contracts are underway for FY23. The phase two electrical upgrade contract is in progress at a cost of \$675,400 to replace and relocate the emergency generator, main power distribution, electrical panels and voltage meter. BIL funding in the amount of \$310,000 will be used for gate stem realignment and greasing, and replacement of a 1960's-era public restroom. The replacement restroom will have sustainable and "green" components to offset the usage footprint. Volunteer information and interpretive events details are listed on the district website at <https://www.nae.usace.army.mil/Missions/Recreation/Hodges-Village-Dam/> or call (508) 248-5697 for more information.

KNIGHTVILLE DAM (1st CD), on the Westfield River in **Huntington**, was constructed at a cost of \$3.3 million. The 1,200-foot-long, 150-foot-high dam can impound a 49,000-acre-foot reservoir (equivalent to 15.8 billion gallons of water). Since its construction in 1941, it has prevented damages of \$338 million. More than 41,000 visitors enjoy the variety of recreational pursuits available at Knightville, including picnicking, hiking, fishing, hunting, horseback riding and cross-country skiing and snowmobiling in season. The **Indian Hollow Group Campground** includes two group site loops that accommodate up to 150 people each, a waterborne comfort station with hot showers, drinking water, hiking trails and a riverside environment. Each loop may be reserved for a fee of \$90 per night. Both loops may be reserved for a fee of \$180 per night. Reservations are on a first-come, first-serve basis and one or both loops may be reserved. Reservations may be made through the National Recreation Reservation Service at www.recreation.gov or by calling 1-877-444-6777. For up-to-date information call (413) 667-3430 or visit the website at <https://www.nae.usace.army.mil/Missions/Recreation/Knightville-Dam/>. Work completed in the winter of 2020-2021 included the full inspection, repair and surface recoating of the dam's emergency flood gate. Upcoming projects planned in 2021 include surface and drainage repairs to the intake access road and upgrades to the gatehouse tower's lightning protection system, and the removal of several trees along the project entrance road and power lines. A major nearly \$700,000 project to repoint and restore the Knightville Dam gatehouse is scheduled to be completed this year.

LITTLEVILLE LAKE (1st CD), on the Middle Branch of the Westfield River in **Huntington** and **Chester**, is 1,360 feet long, 164 feet high and cost \$6.8 million to construct. The reservoir can hold a 23,000-acre-foot pool or 7.5 billion-gallons. It has prevented damages totaling \$152.8 million since placed in operation in 1965. The reservoir area offers many recreational opportunities including picnicking, fishing, hunting, canoeing, boating, nature study and cross-country skiing and snowmobiling (on marked trails) in season, and attracts more than 39,000 visitors annually. Special interpretive programs are offered and include such topics as water safety, the water cycle, the history of the Army Corps and flood damage reduction. Rangers also can prepare a program that deals with the District and its missions, water resources or natural resources and tailor it to your needs. These programs can be given at the dam, or we can come to your group or school. Contact the park ranger for more information on any of these programs or to schedule a program. For details, call (413) 667-3656 or visit the website at: <https://www.nae.usace.army.mil/Missions/Recreation/Littleville-Lake/>. Upcoming projects planned for 2021 include improvements to drainage at the downstream toe of the dam, improvements to the lightning protection system, replacement of the windows on the dam gatehouses, and demolition of the former Operators Quarters building. A major \$450,000 project to complete replacement of the project's electrical system is scheduled to be completed this year.

NEW BEDFORD-FAIRHAVEN-ACUSHNET HURRICANE PROTECTION PROJECT (9th CD) was completed in 1966 at a cost of \$18.6 million and provides a gated barrier across New Bedford-Fairhaven Harbor and supplementary dikes in the Clarks Cove area of **New Bedford** and **Fairhaven**. The twin sector gates can seal the 150-foot-wide navigation opening in 12 minutes. This barrier affords

tidal-flood protection to an area of about 1,400 acres. The project has prevented approximately \$25 million in flood damages through the end of fiscal year 2013.

TULLY LAKE (2nd CD), situated on the East Branch of the Tully River in Royalston, is 1,570 feet long and 62 feet high. Completed in 1949 at a cost of \$1.7 million, the dam has a reservoir storage capacity of 7.1 billion gallons of water. Tully Lake has prevented damages of \$29.1 million. Over 100,000 visitors annually enjoy picnicking, hiking, boating, mountain biking, disc golfing, fishing, hunting and cross-country skiing. For details call (978) 318-8907 or visit the website at: <https://www.nae.usace.army.mil/Missions/Recreation/Tully-Lake/>. The Tully Campground is operated under a lease by the Trustees of Reservations. The campground offers 36 primitive walk-in or boat-in campsites, restrooms with showers, drinking water, and hiking trails. For details, call the Trustees of Reservations at (978) 249-4957 or (978) 840-4446 or visit www.tullylakecampground.org.

WEST HILL DAM (2nd CD), on the West River in **Uxbridge**, was completed in 1961 at a cost of \$2.3 million. The 2,400-foot-long, 51-foot-high dam can impound a 12,400-acre-foot lake capable of storing four billion gallons of water. The dam was designed to protect communities on the West River and Blackstone River basins in Massachusetts and Rhode Island. It has prevented damages of more than \$100.8 million. More than 90,000 annual visitors enjoy picnicking, horseback riding, biking, hiking, fishing and hunting at the 1,401-acre facility. Future upgrades around the project office include generator replacement and electrical upgrades to the gatehouse. Special interpretive programs are offered and include such topics as water safety, the water cycle, the history of the Army Corps and flood damage reduction. Rangers can prepare a program that deals with USACE and its missions, water resources or natural resources tailoring it to your needs. These programs can be given at the dam, or we can come to your group or school. Contact the West Hill Dam ranger team to learn more. Current activities include a major electrical modernization, upgrade to water control structures and habitat restoration within the grassland area, under contract with USACE. For further information on current events, upcoming programs or shelter reservations, call (508) 278-2511 or visit the website at <https://www.nae.usace.army.mil/Missions/Recreation/West-Hill-Dam/>.

WESTVILLE LAKE (1st CD) dam in **Southbridge** and **Sturbridge** is 560 feet long and 78 feet high and cost \$5.7 million to construct in 1962. Its lake can store an 11,100-acre-foot reservoir, which amounts to 3.6 billion gallons of water. Westville Lake has prevented damages totaling \$53.7 million since placed in operation. The reservoir area offers recreational opportunities, including picnicking, fishing, hunting, canoeing, boating, and nature study and annually attracts more than 55,000 visitors. Repaving of the Westville Dam entrance road is scheduled to be completed in 2023. Call (508) 347-3705 or visit the website at <https://www.nae.usace.army.mil/Missions/Recreation/Westville-Lake/>.