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OLMSTED CENTER
for LANDSCAPE PRESERVATION

CULTURAL LANDSCAPE REPORT
BOSTON HARBOR ISLANDS NATIONAL & STATE PARK
VOLUME 1: HISTORICAL OVERVIEW



"America, the new world, compares in glamour and romance with the old, and Boston Harbor is one of the most delightful places in America."

Edward Rowe Snow, 1971

Cultural Landscape Report for the Boston Harbor Islands

Boston Harbor Islands National & State Park

Boston, Massachusetts

Volume I: Historical Overview

Prepared by:
Olmsted Center for Landscape Preservation
National Park Service, Boston, Massachusetts, 2000/2017

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Cover Photo: Bird's Eye View of Bosotn Harbor: in Colors, Along the South Shore to Plymouth, Cape Cod Canal and Provincetown Showing all the Steamboat Routes, 1920. Courtesy of Salem State University Digital Commons.

Title Page: Stone arch remaining from the early twentieth century summer residence of Melvin o. Adams on Middle Brewster Island, 2015. (OCLP)

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FOREWORD

The Boston Harbor Islands have served the city of Boston for hundreds of years as landscapes of agriculture, military protection, education, recreation, research and more, all within sight of the Boston skyline. As the only drowned-drumlin field intersecting a coastline in North America, the islands are a unique physical example of the pre-historic shifting earth as well as a unique cultural example of an island cluster directly tied to a nearby urban environment. Consisting of 34 islands and peninsulas, the establishment of the Boston Harbor Islands National Recreation Area in 1996 attracted more visitors to the islands and contributed to the rejuvenation and cleanup of the Boston Harbor area. The park's creation also served as a new model for collaboration through the creation of the Boston Harbor Islands Partnership, which brought the National Park Service together with managers of the pre-existing Boston Harbor Islands State Park and numerous other land owners and important regional stakeholders.

This report serves to provide a broad overview of the history of the park, focusing on important cultural resources in their landscape context, and their potential value to future planning and development efforts. It complements existing inventories of the park's natural and cultural resources.

Volume one of this cultural landscape report captures the extensive site history of the harbor's 34 islands in a single document, drawing from a great range of individuals and organizations. Presented as seven narrative chapters each focused on a theme, each chapter in volume one identifies potentially significant extant resources, along with a set of recommendations for further actions. Volume two of this report, bound separately, provides an existing conditions overview for the park in the form of individual island data sheets and side-by-side landscape comparison photos from the 1990s and the 2010s. This unique style of existing conditions reporting provides visual documentation of physical changes incurred by the islands over time. The individual attention to each island in volume two will prove to be a helpful guide for the many managing partners of the Boston Harbor Islands in their future planning efforts.

The 2003 General Management Plan for the park identifies its mission goals and policies as related to the following subjects: resource protection, research and information, visitor access, use, and enjoyment, education and interpretation, management and operations, external cooperation. This cultural landscape report in its entirety will assist in the continuation and achievement of the above mission goals of the park, and help ensure that the park's landscapes, structures, and traditions are maintained in perpetuity for future generations to understand, appreciate, and enjoy.

Michael Creasey
Superintendent
National Parks of Boston

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This report pulls together information from many individuals and organizations and represents a collaboration between public and private partners as stewards of an important new addition to the National Park Service system. The information was gathered by staff at the Olmsted Center for Landscape Preservation and Boston Support Office in 1997 through 2000. At the Olmsted Center, Historian Christine Arato compiled the resource list, conducted historical research, and prepared the narrative of the historical overview. Historical Landscape Architects Patrick Eleey and Tracy Stakely recorded existing conditions information, took photographs, and prepared maps. In addition, Tracy contributed to the resource list and compiled a chronology, which served as the framework for the historical overview. Historical Landscape Architect Eliot Foulds and Student Conservation Intern Heidi Werner also contributed to the report. Margaret Coffin served as the project manager and contributed to several portions of the document while Barbara Mackey served as the project manager for the Northeast Region's Boston Support Office. Historians Paul Weinbaum and Larry Lowenthal, and Historical Architect Richard Crisson assisted with information on individual islands and National Register eligibility of resources. Ethnographer Rebecca Joseph and Archeologist Stephen Pendery provided information on relevant studies. Boston Harbor Islands Manager George Price and Assistant Manager Bruce Jacobson assisted with project management and content review. Additional assistance was provided by NPS staff Alan Banks, Linda Berkeley, Joyce Connolly, Kelly Fellner and Daniel Boyd.

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Figure 1.1. Location map showing the 34 islands and peninsulas within the Boston Harbor Islands National & State Park (OCLP).

I. INTRODUCTION

The Boston Harbor Islands were designated as a national park area in 1996 (Figure 1.1).[1] The park encompasses over thirty islands and peninsulas in the harbor, including sixteen islands of the Boston Harbor Islands State Park established in the 1970s. Nearly all of the Boston Harbor Islands contain significant cultural resources relating to early historic and indigenous use, resource extraction, trade and navigation, military use, institutions, industry, infrastructure and recreation. The park area includes six listings on the National Register of Historic Places, of which three are also National Historic Landmarks. Many additional resources may be eligible for the National Register.

Once an abundant fishing and hunting area for Native American tribes including the Wampanoag and Nipmuc, the character of the harbor changed relatively rapidly with the arrival of English settlers in the seventeenth century. Colonists traded land rights, harvested timber and established tenant farms. The port of Boston soon became the hub for trade ships and fishing boats, while the harbor islands served for both guidance and protection with aids to navigation. The islands supported a complex network of harbor defenses, installed and continually updated from the colonial era until the 1950s, paralleling the nation's history of technological innovations and military conflict. Several inner harbor islands are no longer evident as a result of the eastward expansion of Boston by fill. Other islands were dramatically altered by earthmoving for military, sewerage, or landfill facilities. The islands have also been used as prisons, prisoner-of-war camps, quarantine sites, hospitals, and almshouses. Visible remnants of these multiple historical uses are found on many islands, while some facilities continue to be actively used.

PURPOSE AND SCOPE

The purpose of this report is to consolidate base-line information about the park's cultural resources. The report is intended to aid the National Park Service and Boston Harbor Islands Partnership in the planning and protection of the park's natural and cultural resources, as well as with the development of a General Management Plan (GMP). The GMP, as specified in the park's enabling legislation (1029-f2Bii) as an "integrated resource" management plan, includes "policies and programs for…conserving, protecting, and maintaining the scenic, historical, cultural, natural and scientific values of the islands."

In accordance with the park's draft General Management Plan and with Section 110 of the National Historic Preservation Act, federal guidelines for the

preservation of historic properties eligible for listing on the National Register of Historic Places apply to the Boston Harbor Islands.[2] This report seeks to identify significant and potentially significant resources that should be included in the Section 106 review and compliance process. Care and treatment of these historical resources is carried out in accordance with the Secretary of the Interior's Standards for preservation, rehabilitation, restoration and reconstruction.

Consistent with National Park Service policy, the cultural landscape report (CLR) is the primary guide for the treatment and use of the cultural landscapes in the park. With reference to appropriate historical context, a CLR documents and evaluates landscape features and qualities that make a site eligible for listing on the National Register of Historic Places. Drawing upon many disciplines, a CLR documents, analyzes, and evaluates historical, architectural, landscape architectural, archeological, ethnographic, horticultural, engineering, and ecological data as appropriate. For the Boston Harbor Islands, this study was conducted at a limited level of investigation rather than thorough or exhaustive in order to survey resources within the entire park area.[3] For this reason, recommendations are provided for more detailed studies within specific disciplines and for individual islands or sites. This information will also inform the park's strategic plan for resource management priorities in the coming five years.[4]

The report includes two volumes. This first volume presents seven historical themes as chapters. Each contains an overview of area's social, political, economic and environmental history as it relates to physical changes on individual harbor islands. At the conclusion of each chapter, extant significant or potentially significant resources on the islands are highlighted and recommendations are made for further research, documentation, protection, maintenance, education and interpretation of these resources. All recommendations are consolidated in the last chapter of the volume. Table 1 summarizes the types of recommendations found in the report.

The second volume of the cultural landscape report contains descriptions and photo-documentation of existing conditions and notable landscape characteristics on each of the individual islands. Thirty-four islands and peninsulas are documented. Due to their geographical dispersion, this study examines islands both as collective and individual resources, and on site inventory work was conducted over the course of a few years during the more temperate months. The study highlights individual islands that retain notable cultural resources from earlier periods as well as groups of islands that are linked by themes, such as harbor defenses and sewerage. A concurrent study of natural systems is in progress. In combination, these reports will provide information on cultural and natural resources to assist the park with the development of management strategies.

Table 1. Types of Recommendations for Significant and Potentially Significant Resources
Research and Documentation
• Conduct more in depth research to determint the extent, condition and significance of the resource. Types of studies recommended include: historic resource studies, historic structure reports cultural landscape reports for individual islands, ethnographic studies, and archeological assessments
• Determine National Register and National Historic Landmark eligibility
Protection and Maintenance
• Protective measures necessary to stabilize or repair threatened, damaged, or unsafe resources
• Develop preservation maintenance plans to provide either interim or long-term maintenance strategies for cultural landscape features
Education and Interpretation
• Expand recognition and enhance educational and interpretive programs that highlight historical themes, untold stories, and connections to mainland resources

STUDY BOUNDARIES

The Boston Harbor Islands lie within Massachusetts Bay, and the smaller Hull Bay, Hingham Bay, Quincy Bay, and Dorchester Bay and within Suffolk, Plymouth and Norfolk counties. This study examines some thirty islands and several peninsulas that are included in the national park area. Two sites that are likely to be added to the park, Snake Island in Winthrop and Webb State Park in Hingham, were identified during the study, thus only partial information was gathered during the course of this study in the 1990's. Islands are that are outside of the park, (Castle Island and Hog Island) or that are no longer discernable, (Governors, Bird, and Apple are part of Logan Airport, Noddle and another Hog Island [Belle Isle] in East Boston), are not included except where they play a vital role in the development of a historical theme.

In addition to the islands, the park's enabling legislation lists potential land-side points for access, visitor services, and administration. These include Boston's Harborwalk, Long Wharf, Fan Pier, John F. Kennedy Library, the Custom House, Charlestown Navy Yard, Old Northern Avenue Bridge, the City of Quincy at Squantum Point/Marina Bay, the Fore River Shipyard, the Town River, the Town of Hingham at Hewitt's Cove, the Town of Hull, the City of Salem at Salem Maritime National Historic Site, and the City of Lynn at the Heritage State Park. While these sites are very important in relationship to the history of the harbor islands, they are not addressed in order to limit the scope of this study.

NATIONAL REGISTER AND NATIONAL LANDMARK STATUS

Most of the islands are currently listed on the National Register of Historic Places (Table 2). In 1986 many of the islands within the park were listed as part of the "Boston Harbor Islands Archeological District" for their significant resources associated with aboriginal occupation. In 1987 Graves Light Station in the Outer Harbor and Long Island Head Light, at the tip of Long Island, were listed on the National Register as part of a thematic nomination for Lighthouses of Massachusetts.[5] Boston Light on Little Brewster Island has been on the National

Table 2. National Register and National Historic Landmark Properties on the Boston Harbor Islands		
Listing	**Date Authorized**	**Landmark Status**
Boston Light, Little Brewster Island	1966	Yes
Fort Warren, Georges Island	1970	Yes
Boston Harbor Islands Archeological District	1986	
Graves Light Station, The Graves	1987	
Long Island Head Light, Long Island	1987	
Long Wharf and Custom House Block	1991	Yes

Register since 1966, and is also a National Historic Landmark. Fort Warren on Georges Island and Long Wharf in Boston are also National Historic Landmarks. Several land-side access points named in the park's legislation contain properties listed on the National Register and as National Historic Landmarks. This report identifies additional cultural resources that may be eligible for the National Register as well as cases where current listings should be amended to include contributing resources. Recommendations are made in the historical overview and consolidated in Chapter III, Compilation of Recommendations.

METHODOLOGY

Research and field documentation for this study, conducted between February 1998 and December 1999, consulted secondary and some primary sources in nearly two dozen repositories in the greater Boston area. Given the timeframe of this project and the breadth of natural and cultural resources within the park, the historical overview offered in this report is not exhaustive. Rather, it is a limited investigation of broad themes of historical land use that provides preliminary recommendations and suggests directions for more thorough research, documentation, and analysis. The report relies primarily upon written sources and does not include oral traditions and ethnographic sources that will undoubtedly enrich the record of American Indian lifeways and stewardship of island resources. Other sources, including guidebooks, planning documents, and images, have been consulted and cited according to the specific purpose of this project: that is, to provide a thematic overview of the physical history of the site in order to suggest preservation and management strategies for relevant cultural resources.

This document was not intended and should not be viewed as an authoritative or scholarly treatment of exceedingly complex and interrelated historical and contemporary themes. Further research and more detailed analyses of the property as a whole and of its constituent landscapes are required. A preliminary phase of the project was to record repositories and their contents and the result is contained in a separate document, "Boston Harbor Islands Resource List" and is now being entered into a park-wide computerized bibliography.

Due to the large geographical area and array of cultural resources, the report is

presented by themes that characterize the cultural resources found on the Boston Harbor Islands and associated mainland areas. Seven themes were identified including environmental alterations, resource extraction, navigation, military use, institutions, infrastructure, and recreation. Some themes have multiple subthemes such as hunting, fishing and agriculture. The themes in this CLR parallel those identified as part of the General Management Plan's "Mission and Themes" statement (Table 3 and Appendix 2). The themes are also consistent with those identified in the National Park Service's 1996 "Revision of the Thematic Framework" (Appendix 3).

Since this report offers a historical overview of cultural resources within historic contexts it is in many ways a hybrid between a CLR and a historic resource study.[6] However, this report also suggests areas of significance and offers preliminary treatment and management recommendations as is typical for a CLR. Not surprisingly, many of the recommendations are to conduct more in depth CLRs and Historic Resource Studies for individual islands or for resources related to specific themes and subthemes.

SUMMARY OF FINDINGS

The harbor islands contain an array of cultural resources, which require monitoring, stabilization, protection, routine maintenance, documentation, and recognition. These actions are needed to preserve the cultural history manifested in the many layers of physical remains, some fragmented and others intact and actively used. Deteriorating buildings and an assortment of structures related to domestic, military, and institutional use require stabilization, particularly on Peddocks and Long islands. Building remnants, including walls, foundations, chimneys, wells and stone walls, also require stabilization and protection, particularly on Bumpkin, Calf, Middle Brewster, Rainsford, and Thompson islands and at Worlds End. Routine maintenance is needed to protect biotic resources on steep slopes and within historic designed and vernacular landscapes that include orchards and ornamental plantings, associated with domestic, military and institutional facilities, particularly on Gallops, Georges, Long, Peddocks, and Thompson islands and at Worlds End. Protection of sensitive archeological resources is critical on most islands.

Further research is needed in the format of a historic resource study to fully address the themes presented in this cultural landscape report, particularly the significance of fishing and recreational community settlements, of immigration and welfare institutions, and the extent of military installations and coastal defense systems. Combined cultural landscape reports and historic structure reports are needed for individual islands, particularly Georges, Long, Lovells, Peddocks and Thompson islands. In addition, Worlds End would benefit from a cultural landscape report. Archeological studies are needed to document

the extent of resources on the island and inform monitoring and protection needs. Cemeteries and fragments of historic structures also need to be studied. Ethnographic studies are needed to address issues relating to Native American use of the harbor islands as well as nineteenth and twentieth century fishing and recreational communities on the islands. Careful documentation of built resources on the islands, using techniques such as the Historic American Building Survey, Historic American Engineering Record, or the recently established Historic American Landscape Survey, will ensure that the location, materials, construction methods and condition of resources is documented. This documentation will facilitate maintenance and preservation of these resources. Additional resources may be eligible for the National Register and as National Historic Landmarks, including the beacon on Nix's Mate, the sewage facilities on Moon Island, the agricultural and institutional landscapes on Thompson Island, the historic resources on Long and Peddocks islands, and the historic designed landscape at Worlds End.

Education and interpretive programs are needed to enhance appreciation of the island's cultural resources as well as foster stewardship and discourage vandalism. In many cases there are important links between harbor island and mainland resources. Enhancing awareness of these connections will strengthen ties to the surrounding communities. A more detailed list of actions necessary to protect the rich and varied cultural resources on the Boston Harbor Islands is located in Chapter III, Compilation of Recommendations.

ENDNOTES

1. The park is titled a National Recreation Area, however the Boston Harbor Islands are referred to as a National and State Park to foster public appreciation of the park's resources and history, rather than to focus the public's perception solely on recreation. National Park Service, Boston Harbor Islands, A National Park Area, Draft General Management Plan and Draft Environmental Statement (Boston: Boston Support Office of the Northeast Region, National Park Service, April 2000) 1. (hereafter GMP)
2. Ibid., 7-8, 33-37, 83-85, 109-110.
3. National Park Service's Cultural Resource Management Guideline defines limited investigation as research in available published sources, usually of a secondary character, documentary sources if easily accessible, brief interviews, and non-destructive investigation of extant site features (Release 5, 1997) 18.
4. National Park Service, "Boston Harbor Islands, A national park area, Draft Strategic Plan, Fiscal Years 2001-2005."
5. A lighthouse on the tip of Deer Island was listed on the National Register but de-listed, demolished and replaced with a modern beacon.
6. A historic resource study provides a historical overview of a park and identifies and evaluates its cultural resources within historic contexts.

Table 3. Comparison of Themes

Themes from General Management Plan	Themes in Cultural Landscape Report
Home in the Harbor • Native American presence • Resource extraction • Island residents • Domestic structures and associated remnants • Terrestrial, intertidal, and marine life	Resource Extraction • Hunting and fishing • Agriculture • Lumbering and quarrying
Portal to New England • Exploration • Trade and commerce • Navigation • Coastal defense	Trade and Navigation • Exploration • Maritime trade • Ship building • Lighthouses and navigational aids • Life saving Coastal Defense and Military Use • Coastal fortifications • Other military uses
Island on the Edge • Drowned drumlins • Natural habitats • Natural forces • Islands on the edge of the city	Environmental Alterations • Geological formations • Natural processes and habitats • Human intervention Institutions • Almshouses • Hospitals and quarantines • Prisons • Immigration stations • Education facilities
Renewal and Reconnection • Wastewater treatment • Renewal of ecosystems • New national park area • City now reconnecting to its harbor and roots • Places for people to seek renewal of themselves through solitude/nature/experiences/recreation	Industry and Infrastructure • Sewerage • Water treatment • Solid waste and landfills Recreation

II. HISTORICAL OVERVIEW BY THEME

1. ENVIRONMENTAL ALTERATIONS

The Boston Harbor Islands, poised between the open ocean and the settled coast, serve as both a gateway to the harbor and a literal and symbolic vantage for tracking geological, natural, and cultural events. The collection of landforms, shaped and isolated by water, reveal much about the region's geological past, the continual effect of natural processes, and the extent of human alterations, which in relation to natural processes have increased over time. A legacy of intensive past use—and abuse—remains evident in island morphology and in ongoing ecological dynamics.[1] The theme covered in this chapter, "Environmental Alterations," describes interrelated natural processes and cultural activities that have altered harbor topography including storms, wind, waves, tides, erosion, filling, excavation, earthmoving for fortifications, dumping, dredging, seawalls and submerged features. Quarrying, an activity that has altered the shape of several islands, is highlighted in a separate chapter under the theme of "Resource Extraction."

GEOLOGICAL AND NATURAL PROCESSES

Massachusetts Bay, which encompasses nearly 800 square miles, bounded by Stellwagen National Marine Sanctuary to the east and Boston to the west.[2] Nestled along the western boundary of the bay are more than 30 islands in Boston's inner and outer harbor, ranging from less than 1 acre to over 200 acres and collectively embracing 1,200 land acres dispersed over 50 square miles.

Geologists believe millions of years ago, most of Massachusetts and the Boston Harbor were part of a great sea. Later ages saw volcanoes on the current coastline, some over 10,000 feet high. A change in climate allowed glacial ice, over two miles thick in some places, to advance and cover the region. As the glaciers receded approximately 12,000 years ago, they gouged the topographic depression known as Boston Basin, which includes Boston Harbor and is bounded to the north and west by an escarpment stretching from Lynn to Waltham. Within the Boston Basin, the retreating glaciers deposited 180 drumlins—asymmetrical, elongate masses of till formed into smooth-sloped hills. As the climate warmed and the glaciers receded, the melting ice raised ocean levels, thus inundating the basin and isolating the tops of some of the deposits as islands and flooding the local drainage system composed of the Charles, Mystic, and Neponset rivers.[3] The islands in Boston Harbor are somewhat of a geological rarity as the only drumlin field in the

United States that intersects a coastline.

About a dozen of the islands are not drumlins, but rather outcrops of bedrock, scoured by glaciers, composed of Cambridge and Braintree Argellite and a conglomerate of gravel and clay, locally called "Puddingstone." Argellite outcroppings are present throughout the harbor from Slate Island to the Graves while Puddingstone outcroppings predominate on the islands in the vicinity of Hingham Harbor. Glaciers also left behind crushed gravel, sand, and mud—the materials that form beaches, salt marshes, and other coastal and subtidal environments.[4]

Natural coastal processes, including storms, wind, waves, and tides altered—and continue to shape—island landforms as wind and wave action cause shoreline erosion and accretion. During hurricanes and nor'easters, the highest rates of beach erosion typically occur along beaches facing north and east, which are the dominant directions from which the storms originate. In contrast, the leeward sides of the island follow a cycle of spit growth and inlet formation. For example, the bluffs on the northeast side of Great Brewster Island have eroded while a one-mile gravel spit extends from its southwestern side. Similarly, the bluffs on

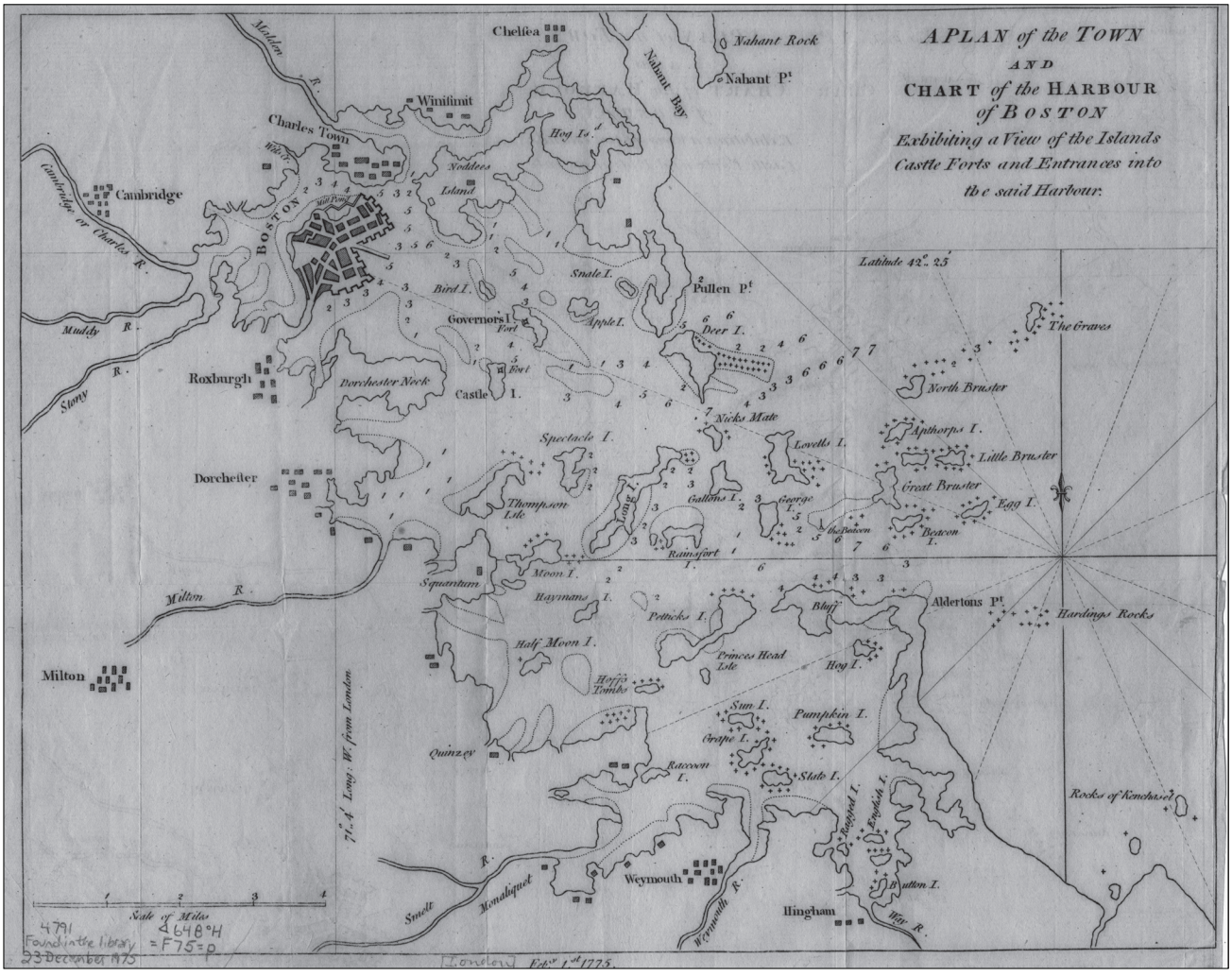


Figure 1.2. Eighteenth century map of Boston Harbor showing islands later reduced by erosion including Half Moon and Hangman islands south of Squantum, Nix's Mate, and Sheep Island. Map courtesy of the Boston Athenaeum.

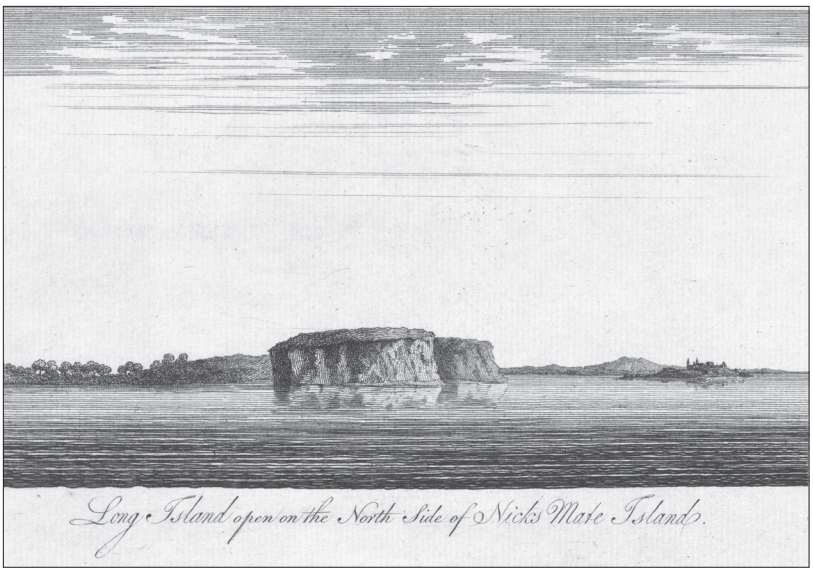


Figure 1.3. View of Nix's Mate, 1775. Boston Public Library, Harbor Views Collection.

the southeastern end of Deer Island, which were once marked by a pyramidal beacon on the shoreline, have eroded and deposited sand and gravel in the vicinity of Shirley Gut.

The current island system is smaller than that documented by seventeenth-century European observers due to natural processes, which were accelerated by human activities.[5] Half Moon Island (now referred to as Moon Island) was mined for fill and subsequently eroded by tides (Figure 1.2).[6] Three other islands were dramatically reduced in size by wind and waves. A 1775 chart shows "Hayman's," or Hangman Island larger than it appeared at the end of the nineteenth century. Lumbering and quarrying likely accelerated erosion of the island to "hardly more than a reef, with deep channels all around, and a convenient strip of beach on the south."[7] The same observer noted that Nix's Mate, a 12-acre island that had been large enough to pasture sheep at the end of the eighteenth century, had been reduced to only a beacon upon a "curving shoal"[8] (Figure 1.3). Now only the distinctive black-and-white concrete buoy, shored up by a granite foundation, remains as cutting wave action continues to tip the beacon.[9] Erosion reduced Sheep Island in Hingham Bay from twenty-five to three acres.[10]

Tides, an important natural process in the harbor, have brought mud into coastal embayments sheltered by the islands and contributed to the ecosystems of tide-dominated zones. During the post glacial period marine inundation covered many estuaries and proceeded up river drainages, flooding freshwater wetlands. Arrestment of this process about 2,500 years ago allowed the formation of tidal mudflats and the shellfish beds that surround the islands.[11] Storm tides and deposition of sand and gravel formed freshwater marshes with standing water and herbaceous plants, such as cattails, grasses or sedges, as evident on Calf, Grape, Lovells, Peddocks and Thompson islands. Over time, these marshes filled with organic matter and evolved into drier communities suitable for hay or pasture. Such natural environmental transitions not only reshaped the configuration of the harbor, but also created an ecosystem that attracted human settlement.

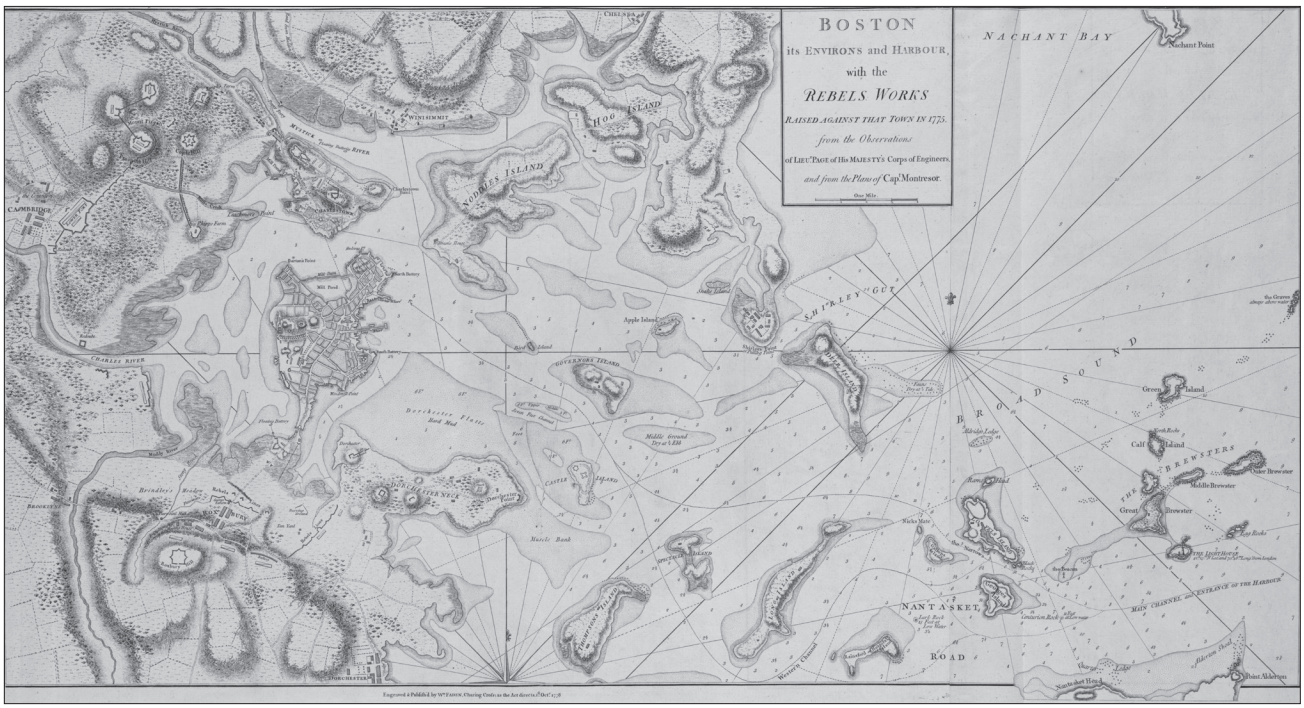
HUMAN ALTERATIONS

Geological and natural processes shaped the harbor topography for millions of years, but human prehistoric and historic activities have dramatically altered landscape in a relatively short period, with the filling of land, construction of

fortifications, and dumping of waste. Historically, Boston Harbor's water and landforms were a rich estuarine zone with extensive intertidal mud flats that stabilized about three thousand years ago. Indian lifeways took advantage of the landscape's diverse natural resources in an ecosystem that supported rich and varied floral and faunal communities, with miles of shellfish beds surrounding freshwater and saltwater marshes, dunes, drumlins, ledges and cliffs, and dense forests on many of the islands (Figure 1.4).[12] Land, as well as clam banks, fishing ponds, berry-picking areas and hunting areas, were traded or sold in the form of usufruct rights, but the exchange was not regarded as permanent.[13] Place names often reflected function rather than ownership and signaled use patterns that largely adapted to topography, rather than an orientation toward alteration.[14]

The first Europeans who arrived in Boston Harbor found a complex geography of irregular landforms. The Hull and Winthrop peninsulas conspicuously encircled the bay and, along with the islands, served as breakwaters for the harbor. Both the Shawmut peninsula, on which Boston was established, and Charlestown were often isolated from the mainland during exceptional tides and storms. South Boston was composed largely of tidal flats, and several large islands comprised the area now known as East Boston. In 1634, William Wood described the site of Boston as "very pleasant, hem'd in on the South-side with the Bay of Roxberry, on the North-side with Charles-river, the Marshes on the backe-side." On this "necke and bare of wood,. . . .To the North-west is a high Mountaine with three little rising Hills on the top of it, wherefore it is called Tramount. From the top of this Mountaine a many may over-looke all of the islands which life before the Bay, and discry such ships as are upon the Sea-Coast."[15]

Figure 1.4. Map of Boston Harbor showing islands and extensive tidal flats, 1780. Boston Public Library Harbor Views Collection.



Wood's observations not only note the tactical advantages of the harbor's natural topography, but reveal the European settlers' early geographic and economic orientation towards the sea. Good anchorage, deep channels, and high ground were of inestimable value to the English settlers. Alterations to the landscape are reflected in the history of deeds for the harbor area. The earliest deeds tended to describe land in terms of its topography and use.[16] Later land divisions and transfers increasingly ignored actual topography, describing land in terms of lots held by adjacent owners and marking territories using surveyors' abstractions. While legal descriptions did not necessarily bear upon every day life, the abstraction of boundaries contributed to the treatment of land as a commodity.[17]

EROSION, FILLING AND EXCAVATION

In the 1600s, deforestation and agricultural practices brought the most immediate and visible changes to island topography. Colonists evaluated land quality and selected sites for initial clearing based on topography and on their knowledge of correlated soil and forest types.[18] The sloped fields, excellent drainage, and prime agriculture soils associated with the drumlins on many of the islands attracted early agriculture use. However, the stripping of vegetation and tilling of soil likely contributed to accelerated erosion on islands such as Deer, Rainsford, and Gallops islands.

European settlers also directly reshaped harbor topography for agricultural use and quarrying. Farmers made early use of island pasturage by driving herds across sandbars during low tides. By the late seventeenth century, colonists had already constructed two driftways, anchoring Nut Island and World's End to the mainland and transforming the islands to peninsulas (Figure 1.5). Quarrying on Nix's Mate and on Hangman, Slate, and Outer Brewster islands contributed to the erosion of soil on these rocky outcroppings. During the early nineteenth century, the Austin family cut a channel into Outer Brewster Island, nearly dividing the island in two, in order to provide safe anchorage during stormy weather.[19]

The filling, grading, and excavating associated with three centuries of varied



Figure 1.5. Worlds End and the "Bar" viewed from Planter's Hill, 1906. The Trustees of Reservations, Worlds End Photographs, 1886 to Today.

Euro-American land use patterns continually remade harbor landscapes. The most obvious change was the loss and alteration of habitats, particularly salt marsh coverage. Much of Thompson Island's marshland was drained for pasturage during the mid-nineteenth century. Early-nineteenth-century maps show a freshwater wetland at the current site of the Deer Island sewage treatment plant. Two ponds, Cow Pond and Ice Pond, in active use on the island during the nineteenth century may have been created by artificially enlarging existing springs or freshwater marshes.[20] At World's End, seventeenth-century dams reclaimed the "Damde" and "East" meadows from the seawaters, but subsequent neglect of these structures led to the formation of brackish wetlands.

A large portion of eelgrass habitat, depicted as "grass" beds in nineteenth-century nautical charts, was probably eliminated as a consequence of reduced water clarity and land fill. Harvesting of sea and freshwater grasses removed stabilizing coastal and estuarine vegetation, interrupting natural decay cycles and plant succession. Aside from relatively large salt marshes remaining on Thompson and Snake islands and smaller brackish marshes on Calf, Gallops, Grape, Lovells, Peddocks, and Spectacle, much wetland coverage has been lost to topographical and ecological change through human intervention.

In the early seventeenth century, Bostonians began to modify their landscape in an attempt to accommodate an expanding settlement and maritime enterprise, literally shaving hills to fill valleys and coves. Earth fill from Mount Pemberton and Mount Vernon expanded the city of Boston into the harbor, leaving Beacon Hill as the sole remaining drumlin in Shawmut's once prominent Trimountaine. Beginning with the development of Town Cove in 1641, merchants began building wharves into the harbor and modifying the outline of the tidal harbor chiefly through the filling in of tidal flats.[21] Prosperous trade encouraged constant tinkering with the coastline until the original shores were far inland, reducing the once extensive shallow-water estuarine habitat to an increasingly regular inner-harbor coastline. The building of Long Wharf, undertaken in 1710, extended King Street into the harbor and marked the culmination of the colonial city's inexorable encroachment upon the sea.[22]

Land interests of Boston's growing metropolis also contributed to alterations of island topography. Back Bay and South Boston, once the western edge of the harbor's estuarine ecosystem, were transformed into urban space with a series of landfill projects during the nineteenth century. In 1891, a long plank bridge from Marine Park integrated Castle Island into the envisioned "Sapphire Necklace" of open recreational spaces that accompanied Boston's much-celebrated Emerald Necklace. A roadway constructed on filled land replaced the plank bridge and completed the connection of the island to South Boston in 1932. Between the Winthrop peninsula and Deer Island, Shirley Gut had remained navigable until the end of the nineteenth century, but was reduced to a depth of only three feet at

high tide by 1936, when the channel was filled and Deer Island transformed into a peninsula. In 1951 a two-lane steel bridge, known as the Long Island Viaduct, linked Long Island to the mainland via Moon Island and the causeway that had connected that part of the regional sewerage system to Squantum peninsula since 1878. Noddle's and Hog (also known as Susanna, Breed's or Belle Isle) islands, joined to the mainland as a single landmass, comprise most of what is now East Boston. Runway expansion at Logan Airport during the 1950s absorbed Governor's and Apple islands, as well as the gravelly shoals that marked the remains of eroded Bird Island and the adjacent tidal flats.

EARTHMOVING FOR FORTIFICATIONS

Beginning with the construction of Castle William in the 1630s, islands were dramatically reshaped for defensive purposes. The first earthen batteries were sculpted near the shoreline on Castle Island, Governors Island and in Boston. During the War for Independence, earthen forts were constructed on Castle, Governors, Georges, and possibly Peddocks Islands. During the mid 1800s, forts designed as part of the Third System of national defense resulted in a dramatic reconfiguration of Georges Island, alteration of Gallops Island, and redefinition of many island boundaries with the construction of seawalls (Figure 1.6). In the 1870s, the Alger Foundry of South Boston conducted ordnance tests from Nut Island, firing 15-inch guns with projectiles as large as 500 pounds at targets on Prince Head on Peddocks Island and thereby accelerating the erosion of the coastal bluffs. Further alterations to island topography occurred in the early 1900s as part of the Endicott Period of fortification, and again during World Wars I and

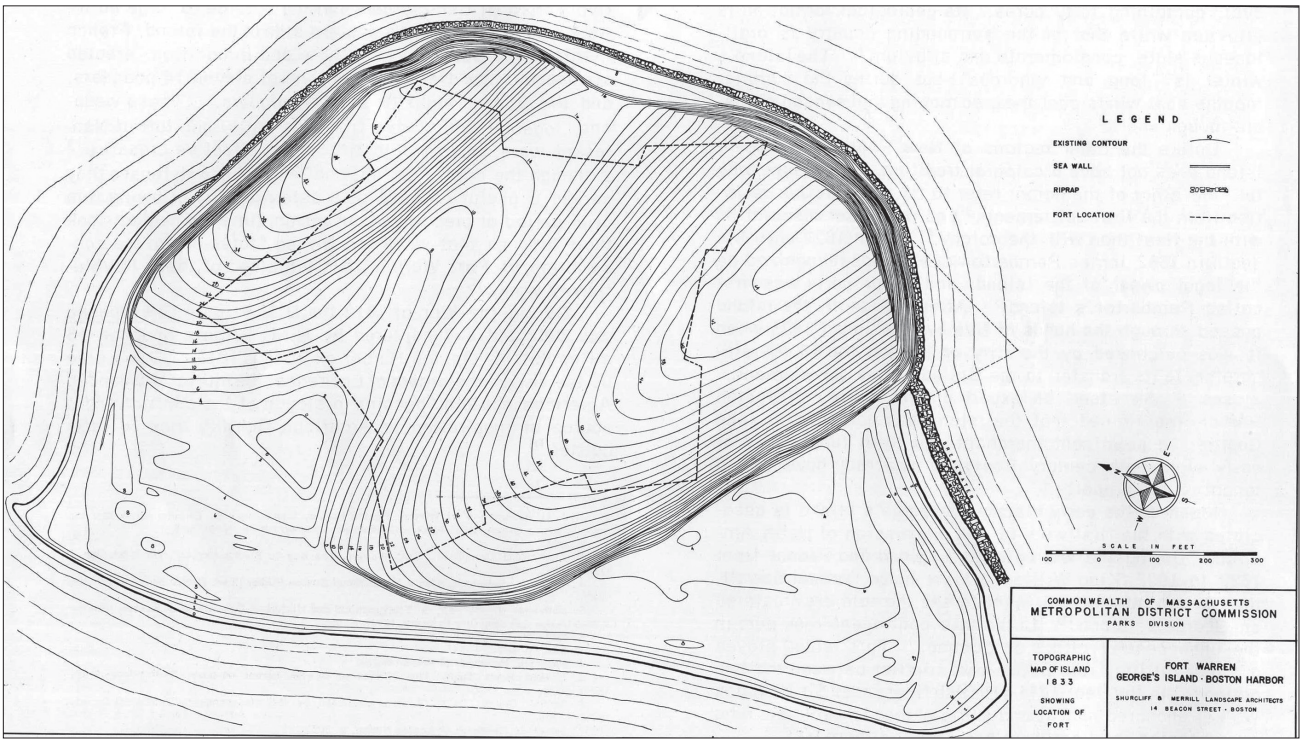


Figure 1.6. Map of Georges Island topography in 1833, showing location of Fort Warren. Map courtesy of the Department of Conservation and Recreation (DCR).

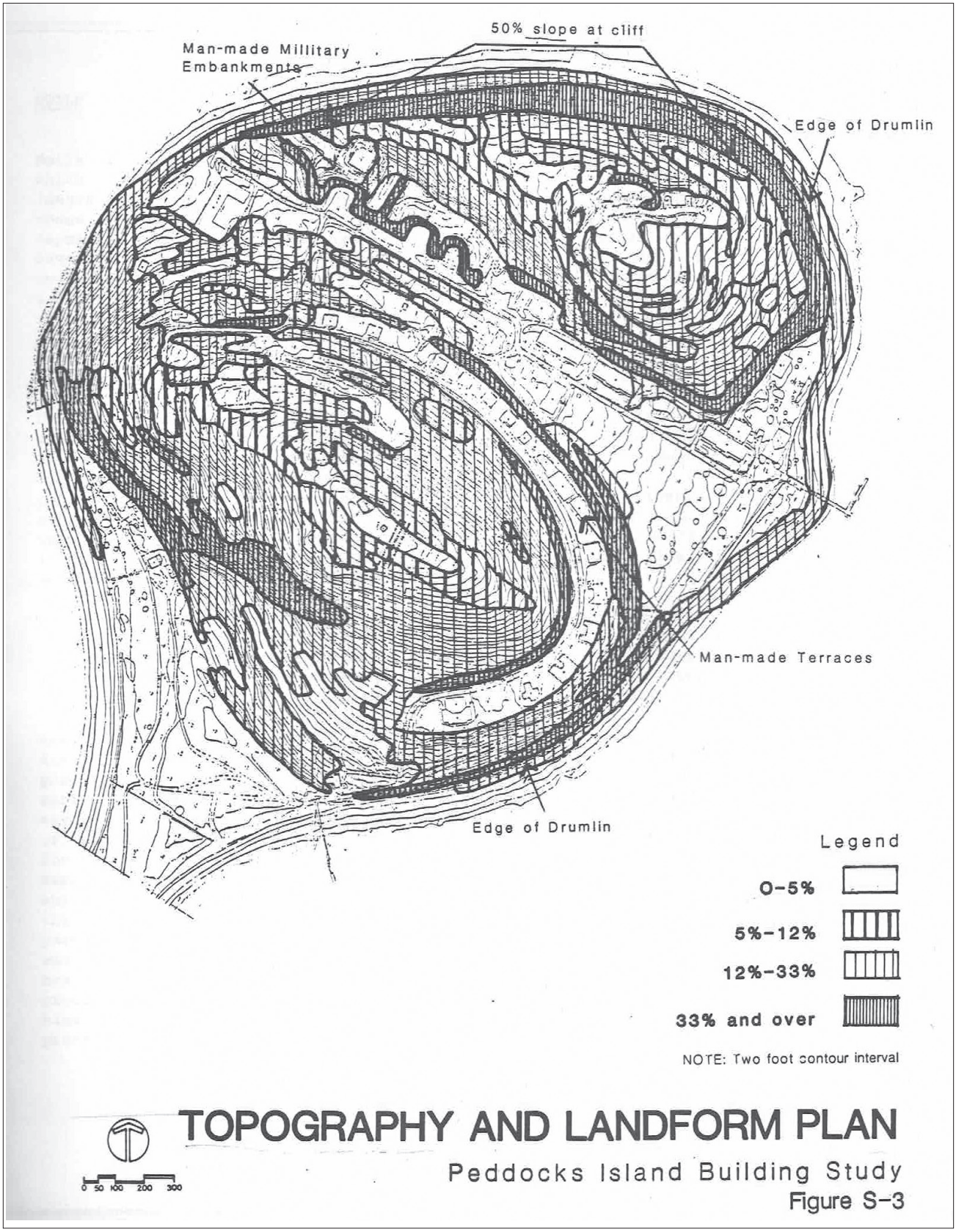


Figure 1.7. Topographic plan of Peddocks Island, 20th century. Image courtesy of DCR.

II (Figure 1.7). During this time disappearing gun batteries, bunkers, and other wartime structures were dug into the drumlins on Bumpkin, Calf, Deer, Gallops, Georges, Great Brewster, Long, Lovells, Middle Brewster, Outer Brewster, Peddocks, and Hog Island in Hull.[23]

DUMPING AND SUBMERGED FEATURES

Infrastructure needs associated with solid and liquid waste resulted in major topographical changes to the islands. Moon and Deer Islands were altered in the late 1800s for the installation of sewerage treatment facilities. More recently in the 1990s, Deer Island was extensively reconfigured to hold a larger treatment facility with an earthen berm serving as a visual barrier for the town of Winthrop.

A private company, operating a grease reclamation facility on Spectacle Island, began dumping refuse on the island in 1921 and initiated one of the most dramatic topographic transformations in the harbor. Though the plant closed in the 1930s, the City of Boston continued to dump raw garbage on the sandbar of Spectacle Island until 1959. The fill added 36 acres to the shoreline and 70 to 100 feet in elevation, filling the bar that connected the two heads and subsuming the island's characteristic outline into its current saddle-shape appearance. During the 1990s, three million cubic yards of fill excavated for the Central Artery Project further altered the island's topography, creating a tall plateau as the highest point in the harbor. Intensive grading, filling, and construction associated with social institutions and sewage facilities also radically altered the configuration of Deer Island. In addition to altering coastline shape and length, extensive filling dramatically reduced water volume and the size of the intertidal zone by as much as 90 percent in the Inner Harbor, and consequently reducing tidal flushing.

Submerged features associated with human deposition, but affected by natural processes, have altered landforms. The shipwreck of the French man-of-war *Magnifique*, which sank off the coast of Lovells Island in 1782, reshaped the island as a sandbar developed around the remains of the ship. In the following centuries, over fifty derelict ships and barges and enough floating debris and shore trash to fill a 19-mile railroad train cluttered the harbor.[24] Much of this debris remains and some is marked on navigational charts.

SEAWALLS AND DREDGING

Engineering structures have altered the nature and rate of shoreline processes. Even interventions, such as seawalls, intended to save or improve coastlines and preserve the depth of shipping channels inadvertently increase erosion and produce environmental degradation within the coastal system. Early seawalls were built as a response to economic expansion in the harbor and centered around the needs of the maritime community for secure landings and stable shipping

channels. Nineteenth-century technological innovations allowed for the use of dressed or semi-dressed stone in waterfront facility construction. The U.S. Army Corps of Engineers constructed granite seawalls on Georges, Lovells, and Great Brewster islands in 1825, 1844, and 1848, respectively. A stone jetty, built in 1849, and groins added in 1926 to protect a gun battery on Lovells Island reshaped the shoreline. In 1870, the Corps of Engineers constructed a seawall faced with dressed granite, with a concrete interior, on Long Island's North Head.[25] A cut granite seawall was built on Gallops Island to halt erosion on the northern and western sides of the island in 1870. A similar structure was erected to stem erosion on Deer Island in the preceding decade. A century later, in 1974, the Metropolitan District Commission reconstructed the seawall at Georges Island in order to protect the significant cultural resources associated with Fort Warren. A 1978 storm toppled a newer seawall on Lovells Island that had been built on the foundations of its nineteenth-century predecessor.

During the period of nineteenth-century seawall construction, the Corps of Engineers also started improving the harbor and adjacent navigable channels for shipping purposes. The agency oversaw the building and operation of bridges and drawbridges, as well as dredging projects. Dredging, such as the 1905 excavation of the Broad Sound Channel, altered submerged topography and redirected maritime traffic. Modifications in the harbor's irregular bottom topography affected the speed of tidal currents. In addition, the dredging of navigation channels removed sediments from the coastal system, further altering the patterns and rates of natural shoreline processes. Pollution, including sewage sludge, and ocean outfall from Boston's regional sewerage system also impacted sediment accumulation and mixing.

ENVIRONMENTAL ALTERATIONS SUMMARY AND RECOMMENDATIONS

Viewed in chronological sequence, navigational and topographic maps reveal how man and nature have shaped, and continue to alter Boston Harbor. Resources lost or obscured include the individual landforms of Half Moon, Apple, Bird, Governors, Hog, Noddles, and the greatly diminished Hangman Island, Nix's Mate and Sheep Island. Also obscured are the tidal flats and indentations of the western edge of Boston Harbor, now covered by fill and urban infrastructure. Some drumlins have been highly altered, such as Deer, Georges, Lovells, Moon and certainly Spectacle, while a few almost retain their prehistoric form, including Bumpkin, Grape, and Great Brewster. Constructed causeways have transformed Castle, Deer, Moon, Nut, and World's End to peninsulas. Some of this work may be historically significant, including the dams and causeway on World's End for their association with Colonial agriculture and the causeway on Moon Island for its association with early sewerage engineering.

Both natural and human-induced erosion have destroyed or may continue to

Table 4. Cultural Resources Associated with Environmental Alterations

Resource	Location	Type	National Register Status
Causeway, fill/landform	Deer	Structure, cultural landscape	Not evaluated
Causeway	Moon	Structure	Not evaluated
Causeway	Nut	Structure	Not evaluated
Causeway and Dam	Worlds End	Structure	Not evaluated
Seawall/jetties	Gallops	Structure	Not evaluated
Seawall/jetties	Georges	Structure	Not evaluated
Seawall/jetties	Great Brewster	Structure	Not evaluated
Jetties	Little Brewster	Structure	Not evaluated
Seawall/jetties	Long	Structure	Not evaluated
Seawall/jetties	Lovells	Structure	Not evaluated
Seawall/jetties	Moon	Structure	Not evaluated
Seawall	Nix's Mate	Structure	Not evaluated
Jetty	Ragged	Structure	Not evaluated
Seawall/jetties	Rainsford	Structure	Not evaluated
Fill/landform	Spectacle	Cultural landscape	Not evaluated
Submerged resources	Unknown	Structure	Not evaluated

damage some of the harbor's prehistoric and historic archeological evidence, stripping untold layers from the landscape record. In contrast, fill operations on Deer and Spectacle islands have covered earlier cultural layers.

Notable resources associated with environmental alterations and harbor topography are the seawalls and jetties on Gallops, Georges, Great Brewster, Little Brewster, Long, Lovells, Moon, Nix's Mate, Ragged, and Rainsford, which not only protect the islands' cultural resources, but also may possess significance as historic resources in their own right. The structural integrity of many of these resources is compromised by material deterioration and foundation erosion. Coincidentally, seawalls constructed to protect property often exacerbate erosion by concentrating sediment transport processes and eventually exposing the structure to the direct force of wave and tidal action. Breaks in sections of seawalls on Georges, Great Brewster, and Gallops islands increase erosion and may threaten cultural resources. The historical significance of the structure and the protection it affords to other cultural resources should be weighed against its environmental impact.

Finally, the harbor's landforms have dictated the placement of many of the cultural resources, including the siting of navigational aids, fortifications, institutions, infrastructure, and settlements. Significant cultural resources associated with these topographical alterations are identified in other chapters of this report. Resources associated with environmental alterations and harbor topography are listed in table 4 and recommendations for further actions associated with these resources include:

RESEARCH & DOCUMENTATION

- Document historic engineering structures, including causeways, dams, seawalls, jetties, and piers on the islands. Identify those structures that protect significant cultural resources. Also document the prevailing storm waves and tides that affect these features. Identify repairs and modifications necessary to protect threatened resources. Islands and structures requiring study include the erosion control walls on Little Brewster, seawalls and jetties on Gallops, Georges, Great Brewster, Long, Lovells, Moon, Nix's Mate, Ragged and Rainsford, and the piers on Georges, Lovells and Peddocks.
- Determine treatment of historic engineering structures and submerged resources through historic structure reports.
- Identify shoreline prehistoric and historic resources that are vulnerable to shoreline erosion and the predominant natural processes and human-induced environmental alterations impacting these resources.

PROTECTION & MAINTENANCE

- Prepare preservation maintenance plans for historic engineering structures and to address island vegetation management in steep, eroded areas, especially around military fortifications and buildings on Georges, Great Brewster, Lovells, Long, and Peddocks islands.

EDUCATION & INTERPRETATION

- Develop educational programs and three-dimensional or computer generated models to illustrate the effects of natural processes and cultural activities on the topography of Boston Harbor and the effect of tides, wind, waves, storms, land cutting, filling, dredging, dumping, seawall and pier construction, erosion and submerged resources.

ENDNOTES

1. John O'Keefe and David R. Foster, "An Ecological History of Massachusetts Forests," *Arnoldia* V.58, no.2 (1998), 3.
2. Stellwagen Bank is a glacially deposited, submerged sandbank that forms critical feeding and breeding grounds for endangered marine species.
3. The orientation of the "drowned" drumlins that comprise many of the islands varies widely, diverging as much as seventy degrees from one another. This departure from the typical orientation in the single direction of glacial flow suggests that more than one period of glacial action molded the 180 drumlins in the Boston Basin. Clifford A. Kaye, *The Geology and Early History of the Boston Area of Massachusetts, A Bicentennial Approach* (United States Government Printing Office, 1976), 6.
4. These ice-eroded materials are gradually moved to new locations and occasionally shifted through catastrophic natural events.
5. Some islands were submerged through natural processes, while others—including Apple, Bird, Governors, Noddle's, and Hog in East Boston—were obliterated in large fill projects and are now part of East Boston and Logan Airport. Several other islands were joined to the mainland with causeways including Deer, Castle, Moon, Nut, and World's End, while Spinnaker and Long are joined with bridges.
6. Carl Seaburg, *Boston Observed* (Boston: Beacon Press, 1971) 63, 66. Note: further research is needed to determine if additional islands were lost to erosion.
7. Slate quarrying most likely accelerated erosion on Hangman Island. M.F. Sweetser, *King's Handbook of Boston Harbor* (Cambridge, MA: Moses King, 1888), 214.
8. Sweetser partly attributed the accelerated erosion of Nix's Mate to the removal of slate from the island over the course of the nineteenth century. Sweetser, 195-96, 214, 217-222 and Fact Sheet, MDC Files.
9. Wind and wave action continue to reshape the islands of Boston Harbor; for example, between 1938 and 1977, over a quarter million cubic meters of cliff sediments were eroded from the 6,000-meter perimeter of Thompson Island. *Journal of Coastal Research,* vol. 9, no. 1, 1993.
10. Metropolitan Area Planning Concil. *Boston Harbor Islands Comprehensive Plan* (Boston: Massachusetts Department of Natural Resources, October 1972) 106.
11. Tidal flats are nearly level intertidal areas adjacent to coastal waters that are protected from heavy wave turbulence and typically exposed at low tide. Sand flats, which are often associated with barrier spits, are generally less protected from wave action than are mud flats, and are subject to constant sand movement. In more protected areas of a sand flat, algal mats and benthic fauna colonies develop, stabilizing the bottom sediments. As organic matter accumulates and mixes with the sand, mud flats form and provide a suitable environment for salt marsh vegetation. Salt marshes are highly productive ecosystems characterized by meandering tidal creeks and pond holes and dominated by saltwater cordgrass (*Spartina alterniflora*). Salt marsh systems produce rich organic matter, most of which is flushed out by tides into shallow marine waters, and provide habitats for many marine organisms.
12. Wind, waves, tides, and currents are natural processes that are, for the most part constructive, enriching tidal flats and building coastal environments. Storm events may remove sand from beaches and erode bluffs, but the interdependent coastal system is not destroyed. Rather, uninterrupted processes shift coastal resources and allow the system to adjust to natural disturbances in the intricate interaction of land and sea toward a dynamic balance. For many centuries indigenous peoples moved to accommodate the changing shoreline, adjusting their behavior to the lay of the land and surrendering evidence of human activity to the natural forces that have effected dramatic topographical change.
13. William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 1983), 69-73.
14. American Indians referred to a part of what is now known as Charlestown as Mashawmut, or "the great canoe landing" in the Natick language. Neponset means "a good fall" in Natick, indicating a place easily negotiated by canoeing parties. Weechagakas, renamed Weymouth by English colonists, was the "place at the end of the rocks" or "rushes for making mats" to Natick-speaking residents. John C. Huden, *Indian Place Names of New England* (New York: Museum of the American Indian, Heye Foundation, 1962).
15. Walter Muir Whitehill, *Boston: A Topographical History* (Cambridge, MA: Belknap Press, 1959), 3.
16. Many island uses have capitalized on the harbor topography. Most notably, on Long and Thompson Islands, institutional campuses were built atop island drumlins to capitalize upon harbor views. Lighthouses, beacons, and defense structures were built atop the highest drumlins lining the main shipping channel. Recreational residences were constructed on bluffs and remote islands to take advantage of harbor views, such as the homes on Calf Island and Middle Brewster, while utilitarian residences were tucked on the leeward side of islands, such as the cottage community on Peddocks Island and the farmstead on Grape Island.
17. In their comments upon the conversion of "wilderness" into European agricultural settlements, colonial authors were aware that fundamental changes were occurring in the lay of the land. Cronon, 5, 74-75. Island nomenclature largely reflected personal ownership, betraying a pervasive anthropocentrism that translated into dramatic environmental interventions and topographical modifications.
18. O'Keefe and Foster, 14.
19. Seaburg, 69.
20. Duncan Ritchie and Marsha King, *An Archaeological Reconnaissance Survey of Deer Island, Boston Harbor, Massachusetts* (Providence: The Public Archaeology Laboratory, 1986), 14-15, 25.

21. *Ibid.*, 2.
22. *Ibid.*, 11, 15-20.
23. Two islands were formerly named Hog Island, one in Hull now called Spinnaker Island and connected to the mainland by a causeway, and the other in East Boston, which, due to fill, is part of East Boston. On Lovells Island, construction for Fort Standish led to the destruction of a freshwater wetland.
24. *Ibid.*, 41, 68.
25. David B. Vine and Peter S. Rosen, "Historic Seawalls of the Boston Harbor, Massachusetts Region: Evolution, Construction, and Repair," *Ports '92: Proceedings of Conference*, (Seattle, WA, 20-22 July 1992), 860-61.

2. RESOURCE EXTRACTION

With the retreat of the glacial cover over New England nearly 12,000 years ago, the Boston Harbor area was a barren and hilly plain dissected by rivers and streams and colonized by various plant and animal species. Five to eight thousand years later, Paleo-Indian populations and their descendants occupied the region, settling primarily along major river basins and leaving their scant imprint upon the land. The significance of human disturbance relative to natural disturbance steadily increased as aboriginal activity expanded from fishing and hunting to include agriculture and then as European settlement brought a dramatic transformation of the natural landscape. The Puritans, who established the Massachusetts Bay Colony in 1630, found upon their arrival in Boston Harbor a system of forested islands with areas for agriculture cleared by Algonquin Indians. Colonists assumed ownership of the islands, harvested timber, built homes, cultivated garden plots and agricultural fields, delineated parcels with fences and stonewalls, planted fruit trees and released cattle and sheep to graze. Masted trade ships and fishing boats plied the waters, while landings and defense batteries sprang up along the shore. The harbor islands served as a gateway to the new territory, which seemed to offer unlimited resources and opportunities. Three centuries of agricultural, industrial, and commercial activities in Boston Harbor altered natural habitats and resources. At the same time limited development, in comparison with the mainland, has preserved remnants of prehistoric and colonial use of the islands. This chapter describes the vestiges of resource extraction in the harbor including hunting, fishing, agriculture, lumbering, and quarrying.

HUNTING & FISHING

By about 9,500 years ago, the topography and physiography of the Boston Basin supported a mixed pine and hardwood forest and animal species.[1] While humans, known as Paleo-Indians, arrived in New England not long after other animal species, no traces of these early hunting peoples have yet been found on the harbor islands, but have been found in the Boston Basin. The Early Archaic Period of over 8,000 years ago is poorly represented in the archeological record, but the presence of a bifurcate base point on Deer Island suggests that the land which now comprises the Boston Harbor Islands may have sustained human occupation during this time.[2] Archeological evidence suggests that human occupation became firmly established in a multi-site seasonal settlement pattern during the Middle Archaic period, with occupation intensifying throughout the Late Archaic and Woodland periods. Skeletal remains found on a harbor island date to the Late Archaic period and are among the oldest human remains found in New England.

Dense forests included many nut-bearing trees that were an important source of protein and fat both for humans and for many of the animals that they hunted,

such as deer, raccoon, and squirrel. It is believed that the seasonal migratory patterns of many bird and fish species became established around 8,000 years ago, thereby furnishing another attractive and important resource for prehistoric inhabitants.[3] Faunal remains found in the harbor islands indicate that cormorants, ducks, loons, auks, and other avian species were important food sources in the area. Rivers and springs offered fresh-water fish and developing estuaries harbored anadromous fish and beds of shellfish. Cod, blackfish, cusk, dogfish, bass, and seals were also consumed. Shell middens on several islands reveal that soft-shelled clams were a primary food source and that blue mussels, scallops, oysters, and quahogs were also gathered from the harbor's extensive tidal mud flats.[4]

The number of coastal sites continued to increase throughout the prehistoric era, reflecting the importance of coastal resource exploitation in aboriginal lifeways. Archeological surveys conducted on several islands document sites near the shore, on slight slopes on the south or southeast sides of the islands that offered maximum solar exposure and proximity to the maritime resources of the tidal flats and harbor. For thousands of years, indigenous peoples used these coastal resources. Villages were not fixed geographical entities, rather they varied in size and location on a seasonal basis. Local distribution of some plants and animals were affected by activities such as hunting, fishing, shellfish gathering, plant collecting, firewood cutting, and burning as a hunting technique, but these traditional subsistence activities had a minimal impact on the area's natural resources. Seasonal movement within defined territories persisted until the Contact period, when European settlement disrupted the settlement and subsistence patterns of Algonquin Indians who harvested resources on the harbor islands. Interruption of important Native American Indian food gathering activities, such as fishing during spring and fall spawning runs and hunting migratory waterfowl, undermined both subsistence opportunities and social and political functions. When Europeans claimed exclusive ownership of the islands and their resources during the seventeenth century, over 4,000 years of sustainable Native American Indian management of the harbor island landscape came to an end.[5]

The Boston Harbor Islands held many attractions for European colonists, as they had for the Indians before them. During the first decade of European settlement, local residents were said to have hunted deer on Deer Island that had sought refuge from mainland wolf populations. Newcomers found a plentiful food source in the harbor's abundant cormorant flocks. Governor Winthrop praised the Massachusetts Bay Colony as a paradise, declaring that "here is fowl and fish in great plenty."[6] While colonists undoubtedly pursued other small game on the mainland and on the islands, the establishment of a private game preserve on Noddle's Island in 1630 suggests that the Puritans had begun to view the

harbor's hunted species as a valuable commodity.[7] Both Indians and European colonists participated in a meat market that targeted turkeys, geese, ducks, and other waterfowl. Increased human intervention, particularly in the form of Euro-American agricultural practices, decimated indigenous flora and fauna. As native forests gave way to cleared fields and pastures during the seventeenth century, hunting was increasingly a less common subsistence activity among both Euro-American and Indian populations. Together with these reductions in edge habitats, over-hunting led to the decline in many meat species by the end of the seventeenth century. Deer populations were so reduced that Massachusetts enforced its first closed season in 1694. Within one hundred years, one observer would note that the deer, along with the elk, bear, and lynx, had vanished from the landscape and that hunting existed "chiefly in the tales of other times."[8]

Few references to hunting during the eighteenth and nineteenth centuries exist, with the exception of bounties placed on harbor seals and occasional sporting activities. One source describes a mid-eighteenth-century South Hingham club that rode to the hounds, driving "the unhappy foxes, whose flight led them inevitably to World's End Bar, upon which…they atoned with their lives for crimes done in the flesh."[9] A national trend of over-hunting, seen locally in the disappearance of cormorants from the harbor in the 1880s, led to legislative protection of many migratory species in Boston Harbor.[10]

Fishing proved to be a much more lucrative and enduring pursuit than hunting. Extensive fishing grounds off the New England shore, including George's Bank, fostered and sustained early European settlement and industry in Massachusetts. European fisherman plied the waters off the Massachusetts coast, harvesting offshore fish at the beginning of the seventeenth century. In a 1630 letter to England, Francis Higginson described the harbor's vast maritime resources:

The abundance of Sea-Fish is almost beyond beleeuing, and sure I whould scarce have beleeued it except I had seene it with mine owne Eyes…[there are] Heering, Turbot, sturgion, Cuskes, Haddocks, Mullets, Eeles, crabs, Muskles, and Oysters.[11]

By 1641, Winthrop boasted that Bostonians had sent 300,000 dried fish to market.[12] Maritime resources played an important role in the commercial and economic development of Boston Harbor, which by 1660 handled most of New England's imports and affected the town's prosperity. Vessels from Boston went to fishing grounds as distant as the Grand Banks, supplying the port with salt fish for trade in European goods. Local products shipped to Spain from Boston Harbor during the late seventeenth century included salt salmon, salt mackerel, oysters, and cod (Figure 2.1).[13]

While Boston developed a sizeable fleet that remained prominent in the mackerel fishery through much of the first half of the nineteenth century, the city's primary role in the commercial fishing industry has been as a central market for

distribution and export. The tremendous growth of the iced fresh fish industry was largely responsible for the expansion of Boston's fishery during the second half of the nineteenth century. In 1885, the catch of vessels enrolled at Boston amounted to only one-fifth of the port's fish product receipts, as great quantities of fish cured elsewhere were packed by Boston and East Boston dealers.[14] The tonnage of the New England vessel fishing fleet, at its apex in 1862, had reached its nadir in 1899 and modestly recovered during the early decades of this century, when a large number of "foreign" vessels and men were regularly fishing for the Boston market.[15] The unusually extensive deep-water fisheries of New England favored schooner fishing; their tall masts dominated the harborscape and lined city wharves (Figure 2.2).

Mud flats and rocky outcroppings limited access on most of the harbor islands, excluding them from most commercial fishing operations. During the seventeenth century, John Holland launched his cod-fishing operations from Commercial Point in Dorchester, while other recreational parties departed from Hull for offshore waters.[16] A commercial wharf and fish processing plant operated intermittently during the first half of the eighteenth century in Dorchester, but the majority of the industry's constructed resources and services were centralized at Boston's wharves. Bumpkin Island was apparently used to dry fish during the early 1800s, but for the most part the islands sustained small, residential communities of fisherman and lobsterman who trawled and trapped offshore and the outer banks. In the nineteenth century, a small colony of lobstermen constructed several simple houses and a gravesite on Calf Island (Figure 2.3). Lobstermen briefly settled Green Island's rocky shores.[17] Fisherman settled a small village on Middle Brewster Island and caught fish and lobsters among the craggy rocks offshore, probably contributing to the abundance of harbor lobsters used to feed Civil War prisoners on Georges Island.[18] Several fishermen's huts and a vegetable garden were situated on Hangman Island in 1882. Around this time, a community of Portuguese fishermen that had resided on Long Island's east coast for nearly three decades was relocated when the City of Boston acquired the island's largest resort hotel and opened a municipal almshouse. A 1903 atlas indicates a "Portuguese Settlement" on the west side of Peddocks Island's East Head. The 14 cottages that comprised this fishing village along the western shoreline were probably relocated to the north and west Middle Head in 1904, when construction of Fort Andrews began on the island (Figure 2.4).[19] In addition, photographic documentation reveals a small stand of rudimentary cottages erected along the Long Island shore that may have been occupied by a fishing community.[20] Most of these island cottages were unoccupied during World War II and some were adapted for seasonal or recreational use following the war.

Pollution closed some sections of the harbor to shellfishing as early as 1906, but in general the harbor remained productive as tidal flows kept flounder and lobster fisheries alive.[21] Smelt were caught in the thick eel grass surrounding Bumpkin

Island during the 1920s and the harbor yielded 275 million pounds of fish and shellfish in 1934.[22] While a special legislative commission charged that Boston Harbor violated public health requirements and labeled Quincy and Hingham Bays as polluted in 1939, the extraction of harbor aquatic resources continued relatively unabated. In 1970, Quincy Bay was known as the "flounder capital of the world."[23] By the early 1980s, Boston Harbor was regarded as the most polluted harbor in the nation. Inadequately treated waste from 43 communities and toxic pollutants discharged by ships and industries had settled to form the "black mayonnaise" that coated the harbor floor. The State Board of Health classified most of the soft-shell clam flats surrounding the harbor islands as contaminated, restricting digging and mandating processing before these resources could be sold for human consumption.

AGRICULTURE

During his second visit to Boston Harbor in 1608, Samuel Champlain anchored off of Noddle's Island and described the indigenous peoples and the cultivation that they practiced on both the mainland and the islands:

All along the shore there is a great deal of land cleared up and planted with Indian corn. The country is very pleasant and agreeable, and there is no lack of fine trees. . . . As we continue our course, large numbers came to us in canoes from the islands and mainland.[24]

Algonquin Indians added farming to their traditional subsistence activities about 1,000 years ago, but there is little evidence that they cleared extensive lands for agriculture. Rather, Indian women worked relatively small summer fields with clamshell hoes and sowed seeds in low mounds. Unlike European monocultural fields, Indian fields supported a dense tangle of food plants, including corn, beans, and squash. Indians abandoned their fields when the soil lost its fertility after eight to ten years and cleared new ones with fire. While the annual reoccupation of fixed village and planting sites imprinted the New England landscape, cyclical movement guaranteed that no single species or site would sustain serious degradation. Selective burning practices that maintained forests in various states of succession and waste piles remained as scant evidence of Indian occupation.[25]

While the corn-growing Indians of southern New England were less involved in the fur trade than were the northern hunting tribes, their greater population densities rendered them much more susceptible to the biological disaster visited upon American Indian populations upon contact with Europeans. Seventeenth-century epidemics raged through the many villages, killing as much as 95 percent of the inhabitants and disrupting networks of kinship and authority. The resulting social disorganization compounded the biological effects of the disease and, in turn, left its mark on the landscape. The interruptions to annual subsistence

cycles and depopulation caused by epidemics freed much of the Indian cultural landscape in these affected areas from annual burnings and plantings. Some previously cleared fields were being rapidly reclaimed by forest, while others were overgrown with strawberries and other "old-field" vegetation by the time of the 1630 Puritan settlement of Massachusetts.[26]

Many New England towns made their first settlements on the sites of decimated Indian villages, saving inhabitants much initial effort in both claiming and clearing the land.[27] Early European settlers practiced agriculture upon their arrival in the seventeenth century, but the rocky terrain made preparing land for tillage an arduous chore.[28] In addition, the lack of markets for agricultural surplus further limited cultivation. Beginning in the late 1700s, market-oriented intensive agriculture, enabled by transportation improvement and changes in the economic and social structure of the colony, transformed the Massachusetts landscape. Farmers cleared more forests and drained wetlands, often placing marginally productive sites under cultivation. Pasture remained the primary land use and beef and wool occupied a central place in the state's agricultural economy.[29]

New England Indians may have cleared some of the original forests for fields and gardens on the harbor islands. Excavations at World's End suggest that Late Woodland inhabitants may have farmed the peninsula, but the role of plant foods in the indigenous diet and evidence of local cultivation is under-represented in the archeological record of the islands.[30] Evidence of Late Woodland and contact period corn culture exists on some islands. Such artifacts are corroborated by John Smith's observations in 1614, when he noted "many iles all planted with corn, groves, mulberries, salvage gardens, and good harbors."[31] Around 1620, representatives of the Plimouth Colony "noticed some of Boston Harbor's islands cleared from end to end and formerly cultivated."[32] However, the impacts of American Indian land use were minimal in comparison to those of the islands' European inhabitants.[33]

The Boston Harbor Islands proved attractive to European settlers. While the first decade of settlement probably sustained mostly trade activities, agricultural use of the islands rapidly ensued. Once cleared, the islands offered relatively fertile soil and growing conditions tempered by the bay. From as early as 1634, farms and resident farm communities existed on at least eight of the islands, including Long, Deer, Peddocks, Rainsford, Gallops, Bumpkin, Grape and Thompson. In 1626, James Pemberton established his farm on Georges Island. Within four years, the harbor pilot John Gallop had established "a snug farm" on the island that bears his name and grazed sheep across the channel on Nix's Mate.[34] John Winthrop established a summer home on Governor's Island in 1632 and planted some of the first apple and pear trees in New England.[35] Shortly thereafter in 1636, Edward Raynsford, the first ruling elder of the Old South Church and owner of a large parcel on Long Island, obtained title to Rainsford Island from a royal grant and

through purchase from Native Americans. He established a farm there, where he lived with his family until 1680.[36]

While Raynsford's preference for a "just title to one founded on right of might" led him to negotiate with the islands' early inhabitants, such recognition was rarely extended to the American Indians who made only seasonal use of what was perceived as a valuable, unexploited resource. Beginning in 1634, many of the communities surrounding the harbor gained title to the islands and leased them for agricultural use. Dorchester acquired Thompson Island and leased parcels to be farmed, applying the rents toward a schoolmaster's salary. The Massachusetts Bay Colony granted Deer, Hog, Long, and Spectacle Islands to Boston, which proceeded to lease parcels to agricultural tenants over the next decade. By 1639, 37 tenants had cleared the forests and laid out planters' lots on Long Island. Farms were established on Peddocks Island and cattle grazed on its grassy bluffs after Charlestown gained title to the island in 1634. Later, Hull secured title from one of the last Massachusee sachems and divided the island into 4-acre parcels. Noddle's Island served as common pasturage for herds from farms on the Winthrop peninsula. This pattern of small, often tenant farms and common pasturage prevailed on many of the islands during the colonial era.[37]

At mid-century, European settlers had already depleted much of indigenous island forests for firewood and building materials and had introduced non-native species of trees, shrubs, and herbaceous vegetation, as well as ruminant herds. John Ruggle built a pen to provide shelter for stray goats and swine on Deer Island in 1641.[38] John Sewall, who established an orchard and sheep farm on Hog Island, was one of many residents to transform the landscapes in Boston Harbor that were described by one visitor in 1687 as "a number of very pretty islands that lie in front of Boston, most of them cultivated and inhabited by peasants."[39] At World's End, early colonists grazed livestock and farmed the fertile southeasterly slopes of Planter's and Pine Hills, an area once known as Old Planter's Fields. Seventeenth-century settlers constructed a causeway, called "the bar," connecting the two outermost drumlins to the mainland and dug a well at Martin's Cove. They also built two stone dams at the end of the southern part of the peninsula, draining the "Damde Meddowes" well into the twentieth century.[40] Like Nix's Mate, where Thomas Munt harvested hay, World's End and many of the islands in the inner harbor served as pasturage or as sources of fodder for farmers who owned and used island resources, yet never settled on these properties. Cattle pastured on Nut Island were driven back to the mainland over sandbars at low tide. By 1678, the harbor islands, together with the area around Rumney Marsh in Chelsea, maintained over 1500 sheep. In 1740, an observer noted upon his entrance to the harbor "about a dozen little islands all in views. . .some of which are as fine farms as any in the whole country," suggesting how rapidly and completely the island landscapes had been transformed.[41] At the end of the eighteenth century, some of the islands had again passed into private ownership and many of the islands

continued to be farmed and grazed for the next 100 years.[42]

The early agricultural value of the Boston Harbor Islands is well illustrated during the War for Independence, when island resources became the object of plunder and the subject of several small skirmishes between British troops and American insurgents. In 1775, during the siege of Boston Harbor, British troops confined to the islands began to search for food and fodder. In what became known as the Battle of Grape Island, South Shore Minutemen intercepted British troops that had landed to collect hay from the island's Tory proprietor, Elisha Levitt. Patriot raiding parties confiscated sheep, horses and cattle from Deer, Long, Peddocks, Noddle's and Hog Islands and diverted agricultural supplies to the Continental Army on the mainland. During these forays, several buildings and fields were destroyed, but the conflict did little to interrupt agricultural traditions on the harbor islands.

While fortification construction recontoured and denuded many of the island landscapes and land titles passed from hapless Loyalist owners, many of the islands reverted to productive agricultural roles during the early Republican era. Farmers continued to pasture cattle and sheep on Nix's Mate and on Nut Island, where a driftway was constructed for the movement of cattle to the mainland in 1793.[43] Farming may have taken place on Great Brewster Island early in the nineteenth century.[44] One building on Outer Brewster Island housed the two or three residents who tended a small herd of cattle and a flock of sheep and Harvard University continued to collect rents from its farm tenants on Bumpkin Island.[45] In 1800 John Breed bought Hog Island, where he maintained a hay farm and built a house with terraced gardens. Peter Newcomb purchased Gallops Island and established a farm there in 1819. Two decades earlier, Thomas Crane had begun hosting summer excursionists at his stock farm on Georges Island, foreshadowing a shift in land use patterns on the islands.[46]

As the nineteenth century progressed, agriculture declined throughout Massachusetts. The development of local industries, together with the expansion of transportation networks and westward settlement, signaled New England's agricultural decline. Small fields rendered most of island farmland incompatible with mechanization, and thus the harbor islands increasingly sustained a variety of military, institutional and recreational uses that often replaced less profitable agricultural uses. When Peter Newcomb died in 1833, his wife opened a restaurant and inn that became a popular summer resort on Gallops Island.[47] During that same year, the Boston Farm School Society bought Thompson Island. Two years later, the society merged with the Boston Asylum for Boys and thereafter managed the Boston Farm and Trades School's agricultural and vocational programs on Thompson Island until the mid-1900s. The school maintained a large farm, kept farm cows, pigs, horses, and chickens, and dyked and drained most of the marshland for pasture (Figure 2.5 & 2.6).[48]

In the latter part of the nineteenth century, several island farms remained productive. One observer noted that Gallops Island produced "about 200 bushels of vegetables yearly, and ten tons of hay, and its dairy yields milk and butter enough for local demand."[49] Captain Smith lived in a "little house" among vegetable gardens on Grape Island. Though parts of Peddocks Island were given over to picnickers and excursionists, at least one small farm supplied fruits and vegetables to hotels in Hull and cattle grazed on the grassy highlands. From at least 1817, the Cleverly farmstead stood on the island's East Head "against a background of dark-green orchards" (Figure 2.7). Farming operations had probably ceased many years before the federal government gained title to the land in 1900 and began to clear the remains of three farms for the construction of Fort Andrews.[50]

In 1855 John R. Brewer, a prominent Bostonian, purchased a ten-acre parcel between Martin's Lane and Hingham Harbor at World's End. At that time, only an old dilapidated barn and a scattering of berry bushes and fruit trees stood on the Brewer parcel as evidence of earlier agricultural activity. Brewer erected a small caretaker's cottage in 1855. Construction of the main house and a barn began the following year. Over the course of roughly the next three decades, Brewer acquired all but two lots of World's End and added several structures to the landscape, including stables, a bathhouse and greenhouses. Beginning in 1864, a large flock of sheep grazed the 72 acres beyond "the bar," where an open shed, known as the "sheepfold," was erected for shelter. Brewer's estate combined utilitarian and aesthetic objectives. In 1859, Brewer hired William F. Walsh, a "landscape gardener" who cleared the northeast section of the Home Pasture and replaced many of the property's cedar trees with ornamental plantings, including an arborvitae hedge along estate roads and rhododendrons, azaleas, heaths, lilies, gladioli, maples, lindens, and chestnuts on the grounds. By 1900, the estate consisted of the wood-shingled mansion, a large barn, a blacksmith shop, a creamery, two greenhouses, two icehouses, workers' lodgings and several tool sheds, pumphouses, windmills, and poultry houses. Canvas-covered haystacks dotted the Damde Meddowes, fences surrounded the portion of Rocky Neck where cattle grazed, and a 110-foot flagpole that incorporated the mast of Thomas W. Lawson's racing sloop, the *Independence*, topped Planter's Hill. Following the death of Brewer's daughter Fannie in 1936, farming activities ceased; livestock were sold and most of the buildings were razed. Though employees of the Brewer estate continued to mow grass, clear dead trees, and maintain roads, tide gates and other built features in good repair, the tradition of animal husbandry and cultivation had ended at World's End.[51]

By the late 1930s the Farm and Trades School evolved into the more academically-oriented Thompson Academy, which no longer maintained a farm nor taught agriculture on Thompson Island.[52] Small-scale farming ended on Grape Island around 1940, at the outset of World War II, when the Torresson family left the

island.[53] Institutional farms on Long and Deer Islands, established to sustain these relatively self-sufficient communities, remained productive until at least the 1930s. Inmates at the islands' indigent and penal institutions cultivated vegetable fields, tended livestock and maintained barnyard buildings, including dairies, piggeries, hen houses, and greenhouses. On Deer Island, a "modern and sanitary" cow barn housed 50 register cows and a 34-acre farm, worked by inmate labor, yielded farm produce for consumption at both Deer and Long Island facilities.[54] Institutional farming practices seemed to have ceased some time around the middle of the twentieth century.

LUMBERING & QUARRYING

In New England, as glaciers melted and the climate warmed nearly 10,000 years ago, changes in vegetation corresponded to a postglacial migration of species from the southern Appalachians and the eastern coastal plain. A period of tundra gave way to northern conifer forest, which was succeeded in turn by pine forest with increasing amounts of deciduous species by 8,000 years ago. The ecoregion, or natural vegetation zone surrounding Boston Harbor falls within the central hardwood-hemlock-white pine zone, suggesting that island drumlins were once covered with mature forests of hemlock, maple, oak, pine, and hickory. The distribution of forest types across New England during the period preceding European settlement was controlled largely by natural factors, including physiography of the landscape, underlying geology, and weather disturbances.[55] Human impact on New England forests, roughly corresponding to population density, was greatest in coastal zones, where Native Americans burned forests to create fields and to rejuvenate understory browse.[56] Early European settlement corresponded closely with indigenous sites.

European forest clearing was initially slow due largely to models of centralized settlement, but accelerated with the shift toward private ownership of land and the development of a market economy in the eighteenth century. The cutting of timber was both an economic activity in its own right, as well as a result of agricultural clearing.[57] At the close of the eighteenth century, gradual clearing had given way to rapid deforestation throughout most of Massachusetts, where nearly 70 percent of the land was cleared by 1860.[58]

The first Europeans who arrived in Boston Harbor found a diverse and rich natural landscape, one that had supported generations of seasonal habitation by Paleo-Indian and American Indian communities. The Boston Harbor Islands once supported pine and hardwood forests, a landscape that Champlain described as a "country very pleasant and agreeable. . .[with] no lack of fine trees" during his explorations of the harbor in 1608.[59] English settlers, accustomed to scarcities of wood, were impressed with "excellent good timber," proclaiming that "here is good living for those that love good Fires."[60] Though Algonquin Indians had

probably cleared agricultural fields on some of the islands, vast tracts of forest remained when Puritans established the Massachusetts Bay Colony in 1630. During that year, Colony legislators authorized lumbering on Long Island, initiating generations of Euro-American timber harvesting that would not only deplete the island's indigenous forests, but also cause soil erosion, nutrient depletion, and the loss of native seed sources. William Wood, a seventeenth-century observer, noted that Boston residents harvested firewood and hay from the islands and transported these valuable resources back to the Shawmut peninsula. Governor John Winthrop also recorded wood harvesting in his description of an expedition to Spectacle Island in 1638:

About thirty persons of Boston going out in a fair day to Spectacle Island to cut wood, (the town being in great want thereof,) the next night the wind rose so high at N.E. with snow, and after at N.W. for two days, and then it froze so hard, as the bay was all frozen up, save a little channel. In this twelve of them gate to the Governour's Garden [Governor's Island] and seven more were carried in the ice in a small skiff out at Broad Sound, and kept among Brewster's Rocks, without food or fire, two days, and then, the wind forbearing, they gate to Pullin Point, to a little house there of Mr. Aspenwall's. Three of them gate home the next day over the ice, but their hands and feet frozen. Some lost their fingers and toes, and one died. The rest went from Spectacle Island to the main, but two of them fell into the ice, yet recovered again.[61] The risk endured by this ill-fated expedition suggests both the rugged conditions on the islands and the general value accorded to island resources.[62]

The forests also served as sources of firewood and in situ building materials for island residents, who began to clear many stands of trees and to put the land under cultivation. Tenant farmers on Long Island began clearing their fields in 1634 and during the next few decades colonists followed suit on many of the other islands.[63] In 1644 the Legislature ordered 150 tons of lumber to be cut from Nantasket for the construction of fortifications on Castle Island and from Lovells Island, which would further reduce the islands' sylvan stock.[64] By the time of the British siege of the harbor a century later, Euro-American colonists had effectively denuded most of the islands of their natural forest cover. The lack of firewood on Castle Island led beleaguered British troops to burn structures before their evacuation of the island in 1776.

Colonists exploited mineral resources on several of the Harbor Islands. In 1631, the General Court asserted its right to regulate the removal of slate from Slate Island. Later in 1650, the granting of Slate Island to William Torey included a provision for public extraction of the island's resources. Thereafter, slate was quarried on the island's northwest side and used in house foundations.[65] During the latter part of the seventeenth century, the owners of Hangman Island used the property primarily as a slate quarry. After Nathaniel Austin purchased Outer

Brewster Island in 1799, his son Arthur quarried granite on the island that was used for construction materials and paving stones in Boston.[66] The removal of slate from Nix's Mate during the nineteenth century contributed to the erosion that reduced the island to a beacon perched atop a "curving shoal" by the end of the century.[67]

Around this time the deleterious effects of human activity on the Boston Harbor Islands entered public debate. Sweetser's 1882 Boston Harbor guide noted the clearing that had taken place among the harbor's many "picturesque and historic localities" and applauded John Brewer's addition of shade trees to the landscape at World's End.[68] A schematic drawing of panoramic views of the harbor included in Sweetser's tour depicts only isolated trees on Rainsford and Thompson Islands and the "graceful elms" of Apple Island.[69] While a "surprising number of trees" lined the streets that traversed Noddle's Island and fruit trees were scattered throughout orchards on many of the islands, landscape architect Frederick Law Olmsted, Sr. had a different vision for revegetation. In 1887, six years after he had developed the plans for Boston's Emerald Necklace of parks and green spaces, Olmsted submitted a report to the Boston Board of Park Commissioners proposing the reforestation of the harbor islands.[70] Olmsted made reference to previous failed attempts at tree plantings and to the effects of continued clear cutting, cropping, and pasturing in his description of the depleted landscape as "generally hard-featured, bare, bleak, and inhospitable." While the Park Commissioners' refusal to appropriate funding for restoration of the forest cover suggests the low regard in which the islands were held, Olmsted was able to realize some of his ideas for revegetating the islands in a landscaping project that he designed for Brewer's property at World's End. As part of a planned subdivision of house lots, Olmsted designed a system of tree-lined roads. These double rows of trees, planted between 1891 and 1894, and groves planted at the summit of Planter's Hill included native and non-native species (Figures 2.8 and 2.9).[71]

More than fifty years passed between the time that Olmsted articulated his vision for island revegetation and the Civilian Conservation Corps mounted its own campaign on the Boston Harbor Islands.[72] Camp ST-5 of the Harold Parker State Forest purportedly planted 100,000 pines and spruces on some of the Boston Harbor Islands in 1934.[73] Following the deactivation of harbor fortifications, the Metropolitan District Commission acquired Lovells Island in 1951 and Georges Island in 1958 as additions to the metropolitan park system and began restoration and interpretive planning and programming. In 1970, amidst widespread acknowledgement of the degraded state of harbor resources, the Commonwealth created the Boston Harbor Islands State Park. Shade and evergreen trees were added to many of the islands developed for recreation and visitation, including Georges, Bumpkin, Gallops, Grape and Great Brewster.

RESOURCE EXTRACTION SUMMARY AND RECOMMENDATIONS

RESOURCES ASSOCIATED WITH HUNTING & FISHING

Extensive archeological remains of prehistoric and Native American Indian hunting and fishing activities may still survive on many of the Boston Harbor Islands. These resources include shell middens, animal bones, pottery and human burial features, which indicate occupation to the Middle Archaic period, with extensive use during the Late Woodland period. Artifacts have been studied from several islands and peninsulas and it is likely that all islands and surrounding peninsulas with undisturbed soil contain archeological resources. Twenty-one islands are listed on the National Register of Historic Places as part of the "Boston Harbor Islands Archeological District." The properties included in the National Park Area that are not included in the District have been heavily altered by natural or cultural disturbances and are unlikely to contain undisturbed prehistoric or historic sites.[74]

By virtue of their isolated location, many prehistoric sites on the harbor islands have escaped the effects of intensive settlement and urbanization that have obliterated most evidence of aboriginal life on the mainland.[75] At the same time, the potential impacts associated with the construction of coastal defense systems in Boston Harbor are not known. Erosion and other natural processes, such as burrowing animals, pose a grave threat to these archeological resources.[76] Increasing harbor traffic, including the proliferation of high-speed commuter boats and recreational crafts, may cause accelerated erosion of the inner islands such as Grape, which contain some of the most extensive sites. Development of infrastructure on the islands under the auspices of the Boston Harbor Islands NRA poses a further threat to archeological sites. Planting, clearing, trail building, regrading, and construction of user facilities have the potential to disturb known and unknown sites and thereby damage valuable cultural resources.

To date historic sites, including those associated with colonial settlers and fishing communities, have not been extensively studied or documented. Fishing communities were described on Bumpkin, Calf, Green, Hangman, Middle Brewster, Long, and Peddocks during the nineteenth century, with extended use into the twentieth century on Long and Peddocks Island. Structures remain only on Peddocks Island. In 1993, the Massachusetts Historical Commission issued an opinion that more information was needed to determine its National Register eligibility: "While it is clear that a fishing community of some significance – and apparently, the last remaining residential grouping on the Harbor Islands – exists here, there is not sufficient information available to complete an evaluation."[77] Additional islands were used by seasonally by individual fisherman or families from the mid 1600s up until WWII. Island occupation diminished after WWII as most islands were owned by the government and harbor's water quality declined.

In the late twentieth century, renewal of natural resources has contributed to the reinvigoration of traditional fishing and marine harvesting activities in Boston Harbor. The federally-mandated Boston Harbor Project, launched in 1985 under the direction of the Massachusetts Water Resources Authority, is a multifaceted plan to reduce harbor pollutants that has already yielded positive results. Aquatic populations of bluefish, striped bass, tomcod, lobster, and winter flounder are increasing, and the harbor's shellfish beds have begun to revive. The recovery of existing fish and crustacean populations signals not only the strengthening of a vital link in the Harbor food chain, but also the resurgence of important commercial and recreational resources. Pollution abatement is allowing renewed clamming and lobstering activities. Sport fishing has had an important impact on the regional economy and on the cultural landscape. Access to finfishing is currently limited to mainland launching ramps and facilities that serve as gateways to harbor island resources. However, the islands no longer sustain resident communities and their protected status as parkland has restricted exploitation of abundant natural resources.

RESOURCES ASSOCIATED WITH AGRICULTURE

Although most of the islands were farmed by Native American Indians or later by colonists, few extant physical resources are known. There have been limited studies of the Boston Harbor Islands during the early colonial period and documentation is scant on the families that occupied them. One important document that portrays the early years of settlement is Governor John Winthrop's diary, *History of New England.* In addition, archeological studies that focused on prehistoric sites have yielded limited evidence of colonial land use and agricultural practices. Those islands, particularly Thompson, Long, Peddocks, Bumpkin, and Grape, that have remained relatively undisturbed by subsequent construction and clearing activities are most likely to yield evidence of colonial land use. Other material traces of island agriculture include scattered fruit trees, fragments and foundations of residential buildings and farm structures, wells, stone walls, and dams. At World's End, a filled-in well, and dams at the east and west ends of the "Damde Meddowes" are known to date to the 1600s.

Several islands contain historical resources remaining from eighteenth, nineteenth and early twentieth century agricultural practices. Mature pear and apple trees, possibly dating to the late nineteenth century and the remains of a stone house may belong to Bumpkin's agricultural past. Evidence of nineteenth and early twentieth-century agriculture on Grape Island is found in a house foundation, stone-walled well and a surviving shade tree. On Thompson Island, most of the existing buildings were constructed in the early 1900s as part of the farm school. Open fields from the abandoned farm, several stands of hard and softwood trees, as well as an old apple orchard, and a network of overgrown dirt roads suggest the island's former agricultural traditions. An orchard rehabilitation project is

underway and two pigs are cared for on the island. On Long Island an abandoned apple orchard remains northeast of the chapel.

On most of the Boston Harbor Islands, the agricultural tradition has ceased to shape the landscape. The majority of existing vegetation on most of the islands reflects neither pre-contact growth nor formerly cultivated species. Rather, once cleared fields and pastures, subjected to the processes of natural succession, are given over primarily to shrubby and herbaceous vegetation, including staghorn sumac, red raspberry, rough-stemmed goldenrod, and various exotic species. While this shrubby vegetation reflects the current management approach to rehabilitate "natural" areas, the vegetation is obscuring the earlier cultural imprint of the islands' agricultural past. In addition, burgeoning rabbit populations continue to damage, often irreparably, the remnants of small-scale orchards on several islands. One notable exception is World's End, where fields are mowed for hay annually. A recently-initiated gardening program at Long Island's Shelter has renewed the tradition of gardening on the island though it is not based on historical antecedents in placement and organization, choice of plants, or farming methods. On several seasonally managed islands, including Georges, Peddocks, Bumpkin, and Grape, park staff cultivate flowers and vegetables in raised planters that do not disturb archeological resources.

RESOURCES ASSOCIATED WITH LUMBERING & QUARRYING

For nearly three centuries, most harbor islands were devoid of forest cover, spanning the time period from colonial settlement and timber harvesting through military and institutional use of most of the islands until the end of World War II. Since "abandonment" in the 1940s most islands are covered with early successional of fast-growing shrubs and trees, that are a mix of native and non-native species. The composition of the precolonial forest is unknown. While charcoal samples taken on the harbor islands show the existence of red and white oaks, hickory, pine, ash, walnut, birch and other species, neither densities nor dates of occurrence are provided by current documentation.[78] Such exotic species as Norway maple cover large portions of the islands. Many cultivated species have spread by self-sown seedlings of privet, apple, pear and peach trees are found on Gallops, Lovells, Georges, Peddocks, Thompson, Bumpkin, Grape, Rainsford and Long Islands. On many islands, a thick, often impenetrable tangle of fast-growing shrubs and vines envelop remnants of military, institutional and residential plantings of shade trees, orchards, ornamental shrubs, hedges, and perennial gardens.

In 1992, the Friends of Boston Harbor Islands launched an initiative to return indigenous plant communities to the islands. Vegetation retrieved from Spectacle Island prior to being stripped to accommodate fill from the Central Artery project was incorporated into a native plant nursery on Long Island. During the following

year, 48 test plots were established and over 1500 seedlings planted on Bumpkin Island as the first phase of research and planning for an ambitious restoration of the forests that the Boston Harbor Islands once supported.

Frederick Law Olmsted, Sr.'s proposal to the Boston Board of Park Commissioners, entitled *The Restoration of Tree-Growth on the Islands and Shores of Boston Harbor*, and his landscape designs for the development of World's End are part of the archival collection at the Frederick Law Olmsted National Historic Site in Brookline, Massachusetts. Single and double allees of mixed species shade trees still line Olmsted's roadways on World's End and some of the introduced species have spread to other areas of the peninsula. Some of the 100,000 to 150,000 trees planted by the CCC on the islands in 1934 likely remain on Long, Lovells, and Gallops Islands. A newspaper article from 1934 suggests that small seedlings were planted as part of a project of short duration. No further documentation of this work has been located. A large stand of red pines on Long Island may derive from the CCC project.

Traces of early quarrying remain on Slate and Outer Brewster Islands. However, quarrying on Hangman's Island likely accelerated erosion of the island. To date little research has been done to determine the volume of material extracted from the islands, its destination and use. Table 5 lists extant resources associated with resource extraction and recommendations for further actions include:

RESEARCH & DOCUMENTATION

- Conduct further archeological investigation, in the format of a cultural land use study and archeological overview and assessment, to consolidate prehistoric and historic data on resources for all islands. The study should address ownership, residence patterns, and land use on islands that sustained agricultural use, particularly on Thompson, Long, Peddocks, Bumpkin and Grape islands.[79] Review existing archeological work to determine whether prehistoric and historic resources are fully documented and conduct archeological survey work as recommended in the land use study.
- Conduct further research on aboriginal use of the islands including ethnographic research on agricultural practices and use of forests.
- Conduct further research on the history of fishing to determine the economic importance of fishing in the harbor and the importance of the islands as communities for fishermen, particularly for Peddocks and Long Islands. Also conduct further research on the relationship with the port of Boston and other New England fishing communities such as Gloucester and New Bedford.
- Determine if Peddocks Island resources are eligible for the National Register. (Further recommendations are listed in the Military and Recreation chapters.)

- Conduct further research on the location of early boat landings, both on the islands and surrounding mainland communities.
- Document location of wells and other constructed water features used to provide freshwater during historic occupation of islands.
- Document landscapes that supported maritime forests for consideration of restoration or rehabilitation of sites demonstrating relative integrity and significance within the local context. Analyze pre-colonial vegetation by pollen analysis or other appropriate techniques. Review the Friends of the Boston Harbor Islands Revegetation Project, including site analysis and selection. Choice of sites should be made within context of broader restoration and rehabilitation plans (i.e., islands that sustained strong agricultural traditions or military uses may not be ideal candidates for reforestation).80
- Investigate and document Civilian Conservation Corps activities on the Boston Harbor Islands. No records were located at the Federal Records Center in Waltham under a CCC listing, although a more thorough search should be undertaken.
- Conduct further research on historic and current faunal populations on the harbor islands and peninsulas.

PROTECTION & MAINTENANCE

- Protect the islands with sensitive archeological zones against further erosion by storm waves and boat wakes, such as Grape Island.
- Control populations of burrowing animals, such as domestic rabbits and rats to protect archeological resources.
- Include review and monitoring by archeologists for all proposed soil disturbances for gardening or other activities that require excavation.
- Provide active protective monitoring of sites to prevent vandalism.
- Provide interim protection of extant resources, including built features (fragments and foundations of residential buildings, farm structures, wells, stone walls, and dams) and vegetation, until a more conclusive assessment of the cultural landscapes and analysis of significant features can be completed.
- Prepare preservation maintenance plans to preserve and maintain historic fruit trees and orchards on Bumpkin, Gallops, Georges, Long and Thompson Islands, until further research, in the form of island-specific Cultural Landscape Reports, is completed.

EDUCATION & INTERPRETATION

- Design educational programs regarding the value of protecting important archeological resources and their significance.
- Search for extant seventeenth, eighteenth or early nineteenth century fishing schooners, dories, and equipment to bring to Boston Harbor for special programs.

ENDNOTES

1. Boston Basin is a geological description for the topographical depression or lowland area that includes Boston and Boston Harbor and is bounded to the north and west by an escarpment stretching from Lynn to Waltham. Clifford A. Kaye, The Geology and Early History of the Boston Area of Massachusetts, A Bicentennial Approach (United States Government Printing Office, 1976), 6.
2. Archaeological typologies are defined roughly as follows: Middle Archaic (8000 - 5000 BP, hunter/gatherers without ceramics), Late Archaic (5000 - 2500 BP, hunter/gatherers without ceramics), Middle Woodland (1600 BP – 800 AD, hunter/gatherers who may have practiced agriculture and had ceramics), and Late Woodland (800 -1500 AD, hunter/gatherers who practiced agriculture and made ceramics). Stephen Cole, "National Register Nomination: Boston Harbor Islands Archaeological District," (Boston: Massachusetts Historical Commission, May 1985) and Commonwealth of Massachusetts, Executive Office of Administration and Finance, Division of Capital Planning and Operations, Peddock's Island Building Study, Phase 2 Inventory and Analysis of Existing Conditions (Boston, MA, March 1990), 10-11.
3. Dina F. Dincauze, "Archeological Reconnaissance in the Greater Boston Area, 1969-1972, Final Report on NSF Grant GS 2707" (Unpublished manuscript, 1974).
4. Cole, Item 10, 3-4, Peddock's Island Building Study, 10-11 and, Barbara Luedtke, "Report on an Archaeological Survey of World's End, Massachusetts," (Department of Anthropology, University of Massachusetts/Boston, 1 June 1990), 2-3.
5. The fur trade that commercialized Indian economies and thereby eroded pre-colonial ecological practices with incentives to exceed subsistence killing did not significantly impact the hunting grounds near Boston, which did not harbor habitats for such commercial targets as beaver, mink, and lynx. Peddock's Island Building Study, 8-13.
6. James Playsted Wood, Boston (New York: The Seabury Press, 1967) 24.
7. M.F. Sweetser, King's Handbook of Boston Harbor (Cambridge, MA: Moses King, 1888), 133.
8. William Cronon, Changes in the Land: Indians, Colonists, and the Ecology of New England (New York: Hill and Wang, 1983), 100-01.
9. William H. C. Walker and Willard Brewer Walker, A History of World's End (The Trustees of Reservations, 1973), 11.
10. The Federal Migratory Bird Act was passed in 1898.
11. Don Swann, "The World's Harbor," Sanctuary (July/August 1986).
12. Carl Seaburg, Boston Observed (Boston: Beacon Press, 1971), 43.
13. W.H. Bunting, Portrait of a Port: Boston, 1852-1914 (Cambridge, MA: Harvard University Press, 1994), 2 and Fact Sheet, MDC Files.
14. Bunting, 169.
15. The Boston Fish Bureau and Census data indicate that a large portion of the fleet active in Boston's fish market were registered outside of Suffolk County. Though many of the ships hailed from Essex County, immigrants—including Canadians, Irish, Scandinavians, and Portuguese—constituted a considerable and growing proportion of the New England fisherman population. Ibid., 172-76.
16. Sweetser, 116, 275.
17. Emily and David Kales, All About the Boston Harbor Islands (Hingham, MA: Hewitts Cove Publishing Co., Inc., 1993) 41-42.
18. Ibid., 36, 41.
19. Joe Orfant, Memorandum to John W. Sears, In Metropolitan District Commission, Report of the Peddocks Island Advisory Committee (1993) and Peddock's Island Building Study, 27-28.
20. It is unclear who occupied these buildings. Long Island Photograph Collection, Boston Public Health Commission (Long Island Campus), Boston, MA.
21. Eric Jay Dolin, Dirty Water/Clean Water: A Chronology of Events Surrounding the Degradation and Cleanup for Boston Harbor (Cambridge, MA: MIT Sea Grant College Program,1990), 19.
22. Ellenor Yahrmarkt, "Metro Parks: Bumpkin History" (Boston: Commonwealth of Massachusetts, Department of Environmental Management) and Susan Crowl Silberberg, The Boston Harbor Urban Design Studio Briefing Handbook (Cambridge, MA: MIT School of Architecture and Planning, 1997), 19.
23. Silberberg, 20-21.
24. Sweetser, 260.
25. Cronon, 44-49.
26. Ibid., 87-90.
27. Further research is needed to determine if early European settlements in Boston, Charlestown, Weymouth, and Salem followed this displacement pattern.
28. Five types of prime agricultural soil, as categorized by the U.S. Department of Agriculture, occur on the Boston Harbor Islands: Canton fine sandy loam, Merrimac fine sandy loam, Newport silt loam, Pittstown silt loam, and Sudbury fine sandy loam. The distribution of these fertile soils, formed in glacial till or outwash, corresponds to historical agricultural use patterns on many of the islands, including Deer, Spectacle, Long, Grape, Gallops, Lovells, and Great Brewster.
29. O'Keefe and Foster, 11, 14.
30. Barbara Luedtke, "Report on an Archaeological Survey of World's End, Massachusetts," 24-25.
31. Samuel Eliot Morison, The Maritime History of Massachusetts, 1783 – 1860 (Boston, MA: Northeastern University Press, 1979) 9.

32. Other crops grown by New England Indians and probably cultivated on the islands included beans, squash, pumpkins, watermelon, and Jerusalem artichoke root. Howard S. Russell, A Long Deep Furrow: Three Centuries of Farming in New England (Hanover, NH: University Press of New England, 1976), 3-5.
33. There is little evidence that indigenous peoples cleared extensive areas for agriculture throughout New England, as well as on the Boston Harbor Islands. It is more likely that they created a patchwork of fields and village sites in a matrix of intact forest. European settlement patterns and agricultural practices had a profound impact on Indians lifeways. Earlier subsistence practices that had depended upon seasonal migration gave way to a new sedentarism and increased pressure on adjacent hunting and planting areas within these denser settlement patterns. Expanded corn cultivation and the adoption of small animal husbandry transformed subsistence practices into land use patterns resembling those of Euro-American colonists. O'Keefe and Foster, 10 and Cronon, 102-03.
34. Metropolitan Area Planning Council (MAPC), Boston Harbor Islands Comprehensive Plan (Boston: Massachusetts Department of Natural Resources, 1972), Sweetser, 190 and "Chronology" DEM Files.
35. Sweetser, 166.
36. Ibid., 201.
37. Sweetser, 133, 172, 181, 201, and MAPC, 61, 94-96.
38. Ritchie and King, 26.
39. Sweetser, 181.
40. Luedtke, "Report on an Archaeological Survey of World's End, Massachusetts," 5 and Walker, 4-5.
41. Sweetser, 265.
42. Harvard College, which inherited Samuel Ward's island property in 1681, leased Bumpkin Island to tenant farmers until 1900. Moon Island, known as Manning's Moon, served as both farmland and pasturage and a largely deforested Deer Island was farmed at this time. Russell, 156, Sweetser, 128, Land Use Chronology, MDC Files, Nathaniel Shurtleff, A Topical and Historical Description of Boston (Boston: Boston City Council, 1871), 559 and Edward Rowe Snow, The Islands of Boston Harbor (New York: Dodd, Mead, & Co., 1971), 260.
43. "Land Use Chronology," MDC Files.
44. MAPC, 87.
45. Sweetser, 250.
46. Ibid., 128, 190, 228, MAPC, 76-78, and Ellenor Yahrmarkt, "Chronology of Gallups Island," DEM Files.
47. MAPC, 78.
48. Ibid., 61.
49. Sweetser, 190.
50. Ibid., 205 and Peddock's Island Building Study, 25-27.
51. Walker, 12-22, 41-50.
52. A 30-acre model farm, similar in operations to the Audubon Society's Drumlin Farm in Lincoln, was proposed in the 1972 Comprehensive Plan prepared by the Metropolitan Area Planning Council, yet never developed. MAPC, 64-67.
53. The Bradley Fertilizer Company employed Captain Billy McLeod and his wife as caretakers of their property on Grape Island from 1901 until Billy's death in 1935. Horses were grazed on the island and its fields were periodically burned to guarantee grazing quality. Hay harvested on Grape Island supplied the stables at Hingham's Polo Club. The Toresson family assumed the caretaker role after the McLeod's term ended and continued these practices until their departure in 1940. Boston Harbor Island Files, Department of Environmental Management, Hingham, MA.
54. City of Boston. Boston Year Book, 1923-1924, 141.
55. Major natural disturbances affecting forest resources include pathogens, fire, and windstorms. Evidence in the paleoecological record points to a widespread hemlock decline beginning 5,000 years ago and attributable to a species-specific pathogen. The strongest winds in counterclockwise-rotating tropical storms, or hurricanes, inflict the most damage on south- and east-facing hillsides. Historical evidence indicates that significant impact on the islands probably occurred at less than 100-year intervals. Evidence of past storms may persist for centuries in microtopographic features, but offers no information about the frequency, intensity, and distribution of storms, which vary with climatic changes. However, storm patterns over the pastglacial period can be inferred from historical observations. After European settlement, catastrophic storms impacted New England in 1635, 1788, 1815, 1869, 1938, and 1944. O'Keefe and Foster, 8.
56. The frequency, extent, and broad-scale impacts of aboriginal burning has not been established. The impact of fire disturbance on the landscape varied with differences in climate, fuel type and distribution, and ignition sources, whether natural—such as lightning—or human. Archeological evidence suggests a correlation between human population density and fire damage, underlining the interrelationship of natural and human processes in forest cover and, more broadly, environmental change. Somewhat conversely, the hemlock decline and subsequent increase in species which produce large edible nuts may have contributed to the significant increase in aboriginal populations at roughly the same time 5,000 years ago. O'Keefe and Foster, 4-10.
57. Colonists sought species of trees for specific purposes and consequently cut forests selectively when lumbering. White oak served maritime markets for the timbers and planking of ships, as well as for barrel staves. Cedar and chestnuts were suited for use in exposed sites and pitch pine furnished pitch, turpentine, and rosin. Varying demands in the maritime trade economy shaped lumbering practices, whereas agricultural clearing engendered indiscriminate harvesting. Cronon, 109.
58. O'Keefe and Foster, 15.

59. Sweetser, 260.
60. Cronon, 25.
61. Seaburg, 33.
62. Governor John Winthrop noted that the storm which came to be known as Great Colonial Hurricane raged through Boston Harbor on August 16, 1635, "blew down many hundred of trees... overthrew some houses, and drove the ships from their anchors." Seaburg, 16-17.
63. Sweetser, 207-08.
64. Ibid., 147.
65. MAPC, 106.
66. Land Use Chronology, MDC Files and Kales, 37.
67. Sweetser, 196.
68. Ibid., 85.
69. Ibid., 26.
70. Sweetser, 126 and Frederick Law Olmsted, The Restoration of Tree-Growth on the Islands and Shore of Boston Harbor (report to the Boston Board of Park Commissioners, 1887, reprinted in Report of the Board, 1893).
71. Walker, 35-37.
72. Friends of Boston Harbor Islands, Boston Harbor Islands Revegetation Project: A Demonstration Project for Impacted Coastal Habitat (Boston: Friends of Boston Harbor Islands, January 1995), 18.
73. The trees were planted on government-islands and many were removed during World War II as possible obstructions to the large gun batteries and artillery emplacements. Predominant species used were scotch pine and "beach plum trees." Some cottonwoods of unknown provenance dating from the CCC era remain on Lovells Island. Newspaper article dated March 28, 1934, "Nearly 150,000 Trees to Be Planted On Islands in Drive to Beautify Harbor" and John Nove, Department of Environmental Management, Interview with Christine Arato, 11 June 1999.
74. The National Register nomination for the Boston Harbor Islands Archeological District distinguished the 21 listed properties from Georges Island, which was listed in a 1970 nomination of Fort Warren, and twelve other islands not included because they have lost integrity due to natural or cultural disturbances. Cole, "National Register Nomination: Boston Harbor Islands Archaeological District" 1. Barbara Luedtke's 1974 study included Bumpkin, Calf, Gallops, Grape, Great Brewster, Green, Little Calf, Middle Brewster, Outer Brewster, Raccoon, Sheep, and Slate. Subsequent research examined Calf, Deer, Grape, Long, Peddocks, and Thompson Islands, as well as Webb State Park and World's End. See Dina F. Dincauze, "Archeological Reconnaissance in the Greater Boston Area, 1969-1972, Final Report on NSF Grant GS 2707" (Unpublished manuscript, 1974) and Barbara Luedtke, Final Report on the Archaeological and Paleobotanical Resources of Twelve Islands in Boston Harbor (Boston: Department of Anthropology, University of Massachusetts/Boston, 1975).
75. Cole, "National Register Nomination: Boston Harbor Islands Archaeological District" 2.
76. Ibid., 4-5.
77. Massachusetts Historical Commission, "MHC Opinion: Eligibility for National Register, Statement of Significance" (Boston: Massachusetts Historical Commission, 7 July 1993).
78. Friends of Boston Harbor Islands, Boston Harbor Islands Revegetation Project, January 1995.
79. A Cultural Land Use Study differs from a Cultural Landscape Report, in that the study documents land use based on archeological evidence. This approach, which relates physical evidence to historical context, is particularly useful for fragmented cultural sites. An Archeological Overview and Assessment describes the park's archeological resources management program and identifies the need for additional field surveys to locate, evaluate and document resources.
80. Criteria for revegetation may include: island soils disturbed and devoid of archeological resources; island soils unstable and in need of vegetation; island climate, location, and topography suitable for growth of vegetation; vegetation will not diminish the integrity of historic resources and their setting (e.g. compromise views or topography); and vegetation will not adversely affect other significant natural resources or existing vegetation that contribute to the diversity of island flora and fauna.

Table 5. Cultural Resources Associated with Resource Extraction

Resource	Location	Type	National Register Status
Indigenous archeological sites	Multiple islands	Archeology	Many sites listed, further study recommended
Historic archeological sites	Multiple islands	Archeology	Not evaluated
Fishing community	Peddocks	Standing structures	Could not be determined due to insufficient information
Stone house	Bumpkin	Unstabilized ruin	Not evaluated
Stone foundation and well	Grape	Unstabilized ruin	Not evaluated
Farm buildings, field patterns, orchard, tree and hedgerows	Thompson	Standing structures, cultural landscape	Not evaluated
Orchard	Long	Cultural landscape	Not evaluated
Orchard	Peddocks	Cultural landscape	Not evaluated
Farm buildings, field patterns, orchard, tree and hedgerows	Worlds End	Unstabilized ruin, cultural landscape	Not evaluated
Planted tree grove	Multiple islands	Cultural landscape	Not evaluated



Figure 2.1. Sketch of a fishing party in Boston Harbor, mid-19th century. Boston Public Library Harbor Views Collection.



Figure 2.2. Schooners at T Wharf in Boston, circa 1885. Image courtesy of Historic New England.

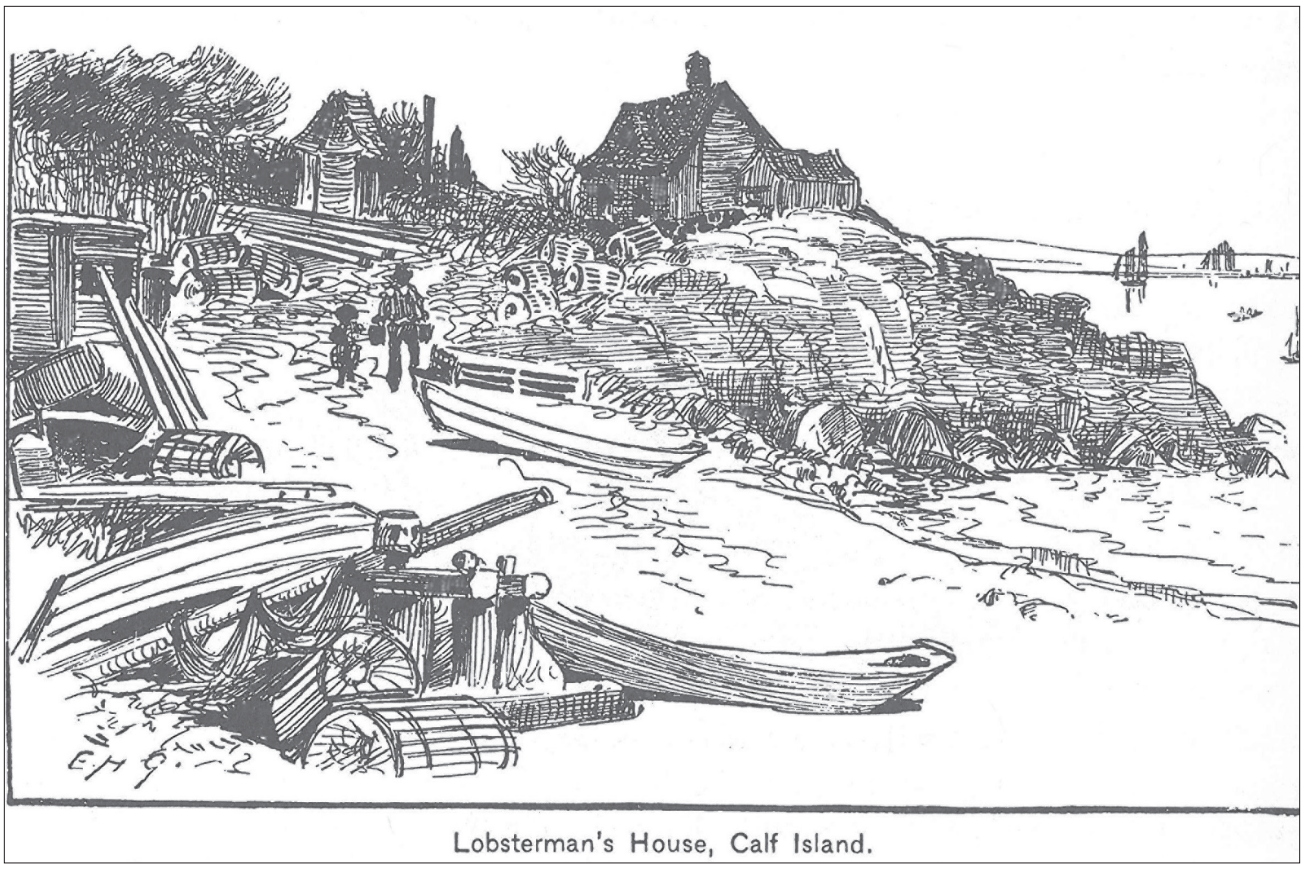


Figure 2.3. Sketch of a lobstermen's colony on Calf Island, late 19th century. Image from MF Sweetser's *King's Handbook of Boston Harbor.*

Figure 2.4. Crab Alley on west side of Middle Head on Peddocks Island, 1890. Image from Shaun Provencher's Peddocks Island Physical History, Chronology, and Statement of Significance, DCR.



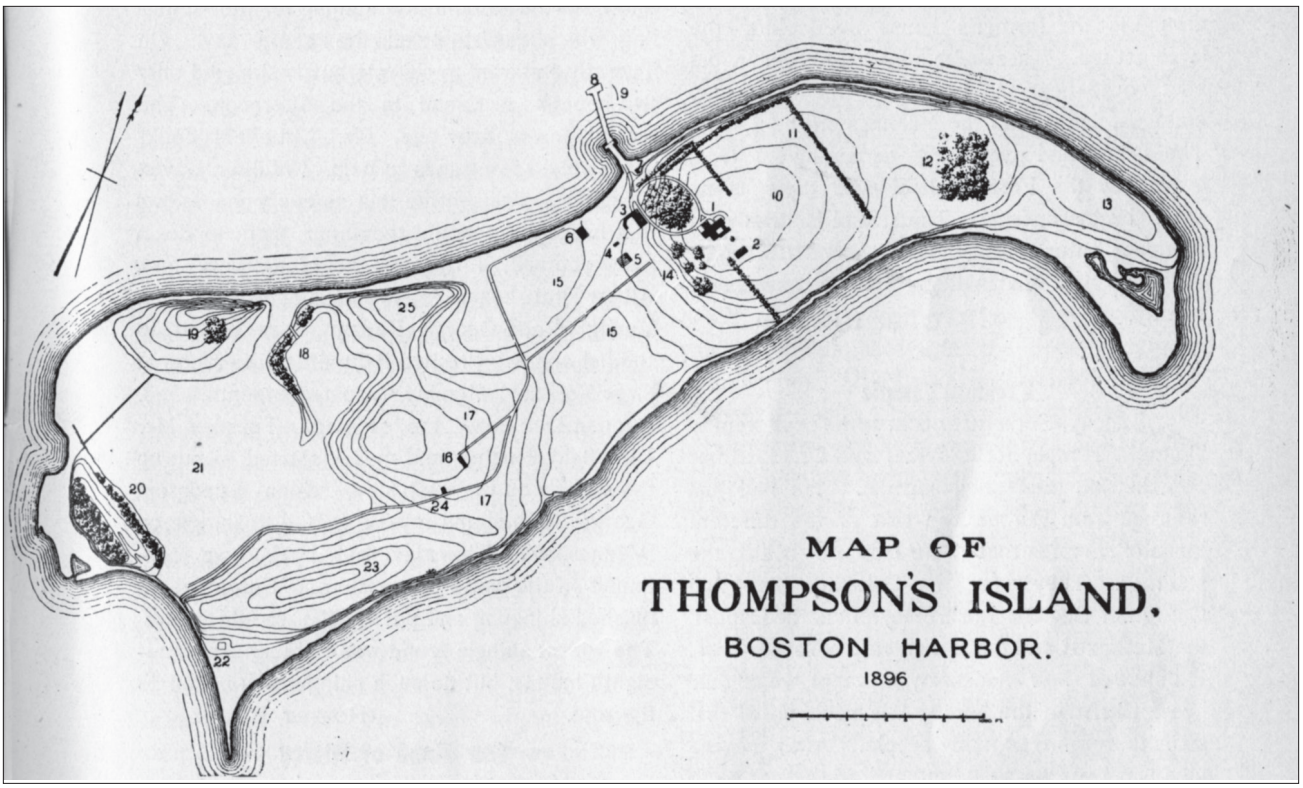


Figure 2.5. Map of Thompson Island, showing the Boston Farm and Trades School's institutional Landscape, with farm buildings clustered at the center of the island, 1896. Courtesy of the University Archives & Special Collections Department, Joseph P. Healey Library, University of Massachusetts Boston: Thompson Island Collection.



Figure 2.6. Boston Farm and Trades School students harvesting crops on Thompson Island, late 19th century. Courtesy of the University Archives & Special Collections Department, Joseph P. Healey Library, University of Massachusetts Boston: Thompson Island Collection.



Figure 2.7. Map of Peddocks Island, showing the Cleverly Family farm on East Head, 1860. US Coastal Survey.



Figure 2.8. Man on a tractor mowing a cleared field with mature plantings to the right, 20th century. The Trustees of Reservations, Worlds End Photographs, 1886 to Today.



Figure 2.9. Cleared field at Worlds End with mature plantings, 20th century. The Trustees of Reservations, Worlds End Photographs, 1886 to Today.

3. TRADE AND NAVIGATION

Boston Harbor has been home to one of the most active ports in the nation for almost 400 years. Beginning with European settlement, port activities have been central to the local economy and have shaped development, leaving their imprint along the waterfront and inland communities. Wharves altered the coastline, navigational aids marked harbor channels and illuminated the seaward horizon, and the city's growing population fed locally abundant resources into a burgeoning maritime economy. By the middle of the nineteenth century, a system of canals and railroads fueled the nation's foremost shipbuilding center and the Port of Boston boasted the highest per capita tonnage in the United States. At one time, the city was more of a component of the harbor in which all streets led easily to the waterfront, in contrast to the contemporary harbor that lies hidden from the city's center behind a screen of tall buildings, highways and overpasses. The deterioration of waterfront structures accompanied the precipitous decline in commercial shipping tonnage during and after the Civil War. Despite a resurgence of shipping in the 1880s, the growing railroad and industrial economy reoriented urban spatial relations and redirected traffic away from the harborfront. During the twentieth century, land, and later air transportation, bypassed the harbor until open space planning and the rise in harbor recreation restored Boston Harbor and its islands to the city's vibrant cultural landscape. Within the theme of trade and navigation, this chapter describes the cultural resources associated with exploration, maritime trade, shipbuilding, lighthouses and navigational aids, and life saving.

EXPLORATION

During the sixteenth century European explorers, including Englishmen John and Sebastian Cabot, sailed along the New England coast in search of the elusive northwest passage to the Orient. Boston Harbor's narrow entrance, the relatively high glacial drumlins, and the confluence of three rivers—the Mystic, Charles, and Neponset—make Boston Harbor easy to discern in the travel logs and maps of early European explorers. A series of sixteenth-century maps drawn by European cartographers depicts what would come to be known as Massachusetts Bay, but the first documented exploration of Boston Harbor awaited the next century.[1] By this time, colonization was replacing the search for routes to the Orient as a motivation for westward exploration.

In 1605, Samuel Champlain and Sieur de Monts sailed into Boston Harbor and named it the "Baye de Isles," commenting upon the harbor's most prominent features.[2] Champlain returned to the harbor in 1608 and described the coastal landscape:

We observed many smokes along the shore, and many Savages running up to see us. Sieur de Monts sent two or three men in a canoe to them, to whom he gave some knives and paternosters to present to them; with which they were greatly pleased, and danced several times in acknowledgment. We could not ascertain the name of their chief, as we did not know their language. . . As we continue our course, large numbers came to us in canoes from the islands and mainland.[3]

Champlain's description betokened an already long and continuous exchange between Europeans and New England Indians and, moreover, reflected the geographic orientation of early visitors from across the Atlantic. These early parties confined their explorations to areas within easy reach of the coast and portrayed these landscapes largely in terms of commodities. Descriptions of these "merchantable commodities" prevailed in early European accounts of the natural environment, perhaps reflecting more upon the nature of European markets and the importance of early trade contacts than on the representative characteristics of the pre-contact landscape.[4]

Not surprisingly, the islands figured prominently in this cartographic landscape. Within a decade of Champlain's visit, John Smith charted and named Massachusetts Bay. His 1616 map depicts eight islands in Boston Harbor and a related "Description of New England" portrays Massachusetts Bay as "the Paradise of all those parts." [5] Smith's writings undoubtedly harbored an ideological bias, one that was largely successful in attracting colonists first to settle at Plymouth Colony in 1620, and then to the Massachusetts Bay Colony in 1630. In an account of his 1633 voyage to New England, the English traveler William Wood contributed his own enticing portrait of a landscape of abundant fields, forests, and other natural resources, including a favorable appraisal of Boston Harbor:

This harbor is made by a great company of islands, whose high cliffs should cut the boisterous seas; yet may easily deceive any unskilful [sic] pilot; presenting many fair openings and broad sounds, which afford too shallow water for ships, though navigable for boats and pinnaces. It is a safe and pleasant harbor within, having but one common and safe entrance, and that not very broad; there scarce being room for three ships to come in board and board at a time; but being once in, there is room for the anchorage of 500 ships. The seaman having spent their old store of wood and water, may here have fresh supplies from the adjacent islands, with good timber to repair the weather-beaten ships.[6]

Though good anchorage and deep channels had led Winthrop's party to select Boston Harbor over other potential settlement sites, the early Bostonians had intended to lead a rather pastoral existence in their new Eden, where "Indian corn answers for all" and fish and fowl were in great plenty. Accordingly, their

aspirations were reflected in a conceptualization of the landscape that categorized features according to potential use for subsistence and trade (forestland for timber and firewood, grassland for grazing, salt marshes for cutting hay, etc.) and that in both deed and name reproduced the English social hierarchy.[7]

Like most of New England, Boston Harbor had already been "discovered" and settled by indigenous population who shared their knowledge of the landscape with their new European neighbors. Through generations of seasonal migration New England Indians traversed coastal and inland areas, rendering the physical landscape into an informative map of resources with the place names that they ascribed to agricultural fields and locations of resources to be gathered. New England Indians seasonally visited the Harbor Islands, where they harvested shellfish and edible plants. Masconomo, the sagamore of Agawam, may have shared his knowledge of the islands' natural landscape when he accompanied David Thompson on his search for a suitable trading post site in 1619. Thompson chose the island that thereafter bore his name because it had a small river and harbor, two important resources with which the Indians undoubtedly would have been familiar.[8]

Thompson operated his island trading post until his death in 1628.[9] As on Thompson Island, the early trade relations for products that had characterized European-Indian relations during the first decade of colonial settlement gave way to more permanent and culturally contested transactions with English purchases—or confiscation—of lands from the Indians. Most colonial claims to ownership of land in New England derived from grants from the English Crown and denied Indian ownership of "unimproved" lands. Deeds—when they existed at all—typically extinguished all Indian usufruct rights and established fixed boundaries to the land. Royal charters, such as the one granted to the Massachusetts Bay Colony, drew a set of boundaries on the landscape defined by lines of latitude that cut a sweeping and abstract swathe:

To have and to holde, possesse, and enjoy all and singuler the aforesaid continent, landes, territories, islands, hereditaments, and precincts, seas, waters, fishings, with all manner their commodities, royalties, liberties, prehemynences, and profitts that should form thenceforth arise from thence, with all and singuler their appurtenances, and every parte and parcell thereof, unto the saide Councell and their successors and assignes for ever.[10]

Initially the colony made land grants to individual owners, but replaced distribution with collective grants in tracts that averaged six square miles to settlers acting together as a town. Many of the Boston Harbor Islands, including Spectacle, Peddocks, Long and Lovells, were granted to local towns and divided among tenants. Grants of house lots, planting fields, pastures, meadows and wood lots were for the most part allocated on the basis of one's means and ability to "improve" them, projecting the social and economic hierarchy onto the landscape.

Such prominent settlers as Edward Rainsford, Samuel Ward, and John Nelson owned large tracts of land and established estates on Rainsford, Bumpkin, and Long Islands, respectively. Massachusetts' initial requirement that all land be improved within three years under penalty of forfeiture provided an incentive toward rapid development. Within fifty years of the Puritan settlement, nearly all of the islands in Boston Harbor were mapped, named, and owned by English colonists. These English conceptions of land tenure reflected a different system of land use than that of their Indian predecessors and would, in turn, introduce a host of ecological changes to the landscape. The "ecological cornucopia" of the Indian landscape would be transformed into a store of tradable commodities. As one historian would later note, "the sweeping alterations of the colonial landscape…were testimony that a people who loved property little had been overwhelmed by a people who loved property much."[11]

MARITIME TRADE

Europeans and Algonquin Indians had engaged in trade for well over a century before settlement began in Massachusetts; metal goods, weaponry, clothing and ornament were exchanged for furs and skins. From the end of the sixteenth century, with the rising popularity of fur hats and the decline in European fur production, the North American fur market introduced Algonquin Indians into the European commercial economy and to a complicated transition in their relationship to the landscape. At the time that Champlain's 1608 expedition encountered trade envoys from the islands and mainland of Boston Harbor, every recorded European exploration found coastal Indians eager for trade, suggesting that the indigenous peoples were already orienting their activities to enable trade with Europeans. By the seventeenth century, commodities were not merely useful resources, but rather objects of commerce that were owned and then traded for profit in a mercantilist economy. Certain items in the New England landscape—fish, furs, timber—were valued not for their immediate utility but for their market value in the early commercial economy. Trade in commodities involved a small group of merchants, yet exercised an inordinate influence over the New England economy and its landscape.[12]

Behind the portals of Deer Island and the Hull peninsula, sheltered by the breakwaters of the Harbor Islands, lay the nearly 4,000 acres of anchorage of Boston Harbor. Good anchorage, deep channels, and high ground proved advantageous in the navigation of the harbor's often deceptive ledges, and were of inestimable value to the company of Englishman who settled the Shawmut peninsula in 1630. While Bostonians had hoped to lead a bucolic existence, the city's maritime enterprise began early. When in 1641 the English Civil War disrupted trade with the mother country, Governor Winthrop observed that the colony set to "work to provide fish, clapboards, plank, etc…and to look to the West Indies for a trade." During the first decade of settlement, nearly 300

ships arrived from England, bearing 21,200 passengers. Boston quickly became the largest port in the colonies with "more good vessels ...than...all Scotland and Ireland" and developed a profitable commerce with Dutch and Swedish settlements along the Hudson and Delaware Rivers.[13] Massachusetts earned the reputation as the "Holland of America" and Boston maintained a large and lucrative trade with Britain and the Dutch colonies at Surinam and Martinique during the late seventeenth and early eighteenth centuries. In 1698, Boston was the largest port in the colonies. Four years later, only London and Bristol surpassed Boston in shipping tonnage within England's mercantile empire.[14] The harbor landscape during the 1600s was one filled with ships arriving with new colonists and departing with trade goods, with 80 wharves ringing the Boston peninsula. Long Wharf, completed to a length of 1,586 feet in 1715, became central to Boston's shipping concerns and the locus of development in the city's financial district (Figure 3.1).

By the late 1600s, Boston served as the gateway for most imports to the colonies. Boston ships transported European goods, timber and foodstuffs to the West Indies and exported sugar, molasses, rum and human cargo. The wealth gleaned from the lucrative trade triangle that had allowed the Massachusetts Bay Colony to flourish may have also girded the fortunes of some of the early proprietors and tenants of the Boston Harbor Islands. Samuel Maverick, one of the first slaveholders in New England, employed slave labor at his "fortified mansion" on Noddle's Island.[15] Boston was above all a shipping town and, during conflict with England, its treasonous talk concerned the rights of free trade and the end to commercial restrictions rather than the universal rights of man. The centrality of maritime trade in the local economy accounts for the strident opposition to Parliamentary bills that catapulted Boston to the forefront of the struggle for independence. The enactment of the Boston Port Bill in 1773 virtually halted trade in Boston Harbor, which became the first military arena in the War for Independence.

While the port's merchant fleet sustained heavy losses during the war, Boston reasserted its dominance in the shipping and ship building industries by the close of the century. The post war recession was relatively short-lived. Leading patriots took over positions in business and politics vacated by Loyalists. Soon shipyards, ropeworks, chandleries, and counting houses along Boston's waterfront were alive and the harbor filled with masted trade ships going to and coming from Europe, China, California, South America, and the West Indies. A tide of new businesses and a concern for security transformed the harbor islands landscape. Boston proper, bursting at the seams, began to expand into the harbor by leveling its hills and filling the surrounding mudflats, beginning a tradition of earthmoving that continues to the present. Amidst the growing trade traffic, the new commonwealth built wharves, a stronger system of harbor defense, navigational aids and a network of huts of refuge for shipwreck victims. With harborfront real estate

at a premium, municipal and social institutions were relocated to less valuable properties, including the Harbor Islands. The harbor reverberated with the sounds of gunfire and artillery as the city celebrated the return of Boston's first ships to circumnavigate the globe and signaled the beginning of a period of direct trade between Boston merchants and Asian ports.[16] Trade with China and India during the early years of the republic solidified Boston's reputation as a maritime center. In 1790, arrivals from abroad numbered 455 vessels and in a single day as many as 70 vessels left the Port of Boston for all parts of the globe. The Napoleonic decrees and the War of 1812 inflicted severe blows on Boston's flourishing maritime trade and the port was closed by hostile war-fleets.

Trade rebounded steadily after the war. Boston owned the highest per capita tonnage in the United States and only New York surpassed the port in absolute tonnage. Nonetheless, a decade of ship seizures and the deleterious effects of the Jeffersonian embargo had encouraged many New England entrepreneurs to redirect capital toward manufacturing investments. Merchant capital accumulated through port activities financed manufacturing ventures, including New England's mill towns, and railroad construction. The Middlesex Canal, constructed between Lowell and Boston and opened in 1804, increased the port's revenues and traffic.[17] Beginning with the incorporation of the Boston and Lowell Railroad in 1830, three railroad lines linked the port to the industrial hinterland. While railroad construction adversely impacted some harbor resources, the iron rails connected the port to a vibrant economy and encouraged trade with southern cotton ports and South American sources of wool and animal hides.[18] By 1840 Massachusetts was primarily a manufacturing state. Boston's registered tonnage grew from 149,186 in 1840 to 270,510 in 1850. A lucrative packet industry brought immigrant labor to Boston Harbor, where many new arrivals were introduced to the city at a municipal immigration station on Deer Island beginning around 1850.[19]

From the vantage point of the islands, one could witness the transformation of the harbor during the national and antebellum periods. Boston's first steamboat, the *Massachusetts,* arrived from Philadelphia in 1816 and made regular trips between Salem and Hingham.[20] By 1830, steamships provided local service throughout the harbor and regular service to such coastal destinations as Portland, Maine. From 1840 until 1848, the Cunard Line's fleet of transatlantic steamships hailed Boston as its exclusive American port of call, docking at East Boston. Boston's maritime commerce peaked in 1855 and though it was eclipsed by New York shortly thereafter, the harbor continued to hold its position as the second port in the nation for much of the remainder of the nineteenth century.[21] By the mid-1800s, Boston had trade monopolies with ports in Europe, South America, Asia, Africa, and the West Indies. Maritime activities consumed one-fifth of the city's available land mass and created the demand for more land; piers were extended and land filled to extend the waterfront. While the harbor islands were largely excluded from the maritime infrastructure, they continued to serve the harbor economy.

Long Island provided ballast for outbound ships and many of the islands accommodated the overflow of social service facilities that taxed the spatial resources of Boston's burgeoning population and industries (Figure 3.2).[22]

The shipping panic of 1857 marked the beginning of the spectacularly rapid decline of America's maritime industries. The rise of low-cost sailing ship production in Great Britain and Canada; the collapse of the California bubble; improved efficiency of foreign shipping; early inroads of foreign steamships; and the commercial disruptions of the Civil War—particularly the destruction of the cotton trade—contributed to a reversal of the nation's maritime fortunes. In the 1860s Boston was forced to watch the steady decline of her deep-water fleet. Not a single steamer sailed directly from Boston to Europe during 1869, signaling the decline in Boston's importance as an international port of trade. Boston's international shipping trade rebounded slightly after the Civil War as free wharfage and cooperation from the port's railroads attracted European trade. In 1880, 196 steamers journeyed directly between Boston and Liverpool; in 1896 there were 361 ships sailing between Boston and Europe. Boston was the nation's leading cattle exporter and several steamship lines that called at Boston served an active transatlantic passenger and immigrant business.[23] However, the revival was limited and relatively short-lived. By the end of the nineteenth century, the coastal rail route linking Hingham and Quincy to Boston put local steamships and their town wharves out of business. Foreign trade declined precipitously during the first decades of the twentieth century. After World War I, the southern migration of Massachusetts textile industries, the advance of motor trucking, and legislative restrictions on immigration devastated the port.[24] The extensive waterfront infrastructure that had supported Boston's maritime commerce blocked visual access to the harbor and its islands.

The port's inner-city location and relatively shallow channels undercut Boston's role in the era of modern merchant shipping with post-panamax container ships. However, Massachusetts Port Authority owns facilities that handle in excess of a million tons of cargo, while privately-owned bulk terminals handle another 22 million tons of cargo each year.[25] As industrial uses of the waterfront declined, planning regulations began to restore a visual link to the harbor and tourist and service business occupied the commercial buildings of the waterfront district.

SHIP BUILDING

Boston Harbor's topography encouraged the earliest settlers to rely upon water transportation. Though some of the American Indians who seasonally inhabited many of the Harbor Islands may have walked across sandspits during low tide, they had certainly developed watercraft to negotiate the bays, estuaries and rivers that were part of their subsistence landscape. One early European visitor observed that Indian canoes were "continually flitting up and down among the islands,"

while another described the local watercraft:

We had the sight of an Indian pinnace sailing by us, made of birch-bark, sewed together with the roots of spruce and white cedar (drawn into threads), with a deck, and trimmed with sails top and top-gallant very sumptuously.[26]

The landscape that had supplied New England Indians with the raw materials for boat construction offered the same appeal to European colonists. Wood's 1633 travelogue noted that the harbor, and particularly the islands therein, were supplied with "good timber to repair the weather-beaten ships."[27] A year after the founding of the colony, Governor Winthrop launched the barque *Blessing of the Bay*; the ship *Seafort* was completed four years later, in 1635. By 1660 shipbuilding was the leading industry in Boston and several other coastal towns.[28] A dockyard at Quincy's southern harbor launched boats into Quincy Bay beginning in 1693.[29] Shipping rapidly became the commodity upon which the Massachusetts colony staked its fortune in the colonial economy and Boston's yards labored to meet the needs of local mercantile capital.

After a prolonged recession the shipbuilding industry rebounded, allowing Massachusetts to continue its reputation as the hub of boat construction, with most builders located to the north at the mouth of the Merrimac and Salem Rivers and to the south along the North River. The shipyard in Medford on the Mystic River, where the *Blessing of the Bay* was constructed in 1631, was reactivated in 1802. Boston and Charlestown shipyards were also active during this period.[30] However, local timber was becoming scarce and competition fierce, forcing builders to rely on distant sources and lower profits. The Middlesex Canal, opened in 1804, provided Boston with new timber resources, and thereafter some of the most productive shipbuilding complexes in the nation operated at Medford and East Boston.[31] As part of a congressionally-mandated program to protect American commerce from French naval attacks, Secretary of the Navy Benjamin Stoddert purchased a site in Charlestown and established the Boston Navy Yard in 1802. Primarily used as a storage facility until the War of 1812, the yard constructed some vessels—including the 74-gun *Independence*, the Navy's first ship-of-the-line—and expanded under steady growth as a repair and supply facility until the Civil War.

Clipper ships, introduced by New York shipyards to serve in the highly profitable "Canton" trade during the 1840s, offered fantastic profits in coastal trading during the California gold rush. Boston enjoyed a central position in financing the California trade and in the construction of fast vessels for both the China and California trades. The clipper era marked the peak of shipbuilding in the harbor, when local yards excelled in vessel design and production. Yards at East Boston, Medford, Chelsea, Quincy, Charlestown and South Boston produced the largest and fastest vessels in the world during the apex of the nation's maritime industries (Figure 3.3). At mid-century, Donald McKay built many of the world's fastest

clipper ships at his renowned yard on Noddle's Island. Between 1848 and 1858 more than 170 vessels slid from the ways at East Boston and raced the high seas "in search of El Dorado" in both European and Asian markets. Even in 1856, after the decreasing demand for California clippers had curtailed the nation-wide shipping boom, Boston yards launched forty-two ships, three barks, one brig and one schooner.[32]

During the Civil War the Boston Navy Yard expanded rapidly as a repair and supply base. Several small vessels were converted to warships and the monitor *Monadnock*, a low deck, iron clad, warship with double gun turrets, was constructed. Boston remained at the center of the shipbuilding industry until after the Civil War, when steam engines began to rapidly replace wooden sailing vessels. While the Boston yards adjusted to the market shift, the port never regained the prominent position it had held in the age of clipper ships.

By 1880 Boston's shipyards were limited largely to repairs to Maine-built coastal vessels. In Charlestown, a second wave of shipbuilding coincided with the resurgence of interest in naval matters during the last decade of the nineteenth century. The Navy began building steel vessels at the Boston Navy Yard, as the facility came to be known. A second drydock was added and the yard continued to construct, recondition, and repair ships during most of the major military conflicts of the twentieth century until its closure in 1974.

Another exception to the general deterioration in shipbuilding was the Fore River Ship & Engine Building Company, which received its first major naval contract in 1893. In 1901 the yard was moved to Quincy to provide room for the construction of 15,000-ton battleships. Boston Harbor yards produced iron-hulled ships and were particularly active during World War I. Beginning in 1942 the Bethlehem/ Hingham shipyard occupied the former site of the Hingham Polo Club across the harbor from Grape Island. From 1942 until 1945 the shipyard produced landing crafts, destroyer escorts, landing ship tanks, and fast-attack transports. Liquid natural gas tankers and nuclear-powered military ships were built at the Port of Boston until the General Dynamics Shipyard in Quincy closed in the 1980s.[33]

LIGHTHOUSES & NAVIGATIONAL AIDS

Early European colonists found that the shipping route to Boston was treacherous around Cape Cod and past the ledges of Cohasset, the Brewsters and the Graves. The Boston Harbor Islands were difficult to navigate, particularly by those unfamiliar with the harbor. In 1633, William Wood remarked: "This harbor is made by a great company of islands, whose high cliffs shoulder out the boisterous seas, yet may easily deceive any unskillful pilot, presenting many fair openings and broad sounds which afford too shallow water for ships, though navigable for boats and small pinnaces."[34] Boston's growing maritime economy necessitated

navigational aids to help ships negotiate the hazardous coast and dangerous storms and fogs of the harbor. As early as 1673, there was a tended beacon at Point Allerton in Hull.[35] A visitor to Boston in 1680 observed the light at the entrance to the harbor:

There are many small islands before Boston, well on to fifty, I believe, between which you sail on to the town. A high one, or the highest, is the first that you meet. It is twelve miles from the town and has a beacon upon it which you can see from a great distance, for it is in other respects naked and bare.[36]

The Town of Hull erected what was probably the first lighthouse in the area on the northern bluff of Great Brewster Island in 1681. This light was removed subsequently, probably after a more permanent beacon was proposed in a 1713 petition from local merchants to the General Court of Massachusetts. The petition proposed the "Erecting of a Light Hous [sic] and Lanthorn [sic] on some Head Land at the entrance of the Harbour of Boston for the Direction of Ships and Vessels in the Night Time bound into the said Harbour." An appointed committee noted that the "want of a lighthouse at the entrance to the harbour of Boston hath been a great discouragement to navigation by the loss of lives and estates." The Boston Light Bill, passed in July 1715, selected "the Southernmost Part of the Great Brewster called Beacon Island [as] the most convenient Place for Erecting a Light House." Completed in 1716, fully thirty years before other lighthouses were erected in the United States, the Boston Light on Little Brewster Island played both a navigational and strategic role in the colonial history of Boston Harbor.[37] A house, barn and wharf served the needs of the resident keeper.[38] The third lightkeeper, John Hayes, asked for a gallery to be built on the seaside of the lighthouse and a fog gun to be placed on the island. In 1719, the court installed on Little Brewster the first cannon in the American colonies to guide distressed ships through heavy fog.[39] Though the lightkeeper served—and probably earned most of his income—as a harbor pilot to ships entering Boston Harbor, a more extensive navigation system was not installed until after the War for Independence.[40] Bad gales and an accidental fire damaged the light in the 1720s. In 1751 a second major fire damaged the lighthouse so that only the walls remained. A ship's lantern, mounted on a 40-foot spar and staked east of the tower's foundation, served as a temporary light until the lighthouse could be repaired.[41]

The Boston Light suffered major damage during the War for Independence. The British command at Boston took control of the light in 1774 and kept it in operation until early July 1775, when a small detachment of American troops under the command of Major Vose burned the wooden part of the lighthouse. The British stationed marines on the island and immediately began repairs. On July 31, a 300-man party, dispatched by General George Washington and led by Major Benjamin Tupper, landed their armed whaleboats on Little Brewster Island and rendered the completed work unserviceable. Though the British again re-

established the light, they destroyed the top of the structure with a time charge during their evacuation of the harbor in June 1776. A guard of Americans landed on Little Brewster shortly thereafter and recovered materials, including the top of the old light that was to be "delivered to the committee to supply the canon with ladles."[42]

No light illuminated the entrance to Boston Harbor until 1783, when the Commonwealth rebuilt the Boston Light. The state legislature approved funds for the construction of a 75-foot rubble stone tower and apparently followed the original plans, incorporating the remaining sections into the new structure. Two piers were constructed on the northwest side of Little Brewster Island (Figure 3.4). The Commonwealth maintained the structure until 1790, when the federal government assumed control of the manned station along with five other lighthouses, four navigational buoys and the beacon near Boston Light.[43] Through an act passed during the previous year, Congress had created a Lighthouse Establishment under the Treasury Department to assume responsibility for the design, construction, maintenance, and staffing of lighthouses. Congress authorized improvements to existing structures, including the installation of Argand lamps, and construction of new lighthouses and illuminating devices during the Establishment's first three decades. Federal intervention signaled a shift from local concerns and private subscriptions towards a systematic effort to provide for safe navigation along the Atlantic coast.

By the turn of the century, the Establishment added twelve more lighthouses on the Atlantic Coast to the twelve that had come under federal ownership in 1790, but the system remained—as one contemporary observed—"in the most inefficient condition."[44] In 1809, six iron bands encircled and strengthened the Boston Light's cracked tower. Argand lamps replaced the original oil lamps in 1811. A second light was constructed in the Inner Harbor at the north end of Long Island in 1819.[45] The Inner Harbor Light, later known as the Long Island Head Light, comprised a white brick cylindrical tower and a small brick gable-roofed entryway. Typical of most early structures, both the lighthouses were simple in design, of moderate height, and situated within a complex of ancillary buildings that housed equipment and served the residential needs of the keeper. Early lighthouse complexes often included a covered walkway, an oil house, storage sheds, bell and foghorn sheds, the keeper's quarters, and such other outbuildings as barns, wood sheds, and outhouses. While it is highly likely that both the Little Brewster and Long Island complexes incorporated residences and oil houses, there is little documentation of early buildings and structures on the islands (Figure 3.5). An early image of Boston Light depicts a two-story salt box residence set amidst one half-dozen trees and two outbuildings.[46]

Such allusions to a domestic landscape within the lighthouse complexes confounds the popular and often romanticized image of lone towers precariously

perched upon wind-swept, rocky crags and tended by isolated men. Surely this scenario is true for some lighthouses, including the light established on Minot's Ledge near Cohasset in 1843, yet the two early properties in Boston Harbor supported a much more social landscape. Lighthouse keeping was often a family affair and the landscape reflected the other jobs that keepers and their families pursued, including piloting, fishing, and farming.[47] Boston Light's first keeper, George Worthylake, lived on Little Brewster Island with his wife, two daughters, and an African slave and kept sheep across the channel on Great Brewster Island. John Hayes supplemented his income by entertaining sailors during the first year of his tenure as keeper in the early eighteenth century. While Tobias Cook was keeper of Boston Light from 1844 until 1849, a visitor noted a lively social scene that included young girls brought from Boston to work in a short-lived "Spanish" cigar factory. Lucy Maria Long, the daughter of Cook's successor, William Long, records an active social life both on and off of Little Brewster Island. Long's journal relates how the family crossed to Great Brewster Island and well along the Brewster spit at low tides and tells of the many visitors to their homestead, including "as many as six pilots landing at once to enjoy a social hour or two at the light."[48] While it is unclear how much of the seventeenth- and eighteenth-century agricultural landscape remained under tillage when the Head Light was constructed on Long Island, the island entertained many visitors at the mansions and resorts, including the Long Island House, that were constructed by the mid-nineteenth century. It is likely that the landscape surrounding the lighthouse complex included kitchen gardens to supply the keeper's table and paths to the establishments on the island's southern shore that proffered fare for more social appetites.[49]

The increasing importance of the maritime economy encouraged other improvements in Boston Harbor by both local and federal authorities. In 1797 Congress appropriated sixteen hundred dollars for sixteen buoys, "to be placed in and near the harbor of Boston." The buoys were made of five-foot wooden staves bound by iron hoops, in the form of a truncated cone, and moored by the smaller end.[50] A "telegraph" system of raised semaphores was devised during the latter portion of the eighteenth century and used to signal the arrival of ships by relaying messages from Edgartown and Wood's Hole along the coast to Hull and then on to Boston. The Boston Marine Society reviewed charts and candidates for harbor pilots and in 1822 constructed the conical buoy perched on a granite base on Nix's Mate. In 1825, Congress enacted a law for "the preservation of the islands in Boston Harbor necessary to the security of that place" and empowered the U.S. Army Corps of Engineers to improve the harbor and adjacent navigable channels for shipping purposes. While the Corps thereafter oversaw bridge construction and operations and maintained records of ships and cargo that moved through the port, accurate mapping of the harbor and the coast was delayed until the establishment of the United States Coastal Survey in 1843. [51]

Mounting criticism of the federal system of navigational aids caused Congress to review the program in the 1830s. Congress appropriated additional funds to construct new lighthouses and improve existing structures and convened a committee to review and improve administration in 1842. While the number of lighthouses increased dramatically from 59 in 1820 to 297 in 1850, it was not until mid-century that the federal government introduced new methods of construction, illumination, and service. The Secretary of the Navy commissioned a report on technological advances in 1845, and in 1847 the lighthouse appropriation bill was amended to include a provision for assistance to shipwrecked mariners. In 1850, an Act of Congress called for a system of coloring and numbering all buoys, but the most important development came with the reorganization of the Lighthouse Board in 1852. The Board, which would administer the lighthouse system until 1910, immediately divided the American coast into twelve districts under the direction of military inspectors and completed an inspection of all structures. Early reports advocated the superiority of Fresnel lenses and, during the next ten years, such lenses were installed in many lights. The Board prepared extensive and detailed construction drawings.[52] Experiments with fuel, the introduction of steam whistles and bell buoys, and the installation of prefabricated cast iron lighthouses dramatically improved navigation. In addition, replacement of civilians with trained military personnel professionalized the service. By the early twentieth century, the United States had created an effective navigational warning system.[53]

In Boston Harbor, improvements to Boston Light during the 1840s included the installation of a cast-iron circular stairway, a cast-iron deck and scuttle, and an outer door.[54] A fog bell replaced the cannon as a fog signal in the late 1840s.[55] In 1859, the tower was raised fourteen feet to its present height of 89 feet and reinforced with brick and new masonry and a new second-order Fresnel lens was installed.[56] A new duplex dwelling was also constructed. In the 1870s, the fog signal was replaced with a more modern trumpet and later a siren. In 1876, a single-story rectangular fog signal building was constructed immediately east of the tower, at the edge of the rock ledge at the eastern shore of the island. Another one-story brick structure, the oil house, was built on the south shore of the island during the same year. The principal keeper's house, a two-story wood frame house, was erected on a raised knoll at the western end of the island in 1884. The cistern building, a one-story wood frame building with a hip roof for rainwater collection, was also constructed at this time just to the north of the tower. Other ancillary buildings, including an auxiliary light, several fog signal buildings for scientific experiments, woodsheds, and privies crowded the island at the end of the nineteenth century (Figure 3.6). An 1898 gale carried away the boathouse and south wharf, both of which were replaced during the following year. Marine railway tracks ran from the beach on the western end of the island to the one-story wood frame structure just north of the land end of the south pier.[57]

Bug Light, built in 1856 on the edge of a long spit which runs out from Great Brewster, warned vessels of Harding's Ledge in the Narrows off of Point Allerton (Figure 3.7). In 1890 the Deer Island Light was established on Fawn Bar, five hundred yards off of the island. The light's brown conical tower supported a beacon visible for thirteen miles. Two range lights were completed on Lovells Island in 1903 and placed in the charge of a resident keeper.[58] Another resident keeper maintained the four Spectacle Island Range Lights that were erected in 1903, though the two inner lights were removed when the channel was straightened.[59] The federal government began construction of the Graves Light, Boston Harbor's outermost light, in 1903 and completed the granite structure on a foundation just four feet above the low tide mark two years later (Figure 3.8). A footbridge connected the round tower to a granite oil house located ninety feet to the south and 2,000 tons of riprap protected the wharf from northeast gales. The keeper climbed from the first stage of the tower, which held a covered water cistern, through the engine room on the second level and residential quarters of the next three stages, to what was at the time the most powerful beam in Massachusetts.[60]

In 1903 the burgeoning Lighthouse Board was transferred from the Treasury Department to the Department of Commerce and Labor, and in 1910, reorganized as the Bureau of Lighthouses. By 1914, the Bureau ran the largest lighthouse system in the world, with more than 16,888 aids. Technological achievements were installed rapidly and the system employed electrified and automated equipment, allowing the Bureau to double the number of navigational aids while decreasing personnel. Radio-marker beacons were outfitted for radio-telephone transmission, range lanterns placed in service, and by 1937 commercial electric power lines extended to even the most remote lighthouses. Under the Presidential Reorganization Act of 1939, the U.S. Coast Guard subsumed the Bureau's activities. During the next fifty years, new technologies allowed for increased automation and alternative navigational aids. Advanced technology has reduced a typical active light station that once would have included a formidable, manned tower and numerous ancillary buildings to small, often solar-powered lights that require attention only once or twice a year. By the late 1960s, fewer than 60 lighthouses still had keepers and all lighthouses under Coast Guard Command were scheduled for automation by 1990.[61]

Long Island Head Light's last keeper, Captain Edwin Tarr, died in 1918 and the Lighthouse Board automated the light in 1929. Also in 1929, a fire destroyed the Bug Light and the Board voted to replace this manned light with an automatic bell and light.[62] A storm did considerable damage to the Lovells Island Range Lights in 1931, submerging the entire station under six feet of water. The lights were extinguished around 1939 and, upon request from the U.S. Army at Fort Standish, demolished during World War II.[63] A radio buoy, designed to direct large ships into and out of the port during fogs, was installed in the main ship channel off

Deer Island in the 1930s. A small light near Peggy's Point on Gallops Island was erected to warn ships passing through the Narrows Channel.[64] By the 1970s, the two remaining range lights on Spectacle Island had been removed (Figure 3.9).[65] When the Graves Light was automated in 1975, its first-order Fresnel lens was removed and donated to the Smithsonian Institute. In 1983, the Coast Guard wanted to replace the Deer Island Light, a three-tiered light set on a caisson in the harbor, with a low-maintenance plastic pole light. In conformance with the National Historic Preservation Act of 1966, the Coast Guard consulted with the state historic preservation office and was granted approval for the demolition of the old light that had been listed on the National Register of Historic Places.[66] The Coast Guard replaced Boston Light's kerosene beacon with an electric light in 1948 and, after extended debate, demolished the greatly deteriorated duplex house in 1960.[67] Pursuant to December 1989 legislation, Boston Light is preserved as the only manned lighthouse in the country.[68]

LIFE SAVING

Shipwrecks, like the sinking of the French man-of-war *Magnifique* off the coast of Lovells Island in 1782, underscored the dangers of Boston Harbor. While the increasing presence of navigational aids improved harbor safety, the relative frequency of maritime deaths spurred a movement toward organized rescue operations. The Humane Society of the Commonwealth of Massachusetts, which later came to be known as the Massachusetts Humane Society (MHS), was founded in 1786 and incorporated in 1791 as the first American organization created solely to save the lives of shipwrecked mariners. Many of the most prominent Boston citizens—including James Bowdoin, Paul Revere, and Samuel Adams—were listed among a membership that "represented the humanitarian, scientific, and public-spirited interests of their community." In 1787, the Society began constructing small huts along the Massachusetts shore as houses of refuge for shipwrecked sailors. The house of refuge on the west end of Lovells Island, built in 1787, was the first life-saving structure in the nation. A second hut was constructed on the outer beach at Nantasket (Hull) during the same year and additional huts were placed on Calf and Peddocks Islands in 1789 and 1799, respectively. The huts, also called Humane or Charity Houses, contained food, candles, and a tinderbox for the shipwrecked sailors or passengers who managed to struggle ashore. The huts probably shared features similar to those described below:

> The six huts…are all of one size and shape. Each hut stands on piles, is 8 feet long, 8 feet wide, and 7 feet high; a sliding door is on the south, a sliding shutter on the west, and a pole, rising 15 feet above the top of the building, on the east. Within it is supplied straw or hay, and is further accommodated with a bench.[69]

Equipped with wooden shingle exteriors and outfitted with a wood stove and

some supplies, each hut cost about forty dollars to establish. Local people were appointed to maintain the largely unattended huts, but theft and vandalism became major problems.[70]

In 1803, the Society began investigating the use of lifeboats for life-saving operations. Four years later, the Society launched America's first life-saving boat and established the nation's first lifeboat station at Cohasset, just south of Boston Harbor. From 1807 through 1871 additional lifeboat stations were placed along the coast. This transition from shelter and resuscitation to active rescue led to further design and development of life-saving boats, as well as the pioneering use of the Hunt gun for extending lines and equipment to shipwrecks.

Despite these early efforts to formalize rescue operations, life-saving remained an unorganized and volunteer activity. Commercial fisherman served as largely unpaid surfmen in MHS operations, although the state and federal governments provided sporadic financial assistance to these volunteer lifeboat crews. Lighthouse keepers, who kept watch during storms, often came to the rescue of shipwreck victims. In June 1840 the Boston lightkeeper David Tower rescued 30 passengers from the *Diana*, which had foundered on the island's rocks during a storm. Twenty years later, keeper Moses Barrett sheltered the crew of the *Ewan Crerar*, who had rowed to Little Brewster after their brig struck a ledge off of the Graves. In 1861 the crew of the schooner *Enterprise*, wrecked on the Shag Rocks, reached the island in safety, but passengers on the *Martina* did not fair as well during a storm later that year. Hull Pilot Boat No. 2, manned by Captain Samuel James, rescued thirteen survivors from the Shag Rocks, but the bodies of those who perished were thrown upon the shores of Little Brewster Island for days after the storm. A boathouse on the island probably served the rescue efforts of the keeper and his assistants; in January 1882 Keeper Thomas Bates rescued the crew onboard the *Fanny A. Pike* after the schooner had broken in two upon the Shag Rocks.

By 1872, the coastal system comprised 76 lifeboat stations, supplied with boats, rafts, line throwing mortars, and other rescue equipment, and eight old huts of refuge. The lifeboat houses gradually replaced the refuge huts, the last of which was in use at Tom Never's Hill on Nantucket. MHS stations served as a model for lifesaving stations in other coastal states, mostly in New York and New Jersey, but the problems of station staffing persisted.

Several well-publicized, fatal shipwrecks along the Atlantic Coast attracted public concern and prompted calls for Congressional attention to the problem of maritime transportation safety. In 1871, Congress authorized and allocated funding for the creation of a life-saving system under the re-established Revenue Marine Bureau. The agency, a precursor of the United States Coast Guard, maintained both life-saving stations and cutters in a comprehensive rescue system. In 1878 Congress established a separate organization, under the auspices of the

Treasury Department, to provide life-saving assistance separate from services provided by revenue cutters. Under the direction of Sumner Increase Kimball the U.S. Life-Saving Service (USLSS) repaired, equipped, and manned stations and dramatically improved rescue operations. The infusion of federal funding allowed professionalization of the service, providing for the training, drills, practice, regulations, and standards of remunerated crews. A series of Houses of Refuge, modeled after the early huts of the Massachusetts Humane Society, were constructed in Florida and supervised by a year-round keeper. Many of these life-saving stations, equipped with lifeboats and surfboats, were moveable wooden structures that were easily relocated when sea encroachments threatened them.

Thirty-two USLSS stations guarded the Massachusetts shores, including the Point Allerton Life-Saving Station that opened at Hull in 1889. Joshua James, a renowned and highly decorated lifesaver who had supervised MHS rescue operations conducted by local commercial fishermen, served as Point Allerton's station keeper and continued to collaborate with MHS teams (Figure 3.10). During "The Great Storm of November 1898" James and his crew rescued seamen from four wrecks, including the schooner *Baker* that was stranded in the shoal of Little Brewster Island. The staff at Boston Light continued to assist with lifesaving operations. In March 1906 Assistant Keepers Charles W. Jordan and H.C. Tolland launched the station's 14-foot dory from the island's reconstructed boat house and rescued six crewmen for the foundering *C.H. Lane* off the southwestern side of Little Brewster Island.[71]

In 1915 the US Lifesaving Service and the Revenue Cutter Service merged to form the United States Coast Guard. Employees of the U.S. Lighthouse Service, the twentieth-century successor to the Lighthouse Board, continued to assist with lifesaving operations. Keeper Charles Jennings and his two assistants responded to the distress signals of the *U.S.S. Alacrity*, navigating their dory through a "gauntlet of ice, rocks, and raging sea" to save the crew from the wreck on nearby ledges. The transfer of the Lighthouse Service to the Treasury Department for consolidation with the U.S. Coast Guard facilitated the transfer of all operations at Boston Light to the U.S. Coast Guard in 1941, thereby consolidating navigation and rescue services.[72] Transportation and technological innovations during the second half of the twentieth century obviated the need for widely distributed coastal rescue stations. When the Coast Guard began automating all lighthouses—with the sole exception of Boston Light—in the 1960s, many of the boathouses had outlived their original function.

TRADE AND NAVIGATION SUMMARY AND RECOMMENDATIONS

RESOURCES ASSOCIATED WITH EXPLORATION

There is no known physical evidence of early European explorers on the islands other than their maps and travel logs. These logs, diaries, and maps are held in repositories locally and in Europe describe the harbor during this period.[73] The remains of the homesite of David Thompson, possibly located by a Thompson Island school group in 1889, are believed to have since disappeared due to shoreline erosion.[74]

RESOURCES ASSOCIATED WITH MARITIME TRADE

The Port of Boston contains approximately 100 piers, wharves and docks, of which 35 are located in the Inner Harbor. Long Wharf, shortened by the outward expansion of Boston, continues to serve as an active wharf and is now used for excursion boats, including the ferries to the harbor islands. The wharf is a National Historic Landmark and listed on the National Register. Connections are still apparent between the harbor, waterways and canals, and the vast network of inland manufacturing facilities.

RESOURCES ASSOCIATED WITH SHIP BUILDING

There are no physical remnants from shipbuilding on the harbor islands. Their role as a readily available source of timber terminated as rapidly as trees could be felled. However, many land-side points associated with the harbor islands contain abundant cultural resources associated with the Port of Boston's longstanding heritage as a center of shipbuilding. A portion of the Charlestown Navy Yard is preserved as part of the Boston National Historical Park to interpret the art and history of naval shipbuilding. The shipyard is listed in the National Register and is designated a National Landmark District. A Historic Resource Study is in progress that will synthesize information on the history of this shipyard. When complete, the Historic Resource Study for the Charlestown Navy Yard may help spawn similar studies in other remaining historic shipyards in Boston Harbor.

Other land-side points with shipbuilding resources are located to the north and south of Boston. Across the Inner Harbor from East Boston, on Castle Island stands a monument to Donald McCay. The 52-foot high granite shaft, faced with bronze medallions, contains the following inscription "Donald McCay, 1810 - 1880, Model builder, whose genius produced ships of a beauty and speed before unknown, which swept the seven seas, made the American clipper ships famous the world over, and brought renown and prosperity to the City of Boston." In Qunicy, an enormous crane in the Quincy Shipyard, known as "Goliath," is one of the most visible structures in the harbor landscape, rising 32 stories or

approximately 300 feet.[75] The Hingham Shipyard, dormant since the close of World War II, contains the shells of hastily constructed buildings and vestiges of the launches.

RESOURCES ASSOCIATED WITH LIGHTHOUSES & NAVIGATIONAL AIDS

Boston Light on Little Brewster Island is one of the most significant cultural resources on the harbor islands and one of the oldest, dating from the colonial period, though later altered. The original structure was erected in 1716, thirty years before any other lighthouses were built in the United States. The original structure was heavily damaged during the War for Independence and replaced in 1783. The light was also improved in the 1800s. The present structure is believed to contain portions of the original lighthouse. The lighthouse is listed on the National Register and is a National Historic Landmark, however the supporting structures and contributing landscape features have not been documented. The U. S. Coast Guard maintains the structures.

The Long Island Head Light and the Graves Light Station are listed in the National Register as part of the thematic nomination for lighthouses in Massachusetts. However supporting structures are not included in this nomination. The Long Island Head Light, automated in 1929, is still active, though it was out of service for three years beginning in 1982. The Coast Guard reactivated the light in 1985 with solar power and a modern plastic lens.[76] Nix's Mate, a navigational beacon erected in 1822 by the Boston Marine Society may be eligible for the National Register. Two historic lighthouses, Deer Island Light and Bug Light have been replaced with automated beacons.

RESOURCES ASSOCIATED WITH LIFE SAVING

Boston Harbor played an important role in the history of American lifesaving. There are no known remains of the three huts of refuge built in the 1780s and 90s by the Massachusetts Humane Society on Lovells, Calf, and Peddocks Islands. However, the 1889 Point Allerton Lifesaving Station, established in Hull by the United States Life Saving Service, survives as evidence of the harbor's early rescue services. The Hull Station, listed on the National Register of Historic Places, now houses the Hull Lifesaving Museum and preserves equipment, memorabilia, and archival materials that document rescue operations at Boston Harbor's surviving USLSS station. In addition, the Hull Lifesaving Museum also maintains the 1935 Coast Guard boat house at Hull's Pemberton Point. Boston Light's boathouse, which served the lifesaving operations of late-nineteenth and early-twentieth century keepers, is also listed on the National Register and remains under the jurisdiction of the U.S. Coast Guard, the heir to Boston Harbor's enduring maritime rescue tradition. Though the Light is the sole remaining manned station in the country, the Coast Guard no longer launches rescue operations from Little

Brewster Island. In addition, shipwrecks and other underwater archeological resources remain as testimony to the tragedy and heroism of the harbor's maritime past. Harbor Island resources associated with trade and navigation are listed in table 6 and recommendations for further actions include:

RESEARCH & DOCUMENTATION

- Consolidate copies of early maps, illustrations and descriptions in order to portray the appearance of the islands at the time of early European exploration and mapping. These sources document the early topography, physiography and vegetation of Boston Harbor Islands and may supplement research for natural and cultural resource treatment plans.

- Locate and synthesize images, oral histories, lore or written descriptions that document American Indian perspectives of settlements and cultures and their impressions of contact with Europeans in order to portray and interpret the Indian cultural landscape.

- Survey pre-1750 maps to identify Indian place names in Boston Harbor.

- Further investigate of the history of Boston's wharves, goods shipped and goods received.

- Study further and document land-side shipbuilding resources, including the East Boston, Quincy and Hingham Shipyards.

- Complete Historic Structures Reports or Historic American Building Survey or Historic American Engineering Record (HABS/HAER) studies for Boston Light, Long Island Head Light, and Graves Light stations and their adjacent structures. Expand National Register nominations to include supporting structures and surrounding landscapes.

- Research and document navigational aids in Boston Harbor, and determine whether any are eligible for the National Register, particularly the navigational beacon on Nix's Mate.

- Research and document extant physical remains of range lights on Spectacle, Gallops, and Lovells Islands.

PROTECTION & MAINTENANCE

- Examine the condition of lighthouses and adjacent structures, potential threats,

and review maintenance practices and their effect on historic fabric.

- Protect remaining submerged archeological resources.

- Support the preservation of buildings, equipment, memorabilia, and archival materials maintained by the Hull Lifesaving Museum.

EDUCATION & INTERPRETATION

- Investigate and interpret links to inland manufacturing facilities on the Charles, Neponset, and Mystic Rivers, the Middlesex Canal, and other smaller rivers.

- Incorporate the theme of lifesaving into interpretive programs on Lovells, Little Brewster, Calf and Peddocks Islands and at the Graves, Shag Rocks, and Hull and evaluate whether a reconstruction of a "hut of refuge" would be effective for interpretation and as a shelter on Lovells Island.

ENDNOTES

1. Fernando Columbus' 1527 map calls the Massachusetts Bay the Bay of St. Antonio. Apolonius Antwerp's 1566 map of the New World calls the Massachusetts Bay the Bay of St. Christoval. Hood's 1592 map identifies the Massachusetts Bay as the Bay of San Christoforo.
2. According to accounts, the party did not care for the harbor, judging the Charles River inadequate as a fur trade artery. Samuel Eliot Morison, *The Maritime History of Massachusetts, 1783 – 1860* (Boston: Northeastern University Press, 1979), 62-3.
3. M.F. Sweetser, *King's Handbook of Boston Harbor* (Cambridge, MA: Moses King, 1888), 260.
4. William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 1983), 20, 76.
5. Morison, 9.
6. William Wood, *New England's Prospect* (Amherst: University of Massachusetts Press, 1977, reprinted from London, 1634).
7. Some pre-1750 settlements preserve Indian place names and provide insight into their cultural landscapes. Parts of Dorchester were known in the Wampanoag language as Mechoiset, or "much food here." Naamkeak, the Pennacook name for Chelsea, identified the area as "the abode of eels" and the Natick language referred to Nantasket as the "place of ebb tibe." See John C. Huber, *Indian Place Names of New England* (New York: Museum of the American Indian, Heye Foundation, 1962).
8. Archeological excavations conducted on Thompson Island during the 1970s and 1980s located evidence of prehistoric and historic use and occupation, including lithic, shell, pottery, bone, and botanical artifacts. Stephen Cole, "National Register Nomination:Boston Harbor Islands Archeological District" (Boston: Massachusetts Historical Commission, May 1985), Cronon, 65-67, and Sweetser, 161.
9. The brick foundations of Thompson's house, probably destroyed by American rebels during the War for Independence, were said to have been unearthed in 1889. Carl Seaburg, *Boston Observed* (Boston: Beacon Press, 1971), 71.
10. Cronon, 69-73.
11. *Ibid.*, 81.
12. Cronon, 77, 83-84.
13. Don Swann, "The World's Harbor," *Sanctuary* (July/August 1986).
14. W.H. Bunting, *Portrait of a Port: Boston, 1852-1914* (Cambridge, MA: Harvard University Press, 1994), 2-3 and Swann.
15. George Worthylake, the first keeper of the Boston Light on Little Brewster Island, held Shadwell, a Black slave, in his employ. Edward Rowe Snow, *Lighthouses of New England, 1716-1973* (New York: Dodd, Mead & Co., c.1976), 172 and Sweetser, 123, 133.
16. In 1790 the vessel, *Columbia* fired a thirteen gun salute near Castle Island upon her return from China. She was the first American vessel to circumnavigate the globe and a "great concourse of citizens assembled on the various wharfs returned with three huzzas and a hearty welcome." In 1796 Castle Island fired a fifteen gun salute for the *Union,* the first sloop-rigged boat to complete the circle. Morison, 43, 76 and Mark Anthony Howe, *Boston: The Place and the People* (New York: MacMillan Company, 1903) 163-67.
17. In the early 1800s the Middlesex Canal represented a major breakthrough in transporting freight from inland mills to Boston Harbor. Many sections of the Middlesex Canal, described in 1803 by the Secretary of the Treasury as "the greatest work of its kind that has been completed in the United States" and abandoned since 1852, are still visible. Michael Kenney, "When the Road Was a River," *The Boston Globe*, 3 July 1999.
18. The construction of a waterfront rail terminal required the filling in of part of South Cove, disrupting tidal flows and causing silting that prevented ocean-going vessels from loading directly at the harbor. Bunting, 11.
19. Bunting, 8 and Sweetser, 221.
20. Sweetser, 284.
21. *Ibid.*, 282-84.
22. Anthony Sammarco, *Images of America: The Boston Harbor Islands* (Charleston, SC: Arcadia Publishing, 1998), 96.
23. Bunting, 9 and Sweester, 284.
24. Bunting, 17-18.
25. Susan Crowl Silberberg, *The Boston Harbor Urban Design Studio Briefing Handbook* (Cambridge, MA: MIT School of Architecture and Planning, 1997), 10.
26. Sweetser, 262.
27. *Ibid*.
28. Sweetser, 282 and Morison, 14.
29. Fact Sheet, MDC Files.
30. Morison, 102-3.
31. Bunting, 71-72.
32. Bunting, 9 and Sweetser, 126.
33. Bunting, 72 and Silberberg, 13.
34. William Wood, *New England's Prospect* (Amherst: University of Massachusetts Press, 1977, reprinted from London, 1634) 26.
35. A petition by Hull residents to the General Court of the Province of Massachusetts mentions "fier-bales of pitch and

ocre for the beacon at Allerton Point." The bales were probably hoisted to the top of the beacon tower and ignited. Malcolm F. Willoughby, *Lighthouses of New England* (Boston: T.O. Metcalf, 1929), 30-40.

36. At that time, high tides separated Point Allerton from the rest of Hull. Snow, *The Lighthouses of New England*, 169-70.
37. George R. Putnam, *Lighthouses and Lightships of the United States* (Boston: Houghton Mifflin, 1917), 4.
38. Sally R. Snowman and James G. Thomson, *Boston Light: A Historical Perspective* (Flagship Press, 1999), 173-74.
39. Putnam, 5.
40. In a petition for an increase in salary, Hayes also mentions the habit of entertaining mariners on the island as supplementary income, but admits that he had given up the practice. Snow, 175.
41. Snowman, 175.
42. Snow, 180.
43. Putnam, 6-9 and F. Ross Holland, Jr., *Great American Lighthouses* (New York: John Wiley & Sons, Inc., 1994), 69.
44. Sarah J. Zimmerman et al. "National Register Nomination: Lighthouses of Massachusetts (Thematic Group Nomination)" (Boston: Massachusetts Historical Commission, March 1987) and Mary Louise Clifford and J. Candace Clifford, *Women Who Kept the Lights: An Illustrated History of Female Lighthouse Keepers* (Williamsburg, VA: Cypress Communications, 1993), 1-2.
45. This lighthouse probably replaced a 1794 structure. The 1819 tower was moved in 1900 from a site closer to the eastern shore near Fort Strong, probably to accommodate fortification construction. National Register documentation does not mention the relocation of the structure, nor does it examine extant remnants and archeological resources of the earlier complex.
46. Only the tower and entranceway of the Long Island Head Light are known to remain. Sweetser referred to "a neat little house" that served as the keeper's home during the latter half of the nineteenth century. An accompanying etching depicts a 1-1/2 story Gothic Revival cottage, but no information regarding its date or provenance has been located. Boston Light's extant ancillary structures date to the late nineteenth century and include a residence, known as the principal keeper's house, that replaced an older double keepers' house. Sweetser, 179, Historic Boston Incorporated and Massachusetts Department of Environmental Management, *Boston Light Preservation Guidelines and Stewardship Plan* (September 1990), 24-26 and Sarah J. Zimmerman et al., March 1987.
47. Federal salaries excluded provisions, with the rational that keepers and their families could find other sources of revenue and sustenance in fishing, piloting, and farming available land. Snowman, 173-76.
48. Snow, 173-75, 182-84.
49. Sweetser maintains that by 1850 Long Island's residents included only a single farmer, George Smith, and Nicolas Capello, a Portuguese fisherman. Sweetser, 180.
50. Morison, 163.
51. Morison, 163 and Workers of the Writer's Program of the Work Projects Administration in the State of Massachusetts, *Boston Looks Seaward: The Story of the Port, 1630 - 1940* (Boston: Northeastern University Press, 1940), 242.
52. Until the advent of the Lighthouse Board, lighthouse construction was contracted and the builder was furnished with minimal directions, usually little more than a sketch and one page of specifications for the desired structure. F. Ross Holland, Jr., 28.
53. Zimmerman et al., 3.
54. Snow, 182.
55. Holland, *Great American Lighthouses*, 99.
56. Ibid., 72.
57. *Boston Light Preservation Guidelines*, 6-34.
58. Seaburg, 64.
59. Range lights consisted of paired towers and were developed to guide vessels into harbors and through channels. By lining up the two lights of differing heights, the navigator could steer a safe course. Holland, 20.
60. Snow 165-66 and Joanne F. McCarthy, " National Register Nomination: The Graves Light," (Boston: U.S. Coast Guard, 1980).
61. Modern lights are smaller, lighter, and weatherproof and, consequently, require simple platforms. Moreover, the importance of lights has declined with the advent of radio and other electronic navigational tools. Holland, 33, 58.
62. Sweetser, 244 and Snow, 224-26.
63. The station's oil shed remains on Lovells Island. Snow, 227-28.
64. Workers of the Writer's Program, 243.
65. Snow, 229-230.
66. Holland, 65-66.
67. *Boston Light Preservation Guidelines*, 6.
68. H.R. 2459-P.L. 101-225, sponsored by Senator Edward M. Kennedy. In *Boston Light Preservation Guidelines*, 39.
69. Lawrence Furlong, *The American Coast Pilot* (Newburyport, MA: Edmund M. Blunt, 1804), as quoted in Lisa Woo Shanks, ed., *The U.S. Life-Saving Service: Heroes, Rescues, and Architecture of the Early Coast Guard* (Petaluma, CA: Constano Books, 1996), 211.
70. Shanks, 2-3.
71. Snowman, 198.
72. *Ibid.*, 30-32.
73. Though not an official repository, a large display of copies of maps dating to the 1600s and 1700s is located in the lobby

of the Boston Harbor Hotel at Rowes Wharf.

74. Interview with Thompson Island staff, October 1999.
75. An article in the *Patriot Ledger,* 23 July, 1975 described Goliath as a 1,200-ton capacity, Gantry type Crane. When installed in the yard by General Dynamics in 1975, it was considered the largest in the western hemisphere.
76. Holland, 100.

Table 6. Cultural Resources Associated with Trade and Navigation

Resource	Location	Type	National Register Status
Lighthouse	The Graves	Structure	Listed on the National Register
Lighthouse	Little Brewster	Structure	Listed on the National Register and Landmark
Lighthouse support structures	Little Brewster	Structures and cultural landscape	Further documentation needed
Lighthouse	Long	Structure	Listed on the National Register
Beacon	Nix's Mate	Structure	Not evaluated
Long Wharf and Custom House Block	Boston	Structures	Listed on the National Register and Landmark
Shipyard	Quincy	Structures, industrial cultural landscape	Not evaluated
Shipyard	Hingham	Structures, industrial cultural landscape	Not evaluated
Lifesaving station and boathouse	Hull	Structures	Listed on the National Register

Table 7. Events during the War for Independence on the Boston Harbor Islands, 1775-1783

Site	Event
Castle Island	• Castle William is significantly damaged (barracks hurned, magazine exploded, island decimated) during British evacuation in 1776 • Fort repaired by Continental troops almost immediately under the supervision of Lt. Col. Paul Revere • Under the command of John Hancock in 1779
Deer Island	• A "rude fortification" was erected on Shirley Point to protect the waters of Shirley Gut • Major Greaton captured a British man-of-war barge offshore in 1775 • Greaton and his men seized 800 sheep and many horses from Deer Island for the Continental Army at Cambridge
Grape Island	• A small skirmish occurred in May 1775, when Elisha Levitt, owner of Grape Island and a prominent Tory, offered to supply fodder hay to the British for their horses. South Shore Minutemen intercepted the troops and thwarted supply forays
Hull	• French soldiers were quartered in Hull during the war; some died and were buried there • Fort Independence, built on Telegraph Hill, was garrisoned by local militia
Little Brewster	• The British took possession of Boston Light in 1775 • Continentals troops, dispatched by General George Washington and under Major Tupper's leadership, put the light out of commission • In Jusy 1775, Continental troops took the lamps and burned the wooden structures of the reconstructed light • Two weeks later, Americans destroyed another replacement structure and took British prisoners • The British rebuilt the light again and destroyed it during their evacuation of the harbor in March 1775, the Commonwealth of Massachusetts rebuilt the light in 1783
Long Island	• In July 1775, 500 Continental soldiers in 65 whale-boats took all the sheep and cattle from Long Island and other islands along with 17 British prisoners • Patriots occupied the island in 1776 and established batteries. A British transport, manned by Scottish Highlanders and carrying a cargo of military supplies, was destroyed from these fortifications. The British Commander and 36 men were killed
Lovells Island	• The French man-of-war Magnifique was sunk off the coast of Lovells Island in 1782
Noddles Island	• In 1775, American forces under the directions of Coloned Stark, raided stock farms on Noddles and Hog islands, removed and killed cattle, burned grain and houses • Heavily fortified after the British evacuation in 1776 • Members of the French fleet hospitalized in 1780
Peddocks Island	• Patriot raiding parties confiscated cattle and sheep from a Loyalist farm and removed them to the mainland • 600 militiamen stationed on the island in 1776 to protect the harbor from British troops • In 1778 the island's outer head may have been fortified by French soldiers and sailors
Spectacle Island	• The site of several small skirmishes during the way • A powder magazine was built, the remains of which were evident in the 1960's
Thompson Island	• Occupied by British troops, then seized by American troops who burned buildings and destroyed crops
Webb Memorial State Park	• Gathering point for American troops for skirmish on Grape Island



Figure 3.1. Drawing of Boston's Long Wharf, late 18th century. Boston Public Library, Harbor Views Collection.

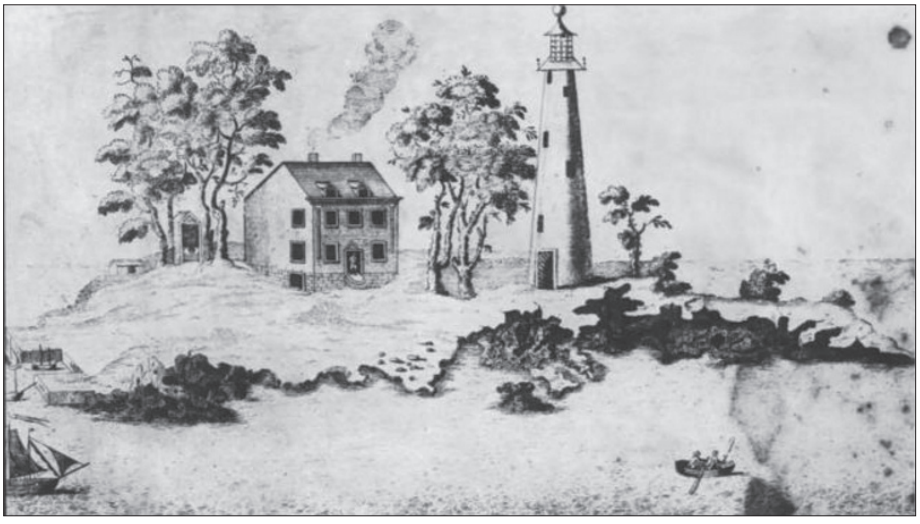


Figure 3.2. Boston Light on Little Brewster Island, early 18th century. National Archives.

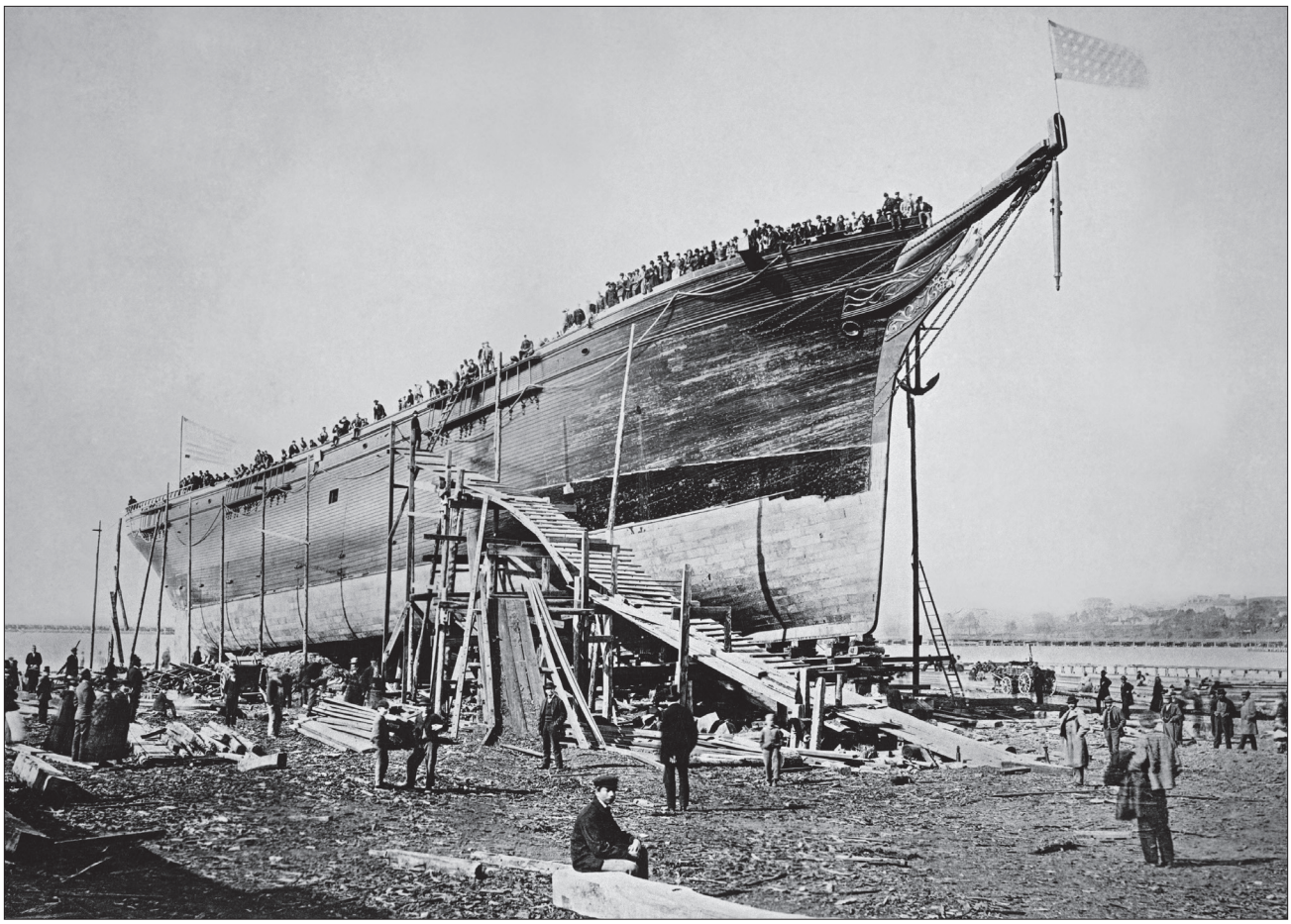


Figure 3.3. The Launching of Donald McKay's Glory of the Sea, from East Boston, 1869. Image courtesy of Peabody Essex Museum.

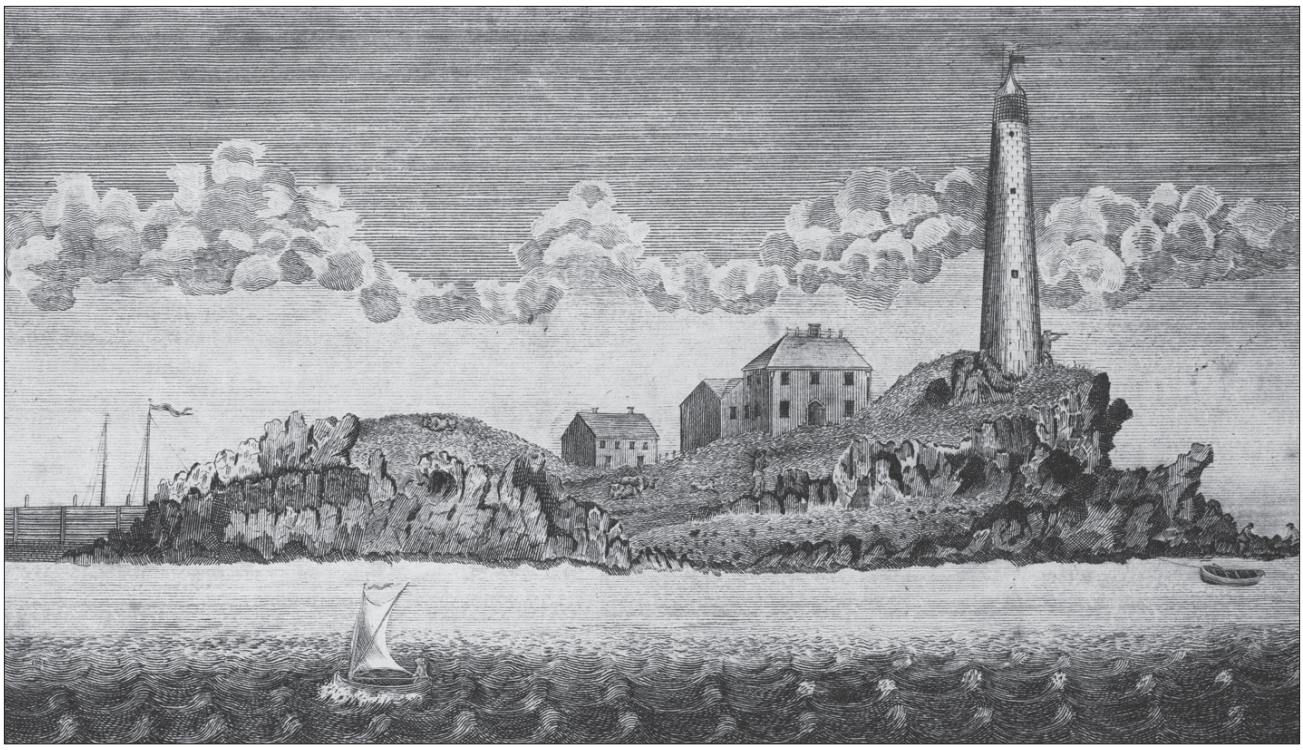


Figure 3.4. View of Little Brewster Island, showing rebuilt Boston Light, keeper's house and ancillary structures, 1789. Boston Public Library Harbor Views Collection.



Figure 3.5. Long Island Light, keeper's house and ancillary structures, early 20th century. Image courtesy of HIstoric New England.



Figure 3.6. Boston Light on Little Brewster Island, early 20th century. Image courtesy of Historic New England.



Figure 3.7. Bug Light, early 20th century. Image courtesy of Historic New England.



Figure 3.8. Graves Light, early 20th century. Courtesy of Swampscott Public Library.



Figure 3.9. Range Light on Spectacle Island (mislabeled Georges Island), early 20th century. Image courtesy of Historic New England.



Figure 3.10. J. James and Pt. Allerton Life Saving Station team, 1893. Image courtesy of Historic New England.

4. MILITARY HISTORY AND COASTAL FORTIFICATIONS

The extensive military history associated with Boston Harbor and the many physical remnants of nineteenth and twentieth century fortifications contribute greatly to the region's history. The islands preserve a nearly unbroken physical record of harbor defense systems, which protected the region's rich maritime resources. The harbor was the first major military theatre in the American War for Independence. Fort Warren on Georges Island, an example of Third American System fort with high integrity, is a National Historic Landmark.[1] Remains of Endicott Period, World War I and World War II facilities and fortifications—extant on Bumpkin, Gallops, Georges, Great Brewster, Long, Lovells, Outer Brewster, and Peddocks—reflect the harbor's role at the forefront of defense technology and defensive strategy in the continual battle against obsolescence. At the same time the islands were home to thousands of enrollees, mostly young men, who trained, patrolled, and sought diversion from their wartime duties while confined on islands in the harbor. Since World War II, the harbor islands have served as a place of remembrance for veterans and their families to retell the narrative of wartime life found in island landscapes.

THE COLONIAL ERA AND THE WAR FOR INDEPENDENCE (1630-1787)

From the outset of European exploration and settlement, the New World and its abundant resources were contested terrain. Colonization closely followed the charting expeditions of Europe's maritime rivals during the late sixteenth and early seventeenth centuries.[2] European settlements in North America were dispersed along the Atlantic coast, situated at the inlets, sheltered bays, and river mouths, which could harbor the ships that brought communication, settlers, and supplies from Europe, as well as provide protection from seaborne foes. To many colonial settlements, the greatest perceived threat to security came from other European countries. Consequently, many coastal positions were fortified with rudimentary structures, simple in design and often hastily built for the protection of a sparse population against intermittent raids from the sea. The overall function of coastal fortifications was both to insure retention of the fortified position and direct enemy movement along certain lines advantageous to the defender. Since colonial security was conceived largely as a defensive system contingent upon imminent threat, early earthwork defenses were used for a short time and then abandoned.[3] Bastions, at which small cannon were mounted to cover the outer faces of the main fort walls, were supplied with light armaments and manned by local militia. Several fortifications, similar in design, were erected at important defensive sites along the Atlantic coast and, at crucial sites, more durable construction materials and methods were employed.

Boston Harbor proved no exception to these early patterns of coastal defense.

Situated behind the protective breakwaters of the Brewster Islands, the harbor offered a system of bays, rivers, islands, and deep natural channels that was noted in the travelogues of many early European explorers. The harbor's sheltered anchorage and prominent headlands undoubtedly suggested ample defensive potential to early visitors and claimants, including Myles Standish and William Brewster of the Plymouth Colony.[4] In 1630, after several other sites proved unsatisfactory, John Winthrop and his company selected the Shawmut peninsula as much for its defensibility as for the other advantages that it offered. Two years later, Governor Winthrop led a small party through the Harbor with the task of selecting a site for a fort "partly to be some block in an enemy's way. . .in regard the French were likely to prove ill neighbors, being Papists."[5] Winthrop's party briefly considered Hull as the best strategic point for the defense of the harbor entrance, but concluded that the costs for maintaining such an outpost would outweigh the threats posed by England's colonial rivals. During the same year, Winthrop noted in his journal the need for a "court of guard" upon the neck between Roxbury and Boston, at which were to be stationed a resident officer and six men. The fort, begun in 1632 on Corn Hill (later Fort Hill) in Boston, was a joint venture undertaken by Charlestown, Roxbury, and Dorchester. While the General Court of the Massachusetts Bay Colony ordered its completion, notes from Court session during the following year mentioned that the fort was lagging in construction, causing the Court to requisition the assistance of "every available hand" for its completion.[6]

In 1634 Governor Winthrop ordered the construction of a coastal fort on Castle Island.[7] During March of the following year, the General Court adopted orders to build fortifications at Charlestown and Dorchester and instructed that "the fort at Castle Island, now begun, shall be fully perfected, the ordnances mounted, and every other thing about it finished."[8] The urgency of these directives derived from an anticipated conflict with the royal authorities under Charles I, who was rumored to have had plans to dispatch a general governor and a special commission to the Massachusetts Bay Colony for the regulation of all plantations. Although the General Court discontinued funding for the Castle Island fort, a structure comprised of two wooden platforms supporting a small mud house was completed in 1638. Volunteers kept the defensive position in working order until 1643, when the ordnance and ammunition were removed to the mainland.[9] A wood and stone structure soon replaced the crumbling crushed oystershell masonry walls of the first fortification and, in response to renewed fear of French aggression, the fort was expanded in 1644 using 150 tons of lumber harvested from Nantasket .[10] Defensive batteries were also built on Governors Island and on the Boston peninsula (then called Trimontaine), at Fort Hill (now adjacent to Battery March), and at the northern end of the peninsula (now the North End).[11] A signal light was placed on "Beacon Hill" to warn of approaching danger. These early defense structures were armed with guns sited very near sea level, aimed

to fire red-hot cannonballs that would ricochet across the water and pummel wooden ships. However, as immediate threats receded, the Colony withdrew its garrisons and allowed most of the forts to decay.

For the next century Castle Island remained the cornerstone in Boston Harbor's defensive system, although the Colony's commitment of troops and funding to the fort varied according to the immediacy of perceived threats. In 1696, apprehensions of a French naval attack caused the Colony to add new bastions and batteries to the fort. Later, in 1701, a mortared brick rectangular fort, armed with over one hundred guns, replaced the earthworks. Named after King William II of England, Castle William was the "most powerful fort in the British colonies" and an exception to the small, inexpensive, temporary earthworks that typified the colonial period of seacoast fortifications.[12] However, by 1735 the bricks had deteriorated and new earthen batteries were constructed at the east end of the island, where the guns were carefully remounted (Figure 4.1). In 1750, Captain Peter Goelet of New York observed the fortifications at Castle Island and remarked that "the Harbour is defended by a Strong Castle of a Hundred Guns, Built upon An Island where the Shipping must pass by and within hale. Its Situation is Extraordenary [sic] as it Commands on Every Side and is Well Built and kept in Exceeding Good Order."[13]

Notwithstanding its renowned coastal fortifications, Boston's defensive system engaged no enemy fire during the colonial era. Rather, during periods lacking threats of perceived aggression its harborside and, in particular, island fortifications hosted a number of activities and services that presaged future institutional use of the islands. As early as 1661, the General Court had ordered the imprisonment of at least one Quaker and probably interned other dissenters in the stone blockhouses on Castle Island. In 1689, with the news of England's Glorious Revolution and the enthronement of William and Mary, Bostonians rose in arms against Governor Edmund Andros, seized his forts, and imprisoned him at the Castle. A party of Native American captives confined to the Castle escaped island imprisonment in 1725. The barracks at Castle Island accommodated nearly 3,000 patients during a smallpox epidemic in 1764 and protected Royal commissioners from Boston's angry crowds in 1768.[14] However, the island refused several shiploads of Acadian exiles in 1761. After the War for Independence, Castle Island's early structures housed Boston's unwanted as well as its military personnel and served as protection for the population at large, a functional pattern that would extend to many of the other islands within Boston Harbor.

With the imposition of the Stamp Act in 1765 ensued nearly two decades of unrest in Boston Harbor, bringing internal struggles and military skirmishes to what had been a peaceful pastoral of tenant farms and pastures on most of the islands. Boston's embargo of British goods and England's later retaliatory closure of the Port of Boston set off a chain of events with national repercussions. British war

ships amassed in Boston Harbor, troops encamped on Boston Common, and the imposition of further acts heightened local tensions and precipitated a deadly street brawl, known as the Boston Massacre, in March 1770. The Boston citizenry, under the leadership and encouragement of Samuel Adams, called for the removal of two British regiments to Castle Island. Castle William served as a refuge for the Loyalist troops for the next six years. General Viscount William Howe directed nearly 11,000 British soldiers from the fort and, in March 1776, turned the Castle's 210 guns on the batteries of the Continental Army under the command of General George Washington at Dorchester Heights. The beleaguered British troops, though supplied from the sea, suffered from their inability to gain access to the mainland and resorted to the demolition of coastal houses as their fuel supply. When the British troops, along with 1,100 Loyalist civilians, finally evacuated Boston and the Castle Island garrison, they burned the barracks, detonated the magazine, dumped the remaining ammunition into the harbor, and set fire to the island, destroying most of the fort. General Benjamin Lincoln's Continental troops and coast-guard contingent opened fire on the British fleet from half a dozen headlands and islands, knocking "many a great splinter out of the natty frigates."[15] Continentals under the supervision of Lieutenant Colonel Paul Revere made immediate repairs to the Castle.[16]

Fortifications were established on several other islands both preceding and following the British evacuation of Boston Harbor. In 1776, Patriots occupied Long Island and established batteries from which they destroyed a British transport with a cargo of military supplies.[17] A "rude" fortification was erected on Shirley Point to protect the waters of Shirley Gut where Yankee privateers and the British fleet had engaged in battle in May 1776.[18] During the same year, patriot forces heavily fortified Noddle's Island. Six hundred patriot militiamen occupied Peddocks Island in 1776 and, two years later, French troops under the command of Count d'Estaing may have fortified the island's outerhead. D'Estaing's ships created a barricade that was reinforced by two forts situated to protect the "Narrows" channel. In addition, French troops assisted with the repair of Castle William and sculpted a large earthwork on Georges Island where many of the French fleet's guns were emplaced to guard the eastern approaches to the Nantasket Road. Georges' six mortars and two batteries could cross fire with a similar 30-gun fort that was constructed on Telegraph Hill in Hull under the direction of Chevalier Du Portail.[19] Spectacle Island was the site of several small conflicts, where a powder magazine was built.[20] Patriot forces also held Point Allerton, Hough's Neck, and Moon Island.[21]

While the harbor islands served as important defensive positions for Boston's patriot forces and the entrenched British troops, it was the islands' agricultural resources that engendered many skirmishes and raids. Confined to Boston Harbor, the British troops were in dire need of supplies and began to search for food and fodder on the islands when their inland supply routes were blocked

in 1775. British attempts to plunder resources from the islands and from ships coming into Massachusetts Bay were often foiled by Continental and militia forces. In what became known as the Battle of Grape Island in May 1775, South Shore Minutemen intercepted a small company of British troops on Grape Island that had landed to collect hay from the island's Tory proprietor, Elisha Levitt. Patriot raiding parties confiscated sheep, horses, and cattle from Deer and Long Islands and diverted supplies to the Continental Army in Cambridge. Patriot forces under the command of Colonel Stark requisitioned cattle, burned grain, and leveled houses during a raid on Noddle's and Hog Islands and American infantry carried off over 500 sheep from Peddocks Island late in May 1775.[22] Resources on Thompson Island were also destroyed by Patriot troops.

Another island resource vital for the British siege of Boston Harbor was the Boston Light, constructed on Little Brewster Island in 1716 and seized by British troops in 1775. The beacon became the object of skirmishes as Continental forces invaded the island and destroyed the structure on two occasions. During their evacuation in 1776, the British finally destroyed the lighthouse that they had twice rebuilt in their struggles with American insurgents.[23]

FIRST SYSTEM (1794-1804)

During the seven years of the War for Independence the number of American coastal forts proliferated with the restoration of existing structures and the construction of new fortifications, but the nature of coastal defenses remained limited to the use of readily available materials and armaments. At the close of the war, many remaining works were allowed to deteriorate by states that showed little interest in maintaining fortifications during peacetime. However, as intra-European conflict following the French Revolution threatened to embroil the United States, concerns for national security led to calls for a unified system of coastal defense.[24]

In 1794 a special committee of the House of Representatives, in response to repeated requests from President Washington, submitted a statement of estimates and recommendations concerning the types and locations of defenses to be erected for a national system of coastal defense. Washington turned to French engineers residing in the United States to design fortifications for the protection of specific harbors and ports along the Atlantic Coast. The First American System prescribed seaward batteries consisting of open works with earthen parapets over which guns could be fired. Most were built from unsupported earth and occasionally fortified with binding vegetation. Some also included an enclosed earthen redoubt or an armed blockhouse to guard the landward sides. Masonry materials were introduced for veneer and revetment. Weapons were limited generally to 24-pound cannons, which were fired over the earthen parapets. Though commissioned by the newly formed federal government, the First

System lacked a unifying design. Many states retained ownership of the sites and exercised control over construction and maintenance.[25] These structures decayed rapidly because of the lack of strong elements used in the construction.

Stephen Rochefontaine directed the fortification of eight New England harbors, which by 1796 included substantial works at Boston, the nation's third largest city at this time.[26] Castle William was only one of three Colonial-era fortifications found to have remnants worth repairing.[27] The island was ceded to the federal government in 1798 and the fort was refitted as a marine hospital.[28] In the following year, President John Adams renamed Castle William as Fort Independence. Re-engineering began in 1800 and a new barbette was added under the direction of French engineer Jean Fontin, who had also been involved in the planning of Fort McHenry. Gun batteries were constructed on Governor's Island across the shipping channel from Castle Island, but no other improvements were made to the harbor's early defensive positions. Castle Island briefly served as a military prison for French captives from 1799 to 1801, but the remote European threat allowed Fort Independence to remain only partially fortified and garrisoned according to federal planning and appropriations.[29]

SECOND SYSTEM (1807-1812)

With the decreased European threat at the end of the eighteenth century, many of the forts were again allowed to lapse into disrepair and the discharge of weapons signaled non-military victories. Guns at Castle Island were fired to welcome the return of transcontinental merchant ships that poured money and goods into the reviving economy of the peacetime landscape. However, as hostilities with Great Britain threatened to escalate, particularly following the Chesapeake incident in 1807, Congress drafted a new fortification project and appropriated funds for its implementation. In December of that year Congress allocated over one million dollars for a new construction initiative. The Second System called for forts of slightly more elaborate design than those of its predecessor and added all-masonry forts to the open batteries and masonry-faced earth forts that had prevailed during the First System. The majority of fortifications constructed during the Second System initiative were masonry-faced structures similar in both style and material to First System constructions, although many included circular or elliptical segments. A major innovation in American military architecture, the adoption of casemated gun emplacements, introduced a trend toward high, vertical-walled harbor defenses with a greater concentration of firepower in multiple tiers of guns. Most major coastal forts constructed during the first half of the nineteenth century followed this design. Armament installed during this period was typically larger and of greater numbers than First System weaponry.[30]

The War Department assigned Major Joseph Gardner Swift of the Corps of Engineers to the New England coast. In 1808, Swift recommended a defensive

plan for Boston Harbor that included fortifications on Georges and Long Islands, both of which overlooked the main shipping channels of the Outer Harbor. The federal government did not act on these findings until nearly a decade after the crisis had passed, choosing to concentrate its efforts in the Inner Harbor.[31] Army engineers added earth batteries with covered brick magazines at Fort Independence in 1808 (Figure 4.2). During the same year the federal government purchased seven acres on Governors Island from James Winthrop, constructed an earthen fort on the summit, and built half-moon and south point batteries along the water's edge. The main work of Fort Warren on Governors Island was an enclosed, eight-pointed star fort, faced with granite. Enclosing this work was an earthen parapet or rampart of a rectangular configuration designed for infantry defense. By 1809, brick barracks, officers' quarters, a magazine and a guard house completed the defensive post. Also in 1809, an earthen half-moon battery, and powder magazine, and brick gun house near the Charlestown Navy Yard was added to Boston Harbor's coastal defense system.[32]

During the War of 1812 Castle Island was manned and used to train militia from Dorchester and surrounding towns. New defensive works were constructed at Dorchester Heights in 1814 and several militia regiments were dispatched to man the site. The Boston militia also erected fortifications on Deer Island. The British blockade of the USS Constitution spurred the fortification of Long Island.[33] Fortifications on Noddles Island that had been reinforced after the British evacuation of 1776 were again strengthened by "various patriotic societies and guilds of tradesmen and mechanics," and renamed Fort Strong.[34] Georges Island was fully garrisoned and, with the arrival of the crack corps of Sea-Fencibles, mortars were placed at the works.

THIRD SYSTEM (1817-1860)

The Third System of national defense was initiated in 1817, with no immediate need for war-time security. Late in 1816, a special board of officers—bearing the name of its chair, Simon Bernard—was convened to create a permanent and cohesive network of defenses and charged with responsibility of site selection and prioritization, determination of design characteristics, and review of construction. The Bernard Board's first complete report, submitted in 1821, underlined the primacy of the Navy in a comprehensive system of coastal defense and indicated locations for naval facilities, as well as fortifications required to guard both these facilities and commercial seaports. Subsequent construction centered around principal harbors and often replaced or restored older works.[35] The economic and strategic goal of material permanence, always an elusive ideal in the previous era of earthwork constructions, was nearly realized with the widespread use of brick and stone. The masonry designs of the Third System offered the advantages of resistance to the erosive action of storms and waves, as well as the structural capacity for casemate emplacement as a universal feature, resulting in a trend

toward multiple tiers of armament. Consequently, a high density of heavy armament characterized the major works constructed in the post-1816 era. Principal seacoast armament was concentrated in the forts' major fronts within a few feet of sea level, and bastions were accordingly reduced in size, allowing for a more symmetrical—usually hexagonal—form.[36] Armament improvements included the Columbiad, a smaller weapon with greater versatility and range that fired either shell or shot at any angle between zero and forty degrees, and Rodman guns in calibers as large as 15 or 20 inches. This substantial increase in firing elevation nearly tripled the range of American armaments. Improvements in cannon castings and gun carriages also characterized the period.[37]

In Boston Harbor, fort construction was delayed for nearly a decade after the Bernard Board submitted its recommendations. Jean Fontin's re-engineered design for Fort Independence on Castle Island was one of the early generations of fortifications to be modified under the Third System. The plans for the renovation of the outdated fort, which was to serve as a secondary line of defense to Fort Warren, included new granite walls twice as high as the brick antecedents and the replacement of quarters, magazines, and storerooms with bombproof casemates. Nearly twenty years of construction, begun in 1833, obliterated most of the original design. A 10-gun battery flanked the fort's northeastern face. Within the fort's massive casemates, gun-galleries overlooked the channel, while the adjacent squad rooms looked out on the parade ground.[38]

During the 1820s Army engineers revisited Swift's recommendation for a defensive post on Georges Island, where little remained of colonial-era earthworks and its subsequent use during the War of 1812.[39] Major James Kearney and Second Lieutenant H.A. Thompson of the United States Army designed the first permanent fortifications on the island to include a fortified structure with five bastions. In 1825 the federal government acquired Georges Island from Caleb Rice of Hingham and began construction on a seawall using granite from William Torrey's quarries at Pigeon Cove, Folly's Cove and Sandy Bay. [40] A large portion of a gravel cliff on Gallops Island was removed to open a view toward the sea for the proposed fort on Georges Island. Construction of Fort Warren, named after a veteran of the Battle of Bunker Hill, began in 1834. Lieutenant-Colonel Sylvanus Thayer, later known as the "Father of West Point," oversaw the construction of a formidable structure with "ten-foot-thick walls, endless labyrinths of dungeon prisons and officers' quarters, a sweeping interior parade ground and massive parapets overlooking the sea." Though Fort Warren, like many other forts, was later modified to accommodate armament innovations, this Third System fort displaced Fort Independence as the foundation for the Boston Harbor coastal defense system with its dedication in 1847 (Figure 4.3).[41]

Across the harbor the fortifications on Governor's Island, renamed Fort Winthrop, underwent extensive modifications beginning in 1844. In 1833, the

United States government purchased additional acreage from Colonel John Winthrop and gained complete title to the property when Captain James H. Bigelow of the Army Corps of Engineers and his wife deeded the remainder of the island to the federal government in 1846. Repair work on the fort's exterior batteries was abandoned in 1846 when plans were accepted for stronger defenses, comprised of a casemated tower surrounded by external batteries. Deer Island inmates constructed batteries on the north, east, and south sides of the island with granite quarried from Milton and Cape Ann. Between 1846 and 1860, work on Fort Winthrop proceeded intermittently until the onset of the Civil War, at which time the brick and granite structures had been completed according to project plans.[42]

Granite seawalls were added to Georges and Deer Islands between 1825 and 1829. Construction of a seawall around Fort Independence began in 1833. Congress appropriated funds for the construction of a cut-granite seawall on the northwest side of Lovells Island in 1844. Elsewhere in the harbor, seawalls were added to Governor's, Gallops and Great Brewster Islands to prevent further erosion. In 1833 barracks were removed from Fort Strong on Noddle's Island. During the next decade the walls of the fort deteriorated and the island landscape gave way to the tree-lined paved streets and buildings of the burgeoning maritime and industrial community of East Boston.[43]

THE CIVIL WAR AND POST-CIVIL WAR YEARS (1860-1885)

The Bernard Board's long-term peacetime design and construction was directed toward potential European foes. The unforeseen contingency of domestic attack allowed all but three of the major works in the South to fall to Confederate forces during the Civil War. However, a much graver development undermined the Third System designs. "The impressive and very costly masonry forts protecting the harbors of the United States were almost overnight and without exception relegated to obsolescence" when confronted with the improved offensive and defensive capabilities of warships.[44] Steam propulsion increased tactical mobility and iron armor reduced vulnerability to shore fire. In addition, the proliferation of rifled artillery, which delivered larger impact energies at substantially increased ranges and with greater accuracy than smooth-bored weapons, threatened irreparable damage to the vertical masonry walls of Third System fortifications. Faced with the increased use of such weapons during the Civil War, both Union and Confederate troops turned to sand bags and makeshift earthwork emplacements for a superior and easily reparable defense against these new projectiles. Construction on Third System fortifications, rendered obsolete somewhat ironically during a contest of internal foes, was largely halted and no new system of harbor defenses pursued during the remainder of the 1860s.[45]

The inability of masonry to withstand modern weapons, the postwar shortage

of funds for military purposes, and the need for emplacements large enough to receive the new armament combined in the closing years of the decade to bring about a return to an inexpensive mode of permanent fortification in which earth once again became the principal substance of protection.[46]

A system of inexpensive barbette batteries of earth, brick and concrete superseded Third System fortifications. An extensive defensive initiative during the 1870s included these batteries, as well as large-caliber mortars, torpedo mines, and channel obstructions.[47]

While Boston Harbor was not an active battleground during the Civil War, the three harbor forts on Georges, Castle and Governor's Islands were heavily armed and fitted for other wartime needs (Figure 4.4). The Massachusetts General Court voted $1,500,000 to fortify the port and coast, purchasing Blakely guns and hastily completing Fort Warren, the bulwark of harbor defense (Figure 4.5 & 4.6). From May to July of 1861, the Twelfth Massachusetts Regiment trained at Fort Warren on Georges Island. Soldiers working on the parade ground purportedly composed the lyrics of "John Brown's Body," a song set to the tune of a popular hymn that was said to have provoked Julia Ward Howe's patriotic poem for the "Battle Hymn of the Republic." In addition, the fort served as a political prison to Confederate soldiers and dignitaries, including captured emissaries Mason and Slidel and Confederate Vice President Alexander Stephens, as well as for Northerners held on charges of disloyalty and sedition.[48]

At Fort Winthrop on Governor's Island, batteries were expanded and 15-inch guns were added to the fort's arsenal, which continued to evolve until 1875.[49] Governor Andrew placed the Fourth Battalion of Massachusetts Infantry across the channel, at Fort Independence on Castle Island, in 1861. Early in 1863, Castle Island was made the headquarters for Massachusetts recruits.[50] In 1860, the City of Boston purchased Gallops Island and deeded it to the federal government, whereupon long lines of wooden barracks were constructed and over 3,000 troops were quartered and trained.[51] Company K of the Eighteenth New Hampshire Volunteer Infantry trained on Lovells Island.[52] Beginning in 1861 Massachusetts volunteers also encamped on Long Island, described by one member of the Ninth Regiment as a site well-suited for both the anticipation of and recuperation from Civil War battles:

The island was, upon the south side, thickly studded with trees; a beautiful verdure clothed the miniature valleys. . .It was a good thought, the selection of Long Island for military rendezvous, not only for its sanitary merits, but for the security it afforded against desertions. It boasts many fine parade-grounds, walks, and loungers, while beautiful views of the sea and land greet the eye in every direction.

The Long-Island House, an erstwhile resort, served as headquarters for Camp

Wightman, an operation that oversaw several full companies of heavy artillery and a camp of over 1,000 conscripts. Several Civil War soldiers are interred near the camp site, which came to be known as Fort Strong in 1867.[53]

Following the war, new batteries were constructed and older emplacements improved at Fort Winthrop on Governor's Island and at Fort Independence on Castle Island. As the increased range of naval guns, demonstrated during the Civil War and the ensuing decades, further underlined the accelerating obsolescence of such inner harbor defensive posts, the importance of the outer islands for Boston Harbor's defense became increasingly evident. Consequently, batteries at Fort Warren on Georges Island were upgraded, and in 1871 construction of an open barbette battery of 28 heavy guns was initiated at Fort Strong on Long Island.[54]

During this period, several of the islands served other important military functions. In the 1870s, the Alger Foundry of South Boston conducted ordnance tests from Nut Island, firing 15-inch guns with projectiles as large as 500 pounds at targets on Princes Head on Peddocks Island.[55] A submarine system constructed after the Civil War consisted of a tunnel under the channel between Lovells and Gallops Islands in which explosives could have been detonated to destroy passing enemy ships.[56]

ENDICOTT PERIOD (1885-1905)

After the Civil War, a brief effort to upgrade coastal defenses foundered. With no perceived threat from abroad and the cessation of harbor defense appropriations, most existing forts were allowed to fall into disrepair. However, as the national system of coastal defense disintegrated, critical advances took place in the design and production of heavy ordnance, including the replacement of iron with steel, the perfection of breech loading artillery, and the introduction of greatly improved propellants.[57] Developments in naval vessels and armaments prompted renewed concerns for national security and the condition of deteriorating coastal fortifications.

During the 1880s, a more active foreign policy and its associated naval build-up focused action on the nation's declining system of coastal defense. In 1885, President Cleveland convened a joint Army-Navy-civilian board, under the direction of Secretary of War William Endicott, and charged it with the task to review the coastal defense system and submit recommendations for a program in response to the threat and demands of newly developing weapons. The Endicott program, presented in 1886, called for defensive works, including many with armored turrets and casemates, to be armed with large guns. Their recommendations resulted in a modern generation of seacoast defenses that took shape during the Spanish American War and prevailed into the first decade of the twentieth century.

The most evident change in the physical nature of harbor defenses involved the shift in emphasis from fortification structures toward the weapons contained therein. In sharp contrast with the stark, vertical-walled forts of the Third System, the new works of reinforced concrete were de-emphasized by being designed to blend. . .into the surrounding landscape.[58]

With the new generation of weaponry, the underlying principles of defense design shifted from an emphasis upon a massive, "story book style" structure housing multiple guns to individual or grouped gun emplacements. Henceforth, "a fort was a piece of real estate occupied by a number of dispersed individual batteries."[59]

The Endicott Board recommended employing larger guns, floating batteries, torpedo boats and submarine mines. Major armaments of the Endicott era were flat-trajectory weapons mounted on disappearing-type carriages in massive emplacements whose crests were at ground level and whose concrete walls were up to twenty feet thick; "such armament was all but invisible and invulnerable from the seaward direction." A few major-caliber weapons were mounted on barbette carriages. Almost all of the major armaments of the Endicott era were installed in batteries from two to four weapons along the seaward sides of earlier harbor fortifications. A second class of heavy armament, firing 12-inch mortars, was clustered in groups of four within dug-out emplacements behind hills or parapets that shielded them from enemy fire. A third class of weapons, intended to cover minefields against penetration by shallow-draft vessels, consisted of small, rapid-fire guns mounted behind shields on pedestrian carriages and set in concrete emplacements with low surrounding parapets.[60] A system of channel obstructions that included chains and other kinds of barriers, as well as submarine nets and mines, were put in place. Mines were stored ashore, along with miles of control cable. The system required the construction of storage facilities for the materiel, as well as fire-control stations and loading wharves.[61]

Physical construction during the Endicott period began in the early 1890s and produced more fortification structures than any other era; in all, approximately 700 guns were installed across the country, mostly in small batteries in strategic locations. Endicott construction was characterized by the physical dispersion of armament elements into widely separated gun and mortar batteries. Most of the new batteries were situated adjacent to older coastal fortifications, but in some cases the new armament had to be installed within or on top of existing Third System forts.[62] Often massive, yet simple in form, these reinforced concrete battery placements were concealed in the landscape.

In Boston Harbor, the Endicott Board's specifications transformed the system of coastal defense with construction of new battery placement and the modernization, and in the case of Castle Island, deactivation of existing fortifications. Seven sites in Boston Harbor—Georges, Peddocks, Long, Lovells,

and Deer Islands, as well as the mainland peninsulas of Winthrop and Hull—received extensive work. Construction began in 1888 at Fort Warren with the addition of two mining casemates, small bomb-proof structures from which submarine mines in the harbor channels could be detonated. Endicott battery installations on Georges Island, where space was limited, were superimposed upon the crest of Fort Warren, an existing Third System structure that had been completed to original specifications in 1869.[63] High-caliber guns, mounted on disappearing carriages, were placed on the island, which served as the first line of defense in the harbor during the Spanish American War.[64]

In 1897, the federal government acquired 88 acres among the drumlins at the East Head of Peddocks Island for construction of a mortar battery. The post was dedicated as Fort Andrews in 1900, and by 1902 Batteries Whitman and Rice were completed with emplacements and platforms for 12-inch mortars and 5-inch barbette pedestal mounts. Construction of temporary buildings including barracks, a mess hall, and officers quarters, began some time before the first garrison arrived in 1904. After their arrival, most of the pre-existing buildings and structures, including a summer colony of 23 cottages on the eastern shore and 14 cottages in the Portuguese fishing village on the western edge of East Head, were either demolished or relocated during early phases of fort construction (Figure 4.7). By 1907, Fort Andrews' 18 buildings—most constructed with red brick walls and slate roofs in a simple Colonial Revival style—included barracks, officers' quarters, mess, and a hospital. The barracks and administrative offices were arranged along the fort's axis in a valley between the two drumlins that comprise the island's East Head. The officers' quarters lined a graceful curve along the ridge of the southern drumlin and commanded an expansive view of Boston Harbor (Figure 4.8). Plans for the expansion of Fort Andrews in 1907 reveal the Board of Officers' aesthetic concerns, particularly with regard to views and vistas. The Board sought to site buildings "with regard to landscape effect and general beautification." The open space between the barracks and the officers' quarters was to be preserved for a parade ground. "Unsightly structures" were to be relegated to a wharf, planned though never realized, on the western shoreline, "leaving the front, east side free for beautification."[65]

New construction also occurred on Long, Lovells, and Deer Islands and on Winthrop and Hull peninsulas.[66] An extensive renovation of Fort Strong on Long Island added batteries of six and twelve-inch guns in 1899 (Figure 4.9). During the following year Fort Standish was established on Lovells Island.[67] On Deer Island new guns were installed at Fort Dawes. Nearby at Fort Banks in Winthrop, new batteries were installed and armed with 12-inch mortars grouped in square emplacements. Fort Heath, on the Winthrop Highlands, augmented the fire power of ordnance emplacements along the Outer Harbor. In 1903, Fort Revere in Hull joined Boston Harbor's system of coastal defense. Situated on 80 acres on the former site of Hull's Fort Independence, the fort included four batteries armed

with six 6-inch disappearing guns, two 12-inch guns, two 5-inch quick-fire guns, as well as a barrack, hospital facilities, ammunition dumps, and a movie theater (Figure 4.10).[68] Small guns, set in concrete emplacements in groups of two to six and surrounded by low parapets, were placed on most of the fortified islands. Some of the larger, 6-inch anti-aircraft guns were kept in service until the end of World War II on Lovells, Peddocks, the Brewster Islands, and in Hull. By 1906, the designs of the Endicott program were nearly complete and a system of seven forts defended Boston Harbor.

The Endicott Board excluded Castle Island from the modernization of strategic positions in the outer harbor. In 1879, troops stationed at Fort Independence had been transferred to Fort Warren on Georges Island, but the federal government refused requests from the City of Boston to cede the property for incorporation into the new municipal park system, citing the need for a military post in defense of the inner harbor. In 1888 President Cleveland vetoed resolutions authorizing the extension of city driveway and promenades around Castle Island, but the land surrounding the fort was given to the city for use as a park just two years later.[69] During the Spanish American War, the fort was temporarily reactivated and slightly reworked to house mines and torpedoes.[70]

TAFT PERIOD (1905-08)

In 1905, President Theodore Roosevelt convened a group, under the direction of Secretary of War William Howard Taft, to review and update the Endicott program. The Taft Board called for the installation of accessory harbor defense equipment, including search lights, electrification, and modern aiming systems in the continental United States and directed a strategic shift from the passive coast-defense doctrine to a system of installations servicing the newly-reinforced Navy's positive function. The Taft Board focused on improving protection for harbors of commercial significance and population centers and, more importantly, on centers for the manufacture and repair of the Navy fleet.[71]

In Boston Harbor, no major military construction was undertaken during the Taft period except an extensive fire-control system, in the form of base-end stations, to improve the directional aim of Endicott Period guns when fired. This system was installed under Taft Board specifications in Boston Harbor. By 1908, 48 base-end stations had been erected at fort sites and at new military reservations.[72] In addition, the first military wireless station in New England was installed at Fort Andrews in 1908.

WORLD WAR I & INTERWAR YEARS (1917-37)

At the outset of World War I rapid advancements in naval technologies again threatened the United States coastal defense system. Battleships could call

upon weapons with improved accuracy and range, as well as greater trajectory curvatures to destroy coastal fortifications, including disappearing gun batteries. Confronted once again with an obsolete network of coastal defenses, the War Department developed new tactics. A small number of gun batteries, enhanced with a new, high-angle barbette carriage that doubled the range of the existing 12-inch Endicott Period guns, were installed between 1915 and 1920. While ordnance specialists began to design a new generation of coastal armaments, wartime installation activities were limited to minimal new construction and the relocation of older weapons to emplacements at previously undefended positions. New types of materiel, including anti-aircraft guns and mobile artillery, were introduced during World War I and gained in prominence during the postwar years.[73]

In the years following the war, there were a few modifications to permanent works in order to accommodate improvements such as the high-angle barbette carriage and the new, long-range 16-inch guns. Fortification design centered upon the security of the dispersed batteries, since the weapons were provided with almost no protection and were concealed only from sea-level observation. Ammunition was stored in subterranean magazines between emplacements. The growing threat of aircraft to harbor defenses necessitated a new type of battery in which all components would be protected from aerial attack. A prototype constructed in San Francisco in 1937 consisted of armored casemates (bunkers) and galleries roofed with eight to ten feet of densely reinforced concrete and up to twenty additional feet of earth. The Coast Artillery Corps added many new 3-inch caliber anti-aircraft guns, arranged typically in three-gun batteries, to coastal installations. A system of mobile seacoast artillery was also devised, placing 16-inch-caliber weapons approximately 1,000 feet apart; small railways transported ammunition from subterranean magazines.[74]

There was little new military construction in Boston Harbor during World War I. Troops destined for the European front trained at Fort Warren on Georges Island, which continued to serve as the center of the harbor defense program until 1922, and at Fort Andrews on Peddocks, where temporary structures were erected to house additional soldiers (Figures 4.11 and 4.12). Additional troops were stationed on Bumpkin Island, where the Navy built barracks for 1,300 soldiers during 1917 and 1918.[75] German prisoners-of-war may have been held on Gallops Island. In 1918 construction began on a new battery in Nahant. Completed in 1921, Fort Ruckman comprised two 12-inch guns, fire control stations, and a searchlight. By 1925 two 16-inch rifles, the most powerful service cannon produced in the United States, were installed at Fort Duvall on Hog Island and at Fort Dawes on Deer Island. Though Boston Harbor was one of eighteen coastal areas selected by the Navy for continued maintenance in the post-war interregnum, little money was allocated to the Atlantic coast defenses and many forts, including Fort Andrews, were deactivated.[76]

WORLD WAR II (1937-1945)

By 1940, as the growing emphasis on national security demanded a greatly expanded and accelerated battery installation schedule, a special War Department board drafted a new defense plan for the country's most important harbors, calling for a comprehensive program of highly-standardized construction at 33 locations in the country. During this period, weapons and installation designs were standardized to an unprecedented degree. On most sites, two types of armament were installed: the 16-inch gun, capable of firing 30 miles, and a new 6-inch gun with a firing range of 15 miles. The tremendous ranges of these two classes of armament, together with a high degree of design standardization, allowed for a reduction in the actual number of batteries and personnel required to service them, as well as considerable simplifications in training and maintenance. In general, compared to earlier periods, there were fewer guns, spaced farther apart, with fewer personnel. New fortification structures conformed to a rigid design uniformity in which batteries housed two guns. Large-caliber guns were emplaced within reinforced concrete casemates and surrounded by a heavy-armor shield, while curved steel shields protected smaller armament. Fire-control networks were expanded with widely spaced and occasionally camouflaged base-end stations.[77]

In Boston Harbor, nine islands were fortified. Forts on Hog, Deer, Calf, Outer Brewster, Castle, Georges, Long, Lovells, Great Brewster and Peddocks Island were modernized and garrisoned. Sixteen-inch Mark II naval guns were installed at several locations around the harbor. Existing batteries were casemated and long range guns were placed at Forts Ruckman and Duvall on Hog Island. Additional batteries were built at Fort Dawes on Deer Island, which served as the Harbor Entrance Command Post, and on Calf Island. Battery Jewell, constructed in 1941 on Outer Brewster Island, included a battery of 6-inch radar-controlled guns, a searchlight, quarters, and a desalination plant. The island's command post housed barracks, a bomb- and chemical-proof bunker system, and electronic equipment that controlled an underwater mine system in conjunction with stations on Georges and Deer Islands. Great Brewster served as the control center for a network of harbor mines that spanned from Hull, across the Brewsters to the Broad Sound north of Deer Island. The explosive mines were controlled from bombproof bunkers on Georges, Great Brewster and Deer Islands. Submarine nets were also placed in several key locations during World War II; one spanned the Hull Gut between Peddocks Island and Hull and another screened the channel between Long and Deer Islands (Figure 4.13). A series of powerful searchlights were mounted along the coast and most of the outer islands, including Outer Brewster, Great Brewster, Lovells, Deer, Georges, Peddocks and Long Islands and several points in Hull. Anti-aircraft guns were installed on many of the islands as well as in downtown Boston.[78]

During the war, many of the harbor islands supported populations of soldiers. Members of the 241st Coast Artillery, stationed on Georges Island at the start of peacetime conscription in 1940, cleared trash and cut grass from the parade ground at Fort Warren before they settled into a training routine.[79] At one time, there were more than 1,000 soldiers stationed at Fort Andrews and Peddocks Island teemed with the camp's official and recreational activities. Italian prisoners-of-war were held at the fort during the war years. Over thirty temporary structures and an army chapel were built to supplement existing brick buildings (Figures 4.14 & 4.15). The grounds hosted football and basketball games, as wells as military drills, and soldiers maintained a common garden on the hilltop and a fruit orchard near the Bies house (Figure 4.16). Housed in three reinforced concrete barracks, 125 men garrisoned Battery Jewell on Outer Brewster Island. Nearby on Great Brewster Island, 120 men were stationed.[80] On Gallops Island the United States Maritime Radio School accommodated 325 enrollees. A school for bakers and cooks hosted another 150 residents in a combined complex of temporary buildings and structures, including barracks constructed on pilings and a three-story recreation hall, that were removed after the war. Telephone, electricity, and water lines were extended from the mainland and ferry service brought passengers from Boston's Commercial Wharf and from Hough's Neck in Quincy.[81]

THE POST WAR ERA (1946-PRESENT)

Second World War amphibious invasions had demonstrated that harbor facilities were no longer necessary for landing materiel and that supporting air cover undermined the concept of permanent harbor defense. During 1949, most of the long-range artillery was scrapped and the remaining harbor defense commands were disbanded in the following year.[82] Henceforth, missile silos usurped the function once served by coastal fortifications. Of the nearly 700 surviving fortifications along the United States coastline, from all eras of construction, many have been allowed to deteriorate, a large number are maintained for non-military use, and a relatively small number have been preserved or restored. A large percentage of remaining fortifications are World War II era installations that lay dormant on existing military reservations. For the most part, seacoast fortifications of the United States, no longer important from a military standpoint, have passed into history, "leaving a rich assortment of stone, brick, and concrete monuments to the century and a half devoted to this form of defensive effort."[83]

The dismantling of Boston's system of coastal defense proceeded rapidly after the conclusion of World War II. In 1946, the Army declared Fort Strong on Long Island a surplus property and deactivated all of the harbor forts. The flag over an active Fort Warren was lowered for the last time and dynamite charges destroyed Fort Winthrop to make room for Logan Airport's runway expansion on Governor's Island. During the following year, Gallops Island was sold at public auction and its buildings and structures were removed to the mainland. Battery

Jewell on Outer Brewster Island and Fort Duvall on Hog Island were among the last fortifications to be abandoned. Fire destroyed the Burrage Hospital building on Bumpkin Island in 1946. Several years later, Hurricane Diane damaged many of the Endicott-era officers' quarters and most of the temporary structures at Fort Andrews, which several dozen families continued to inhabit. Though the Army installed Nike-Ajax missiles in massive silos on Long Island and at points along the coast (including the area that is now Webb State Park) during the 1950s, these were removed after a few years in favor of more sophisticated, long-range defense systems located further inland. This ended the over three hundred years of active defense systems positioned in the harbor.

During the 1950s, the federal government divested itself of many former military properties on the Boston Harbor Islands. Outer Brewster Island was sold as surplus property and passed into the hands of the Massachusetts Department of Environmental Management. In 1962, the Commonwealth regained ownership of Fort Independence and Castle Island. The deed to Lovells and Georges Islands passed to the Commonwealth of Massachusetts in 1951 and 1958. Thereafter, the Metropolitan District Commission assumed stewardship for Fort Warren, prepared the first of a series of preservation plans in 1960, and nominated the historic Third System structure to the National Register in 1970. In addition, the MDC added Peddocks Island in 1970 to its system of recreational properties. As the use of the islands transitioned to parkland, many military structures were removed or left to deteriorate, while a few, such as Fort Warren, were actively preserved or stabilized for historical interpretation.

MILITARY HISTORY AND COASTAL FORTIFICATIONS SUMMARY AND RECOMMENDATIONS

Throughout the United States, from 1794 to 1949, harbor defense programs produced between 800 and 900 fortification structures, of which close to four-fifths are extant. Few forts remain from the Colonial Era and the War for Independence. Of the works remaining from the First and Second Systems, few retain their original form; most were modified during the Third System period. The major forts of the Third System remain in good repair, due largely to the solid granite-block construction and to maintenance from continued use until the end of the World War II. Most earthworks have deteriorated, though some visible traces remain. Many fortification structures remain from the Endicott period, some still in use on active Army posts, though most are badly deteriorated. Most Taft period construction was outside the continental United States and World War I construction was, for the most part, subsumed in World War II batteries. Many World War II batteries survive.[84] The following describes remaining military resources in Boston Harbor.

RESOURCES ASSOCIATED WITH THE COLONIAL ERA & THE WAR FOR INDEPENDENCE

Prior to the War for Independence fort construction was ad hoc and temporary in construction methods and materials. During the War for Independence, earthen forts were built in the vicinity of the harbor islands, but there was not a uniform design or systematic method of building or arming facilities. Few innovations were introduced and most fortifications were allowed to deteriorate at the close of the conflict. During the first national effort to fortify the country's harbors in the 1790s, Castle William was only one of three fortifications deemed reparable.[85] As one of the oldest fortifications that was continuously occupied through the settlement and defense of the U.S. coastline up until WWII, Castle Island is a significant cultural resource that contributes to the theme of military fortifications within the harbor, but is not included within the Boston Harbor Islands NRA.[86] Dorchester Heights, maintained by the National Park Service as part of the Boston National Historical Park, offers an important thematic link to the Boston Harbor Islands with respect to the military defense strategy carried out by General Washington to force British troops to evacuate Boston Harbor. All other colonial fortifications, including Fort Hill in Boston, North and South Battery, Governor's Island, and the powder magazine on Spectacle Island seem to have been obscured by subsequent major earthmoving projects.[87]

As an early center of patriot activity and as the first major military theatre in the War for Independence, Boston and its harbor hosted a number of significant events that are not adequately represented by the fragmentary physical remnants of individual fortifications. Due to the ephemeral nature of earthen fortifications, many batteries on the harbor's defensive system within the Inner Harbor, including posts on the mainland and on six islands—Deer, Georges, Long, Noddles, Peddocks and Spectacle—have been lost. A small remnant of an earthen battery may remain in Hull atop Telegraph Hill. Further study is needed to determine whether remnants of other batteries and evidence of encampments, as well as burials or other archeological resources, exist.

RESOURCES ASSOCIATED WITH FIRST, SECOND, & THIRD SYSTEMS & POST-CIVIL WAR YEARS

As an important maritime center during the early national period, Boston Harbor sustained several generations of coastal fortifications, each distinguished by a particular combination of building materials, armament, and architectural style. While First and Second System designs for national defense superseded colonial fortifications, Third System construction dramatically and more permanently altered the harborscape. One military historian noted that "some of the most spectacular harbor defense structures to come out of any era of military architecture" were built during this period and characterized by "structural

durability, a high concentration of armament, and enormous overall firepower." Nationally, most of these forts have proven their strength and remain standing, though some have been partially obscured by the superimposition of later works. In Boston Harbor, partially-restored Fort Warren, an impressive granite Third System fortification designated as a National Historic Landmark, represents a significant period in the development of Boston's coastal defenses. Since little remains of First and Second System construction, Fort Warren stands as a symbol of these early efforts toward defensive planning in Boston Harbor and illustrates the strategic shift towards more permanent structures situated in the outer harbor. Fort Independence on Castle Island is another outstanding example of Third System fortifications and is listed on the National Register; the fort is not part of the Boston Harbor Islands NRA.

RESOURCES ASSOCIATED WITH ENDICOTT & TAFT PERIODS

Endicott Period fortifications represented a significant shift in the nature of coastal defense from forts to the weapons within and surrounding them. Moreover, the program sustained more construction than any other period of military fortification. In Hull, only a few structures remain from Fort Revere. The remains of Fort Dawes on Deer Island were demolished during the expansion of the sewerage treatment plant in the 1990s. Most of the structures at Fort Strong on Long Island are gone but foundations and gun emplacements remain. Fort Andrews on Peddocks Island is the last surviving example of a substantially intact Endicott Period fortification in the northeastern United States and is one of the most completely intact forts of any period in Boston Harbor. The fort provides an important link in the evolution of the coastal defense systems within the harbor. The design and layout of the fort are still evident and the numerous buildings, though dilapidated, illustrate administrative functions and daily military life. In 1986 the Massachusetts Historical Commission recorded that the Fort Andrews complex was likely eligible for listing on the National Register of Historic Places under Criteria A and C, stating that:

Under Criterion A, the Fort is representative of a locally important period of military development and reflects continued usage of Boston's Harbor Islands as a major component of the city's "defensive system." Under Criterion C, the complex reflects a single period of architectural development and, though deteriorated, is an excellent example of Colonial Revival institutional architecture which preserves intact the plan and hierarchy of the complex's military use. An unknown number of frame buildings once standing on the site have been demolished and others are in deteriorated condition, however, depending on structural engineering analysis (supporting retention of existing buildings) [the] complex retains sufficient integrity to convey a strong sense of its original use, design and setting.[88]

RESOURCES ASSOCIATED WITH WORLD WARS I AND II & THE POST WAR YEARS

During WWI, the forts on Georges and Peddocks, and to a lesser degree on Lovells, were modified and expanded. New defenses were constructed on Great Brewster, However much of this work was modified again during WWII or subsequently demolished. On Georges Island, the shell of the mine control center built over Bastion D and the brick mine storage building near the pier remain, but other structures including officers housing and a hospital were later demolished. On Bumpkin Island, there are many remnants of the buildings and foundations of the U. S. Naval training station erected during WWI.

During the two decades following World War I, little money was allocated to Atlantic Coast defenses and less than two dozen batteries were constructed across the country. Of this generation of defenses, nearly every World War I era installation was subsequently absorbed into World War II fortifications. A new fort, Battery Jewell, was constructed on Outer Brewster and the post on Great Brewster was expanded. Most WWI and WWII structures were hastily dismantled and removed in the late 1940s. However, concrete barracks, bunkers and gun emplacements that were active during WWII remain on several islands including Gallops, Georges, Great Brewster, Long, Outer Brewster, and Peddocks. The chapel on Peddocks Island is one of the best preserved structures from this period, though its condition is rapidly deteriorating. The largest guns installed in Boston Harbor, on Deer Island and Hog [now Spinnaker] Island no longer exist, though a portion of the bunker remains on Hog, which is not part of the Boston NRA.

Remnants of Nike missile sites remain on Long Island. At Webb Memorial Park, the missile site was capped with earth. The site on Hog Island was removed though several sub-structures remain. Harbor island resources associated with military history and coastal fortifications are listed in table 8 and recommendations for further actions include:

RESEARCH & DOCUMENTATION

- Conduct a Historic Resource Study of coastal fortifications on the Boston Harbor Islands based on historical changes in defensive strategies. Review existing resources in the context of a system of individual components, including forts, batteries, seawalls, earthworks, Nike sites and other related structures. This study would highlight the coordinated system of defense that included most islands and mainland peninsulas rather than treat military history as isolated incidents on individual islands.

- Prepare combined cultural landscape reports, historic structure reports and

archeological assessments for all islands with extant fortifications and military structures, particularly Georges, Long and Peddocks. This would include documentation of existing conditions, review of existing National Register documentation, recommendations for amendments (likely for Fort Warren), evaluation of military resources in the context of a harbor-wide system of defense, selection of a treatment alternative and recommended actions. Problems pertaining to restoration and rehabilitation, including the scarcity of pre-twentieth century armament, should be examined. On Peddocks Island, the study of Fort Andrews should include the cottages used by military officers on the west side of East Head.

- Prepare National Register nominations for military resources determined eligible through the above described studies, potentially for Fort Andrews on Peddocks, Fort Strong on Long, Battery Jewell on Outer Brewster, Fort Standish on Lovells. In particular, consider nominating Fort Andrews to the National Register of Historic Places as a major component in Boston's system of coastal defense and as an example of Colonial Revival institutional architecture.

- To protect resources, document remnants of early forts including any First, Second or Third System remnants, and burial sites on all islands, but particularly on Peddocks and Long Islands.

- Investigate further non-military uses of fortifications, including the placement of beacons for navigation, ceremonial use of armaments and facilities, and alternative institutional use.

- Conduct an ethnographic study of war-time life on the harbor islands.

- Prioritize preservation opportunities for both individual components and the defensive system as a whole. Problems pertaining to restoration and rehabilitation, including the scarcity of pre-twentieth century armament, must be examined.

PROTECTION & MAINTENANCE

- Stabilize buildings and structures and thoroughly document existing conditions, including those of the surrounding landscape, on Peddocks Island.

- Protect archeological resources associated with military use.

EDUCATION & INTERPRETATION

- Integrate the roles of fortifications at Dorchester Heights, Castle Island, Winthrop

and Hull into the interpretation of the events during the siege of the Port of Boston during the War for Independence through World War II.

- Highlight the importance of agricultural and natural resources on the islands during the War for Independence.

ENDNOTES

1. Fort Independence on Castle Island is also an excellent example of an intact Third American System fort and is listed on the National Register of Historic Places.
2. Colonial geographic conceptions, limited by cartographic knowledge and the prevailing mercantilist system, underlay the placement and orientation of these initial outposts.
3. Emanuel Raymond Lewis, *Seacoast Fortifications of the United States: An Introductory History* (Annapolis, MD: Naval Institute Press, 1979), 7.
4. The natural security that the harbor afforded was noted by Wood in 1633: "It is a safe and pleasant harbour within, having but one common and safe entrance, and that not very broad." In 1740, Bennett also appreciated the harbor's inherent defensive qualities, declaring that "this town [Boston] has a good natural security, in my opinion; for there is great plenty of rocks and shoals, which are not easy to be avoided by strangers to the coast; and there is but one safe channel to approach the harbor, and that so narrow that three ships can hardly sail through abreast." Sweetser, 262, 264-65.
5. Sweetser, 47.
6. Charles Smith, "Boston and the Colony," in Justin Winsor, The Memorial History of Boston, (Boston: Wright & Potter, 1880), 222-23.
7. Mark Antony DeWolfe Howe, Boston: The Place and the People (New York: MacMillan Company, 1903), 30-31.
8. A rudimentary fort had been built on Savin Hill in Dorchester but was later abandoned in favor of the fort on Castle Island. Charles Deane, "The Struggle to Maintain the Charter of King Charles I, and Its Final Loss," in Winsor, 339.
9. Sweetser, 146.
10. *Ibid.*, 39.
11. *Ibid.*, 166.
12. Lewis, 15.
13. Sweetser, 154.
14. *Ibid.*, 150, 155.
15. *Ibid.*, 268.
16. Emily and David Kales, *All About the Boston Harbor Islands* (Hingham, MA: Hewitts Cove Publishing Co., Inc., 1993), 17-18, M. Howe, 118, and Sweetser, 156.
17. Sweetser 182-84, and Long Island Campus files.
18. Sweetser, 138.
19. Sweetser, 228 and Metropolitan District Commission (MDC), "History and Master Plan, Georges Island and Fort Warren" (1960), 7.
20. Edward Rowe Snow, *Mysterious Tales of the New England Coast* (New York: Dodd, Mead & Company, 1961), 274.
21. Henry F. Howe, *Salt Rivers of the Massachusetts Shore* (New York: Rinehart, 1951), 192.
22. M. Howe, 115, Sweetser 138, 207-8, 220, Kales, 86, and Howard S. Russell, *A Long, Deep Furrow: Three Centuries of Farming in New England* (Hanover, NH: University Press of New England, 1976), 215.
23. The Commonwealth of Massachusetts rebuilt the light at the end of the war in 1783. Kales, 39-41 and George R. Putnam, *Lighthouses and Lightships of the United States* (Boston: Houghton Mifflin Company, 1917), 6-8.
24. Lewis, 21.
25. *Ibid.*, 21-22.
26. *Peddock's Island Building Study*, 17.
27. The other two salvageable positions were at Goat Island in Newport and Mud Island in Philadelphia. Lewis, 17.
28. The marine hospital dedicated to the care of merchant sailors opened on Castle Island was an early step in the creation of the U.S. Public Health Service. It was the first facility built with Marine Hospital funds which were generated from a $.20 per month tax on sailors' salaries. The legislation establishing the tax, "An Act for the Relief of Sick and Disabled Seamen," was signed into law by President John Adams on 16 July 1798. The first patients were admitted to barracks on the island in 1799. Eligible patients included "all officers of the Navy and of the Marines and all seamen and marines in the public service of the United States, and all officers and seamen in the merchant service." A new facility was opened in Charlestown in 1802. Fitzhugh Mullan, *Plagues and Politics: The Story of the United States Public Health Service* (New York: Basic Books, Inc., 1989), 17.
29. Sweetser, 156-60, 168.
30. Lewis, 25-33.
31. Alfred K. Schroeder, "Fort Warren Fact Sheet" (MDC Files).
32. The battery had eight gun platforms resting on stone foundations and was armed with 10-pound guns. It was located on the current site of Building 103. Edwin C. Bearss, *Historic Resource Study: Charlestown Navy Yard, 1800-1842* (Boston: US Department of the Interior, National Park Service, October 1984) 66-67, 352, 365, 491. Also "Fort Winthrop: Its Past and Present History," *The Bostonian* (1895), Alfred K. Schroeder, "Life and Times of a Harbor Fort" (MDC Files), and *Peddock's Island Building Study*, 18.
33. Long Island Campus Files.
34. The fort on Governor's Island was first known as Fort Warren. Later the name was used for the fort on Georges Island. Similar confusion surrounds the name Fort Strong, which was initially used to describe the fort on Noddles Island then later used for the fort on Long Island. The barracks of Fort Strong on Noddles Island were removed in 1833 and the

remainder of fort was allowed to deteriorate. Sweetser, 112, 119, 126, 158, 220.
35. The Board proposed nearly 200 separate works, of which thirty were built nationwide; only a few sites in Florida and on the Gulf Coast saw forts in completely new areas. The original intention to abandon First and Second System forts eventually expanded to include about two dozen earlier fortifications in the new construction. Lewis, 38-39.
36. *Ibid.*, 43-44.
37. *Ibid.*, 59-60.
38. Sweetser, 159, Lewis, 40-41, and *Peddock's Island Building Study*, 19.
39. Metropolitan Area Planning Council (MAPC), *Boston Harbor Islands Comprehensive Plan* (Boston: Massachusetts Department of Natural Resources, 1972), 76-77 and MDC, *History and Master Plan of Georges Island* (Boston, May 1960), 7.
40. Schroeder, "Fort Warren Fact Sheet."
41. MAPC, 76-77, Kales, 55, Sweetser, 227, and Schroeder, "Fort Warren Fact Sheet."
42. "Fort Winthrop: Its Past and Present History," Schroeder, "Life and Times of a Harbor Fort," and MAPC, 23.
43. MAPC, 80 and Sweetser, 126.
44. Lewis, 61.
45. *Ibid.*, 66-8.
46. *Ibid.,* 69.
47. *Ibid.*, 69.
48. Sweetser, 230.
49. Schroeder, "Fort Winthrop: Its Past and Present History."
50. Sweetser, 161.
51. MAPC, 78 and Ellenor Yahrmarkt, "Chronology of Gallups Island," DEM files.
52. Kales, 52 and MAPC, 80.
53. A cemetery is demarcated on an 1899 map of the island in the vicinity of the Fort Strong Hospital. Sweetser, 181-85, Kales, 71, NPS, 63 and Long Island Campus Files.
54. *Peddock's Island Building Study*, 20.
55. The Alger Foundry is credited with the manufacture of over 2,000 pieces of heavy ordnance, including the guns with which the *Monitor* fought the *Merrimac*. MAPC, 94 and Sweetser, 211-12.
56. Kales, 52.
57. Lewis, 75.
58. *Ibid.*, 77-78.
59. *Ibid.*, 70.
60. *Ibid.*, 79, 83.
61. *Ibid.*, 88.
62. *Ibid.*, 90.
63. Lewis, 90 and Schroeder, "Fort Warren Fact Sheet."
64. MDC, "History and Master Plan, Georges Island and Fort Warren," 32-36.
65. U.S. War Department, "Proceedings of a Board of Officers," as cited in *Peddock's Island Building Study*, 27-30.
66. Don Swann, "Defenses of Boston Harbor," (MDC files, 1985).
67. Kales, 52.
68. Fort Revere Park & Preservation Society brochure, (Hull, MA).
69. Frederick Law Olmsted prepared a plan for the recreational use of the island. Sweetser, 161-63 and MAPC, 72.
70. In 1898 an explosion occurred during the unloading of mines, killing four men and ripping a large hole in the island's seawall. MAPC, 72 and Sweetser, 163.
71. Lewis, 89-91 and 99-100.
72. Two to four stations, usually widely-spaced, simple structures of wood, brick or concrete, served each battery. This was the most precise system of fire control from which simultaneous optical bearings could be taken on a moving target. Lewis, 91 and *Peddock's Island Building Study*, 22-23.
73. Lewis, 101-2.
74. *Ibid.*, 111, 115-16.
75. The barracks were removed after the war. The Burrage Hospital was left intact, but was subsequently destroyed by fire in 1945. Kales, 85.
76. Swann, "Defenses of Boston Harbor" and *Peddock's Island Building Study*, 23.
77. Lewis, 117-18.
78. *Peddock's Island Building Study*, 23-24.
79. MDC, "History and Master Plan, Georges Island and Fort Warren," 44.
80. Great Brewster notebook, DEM Files
81. "Chronology of Gallups Island," DEM Files and Kales, 63-64.
82. Very few seacoast weapons were preserved from the Endicott, Taft, World War I or World War II periods. Most are located on the island forts in Manila Bay, including Corregidor. Lewis, 132.
83. *Ibid.*, 124.
84. *Ibid.*, 130.
85. *Ibid.*, 17.

86. Fort Independence was listed on the National Register of Historic Places in 1970.
87. Harbor historian Edward Rowe Snow notes that remains of a powder magazine on Spectacle Island were still evident in the 1960s. Snow, *Mysterious Tales of the New England Coast*, 274.
88. Sarah J. Zimmeran, "MHC Opinion: Eligibility for National Register, Statement of Significance" (Boston: Massachusetts Historical Commission, 18 March 1986).

Table 8. Cultural Resources Associated with Military History and Coastal Fortifications

Resource	Location	Type	National Register Status
Navy Station remnants	Bumpkin Island	Unstabilized ruins and cultural landscape	Not evaluated
Radio School remnants	Gallops Island	Unstabilized ruins and cultural landscape	Not evaluated
Fort Warren	Georges Island	Unstabilized ruins and cultural landscape	Listed on the National Register and Landmark
Military Post	Great Brewster	Unstabilized ruins and cultural landscape	Not evaluated
Fort Strong	Long Island	Stabilized and unstabilized ruins and cultural landscape	Not evaluated
Fort Standish	Lovells Island	Unstabilized ruins and cultural landscape	Not evaluated
Battery Jewell	Outer Brewster	Unstabilized ruins and cultural landscape	Not evaluated
Fort Andrews	Peddocks Island	Stabilized and unstabilized ruins and cultural landscape	Determined eligible for listing on the National Register

Table 9. Military Use of the Boston Harbor Islands

Island	Colonial Period 1630-1787	First System 1794-1804	Second System 1807-1812	Third System 1817-1867	Civil War & Post War 1860-1885	Endicott & Taft Periods 1885-1908	WWI Period 1917-1937	WWII Period 1937-1945	Post-War Period 1946
Bumpkin							X		
Calf								X	
Castle Ft William/ Independence	X	X	X	X	X	X		X	
Deer Ft Dawes			X	X				X	
Dorchester Heights	X		X						
Gallops				X	X		X	X	
Georges Ft Warren				X	X	X	X	X	
Governors Ft Warren/ Winthrop	X	X	X	X	X				
Great Brewster								X	
Hog (Spinnaker) Ft Duvall								X	X
Hull Ft Independence/ Revere	X					X	X	X	
Long Ft Strong	X	X	X	X	X	X			X
Lovell's Ft Standish				X	X	X			
Noddles Ft Strong	X		X						
Nut				X					
Outer Brewster Battery Jewell								X	
Peddocks Ft Andrews	X					X	X	X	
Spectacle	X								
Webb Mem St Park Weymouth									X
Winthrop Shirley Pt Ft Banks	X					X			



Figure 4.1. Drawing of Castle William on Castle Island, late 18th century. Courtesy of the Bostonian Society.



Figure 4.2. Imprint of star shaped Fort Independence in Hull, 1933. Image courtesy of Fort Revere Park and Preservation Society.

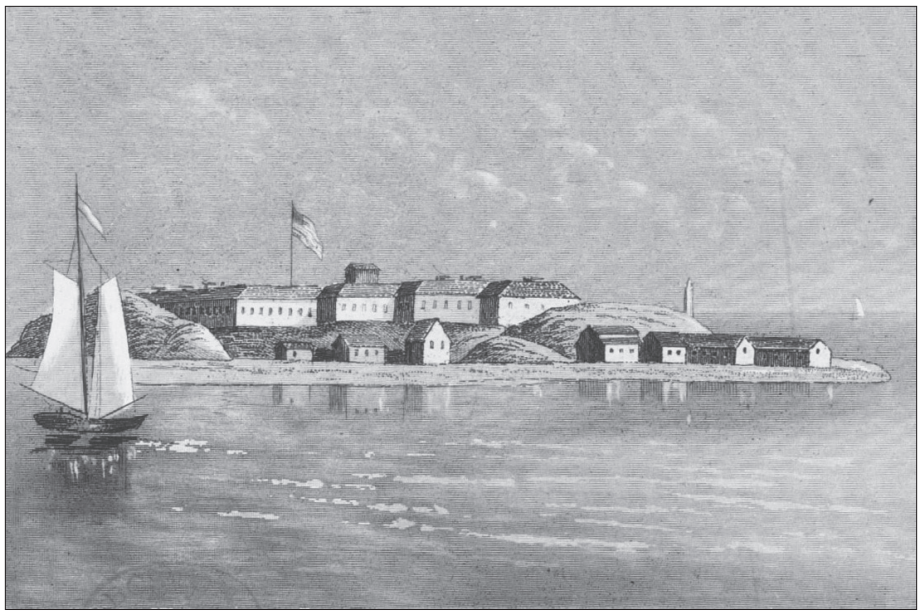


Figure 4.3. Fort Warren on Georges Island, Civil War era. Boston Public Library Harbor Views Collection.



Figure 4.4. Remains of Fort Winthrop's "Dungeon Keep" on Governor's Island, early 20th century. Image courtesy of Historic New England.

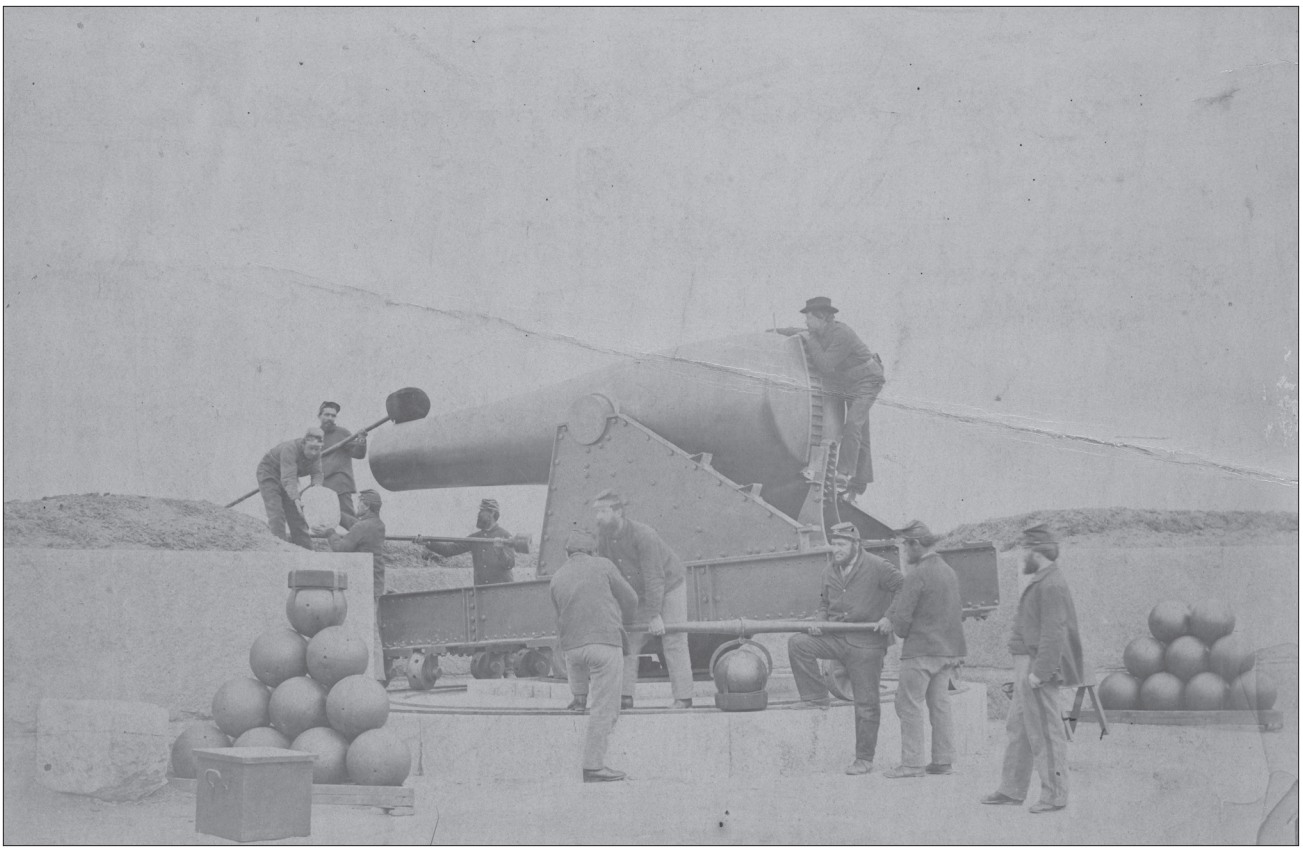


Figure 4.5. Troops with heavy artillery at Fort Warren on Georges Island, Civil War era. Boston Public Library Harbor Views Collection.

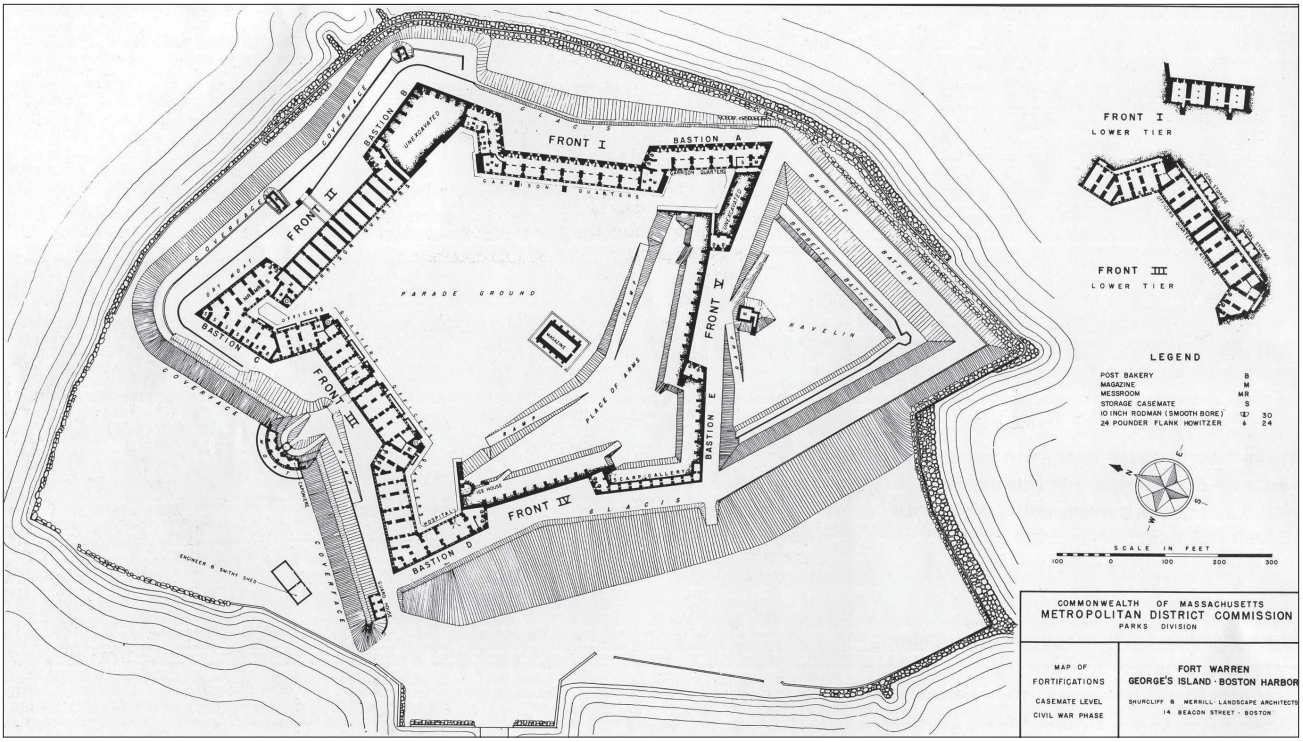


Figure 4.6. Map of Civil War fortifications at Fort Warren on Georges Island. Map courtesy of DCR.

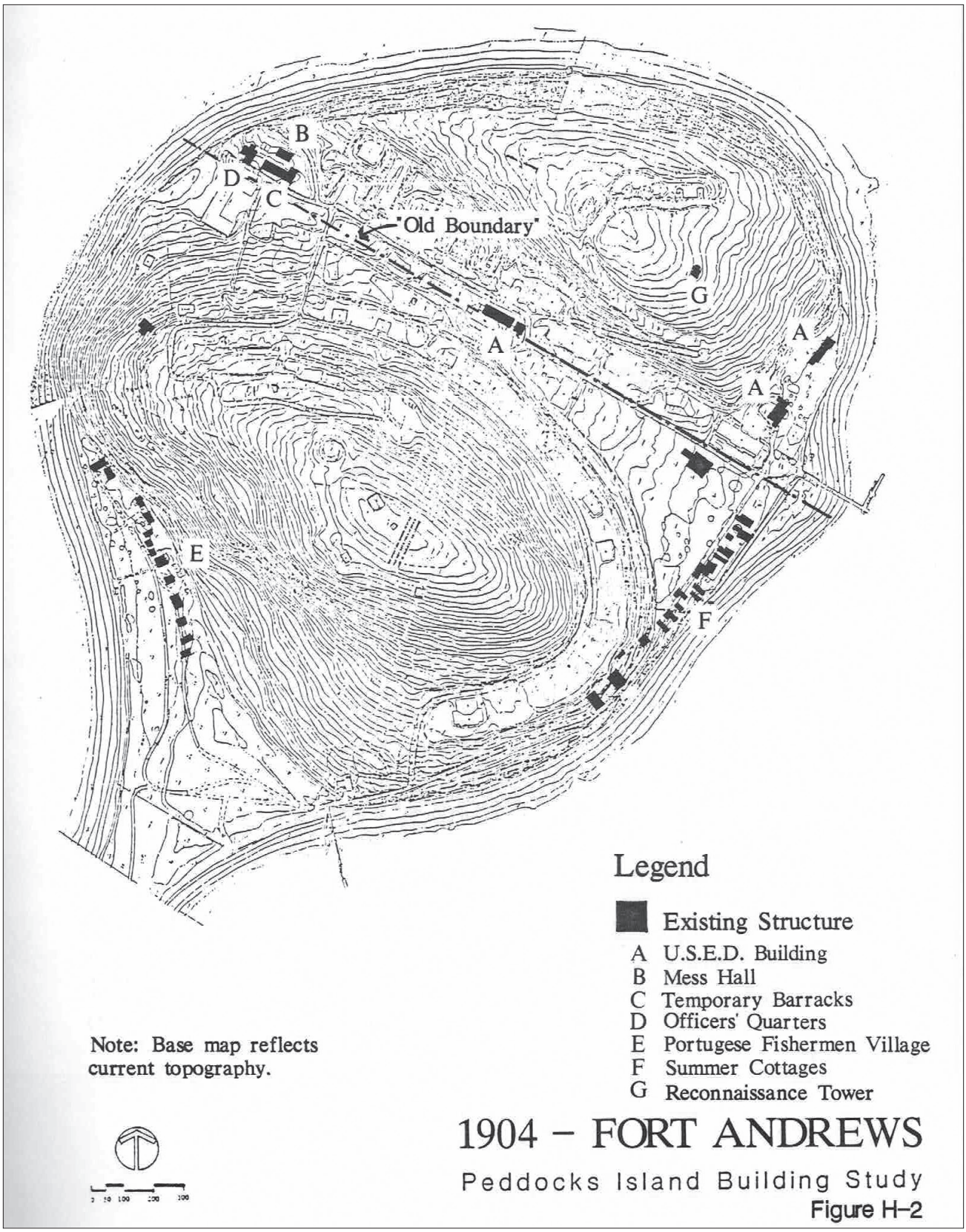


Figure 4.7. Map of Peddocks Island, with footprints of buildings existing at Fort Andrews in 1904. Map courtesy of DCR.

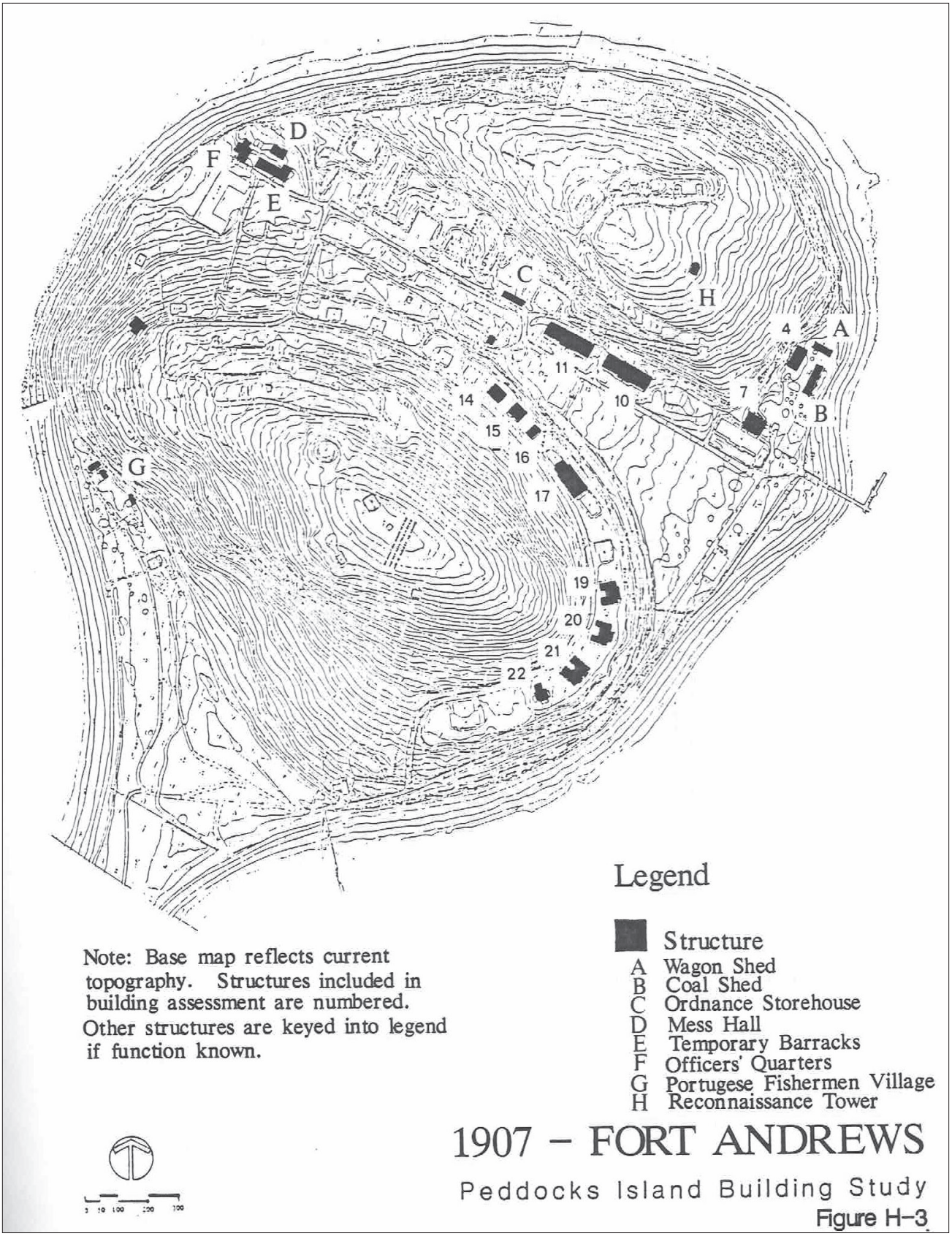


Figure 4.8. Map of Peddocks Island, with footprints of buildings existing at Fort Andrews in 1907. Map courtesy of DCR.

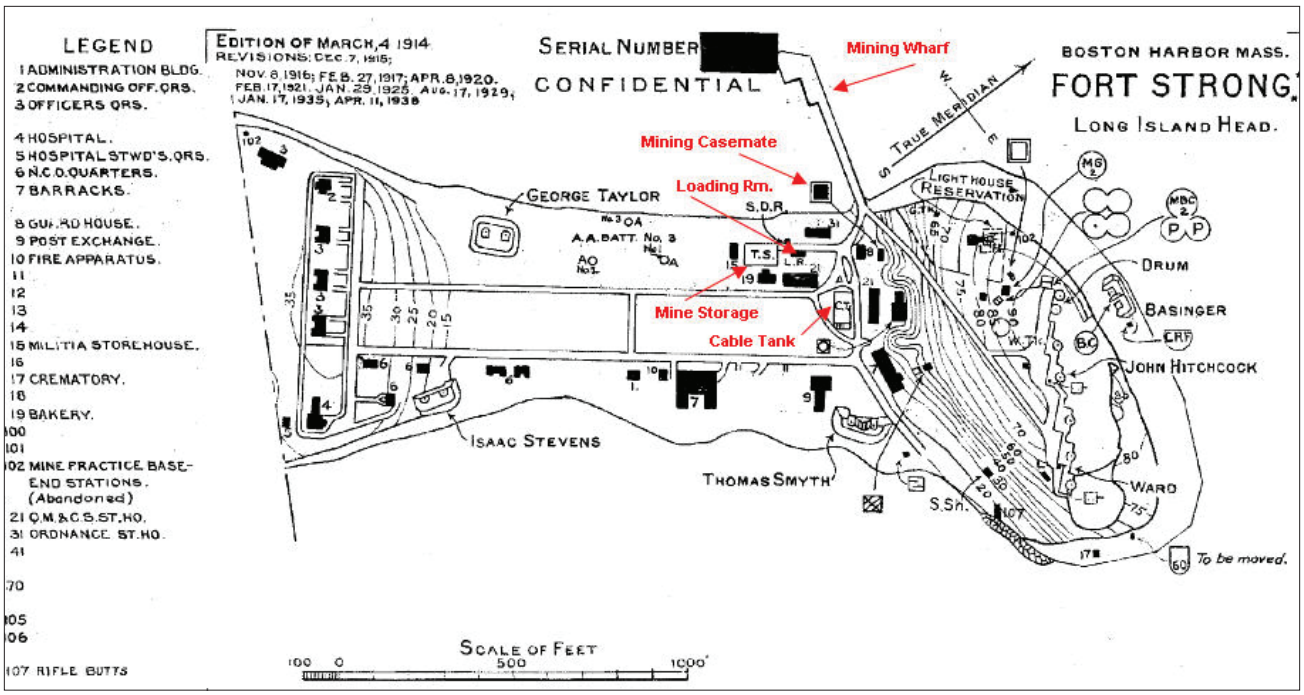


Figure 4.9. Plan of Fort Strong on Long Island, 1914.



Figure 4.10. Fort Revere in Hull, showing the "Officers Line" curving around the water tower, circa 1920's. Image courtesy of Fort Revere Park and Preservation Society.

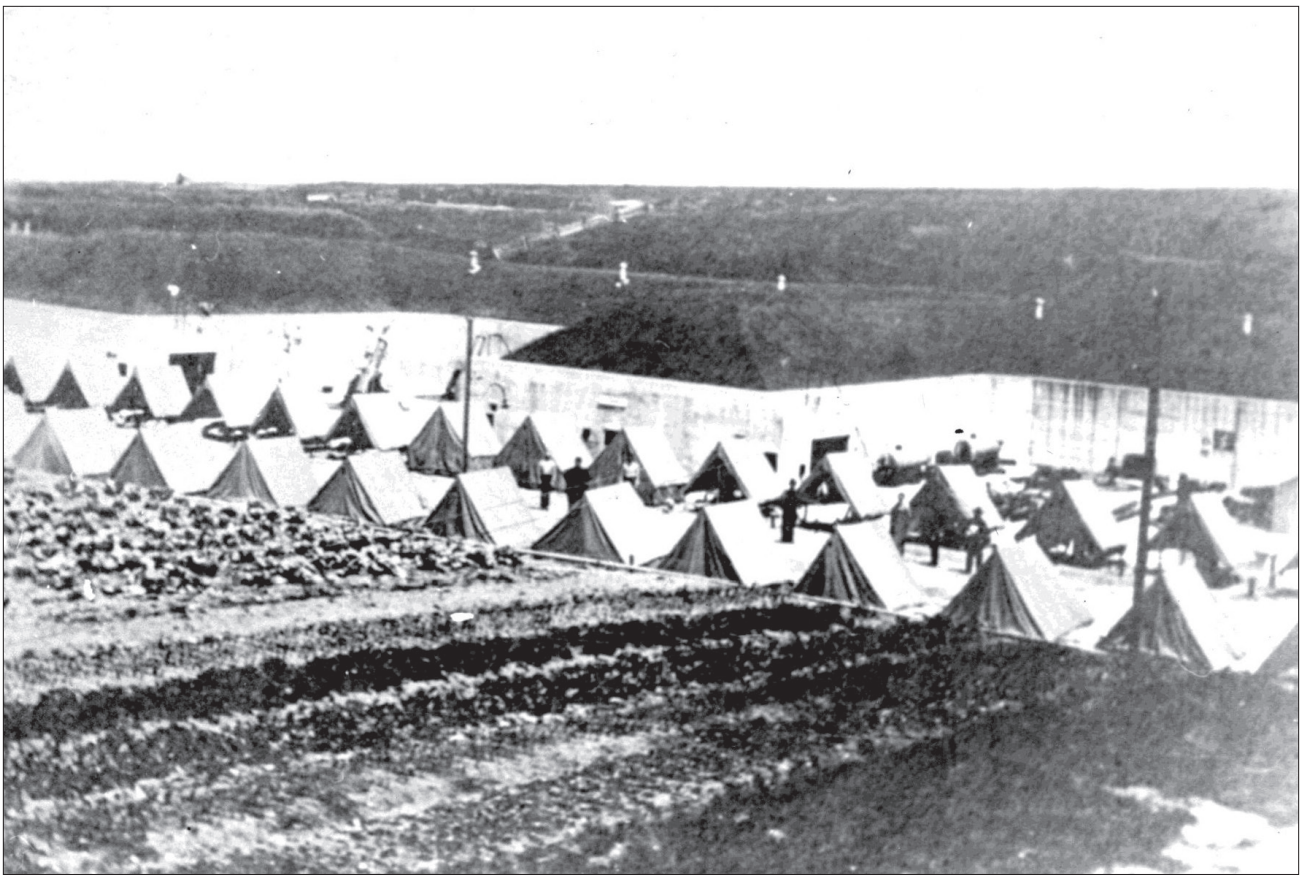


Figure 4.11. Temporary encampments at Fort Andrews on Peddocks Island with Battery Cushing in the background, circa 1915. Image from Shaun Provencher's Peddocks Island Physical History, Chronology, and Statement of Significance, DCR.

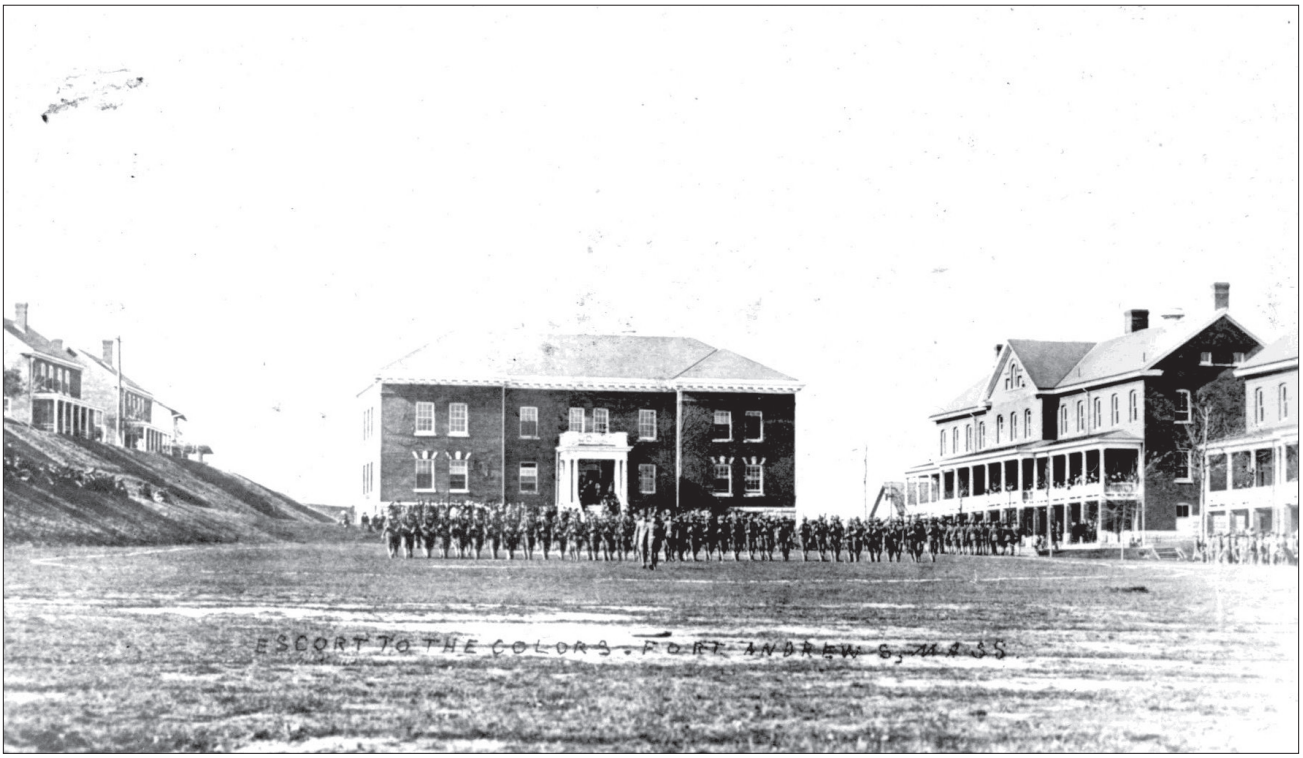


Figure 4.12. Drilling on the parade ground at Fort Andrews, Peddocks Island, 1917. Image from Shaun Provencher's Peddocks Island Physical History, Chronology, and Statement of Significance, DCR.

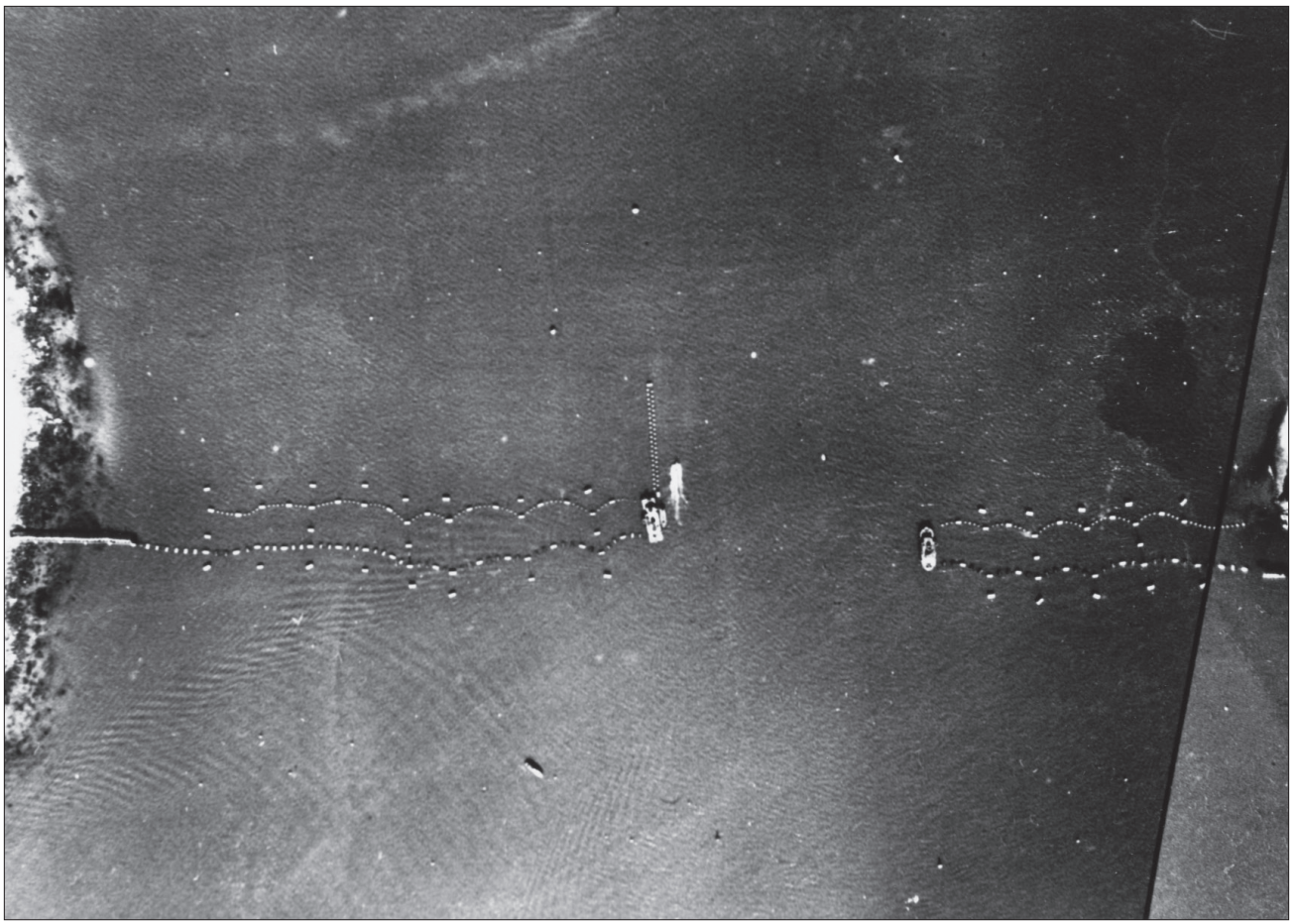


Figure 4.13. Anti-submarine net between Long and Deer Islands, WWII era. Boston Public Library Harbor Views Collection.

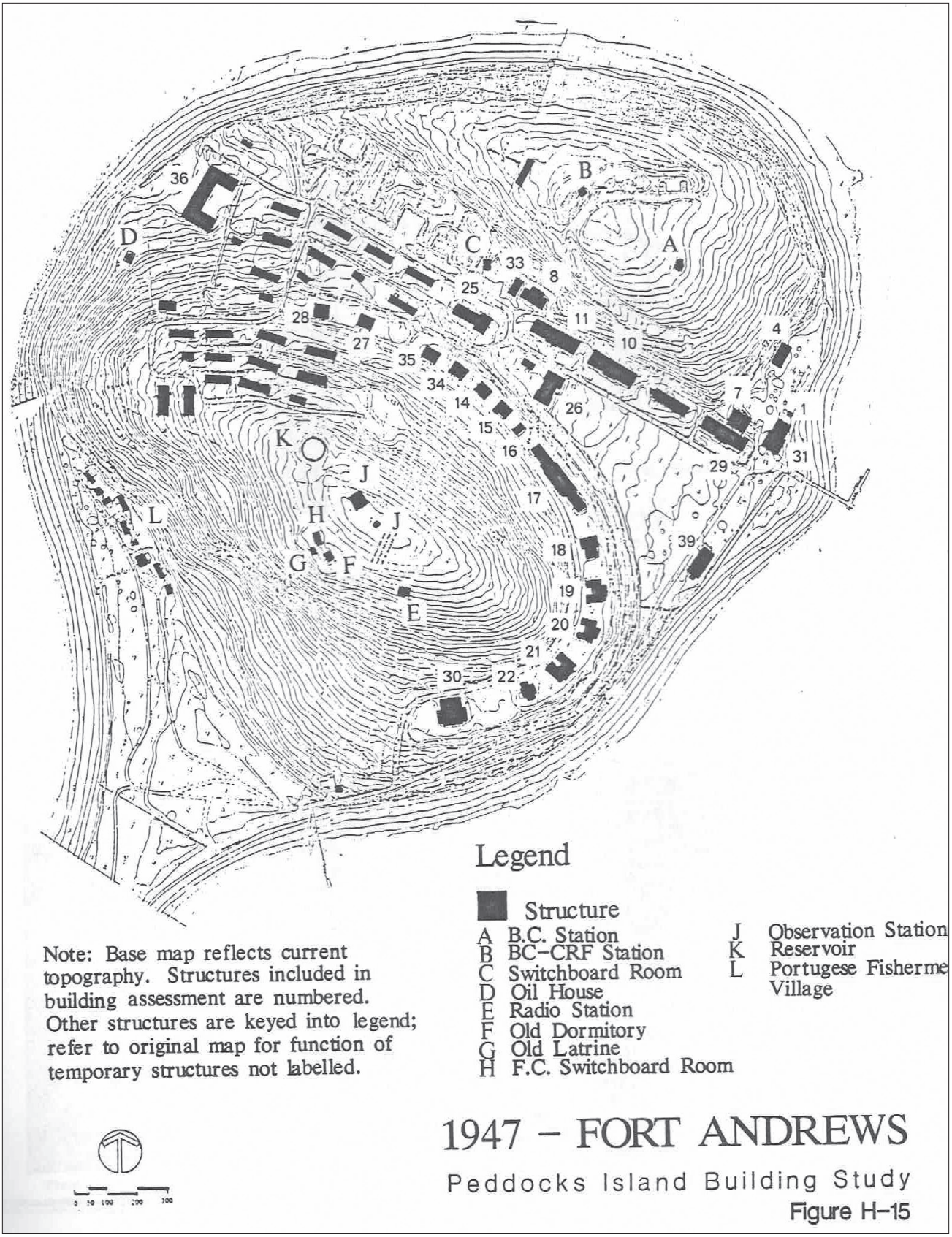


Figure 4.14. Map of Peddocks Island, with footprints of buildings existing at Fort Andrews in 1947. Map courtesy of DCR.



Figure 4.15. Aerial photo of Peddocks Island East Head showing Fort Andrews at full development with temporary and permament structures, 1952. Photo courtesy of DCR.

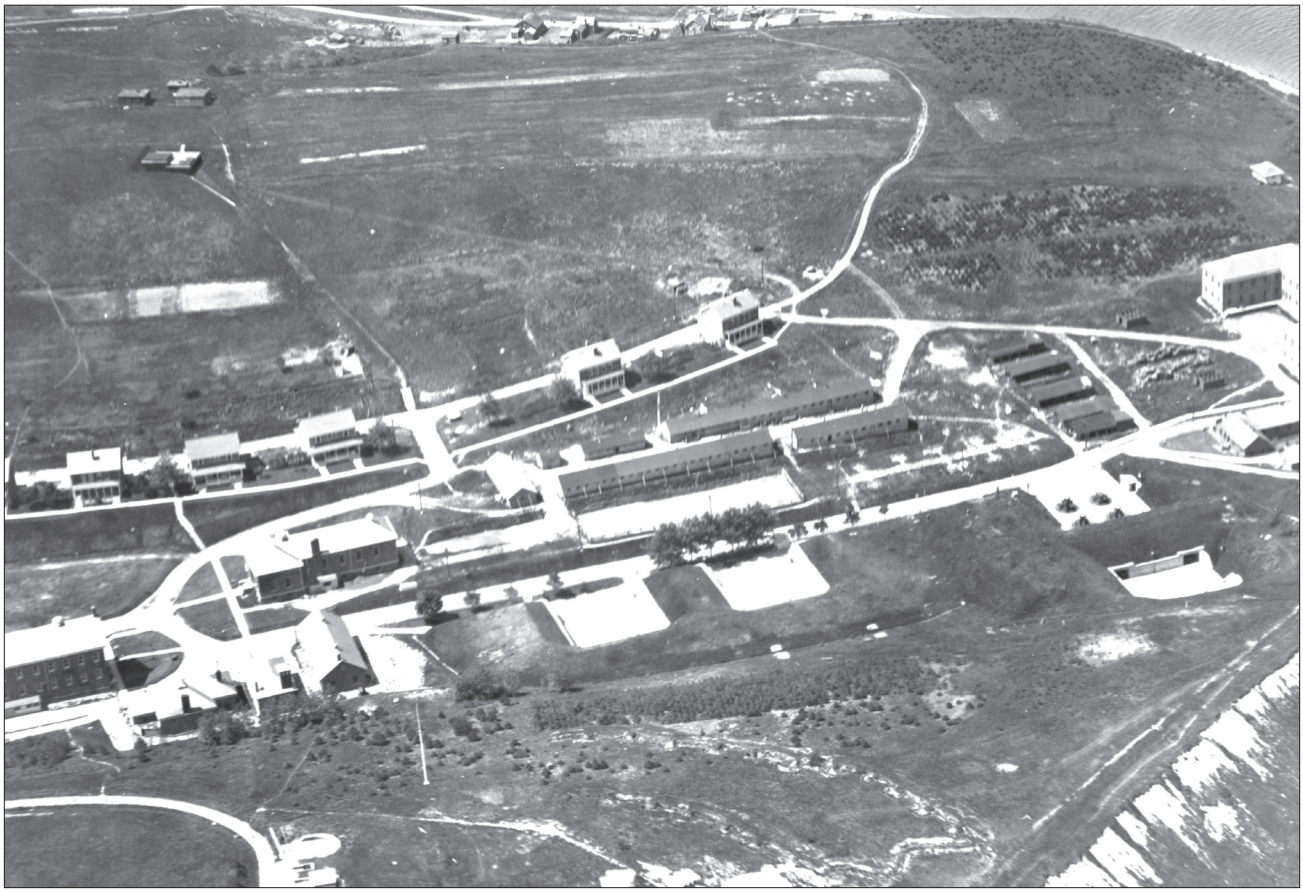


Figure 4.16. Aerial photo of Peddocks Island East Head, Fort Andrews area, showing gardens and orchards on the hilltop, Early 20th century. Image courtesy of DCR.

5. INSTITUTIONS

By far, the most intensive historic use of the islands has been to sequester those who undermined the perceived social order in Boston's evolving urban environment. Beginning as early as the mid-1600s, the island were used for internment and imprisonment. Later, in the 1820s, the influence of antebellum reform thought, which favored isolation as the solution for social and public health problems, made the islands a tempting location for facilities and institutions. Institution-building transformed the island landscape, with penitentiaries for criminals, asylums for the insane, almshouses for the poor, schools for the indigent, and hospitals for quarantined immigrants.[1] Despite the proliferation of conflicting reform theories, a common design vocabulary informed many institutional campuses, resulting in their adaptive reuse by different management agencies responsible for the care of deviant and dependent members of society. Not until the twentieth century was there a marked departure in custodial practices and a movement towards non-institutional responses to poverty, crime and insanity, but by then nearly three centuries of activity had left an indelible imprint upon the islands. This chapter describes the development of social institutions in the Boston area and their eventual placement and displacement to the harbor—on Apple, Bumpkin, the Brewsters, Castle, Deer, Gallops, Georges, Long, Lovells, Nix's Mate, Peddocks, Rainsford, Spectacle and Thompson islands—including prisons, penal institutions, mental institutions and treatment facilities, poorhouses, shelters, hospitals, quarantine stations, and immigration facilities.

PRISONS AND PENAL INSTITUTIONS

Colonial attitudes and practices toward the criminal, as well as toward the poor, the insane, the invalid, and the delinquent, were remarkably different from those that Americans would come to share.[2] A rigid social hierarchy informed most colonial social practices. The premise that the existing social order had divine approbation, under the Calvinist tenet of predetermination, was buttressed by the frontier conditions that challenged the early colonists. Common goals commanded community action and harsh conditions necessitated interdependence. The relative religious and ethnic homogeneity of early settlements further underscored a communal orientation. Colonial communities guarded their good order—and tax money—by "warning out" potential deviants and dependents.

The efficacy of deterrent measures presumed a society in which reputation was an important element of social control and inevitably led to another common practice. "Warning out" provided for the expulsion of nonresident offenders and dependents, reflecting the community's narrowly-defined corporate identity and sphere of responsibility.[3] This tendency toward insularity and suspicion of

strangers informed one of the most tragic episodes of banishment in Boston's colonial history: the internment of Christian Indians on islands in Boston Harbor during King Philip's War. When Puritan settlers first arrived in Massachusetts Bay in 1630, Governor Winthrop exhorted them to establish a "city upon the hill," a model Christian and missionary community. English settlements expanded rapidly with the arrival of 20,000 immigrants in the 1630s and its demands for land spread. Expansion relied on the "purchase" of land from the native population, though much of the land was simply "granted" by the English General Court to settlers regardless of the land rights of the native inhabitants. New England Indians suffered not only the loss of much of their land in questionable land deals, but also much of their population to epidemics of European disease. The psychological crisis of rapid depopulation and disenfranchisement made some Indians more receptive to the missionary preaching of colonial ministers. John Eliot, the Puritan minister of Roxbury who preached in a local Algonquian dialect, established fourteen "praying towns," or Christian Indian settlements, where converts could live separate from their less tractable brethren. By 1674, approximately 11,000 Indians, nearly one-quarter of the New England population, lived in these inland settlements.[4]

By the 1670s, frequent land disputes and the erosion of native cultures by colonizing and missionary practices led to hostile relations between English and Indian peoples. In Plymouth Colony Philip, or Metacom, was particularly aggrieved by English encroachments and, in 1675, a series of disputes rapidly devolved into the violent conflict throughout New England that came to be known as King Philip's War. Under Metacom's leadership, Wompanoags, Pocumtucks, Mipmucks, and Narragansetts attacked English towns throughout New England, killing inhabitants and destroying buildings.[5] In October 1675 Massachusetts Bay authorities, fearing the rebellion of peaceful Christian Indians, ordered their removal from the fourteen praying towns to the islands of Boston Harbor. Approximately eight hundred Christian Indians and several non-Christian Indians were interned on the islands through the winter without adequate food, clothing, or shelter. Sympathizers Daniel Gookin and John Eliot visited in December and reported "the Island was bleak and cold, their wigwams poor and mean, their clothes few and thin."[6] The Indians themselves begged for relief. [7] A Christian Indian confined to Deer Island, who hoped to find better conditions on Long Island, wrote a petition to the Massachusetts Council " humbly If I might have liberty to goe too som place wheare I might get som clames som wood and som corne."[8]

An order from the Massachusetts Council dated 29 February 1676 refers to Christian Indians confined at Deer, Long, and one of the Brewster islands. By the following month, the Council had responded to repeated reports of overcrowding and transferred at least 100 Indians to Long, Peddocks and the "greatest of the Brewster Islands" to reduce the overcrowded conditions. About half of the

Indians confined on the islands died of starvation or exposure, while an unknown number of Indians were smuggled off the island and sold as slaves in the West Indies.[9] It is not known where on these islands the prisoners camped or were buried. Those who survived were released in May 1676. While a small number of Christian Indians resettled the praying towns at Natick and Punkapoag, others may have fled to Mashpee territory.

Seventeenth and eighteenth century criminal codes fixed a wide range of punishments, including provisions for fines, corporal punishment, mechanisms for public shaming, banishment, and, ultimately, capital punishment. Prevailing religious doctrines that stressed the natural depravity of man placed little faith in the possibility of reform; "jails facilitated the process of criminal punishment but were not themselves instruments of discipline."[10] Rather, anyone who repeatedly flouted non-institutional mechanisms of correction was deemed uncontrollable, and given the religious impulse to define crime as a sin, sent to divine judgment at the gallows. Local jails, found throughout the colonies and lacking a distinctive architecture and specialized procedures, held persons to be tried or sentenced and, occasionally, debtors.[11] Bostonians reserved island incarceration for the most threatening and reviled offenders. In 1689, with the news of England's Glorious Revolution and the enthronement of William and Mary, Bostonians rose in arms against Governor Edmund Andros, seized his forts, and imprisoned him on Castle Island. A party of American Indian captives confined to Castle Island escaped imprisonment in 1725. Colonial society reserved island incarceration for those outside its social—and, consequently, physical—boundaries.

Visible manifestations of public authority provided mechanisms for determent and correction. Criminals and the morally suspect were "displayed to the surrounding multitude" and exposed to "the leaden infliction of public scorn" in the market and public spaces of seventeenth-century Boston. In a penal system in which the "public gaze" conveyed the greatest ignominy and, barring execution, the gravest punishment, correction was of necessity a public and participatory event.[12]. Corporal punishment served as the ultimate deterrent and the harbor may have provided a forum for such moral suasion. On at least one occasion, the corpse of an executed criminal, the pirate William Fly, was chained and displayed on Nix's Mate in 1726. Two other executed pirates were buried on the island, serving as a warning to Boston's growing and intractable maritime community.[13]

Colonial notions of deviancy and methods of correction did not survive long into the nineteenth century, when the broad changes that differentiated the states of the new republic from their colonial precursors prompted a revision of the ideas and techniques of social control. Social and geographic mobility undermined the sense of stability that colonial hierarchies and localism had instilled, and spurred a critical reappraisal of national identity and social order.[14] In the early republic, social reformers located the origins and persistence of criminality in the nature

of punitive laws that were the legacy of crude customs. In their enlightened society, Americans expected that a rational system of correction would dissuade criminal behavior. Most states abolished or strictly limited capital punishment and called for incarceration. The Commonwealth's first prison is said to have been on Castle Island, where French prisoners were held from 1799 until 1801.[15] In 1800 the Massachusetts legislature made appropriations for a prison at Charlestown that fronted two sides on water and included hard flint stone walls to provide maximum security.[16] Though the Charlestown design was a departure from typically unspecialized institutional architecture, a much more concerted campaign for institutional reform ensued.

By the 1820s, the focus shifted from the nature of punitive laws to the roots of deviant behavior and the creation of specialized institutions to both insure public safety and reform criminal offenders. Contemporary critics displayed a significant shift in consciousness with the conclusion that deviant behavior was symptomatic of a failing in society, rather than evidence of an individual's sinful nature. Consequently, the logical alternative posited the removal of the deviant to an artificial and corruption-free environment, a model and small-scale society in the form of a penitentiary.[17] Paradoxically, in locating the origins of crime and delinquency within society, disciplinary institutions were conceived as refuges both to protect society from criminals and to isolate deviants from external conditions that engendered criminal behavior.

The precursors to the penitentiary on Deer Island were located at the edge of early nineteenth-century Boston. The Boston Prison Discipline Society, founded in 1825 by Louis Dwight, located the source of deviant behavior in parental neglect. Society member Samuel Gridley Howe propounded:

Thousands of convicts are made so in consequence of a faulty organization of society…They are thrown upon society as a sacred charge; and that society is false to its trust, if it neglects any means for their reformation.[18]

Such a lofty mission—to eliminate the influences that bred crime in the community—merited publicity and close study. The design of penitentiaries—their external appearance, internal arrangement, and daily routine—entered public debate and the two competing modes of organization that emerged in the 1820s, as well as the highly specialized structures that served them, attracted international attention. While one system advocated for the congregation of prisoners and the other complete isolation, both emphasized the establishment of a disciplined routine.[19] Prison architecture became the central concern of reformers; proper principles of social organization would benefit not only penitentiaries and other custodial institutions, but also the entire society. The Boston Prison Discipline Society wrote of a "moral architecture:"

There is such a thing as architecture adapted to morals; that other things being

equal, the prospect of improvement, in morals, depends, in some degree, upon the construction of buildings.[20]

The Charlestown penitentiary, reorganized in 1829, rigorously attempted to isolate inmates both from the general community and from fellow prisoners; for much of the next several decades, solitary cells and close supervision prevented most communication between inmates.[21] Since the underlying premise of the penitentiary movement emphasized discipline in an arranged environment, regimentation became the standard mode of prison life. In turn, the fixity and order expressed in the penitentiary's monumental structures would promote a new respect for authority at large.

In 1825, a second prison accommodated Boston's growing incarcerated population. Constructed in 1825, the South Boston campus comprised a Palladian central core and flanking wings within a walled enclosure, housing both criminal and indigent inmates.[22] By mid-century, additional facilities were needed. Deer Island was selected at suitable location on the fringe of the city. Beginning in 1849, municipal buildings on Deer Island that had housed a quarantine station and hospital for immigrants and paupers were adaptively reused to house inmates as "an appendage to the South Boston establishment." Inmates were sentenced by the courts to serve time at the Deer Island "Department of the House of Industry" for crimes and misdemeanors, including drunkenness and vagrancy. As early as 1854, Deer Island was considered as a site for the relocation of the South Boston House of Correction. While the relocation stymied, Boston's Committee on Public Buildings authorized the conversion of a portion of Deer Island's brick Almshouse and House of Industry, constructed two years earlier, into detention cells. In 1858 renovations were completed and inmates transferred from South Boston's House of Reformation, a detention center for juvenile offenders. The newly-quartered "House for the Employment and Reformation of Juvenile Offenders—Boys" detained boys sentenced for misdemeanors such as truancy, larceny and idleness. Shortly thereafter, similar, largely penal programs for truant girls and neglected children were established at Deer Island's House of Industry (Figure 5.1).

By the outbreak of the Civil War the preconceptions of proponents of incarceration had proved woefully inaccurate. The system of discipline and order failed to rehabilitate; rather, penitentiary cells filled with hardened criminals and communities came to accept the purely custodial function of penal institutions. Nativist doctrines stressed the powerful influence of heredity and eroded the once accepted theory of environmentalism. Increased immigration, coupled with xenophobic concerns for safety and security, heightened the appeal of confinement. Many native-born Americans found sufficient reason for the support of custodial institutions in official statistics. An 1859 report from the Charlestown prison revealed that almost forty percent of the inmates were foreign-born. After

1850 incarceration guaranteed to control social deviants, rather than the earlier and optimistic promise of reform.[23]

While the Boston Harbor Islands offered conveniently isolated sites for sequestering outcasts, most of the island institutions were not constructed specifically for penal services. On Georges Island, Fort Warren served as a political prison for Confederate soldiers and officials, as well as for Northerners held on charges of loyalty and sedition, but no new prisons were erected during the first half of the century.[24] However, a major change occurred in the decades following the Civil War, when overcrowding plagued the Charlestown prison in the 1870s and dramatic demographic changes conveyed a sense of alarm at Boston's social and economic evolution.

In 1882 the City transferred some inmates from the South Boston House of Corrections to a newly-established institution in the facilities of the former House of Reformation on Deer Island. The Deer Island House of Correction was not considered reformatory, but "merely as a place of punishment and detention" where men were employed at farming, manufacturing, and stone cutting (Figure 5.2).[25] Inmates transferred from the penal institution in South Boston were incarcerated in the compound on Deer Island that had once served the city's paupers, vagrants, and juvenile offenders. In 1895 contractors filed a permit to build a new prison "Cell House" northeast of the administration building. During the following year the institution—heretofore known as the House of Industry on Deer Island—was officially "established as a Suffolk County Institution, and designated as the House of Correction at Deer Island."[26] With the addition of 500 cells in the new Cell House, the transfer of inmates from South Boston was completed in 1902.

After the consolidation of the two prisons, the House of Correction was the only remaining institution on the island, all other institutional uses had been terminated or relocated. At the end of the century, the campus included the administration building (the large main brick building constructed as the House of Industry in 1850), various outbuildings, a greenhouse and gardens, barns, a pig pen, a cattle pasture and "Cow Pond," and a two-mile drive leading to the wharf. By 1904 the prison complex was the largest in the state, housing 1,793 prisoners in a self-sufficient community.[27] The Hill (Women's) Prison was built in 1904 on the north slope of Signal Hill and lauded as "a model of its kind" (Figure 5.3). A showplace of enlightened institutional design, the building's Palladian entrance, pillared vestibules, vaulted ceilings, and chapel with tripartite Gothic-Romanesque windows were designed to edify the women inmates. A modernized reform program, administered by chaplains and teachers, provided separate facilities for the rehabilitation and education of inmates in addition to simple incarceration.[28]

A plan drawn at the time of the U.S. Army Corps of Engineer's acquisition of

Deer Island's southwest corner in 1906 shows a rectangular concrete reservoir on Signal Hill, as well as a piggery, the "pest house," and Rest Haven Cemetery on the southern end of Deer Island. Construction of gun emplacements on federal property forced the relocation of Rest Haven Cemetery to a site behind the Hill Prison, on the northeast end of the island, in 1908. A concrete wall, crossing the island from a point on the north shore near the Hill Prison to the southwestern shore beyond the sewerage treatment facilities, defined the federal boundary on the southern end of Deer Island. The House of Correction leased federal land for grazing its animals in 1909, and concrete seawalls were built on the northeast shore behind Hill Prison during the following year.[29]

In 1924, the House of Correction comprised 37 buildings and structures, including a plant of three prisons: a cell-block building that fell into disuse around that time, Barracks B, and a "modern" building to which the prison body was transferred that had formerly housed women, but served to confine "Reds thought dangerous to the Government" in the years following World War I. A 34-acre farm provided opportunities for the vocational training that prison administrators considered "an essential part of corrective work."[30] Inmate labor constructed a cow barn and produced crops for the House of Correction, as well as for municipal institutions on Long Island. In the stone shed, "wife beaters and men who refuse[d] to support their families" cut and trimmed granite for Boston's Public Works Department. After meals, inmates were permitted to walk in the yard. In addition, the inmates enjoyed occasional concerts and weekly films and, during the summer months, played baseball in the evenings. Most of the prison complex was landscaped or graded and maintained as open lawns or fields.[31]

Fire destroyed the top floors of the Old Prison and Doctor's House in 1929. The City erected a Georgian Revival Doctor's House on the southwestern side of the island during the following year. A lawn stretched to the waterfront and a row of trees to the northeast emphasized the visual separation of the house from the more institutional buildings of the prison complex.[32] Jurisdiction of the prison shifted to the Suffolk County Corrections Department in 1931. Continuous silting in Shirley Gut led to the construction of the causeway between Deer Island and Point Shirley in 1936. Other twentieth-century additions to the prison campus included a sheet metal shop, garage, and piggery. Renovations were made to the Hill Prison in 1976 and to the Superintendent's House in 1985. Though the New Prison building was razed in 1960, the county prison continued to occupy Deer Island facilities until 1991 when operations were transferred to the South Bay area in order to accommodate the expansion of the Massachusetts Water Resources Authority sewage treatment plant. The relocation of the House of Correction and the demolition of its Deer Island facilities destroyed one of the oldest, continuously used penal institutions in the nation.[33]

In 1990, during demolition of concrete foundations of the old piggery and

machine excavation of the adjacent area for the construction of new wastewater treatment facilities, workers reported the presence of bones in the removed soil. Upon notification, the Massachusetts Historical Commission determined that human remains had been disturbed from unmarked, and apparently undocumented, burials beneath the foundations of the 1908 structure. The possible identification of these excavated bones as remains of Indian victims of seventeenth-century incarceration led the Muhheconneuk Intertribal Committee to petition for a cessation of MWRA excavations in archeologically sensitive sites. Subsequent analysis identified the remains of seventeen individuals and speculated that the victims were immigrant victims of typhus or cholera during the mid-nineteenth century.[34] The Massachusetts State Archeologist's office concluded that no Indian burials remain on Deer Island and construction proceeded. In 1991 an American Indian coalition commemorated the confinement and deaths of Christian Indians on Deer Island.

MENTAL INSTITUTIONS AND TREATMENT FACILITIES

Long Island in Boston Harbor ultimately became a refuge for the city's mental health patients in the 1880s, but the debate about the nature and location of such facilities began in the Colonial period, when many were consigned to penal institutions. Colonial Americans had assumed that the cause of insanity, like that of other diseases, rested with God's will; the insane received public attention and assistance as one group among the deviant and dependent population with which Christian society was charged. Though "distracted" persons were often regarded with fear and revulsion by those who regarded their condition in demoniacal or supernatural terms, colonial communities accepted responsibility for the insane. In seventeenth-century Boston, where local needs exceeded the bounds of familial or neighborly resources, the indigent insane were committed to the town almshouse and accorded no special treatment or facilities. Prior to 1830, there was little institutional differentiation in the treatment of indigents; poor, aged, lame, blind, orphaned and insane individuals were often committed to a single institution, often near the center of town.

As with criminal behavior, insanity—both its etiology and treatment—became the object of elaborate debate in the Early Republic. Changes in the intellectual climate had weakened the Calvinistic emphasis on the depravity of human nature and garnered support for European theories and practices. "Moral treatment," which prescribed a total therapeutic environment as a remedy for mental illness, gained advocates among the nation's intellectual community, including Benjamin Rush. In Boston noted philanthropists and reformists advocated for more specialized treatment and accommodation, yet few changes were made in the treatment of the insane. Thomas Hancock left a bequest of £600 in 1764 to build a house for the insane, but nothing became of his or other charitable bequests until the next century.[35] Many patients remained in the care of their families and only

the most intractable and violent cases became wards of the city or state, confined to jail cells where their condition most often deteriorated into "raving lunacy."[36]

Outrage at the indiscriminate mixing of sick, insane, and pregnant patients amongst the general indigent population of Boston's almshouse led to advocacy for the Massachusetts General Hospital, incorporated in 1811 and opened in 1818. A separate facility, renamed McLean Asylum for the Insane in 1826, opened in Charlestown and accepted an overwhelming majority of affluent patients. During the following year, the Boston Prison Discipline Society documented the appalling conditions to which the indigent insane were consigned in penal institutions and recommended to the Massachusetts General Court that all such inmates be accommodated at the General Hospital or at another specialized facility. In 1830, the state legislature approved the establishment of a State Lunatic Hospital and selected Worcester as the site shortly thereafter.[37]

The design of the Worcester facility was modeled after the McLean Asylum and reflected the beliefs of reform advocates and medical specialists, who were convinced that social mobility encouraged grandiose ambitions and that Americans' unbridled pursuit of wealth, power, and knowledge paved the path toward insanity. The prevalence of mental illness, like that of crime, pointed to fundamental defects in society, to the "exciting causes" that were at large. And again the family—the one institution that could have "calmed the frantic spirit loose in the community"—failed to discipline its charges. Boston reformer Samuel Gridley Howe declared: "This duty of society. . .will be seen to be more imperative if we consider that insanity is in many cases the result of imperfect or vicious social institutions and observances." Since mental illness originated in the structure of society, the community had an inescapable responsibility to correct the conditions. And again, contemporaries were confident that an environment which eliminated disorder and chaos and isolated the afflicted from the dangers at loose in the community would not only restore the deviant to the fold, but also demonstrate to the larger society the advantages of an orderly, regular, and disciplined routine. [38]

Between 1830 and 1860 the institutionalization of the insane became standard procedure and the sturdy walls of the asylum marked the landscape of antebellum America. According to its proponents, the asylum was not the last resort of a frightened and intolerant community, but rather a model community that confidently offered a cure. Dorothea Dix and other laypeople extolled the curative powers of the asylum and state legislatures approved funds for mental institutions. Set in a country location, the institution was to have ample grounds and to command an unobstructed view of the landscape. Removed from the tumult of urban life, patients would benefit from a tranquil, natural, and therapeutic environment.[39] However, the asylum and its therapeutic landscapes could not accommodate burgeoning patient populations, and many mentally-ill charges

remained in state and city penal and pauper institutions.

As early as 1832 the superintendent of the Boston House of Industry had inquired about the transfer of insane inmates to the Worcester facility, noting that 50 of his institution's inmates were "more or less insane and about one half may be described as 'furiously mad' requiring almost constant confinement in closed dormitories."[40] The State Lunatic Hospital at Worcester opened in 1833, accepting a majority of patients who had previously been confined to penal and pauper institutions. A steady growth in the number of patients, particularly those who were chronically ill, soon overwhelmed the limits of the Worcester facility and public jails and houses of correction continued to care for a substantial number of mentally ill persons.[41] Crowded conditions in municipal penal and pauper institutions forced the City of Boston to erect the Boston Lunatic Hospital at South Boston in 1839. The new hospital received patients from the Houses of Industry and Correction, but the facilities soon proved inadequate to the city's growing needs. City officials continued to hold mentally ill and alcoholic detainees in jail cells and other municipal institutions.[42]

At mid-century, rapid urban and industrial development magnified social problems, including the burgeoning institutional population. In Boston, immigration taxed the urban infrastructure and municipal services. Legislative concern over pauperism and rising welfare expenditures focused on a steady increase in "alien" dependents. Reform advocates, having established a statistical correlation between insanity and pauperism among the immigrant population, found a useful explanation for these perplexing conditions in theories of inherited characteristics. The identification of poverty, degradation, and, ultimately, insanity with foreign immigration led to the removal of "alien" insane from state hospitals between 1854 and 1863. An 1856 legislative act authorized hospitals to transfer insane paupers to the state almshouses. Ten years later, the Tewksbury Asylum for the Chronic Insane opened, offering custodial care to a largely foreign-born patient population and illustrating the influence of nativist prejudices in confinement and treatment practices.[43]

By 1870 professionals and laymen conceded that expectations of eradicating insanity were illusory and that mental illness was not as easily remediable as they had once believed. Overcrowding taxed existing facilities and led to both the demise of work therapy and an increase in the use of mechanical restraints and harsh punishments. The medical community, convinced of the anatomical roots of insanity, discounted the therapeutic value of environmental manipulation and, above all, of incarceration. However, state legislatures continued to support asylums and, as with the penitentiary, the institution continued to operate with a growing number of chronic inmates. Given an intractable patient population, the goal of recovery inevitably gave way to custody in the asylum. And again, the social and ethnic composition of the patient population discouraged rehabilitative goals,

reflecting common prejudices toward the immigrant and the pauper. At the end of the nineteenth century, Americans found in institutionalization a useful defense from contamination and a dumping ground for social undesirables.[44]

The institutional landscape of the Boston Harbor Islands attracted scrutiny in this era of increasing welfare demands. At a time when the source of insanity—and, moreover, poverty—was not clearly differentiated from the etiology of disease, the elision of state responsibility for all of these conditions seemed inexorable during the post-Civil War economic crisis. In 1879 the state legislature established a joint Board of Health, Lunacy, and Charity. Six years later, the Board reported overcrowding in state asylums and requested that the City of Boston remove its insane charges from these institutions to private, noninstitutional care. Boston's Board of Directors opposed such a procedure, citing a "violation in the settled policy of the Board regarding the confinement of insane people, which is to locate them as near as possible to relatives and friends." To that end, the Board proposed the transfer of paupers held at Austin Farm in South Boston to the newly-acquired Long Island facility and the accommodation of insane patients in the vacated buildings.[45] Female paupers were transferred to a facility on Long Island in Boston Harbor, called the Boston Alms House in 1887, vacating the Austin Farm campus for mental health care. Nevertheless, island institutions probably continued to accommodate overflow from inadequate state and local mental hospitals.[46]

In the last decades of the nineteenth century criticism of institutional psychiatry and of state mental hospitals was slowly effecting reform of the system. Much of dissatisfaction with the State Board of Lunacy and Charity centered in Boston, which—with a population of about one-half million—found itself with the largest patient population and the least adequate facilities. The transformation of the nation's social and economic environment and the failure of traditional solutions in the evolving urban-industrial climate led to the articulation of new ideologies and a general consensus on the need for social melioration. The result was an incipient current of reform, characterized by an optimistic moralism and belief in the remedial capacities of environmental change, that took definite shape in the Progressive movement of the early twentieth century. In 1894 the State Board of Lunacy and Charity, in response to criticism of state mental hospitals, noted the absence of a spirit of scientific inquiry at public institutions and a lack of laboratories and facilities to improve the caliber of professional personnel. Among the Board's proposals to improve hospital conditions was the establishment of training schools for nurses at all state institutions.[47] The construction of chronic care wards and a nursing school at the Boston Alms House on Long Island around this time suggests that the Long Island facility struggled to deal with the medical—including mental health—needs of its indigent charges.[48]

In 1898 the Massachusetts legislature, acting upon the advice of a special commission, passed a comprehensive law creating a new State Board of

Insanity. Early in the summer of 1900 a second law set 1904 as the date when the Commonwealth would assume responsibility for the care of the mentally ill. In Boston, a movement was launched to establish an observation hospital for mental disorders. The Boston Psychopathic Hospital, established in 1912 as part of the Boston State Hospital, acted as a clearing house for the mentally ill and provided intensive treatment for acute patients. In departing from the entrenched model of custodial care, Boston Psychopathic Hospital initiated the transformation of the state's institutional treatment structure toward outpatient services. In 1914 the State Board of Insanity decided to extend outpatient work to all state institutions and many municipal agencies followed suit, leading to the eventual decline of patient populations in custodial institutions.[49]

The twentieth-century transition in mental health care presented hospital campuses with new and often competing requirements. The development and professionalization of psychiatry and increasing medical and pharmaceutical interventions emphasized out-patient services, but the first decades of the century witnessed a resurgence of concern for both social and physical environments in mental health treatment. Occupational therapy in the form of work and recreation had been an accepted practice in early mental institutions and, by 1950s, had evolved into a distinct therapeutic specialty. Horticultural therapy, or gardening within an integrated clinical program, probably derived from the long tradition of farm work at mental institutions. While the precise date and manner of transition from the old farming therapy to the new horticultural therapy is unknown, fragmentary reports point to the establishment of gardens, greenhouses, and garden programs at veterans hospitals (including the Chelsea Naval Hospital) and mental hospitals as evidence of an emerging and coherent therapeutic practice in the years following World War II.[50]

The Boston Alms House, renamed Long Island Hospital in 1926, evolved and expanded during the early decades of the twentieth century into a number of facilities for the institutional care of the Boston's indigent population. The hospital's working farm gave way to ornamental gardens that may have served occupational and horticultural therapy programs around mid-century. By 1941, the hospital offered a mental health facility and alcohol and drug treatment centers. Arising out of changing medical and social conditions for indigent care, the City of Boston closed the Chronic Disease Hospital in 1991 and developed a combination of health care and human services at the Long Island campus, including programs for homeless clients with mental health and substance abuse needs. Residents and staff reinitiated Long Island's gardening tradition, developing a vegetable plot at the southern edge of the campus.

POORHOUSES, SHELTERS AND SCHOOLS

Colonial Americans assumed that poverty was providentially caused. The poor,

rather than evidence of a social problem, were an integral part of the social hierarchy and few people questioned the community's responsibility to care for its dependents. While destitute strangers were excluded from household relief, the colonial poor, for the most part, were not subjected to animosity or intervention. Orphans were apprenticed to local householders and townsmen provided temporary relief to needy neighbors.

Boston commissioned its first almshouse, a small wood-framed building on the eastern edge of the Common, in 1662. In response to public complaints against caring for "persons & Families [that] misspend their time, in idlenesse," the city constructed a new brick almshouse that incorporated a workhouse for the employment of the able-bodied poor in 1685.[51] In 1739 Boston constructed a two-story brick workhouse next to the almshouse in order to discourage the migration of needy strangers to the growing maritime city. The "city upon the hill" was at the forefront of a shift in social practice; "warning out" was losing ground to "walling in."[52]

In the 1820s and 1830s dependency, like deviancy, became the subject of close scrutiny and antebellum Americans gave unprecedented attention to the causes and relief of poverty. They now considered the poor a social problem and, as with criminality and insanity, reformers expected to control and eliminate poverty in the new republic.[53] In 1821, the Massachusetts assembly appointed Josiah Quincy to chair one of the first and most influential investigations of the conditions of poverty and of the efficacy of existing relief policies. After sampling conditions, Quincy reported that Boston relieved as many as six hundred persons annually. A consensus emerged, equating economic straits with moral failure and laying culpability at the feet of the poor. The Quincy report put the matter succinctly: "Of all causes of pauperism, intemperance, in the use of spirituous liquors, is the most powerful and universal." Inevitably, the poor became synonymous with the idle and shiftless, exonerating the community from its traditional obligations to dependents. In this particular formulation of the origins of poverty, dependency led inexorably to deviancy. In turn, contemporaries searched for the source of such moral weakness in the social environment. Quincy contended that outdoor relief aggravated rather than alleviated poverty by discouraging the natural instinct toward industrious and independent behavior. The poor were victims of forces beyond their control and, as with crime and insanity, the very institutions that should have mitigated the vices of taverns, gambling halls, and brothels offered little restraint from the inevitable decline into vice, dissipation, and crime. Poverty, in short, was a social condition.[54]

Nevertheless, the poor stood as a separate, disorderly class and the techniques for dispensing relief to neighbors no longer seemed appropriate. The 1821 "Committee on Pauperism and Erecting a House of Industry" considered a Deer Island site, but rejected it due to its poor soil and exposed location.[55] In 1832

a second committee, appointed by the Massachusetts assembly and under the direction of Joseph Tuckerman, confirmed Quincy's recommendations to end public outdoor relief. The committee called for the removal of dependents from society to a place where temptations could be eliminated. As the penitentiary would reform the criminal and the asylum would cure the insane, the almshouse would rehabilitate the poor.[56] While a few communities invested in an almshouse during the first few decades of independence, it was only following the Quincy report that state and local assemblies made incarceration central to poor relief. Between 1820 and 1840, approximately sixty Massachusetts towns constructed new structures or renovated old ones. Outside of the South, many other states followed the Massachusetts example, committing the poor to a "well-ordered" and "well-regulated" institution and sharing faith in the rehabilitative powers of a carefully designed environment.

With the construction of the new State House in 1798, Boston's colonial almshouse was relocated to a new facility designed by Charles Bulfinch. This soon proved inadequate; in 1823 Boston sequestered all of the city's needy into the Boston House of Industry and House of Correction, a combined almshouse-workhouse in South Boston, and subjected its clients to a rigorous discipline to counteract the influences that promoted and perpetuated idleness and vice.[57] As a contemporary correspondent wrote in 1834, the House of Industry was "an asylum for the poor of all classes" and a "receptacle for men and women, whose imprudent and vicious course of life brings them to poverty and sickness."[58] Institutional relief came to dominate public policy and the poor and needy, long visible in the community, were increasingly consigned to campuses in isolated locations.

In 1852 the Commonwealth managed a "pauper's" home on Gallops Island and, four years later, purchased the island for its operations. During the same year, the Commonwealth purchased and renovated the Rainsford quarantine facility for use as an almshouse. An almshouse and workhouse, known as the House of Industry, opened on Deer Island in 1852 (Figure 5.4). The House of Industry occupied an imposing brick structure that housed facilities for the "virtuous or deserving poor…who were unable to support or care for themselves," as well as for criminals who had committed such misdemeanors as drunkenness or idleness. An adjacent complex of wooden structures of the former yellow-fever quarantine station included the doctor's residence, the almshouse, and hospital buildings, as well as a nursery for orphaned infants, classrooms, dormitories, and workshops.[59] One observer noted that inmates were employed in various operations on the farm or in the institutional gardens and that conditions on the island were rapidly improving.[60] A change in state policy relieved the City of responsibility for care of the indigent and many paupers were transferred from the Deer Island facilities to the State Almshouse in South Boston.[61]

The youngest victims of society—orphaned, destitute, and vagrant children—were of particular concern to the reform community. Early Republican officials had followed the colonial precedent of outdoor relief for children, but a significant transformation occurred in the 1830s. Orphan asylums began operating in towns and cities—including Boston, New York, and Philadelphia—and within two decades they were widespread and accepted institutions that admitted a wide variety of dependent children.[62]

A second type of custodial institution emerged alongside the orphan asylum: the house of refuge, or reformatory for disobedient children, also admitted a variety of dependent children. Vagrants, juvenile offenders, and "willfully disobedient" children found shelter, sanctuary, and, theoretically, rehabilitation through institutionalization. New York philanthropists founded a house of refuge in 1825, and Boston's reform community quickly followed suit. The Boston House of Reformation, opened in 1827, accepted truants and criminal juvenile offenders until the latter were confined to the state reform school at Westborough beginning in 1848.[63] While some communities continued to commit minors to penal and adult relief institutions, the movement grew to merit a national convention of superintendents by mid-century. The Boston Children's Friend Society assumed the task of removing children from "those baleful influences which inevitably tend to make them pests to society, and ultimately the tenants of our prisons." Again, asylum proponents found the root of vice in a faulty environment and labored to rehabilitate the young and impressionable before they became fixed in deviant or dependent behavior. And again, at the core of reform was a faith in the necessity of removing clients from corrupting influence and in the transformative power of strict and steady discipline. Incarcerated children labored six to eight hours, attended school from three to four hours, and exercised from one to three hours each day. Building complexes typically followed the congregate system, lodging children in cells within wings or in central dormitories. Managers imposed upon their charges a quasi-military routine; inmates marched and stood in formation, followed a rigid schedule, wore uniforms, and obeyed rules of silence or suffered punishment.[64]

In 1814 a reformatory refuge for delinquent children, the Boston Asylum for Indigent Boys, was founded in Boston, but would later be moved to Thompson Island. The goal of the Asylum was to take children from the "abodes of raggedness and want" and from the "road to ruin before them. . .with beggary and vice, steering their downward course." Rather, the Asylum would "prepare a place of safety for them, where their eyes will be shut upon scenes of infamy and guilt. . .where temptations to evil shall be put far from them."[65] Within the walls of this "Christian asylum," destitute and vagrant children "acquired habits of order, industry, and usefulness."[66] In 1833 the Asylum moved to Thompson Island and, two years later, merged with the Boston Farm School Society to form the Boston Farm and Trade School.[67] An image published at mid-century

depicts a three-story, brick Greek Revival building set within a small grove at the summit of the island's central drumlin (Figure 5.6). Trees line the sloping road down to farmyard and wharf and run along a picket fence that cuts a broad swath through the sloping field up to the main building. The working farm, part of the School's endeavor to provide delinquent boys with a future livelihood, included barns and outbuildings for the farming and animal husbandry programs. Much of the island's marshland was drained for pasture. In 1846, Theodore Lyman, a former school superintendent, donated and planted approximately 6,000 trees in Lyman's Grove on the island's southwestern hill.[68] The reformative role of the island landscape was not limited to its functional qualities; in its isolation from the city and in the virtues of a rural setting, Thompson Island offered "the change of circumstance" heralded in the therapeutic and transformative landscapes of the era.[69]

In 1864 the Massachusetts Board of State Charities reported that all of the state's almshouses were in sorry disrepair. Nevertheless, the almshouse remained essential in public relief as general suspicion of the poor grew more acute, particularly with an increase in the number of immigrant dependents. Native-born Americans accepted the almshouse, however inadequate, as appropriate—perhaps even generous—for the immigrant and the destitute.[70] Within two years of the Board of State Charities investigations, Boston purchased the converted quarantine facility on Rainsford Island from the Commonwealth for use as a municipal poorhouse. Women inmates inhabited the buildings on the eastern bluff, while men resided in the those on the western head; a pier was constructed near the southern cove.[71] Beginning in 1865, the institution housed Civil War veterans seeking medical treatment until a new Soldiers Home in Chelsea began accepting clients in 1882.[72] The City consigned female paupers to the Rainsford facility until its conversion to the Suffolk County School for Boys around 1895.[73]

After the Civil War, the "first free negro school" in the Boston area was established on Apple (now part of Logan Airport) or Rainsford Island by Colonel Jarvis Dwight Braman (Figure 5.8). The City of Boston furnished a steamboat, which transported young Boston women to the island daily to teach the men to read and write. Eventually, the school supported more students than could be accommodated on the island, and was relocated to become part of the Boston public school system as an evening school.[74]

In 1882, the City of Boston acquired Long Island's largest resort hotel and began converting the building for use as a poorhouse. The City purchased the entire island, with the exception of fifty acres of federal land, five years later and evicted a Portuguese fishing colony in order to make room for construction. Within three years, the city had constructed a municipal Home for Paupers. Women from Austin Farm in South Boston were transferred to the Long Island facility in 1887 and men from Rainsford Island joined the campus in 1889.[75] By 1891, the

facility housed 650 people. Ground was broken for a chronic disease hospital during that year, and by 1895 the Boston Alms House, as the institution came to be known, included medical wards and a training school for nurses, as well as farm that supplied supplementary revenue.[76] An 1899 map depicts three buildings on the municipal campus: the superintendent's office, a chapel, and a "women's" building sheltered on two sides by a fence (Figures 5.9, 5.10, & 5.11).

In the 1850s, amidst growing disillusionment with penitentiaries, reform schools and refuges for children continued to sustain public support and attention. Critics objected to the penal character of reformatories and the Massachusetts Board of State Charities charged that many institutions were little more than prisons. Other proponents of reform attacked the premise of institutionalization or adhered to the notion of cottage organization, but there were few procedural changes in the treatment of dependent children until the early decades of the twentieth century. As in other caretaker institutions, the overwhelming majority of reformatory inmates came from the working class and increasingly from immigrant populations. And again, an institution that had emerged as an attempt to eliminate a social problem evolved into a structure to rid society of deviants.[77]

In 1858 the Boston Board of Directors of Public Institutions converted the quarantine hospital on Deer Island to the House of Reformation, a facility for 160 delinquent boys. In response to the 1867 Annual Report on Boston's City Institutions' objection to the quartering of children with adult paupers, boys were housed in the renovated and converted dairy building. Pauper boys occupied a new brick building in 1868 and the remodeled dairy building served as a residence for pauper girls. A new "Pauper Boys School" building was erected in 1870 and later was tenanted by the Deer Island School for Pauper Girls when the boys were moved to Roxbury's Marcella Street House in 1876.[78] Buildings, added to the Deer Island campus in 1869, accommodated a farm school and an asylum for pauper girls.[79] In 1866, Boston designated the House of Reformation for Juvenile Offenders on Deer Island as the detention facility for neglected children under the age of sixteen. In 1895 the "House for Employment and Reformation of Juvenile Offenders" was removed from Deer to Rainsford Island (Figures 5.12 & 5.13).

As in many nineteenth-century social institutions, incarceration was easily confused with improvement in state and municipal reformatory and relief programs for juvenile charges. One notable exception to the overwhelmingly penal character of reform institutions was the Boston Farm and Trade School, which remained committed to its vocational and rehabilitative mission. While the program's strict discipline included military-style drills and labor, the boys were not confined to the restrictive conditions that had been excoriated in the Board of State Charities' 1864 report. The School's facilities remained extensive and included buildings, structures, and resources for agricultural and vocational training, as well as recreational spaces (Figure 5.14). The island landscape

departed from the stark models of functional prison yards. An ornamental garden surrounded Gardiner Hall and at least five groves and orchards added foliage to the island's verdant agricultural landscape (Figure 5.15).[80] In the late 1880s, students constructed Cottage Row, a row of one-room wooden structures situated northeast of the main building, that provided a "self-governed," residential community in keeping with contemporaneous reform trends (Figure 5.16).

The Progressive era of the early twentieth century marked another major turning point in the treatment of dependent populations with a movement away from institutional responses to poverty and juvenile delinquency. The transition toward outdoor, or home, poor relief that had been advocated by Progressive reformers redirected in-patient, or institutional, dependent care increasingly towards medical services. In 1921 the Boston Alms House on Long Island was converted to a home for unwed mothers. Five years later, the institution was renamed Long Island Hospital, reflecting the institution's redirection from custodial practices toward medical services for Boston's indigent population (Figure 5.17). The Nichols Building, housing a cafeteria for patients, hospital wards, and a dormitory for homeless men, was erected in 1928. Additional structures were added to the complex over the next 30 years, including the Curley Recreation Building and the Tobin Building, a three-story brick edifice used as a male dormitory. In 1935, there were about 890 inmates in the almshouse division, of which 450 were numbered among the workforce. Some inmates occupied small huts, constructed from driftwood, on the shore of the island and occupied their time with gardening and fishing (Figure 5.18).[81]

A 1941 addition to the old almshouse structure provided space for substance abuse treatment programs. At this time, the Long Island Chronic Care Hospital included a 400-bed homeless shelter and a mental health facility. In 1954 the Institutional Department was incorporated into the City of Boston Hospital Department and thereafter the Long Island Hospital, a division of the Boston Hospital, was given over largely to medical services.

A similar transition occurred in the care of dependent children. In the 1923 municipal yearbook, Boston's Institutions Department, charged with the care of the City's dependents, advocated the "preventive medicine of welfare work" in the care of neglected and abandoned children as the "most effective way to blot out the maladies of ill-health, pauperism and crime in communities." The Child Welfare Division explained the transition in organizational philosophy and policy as follows:

Not so long ago a city felt that it had done its duty by dependent children if it herded them in a bleak institution, clothed them in drab uniforms and provided enough food to keep them from hunger, but our civic conscience and knowledge of child psychology has grown beyond that. We have come to realize that… children have a positive right to love, recreation, mental and spiritual training

and that if their parents cannot or will not give it to them, the public should; and not only should, but must, for happy, well-cared for children are a community's greatest asset, as neglected ones are its most terrible liability.[82]

The report proceeds to laud the City as a pioneer in important reform, "boarding out its wards in private homes instead of housing them in institutions." In a similar vein, the Suffolk School for Boys on Rainsford Island closed in the 1920s. Increasingly, the City entrusted "dependent" child care to parents and facilitated the fulfillment of familial responsibility with the provision of welfare, health, and recreational resources. While the islands served as a setting for city-sponsored outings, the redefinition of welfare services dramatically reduced the dependent population at island institutions.

Similarly, the goals of the Boston Farm and Trade School adjusted its program goals as the city's dependent population declined. A more traditional academic curriculum supplanted the agricultural program in the 1930s and in 1955 the school was renamed as the Thompson Academy. Twenty years later, the Academy underwent yet another transformation into an outdoor learning center for children and adults. In 1986 the Trustees of Thompson Island and Hurricane Island Outward Bound School and Outward Bound USA created a new entity on the island: the Thompson Island Outward Bound Education Center, whose mission is "to inspire in the young people of Boston fundamental qualities of character--self-esteem, empathy for others, and caretaking responsibility for the environment."[83] In 1994 the Hynes-Willauer School, a middle school that follows the Outward Bound teachings/principles, opened on Thompson Island.[84]

HOSPITALS, QUARANTINE STATIONS, AND IMMIGRATION FACILITIES

From the outset of human occupation of the Boston area, isolation offered protection from many of the pathogens that ravaged large host populations in Europe and Asia. Until European contact, many American Indian communities had little exposure to epidemic illnesses, including small pox, influenza, and tuberculosis, and consequently lacked acquired immunity to Eurasian lethal organisms. As a result, Indian populations suffered a succession of devastating epidemics beginning with initial contact with European colonists and their pathogens. The first recorded epidemic in southern New England began in 1616 and raged for three years through Indian villages. Mortality rates may have been as high as 80 or 90 percent; Plymouth colonists, upon encountering the skeletal remains of entire communities, observed a "new found Golgotha," a paradoxical encounter with human devastation in their Edenic landscape of abundance. New England Indians continued to experience outbreaks of disease. During a particularly virulent outbreak in 1633, Europeans observed as small pox reduced the "lusty and healthful bodies" of victims into "all of a gore blood, most fearful to behold." Measles, typhus, and dysentery preyed upon weakened populations and,

by the third quarter of the seventeenth century, epidemic and chronic disease had greatly reduced Indian populations of New England.[85]

Among European settlers, the exigencies of "frontier" life contributed to the endemic conditions—malnutrition, enteritis, and respiratory infections—that were among the leading causes of death during the first decades of colonization. Paradoxically, the easing of early hardships, coupled with a concomitant population increase, eroded the relative advantage of protection from epidemic disease that remoteness had offered. By 1700 Boston was the largest city in the English colonies and an important commercial center in its own right. The city's maritime standing was linked to the West Indies trade and the spread of its commercial networks introduced a venue for unwelcome exchange. The first published map of Boston, printed in 1722, listed six small pox epidemics in 1640, 1660, 1678-79, 1690-91, 1702, and 1721. Epidemics visited the city during nearly every decade of the eighteenth century, when the average death rate fluctuated between 37 and 103 per 1000.[86] By the close of the century, improvements in colonial public health could be attributed to changes in the general standard of living and, more importantly, to such public measures as street sanitation, quarantines, and medical assistance to the poor.

The Harbor Islands offered a partial solution to Boston's health problems, given the colonial understanding of illness. Faced with epidemics and plagues, physicians believed disease resulted from emanations of decaying matter, including rotting refuse and filth, as well as the wounds and wastes of invalids. Following European precedent, public defense against these emanations had been isolation of the sick through quarantine.[87] As early as 1648, Massachusetts adopted temporary quarantine measures to prevent the spread of communicable disease. At this time, the Commonwealth imposed a quarantine on all inbound ships from the West Indies. Deer Island first served as a quarantine station for passengers afflicted with smallpox in 1677. In 1685 a sailing vessel carrying passengers exposed to small pox was quarantined on Lovells Island.[88] Squantum was set aside as a quarantine hospital for incoming vessels in 1716, though opposition from the communities of Dorchester, Braintree and Milton forced the station's closure shortly thereafter.[89] During the following year, Boston purchased part of Spectacle Island from Samuel Bill and established a quarantine hospital on the island's southern highland. Many ships, such as those that set sail from Ireland during a 1729 small pox outbreak, were required to discharge passengers and crew on the island. In 1717 the town's selectmen also voted to lease a parcel on Deer Island for the erection of a "pest house," or quarantine station.[90] In 1737 Boston purchased Rainsford Island from the Loring family of Hull for £750, "to be used and improved for a publick (sic) hospital for the reception and accommodation of such sick and infectious persons as shall be sent there by order." Boston operated a quarantine hospital there for the next twenty years. The keepers of Boston Light and the commanders of Castle Island were under orders to send all

vessels in which contagious diseases were found to "Hospital" Island, this epithet reflecting Rainsford's function in the harbor landscape. These facilities operated intermittently for nearly a century, and Boston authorities allowed the keepers to take in summer boarders in the absence of infectious patients.[91]

Doctors based a large inoculation campaign at Castle Island during the 1764 small pox epidemic.[92] In 1799 a marine hospital dedicated to the care of merchant sailors, a precursor of the United States Public Health Service, opened on the island.[93] Together with the Boston Dispensary, established in 1796 to meet the medical needs of the poor, and Massachusetts General Hospital, which opened in 1821, the new institution reflected a shift in both medical practices and social conditions. Medical care, previously administered at home, increasingly became the domain of professionals in highly specialized settings. Moreover, demographic trends began to transform the profile of the patient population.

During the first three decades of the nineteenth century, Bostonians enjoyed a rising standard of health, though this respite from public health crises was relatively short-lived. Boston continued to operate quarantine facilities on Rainsford Island, where it erected a Neoclassical building on the island's western head in 1832 (Figure 5.19).[94] The imposing Greek temple served as the city's smallpox hospital, where "it was the custom for Boston families to send their members, when taken with infectious diseases…whence they were tolerably certain never to return." Patients "isolated on this dreary strand" were "allowed to drift down into the darkness of death without the comfort and support of their neighboring friends and relatives" and laid to rest in the graveyard on the island's West Head.[95] The hospital superintendent's house and a morgue, or "Dead House," were located not far from a summer resort on the island's great eastern head.[96] This commentator's assessment suggests that while isolation on the islands may have garnered theoretical appeal for the treatment of dependent populations, treatment practices in sequestered settings were best reserved for "others." Major changes in Boston's ethnic and class landscape at mid-century would reinforce these xenophobic tendencies.

Urban population density and mortality rates rose drastically at mid-century, corresponding to a dramatic demographic turn. Between 1840 and 1860 Boston's population doubled. Irish immigrants greatly contributed to this increase and figured prominently in the health crises that ensued. Transatlantic passage was often a long and arduous journey and many passengers, subject to self-provisioning and swindling by provisioners, suffered extreme hardship. Many of the early packet ships were filthy cargo vessels and though steamships, which shortened the voyage, entered the passenger trade in the 1840s, many emigrants braved the delays of cheaper, wind-driven vessels. Most ships carried no physician and in steerage dysentery, cholera, and typhus, known as "ship fever," spread rapidly. Shipboard mortality rates averaged at one percent, although

deaths soared among passengers, such as Irish famine victims, who began their voyage in a debilitated state. Once settled in Boston, immigrants clustered about the commercial heart of the city and the waterfront. In these congested areas, enterprising landlords utilized all open spaces and made few provisions for sewerage equipment and sanitation of any kind in tightly-packed immigrant quarters. In the nineteenth-century history of Boston's epidemics, mortality and morbidity weighed disproportionately upon the foreign-born and, in particular, Irish population.[97]

Attempts to reduce the spread of epidemic disease through isolation or inoculation and to restrict the importation of disease through quarantine of immigrants and disinfecting cargo signified new ideas about the cause and treatment of disease. More importantly, this focus on external sources of contamination signaled a shift in notions of public health and social order. Gone was the early Calvinist resignation to disease and disaster dispensed by a just God upon an erring people. Nineteenth-century physicians and laymen debated contagion and anti-contagion theories, and the allegation that yellow fever had been imported to New York City by Irish immigrants invited invective from both camps. In 1845 at the request of the Boston City Council, Lemuel Shattuck compiled a city census that highlighted the dramatic increase in Boston's immigrant population and demonstrated a correlation between the city's demographic shift and the deterioration of public health. "The influence of unacclimated foreign immigrants," Shattuck asserted, "and the great number of families crowed into…densely populated parts of the city, render the air very impure." Shattuck concluded that the conditions under which immigrants lived invited epidemics and threatened the community at large; Europe's poor and unwanted were responsible for bringing disease to a predominantly healthy native-born population.[98]

Massachusetts enacted laws to deal with sick or destitute "aliens," requiring captains to pay a per capita fee for passengers to help the state support sick emigrants. A smallpox outbreak in 1847 prompted the creation of a temporary quarantine hospital on Deer Island to accommodate the "great influx of Foreign Diseased Paupers." Between 1847 and 1849 the state admitted nearly 5,000 Irish immigrants, of whom 750 died and were buried on the island. By 1849 all ships that entered the harbor with passengers or cargo considered "foul and infected with any malignant or contagious disease" were forced to anchor at the Deer Island station. Boston built a large immigration facility on Deer Island during the following year.[99] The City transferred services to a new quarantine station on Gallops Island in 1866 and turned over the Deer Island hospital building to the House of Reformation for delinquent boys. By 1886 the Gallops medical staff was examining over 33,000 passengers a year. A Consumptive's Hospital opened in 1902 at the Boston Alms House, the Long Island facility for the care of the city's indigent population among which many immigrants found themselves.

In the nineteenth century era of industrialization and immigration, and the consequent urban blight of overcrowding and poor sanitation, Boston's health crises attracted administrative scrutiny. In an 1850 report to the state legislature, Shattuck argued that the state had an obligation to protect public health and called for the creation of a public health authority. Shattuck's report articulated tenets that would come to underlay public health theory: namely, that socially-determined environmental factors accompanied the deterioration of public health and that in the public authority rested responsibility for mitigation of these conditions.[100] The development of a "germ" theory of disease during the latter part of the nineteenth century identified the bacterial etiology of contagious disease and encouraged the replacement of ethical concerns and reformatory activities with the scientific objectives of public health authorities. With this separation of the cause from the conditions of disease, preventative therapies replaced the traditional management of infectious disease through isolation and disinfection. In this era of scientific objectivity, the Massachusetts State Board of Health, established in 1869, pursued a program of public hygiene that treated the mitigation of social problems as a secondary concern. Responding to the diptheria epidemic of the 1890s, Boston established a plant to produce diptheria antitoxin on Gallops Island under the direction of Dr. Harold C. Ernst of Harvard Medical School. The smallpox epidemic of 1900-1902 and the demonstrated ineffectiveness of isolation as a public health strategy bolstered the State Board's commitment to preventative therapy.[101]

Treatment practices that had evolved during eighteenth and nineteenth century military campaigns demonstrated dramatic differences in mortality between soldiers housed in tents and open spaces and the wounded confined to hospitals. From these demonstrations derived the design for the pavilion hospital campus, where wide spacing between long, low buildings afforded abundant sunlight, and windows and ventilators flooded wards with fresh air. Within this arrangement intervening green spaces formed park-like spaces for convalescents, staff and visitors, contributing to the therapeutic process in the wards. The City Hospital in Boston, designed by Gridley J.F. Bryant and constructed between 1861 and 1864, served an early model of the pavilion design concept.[102] On Long Island, the City constructed chronic disease facilities for indigent patients that followed the model of detached, special-purpose structures that housed wards, surgical and treatment facilities, administrative operations, nursing classrooms and dormitories, and support facilities (Figure 5.20). The hospital at Deer Island, a long, low building constructed in 1884, comprised five wards and provided medical care to indigent and penal inmates interred on the island.[103]

Some of the harbor's military fortifications also adopted the principles of pavilion design in the construction and renovation of medical facilities. On Georges Island a two-story, Georgian Revival hospital building, erected outside the caponiere just before World War I, replaced the hospital and dispensary that had occupied damp

quarters in Fort Warren's Bastion D (Figure 5.21).[104] On Peddocks Island a large brick hospital, constructed at the center of Officer's Row between 1904 and 1906, overlooked the Fort Andrews' parade ground.[105]

Immigration continued to contribute to the crowded and unhealthy conditions in many of Boston's late-nineteenth-century neighborhoods. During the summer months, the mortality rate for Boston's children under age five often tripled and parents often took to the harborside streets during sweltering nights. Inspired by this spectacle, the Boston Floating Hospital took its first voyage into the harbor in 1894. Reverend Rufus B. Tobey rented the *Clifford* and sailed into the harbor in order to expose the sick and impoverished children of Boston to the "beneficial harbor breezes" that were thought to help with many illnesses. The Floating Hospital, supported by private charity, provided sick children with medical care and nutritious food and offered to accompanying mothers and healthy siblings both cool breezes and a change of scenery. Until 1927 the Floating Hospital hosted research activities that promoted advances in children's health care, including new treatments for heart, pituitary and gastrointestinal diseases, and programs to encourage "whole child" health care and to teach parents to care for their sick children.[106]

The concern for child health care and the principles of pavilion design informed another development in the harbor landscape. In 1899 Mr. and Mrs. Albert C. Burrage obtained a 500-year lease from Harvard College for a new handicapped children's hospital on Bumpkin Island and commissioned architect Charles Brigham to design the facilities. Construction of a large, H-shaped, three-story main building, two large open-air play houses, a pavilion and a dock began in 190. Located at the center of the island, the hospital's brick buildings were designed and situated to take advantage of the summer's cooling winds and bright sunlight "depended upon to a great extent for cures." The Burrage Hospital opened in 1902 and offered free treatment and accommodation to up to 150 children whose parents or guardians were unable to provide "proper care." While the hospital admitted children suffering from almost any non-contagious disease, particular attention was given to disabled children.[107] At the outset of World War I, the Burrage Hospital Association suspended operations and transferred control of the island to the federal government for the duration of the war.

The fashion for fresh-air treatment peaked in the decades preceding World War I. During the early decades of the new century, knowledge of germ theory and antiseptic practice allowed efficiency engineers to replace the pavilion campus and its accompanying gardens with multistory buildings. The redirection of therapeutic practices toward pharmaceutical and surgical interventions revolutionized hospitals and transformed early environmental theories, toward a focus on the internal environment. Inside the hospital, hospital units divided into diagnostic and treatment clusters (acute surgical, chronic medical, tubercular,

pediatric, contagious, and psychopathic) replaced all-purpose wards. An early twentieth-century boom in hospital construction witnessed a shift in design emphasis toward professional efficiency and away from cultivating the patients' environment, limiting landscaping to entrance beautification and visiting areas. Behind exteriors of popular historical styles (including Georgian, Jacobean, and Gothic) patients were sequestered in increasingly isolating spaces.[108]

This efficient, space conserving hospital environment allowed for integration of medical campuses into the urban landscape. One notable exception were tuberculosis sanitaria which, as both convalescent hospitals and "pesthouses," continued to be located in isolated settings. Following German treatment precedents, American tuberculosis sanitaria subscribed to the pavilion design prescription for rest and fresh air and integrated new trends in occupational therapy.[109] The restorative functions of such institutional settings served other victims of epidemic disease, providing convalescent wards and easing public fears of contagion. Bumpkin Island's Burrage Hospital opened its wards to poliomyelitis patients sometime in the 1940s and provided summer care until a fire destroyed the building in 1945.

The twentieth-century design revolution of hospital efficiency experts had only limited effects on medical facilities for two client populations; the marginalized social status of immigrants and indigent patients perpetuated the sequestering of services on the harbor islands. In 1916 the United States Public Health Service assumed control of the quarantine hospital and immigration station on Gallops Island. Dr. Alvin Sweeney served as the hospital's director from 1927 to 1935. Sweeney, a skilled horticulturist, planted many trees and ornamental shrubs, including apple, pear and peach trees, near the residential campus for hospital staff at the center of the island.[110] The Gallops quarantine hospital remained in continuous use until 1937, when operations were transferred to warehouse facility in East Boston's Bethlehem Steel shipyard. Following its closure the buildings were used as a training center for sea-rescue units, as well as for the United States Maritime Service radio school.[111]

A ten-million-dollar "hospitalization program" unfolded during the third term of Boston Mayor James Michael Curley, who was noted for his civic improvements benefiting the city's institutionalized residents. Funds were allocated for the renovation and construction of various hospitals associated with municipal institutions, including the Long Island Hospital.[112] Many physicians may have considered the Long Island Hospital as a "custodial asylum for the destitute chronically ill. . .approached only at the peril of a voyage down the harbor with the variegated risks that those who go down to the sea must encounter." It was clear that isolation was becoming a disadvantage in an increasingly specialized professional environment. Members of the medical community suggested the removal of patients because of the campus' isolation or advocated a bridge to the

mainland. However, medical and surgical staffs were augmented and operating rooms added when a viaduct connected Long Island to the mainland, via Moon Island, in 1951. The Long Island Nursing School reopened as the Attendant Nurse's School in 1949, further bolstering the campus' reputation (Figure 5.22). In 1953, the 25-building complex of mostly one- and two-story structures included two barber shops, two tailor shops, workshops for carpenters, cobblers, electricians, painters, plumbers, and rehabilitation and occupational therapy facilities. This "miniature city" had a network of named streets, its own fire department and police force, as well as a coffee shop and sub-station of the United States Post Office. The institutional cemetery contained 3500 graves for burial of unclaimed dead (Figure 5.23). A new chapel, constructed in 1958, replaced its late-nineteenth-century predecessor. In 1959 the New England Journal of Medicine declared that "the mighty deep [had] been bridged" and that the hospital, "almost literally only fifteen minutes from Broadway, Boston. . .is definitely on the map."[113] When the Long Island Hospital officially closed in 1991, clinical services were transferred to other city hospitals and the campus revisited its original mission of custodial and treatment programs for Boston's homeless population.

INSTITUTION SUMMARY AND RECOMMENDATIONS

Institutions on the Boston Harbor Islands have long and complex histories, particularly since the operation of such facilities has shifted among various city departments and agencies, as well as among municipal, state, and federal jurisdictions. The City of Boston has no centralized archive or depository for records pertaining to institutions, nor has it compiled an index of the location of relevant documents. Records may have been lost during the move to the new City Hall. The Massachusetts State Library holds the institutional records for many of the committees and departments that oversaw island institutions. In addition, the records of the U.S. Army Corps of Engineers at the National Archives and Records Administration Center in Waltham provide information on many adjacent properties that served as military reservations and offer details pertaining to their institutional neighbors.

A 1986 archeological reconnaissance survey, prepared by the Public Archeology Laboratory, Inc., (PAL) examined the northern half of Deer Island and reconstructed a sequence of historic land uses and developments for the studied area. Earlier intensive level archeological surveys collected information on different section of Deer Island: the Institute for Conservation Archeology conducted a 1981 Phase I survey; Harvard University examined the location of the 1968 treatment plant; and, PAL's 1984 intensive survey studied the central drumlin section of the island, as well as the southern shoreline and site of the Deer Island Pumping Station. In the course of the reconnaissance survey an historic cemetery and mausoleum were identified on the northeast side of the island, between the old piggery and the concrete boundary wall that had separated City

of Boston property from the U.S. military reservation on the southern half of the island. Marsha King's subsequent study identified the cemetery in question as the New Rest Haven Cemetery, created in 1908 with the reinterment of over 4000 bodies from the old Rest Haven Cemetery in the military reservation. King estimates that 2559 of the reinterred bodies were over 100 years old and were most likely quarantine hospital and Irish immigrant deaths. Due to the poor preservation of the burials, no further archeological work was recommended.[114]

Jill Lepore's 1998 study, "The Internment of Native Americans on the Boston Harbor Islands during King Philip's War," builds on the information in her book published the same year, *The Name of War: King Philip's War and the Origins of American Identity*. Lepore's study indicates that burial sites of Native Americans that died on the islands during King Philips War have not been located.[115] Her study contains recommendations on planning actions and interpretative programs to address the suffering of Indians on Deer Island.

While the vast cultural and technological changes in the treatment of deviant and dependent populations have left their mark upon the landscape, the extant remnants that contribute to the institutional history of the Boston Harbor Islands are widely distributed and fragmentary. There is no known archeological evidence of Indian internment on Deer, Long, and Peddocks Islands. Deer Island's New Rest Haven Cemetery and mausoleum contain the remains of inmate burials, as well as those of almshouse and quarantine patients. While the Massachusetts Historical Commission found portions of the Deer Island House of Correction campus to be eligible for the National Register of Historic Places in 1985, the MWRA demolished all of the institution's buildings and structures during construction of a new waste treatment facility that began in 1991. Portions of the Greek Temple (quarantine hospital) granite foundations remain on Rainsford Island as evidence of island's long welfare history. Inscriptions in the rocks on the east side of Rainsford's western bluff, dating to the eighteenth and nineteenth centuries, were evident twenty years ago and may still remain (Figure 5.24).[116] Similarly, the island's unmarked graveyard has been obscured by shrubby vegetation. There is no known physical evidence of the first free school for African-Americans, as its exact location, on Rainsford or Apple (now part of Logan Airport), needs to be determined.

Structures associated with the Gallops Island quarantine station were removed to the mainland following the island's sale at auction in 1947. However, foundations of the quarantine station and the unmarked hospital cemetery remain among a notable collection of ornamental plantings installed in the early twentieth century. The cement foundations of the Burrage Hospital and several large shade trees narrate Bumpkin Island's historic landscape.

Two active campuses maintain the islands' institutional legacy. The Long Island Campus of the Boston Public Health Commission supports social and health

programming in several of the 24 remaining buildings. The Administration Building, which probably dates to 1887, endured the institution's several incarnations and continues to serve campus programming. Operational facilities of this once self-sufficient community, including a water tower, power plant, and sewage treatment plant, are in active use. Six buildings of the pavilion campus, including the nurses and recreation buildings, the morgue, and the laboratory, are vacant and deteriorating. Many of the island's cultural features, including the hospital cemetery, are increasingly obscured by unchecked vegetative growth. While island residents have reinitiated the institution's tradition of gardening and occupational therapy, there is no evidence that current projects follow historic precedents in siting, methods, or plant choice.

The Thompson Island Outward Bound Education Center, the institutional heir of the Boston Farm and Trade School, continues a tradition of programming for inner-city youth. The program occupies a campus of largely twentieth-century buildings and structures; a nineteenth-century Bullfinch design was destroyed by fire earlier in this century and many of the farm structures are no longer standing. Open fields from the abandoned farm, stands of hardwood and softwood trees, an old apple orchard, and a network of overgrown dirt roads testify to the island's institutional past.

Though Boston occupied a preeminent place in the evolution of social reform theory and practice, the City—and its islands, in particular—has suffered a regrettable loss in its historic fabric. However, many related properties in Boston's network of social services remain, though often in serious degraded conditions. For example, the Immigration Building, located on Massport's East Boston Pier, stands vacant and in poor condition. Constructed during the 1930s, the structure served as immigration processing station for the United States Public Health Service. As one of the few remnants of Boston's immigration history and as a successor site to services rendered on the Boston Harbor Islands, the Immigration Building may hold historical and interpretive significance. The New England Aquarium is currently evaluating the structure for use as a public-access research center for marine mammals. In addition, two other East Boston resources may contribute to the interpretation of immigration and harbor history. Anecdotal evidence suggests that a staircase near Massport's Cashman building, leading from Marginal Street up to Jeffrey's Point was once known as the "golden staircase," a landmark in early twentieth-century landscape that signaled entrance into America's wealth for newly-arrived immigrants. Further down, at 72 Marginal Street, the East Boston Immigrant Home once provided "a resting-place for the weary, sea-sick, homeless" Irish and North European immigrants who disembarked across the street at the Cunard Wharf.[117] Founded in 1888 by the Woman's Home Missionary Society of the Methodist Episcopal Church and reconstructed in 1912, the building has provided senior housing since its rehabilitation in 1973. Known as "Landfall," the Immigrant Home is now owned

by the East Boston Community Development Corporation.

Similarly, the Old Suffolk County Jail, an 1851 "Boston Granite School" design by Gridley J.F. Bryant that shared a common institutional design vocabulary with the contemporaneous Deer Island House of Industry, stands vacant on Mass General Hospital property in Boston's West End. The Boston Sanatorium, one of six hospitals created in the first decade of the twentieth century to provide additional services to the city's poor, occupies a 51-acre campus along the Neponset River in Mattapan that enabled the city to isolate contagious tubercular patients in a salubrious and therapeutic landscape. The monumental e-shaped Hospital Ward is reminiscent of the large-scale Georgian Revival architecture of some of the Long Island campus, as well of New York's Ellis Island campus. These imperiled extant resources share both a design vocabulary, as well as interrelated institutional histories, with many of their Harbor Island counterparts and may be examined for interpretive relevance. Extant resources associated with institutional use on the harbor islands are summarized in table 10 and recommendations are listed below:

RESEARCH & DOCUMENTATION

- Conduct thematic studies of Boston's immigration and welfare institutional histories in order to document and protect extant cultural resources on the Boston Harbor Islands and in the broader metropolitan area.

- Prepare Cultural Landscape and Historic Structure Reports for the relatively intact campuses on Long and Thompson Islands and determine whether these resources are eligible for listing on the National Register and as National Historic Landmarks.

- Conduct comprehensive research and interpretive planning that elucidates the history of reform theory and organizational development for reformatory and social service institutions on the Boston Harbor Islands.

- Provide emergency documentation of obscured or imperiled cultural resources, such as the Rainsford Island cemetery and rock carvings, and interim preservation measures until a more comprehensive preservation strategy can be determined and implemented.

PROTECTION & MAINTENANCE

- Prepare preservation maintenance plans for institutional landscapes on Long and Thompson islands and remnants of institutional landscapes on Bumpkin, Gallops

and Rainsford islands.

- Provide boundary delineation and protection for all known island cemeteries and burial sites and associated headstones, plaques, markers, rock carvings, including those on Rainsford, Long, Gallops and Calf Islands using documentation, remote sensing and survey techniques.

- Support protection of mainland facilities associated with harbor islands institutional history.

EDUCATION & INTERPRETATION

- Develop education programs on the institutional history of the harbor islands.

- Explore cooperative interpretive and preservation planning for relevant mainland institutional properties and resources.

ENDNOTES

1. During the presidency of Andrew Jackson, 1829-1837, a mass of reform movements characterized this period including anti-slavery societies, temperance, peace, and women's rights movements.
2. Colonists devoted few resources to reforming or isolating criminal offenders, nor did they conceive of crime as a remediable phenomenon. While their ideas and behavior invited the criticism of nineteenth-century reformers, colonial attitudes were located within a social and intellectual framework that reflected their religious, demographic, political, and physical environment. Community needs often overrode individual and family prerogatives and the fulfillment of proper roles within all stations insured that the system would function smoothly.
3. David J. Rothman. *The Discovery of the Asylum: Social Order and Disorder in the New Republic* (Boston: Little, Brown, 1971), 49-51.
4. Jill Lepore, "No Safety for Us: The Internment of Native Americans on the Boston Harbor Islands during King Philip's War, 1675-1676" (Boston: National Park Service, December 1998), 9-12.
5. *Ibid*., 25.
6. *Ibid.*, 29.
7. Captain Daniel Henchman, the colonial authority in charge of the camps on Deer Island, occupied an existing house on the island. However, the prisoners were charged with the construction of their own makeshift dwellings from the meager resources of the partially deforested landscape. *Ibid*., 5-19, 28, 33-34.
8. *Ibid.*, 30.
9. During this period there were also Indians held as servants or slaves on privately owned islands. Indians were held on Noddle Island by Samuel Shrimpton and on Spectacle Island by Zanky Panky. *Ibid.*, 20-22.
10. Rothman, 1971.
11. In 1699, an "Act for Suppressing and Punishing Rogues, Vagabonds, Common Beggars. . .and Also for Setting the Poor to Work" provided for structures equipped to force inmates to labor. Petty criminals were to be confined to the house of correction, yet in practice few disciplinary or punitive standards regulated workhouse life. The intended salutary effects of steady labor evaded residents who did not carry out a day's work. Rothman, 26, 55.
12. Lawrence Vale, "From the Puritans to the Projects: The Ideological Origins of American Public Housing," *Harvard Design Magazine* (Summer 1999), 52-53.
13. The incident involving William Fly was recorded in the 1726 Boston "Newsletter:"
14. On Tuesday the 12th Instant, about 3 p.m. were executed here for Piracy, Murder, + c. Three of the Condemned Persons mentioned in our last, viz. William Fly, Captain, Samuel Cole, Quartermaster, and Henry Greenvill, the other viz. George Condick, was Repriev'd at the Place of Execution...Fly behaved himself very unbecomingly even to the last; however advised Masters of Vessels not to be severe and barbarous to their Men, which might be a reason why so many turned Pirates....Their bodies were carried in a Boat to a Small Island called Nick's Mate, about 2 leagues from the Town, where the abovesaid Fly was hung up in Irons, as a Spectacle for the warning of others, especially Seafaring Men; the other two were buried there.
15. Public executions took place on Boston Common. While there is no physical evidence of post-execution displays, one historian notes that nineteenth-century commentators were thoroughly familiar with early eighteenth-century discipline and did not contest the "pirate" history of Nix's Mate. Paul Barresi, Interview with Margaret Coffin, 20 July 1999 and Alan Mikal, *Exploring Boston Harbor* (North Quincy, MA: The Christopher Publishing House, 1973), 53-54.
16. Rothman, 57-58.
17. M.F. Sweetser, *King's Handbook of Boston Harbor* (Cambridge, MA: Moses King, 1888), 158.
18. *Ibid.*, 61, 90.
19. Critics defined as corrupting the wholesale fluidity and mobility that they saw in the families and communities of the early republic. *Ibid.*, 55-59, 69-71.
20. *Ibid*., 75.
21. The two most debated configurations of penitentiaries were the Auburn (or, congregate) and Pennsylvania (or, separate) systems. Further research is needed to determine how this debate influenced the configuration of Boston's facilities.
22. *Ibid*., 83-84.
23. *Ibid*., 79-80, 100.
24. Massachusetts Water Resource Authority (MWRA), "Deer Island House of Correction: Section 106 Documentation, HABS No. MA-1250," March 1991, 3.
25. While critics questioned the efficacy of confinement and counseled the rapid return of convicts to society, the penitentiary remained central to criminal punishment. Reformatory routines had given way to holding operations and, in view of the social and ethnic composition of the penitentiary population, put offenders out of sight and, perhaps, out of mind. Rothman, 239-40, 244, 251-54.
26. Island fortifications continued to serve as emergency military detention centers in the twentieth century. German prisoners-of-war may have been held on Gallops Island during World War I and Italian soldiers were imprisoned at Fort Andrews, on Peddocks Island, during World War II.
27. Young male inmates of the South Boston House of Correction were sent to the Concord Reformatory. City Doc. 9, 1887, 34 as quoted in Marsha K. King, *Intensive Archaeological Survey of New Rest Haven Historic Cemetery Site at the Deer Island House of Corrections, Boston, Massachusetts* (Providence, RI: The Public Archaeology Laboratory, Inc., Au-

gust 1987), 20.
28. City Doc. 14, 1897, 1 as quoted in King, *Intensive Archaeological Survey*, 20.
29. Ritchie and King, 38.
30. MWRA, 5.
31. Sweetser, 217-222 and MWRA, *Superintendent's (Doctor's) House HABS No. MA-1250-B*, 5, 13.
32. City of Boston, *Boston Year Book*, 1923-1924, 138-42.
33. Duncan Ritchie and Marsha King, *An Archaeological Reconnaissance Survey of Deer Island, Boston Harbor, Massachusetts* (Providence: The Public Archaeology Laboratory, Inc., 1986), 15.
34. The old "Doctor's House" was actually a wing of the prison building; the new building served as the Superintendent's House until its destruction. It was designed in the Georgian Revival "Virginia" or "Williamsburg" style and bore a striking similarity in both for and siting to Westover, a 1737 Virginia tidewater residence. One can only speculate about the implications of such a shared design vocabulary between an ostensibly reformatory institution and the landscape of the southern slave economy.
35. Fact Sheet, MDC Files.
36. Marsha King, *Archaeological Investigations, Haul Road Trenching, and Disturbance Documentation of the Piggery Point Burials on Deer Island, Boston, Massachusetts* (Providence, RI: The Public Archaeology Laboratory, Inc., 1991), 67-72.
37. Gerald N. Grob, *The State and the Mentally Ill: A History of Worcester State Hospital in Massachusetts, 183-1920* (Chapel Hill: The University of North Carolina Press, 1966), 6.
38. Commonwealth laws in 1796 and 1816 confined dangerous and pauper "lunatics" to local jails due to lack of better facilities. *Ibid.*, 10-11, 17, 27.
39. Boston was among the sites considered for the state asylum, but the existing concentration of social institutions in Boston and the committee's favoring of a more geographically central location led to the choice of an alternative urban area. *Ibid.*, 20-27.
40. Rothman, 109-11, 121-126, 128-129.
41. *Ibid.*, 137-38, 141.
42. Artemas Simonds to Horace Mann, August 17, 1832, Mann Papers (Massachusetts Historical Society, Boston), as quoted in Grob, 50-51.
43. *Ibid.*,84.
44. L. Vernon Briggs, *History of the Psychopathic Hospital, Boston, Massachusetts* (New York: Arno Press, 1973), xi-xv.
45. An 1848 Massachusetts law required every town and city to appoint a superintendent of alien passengers and to refuse admittance to lunatics, idiots, maimed, aged or infirm persons who could not post $1000 bond.
46. Rothman, 268, 284-86.
47. City of Boston, Committee on Public Institutions, "Report and Order of the Committee on Public Institutions Relative to the Care of a Portion of the City's Insane at Long Island," [Document 119, 1885], 1-2.
48. Grob, 333.
49. *Ibid.*, 267-270.
50. Female inmates "addicted to the use of liquor" were confined to solitary cells in the basement of the "dormitory" building. It is likely patients requiring disciplinary confinement, including mentally ill paupers, endured similar treatment. "The Island Chatter" (fragment), Long Island Campus Files.
51. Grob, 333-35, 350.
52. Nancy Gerlach-Spriggs et al., *Restorative Gardens: The Healing Landscape* (New Haven, CT: Yale University Press, 1998), 28-31.
53. Minutes of the 1657 Boston Town Meeting, quoted in Vale, 53.
54. Vale, 54.
55. Rothman, 155.
56. *Ibid.*, 157, 159, 163-65, 169-70.
57. MWRA, *Deer Island House of Correction*, 3.
58. Rothman, 178-80.
59. *Ibid.*, 189, 207.
60. "House of Industry: South Boston," *American Magazine of Useful and Entertaining Knowledge* 1, no.2 (October 1834), quoted in Vale, 54.
61. Fact Sheet, MDC Files.
62. "Deer Island Hospital, Boston Harbor," *Ballou's Pictorial* 11, no.12.
63. Ritchie and King, 35.
64. Rothman, 206-07.
65. Michael Katz, *The Irony of Early School Reform: Educational Innovation in Mid-Nineteenth Century Massachusetts* (Cambridge, MA: Harvard University Press, 1968), 166-67.
66. Rothman, 211-13, 228, 235.
67. Boston Asylum for Boys, *A Statement of the Present Depression Conditions of the Funds*...(Boston, 1831) as quoted in Rothman, 170.
68. Boston Asylum for Boys, as quoted in Rothman, 214.
69. "Chronology," Thompson Island Collection, University of Massachusetts/Boston.
70. Alan Mikal, *Exploring Boston Harbor in Photographs and Text* (North Quincy, MA: The Christopher Press, 1975), 88.

71. Exposure to the edifying influence of the country landscape was a key strategy of mid-nineteenth-century reform, which sought to create complete therapeutic environments for deviant and dependent populations. Katz, 191.
72. Rothman, 287.
73. Mikal, 58.
74. At least 79 patients who died at the hospital were buried on the island and later re-interred on Long Island in 1948, where a monument was dedicated to them. After examining military and burial records, one researcher concluded that many of those memorialized may not have been veterans, suggesting that the state and county continued to admit general patients to the Rainsford Hospital. In addition, more than fifty percent of the "veterans" re-interred at Long Island Cemetery were either foreign-born or African American, suggesting that the hospital catered to enlisted men. Michael H. Cunningham, "The Civil War Cemetery on Long Island," (unpublished paper).
75. Sweetser, 297 and MDC, "Management Manual for Georges, Lovell's, and Peddock's Island", MDC, 1983.
76. Two sources on information about the school provide conflicting information as to its location. A letter from the son of Colonel and later Lieutenant Jarvis Dwight Braman (1825-1888), written in 1928, states that Braman trained 400 volunteer officers during the Civil War and assisted as Paymaster-General for the state of Massachusetts during the war. "When the first colored troops returned from the field to receive their pay, they requested him to keep their pay for them until they returned. He declined to receive from them any of their earned pay for the reason that they might never return or other reasons. So he at once established this free school for them on an island in Boston Harbor, as I recall Apple Island, which he owned." Letter from Dwight Braman, President, The Law and Order Union of New York State to the New England Historic Genealogical Society, 27 November, 1928, held by the Bostonian Society. A historical account written in 1898, described Braman as establishing the first Soldier's Home in the United States and "on one of the islands in Boston Harbor a free school for these colored men." While serving as president of eight different land and utility companies, Braman was also an advocate of a metropolitan park system. From, Oliver Ayer Roberts, History of the Military Company of the Massachusetts now called The Ancient and Honorable Artillery Company of Massachusetts, 1637-1888, Volume III, 1822-1865 (Boston: Alfred Mudge & Son, 1898)83-84.
77. Female inmates were transferred to the newly-vacated Rainsford facilities and remained there until the completion of a woman's dormitory in 1894.
78. The nursing school, which graduated its first class in 1896, operated as the Long Island Nursing School until 1937. Sweetser, 180 and "History of Long Island Hospital" (unpublished paper).
79. Rothman, 257-58, 261-62.
80. MWRA, *Deer Island House of Correction*, 4.
81. Sweetser, 221.
82. Late nineteenth century maps and photographs reveal a wide variety of plant species, including fruit trees, oaks, spruces, ornamental flowers, and the "Old Elm," a massive tree that served as a gathering place behind Gardiner Hall.
83. Long Island Campus Files.
84. City of Boston, *Boston Year Book*, 1923-1924, 138.
85. "Thompson Island: Learning by Doing." Thompson Island Outward Bound Education Center.
86. *Thompson Island Journal,* Fall 1994.
87. William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England* (New York: Hill and Wang, 1983), 85-89.
88. The higher statistical end reflected crisis years, such as the 1721 epidemic. The death rate in 1918 during the height of the Spanish "influenza" epidemic was 25 in 1000 and may serve as a useful point of comparison. Robert Francis Murphy, *Public Health Trails in Massachusetts: A History and Guide*, (Jamaica Plain, MA: Massachusetts Public Health Association, 1988), 3-4.
89. Gerlach-Spriggs et al., 21.
90. Sweetser, 189.
91. *Ibid.,* 107.
92. It is unclear if the proposed "pest house" was constructed on Deer Island; one source suggests that the structure was built on Spectacle Island instead. Ritchie and King, 28 and MWRA, *Deer Island House of Correction*, 3.
93. Buildings on the North Bluff (or Great Head), including an "old dead house," probably comprised the early hospital site. The provenance of a long, low building, known as the Fever Hospital or Bowling Alleys, on the island's West Head is unclear. Sweetser, 176, 201-02.
94. *Ibid.,* 155.
95. It was the first facility built with Marine Hospital funds which were generated from a $.20 per month tax on sailors' salaries. The legislation establishing the tax, "An Act for the Relief of Sick and Disabled Seamen," was signed into law by President John Adams on July 16, 1798. Secretary of the Treasury, Oliver Wolcott, urged the collector of customs for the port of Boston to build the hospital at the Castle Island site. Physician of the Hospital." He was also a founder of the Massachusetts Medical Society and a member of the American Academy of Arts and Sciences. "The first patients were admitted to barracks on the island in 1799. Eligible patients included "all officers of the Navy and of the Marines and all seamen and marines in the public service of the United States, and all officers and seamen in the merchant service." A new facility was opened in Charlestown in 1802. Fitzhugh Mullan, *Plagues and Politics: The Story of the United States Public Health Service* (New York: Basic Books, Inc., 1989), 17.
96. The quarantine station operated there until 1852, when the Commonwealth purchased and renovated the facilities for use as an almshouse. Sweetser, 203.

97. *Ibid*.
98. Mikal, 58.
99. Oscar Handlin, *Boston's Immigrants, 1790-1880: A Study of Acculturation* (Cambridge, MA: Harvard University Press, 1991), 105, 114-16.
100. Changes wrought by the influx of 125,000 immigrants to the state and the sharp rise in Boston's death rate between 1845 and 1849 invited further criticism of urban conditions and of the moral failing that such conditions engendered. Shattuck reported:
101. Our own native inhabitants, who mingle with these recipients of their bounty, often themselves become contaminated with diseases, and sicken and die; the physical and moral power of living is depreciated, and the healthy, social and moral character we once enjoyed is liable to be forever lost. Pauperism, crime, disease, and death, stare us in the face.
102. Barbara Gutman Rosenkrantz, *Public Health and the State: Changing Views in Massachusetts, 1842-1936* (Cambridge, MA: Harvard University Press, 1972), 1-3, 18-19, 30.
103. Sweetser, 221 and Fact Sheet, MDC Files.
104. Murphy, 11.
105. The City constructed the Chronic Disease Hospital at its Long Island Almshouse campus in 1893 for the treatment of indigent patients. The facility was not designed as an isolation or quarantine station, though quarantines were imposed periodically in the wards. Rosenkrantz, 112-13, 123-24.
106. Gerlach-Spriggs et al., 22-23.
107. Anthony Mitchell Sammarco, *Images of America: Boston's Harbor Islands* (Charleston, SC: Arcadia Publishing, 1998), 66.
108. *History and Master Plan: Georges Island and Fort Warren, Boston Harbor* (Boston: Metropolitan District Commission, May 1960), 16, 38.
109. *Peddock's Island Building Study*, 28.
110. In 1927, hospital operations became land-based and the program evolved into the pediatric hospital at New England Medical Center. "Floating Hospital's 100th Birthday," *The Boston Globe*, June 1994 and Bunting, 148.
111. "Burrage Hospital for Crippled Children," *The Boston Globe* , 11 October 1901 and Ellenor Yahrmarkt, "Metro Parks: Bumpkin History" (Boston: Commonwealth of Massachusetts, Department of Environmental Management).
112. Gerlach-Spriggs et al., 25-26.
113. *Ibid*., 27.
114. Commonwealth of Massachusetts, Department of Environmental Management, "Exploring Gallop's Island."
115. During the station's operating years, 237 bodies, including the victims of a smallpox epidemic and immigrants detained at the quarantine hospital, were buried under wooden markers in the cemetery on the north side of the island. Following the sale of Gallops Island at public auction in 1947, many of the structures were removed from the island. The pharmacist's house was moved to Hingham, two houses were relocated to Quincy, and the recreation hall and three house were moved to the grounds of Boston University. Mikal 50, "Exploring Gallop's Island: A Self-Guided Tour" and "Chronology of Gallops Island," DEM files.
116. MWRA, *Superintendent's (Doctor's) House*, 2.
117. "Long Island Hospital," *New England Journal of Medicine*, 1 January 1959.
118. King, 70-74.
119. Lepore, 6.
120. Mikal, 57-62.
121. George A. Crawford, ed., *The Centennial of New England Methodism: A Full Report of the Services Held in People's Church, Boston, Mass., October 21-23, 1890, with Additional Historical Material* (Boston: Crawford Brothers, 1891), 544.

Table 10. Cultural Resources Associated with Institutions

Resource	Location	Type	National Register Status
Colonial internment sites for Native Americans	Deer, Long, Peddocks, the Brewsters	Cultural landscape	Not evaluated
New Rest Haven Cemetery	Deer	Commemorative site	Not evaluated
Fort Warren (military prison)	Georges	Standing structure	Listed on the National Register and Landmark
Fort Andrews (military prison), military hospital	Peddocks	Standing structures, unstabilized ruins	Determined eligible
Children's hospital	Bumpkin	Unstabilized ruins and cultural landscape	Not evaluated
Quarantine, veterans hospital, possible school	Rainsford	Unstabilized ruins and cultural landscape, possible cemetery	Not evaluated
Gallops Island quarantine station	Gallops	Unstabilized ruins and cultural landscape, cemetery	Not evaluated
Long Island campus	Long	Structures, cultural landscape, unstabilized ruins	May be eligible as a district
Thompson Island Outward Bound Education Center campus	Thompson	Structures, cultural landscape, cemeteries	May be eligible as a district

Table 11. Institutional Use of the Boston Harbor Islands

Island	Colonial Period 1600-1783	New Republic Period 1783-1860	Civil War and Industrial Period 1860-1900	Progressive and Modern Eras 1900-2015
Apple Island			Possible site of school (or Rainsford c 1865)	
Brewsters	Internment of Native Americans (1675-76)			
Bumpkin Island				Children's hospital (1900-1917, c.1940)
Castle Island	Smallpox hospital (c 1764	Prison (1799-1801); Marine hospital (c.1799)		
Deer Island	Quarantine station (c 1677), internment of Native Americans and undocumented burial site (1675-76)	Quarantine hospital & Cemetery (c.1717, 1847-66) & Immigration station (1847-96); Prison (1854-1991)	Quarantine hospital & Cemetery (1847-58, 66); Immigration station (1847-96); Almshouse (c.1852); House of industry (1850-c.1900); Prison (1854-1991); Pauper boys school (1858-76); Pauper girls school (1868-?); Juvenile detention facility (1866-95)	Prison (1854-1991)
Gallops Island			Almshouse (1856-1960); Quarantine hospital & Cemetery (1867-1937)	Immigration station (1916-1920); Quarantine hospital & Cemetery (1867-1937)
Georges Island			Civil War hospital & POW prison (1861-64)	WWI, WWII infirmary (c.1917, 1940s)
Long Island	Internment of Native Americans (1675-76)		Almshouse (1887-1926); Chronic care hospital (1893-1991); Nursing school (1896-1937, 1949-?)	Almshouse (1887-1926); Home for unwed mothers (1921-26?); Chronic care hospital (1893-1991); Nursing school (1896-1937, 1949-?); Homeless shelter, Mental health, and social services (1991-2014)
Lovells Island	Quarantine station (c 1865)			
Nix's Mate	Public display of executed pirate (1726)			
Peddocks Island	Internment of Native Americans (1675-76)			WWI & WWII infirmary (c.1917, 1940s); Italian POW camp (1940s)
Rainsford Island	Quarantine hospital (1737-1852)	Quarantine hospital (1737-1852), state almshouse (1852-1866)	State almshouse (1852-66), city poorhouse and cemetery (1866-72), veterans hospital or "Soldiers Home" & cemetery (1872-82); reform school for boys (1895-1920); possible site of school (or Apple) (c.1865)	Reform school for boys (1895-1920)
Spectacle Island	Quarantine hospital (1717-37)			
Thompson Island			Farm and trade school and asylum for boys (1832-1956)	Outdoor education center (1975-present)



Figure 5.1. Boston Almshouse and House of Industry on Deer Island, mid-19th century. Boston Public Library Harbor Views Collection.



Figure 5.2. Inmates in the Deer Island House of Correction prison yard, date unknown. Image courtesy of the Massachusetts Water Resources Authority (MWRA).



Figure 5.3. Aerial view of Deer Island campus showing the Women's Prison behind the Boston Almshouse and House of Industry, 1939. Boston Public Library Harbor Views Collection.



Figure 5.4. Nurses and children outside the children's ward at the Long Island Hospital Campus, 1930's. Boston Public Library Harbor Views: Long Island Collection.

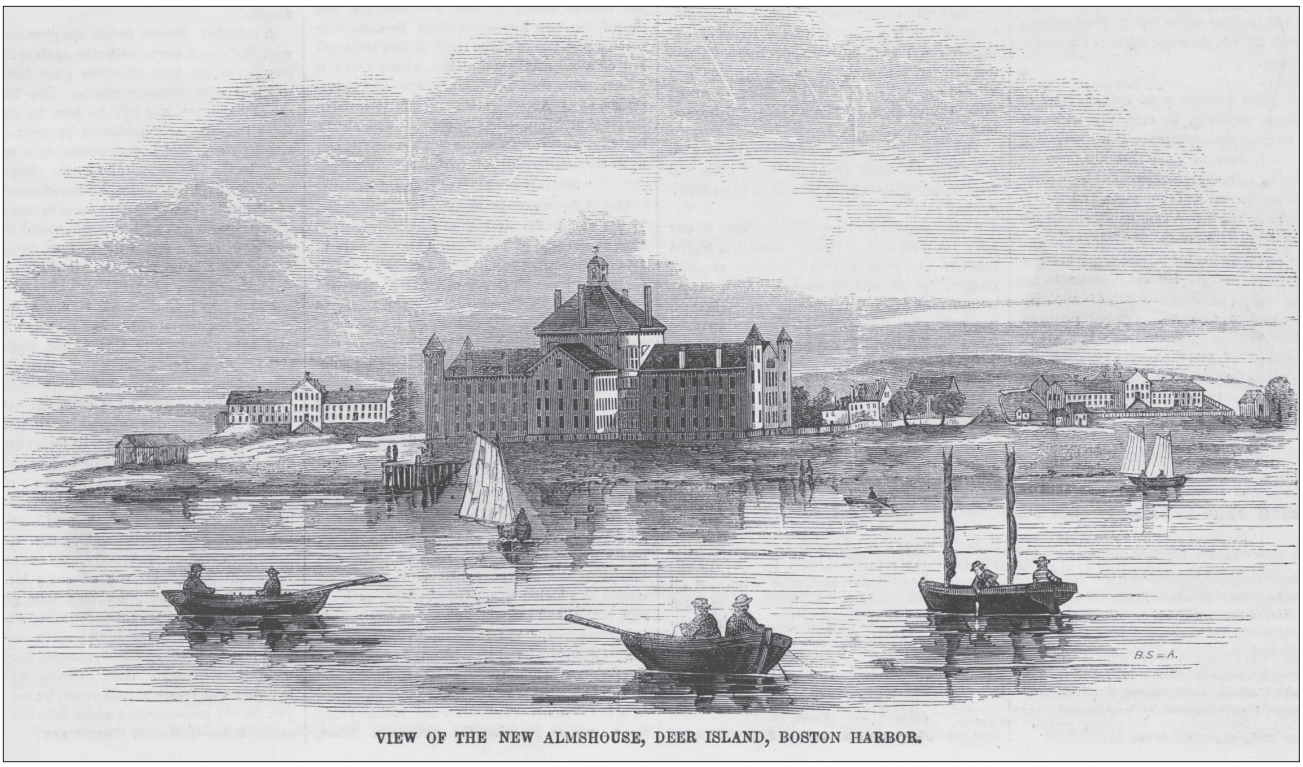


Figure 5.5.Deer Island House of Industry, mid-19th century. Boston Public Library Harbor Views Collection.



Figure 5.6. Boston Farm and Trades School campus on Thompson Island, 1852. Courtesy of the University Archives & Special Collections Department, Joseph P. Healey Library, University of Massachusetts Boston: Thompson Island Collection.



Figure 5.7. Superintendent's House at the municipal almshouse on Rainsford Island, late 19th century. Children's Institutions Department lantern slides, Collection #8500.002, City of Boston Archives, Boston.



Figure 5.8. Chapel and grounds as seen from the Administration Building of the Boston Almshouse (later Long Island Hospital) on Long Island, early 20th century. Long Island Hospital records, Collection 8500.200, City of Boston Archives, Boston.

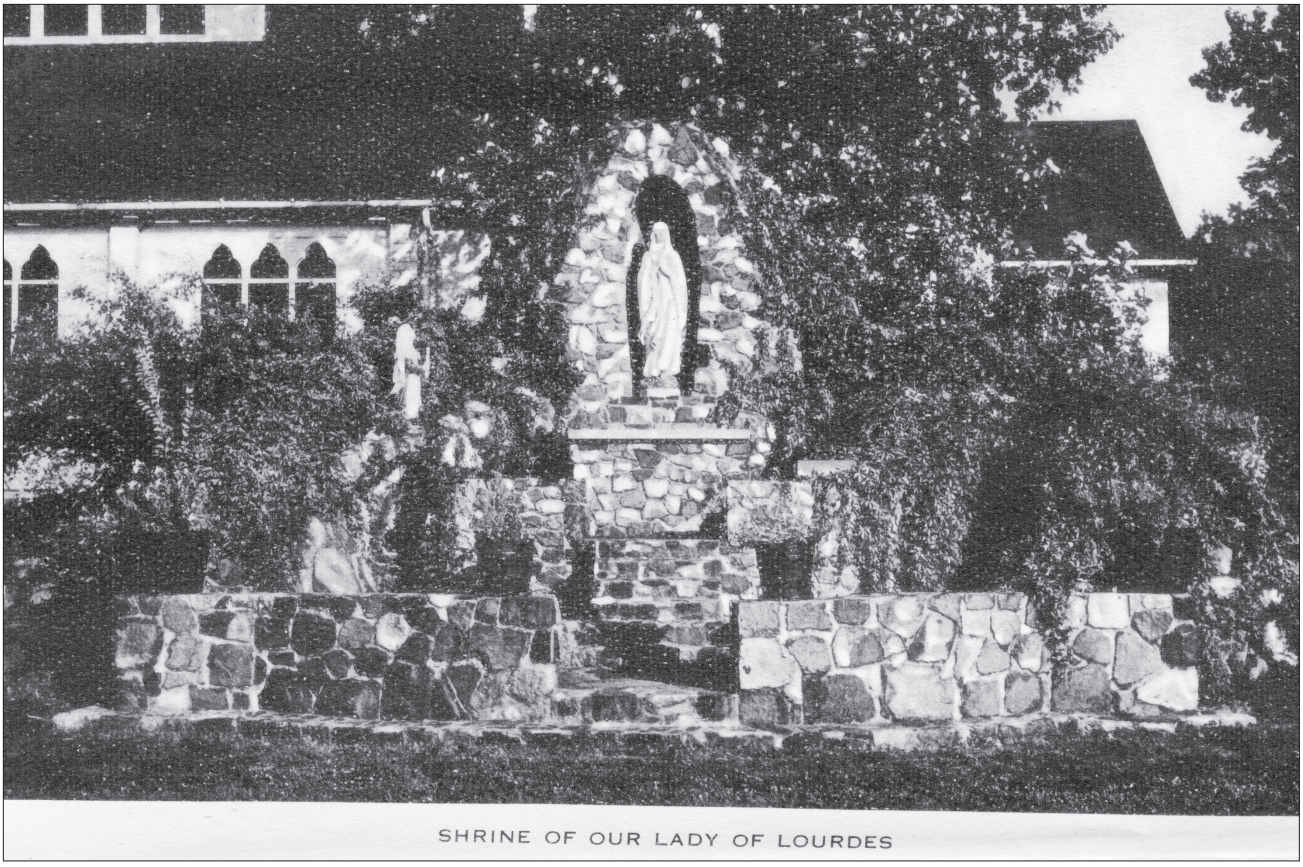


Figure 5.9. Grotto at the Long Island chapel, early 20th century. Long Island Hospital records, Collection 8500.200, City of Boston Archives, Boston



Figure 5.10. Women's Dormitory at the Boston Alms House on Long Island, early 20th century. Boston Public Library Harbor Views: Long Island Collection.



Figure 5.11. House of Reformation on Rainsford Island, late 19th century. Children's Institutions Department lantern slides, Collection #8500.002, City of Boston Archives, Boston.



Figure 5.12. Rainsford Island Battalion on the grounds of the Suffolk County School for Boys, early 20th century. Children's Institutions Department lantern slides, Collection #8500.002, City of Boston Archives, Boston.



Figure 5.13. Preparing for mowing near the barn of the Boston Farm and Trades School on Thompson Island, late 19th century. Courtesy of the University Archives & Special Collections Department, Joseph P. Healey Library, University of Massachusetts Boston: Thompson Island Collection.



Figure 5.14. Gardener Hall at the Boston Farm and Trades School on Thompson Island, late 19th century. Courtesy of the University Archives & Special Collections Department, Joseph P. Healey Library, University of Massachusetts Boston: Thompson Island Collection.



Figure 5.15. Boston Farm and Trades School "Cottage Row," Thompson Island, late 19th century. Courtesy of the University Archives & Special Collections Department, Joseph P. Healey Library, University of Massachusetts Boston: Thompson Island Collection.



Figure 5.16. Hospital for Old Women, part of the Long Island Hospital campus, early 20th century. Long Island Hospital records, Collection 8500.200, City of Boston Archives, Boston.



Figure 5.17. View of shore cottages on Long Island near the hospital campus, early 20th century. Boston Public Library Harbor Views: Long Island Collection.

Figure 5.18. Rainsford Island quarantine hospital, c. 1910. Children's Institutions Department lantern slides, Collection #8500.002, City of Boston Archives, Boston.



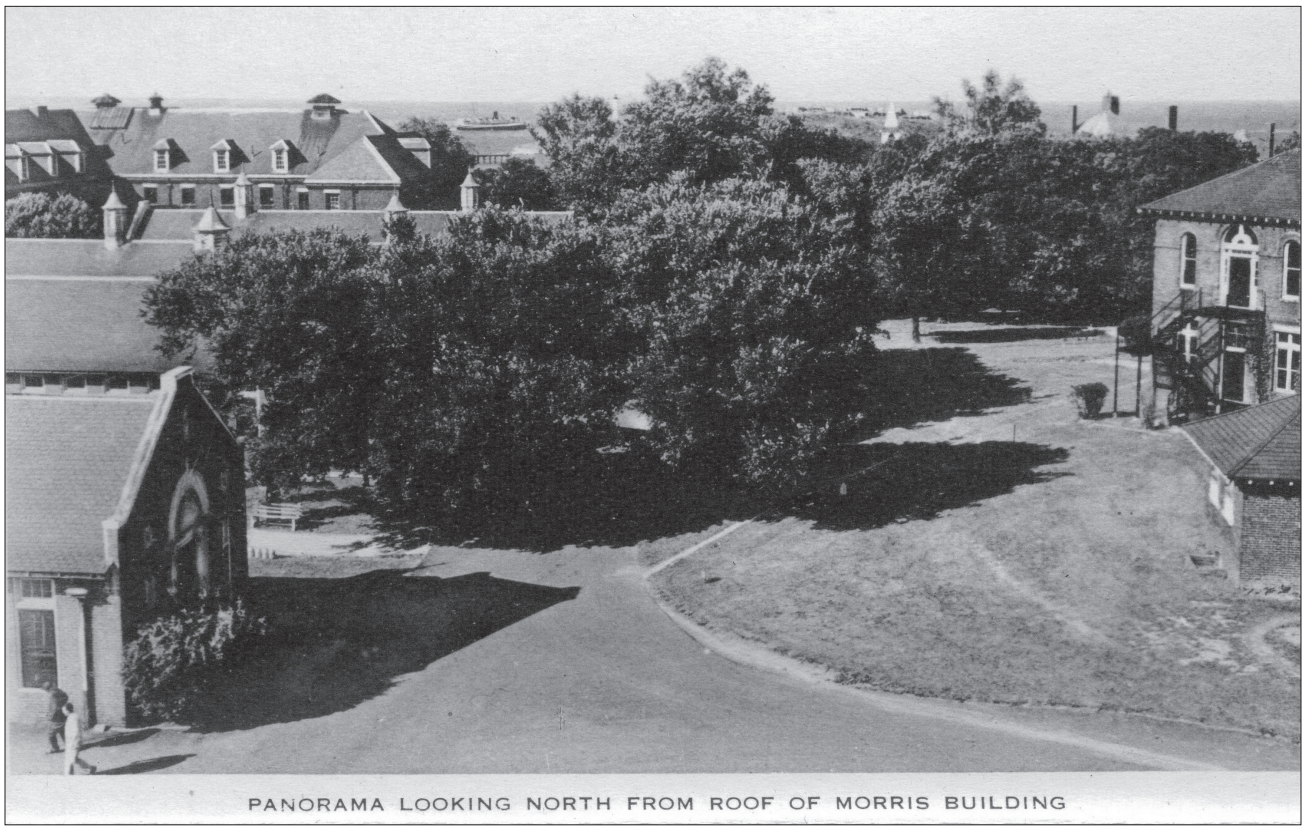


Figure 5.19. Wards A through D at the Long Island Hospital campus, early 20th century. Long Island Hospital records, Collection 8500.200, City of Boston Archives, Boston.



Figure 5.20. Hospital building at Fort Warren on Georges Island,1958. Image courtesy of DCR.



Figure 5.21. Nurses' Home at the Long Island Hospital, mid-20th century. Long Island Hospital records, Collection 8500.200, City of Boston Archives, Boston.



Figure 5.22. View toward the Long Island Hospital campus, as seen from the Civil War memorial, 1950. Long Island Hospital records, Collection 8500.200, City of Boston Archives, Boston.

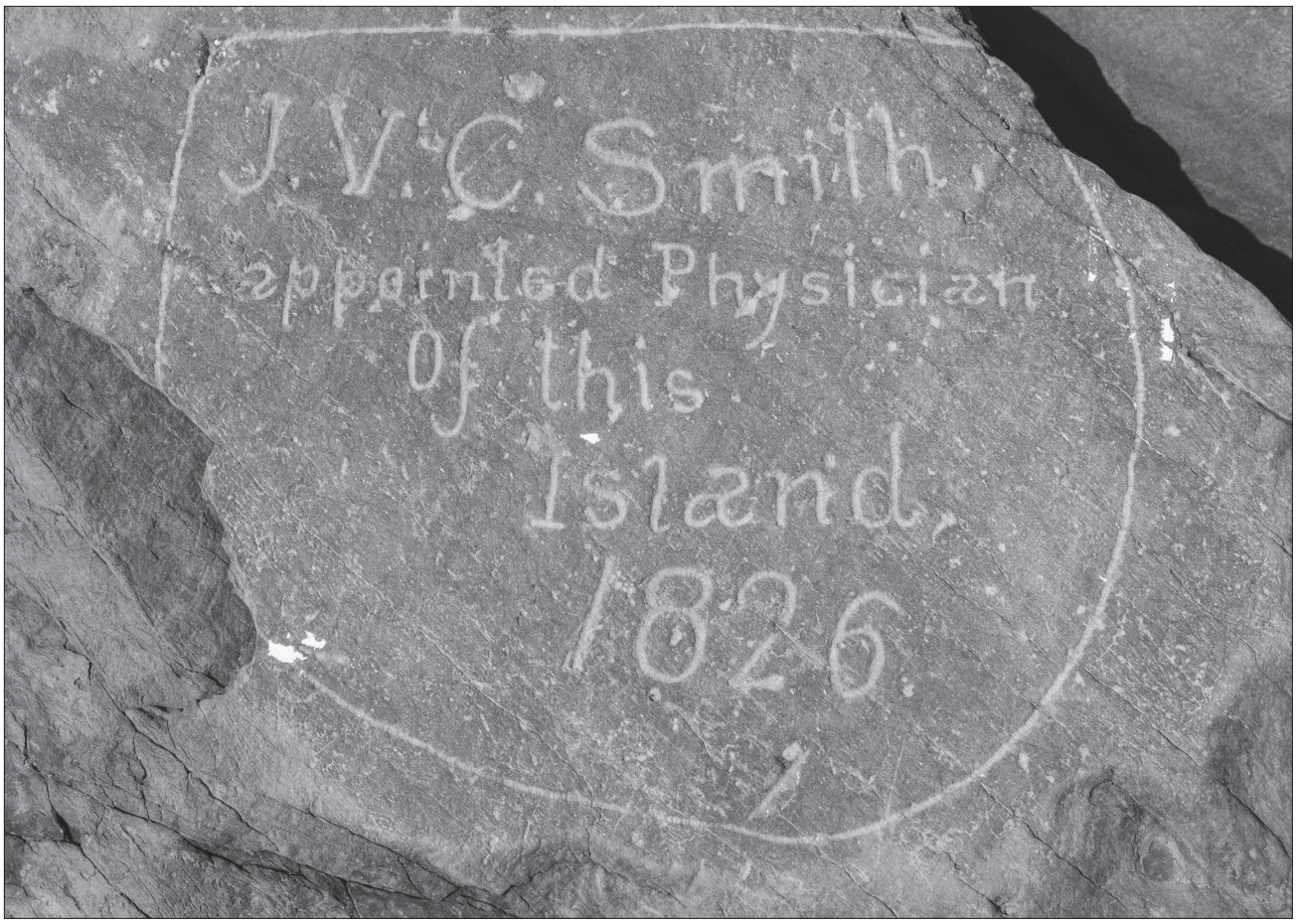


Figure 5.23. 19th century rock carving on the east side of Rainsford Island's western bluff, late 20th century. Jacob, Judith. Rainsford Island Record of Observations and Recommendations for Protection of Historic Graffiti and Reduction of Contemporary Graffiti, 2014.

6. INDUSTRY AND INFRASTRUCTURE

The northeastern United States witnessed a period of tremendous industrial and urban growth during the nineteenth century. Burgeoning populations and the expansion of the urban industrial economy produced waste products that increasingly taxed existing disposal systems. Health crises, particularly in overcrowded immigrant wards, attracted official scrutiny of public drinking water sources and waste disposal. An emerging public health profession identified sources of contamination and, by mid-century, advocated for reform. Boston's metropolitan sewerage system was notable for its innovative administrative structure, for the innovative and integral efforts in raising public awareness of health issues, and for advanced technology and design.[1] Not surprisingly, the Boston Harbor Islands figured prominently in the city's design to remove both sewage and solid waste from densely-settled areas to more isolated landscapes in the harbor.

SEWERAGE AND WASTE TREATMENT FACILITIES

During the first half of the nineteenth century many American cities had both public and private sewers—including cesspools, privy vaults, and fragmented sewers—though many "systems" were neither continuous nor well-engineered. Contaminated water supplies, chronic and epidemic disease, and noxious odors concerned public officials and health reformers. Around mid-century the expansion of public water supplies in many cities, while increasing such sanitary facilities as the water closet, drastically increased the volume of wastewater. Municipal authorities responded with two alternatives: sewerage systems using the water carriage method and sewage treatment.

In the 1840s Edwin Chadwick, an English sanitarian, advocated the water carriage method in which a system of self-cleaning earthenware pipes carried wastewater and human waste. Chadwick's plan influenced Ellis Chesbrough's design for the Chicago sewerage system, a prominent example of early American urban engineering that addressed the related problems of water supply, drainage, and sewerage. Chesbrough had undertaken early water supply and drainage projects in Boston, where he worked as the first City Engineer, before undertaking the Chicago project in the 1850s.

A network of sewers, portions of which dated to the seventeenth century, served Boston at the beginning of the nineteenth century.[2] Property owners banded together and, occasionally, obtained permission to build a drain on the shortest line to tide-water. These early sewers were not built to dispose of fecal waste, but rather to receive waste from cellar pumps and kitchen sinks and to drain rainwater. An act passed in 1709 stipulated prior approval from the selectmen,

imposed construction and maintenance standards, and specifically excluded the contents of privy-vaults from the growing network. Private individuals built, repaired, and owned sewers under the authority of this act until 1823, when a new city charter assumed control of existing sewers and charged the City with construction and maintenance of new lines for storm drainage[3] Fluid human wastes were first allowed in the Boston sewer system in 1833 and by mid-century the popularity of indoor plumbing, rising volumes of sewage, and cholera outbreaks led the City to allow for the disposal of human waste through wooden drainpipes into local waterways and eventually into Boston Harbor.

Boston's topography contributed to the limited success of this early system. Hills on all sides of the Shawmut peninsula provided slopes and gravitational drainage to the water, though occasional clogging plagued the system. Changes in the contours of the city through the filling of tidal areas presented obstacles to an efficient sewerage system. Construction on reclaimed land, at just above the high tide level, necessitated the placement of household drains and sewers near low-water mark and the ongoing extension of sewers and outlets with the expansion of the city's physical boundaries. The consequent lower outfalls were dammed back by the tide for much of the day and sewage, once released, was brought back by incoming tides to form deposits on the flats and shores near densely-populated districts.[4] In one of their annual reports the City Board of Health cited "complaints of bad odors" and "the accumulation of sewage upon the flats about the city…until there is not probably a foot of mud in the river, in the basins, in the docks, or elsewhere in close proximity to the city, that is not fouled with sewage."[5] Increasing volumes further exacerbated the problem of disposal. By 1869 more than one hundred miles of pipe led to harbor drainage; that number more than double by 1885.[6] Between 1857 and 1885 the number of "water-closets" in the city increased 15-fold, from 6,500 to more than 100,000.[7]

Amongst Boston's emerging reform community a filth theory of disease prevailed and attention increasingly focused on the sanitary disposal of human and solid wastes.[8] Lemuel Shattuck, a Massachusetts reformer influenced by the ideas of Chadwick, advocated methods of improved sanitation and public works as a means of improving public health. As chief author of the Massachusetts Sanitary Commission's 1850 report, Shattuck outlined a system of public health administration for the state. Though many of Shattuck's recommendations went unnoticed, one key component was enacted with the establishment of the Massachusetts State Board of Health, the nation's first public health agency, in 1869. The broad range of public health responsibilities assigned to the Board included water pollution, sewerage, and sewage treatment and established the state's preeminent role in American sanitation reform.[9]

A remonstrance issued by the city's Consulting Physicians spurred further reform. The 1870 statement declared the urgent necessity of improvements

to the sewerage system for Boston and its immediate surroundings. The State Legislature, in the special session of 1872, directed the Board to "consider the general subject of the disposition of the sewage of towns and cities" and to present a comprehensive plan for the metropolitan drainage system. In the same year, the Miller's River Commission, the first of a series of agencies that led to intercommunity cooperation in water supply and waste disposal, convened to recommend ways to eliminate contamination of the basin between Cambridge and Somerville. The commission proposed a comprehensive plan of sewer construction and channel drainage and, more broadly, demonstrated the efficacy of interagency actions. However, the practice of dumping waste into the nearest source of flowing water had long been sanctioned by local custom and the financial commitment involved with the construction of intercepting sewers discouraged action.[10]

During the next fifteen years repeated attempts to study and plan a metropolitan-wide sewerage system met with mixed results. An 1875 order passed by the city Council authorized Boston's mayor to appoint an investigative commission to confront conditions that were "manifestly inimical to public health and comfort."[11] The commission, upon which Chesbrough served, reviewed the defects of the existing system and recommended a plan comprising two main drainage systems: one on the south side of the Charles River with an outlet at Moon Island, and the other on the north side discharging at Shirley Gut. These identical systems had intercepting sewers along the periphery of the city to receive the flow from existing sewers; main sewers in which sewage was to be conducted to pumping stations; and, pumping machinery and outfall sewers leading to reservoirs near coastal discharge points (Figure 6.1). The City voted to implement only the southern system and authorized surveys and estimates for construction, as well as a feasibility study for the possibility of a Caste Island outlet in June 1876. Preliminary "free-float" experiments in the currents surrounding Moon, Castle, Thompson, and Spectacle Islands identified favorable ebb currents near Moon and Castle, though the latter was rejected due to "great opposition to building a reservoir so near to a densely populated district." A similar criterion dictated the recommendation of Dorchester's Old Harbor Point (now Columbia Point)as the site for the pumping station and the nearly 100 acres of uninhabited marshland was selected.[12]

In 1884 the Boston Main Drainage Works began operating the Calf Pasture Pumping Station at Old Harbor Point, a remote and low-lying area where wastewater was screened through four cages and then pumped through a mile-long tunnel under the mouth of the Neponset River to a reservoir on Moon Island, where it was discharged into Boston Harbor on the outgoing tide (Figure 6.2).[13] Situated in the island's valley just above the level of high water, the five-acre reservoir, stored sewage within four granite tanks until about two hours into ebb tide, when receding tides carried the release effluent between Long and Rainsford

Islands, and between Gallops and Georges Islands, toward the Brewsters (Figure 6.3).[14] The location of the reservoir allowed for future expansion at its southern side and foundations blocks built into the floor were intended to support a roof, if needed, over the uncovered structure. The "Long Gate-House," a brick building extending 575 feet along the front of the reservoir, housed 20 cast-iron gates. A larger building, situated perpendicular to the gatehouse at the northeastern corner of the reservoir, contained engine, boiler, and coal rooms. A 40-foot chimney, a driveway, and a rainwater collection system, comprised of a large cistern and drainage ditches, completed the campus.[15]

In 1881 Chesbrough again served on a committee to plan a more extensive drainage and sewerage system for the metropolitan area. The Metropolitan Drainage Commission of 1881 recommended an extensive sewerage system comprising intercepting sewers and branches that would discharge into Boston Harbor at Deer Island, and was later succeeded by the Massachusetts Drainage Commission of 1884 and 1885.[16] In 1887 the Legislature moved towards a solution to the metropolitan sewerage problem with yet another study, undertaken by the State Board of Health, that recommended the discharge of crude sewage from an outlet located west of the beacon just south of Deer Island.[17]

In 1889 the State Legislature established the Metropolitan Sewerage Commission, which began construction of the North Metropolitan System of sewers in the following year. During the next five years, construction proceeded on sewer lines in outlying communities and on selected pumping stations. The Deer Island outfall and Shirley Gut siphon were begun in 1893. Within a year, the Deer Island and East Boston pumping stations were nearly complete. The site for the Deer Island station was on the southwestern side of the island, protected from easterly gales by a drumlin. Construction of the first major structure for the Deer Island system, the coal wharf, began in 1890 and was completed in the following year. The wharf, designed to extend 400 feet from the shore, served as the unloading area for construction materials. The construction of the sewage Outfall Conduit took place in two stages between 1893 and 1894 (Figure 6.4). The 1,925-foot conduit ran from a point 60 feet above high tide on shore to a submerged point opposite Deer Island Light. Construction of the Deer Island pump house and boiler house structures was completed in November 1894 and daily service commenced during the following June (Figure 6.5).[18] The screen and coal houses, with a coal-run extending nearly 500 feet from the end of the wharf to the coal pocket, were completed later that year. The plan for the complex was both linear in organization and utilitarian in design (Figure 6.6). Sewage flowed in a southeasterly direction from the Screen House to the Pump House, a single-story brick building with subtle Queen Anne and Romanesque decorative elements. Two ancillary buildings stood to the east of the pumping station. A two-story residence, completed in 1896, provided staff housing. The barn, or boat locker, served a variety of uses: housing animals, storing feed and equipment, providing

locker facilities, and later housing a resident engineer. The Deer Island pumping station was in full operation in 1896. In anticipation of reaching full capacity, a third pump was brought on line and a 20,000-gallon reservoir was constructed at the eastern end of the station.[19]

The growth of the sewered area within metropolitan Boston quickly exceeded the limits of the Boston Main Drainage System. While the Commonwealth paid heavy and increasing rentals to the City of Boston for partial use of the municipal sewerage system, sewerage commissioners recommended the construction of a high-level sewer with an independent gravity outfall into the harbor near Nut Island, in Quincy. The Legislature approved this proposal in 1899 and added Roxbury, West Roxbury, Dorchester, and all of Quincy to the south metropolitan sewerage district (Figure 6.7).[20] Dredging for the two heavy cast-iron pipes at the Nut Island outfall site began in July 1902. A plant at the site included a screen house and sand catcher, as well as two boilers that operated plant engines, furnished power for the Hough's Neck sewage lifting station, and incinerated solid waste screened from the effluent.[21] By 1900 the Metropolitan Sewerage Commission operated 726 miles of sewer lines within its district. The Metropolitan Water and Sewerage Board, created in 1901, assumed control of all of the Commission's operations, only to be subsumed by the Metropolitan District Commission (MDC) in 1919.[22]

In 1908 the Legislature authorized the expansion of the Deer Island facilities, including the enlargement of the Pump and Coal Houses, the addition of a screening apparatus adjacent to the existing Screen House, and the installation of six new boilers. With these improvements, the station had the capacity to pump 235 million gallons of untreated sewage per day. Complaints about the condition of the water surrounding the Deer Island outfall led to the extension of the outfall into deep water at a point 322 feet south of its original location in 1915.[23] A series of seven legislative reports investigated conditions in the Boston Area Sewerage system and water quality in Boston Harbor. In the final report of 1939 a special legislative commission recommended a plan for effluent chlorination and sedimentation before discharge at Deer Island. Additional improvements at mid-century could not mitigate the Deer Island's limited capacity and inadequate sewage treatment facilities. A new facility, located immediately to the west, replaced the old pumping station in 1968.[24] Though the Deer Island treatment plant, together with a new headworks near Columbia Circle, served as Boston's main sewerage system, the Calf Pasture Pumping Station and Moon Island reservoirs remained open on a stand-by-basis to handle runoff from heavy rainfall.[25]

In 1982 the City of Quincy brought civil action against the MDC and the Boston Water and Sewer Commission, seeking injunctive, remedial, and declaratory relief from the pollution of Boston Harbor, Quincy Bay, and adjacent waters. During the

following year, Charles M. Haar, a court-appointed Special Master, recommended funding for a feasibility study of an independent authority to assume the responsibilities of the MDC's sewerage division. In 1984 the sewerage and water division of the MDC was removed to the newly-established Massachusetts Water Resources Authority.[26]

Plans to improve wastewater treatment facilities serving the Boston metropolitan area explored several siting options for a new treatment plant, including two sites on Deer and Long Islands. Environmental assessments, including a reconnaissance level archeological survey, led to the selection of nearly 200 acres on the northern portion of Deer Island, a site occupied by the Deer Island House of Corrections and the sewage treatment plant. [27] A Final Environmental Impact Review, prepared by the Massachusetts Water Resources Agency, was certified by the State Secretary of Environmental Affairs in January 1986.

Construction of new wastewater treatment facilities, designed to reduce pollution and improve water quality in Boston Harbor, began in 1990. During demolition of concrete foundations of the old piggery and machine excavation of the adjacent area, workers reported the presence of bones in the removed soil. Upon notification, the Massachusetts Historical Commission determined that human remains had been disturbed from unmarked, and apparently undocumented, burials beneath the foundations of the 1908 structure. Subsequent analysis identified the remains of seventeen individuals and speculated that the victims were immigrant victims of typhus or cholera during the mid-nineteenth century.[28]

SOLID WASTE DISPOSAL

The problem of solid waste disposal predated Boston's mid-nineteenth-century sewerage crisis. During the initial years of settlement on the Shawmut peninsula early regulations were quickly established. In 1634 the first entry in Boston's Book of Record established a five shilling fine for dumping garbage or fish near the common landing or between the creeks, signaling an early awareness of the problem of waste disposal and related contamination of potable waters.[29] However, the European colonists found in Boston Harbor a convenient dumping ground for refuse. In 1656 a local edict directed all butchers in the colony to dispose of their "beast entralls and garbidg" into a nearby creek that would drain into the harbor.[30]

In 1857 Nahum Ward purchased Spectacle Island and constructed a rendering plant there. The plant processed slaughterhouse offal and nearly 2,000 dead horses per year, producing hides, glues, horsehair and neat's-foot oil. Ward's plant employed thirty people and about a dozen families lived on the island, where they planted five acres of vegetable gardens and mowed 37 acres of hayfields near the malodorous plant. Ward constructed many buildings to accommodate his thriving

business operations. Iron tanks received the daily cargo delivered by steam-tug and barge from the company's pier of Federal Street to the island wharf. The plant ceased operations in 1910, when a decline in both the supply of horse and cattle carcasses and the demand for rendered products diminished profits.[31]

The metropolitan sewerage systems also faced the growing problem of solid waste. Screens inserted into incoming sewer lines trapped waste materials, which were then manually removed and incinerated in station boilers. At the turn of the century paper and rags comprised more than 75 percent of screened materials at the Deer Island station, with hair, slaughter house and tannery refuse, grease, and fecal matter removed in lesser quantities. Over 1,300 cubic yards of material, or the equivalent of 1.45 cubic feet for each million gallons of sewage pumped, were intercepted at the Deer Island station in 1921. The material intercepted at the screens of the South Metropolitan sewerage stations amounted to nearly 3,200 cubic yards, or 3.51 feet per million gallons of sewage delivered at the Nut Island outfall.[32]

In 1921 the City of Boston contracted with a private company to reclaim grease from garbage. Garbage, delivered to Spectacle Island by barge, was cooked and compressed at the extraction plant; the grease was sold to a soap manufacturer, while the processed garbage was buried on the island. Though the plant closed in the 1930s, the ruins and 90-foot draft chimney of the grease extraction plant remained on Spectacle Island until the 1980s (Figure 6.8). The City continued to dump raw garbage on Spectacle Island until 1959, when the South Bay Incinerator opened.[33] Dumping activities augmented the size of the island by 36 acres, radically altered island topography, and added 60 feet to island, making it the highest point in the harbor. The landfill produced so much methane that in 1960 underground fires broke out and smoldered there for many years. A salvage firm stored metal demolition materials for later salvage or fill on Spectacle Island until the 1970s, after which the island's littered landscape remained abandoned for nearly twenty years.[34] During the 1990s Spectacle Island again served as the repository for urban refuse, accepting more than 3 million cubic yards of dirt excavated for the Central Artery Project.

INDUSTRY AND INFRASTRUCTURE SUMMARY AND RECOMMENDATIONS

The Calf Pasture Pumping Station at Columbia Point, the first sewage pumping station in Boston, was listed on the National Register of Historic Places in 1990. The boundaries of the station complex include the Richardsonian Romanesque pumping station and its gatehouse and filth hoist; but the system's Moon Island reservoir, a discontiguous resource, is not included within the nomination. The abandoned reservoir is extant and should be evaluated as a contributing feature to the integrity and significance of the Calf Island Pumping Station. Plans to develop aquaculture projects at the Moon Island site have not been realized.

The Deer Island Pumping Station, built in 1894, is significant as a component of the North Metropolitan Sewerage District, the first regional sewerage system in the Boston area and one of two early special government districts in the United States to address regional sewage collection and disposal. Of the systems functional components, only the Sewage Pumping Station—containing the Screen House and Extension, Coal House and Extension, Boiler House, and Pump House—and Sewage Outfall Conduit are extant. The coal wharf, seawater trestle, residence, and barn were demolished by 1990. While the Massachusetts Historical Commission has determined that the Deer Island Pumping Station Complex met National Register Criteria A and C, the property has not been nominated to the National Register of Historic Places.[35]

Upon the completion of the five-mile Inter-Island Tunnel between Nut and Deer Island in 1998, the old Nut Island Treatment was decommissioned and demolished early in the following year, ending more than 100 years of wastewater discharges to the shallow waters of Quincy Bay. A new headworks, or sewage screening facility, went into service the summer of 1998, providing preliminary treatment for Deer Island-bound wastewater from 21 southern sewer system communities. The area around the headworks has been landscaped for use as a public park and biking and walking trails are under development along the perimeter of the island.

A new outfall tunnel now under construction will release treated effluent into deep Massachusetts Bay waters, 9.5 miles from Deer Island.

Spectacle Island's radically altered topography now offers the highest vantage in Boston Harbor. In return for earth disposal rights, Central Artery contractors were obligated to provide mitigation services, including waste containment measures, a visitor's center, recreational trails, beaches, and a mussel habitat area. A one-million-dollar zero-emission grant from the United States Department of Transportation will fund solar energy collectors for visitor services in the planned park area, including electric cars, boats, and bicycles. A network of dirt roads and some temporary structures accommodate construction and earthmoving projects on Spectacle Island. Only a seawall and pier remnants remain on the island as evidence of Spectacle's functional historic landscape. These structures are not historically significant. Harbor island resources associated with industry and infrastructure are listed in table 12 and recommendations for further actions associated with industry and infrastructure include:

RESEARCH AND DOCUMENTATION

- Examine the National Register nomination for the Calf Island Pumping Station and determine whether the Moon Island reservoir should be included as a discontiguous resource as defined by the National Register criteria in Bulletin 16B.

- Nominate the Deer Island Sewage Pumping Station to the National Register.
- Conduct further research and documentation of remaining components of the late nineteenth and early twentieth century sewerage system.
- Research the historic landscape setting for the Deer Island Sewage Pumping Station.

ENDNOTES

1. Massachusetts Water Resources Authority (MWRA), *Deer Island Pumping Station: Recorded for the Historic American Engineering Record* (December 1991), 6.
2. The date of the earliest sewer construction is unclear, but a 1701 town edict stated:
3. That no person shall henceforth dig up the Ground in any of the Streets, Lanes, or High-wayes in this Town, for the laying or repairing any Drain, without the leave or approbation of two or more Selectman.
4. This official statement suggests that such excavations were prevalent in preceding years, dating early construction to the seventeenth century. Quoted in Eliot C. Clarke, *Main Drainage Works of the City of Boston* (Boston: Rockwell and Churchill, 1885), 7.
5. Eric Jay Dolin, *Dirty Water/Clean Water: A Chronology of Events Surrounding the Degradation and Cleanup for Boston Harbor* (Cambridge, MA: MIT Sea Grant College Program, 1990), 1, 4.
6. Clarke, 12-13.
7. Ibid., 14.
8. In 1980 the City's sanitation system still made use of nearly 28 miles of nineteenth-century wooden piping. Anthony Wolff, "Boston's Toilet: The True Story," *Audubon* (March 1989), 26-32.
9. Clarke, 7-11.
10. Barbara Gutman Rosenkrantz, *Public Health and the State: Changing Views in Massachusetts, 1842-1936* (Cambridge, MA: Harvard University Press, 1972), 66-67.
11. MWRA, 7.
12. Clarke, 16 and Ralph W. Loud, "The Metropolitan Sewerage Works," Papers and Discussions (Boston: Boston Society of Civil Engineers, October 1923), 329-30.
13. Loud, 326.
14. Clarke, 21-24.
15. MWRA, 9.
16. Earth excavated from the reservoir site was used in building the upper portion of the embankment between Moon Island and Squantum. In all, about 283,000 cubic yards of material were removed from the island. Clarke, 77 and M.F. Sweetser, *King's Handbook of Boston Harbor* (Cambridge, MA: Moses King, 1888), 119.
17. Clarke, 77-80, 86.
18. Loud, 329-30.
19. MWRA, 9-11.
20. The North Metropolitan Sewerage System included three principal pumping stations located in Charlestown, East Boston, and Deer Island. Each pumping station was designed to "lift" sewage so that it would flow by gravity to the harbor outfall. Ibid., 18.
21. The employee residence was demolished around 1977. The barn was recorded for the Historic American Buildings Survey (HABS No. MA-1244) in 1989 and then demolished. Ibid., 20.
22. An outlet near Peddocks Island was considered and subsequently rejected. Commonwealth of Massachusetts, State Board of Health, *Report of the State Board of Health upon the Discharge of Sewage into Boston Harbor* (Boston: Wright & Potter Printing Co., 1900), 28-29 and Loud, 332-33.
23. A primary treatment plant replaced the original Nut Island headworks in 1952. Loud, 347-48, 369.
24. Ibid., 334.
25. Ibid., 352.
26. MWRA, 22.
27. United States Department of Interior, National Park Service (NPS), "Calf Pasture Pumping Station Complex, National Register of Historic Places Registration Form," (Boston, 1990).
28. "An Outline as the Creation of Sewerage Records," MDC Archives, January 1998, 1-3.
29. The treatment plant occupied open areas of the prison complex that had been used for watering cows (Cow Pond) and recreational activities. Duncan Ritchie and Marsha King, *An Archaeological Reconnaissance Survey of Deer Island, Boston Harbor, Massachusetts* (Providence, RI: The Public Archaeology Laboratory, Inc., 1986), 47 and MWRA, 23.
30. Marsha King, *Archaeological Investigations, Haul Road Trenching, and Disturbance Documentation of the Piggery Point Burials on Deer Island, Boston, Massachusetts* (Providence, RI: The Public Archaeology Laboratory, Inc., 1991), 67-72.
31. Fact Sheet, MDC Files.
32. Walter Muir Whitehill, *Boston: A Topographical History* (Cambridge, MA: Harvard University Press, 1968), 12.
33. Sweetser, 177.
34. Loud, 372-73.
35. Gallops Island also served as a municipal dump for many years after the federal government sold the property in 1947.
36. David Kales, *All About the Boston Harbor Islands* (Millis, MA: Captain George's, Inc., 1989), 22-23.
37. Valerie A. Talmage (Massachusetts Historical Commission) to Michael Deland, memorandum, 6 December 1985.

Table 12. Cultural Resources Associated with Industry and Infrastructure

Resource	Location	Type	National Register Status
Moon Island Reservoir as part of Calf Island pumping station	Moon Island	Structures	Not evaluated
Deer Island Sewage pumping station	Deer Island	Buildings	Determined eligible
Nut Island Sewage Treatment	Nut Island	Remnants	Not eligible
Long Island Water Tower	Long Island	Structure	Not evaluated
Long Island Sewage Treatment	Long Island	Underground structure	Not evaluated

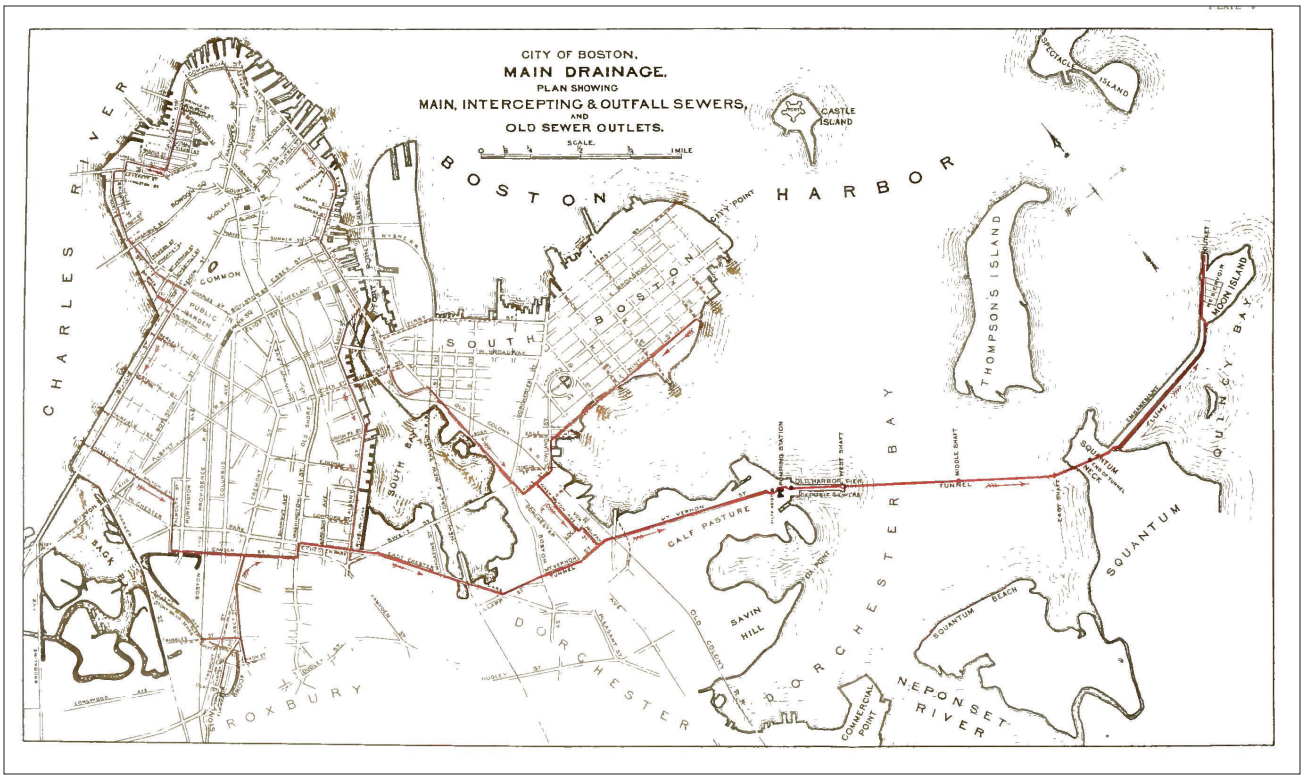


Figure 6.1. Plan for the Boston Main Drainage Works, 1885. Image courtesy of the MWRA.

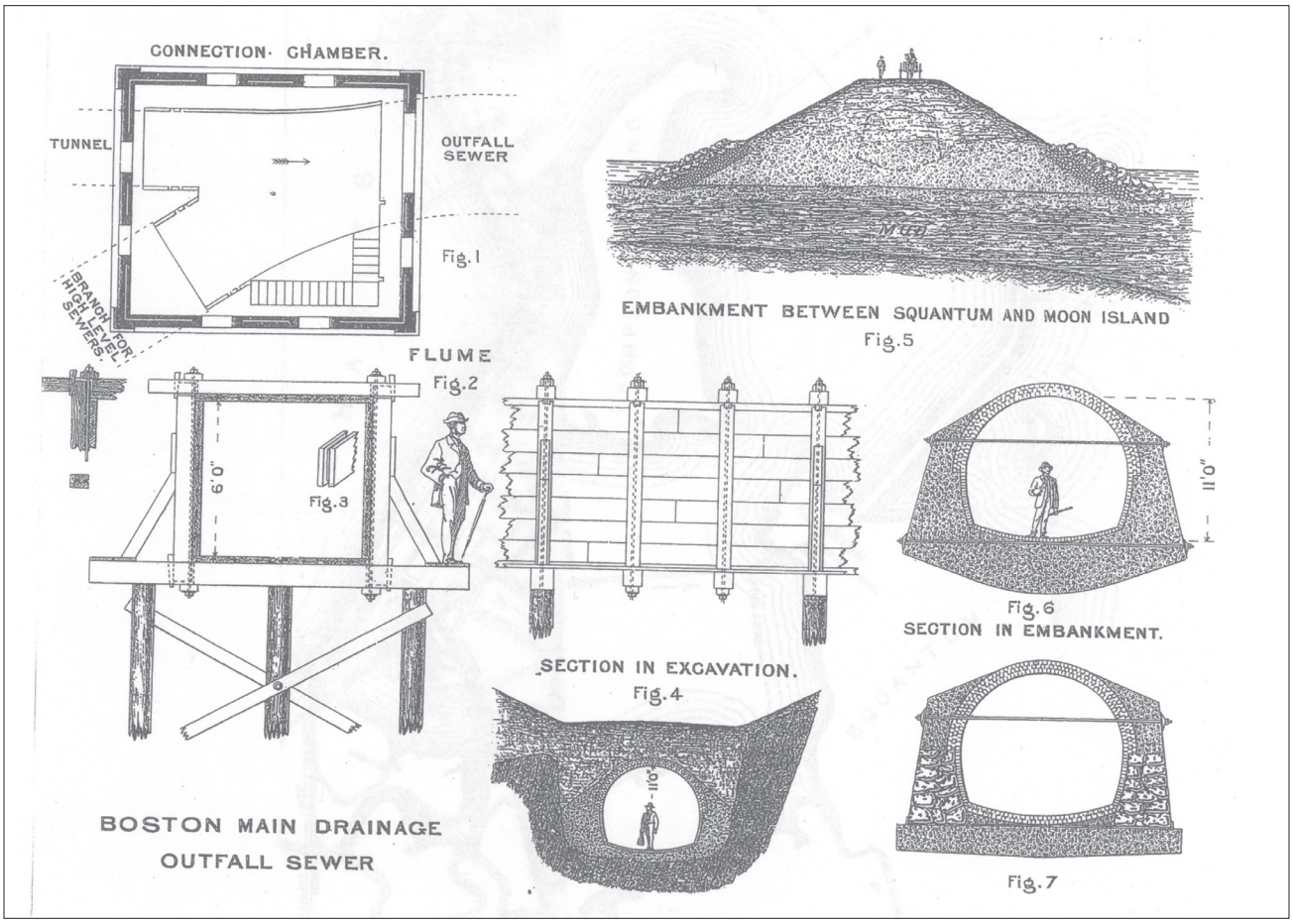


Figure 6.2. Schematic diagrams for tunnel and outfall sewer construction near Moon Island, 1885. Image courtesy of the MWRA.

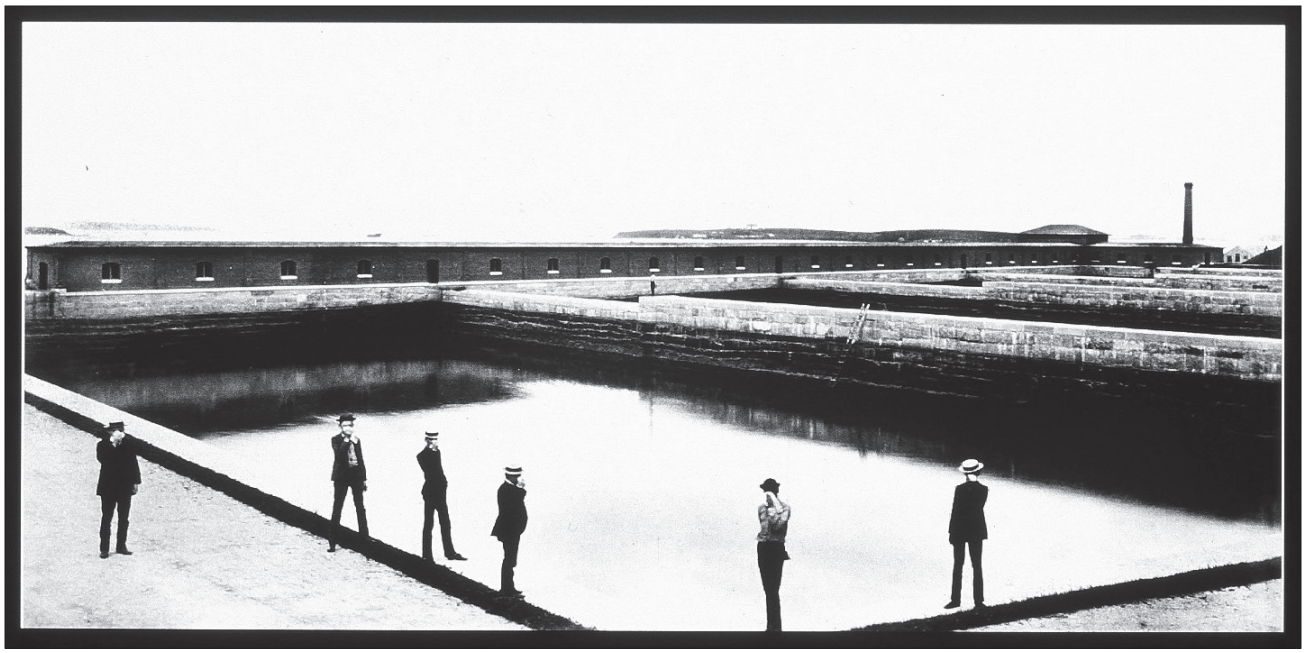


Figure 6.3. Moon Island sewerage reservoir, circa 1885. Image courtesy of the MRWA.

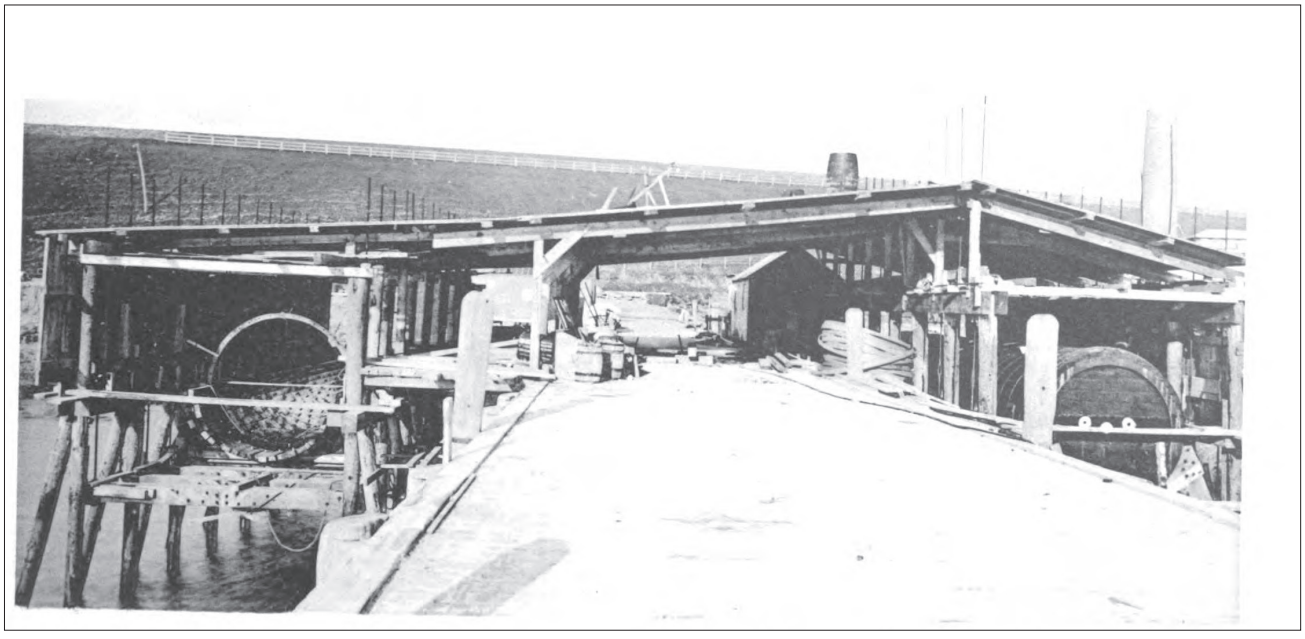


Figure 6.4. Deer Island outfall cradles at the wharf, 1900. Image courtesy of the MWRA.

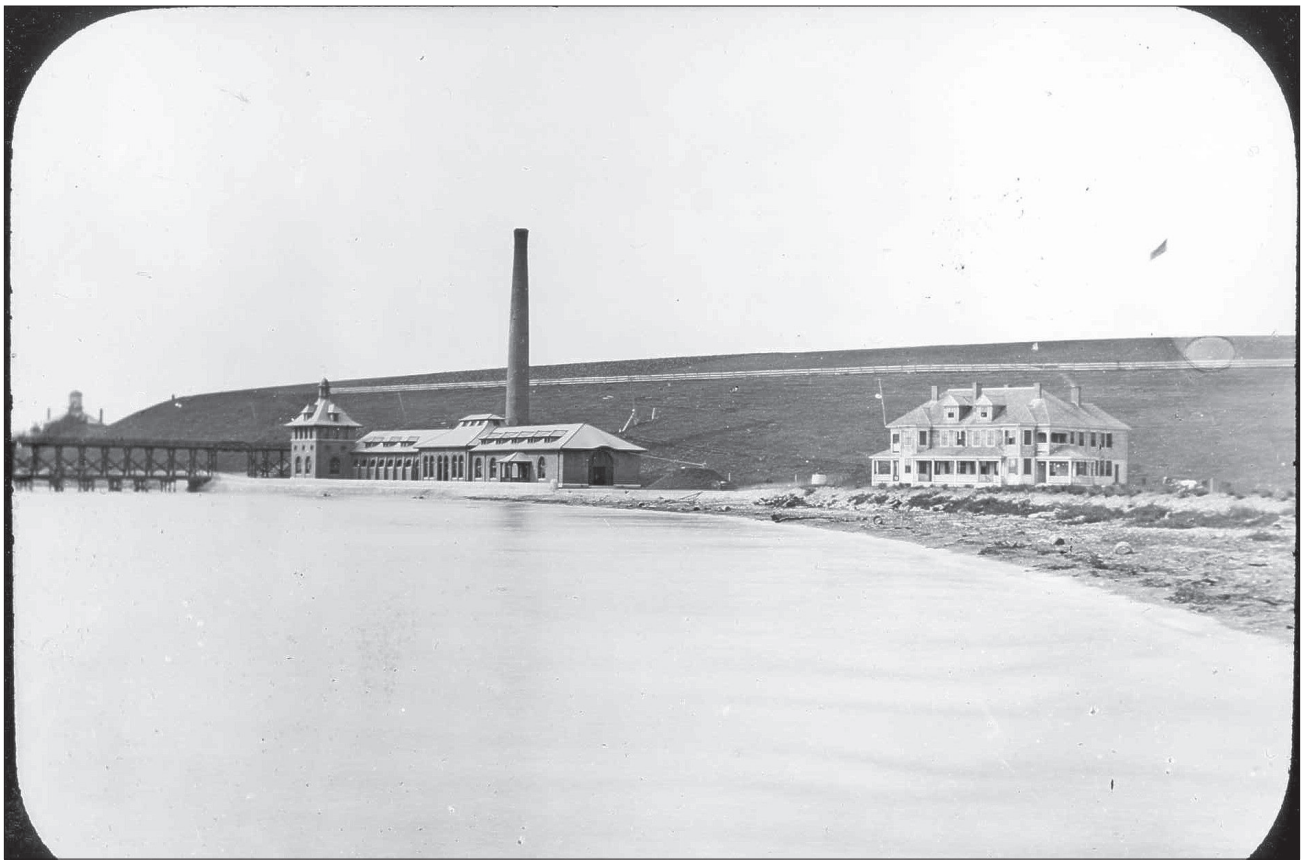


Figure 6.5. Deer Island coal wharf, pumping station, engine/pump extension and intake and discharge pipes, 1909. Image courtesy of the MWRA.

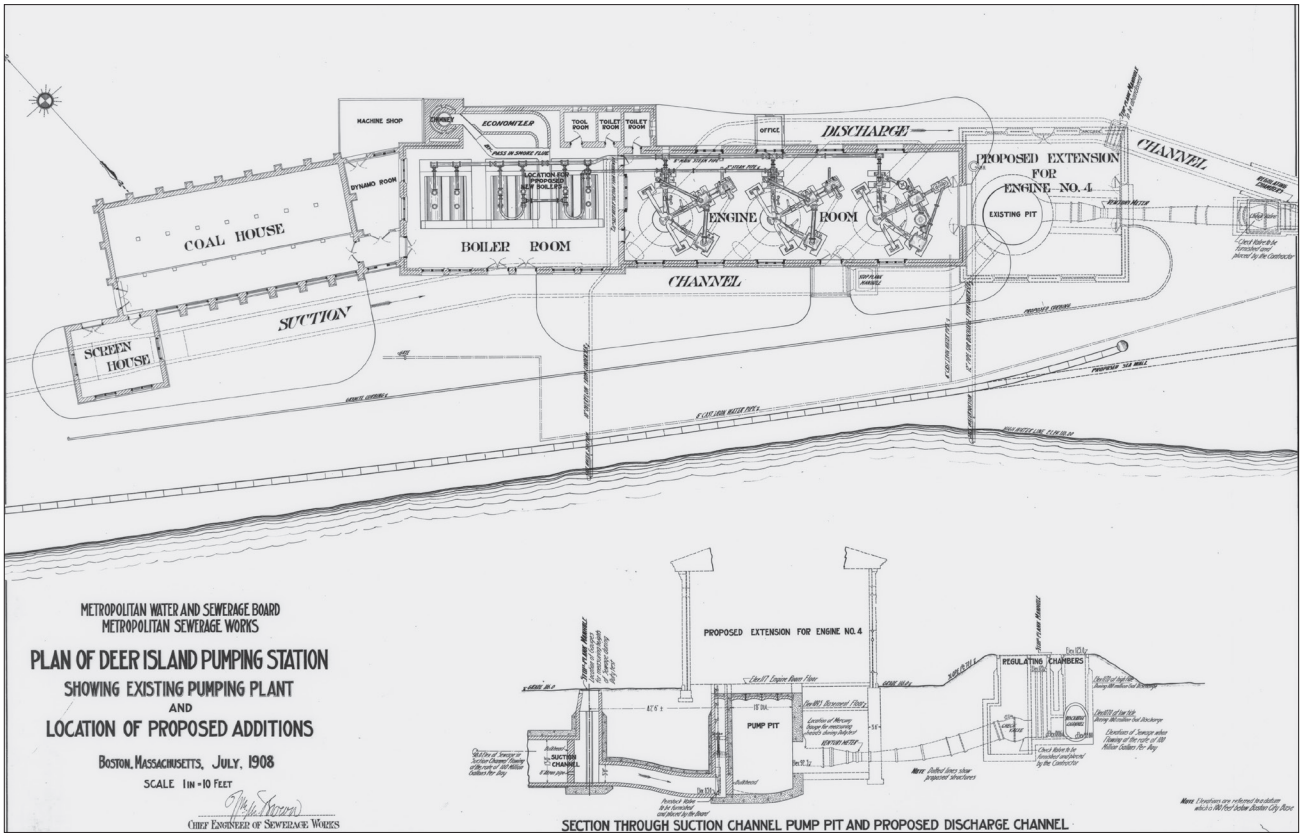


Figure 6.6. General plan of Deer Island Pumping Station, 1908. Library of Congress Prints and Photographs Division.

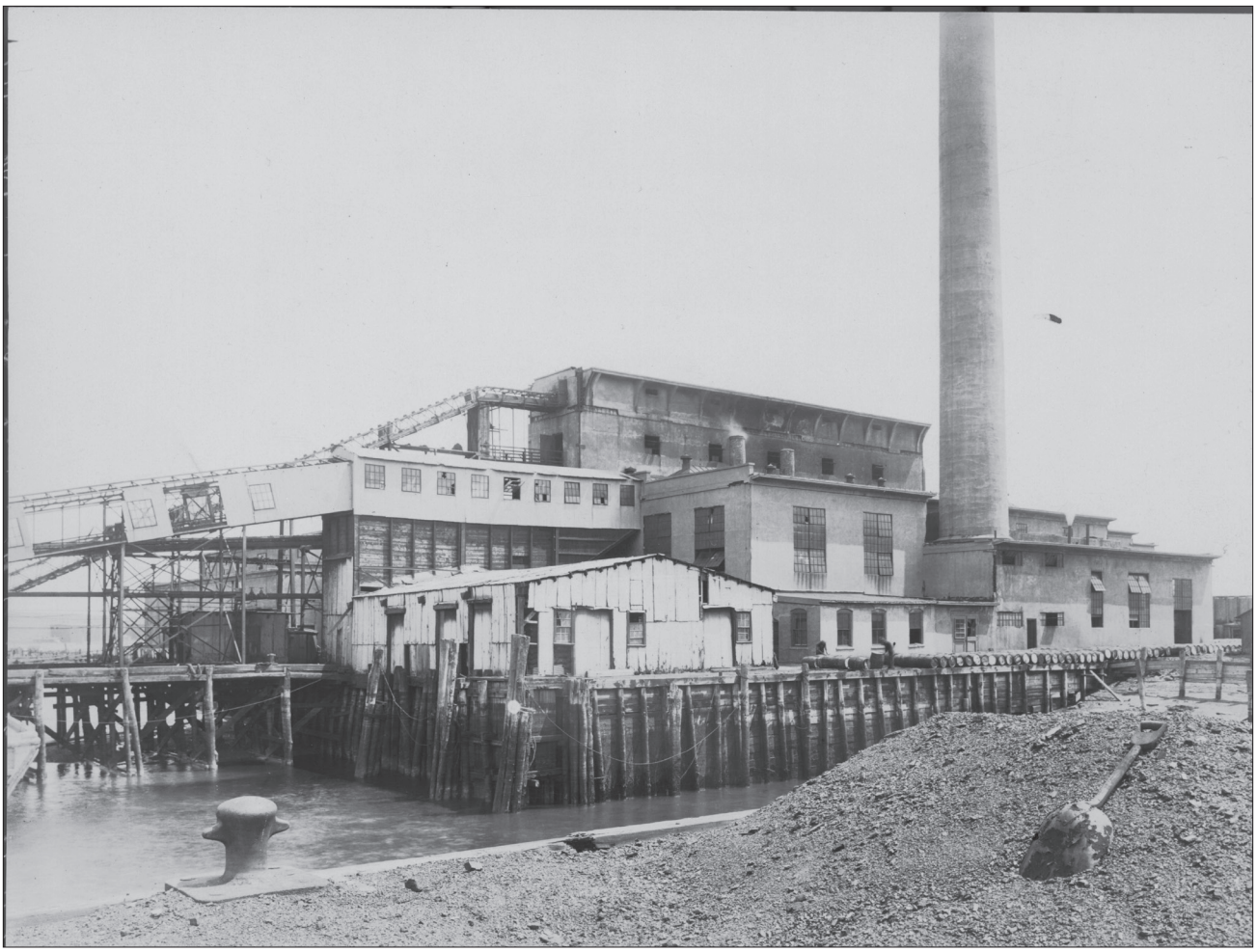


Figure 6.7. Spectacle Island reclamation plant, 1922. Image courtesy of HIstoric New England.

7. RECREATION

Positioned for recreational use by their proximity to Boston, the Harbor Islands have served as a haven for generations of urban residents. As the Metropolitan Park Commission asserted in 1893, "the harbor and bay, with their surroundings, throughout the summer months, form perhaps the most popular pleasure ground of the entire metropolitan region."[1] The appeal of the islands lay in their isolation from the cares and congestion of city life, in the repose and recreation that these natural areas offered as refuge from the urban environment. Yet, the appreciation of these "natural" landscapes represents intertwined histories of economic, intellectual, and social change. This chapter describes inns, resorts, summer estates and island communities that once flourished on the harbor islands—notably on Calf, Middle Brewster, Gallops, Great Brewster, Long, Peddocks, Rainsford, and a century-long effort to protect the islands as public parkland.

Europeans arrived on the North American continent with ancient biases, viewing the New England wilderness as disordered and uncontrolled, and with a compulsion to transform the landscapes that they encountered in the interest of survival. One historian observed that: "The first white visitors regarded wilderness as a moral and physical wasteland fit only for conquest and fructification in the name of progress, civilization, and Christianity. Wilderness recreation was the last thing on…John Winthrop's mind."[2]

Indeed, seventeenth-century Puritan settlers eyed the landscape as a wilderness to be tamed and saw, in what Governor Winthrop praised as a "paradise," the commodities for constructing their "city on the hill." In the minds of these early settlers safety and comfort, including the necessities of food and shelter, depended upon overcoming the wild environment and transforming the wilderness into a productive garden.[3] In Boston the "Admirable Acts of Christ" transformed the "hideous Thickets" where "Wolfes and Beares nurst up their young" into "streets full of Girles and Boys sporting up and down."[4] Clearly, the location for leisure remained within the pale of the European settlement.

Puritan objections to "leisure" activities carried political as well as moral overtones, engendering sharp criticism of hunting and angling pastimes that were popular among the English aristocracy and, more importantly, of Indian males. Pilgrim apologist Robert Cushman argued that Indians were "not industrious, neither have art, science, skill or faculty to use either the land or the commodities of it," gathering in his assessment of Indian "leisure" and labor both a moral judgment and justification for the expropriation of Indian lands.[5] While Calvinist tenets confined "sporting" to the streets of Boston, some residents disregarded these strictures. As early as 1687 Judge Sewall crossed the harbor "to Alderton's Point, and with our Boat beyond…there catch'd fresh Cod." In an early account of harbor recreation, Colonel Samuel Pierce confided to his diary that he "went

frolicking on the water" in July 1765. Other revelers reported that "the gentlemen, sometimes by themselves, and sometimes in company with ladies, spend the day partly on the water and partly on some of the islands in this very delightful harbor." [6] On Deer Island William Tewksbury operated a resort hotel, offering accommodations, a dance hall, lawn bowling courts, and a beach from the 1780s until the mid-1800s.[7]

During the early decades of the nineteenth century, pleasure parties sailed small boats to the islands and picnicked by the waterside, but recreational boating was probably enjoyed by a very limited number of people. Prosperous merchants maintained gentlemen's farms in the countryside and there were few individuals, save those who were economically dependent upon the sea, who could afford the time and expense of seaside recreation. Beginning in the 1820s, when Massachusetts industry turned inland, the harbor shores began a long and halting transition toward a landscape of pleasure. The first local resort and yachting center was at Nahant, where summer cottages and an open yacht race were established in 1820 and 1845, respectively.[8] The Boston Harbor Islands were a popular destination for recreational outings throughout the century. Historical artifacts, including such typical items of picnic debris as fragmented ceramics and kaolin pipes, substantiate the comments of one nineteenth-century observer who noted "people encamped in tents, week after week, with small boats and yachts off shore, and camp kettles swinging gypsy-wise over their drift-wood fires."[9]

The growth of an industrial economy and the concomitant emergence of a leisure class during the first half of the nineteenth century contributed to a burgeoning tourist industry in the northeastern United States. The grand hotel, situated in wilderness settings, served as an "early symbol of the economic and social flowering of the new Republic…a refuge for our well-to-do merchants…[and] a showcase for foreign visitors."[10] While the Boston Harbor Islands lacked the sublime setting that beckoned artists, authors, and tourists to the mountains of New England, island resorts attracted a diverse clientele. The Old Mansion House, built on the Great Head of Rainsford Island in 1819, hosted summer guests for many years. The island's nearby quarantine facilities took in summer guests when infectious disease failed to fill the wards.[11] On Gallops Island Margaret Newcomb established an inn and restaurant, following the death of her husband Peter in 1833, that became a popular summer resort. Joseph Snow purchased the inn in 1855 and continued to run this thriving establishment until diminishing popularity forced the resort's closure at the beginning of the Civil War.[12] For forty years, beginning in 1832, the Old Colony House attracted thousands of summer visitors to the Hingham peninsula and was a starting point for excursions to the nearby islands in Hingham Bay and the accessible parts of Cushing's Neck.[13]

Other large hotels in Hull drew tourists toward the pleasures of the harbor. The Pemberton, a large Queen Anne hotel at Windmill Point, had over 100 rooms,

a steamboat pier, a railway station, and a grandstand for summer concerts; its multileveled galleries looked out across Quincy Bay and the Nantasket Roads, toward the Brewster Islands. In 1848 the Oregon House, another large hotel constructed with planks taken from the barracks at Fort Independence (later renamed Fort Revere) in Hull, opened to summer guests and autumn fishermen.[14] Nearby on Peddocks Island, the white tents of camping-parties occupied fields behind the Cleverly farm, which supplied fruits and vegetables to resort hotels on the Hull peninsula. Sheep Island was also frequented by camping parties at the end of the nineteenth century.[15]

Beginning in the 1840s, a variety of proprietors entertained a diverse group of guests at the Long Island House (Figure 7.1). The Long Island Company bought the island in 1849 and subdivided the property into lots intended for a hotel and summer residences, but the community failed to develop. Most recreational activities ceased during the Civil War and island resources were adapted to support the Union campaign. On Long Island the Third Massachusetts Regiment occupied the Long Island House and over 1,000 conscripts encamped and drilled on the grounds of Camp Wightman.

Most resorts reopened after the war and new establishments welcomed an increasing number of vacation revelers. On Long Island a second resort, Eutaw House, was constructed around 1873. Before the City of Boston acquired the property to house a municipal almshouse in 1882, summer visitors enjoyed a pleasant view of the harbor from the hotel's long piazzas and from the rustling groves at the front of the property. Long Island's isolated setting, together with its relative proximity to the mainland, attracted "adventurous young men" and occasionally "a large assemblage of bruisers and plug-uglies" to illicit prize fights until the arrival of police boats and a detachment of officers ended these illegal events.[16] A similar confrontation with the police over illegal gambling activities closed two summer resort hotels that had operated during the early part of the nineteenth century on Spectacle Island. In Hingham Bay, a footbridge connected a restaurant and observation tower, built in 1880 on Ragged Island, to the lavish summer resort at Downer's Landing, near Crow Point (Figure 7.2).[17]

Summer residences and estates of varying size existed on several of the harbor islands during the late nineteenth and early twentieth centuries. In 1855 Boston businessman John Brewer purchased ten acres on Cushing's Neck in Hingham for a summer residence and began construction of a residence. By 1882 Brewer's holdings included almost all of Planter's Hill and World's End, most of Cushing's Neck, where the house and farm buildings were located, and Sarah and Langlee Islands in Hingham Harbor. In 1886 Brewer asked Frederick Law Olmsted to draw a subdivision plan for Planter's Hill and World's End, probably intending a suburban development—rather than a summer community—in case it became financially necessary to sell part of his land. Roads were laid out in a curvilinear

pattern according to the Olmsted plan and double rows of closely spaced trees, including such non-indigenous species as Norway maples and English oaks, were planted between 1891 and 1894 (Figure 7.3). Groves were planted at the top of Planter's Hill, on the first hill beyond the bar, and along the banks of hills just above the shoreline. The tree-planting program extended to Sarah and Langlee Islands (Figures 7.4).[18] Brewer had been committed to the reforestation of the Boston Harbor Islands and his private efforts elicited praise from one contemporary observer, who described Langlee as:

. . .a beautiful spot. Steep ledges surround it, except for small intervals, where there are gravelly beaches, upon one of which stands a fine linden. Shrubs abound upon the uplands. It will be, in a few years, more beautiful than now, thanks to the enlightened taste of the gentleman who owns it. He has planted many small trees, which will eventually cover it with forest growth, as was originally the case when the country was settled, and restore it to the condition in which all the islands of Boston harbor should be. Had they been kept so for the past two centuries, the forces of erosion would not have succeeded in practically sweeping some of them from the face of the earth, and destroying the contour of all.[19]

In the mid-1870s Augustus Russ, founder of the Boston Yacht Club, purchased most of Middle Brewster Island from resident fisherman and built a summer villa on the southwestern cliff. Russ leased land to others and a small summer community occupied the fishermen's huts that perched upon the island's rocky surface.[20] For a number of years Benjamin P. Cheney and his wife, Julia Arthur, had a summer home on Middle Brewster among a small community that included Melvin O. Adams and Richard S. Whitney (Figure 7.5). In 1902 the Cheneys leased Calf Island, built a large estate on the southeastern cliffs, and planned both a swimming pool and golf links on the grounds. "A little village of itself," the estate known as "The Moorings" included a two-story, colonial-style villa, a large boathouse and servants' quarters. Stone stairs led from the boat landing to a belvedere with views toward Boston, and up to the estate. The United States government acquired rights to the island during World War I and the estate was abandoned. During the inter-war years, Charles Quigg proposed that a huge, recreational area—including a marina, swimming pool, golf course, tennis courts, and a hotel—be built on Calf Island. These plans were never realized and the Cheneys' imposing estate was destroyed by fire after World War II (Figure 7.6).[21]

From 1900 until 1941, fifteen families leased summer cottages on Great Brewster Island from the federal government.[22] Summer cottagers included Frank McKinley, "Shanghai Harry" Long, Ray thomas, "Joe Peg-leg" Nuskey, the Forests and the Caseys. Property records suggest that a summer community occupied cottages associated with a Portuguese fishing village on Peddocks Island on East Head and that additional cottages were constructed on the north and west sides of the island's Middle Head (Figure 7.7). In 1915 Hull valuation records for the

property list a hotel, two houses, 15 Portuguese cottages (probably a relocated fishing village), and 13 additional cottages. A dirt road and a series of paths led to clusters of cottages that may have been built as rental properties during the first half of the twentieth century and continued to be seasonally occupied.[23] Sheep Island harbored a private summer residence and hunting lodge until at least the mid-1900s.[24]

Roughly coinciding with the emergence of summer residences and estates on many of the harbor islands there arose a public debate concerning the propriety of public parks in Boston. The exchange pitted opponents, who considered the Parks Commission proposal a luxury that the city could ill afford, against community leaders who advocated for the protection of the area's remaining open spaces through the creation of a metropolitan park system. Among the pro-park advocates were Richard Henry Dana, Jr., Oliver Wendell Holmes, Jr. and Charles Eliot, who planned the metropolitan park system that state legislation legally constituted in 1893.[25]

Collectively the islands were not viewed as a recreational asset. Diverse ownership, lack of easy access, and, perhaps most importantly, the commercial importance of the certain sections of the waterfront may have directed pleasure-seeking crowds toward mainland resources. In an 1869 editorial Robert Morris Copeland outlined a municipal and metropolitan park system of broad proportions, linking a ring of parks by a broad boulevard and proposing a system of bridges and ferries to the islands that would complete the network. By 1872 Copeland had revised his plan, limiting waterfront park development to three sites in order to insure adequate space for the needs of shipping and industry.

The contributions of the noted landscape architect Frederick Law Olmsted undoubtedly bolstered the pro-park camp. Olmsted developed plans for Boston's Emerald Necklace in 1881 and shared in Eliot's vision of a system of green spaces where urban classes could intermingle. In 1887 Olmsted submitted a report to the Boston Board of Park Commissioners concerning the possibility of reforesting the harbor islands. He discussed the recreational and aesthetic potential of the islands and the harbor, comparing Boston to Venice in its appreciation for the waterfront. Olmsted suggested not trying to create the picturesque landscapes found in many parks and cemeteries at the time, but rather to restore the original forest cover. According to Olmsted, this would produce "the beauty of large compositions as these may be affected, to one looking in any direction across the harbor, by broad masses of foliage palpitation over the rigid structure of the islands and headlands." He suggested mixing fast growing, reliable species, such as birch, with the slower growing native trees. The birch would mature faster and offer protection for developing species, allowing for a healthy forest canopy that would eventually replace the declining birch community.[26]

The Boston Park Commission's refusal in 1893 to appropriate funds for Olmsted's

proposal reflects a competing vision of the municipal park system that excluded most of the islands which both Olmsted and Eliot had regard as integral to their plans. In the mid-1880s municipal authorities had requested that the federal government cede Castle Island back to the City of Boston for integration into the city's nascent park system. Planners envisioned a "broad driveway and promenade around the outside of the walls and along the edge of the shore and sea-wall." Though the government initially refused, citing defense needs in the inner harbor, Boston integrated the land surrounding Fort Independence into the municipal park system in 1890. Olmsted had prepared a plan for the recreational use of Castle Island and, following the completion of a wooden pile bridge in 1892, the island welcomed "a continuous line of people, of many nationalities, mostly mothers and children, walking to and wandering the island, enjoying the cool, invigorating sea breezes."[27] The Department of Parks for the City of Boston, under Olmsted's influence, continued to add links to the Emerald Necklace, providing "opportunities for health and recreation…[and] a roadstead for yachts and facilities for sea-bathing." The City had already added Marine Park, at the eastern end of South Boston, to its network. In 1894 Wood Island Park in East Boston joined the municipal greenspaces that ringed the harbor. The harbor islands, however, remained outside the fold. Even Olmsted's reforestation design for the islands proposed only "to dress them again with the graces of naturally disposed foliage," and not to acquire land for park development.[28] Plans to develop a marine park on Long Island, connected with South Boston and the North End by city steamboats, as a recreation spot for residents of Boston's "most densely crowded wards" never materialized.[29]

Despite the lack of early municipal management, the Harbor Islands remained a popular recreational destination. Beginning in the late 1890s an annuity bequeathed to the City of Boston by George L. Randidge financed outings for children "whose means [did] not permit trips to the country enjoyed by children more fortunately circumstanced."[30] During each weekend of July and August, the "Michael J. Perkins" ferried 300 children from the city's most congested neighborhood's, including the North, South and West Ends, Roxbury, Charlestown, and East Boston, to Rainsford Island for a day of picnicking and outdoor recreation. A playground equipped with swings, a merry-go-round and a guarded beach provided the setting for these weekly excursions. The Randidge Fund, which also sponsored picnics to West Bluff on Long Island, continued these excursion well into this century. In the late 1880s, Edwin Clapp of Weymouth deeded Slate Island to the Clapp Memorial Association, a charitable non-profit group that ran a summer camp for boys on the island from 1937 until 1938. Around this time, the Stigmatine Order ran a summer school and camp for boys on Raccoon Island.[31]

Swimming, yachting and motor-boating were popular along the harbor coast of the industrial city. Boston Yacht Club, the first regular local club, was organized

in 1865. The South Boston and Lynn clubs followed three years later. During the next fifteen years, clubs were established at Quincy, Dorchester, Charlestown, Chelsea, East Boston, and Winthrop. Hull Yacht Club, founded in 1882, was the second largest club in the country, with nearly 500 members by the end of the century (Figure 7.8). At the turn of the century Massachusetts Bay was probably the greatest yachting center in the country, and many avid boaters planned day-excursions to the islands in Boston Harbor.[32]

City Point in South Boston was an active yachting center, as well as a popular bathing beach with several public bathhouses located along the waterfront. Beginning in the 1860s the emergence of urban beaches reflected the growth of the industrial city and of mass recreation. Beaches were developed to improve the quality of life for the working classes. In an era when few homes had baths and showers, these public pleasure grounds provided not only contact with the restorative powers of sunshine and sea air, but also hygienic facilities in large, elaborate bath houses. Easily accessible by trolley, the beaches were part of Olmsted and Eliot's urban vision of a network of parks that served as important social and cultural centers for Boston's ethnically and economically diverse population. The construction of the Moon Island sewer system improved swimming and yachting conditions in the harbor. Elaborately developed promenades, balustrades, benches, and pavilions dotted the landscape where the city met the shore.

During the 1930s the Civilian Conservation Corps (CCC) partially realized Olmsted's vision for the islands. CCC Camp SP-5 from Harold Parker State Forest planted approximately 100,000 pine trees on the Harbor Islands in 1934, although many of these seedlings were removed with the reactivation of island military installations during World War II.[33] Recreation halls and parade grounds served the daily exercise and drilling needs of troops confined to the islands during World War I and World War II, but the public was restricted from these landscapes.

As the twentieth century progressed, the decline of the trolley system and widespread improvements in residential plumbing and sanitation undermined the importance of urban beaches. Pollution and the deterioration of shore-side structures discouraged active recreational use of the harbor, while at the same time the rise of the automobile encouraged travel to more appealing, natural beaches in the suburbs and elsewhere. In the years following World War II, the abandonment of island military installations and the incorporation of Governor's and Apple islands into Logan Airport further diminished the appeal of Boston Harbor and its islands. Changing perceptions and standards of water and beach quality, lower levels of maintenance and services, and the encroachment of widened roads and railroad right-of-ways on beaches undermined the notion of a healthy, recreation landscape at the harborside.[34]

In 1946 with the deactivation of all harbor fortifications came the beginning realization of Olmsted's vision of maritime recreation in the harbor. In 1958 the Metropolitan District Commission acquired Lovells and Georges Islands and began restoration and interpretive programs at Fort Warren. The agency added Castle and Peddocks Islands to the fold in 1962 and 1968-70, respectively. At that time, the Boston Harbor Islands Commission funded a Massachusetts Institute of Technology study of the impact of noise, pollution and waste disposal on the islands in order to ascertain the constraints for recreational use of the islands. In 1970 amidst widespread acknowledgement of the degraded state of harbor resources, the Commonwealth created the Boston Harbor Islands State Park. During the 1970s islands were acquired by the Massachusetts Department of Environmental Management, and in combination with the islands owned by the Metropolitan District Commission, designated sixteen islands as part of the new state park, including Bumpkin, Calf, Gallops, Georges, Grape, Great Brewster, Green, Hangman, Little Calf, Lovells, Middle Brewster, Outer Brewster, Peddocks, Raccoon, Sheep, and Slate islands. During the remainder of the decade, a number of commissioned studies examined park resources and laid the foundations for island recreational development. The Commonwealth's master plans of 1972 and 1986 proposed integrating the islands into a single recreational system that would offer open space, refuge, and a rich and sustaining environment for plant and animal—both human and nonhuman—species.[35]

During the 1960s and 1970s several private and public organizations protected additional island and harbor resources for recreational and educational use. In 1967, in response to the Metropolitan Area Planning Council recommendation, the Trustees of Reservations initiated a fundraising campaign and later that year acquired the remainder of the Brewer estate at World's End as an open space preserve.[36] The New England Aquarium opened during the following year. The National Park Service established the Boston National Historical Park in 1974. Following the initiation of the federally-mandated Boston Harbor Project in 1985 and the massive tide of recreational planning that ensued with the clean-up, the Boston Harbor Islands National Recreation Area was created in 1996 and entrusted to the stewardship of a broad partnership of public and private agencies and organizations. Recreational use of the harbor islands is summarized in table 13.

RECREATION SUMMARY AND RECOMMENDATIONS

Only one of the many resorts that dotted the islands in the eighteenth, nineteenth and twentieth centuries remains. Resorts and inns on Deer, Gallops, Rainsford, and Spectacle have all disappeared, though foundations are still visible on Gallops and Rainsford. The auxiliary resort structures on Ragged Island are gone, but remnants include a stone jetty, ornamental plantings, and, most likely, a well. Eutaw House, a late nineteenth-century resort on Long Island, may now be part

of the Administration Building of the Boston Public Health Commission's Long Island Campus.

Similarly only one island still retains summer cottages. Summer estates and cottages on Calf, Great Brewster, Middle Brewster, as well as shoreline shacks on Long have been leveled. On Middle Brewster, the crumbling foundation of the Russ villa is still evident. In addition, a solid stone arch, several fireplaces, brick foundation walls and stone walls stand intact. On Calf Island one chimney survives from the Cheney estate, though vandals have toppled two others. The cottage community on Peddocks remains nearly intact, though several cottages have been vacated recently. The Metropolitan District Commission has removed doors and windows from these vacated structures in preparation for their demolition.

The Peddocks Island cottages, present when the MDC acquired the island in 1968, have presented a complex management issue for the agency. A 1993 "Report of the Peddock's Island Advisory Committee" was prepared to determine future management of the island. The report discusses whether the cottages, located on publicly owned land, should be removed or be preserved as "a historical community not found on any other harbor island and by virtue of their uniqueness should be allowed to remain."[37] In an attached memorandum Joe Orfant, from the Cultural Resources Section of the Massachusetts Highway Department, provides a cursory review of the history of the cottages and recommends that portions of the cottage community be considered for National Register eligibility. Orfant recommends that the Sargent's Row cottages be nominated for the National Register as part of Fort Andrews. He suggests the northern group on Middle Head may represent a locally significant historical fishing community, but makes no recommendation for the southern row of cottages on Middle Head. In response, the Massachusetts Historical Commission requested additional information in July of 1993 in order to determine eligibility.[38] Also enclosed in the report was a letter from the commissioner to cottage owners stating that the MDC had selected tenancy conditions, namely life tenancy for the cottage's record owners as of 1990. The letter states,

Once the MDC acquires a cottage, its condition and historical significance will be evaluated. Cottages with historic significance and those in good repair may be retained by the MDC and re-utilized as follows: By the MDC for Ranger Stations and Caretaker Housing; by non-profit groups, such as the Boy and Girl Scouts, for short terms; By the General Public for short term rentals -- Persons whose family have a history of cottage ownership may be given priority for short term rentals.

This was followed by an "Appraisal Report and Valuation Analysis" prepared in September 1994 for the 47 cottages on the island in which the appearance and condition of each cottage was documented. The agency has acquired thirteen Peddocks Island cottages for which the condition and historical significance have

been examined on-site by the MDC Chief Archeologist and Cultural Resources Specialist.

The nineteenth century harbor islands park vision of Olmsted, Eliot and others was largely unrealized and there is little evidence of the park movement. Notable exceptions are Castle Island and Pleasure Bay, though these public spaces are not currently part of the National Recreation Area. Though not conceived as a public park, the 248-acre World's End parcel is now preserved by the Trustees of Reservations as parkland. The preservation of Olmsted's planting design and road configuration provide an excellent example of land planning.

Twentieth-century public park efforts have resulted in extensive enhancements to the islands for recreation. On Gallops, Long, and Lovells Islands some of the 1930s Civilian Conservation plantings likely remain, though further research is needed to verify provenance. Beginning in the 1950s the Metropolitan District Commission began rehabilitation work on Georges Island, adding docking facilities, public restrooms, a picnic area, safety railing on the ramparts, interpretive signs, shade and evergreen trees, and barriers to unmanaged parts of the fort. Further research is needed on the John Brown Chapel and the programs initiated on the island by Edward Rowe Snow. Peddocks and Lovells Islands received new piers, but are without electricity or running water. The MDC has maintained paths through abandoned fortifications and primitive facilities, offering camping as well as a guarded bathing beach on Lovells. Beginning in the early 1970s Bumpkin, Gallops, Grape and Great Brewster were outfitted with piers and floats, outhouses, interpretive and directional signs, walking paths, benches, shade and evergreen trees as part of the state park. In addition, designated campsites were cleared on Bumpkin, Grape and Great Brewster. Since this time the Great Brewster pier, heavily damaged by storms, has been removed.

Most of the yacht clubs established in the late 1800s and early 1900s are still active. Some additional clubs have opened more recently. Most yacht clubs are easily identified along the shoreline by the aggregation of boats, moorings, and pennants. The harbor islands are often an integral component of club activities and destinations. There is no visible evidence of the summer camps that once occupied Raccoon Island and Slate Island. On Long Island there are no physical remnants of the Randidge Fund camp but a new camp, dedicated in 1998, was initiated by the New England Aquarium and City of Boston, which continues the tradition of outdoor excursions for urban children. Table 7.2 lists extant resources, association with recreation and recommendations for further actions include:

RESEARCH & DOCUMENTATION

- Conduct detailed examination and documentation of the Long Island Campus Administration Building to determine whether it incorporates portions of the

1873 Eutaw House resort and thus is the last remaining nineteenth century resort structure on the islands.

- Document the remaining chimneys, fireplaces, foundation and stone walls on Calf, Middle Brewster, Rainsford and possibly Gallops, Great Brewster and Long Islands.

- Complete a Historic Resource Study for summer communities in Boston Harbor including communities on Peddocks, Long, Great Brewster, Middle Brewster, and Calf Islands.

- Document through a combined historic structures report and cultural landscape report extant cultural resources on Thompson and Long Islands.

- Prepare a Cultural Landscape Report and determination of National Register eligibility for World's End as an Olmsted, Sr., designed landscape with an apparent high level of integrity.

- Document through a combined historic structures report, cultural landscape report and ethnographic study extant cultural resources on Peddocks Island. Determine eligibility for the National Register. Complete thorough documentation of cottages and outbuildings slated for demolition (including windows and doors), coupled with archeological study of prehistoric sites vulnerable to disturbance during demolition.

PROTECTION & MAINTENANCE

- Protect and maintain the remaining chimneys, fireplaces, foundation and stone walls on Calf, Middle Brewster, Rainsford and possibly Gallops, Great Brewster and Long Islands.

EDUCATION & INTERPRETATION

- Incorporate nineteenth-century metropolitan park plans that included the harbor islands advocated for by park planning visionaries into the "renewal and

reconnection" theme and story of the creation of the park.

ENDNOTES

1. Commonwealth of Massachusetts, House of Representatives, "Metropolitan Parks" (House of Representatives Document No. 150, 1893).
2. Roderick Nash, *Wilderness and the American Mind* (New Haven: Yale University Press, 1982), xii.
3. The New England landscape and, moreover, its indigenous people acquired significance as a dark and sinister symbol and, consequently, the transformation of a wilderness into civilization took on the qualities of a morality play. In the colonial worldview, morality and order stopped at the edge of the clearing; community and the controlling institutions of society served to check the "wilderness-temptations" that imperiled the solitary individual in the New World. Nash, 24-25, 28-33.
4. *Ibid.*, 37.
5. William Cronon, *Changes in the Land: Indians, Colonists, and the Ecology of New England*, 56.
6. Carl Seaburg, *Boston Observed* (Boston: Beacon Press, 1971), 55 and M.F. Sweetser, *King's Handbook of Boston Harbor* (Cambridge, MA: Moses King, 1888), 275-76.
7. An 1817 map of Deer Island depicts a large house and two barns near the center of the island that may have been the Tewksbury property. Duncan Ritchie and Marsha King, *An Archaeological Reconnaissance Survey of Deer Island, Boston Harbor, Massachusetts* (Providence: The Public Archaeology Laboratory, 1986), 29.
8. W.H. Bunting, *Portrait of a Port: Boston, 1852-1914* (Cambridge, MA: Harvard University Press, 1994), 451.
9. While Sweetser speaks primarily of the Nantasket side of the Weir River, archeological evidence unearthed at World's End suggests that some pleasure-seekers visited the area. Sweetser , 77, 108, 214 and Barbara Luedtke, "Report on an Archaeological Survey of World's End, Massachusetts (June 1990), 40, 63.
10. John F. Sears, *Sacred Places: American Tourism Attractions in the Nineteenth Century* (New York: Oxford University Press, 1989), 3-4.
11. Sweetser, 202.
12. Metropolitan Area Planning Council (MAPC), *Boston Harbor Islands Comprehensive Plan* (Boston: Massachusetts Department of Natural Resources, 1972), 78 and Emily and David Kales, *All About the Boston Harbor Islands* (Hingham, MA: Hewitts Cove Publishing Co., Inc., 1993).
13. The resort burned to the ground in 1872. Sweetser, 86 and William H.C. Walker and Willard Brewer Walker, *A History of World's End* (The Trustees of Reservations, 1973), 11.
14. Sweetser, 32-35.
15. Ibid.
16. During the 1880s illegal boxing matches also purportedly took place on Calf Island. Sweetser, 183-86.
17. Samuel Downer, whose summer resort the Rose Standish House, lay across the channel at Hingham, probably planted ornamental shrubs and trees in order to create a more appealing landscape for guest excursions to Ragged Island. Sweetser, 82, NPS, 65 and Land Use Chronology, MDC Files.
18. Olmsted's "General Plan for the Subdivision of Planter's Hill and World's End Hingham, Mass." provided for 163 building lots of varying sizes in the area south of the meadows between Ringbolt and Martin's Cove (excluding the Barnes and Loud Lots and the Damde Meddowes), with access through a system of tree-lined roads. Plans also show boat landings near Rocky Neck and a "bridge to Nantasket" at the Ringbolt. Much of the road system, which would have placed the proposed subdivision within walking distance of the Plymouth-to-Boston railroad, was realized (with exception of roads planned for Rocky Neck and link the from Barnes Road to Weir River Road), but the lots were never developed. Cynthia Zaitzevsky, Frederick Law Olmsted and the Boston Park System (Cambridge, MA: Harvard University Press, 1982), 117-118 and Walker, 35-37.
19. Walker, 38-39.
20. Sweetser, 248 and NPS, 64.
21. NPS, 59, Alan Mikal, *Exploring Boston Harbor in Photographs and Text* (North Quincy, MA: The Christopher Press, 1975), 34 and "Realm Where the Cheneys Live," *The [Boston] Sunday Herald*, 26 July 1903, 1.
22. The cottages were demolished to accommodate the construction of bomb- and chemical-proof bunkers at a World War II command post. DEM files.
23. Joe Orfant (Massachusetts Highway Department) to John W. Sears, memorandum, 8 April 1993.
24. Seaburg, 71.
25. Alderman Burrage, "Speech on Public Parks…November 20, 1876," in Boston Pamphlets 39 (Boston: Rockwell & Church, 1877), "Parks for the People," proceedings of a Public Meeting held at Fanueil Hall June 7, 1876 (Boston: Franklin Press, 1876), and Charles Eliot, *A Report upon the Opportunities for Public Open in the Metropolitan District of Boston made to the Parks Commission, 1892* (Boston: Wright and Potter, 1893).
26. Frederick Law Olmsted, *The Restoration of Tree-Growth on the Islands and Shores of Boston Harbor: Report to the Boston Board of park Commissioners, 1887* (reprinted, January 1893).
27. Sweetser, 161, MAPC, 72-73 and William J. Reid, *Caste Island and Fort Independence* (Boston: Trustees of the Public Library of the City of Boston, 1995), 130-31.
28. Zaitzevsky, 37-38, 108.
29. Sweetser, 120.
30. *Boston Year Book*, 1923-1924, 146.

31. MAPC, 106, 113.
32. Sweetser, 35 and Bunting, 451-52.
33. Newspaper article dated March 28, 1934, "Nearly 150,000 Trees to Be Planted On Islands in Drive to Beautify Harbor".
34. *Opportunities Plan for the Future of Boston Harbor Beaches*, (The Joint Commission on the Future of Boston Harbor Beaches, 15 June 1993), 1-4.
35. 1972 Boston Harbor Islands Comprehensive Plan by the Metropolitan Area Planning Council for the Massachusetts Department of Natural Resources and 1986 Boston Harbor Islands State Park Master Plan by the Department of Environmental Management.
36. In 1944, the original 24-acre lot on Martin's Cove and an adjoining parcel on Seal's Cove were subdivided and developed, as was a portion of Cedar Gables in 1923. Much of the remainder of the Brewer estate, with the exception of World's End, was subdivided and developed in the 1950s and several offers for remaining property were made during the following decade. Walker, 53.
37. Report of the Peddock's Island Advisory Committee, 1993, 8.
38. The memo from the Massachusetts Historical Commission, dated July 7, 1993 states… "While it is clear that a fishing community of some significance—and apparently, the last remaining residential grouping on the Harbor Islands—exists here, there is not sufficient information presently available to complete an evaluation. Maps keyed to the photos—of Middle Head, Crab Alley, and West and East Head—will help, as will additional information on the history of the fishing community here, its association with Hull and/or with Portuguese fishermen elsewhere around Boston Harbor, and recent history of the community will be useful. Perhaps most importantly, a building typology similar to that developed for the Dune Shacks of Provincetown and Truro could clarify the significant characteristics of the modest structures, the nature of change they inevitably have undergone, and help staff conclude whether any potential historic district or significant individually eligible properties are present."

Table 13. Cultural Resources Associated with Recreation

Resource	Location	Type	National Register Status
Summer estate	Calf Island	Unstabilized ruins	Not evaluated
Inn	Gallops Island	Possible unstabilized ruins	Not evaluated
Summer cottage community	Great Brewster	Unstabilized ruins	Not evaluated
Possible resort structure, CCC plantings	Long Island	Structure, cultural landscape	Not evaluated
CCC plantings	Lovells Island	Cultural landscape	Not evaluated
Summer cottage community	Middle Brewster	Unstabilized ruins, cultural landscape	Not evaluated
Summer cottage community	Peddocks Island	Structures, cultural landscape, ethnographic resource	Not evaluated
Resort	Rainsford Island	Unstabilized ruins, cultural landscape	Not evaluated
Brewer Estate	Worlds End	Structures, cultural landscape	Not evaluated

Table 14. Recreational Use of the Boston Harbor Islands

Island	Colonial Period 1600-1783	New Republic Period 1783-1860	Civil War and Industrial Period 1860-1900	Progressive and Modern Eras 1900-2015
Bumpkin Island				Park (1974)
Calf Island			Summer estate (1902-17)	Park (1970s)
Deer Island	Resort hotel (1780s-1850s)			Perimeter park and walkway (1996)
Gallops Island	Restaurant and inn (1833-60s)			Park (1973)
Georges Island				Park (1958)
Grape Island				Park (1974)
Great Brewster			Summer cottages (1900-1941)	Park (1970s)
Green Island				Park (1970s)
Hangman Island				Park (1970s)
Langlee Island		Resort (1873-82); summer camp (1890s-1900s))	Part of estate (1882-1947	Park (1947)
Little Calf Island				Park (1970s)
Long Island	Resort (1873-82); summer camp (1890s-1900s)	Resort (1873-82); summer camp (1890s-1900s)	Resort (1873-82); summer camp (1890s-1900s)	Park (1996), summer camp (1998)
Lovells Island				Park (1970s)
Middle Brewster		Summer estates and cottages (1870s-1910s)	Summer estates and cottages (1870s-1910s)	Park (1970s)
Outer Brewster				Park (1970s)
Peddocks Island		Summer cottages (1898-present)	Summer cottages (1898-present)	Summer cottages (1898-present), Park (1970s)
Raccoon Island			Summer camp (1930s)	Park (1970s)
Ragged Island		Part of resort (1880s)		Park (1900s)
Rainsford Island	Resort (1819-1852)			Park (1970s)
Sarah Island		Part of estate (1882-1947)	Part of estate (1882-1947)	Park (1947)
Sheep Island	Camping (1800s)	Camping (1800s)	Summer estate and hunting lodge (1900s)	Park (1970s)
Slate Island			Summer camp (1937-8)	Park (1970s)
Spectacle Island	Resorts (1847-1850s)			Park (1996)
Thompson Island				Park (1996)
Worlds End		Estate (1855-1967)		Park (1967)

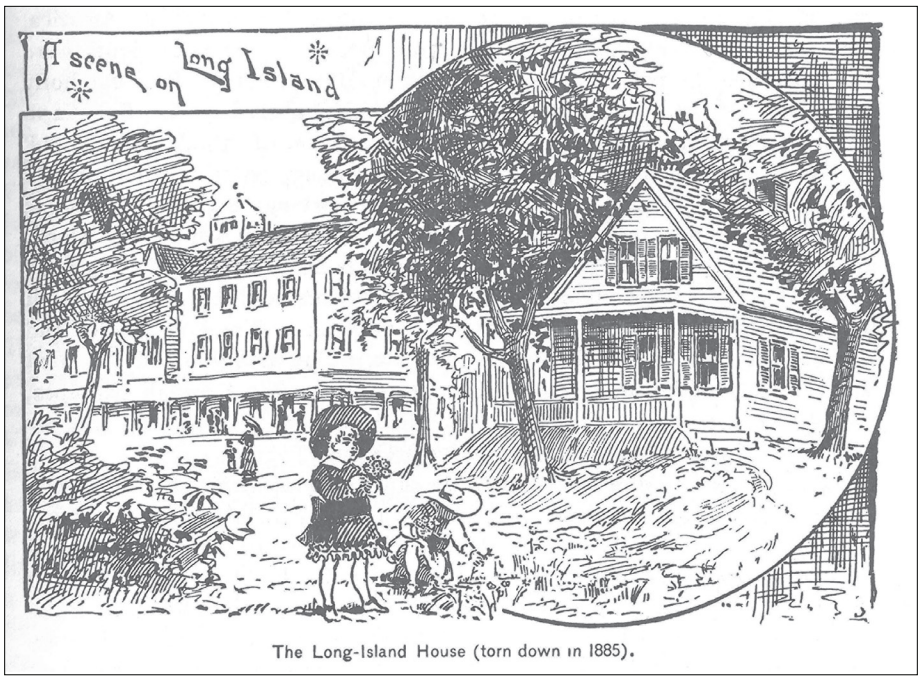


Figure 7.1. Sketch of Long Island House, mid-19th century. Image from Sweetser.



Figure 7.2. Sketch of excursionists on Ragged Island with a view of the resort at Crow Point across Hingham Harbor, late-19th century. Image from Sweetser.

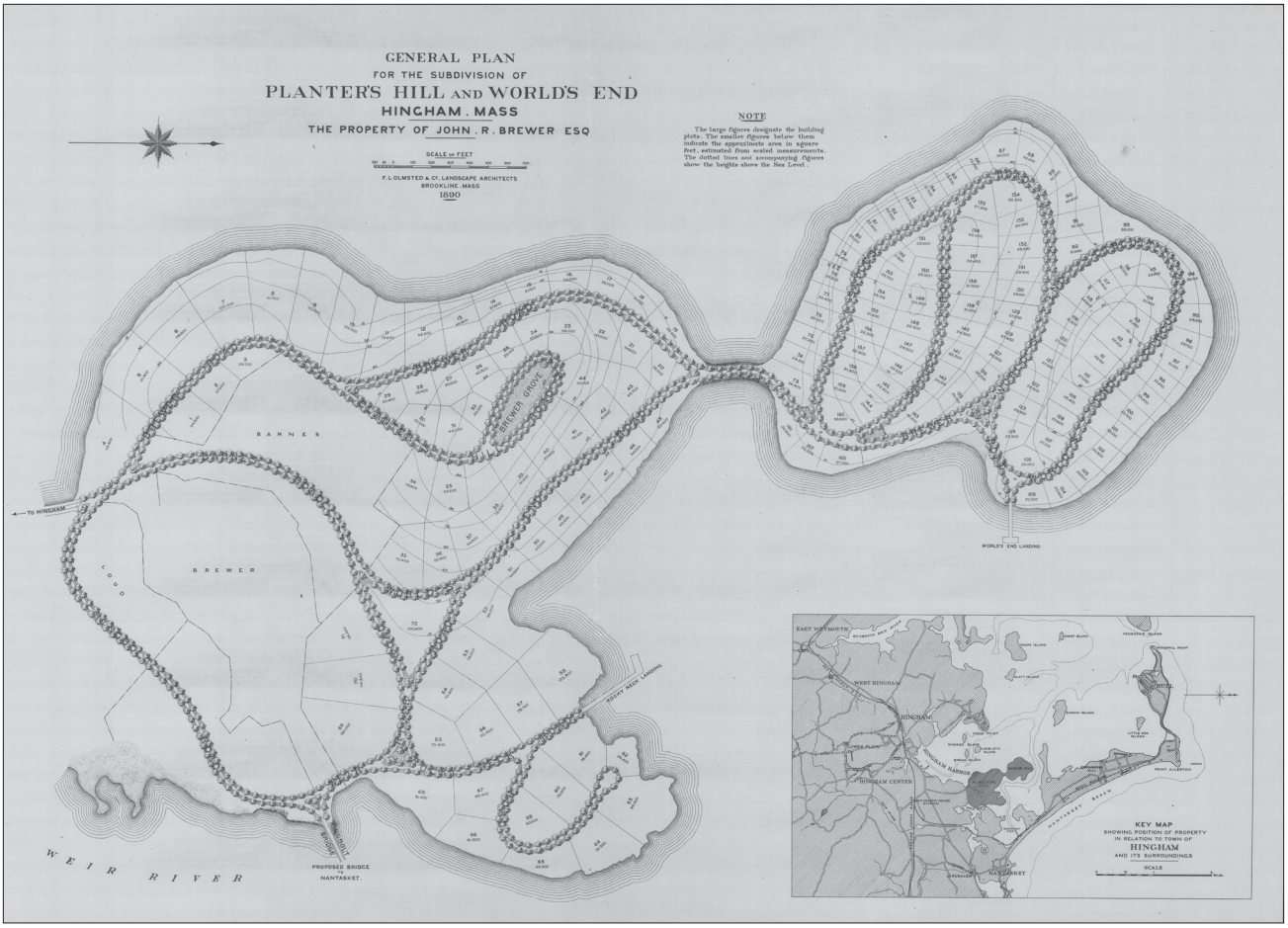


Figure 7.3. Plan by Frederick Law Olmsted for residential subdivision of Planter's Hill and Worlds End, job number 01051, 1890. Plan courtesy of Frederick Law Olmsted National Historic Site Archives.



Figure 7.4. From the grove on Langlee Island looking toward Ragged Island and Hingham, June 1915. Photo courtesy of Hingham HIstorical Society, Howard Hendersen Album.



Figure 7.5. Portrait of Melvin O. Adams, 1850, resident of Middle Brewster Island. Courtesy of the Boston Athenaeum.



Figure 7.6. Remnants of the Cheney Estate on Calf Island, late-20th century. Olmsted Center for Landscape Preservation.



Figure 7.7. Cottages on Middle Head, Peddocks Island, mid-20th century. Image from Shaun Provencher's Peddocks Island Physical History, Chronology, and Statement of Significance, DCR.

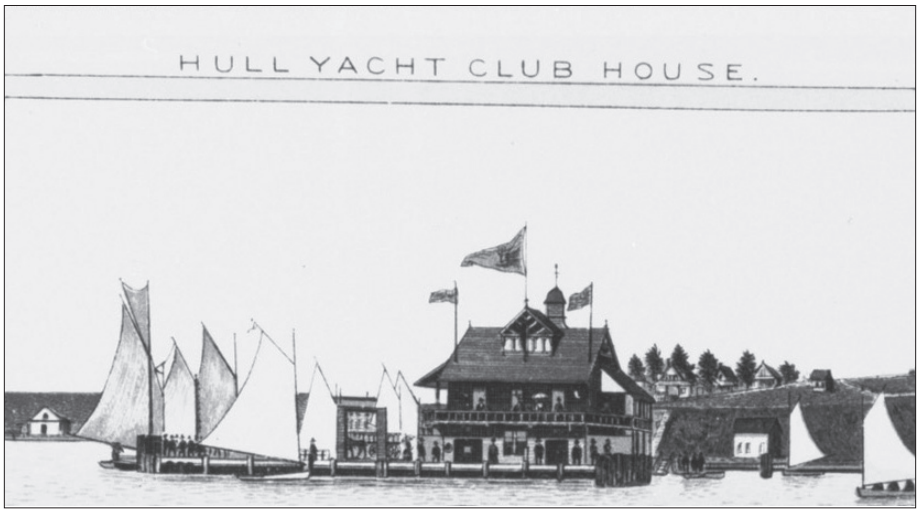


Figure 7.8. Drawing of Hull Yacht Club House, unknown date. Boston Public Library Harbor Views: Islands and Lighthouses Collection.

III. COMPILATION OF RECOMMENDATIONS

This chapter provides a compilation of all recommendations for further actions listed in the previous seven chapters. The harbor islands contain an array of cultural resources, many of which require recognition, monitoring and maintenance in order to preserve the history held in their physical remains. These recommendations are made in concert with the park's five year strategic plan for the protection of resources and the park's goals to preserve park resources as stated below.

- The Boston Harbor Islands as a whole, containing natural, geologic, cultural, and historic resources and associated values, are protected, preserved or restored, and managed within their broader marine and coastal ecosystem and their cultural context.

- The Boston Harbor Islands Partnership contributes to knowledge about the island system; management decisions about natural, geologic, cultural, and historic resources and visitors are based on adequate scholarly and scientific information.[1]

As with previous chapters, recommendations are divided into three categories: protection & maintenance, research & documentation, and education & interpretation. Note that some repetition is inevitable in an effort to categorize all recommendations. This list is not comprehensive but is pulled together from a limited level of investigation and a preliminary survey of existing conditions. The recommendations are intended to facilitate discussion and prioritization of further studies and actions. For many island resources a comprehensive or exhaustive level of research and documentation is necessary.

PROTECTION & MAINTENANCE

Protect Resources

- Protect the islands with sensitive archeological zones against further erosion by storm waves and boat wakes, such as Grape Island (Resource Extraction).

- Control populations of burrowing animals, such as domestic rabbits and rats to protect archeological resources (Resource Extraction).

- Include review and monitoring by archeologists for all proposed soil disturbances for gardening or other activities that require excavation (Resource Extraction).

- Provide active protective monitoring of archeological sites to prevent vandalism (Resource Extraction).

- Provide interim protection of extant resources, including built features (fragments and foundations of residential buildings, farm structures, wells, stone walls, and dams) and vegetation, until a more conclusive assessment of the cultural landscapes and analysis of significant features can be completed (Resource Extraction).

- Protect remaining submerged archeological resources (Trade & Navigation).

- Support the preservation of buildings, equipment, memorabilia, and archival materials maintained by the Hull Lifesaving Museum (Trade & Navigation).

- Stabilize military buildings and structures and thoroughly document existing conditions, including those of the surrounding landscape, on Long and Peddocks Island (Military).

- Protect archeological resources associated with military use (Military).

- Provide boundary delineation and protection for all known island cemeteries and burial sites and associated headstones, plaques, markers, rock carvings, including those on Rainsford, Long, Gallops and Calf Islands using documentation, remote sensing and survey techniques (Institutions).

- Support protection of mainland facilities associated with harbor islands institutional history (Institutions).

- Protect and maintain the remaining chimneys, fireplaces, foundation and stone walls on Calf, Middle Brewster, Rainsford and possibly Gallops, Great Brewster and Long Islands (Recreation).

Prepare preservation maintenance plans

- Prepare preservation maintenance plans to address island vegetation management in steep, eroded areas, especially around military fortifications and buildings on Georges, Great Brewster, Lovells, Long, and Peddocks islands (Environmental Alterations).

- Prepare maintenance plans and examine the condition of lighthouses and adjacent structures, potential threats, and review of maintenance practices and their effect on historic fabric (Trade & Navigation).

- Prepare preservation maintenance plans to preserve and maintain historic fruit trees and orchards on Bumpkin, Gallops, Georges, Long and Thompson Islands, until further research, in the form of island-specific Cultural Landscape Reports, is completed (Resource Extraction).

- Prepare preservation maintenance plans for institutional landscapes on Long and Thompson islands and remnants of institutional landscapes on Bumpkin, Gallops and Rainsford islands (Institutions).

RESEARCH & DOCUMENTATION

Address themes in Historic Resource Studies for the park

- Conduct a Historic Resource Study of coastal fortifications on the Boston Harbor Islands based on historical changes in defensive strategies. Review existing resources in the context of a system of individual components, including forts, batteries, seawalls, earthworks, Nike sites and other related structures. This study would highlight the coordinated system of defense that included most islands and mainland peninsulas rather than treat military history as isolated incidents on individual islands (Military).

- Conduct comprehensive research and interpretive planning that elucidates the history of reform theory and organizational development for reformatory and social service institutions on the Boston Harbor Islands (Institutions).

- Complete a Historic Resource Study for summer communities in Boston Harbor including communities on Peddocks, Long, Great Brewster, Middle Brewster, and Calf Islands (Recreation).

- Conduct thematic studies of Boston's immigration and welfare institutional histories in order to document and protect extant cultural resources on the Boston Harbor Islands and in the broader metropolitan area (Institutions).

Prepare Cultural Landscape Reports, Cultural Landscape Inventories, Historic Structure Reports, and List of Classified Structures documentation

- Document through a combined historic structures report, cultural landscape report and ethnographic study extant cultural resources on Peddocks Island. Determine eligibility for the National Register. Complete Cultural Landscape Inventory and List of Classified Structures documentation. Complete thorough documentation of cottages and outbuildings slated for demolition (including windows and doors), coupled with archeological study of prehistoric sites vulnerable to disturbance during demolition (Recreation).

- Prepare a Cultural Landscape Report and determination of National Register eligibility for World's End as an Olmsted, Sr., designed landscape with an apparent high level of integrity. Complete Cultural Landscape Inventory and List of Classified Structures documentation. (Recreation).

- Document through a combined historic structures report and cultural landscape report extant cultural resources on Thompson and Long Islands. Complete Cultural Landscape Inventory and List of Classified Structures documentation. (Recreation).

- Investigate and document Civilian Conservation Corps activities on the Boston Harbor Islands. No records were located at the Federal Records Center in Waltham under a CCC listing, although a more thorough search should be undertaken (Resource Extraction).

- Prepare combined cultural landscape reports, historic structure reports and archeological assessments for all islands with extant fortifications and military structures, particularly Georges, Long and Peddocks. Also complete Cultural Landscape Inventory and List of Classified Structures documentation. This will include documentation of existing conditions, review of existing National Register documentation, recommendations for amendments (likely for Fort Warren), evaluation of military resources in the context of a harbor-wide system of defense, selection of a treatment alternative and recommended actions. Problems pertaining to restoration and rehabilitation, including the scarcity of pre-twentieth century armament, should be examined. On Peddocks Island, the study of Fort Andrews should include the cottages used by military officers on the west side of East Head (Military).

- Research the historic landscape setting for the Deer Island Sewage Pumping Station (Industry).

- Conduct detailed examination and documentation of the Long Island Campus Administration Building to determine whether it incorporates portions of the 1873 Eutaw House resort and thus is the last remaining nineteenth century resort structure on the islands. (Recreation).

- Prepare Cultural Landscape and Historic Structure Reports for the relatively intact campuses on Long and Thompson Islands and determine whether these resources are eligible for listing on the National Register and as National Historic Landmarks. Also complete Cultural Landscape Inventory and List of Classified Structures documentation. (Institutions).

Conduct archeological studies

- Identify shoreline prehistoric and historic resources that are vulnerable to shoreline erosion and the predominant natural and human-induced processes impacting these resources (Environmental Alterations).

- Conduct further archeological investigation, in the format of a cultural land use study and archeological overview and assessment, to consolidate prehistoric and historic data on resources for all islands. The study should address ownership, residence patterns, and land use on islands that sustained agricultural use, particularly on Thompson, Long, Peddocks, Bumpkin and Grape islands.2 Review existing archeological work to determine whether prehistoric and historic resources are fully documented and conduct archeological survey work as recommended in the land use study (Resource Extraction).

- Prepare combined cultural landscape reports, historic structure reports and archeological assessments for all islands with extant fortifications and military structures, particularly Georges, Long and Peddocks (Military).

- To protect resources, document remnants of early forts including any First, Second or Third System remnants, and burial sites on all islands, but particularly on Peddocks and Long Islands (Military).

- Provide emergency documentation of obscured or imperiled cultural resources, such as the Rainsford Island cemetery and rock carvings, and interim preservation measures until a more comprehensive preservation strategy can be determined and implemented (Institutions).

- Complete thorough documentation of Peddocks cottages and outbuildings slated for demolition (including windows and doors), coupled with archeological study of prehistoric sites vulnerable to disturbance during demolition (Recreation).

Conduct ethnographic studies

- Conduct further research on aboriginal use of the islands including ethnographic research on agricultural practices and use of forests (Resource Extraction).

- Locate and synthesize images, oral histories, lore or written descriptions that document American Indian perspectives of settlements and cultures and their impressions of contact with Europeans in order to portray and interpret the Indian cultural landscape (Trade & Navigation).

- Survey pre-1750 maps to identify Indian place names in Boston Harbor (Trade & Navigation).

- Conduct further research on the history of fishing to determine the economic importance of fishing in the harbor and the importance of the islands as communities for fishermen, particularly for Peddocks and Long Islands. Also conduct further research on the relationship with the port of Boston and other New England fishing communities such as Gloucester and New Bedford (Resource Extraction).

- Investigate further non-military uses of fortifications, including the placement of beacons for navigation, ceremonial use of armaments and facilities, and alternative institutional use (Military).

- Conduct an ethnographic study of war-time life on the harbor islands (Military).

Document location, materials, construction methods and condition of resources to facilitate preservation, using HABS, HAER, or HALS standards and other techniques

- Complete Historic Structures Reports or Historic American Building Survey, Historic American Engineering Record, or Historic American Landscape Survey (HABS/HAER/HALS) studies for Boston Light, Long Island Head Light, and Graves Light stations and their adjacent structures. Expand National Register nominations to include supporting structures and surrounding landscapes (Trade & Navigation).

- Document historic engineering structures, including causeways, dams, seawalls, jetties, and piers on the islands. Identify those structures that protect significant cultural resources. Also document the prevailing storm waves and tides that affect these features. Identify repairs and modifications necessary to protect threatened resources. Islands and structures requiring study include the erosion control walls on Little Brewster, seawalls and jetties on Gallops, Georges, Great Brewster, Long, Lovells, Moon, Nix's Mate, Ragged and Rainsford, and the piers on Georges, Lovells and Peddocks (Environmental Alterations).

- Conduct further research on historic and current faunal populations on the harbor islands and peninsulas (Resource Extraction).

- Conduct further research on the location of early boat landings, both on the islands and surrounding mainland communities (Resource Extraction).

- Document location of wells and other constructed water features used to provide freshwater during historic occupation of islands (Resource Extraction).

- Document landscapes that supported maritime forests for consideration of restoration or rehabilitation of sites demonstrating relative integrity and significance

within the local context. Analyze pre-colonial vegetation by pollen analysis or other appropriate techniques. Review the Friends of the Boston Harbor Islands Revegetation Project, including site analysis and selection. Choice of sites should be made within context of broader restoration and rehabilitation plans, i.e., islands that sustained strong agricultural traditions or military uses may not be ideal candidates for reforestation (Resource Extraction).

- Consolidate copies of early maps, illustrations and descriptions in order to portray the appearance of the islands at the time of early European exploration and mapping. These sources document the early topography, physiography and vegetation of Boston Harbor Islands and may supplement research for natural and cultural resource treatment plans (Trade & Navigation).

- Further investigate of the history of Boston's wharves, goods shipped and goods received (Trade & Navigation).

- Research and document extant physical remains of range lights on Spectacle, Gallops, and Lovells Islands (Trade & Navigation).

- Study further and document land-side shipbuilding resources, including the East Boston, Quincy and Hingham Shipyards (Trade & Navigation).

- Document the remaining chimneys, fireplaces, foundation and stone walls on Calf, Middle Brewster, Rainsford and possibly Gallops, Great Brewster and Long Islands. Conduct further research and documentation of remaining components of the late nineteenth and early twentieth century sewerage system (Industry).

- Prioritize preservation opportunities for both individual components and the defensive system as a whole. Problems pertaining to restoration and rehabilitation, including the scarcity of pre-twentieth century armament, must be examined (Military).

Determine National Register and National Historic Landmark eligibility and prepare nominations

- Evaluate National Register eligibility of Peddocks Island resources (Resource Extraction).

- Evaluate National Register eligibility for World's End as an Olmsted, Sr., designed landscape with an apparent high level of integrity (Recreation).

- Evaluate National Register eligibility of navigational aids in Boston Harbor, particularly the navigational beacon on Nix's Mate (Trade & Navigation).

- Prepare combined cultural landscape reports, historic structure reports and archeological assessments for all islands with extant fortifications and military structures, particularly Georges, Long and Peddocks. This would included documentation of existing conditions, review of existing National Register documentation, recommendations for amendments (likely for Fort Warren), evaluation of military resources in the context of a harbor-wide system of defense, selection of a treatment alternative and recommended actions. Problems pertaining to restoration and rehabilitation, including the scarcity of pre-twentieth century armament, should be examined. On Peddocks Island, the study of Fort Andrews should include the cottages used by military officers on the west side of East Head (Military).

- Prepare National Register nominations for military resources determined eligible through the above described studies, potentially for Fort Andrews on Peddocks, Fort Strong on Long, Battery Jewell on Outer Brewster, Fort Standish on Lovells. In particular, consider nominating Fort Andrews to the National Register of Historic Places as a major component in Boston's system of coastal defense and as an example of Colonial Revival institutional architecture (Military).

- Examine the National Register nomination for the Calf Pasture Pumping Station and determine whether the Moon Island reservoir should be included as a discontiguous resource as defined by the National Register criteria in Bulletin 16B (Industry).

- Nominate the Deer Island Sewage Pumping Station to the National Register.

EDUCATION & INTERPRETATION

- Develop educational programs and three-dimensional or computer generated models to illustrate the effects of natural processes and cultural activities on the topography of Boston Harbor and the effect of tides, wind, waves, storms, land cutting, filling, dredging, dumping, seawall and pier construction, erosion and submerged resources (Environmental Alterations).

- Design educational programs regarding the value of protecting important archeological resources and their significance (Resource Extraction).

- Search for extant seventeenth, eighteenth or early nineteenth century fishing schooners, dories, and equipment to bring to Boston Harbor for special programs (Resource Extraction).

- Investigate and interpret links to inland manufacturing facilities on the Charles,

Neponset, and Mystic Rivers, the Middlesex Canal, and other smaller rivers (Trade & Navigation).

- Incorporate the theme of lifesaving into interpretive programs on Lovells, Little Brewster, Calf and Peddocks Islands and at the Graves, Shag Rocks, and Hull and evaluate whether a reconstruction of a "hut of refuge" would be effective for interpretation and as a shelter on Lovells Island (Trade & Navigation).

- Integrate the roles of fortifications at Dorchester Heights, Castle Island, Winthrop and Hull into the interpretation of the events during the siege of the Port of Boston during the War for Independence through World War II (Military).

- Highlight the importance of agricultural and natural resources on the islands during the War for Independence (Military).

- Develop education programs on the institutional history of the harbor islands. Explore cooperative interpretive and preservation planning for relevant mainland institutional properties and resources (Institutions).

- Incorporate nineteenth-century metropolitan park plans that included the harbor islands advocated for by park planning visionaries into the "renewal and reconnection" theme and story of the creation of the park (Recreation).

ENDNOTES

1. National Park Service, "Boston Harbor Islands, A national park area, Draft Strategic Plan, Fiscal Years 2001-2005.
2. A Cultural Land Use Study differs from a Cultural Landscape Report, in that the study documents land use based on archeological evidence. This approach, which relates physical evidence to historical context, is particularly useful for fragmented cultural sites. An Archeological Overview and Assessment describes the park's archeological resources management program and identifies the need for additional field surveys to locate, evaluate and document resources.

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APPENDIX 1: ENABLING LEGISLATION FOR BOSTON HARBOR ISLANDS NATIONAL RECREATION AREA

P.L.104-333

Omnibus Parks and Public Lands Management Act of 1996. Signed 11/12/96

SEC. 1029. BOSTON HARBOR ISLANDS RECREATION AREA.

(a) PURPOSES- The purposes of this section are—

(1) to preserve for public use and enjoyment the lands and waters that comprise the Boston Harbor Islands National Recreation Area;

(2) to manage the recreation area in partnership with the private sector, the Commonwealth of Massachusetts, municipalities surrounding Massachusetts and Cape Cod Bays, the Thompson Island Outward Bound Education Center, and Trustees of Reservations, and with historical, business, cultural, civic, recreational and tourism organizations;

(3) to improve access to the Boston Harbor Islands through the use of public water transportation; and

(4) to provide education and visitor information programs to increase public understanding of and appreciation for the natural and cultural resources of the Boston Harbor Islands, including the history of Native American use and involvement.

(b) DEFINITIONS- For the purposes of this section—

(1) the term recreation area means the Boston Harbor Islands National Recreation Area established by subsection (c); and

(2) the term 'Secretary' means the Secretary of the Interior.

(c) Boston Harbor Islands National Recreation Area-

(1) ESTABLISHMENT-In order to preserve for the benefit and inspiration of the people of the United States as a national recreation area certain lands located in Massachusetts Bay, there is established as a unit of the National Park System the Boston Harbor Islands National Recreation Area.

(2) BOUNDARIES- (A) The recreation area shall be comprised of the lands, waters, and submerged lands generally depicted on the map entitled 'Proposed Boston Harbor Islands NRA', numbered BOHA 80,002, and dated September 1996. Such map shall be on file and available for public inspection in the appropriate offices of the National Park Service. After advising the Committee on Resources of the House of Representatives and the Committee on Energy and Natural Resources of the Senate, in writing, the Secretary may make minor revisions of the boundaries of the recreation area when necessary by publication of a revised drawing or other boundary description in the Federal Register.

(B) The recreation area shall include the following:

(i) The areas depicted on the map reference in subparagraph (A).

(ii) Landside points required for access, visitor services, and administration in the city of Boston along its Harborwalk and at Long Wharf, Fan Pier, John F. Kennedy Library, and the Custom House; Charlestown Navy Yard; Old Northern Avenue Bridge; the city of Quincy at Squantum Point/Marina Bay, the Fore River Shipyard, and Town River; the Town of Hingham at Hewitt's Cove; the Town of Hull; the city of Salem at Salem National Historic Site; and the city of Lynn at the Heritage State Park.

(d) ADMINISTRATION OF RECREATION AREA-

(1) IN GENERAL- The recreation area shall be administered in partnership by the Secretary, the Commonwealth of Massachusetts, City of Boston and its applicable subdivisions and others in accordance with the provisions of law generally applicable to units of the National Park System, including the Act entitled 'An Act to establish a National Park Service, and for other purposes', approved August 25, 1916 (39 Stat. 535; 16 U.S.C. 1, 2, 3, and 4), and the Act of August 21, 1935 (49 Stat. 666; 16 U.S.C. 461-467) as amended and supplemented and in accordance with the integrated management plan specified in subsection (f).

(2) STATE AND LOCAL JURISDICTION- Nothing in this section shall be construed to diminish, enlarge, or modify any right of the Commonwealth of Massachusetts or any political subdivision thereof, to exercise civil and criminal jurisdiction or to carry out State laws, rules, and regulations within the recreation area, including those relating to fish and wildlife, or to tax persons, corporations, franchises, or private property on the lands and waters included in the recreation area.

(3) COOPERATIVE AGREEMENTS- The Secretary may consult and enter into cooperative agreements

with the Commonwealth of Massachusetts or its political subdivisions to acquire from and provide to the Commonwealth or its political subdivisions goods and services to be used in the cooperative management of lands within the recreation area, if the Secretary determines that appropriations for that purpose are available and the agreement is in the best interest of the United States.

(4) CONSTRUCTION OF FACILITIES ON NON-FEDERAL LANDS- In order to facilitate the administration of the recreation area, the Secretary is authorized, subject to the appropriation of necessary funds in advance, to construct essential administrative or visitor use facilities on non-Federal public lands within the recreation area. Such facilities and the use thereof shall be in conformance with applicable plans

(5) OTHER PROPERTY, FUNDS, AND SERVICES- The Secretary may accept and use donated funds, property, and services to carry out this section.

(6) RELATIONSHIP OF RECREATION AREA TO BOSTON-LOGAN INTERNATIONAL AIRPORT- With respect to the recreation area, the present and future maintenance, operation, improvement and use of Boston-Logan International Airport and associated flight patterns from time to time in effect shall not be deemed to constitute the use of publicly owned land of a public park, recreation area, or other resource within the meaning of section 303(c) of title 49, United States Code, and shall not be deemed to have a significant effect on natural, scenic, and recreation assets within the meaning of section 47101(h)(2) of title 49, United States Code.

(7) MANAGEMENT IN ACCORDANCE WITH INTEGRATED MANAGEMENT PLAN- The Secretary shall preserve, interpret, manage, and provide educational and recreational uses for the recreation area, in consultation with the owners and managers of lands in the recreation area, in accordance with the integrated management plan.

(e) Boston Harbor Islands Partnership Establishment-

(1) ESTABLISHMENT- There is hereby established the Boston Harbor Islands Partnership whose purpose shall be to coordinate the activities of Federal, State, and local authorities and the private sector in the development and implementation of an integrated resource management plan for the recreation area.

(2) MEMBERSHIP- The Partnership shall be composed of 13 members, as follows:

(A) One individual, appointed by the Secretary, to represent the National Park Service.

(B) One individual, appointed by the Secretary of Transportation, to represent the United States Coast Guard.

(C) Two individuals, appointed by the Secretary, after consideration of recommendations by the Governor of Massachusetts, to represent the Department of Environmental Management and the Metropolitan District Commission.

(D) One individual, appointed by the Secretary, after consideration of recommendations by the Chair, to represent the Massachusetts Port Authority.

(E) One individual, appointed by the Secretary, after consideration of recommendations by the Chair, to represent the Massachusetts Water Resources Authority.

(F) One individual, appointed by the Secretary, after consideration of recommendations by the Mayor of Boston, to represent the Office of Environmental Services of the City of Boston.

(G) One individual, appointed by the Secretary, after consideration of recommendations by the Chair, to represent the Boston Redevelopment Authority.

(H) One individual, appointed by the Secretary, after consideration of recommendations of the President of the Thompson Island Outward Bound Education Center, to represent the Center.

(I) One individual, appointed by the Secretary, after consideration of recommendations of the Chair, to represent the Trustees of Reservations.

(J) One individual, appointed by the Secretary, after consideration of recommendations of the President of the Island Alliance, to represent the Alliance, a nonprofit organization whose sole purpose is to provide financial support for the Boston Harbor Islands National Recreation Area.

(K) Two individuals, appointed by the Secretary, to represent the Boston Harbor Islands Advisory Council, established in subsection (g).

(3) TERMS OF OFFICE; REAPPOINTMENT- (A) Members of the Partnership shall serve for terms of three years. Any member may be reappointed for one additional 3-year term.

(B) The Secretary shall appoint the first members of the Partnership within 30 days after the date on which the Secretary has received all of the recommendations for appointment pursuant to subsections (b) (3), (4), (5), (6), (7), (8), (9), and (10).

(C) A member may serve after the expiration of his or her term until a successor has been appointed.
(4) COMPENSATION- Members of the Partnership shall serve without pay, but while away from their homes or regular places of business in the performance of services for the Partnership, members shall be allowed travel expenses, including per diem in lieu of subsistence, in the same manner as persons employed intermittently in the Government service are allowed expenses under section 5703 of title 5, United States Code.
(5) ELECTION OF OFFICERS- The Partnership shall elect one of its members as Chairperson and one as Vice Chairperson. The term of office of the Chairperson and Vice Chairperson shall be one year. The Vice Chairperson shall serve as chairperson in the absence of the Chairperson.
(6) VACANCY- Any vacancy on the Partnership shall be filled in the same manner in which the original appointment was made.
(7) MEETINGS- The Partnership shall meet at the call of the Chairperson or a majority of its members.
(8) QUORUM- A majority of the Partnership shall constitute a quorum.
(9) STAFF OF THE PARTNERSHIP- The Secretary shall provide the Partnership with such staff and technical assistance as the Secretary, after consultation with the Partnership, considers appropriate to enable the Partnership to carry out its duties. The Secretary may accept the services of personnel detailed from the Commonwealth of Massachusetts, any political subdivision of the Commonwealth or any entity represented on the Partnership.
(10) HEARINGS- The Partnership may hold such hearings, sit and act at such times and places, take such testimony, and receive such evidence as the Partnership may deem appropriate.
(11) DONATIONS- Nothwithstanding any other provision of law, the Partnership may seek and accept donations of funds, property, or services from individuals, foundations, corporations, and other private and public entities for the purpose of carrying out this section.
(12) USE OF FUNDS TO OBTAIN MONEY- The Partnership may use its funds to obtain money from any source under any program or law requiring the recipient of such money to make a contribution in order to receive such money.
(13) MAILS- The Partnership may use the United States mails in the same manner and upon the same conditions as other departments and agencies of the United States.
(14) OBTAINING PROPERTY- The Partnership may obtain by purchase, rental, donation, or otherwise, such property, facilities, and services as may be needed to carry out its duties, except that the Partnership may not acquire any real property or interest in real property.
(15) COOPERATIVE AGREEMENTS- For purposes of carrying out the plan described in subsection (f), the Partnership may enter into cooperative agreements with the Commonwealth of Massachusetts, any political subdivision thereof, or with any organization or person.

(f) Integrated Resource Management Plan-

(1) IN GENERAL- Within three years after the date of enactment of this Act, the Partnership shall submit to the Secretary a management plan for the recreation area to be developed and implemented by the Partnership.
(2) CONTENTS OF PLAN- The plan shall include (but not be limited to) each of the following:
(A) A program providing for coordinated administration of the recreation area with proposed assignment of responsibilities to the appropriate governmental unit at the Federal, State, and local levels, and nonprofit organizations, including each of the following:
(i) A plan to finance and support the public improvements and services recommended in the plan, including allocation of non-Federal matching requirements set forth in subsection (h)(2) and a delineation of profit sector roles and responsibilities.
(ii) A program for the coordination and consolidation, to the extent feasible, of activities that may be carried out by Federal, State, and local agencies having jurisdiction over land and waters within the recreation area, including planning and regulatory responsibilities.
(B) Policies and programs for the following purposes:
(i) Enhancing public outdoor recreational opportunities in the recreation area.
(ii) Conserving, protecting, and maintaining the scenic, historical, cultural, natural and scientific values of the islands.
(iii) Developing educational opportunities in the recreation area.

(iv) Enhancing public access to the Islands, including development of transportation networks.

(v) Identifying potential sources of revenue from programs or activities carried out within the recreation area.

(vi) Protecting and preserving Native American burial grounds connected with the King Philip's War internment period and other periods.

(C) A policy statement that recognizes existing economic activities within the recreation area.

(3) DEVELOPMENT OF PLAN- In developing the plan, the Partnership shall—

(A) consult on a regular basis with appropriate officials of any local government or Federal or State agency which has jurisdiction over lands and waters within the recreation area;

(B) consult with interested conservation, business, professional, and citizen organizations; and

(C) conduct public hearings or meetings for the purposes of providing interested persons with the opportunity to testify with respect to matters to be addressed by the plan.

(4) APPROVAL OF PLAN-

(A) The Partnership shall submit the plan to the Governor of Massachusetts for review. The Governor shall have 90 days to review and make any recommendations. After considering the Governor's recommendations, the Partnership shall submit the plan to the Secretary, who shall approve or disapprove the plan within 90 days. In reviewing the plan the Secretary shall consider each of the following:

(i) The adequacy of public participation.

(ii) Assurances of plan implementation from State and local officials.

(iii) The adequacy of regulatory and financial tools that are in place to implement the plan.

(B) If the Secretary disapproves the plan, the Secretary shall within 60 days after the date of such disapproval, advise the Partnership in writing of the reasons therefore, together with recommendations for revision. Within 90 days of receipt of such notice of disapproval, the Partnership shall revise and resubmit the plan to the Secretary who shall approve or disapprove the revision within 60 days.

(5) INTERIM PROGRAM- Prior to adoption of the Partnership's plan, the Secretary and the Partnership shall assist the owners and managers of lands and waters within the recreation area to ensure that existing programs, services, and activities that promote the purposes of this section are supported.

(g) BOSTON HARBOR ISLANDS ADVISORY COUNCIL-

(1) ESTABLISHMENT- The Secretary, acting through the Director of the National Park Service, shall establish an advisory committee to be known as the Boston Harbor Islands Advisory Council. The purpose of the Advisory Council shall be to represent various groups with interests in the recreation area and make recommendations to the Boston Harbor Islands Partnership on issues related to the development and implementation of the integrated resource management plan developed under subsection (f). The Advisory Council is encouraged to establish committees relating to specific recreation area management issues, including (but not limited to) education, tourism, transportation, natural resources, cultural and historic resources, and revenue raising activities. Participation on any such committee shall not be limited to members of the Advisory Council.

(2) MEMBERSHIP- The Advisory Council shall consist of not fewer than 18 individuals, to be appointed by the Secretary, acting through the Director of the National Park Service. The Secretary shall appoint no fewer than three individuals to represent each of the following categories of entities: municipalities; educational and cultural institutions; environmental organizations; business and commercial entities, including those related to transportation, tourism and the maritime industry; and Boston Harbor-related advocacy organizations; and organizations representing Native American interests.

(3) PROCEDURES- Each meeting of the Advisory Council and its committees shall be open to the public.

(4) FACA- The provisions of section 14 of the Federal Advisory Committee Act (5 U.S.C. App.), are hereby waived with respect to the Advisory Council.

(h) AUTHORIZATION OF APPROPRIATIONS-

(1) IN GENERAL- There are authorized to be appropriated such sums as may be necessary to carry out this section, provided that no funds may be appropriated for land acquisition.

(2) MATCHING REQUIREMENT- Amounts appropriated in any fiscal year to carry out this section may only be expended on a matching basis in a ration of at least three non-Federal dollars to every Federal dollar. The non-Federal share of the match may be in the form of cash, services, or in-kind contributions, fairly valued.

P.L. 106-176

Omnibus Parks Technical Corrections Act of 2000. H.R. 149, Signed 3/10/00

SEC. 126. BOSTON HARBOR ISLANDS NATIONAL RECREATION AREA.

Section 1029 of division I of the Omnibus Parks Act (110 Stat. 4232; 16 U.S.C. 460kkk) is amended as follows:

(1) In the section heading, by striking `recreation area' and inserting `national recreation area'.

(2) In subsection (b)(1), by inserting quotation marks around the term `recreation area'.

(3) In subsection (e)(3)(B), by striking `subsections (b)(3), (4), (5), (6), (7), (8), (9), and (10).' and inserting `subparagraphs (C), (D), (E), (F), (G), (H), (I), and (J) of paragraph (2).'.

(4) In subsection (f)(2)(A)(i), by striking `profit sector roles' and inserting `private-sector roles'.

(5) In subsection (g)(1), by striking `and revenue raising activities.' and inserting `and revenue-raising activities.'.

(6) In subsection (h)(2), by striking `ration' and inserting `ratio'.

P.L. 105-355

TITLE I—AUTOMOBILE NATIONAL HERITAGE AREA OF MICHIGAN

SEC. 513. LAND ACQUISITION, BOSTON HARBOR ISLANDS RECREATION AREA. Signed 11/6/98

Section 1029(c) of division I of the Omnibus Parks and Public Lands Management Act of 1996 (Public Law 104-333; 110 Stat. 4233; 16 U.S.C. 460kkk(c)) is amended by adding at the end the following new paragraph:

(3) LAND ACQUISITION- Notwithstanding subsection (h), the Secretary is authorized to acquire, in partnership with other entities, a less than fee interest in lands at Thompson Island within the recreation area. The Secretary may acquire the lands only by donation, purchase with donated or appropriated funds, or by exchange.'.

P.L. 102-525

TITLE V—BOSTON HARBOR ISLANDS STUDY

SEC. 501. BOSTON HARBOR ISLANDS STUDY. Signed 10/26/92

(a) IN GENERAL- The Secretary of the Interior shall, within 1 year after the date of the enactment of this title, conduct a study of the Boston Harbor Islands to assess the opportunities for the National Park Service to contribute to State, regional, and local efforts to promote the conservation of the Boston Harbor Islands and their use and enjoyment by the public. In conducting the study, the Secretary shall—

(1) consult closely with and explore means for expanded cooperation with the Massachusetts Department of Environmental Management, the Metropolitan District Commission, and the City of Boston;

(2) evaluate the suitability of establishing the Boston Harbor Islands as a unit of the National Park System;

(3) assess the opportunities for expanded tourism, public education, and visibility by managing the Boston Harbor Islands in conjunction with units of the National Park System in the vicinity, including the Adams National Historic Site in Quincy, Massachusetts; and

(4) evaluate the possibility for developing ferry service and other transportation links among those units to enhance their public use and enjoyment.

(b) REPORT- The Secretary of the Interior shall submit to the Congress a report on the findings, conclusions, and recommendations of the study under subsection (a), by not later than 1 year after the date of the enactment of this title.

APPENDIX 2: GLOSSARY OF NPS CULTURAL RESOURCE TERMS AND TYPES OF REPORTS

Sources for definitions include the NPS Cultural Resource Management Guideline (Release No. 5, 1997) and Guide to Cultural Landscape Reports by Robert R. Page, Cathy A. Gilbert, and Susan A. Dolan (National Park Service, 1998).

Archeological Identification/Evaluation Studies - An identification study locates archeological resources and describes their characteristics, potential scientific value, and threats to their integrity and condition. An archeological evaluation study documents the scientific value, integrity, condition and National Register eligibility of archeological resources and threats to them.

Archeological Cultural Land Use Study - A type of Archeological Overview and Assessment that emphasizes cultural history, particularly prehistory.

Archeological Overview and Assessment - An archeological research report to determine requirements for additional research, which serves as a basic element of a park's archeological resources management program. The report describes and evaluates the known and potential archeological resources in an area and identifies the need for additional field surveys to locate, evaluate, and document resources.

Archeological Resources - Any material remains or physical evidence of past human life or activities that are of archeological interest, including the record of the effects of human activities on the environment.

Buildings and structures - Elements constructed primarily for sheltering any form of human activities are considered buildings. Elements constructed for functional purposes other than sheltering human activity are considered structures. Engineering systems are also structures, and mechanical engineering systems may be distinguished from structural engineering systems. Mechanical engineering systems conduct utilities within a landscape (power lines, hydrants, culverts). Structural engineering systems provide physical stabilization in the landscape (retaining walls, dikes, foundations). In certain instances the word "structure" is used generally to refer to buildings and structures as in the List of Classified Structures. In the National Register program, "structure" is limited to functional constructions other than buildings.

Circulation - The spaces, features, and applied material finishes that constitute the systems of movement in a landscape. Examples of features associated with circulation include paths, sidewalks, roads and canals.

Collection Management Plan (CMP) - A plan that provides short-term and long-term guidance on the management and care of museum objects and archival and manuscript collections. Additional studies may include a collection storage plan, collection condition survey, exhibit plan and design, and historic furnishings report.

Constructed water features - The built features and elements that use water for aesthetic or utilitarian functions in the landscape. Examples of features associated with constructed water features include fountains, canals, cascades, pools, and reservoirs.

Cultural Land Use Study - A type of Archeological Overview and Assessment that emphasizes cultural history, particularly prehistory.

Cultural landscape - A geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person, or that exhibits other cultural or aesthetic values. The four general kinds of cultural landscapes are ethnographic, historic designed, historic vernacular, and historic site.

Cultural Landscape Inventory (CLI) - A computerized, evaluated inventory of all cultural landscapes for which the National Park Service has or plans to acquire any legal interest. The CLI includes a description of the location, historical development, landscape characteristics and associated features, and management of cultural landscapes in the national park system.

Cultural Landscape Report (CLR) - A report that serves as the primary guide to treatment and use of a cultural landscape, and that prescribes treatment and management of the physical attributes and biotic systems of a landscape, and use when use contributes to historical significance. The report includes an introduction, site history, existing conditions, analysis and evaluation, treatment, and record of treatment.

Cultural resource - A tangible entity or a cultural practice of a cultural system that is valued by or significantly representative of a culture or that contains significant information about a culture. Tangible cultural resources are categorized as districts, sites, buildings, structures, and objects for the National Register and as archeological resources, cultural landscapes, structures, museum objects, and ethnographic resources for National Park Service management purposes.

Cultural Resources Management Bibliography (CRBIB) - A computerized, multi-disciplinary listing of professional reports, books articles, and other publications that address park cultural resources. Bibliographic information on final reports, books, articles, and other publications are included in CRBIB.

Cultural traditions - The practices that have influenced the development of the landscape in terms of land use, patterns of land division, building forms, stylistic preferences, and the use of materials. Examples of features associated with cultural traditions include land use practices, buildings, patterns of land division, and use of vegetation.

Earthworks - Linear or geometric landscape structures built for military, industrial, agricultural, ceremonial, or aesthetic purposes. They include fortifications, water impoundment and control structures, early field boundary ditches and berms, burial mounds, grass garden ramps, and raised beds.

Ethnographic landscape - Areas containing a variety of natural and cultural resources that associated people define as heritage resources, including plant and animal communities, geographic features, and structures, each with their own special local names.

Ethnographic Landscape Study - A limited field survey to identify and describe names, locations, distributions, and meanings of ethnographic landscape features. It can be combined with Traditional Use Studies or conducted as part of other cultural landscape studies. It follows or may be combined with an Ethnographic Overview and Assessment when gaps in the available database indicate the need for detailed data.

Ethnographic Oral and Life Histories - Documentation methods for studying development, change, and stability in human life cycles, lifeways, and the resources that support them.

Ethnographic Overview and Assessment - A background study of types, uses and users of ethnographic resources. The overview reviews and summarizes existing ethnographic data for people and resources associated with parks. The assessment evaluates the data and identifies gaps. Information is derived primarily from existing archival and published materials and is supplemented with ethnographic interviewing of knowledgeable community consultants.

Ethnography - Part of the discipline of cultural anthropology concerned with the systematic description and analysis of cultural systems or lifeways such as hunting, agriculture, fishing, other food procurement strategies, family life festivals

and other religious celebrations. Ethnographic studies of contemporary people and cultures rely heavily on participant observation as well as interviews, oral histories, and review of relevant documents. Applied ethnography uses ethnographic data and concepts to identify contemporary issues and design feasible solutions.

Evaluation - Process by which the significance of a cultural landscape is judged and eligibility for the National Register of Historic Places is determined.

Existing conditions - The present physical state of a cultural landscape.

Feature - A prominent or distinctive quality or characteristic of a cultural landscape in a cultural landscape, individual features are grouped under broader categories of landscape characteristics. For example, such features such as ravines, valleys, wetlands, and cliffs are grouped under the landscape characteristic "natural systems and features."

Feeling - A cultural landscape's expression of the aesthetic or historic sense of a particular period.

General Management Plan (GMP) - A planning document that sets forth the basic management philosophy for a park and provides strategies for addressing issues and identifying management objectives over a 5- to 10- year period. Two types of strategies are presented in the GMP: those required to properly manage the park's resources, and those required to provide for appropriate visitor use and interpretation of the resources. Based on these strategies, programs, actions, and support facilities necessary for efficient park operation and visitor use are identified.

Historic American Buildings Survey (HABS), Historic American Engineering Record (HAER), Historic American Landscape Survey (HALS) - Architectural, engineering, and landscape documentation programs that produce a thorough archival record of buildings, engineering structures, and cultural landscapes significant in American history and the growth and development of the built environment.

Historic character - The sum of visual aspects, features, materials, and spaces associated with a cultural landscape's history.

Historic designed landscape - A landscape significant as a design or work of art. Such a landscape was consciously designed and laid out either by a master gardener, landscape architect, architect, or horticulturist according to a design principle, or by an owner or other amateur according to a recognized style or tradition. A landscape associated with a significant person, trend or movement in landscape gardening or architectural history, or a significant relationship to the theory or practice of landscape architecture.

Historic district - A geographically definable area, urban or rural, possessing a significant concentration, linkage, or continuity of sites, landscapes, structures, or objects, united by past events or aesthetically by plan or physical developments. A district may also be composed of individual elements separated geographically but linked by association or history.

Historic landscape - A cultural landscape associated with events, persons, design styles or ways of life that are significant in American history, landscape architecture, archeology, engineering, and culture. A landscape listed in or eligible for the National Register of Historic Places.

Historic Resource Survey (HRS) - A historical overview of a park or region that identifies and evaluates the cultural resources within historic contexts. The study is a synthesis of all available cultural resource information from all disciplines in a narrative designed to serve managers, planners, interpreters, cultural resource specialists, and interested public as a reference for the history of the region and the resources within a park. It includes preparation of National Register

nominations for all qualifying resources and is the principal tool for completing the Cultural Landscape Inventory and the List of Classified Structures. The HRS identifies needs for special history studies, cultural landscape reports, and other detailed studies and may make recommendations for resource management and interpretation.

Historic property - A district, site, structure, or landscape significant in American history, architecture, engineering, archeology or culture. Or, an umbrella term for all entries in the National Register of Historic Places.

Historic site - A landscape significant for its association with a historic event, activity, or person.

Historic Structure Report (HSR) - A report that serves as the primary guide to treatment and use of a historic structure and may also be used in managing a prehistoric structure. The report includes a management summary, developmental history of the structure and current condition, treatment and use, and record of treatment.

Historic vernacular landscape - A landscape with a use, construction or physical layout that reflects endemic traditions, customs, beliefs, or values. The expression of cultural values, social behavior, and individual actions over time is manifested in physical features and materials and their interrelationships, including patterns of spatial organization, land use, circulation, vegetation, structures, and objects. The physical, biological, and cultural features of the landscape reflect the customs and everyday lives of people.

Historical context - An organizing structure created for planning purposes that groups information about historic properties based on common themes, time periods, and geographical areas.

Historical integrity - The authenticity of a cultural landscape's historic identity, evidenced by the survival of physical characteristics that existed during its historic or prehistoric period. The extent to which a cultural landscape retains its historic appearance.

Historical significance - The meaning or value ascribed to a structure, landscape, object, or site based on the National Register criteria for evaluation, typically from its association and integrity.

Integrity - See historical integrity

Landscape characteristics - The tangible and intangible characteristics of a landscape that define and characterize the landscape that, individually and collectively, give a landscape character and aid in understanding its cultural value. The term is applied to either cultural derived or naturally occurring processes or to cultural and natural physical forms that have influenced the historical developments of a landscape or are the products of its development. Landscape characteristics include the following: natural systems and features, spatial organization, land use, cultural traditions, cluster arrangement, circulation, topography, vegetation, buildings and structures, views and vistas, constructed water features, small scale features, archeological sites.

List of Classified Structures (LCS) - A computerized, evaluated inventory of all historic and prehistoric structures having historical, architectural, or engineering significance for which the National Park Service has or plans to acquire any legal interest. Included in the LCS are structures that individually meet the criteria of the National Register of Historic Places and contributing elements of sites and districts that meet the Register criteria. Also included are moved, reconstructed, and commemorative structures and structures achieving significance within the last 50 years that are managed as cultural resources because of decisions made in the planning process.

Location - The place where a cultural landscape was constructed or the place where the historic event(s) occurred.

Material - The physical elements that were combined or deposited to form a cultural landscape. Historic material or historic fabric is that from a historically significant period, as opposed to material used to maintain or restore a cultural landscape following its historic period(s).

National Historic Landmark - A district, site, building, structure, or object of national historical significance, designated by the Secretary of the Interior under authority of the Historic Sites Act of 1935.

National Register of Historic Places - The comprehensive list of districts, sites, buildings, structures, and objects of national, regional, state, and local significance in American history architecture, archeology, engineering and culture kept by the National Park Service under authority of the National Historic Preservation Act of 1966.

Period of significance - The span of time for which a cultural landscape attains historical significance and for which the landscape meets National Register criteria.

Preservation - The act or process of applying measures to sustain the existing form, integrity, and material of a cultural landscape. Work may include preliminary measures to protect and stabilize the landscape, but generally focuses on the ongoing preservation maintenance and repair of historic materials and features rather than extensive replacement and new work.

Preservation maintenance - Action to mitigate wear and deterioration of a cultural landscape without altering its historic character by protecting its condition, repairing when its condition warrants with the least degree of intervention including limited replacement in-kind. Replacing an entire feature in-kind is appropriate when the level of deterioration or damage of materials precludes repair, and stabilization to protect damaged materials or features from additional damage. For archeological sites it includes work to moderate, prevent or arrest erosion.

Rapid Ethnographic Assessment Project (REAP) - A project-driven study and battery of methods including focus groups, transect walks, and community mapping, to acquire and analyze data for planning and program evaluation decisions. A short term study that does not replace the need for the more detailed Ethnographic Overview and Assessment or Traditional Use Study.

Reconstruction - The act or process of depicting, by means of new work, the form, features, and detailing of a non-surviving cultural landscape, or any part thereof, for the purpose of replicating its appearance at a specific time and in its historic location.

Record of treatment - A compilation of information documenting actual treatment, including accounting data, photographs, sketches, and narratives outlining the course of work, conditions encountered, and materials used.

Rehabilitation - The act or process of making possible an efficient compatible use for a cultural landscape through repair, alterations, and additions while preserving those portions or features that convey its historical, cultural, and architectural values.

Resource Management Plan (RMP) - A specific plan of action for cultural and natural resource management objectives, which is used to prioritize requests for funding and to guide the expenditure of funds allocated for resource management. The cultural resource component of the plan summarizes the cultural resource values and related mission and purposes of the park, and defines and programs the activities required to perpetuate and provide for the public enjoyment of resources.

Restoration - The act or process of accurately depicting the form. Features, and character of a cultural landscape as it appeared at a particular period by means of the removal of features from other periods in its history and reconstruction of

missing features from the restoration period.

Section 106 - Section 106 of the National Historic Preservation Act of 1966 requires federal agencies to take into account the effects of their proposed undertakings on properties included or eligible for inclusion in the National Register of Historic Places. The Act ensures that the Advisory Council on Historic Preservation has an opportunity to comment on proposed undertakings.

Setting - The physical environment of a cultural landscape or the character of the place in which a property played its historical role.

Significance - See historical significance

Small-scale features - The elements proving detail and diversity for both functional needs and aesthetic concerns in the landscape. Examples of features associated with small-scale features include fences, benches, signs, and road markers.

Spatial organization - The three-dimensional organization of physical forms and visual associations in the landscape that define and create spaces, including the articulation of ground, vertical, and overhead planes. Examples of features associated with spatial organization include circulation systems, views and vistas, divisions of property, and topography.

Structure - See buildings and structures

Theme - A trend or pattern in history or prehistory relating to a particular aspect of cultural development, such as farming or mining.

Topography - The three-dimensional configuration of the landscape surface characterized by features, such as slope, orientation, elevation and solar aspect. Examples of features associated with topography include earthworks, drainage ditches, knolls, and terraces.

Traditional cultural property - A property associated with cultural practices or beliefs of a living community that are rooted in that community's history or are important in maintaining its cultural identity. Traditional cultural properties are ethnographic resources eligible for listing in the National Register.

Traditional Use Study - An in depth field study that describes and analyzes traditional resource use and management regimes to meet legislative requirements, provide baseline information for interpretive programs, monitor the effect on resources, determine levels of protection, and assess effects of restricted use on traditional users.

Treatment plan - A plan that graphically depicts a strategy and actions for treatment of a cultural landscape, including preservation, rehabilitation, restoration and reconstruction.

Undertaking - As referred to in Section 106 of the National Historic Preservation Act of 1966, any federal, federally assisted, federally licensed, or federally sanctioned project, activity, or program that can result in changes in the character or use of historic properties. Undertakings include new and continuing projects, programs, and activities that are directly undertaken by federal agencies, supported in whole or in part, directly or indirectly, by federal agencies, carried out pursuant to a federal lease, permit, license, approval, or other form of permission, or proposed by a federal agency for congressional authorization or appropriation. Undertakings may or may not be site-specific.

Vegetation - An individual or aggregate plant features of deciduous and evergreen trees, shrubs, vines, ground covers and herbaceous plants, and plant communities, whether indigenous or introduced. Examples of features associated with vegetation include specimen trees, allees, woodlots, orchards, and perennial gardens.

Views and vistas - The prospect created by a range of vision in the cultural landscape, conferred by the composition of other landscape characteristics. Views are the expansive or panoramic prospect of a broad range of vision, which may be naturally occurring or deliberately contrived. Vistas are the controlled prospect of a discrete, linear range of vision, which is deliberately contrived.

Workmanship - The physical evidence of the crafts of a particular culture or people. The techniques and skills necessary to execute or construct a particular detail or feature.

APPENDIX 3: MISSION AND THEMES FROM THE PARK'S GENERAL MANAGEMENT PLAN

P A R K M I S S I O N

MISSION STATEMENT

The foundation of the general management plan rests on the park mission, a short narrative that reflects the park's purpose and significance. The mission provides a common ground for park management based on the 1996 enabling legislation. It describes the management philosophy for the park and what the park is to be like in the future.

The mission of the Boston Harbor Islands, a national park area, is to protect the islands as a resource of national significance and to make the island system an integral part of the life of the surrounding communities and region, while improving public knowledge and access for education, recreation, and tranquility within an urban area.

PURPOSE AND SIGNIFICANCE

Park purpose and significance statements support the mission statement. The purpose states why the park was established as a unit of the national park system. Park significance defines the park's place within the broader regional and national context. Park themes flow from these statements and incorporate key concepts that characterize the Boston Harbor Islands national park area. Their function is to communicate the park's purpose and significance to the public.

The purpose of Boston Harbor Islands, a national park area is:

- to preserve and protect an island system within Boston Harbor, along with associated natural, cultural, and historic resources
- to manage the islands in partnership with public and private entities
- to provide public access, where appropriate, to the islands and surrounding waters for the education, enjoyment, and scientific and scholarly research of this and future generations
- to tell the islands' individual stories and to enhance public understanding and appreciation of the island system as a whole, including the history of American Indian use and involvement.

By their configuration, assemblage of natural, geologic, cultural, and historic features, and proximity to a major metropolitan area, the Boston Harbor Islands collectively offer outstanding opportunities for public use and enjoyment. The primary significance of the park's resources resides in:

- islands and peninsulas composed of 1,600 acres of land, archeological resources, historic sites, open space, wildlife habitats, and 35 miles of relatively undeveloped shoreline; all inside an area of 50 square miles and set against the skyline of Boston and other harbor communities
- the only drumlin field in the United States that intersects a coast, formed by the glaciers some 15,000 years ago
- opportunities for tranquility and personal renewal, and land- and water-based education and recreation within an urban area with potential to serve visitors from around the nation.

Contributing to the significance of the park are:

- resources and sites associated with thousands of years of occupation of the islands by American Indians
- three National Historic Landmarks—Boston Light, Fort Warren, and Long Wharf—and other historic sites and landscapes resulting from Euro-American use
- complex natural communities adapted to coastal and island life
- social service facilities and urban infrastructure (water and sewer) that are an integral part of the surrounding communities as well as the history of the region.

PARK THEMES

Park themes communicate the national significance of the Boston Harbor Islands. They are conceptual, rather than a simple listing of important topics or a chronology of events. The themes articulate the connections between the islands and express key concepts that characterize the system. There are hundreds of individual resources (both natural and cultural) and countless stories about the Boston Harbor Islands that could be presented to visitors and students in interpretive and education programs. The pitfall is that the visitor could become overwhelmed by the profusion of unrelated facts and fail to appreciate the island system as a whole. To help people consider and learn more about the bigger picture, the Partnership has developed four themes: Islands on the Edge, Home in the Harbor, Portal to New England, and Renewal and Reconnection.

A principle that has informed theme development is integration: nature and human history are interconnected. Similarly, stories related to Euro-American and American Indians are interwoven. The holistic approach breaks down the rigid lines often perceived between past and present, between people and their environment, and between life on the islands during pre-contact and post-contact periods.

While primarily useful in communicating with visitors, the themes also can be used to help organize concepts related to park management, such as research.

More specific story statements that deal with individual islands or more detailed ideas may be elaborated from the park themes for use in education and interpretation. Sample story statements are presented in Appendix 18. The themes and accompanying sub-themes are presented below.

ISLANDS ON THE EDGE

Since their ancient formation by rising sea level, the Boston Harbor Islands have literally been on the edge of the continent, places where land meets sea. With the growth of Boston and its surrounding communities, the islands came to be unusual for their lack of inhabitants and development at the edge of a major metropolitan area. Figuratively, the Boston Harbor Islands have often been on the "edge of society": places used to isolate people, institutions, and activities.



Islands on the Edge

Sub-themes

ON THE EDGE OF THE CONTINENT

The Boston Harbor Islands mark a zone where a drumlin field intersects a coastline—a geological rarity—and where salt water meets fresh water.

ON THE EDGE OF THE CITY

Boston Harbor Islands national park area contains 34 islands with a wealth of natural and cultural resources, at the edge of a major metropolitan area.

ON THE EDGE OF SOCIETY

The Boston Harbor Islands have been perceived as being on the "edge of society" and have been used to isolate people, institutions, and activities.

HOME IN THE HARBOR

The islands and surrounding estuary have been home to a rich diversity of plant and animal life for millennia. People have lived on and around the Boston Harbor Islands for thousands of years and have made a mark on the landscape.

Sub-themes

NATURAL INHABITANTS

Terrestrial, intertidal, and estuarine life abounds on and around the islands.

AMERICAN INDIAN HOMELAND

American Indians have lived on the Boston Harbor Islands for thousands of years.

FARMERS, FISHERS, AND FACILITY KEEPERS

Although most of the islands were never permanently settled, nearly all were home to farm and fishing communities and to people who worked in facilities located on the islands.



Home in the Harbor

PORTAL TO NEW ENGLAND

Marking the maritime entry to New England, the Boston Harbor Islands have played an important role in European exploration, navigation, commerce, and defense.

Sub-themes

PORT OF ENTRY

European newcomers exploring this part of North America found Boston Harbor a hospitable haven and an important portal to the wealth of the "new world."



Portal to New England

MARITIME COMMERCE

Maritime commerce through Boston Harbor was the lifeblood of early New England and now, some 300 years later, it continues to be a vital economic activity.

NAVIGATION

The challenge of navigating through the islands led to the construction of numerous navigational aids, including the country's first lighthouse.

COASTAL DEFENSE

The islands have a long history as the location of strategic coastal defenses and are dotted with the remains of fortifications.

RENEWAL AND RECONNECTION

Boston Harbor and its islands provided a rich and sustaining environment for human life until pollution and intensive use of the waterfront severed people's everyday connection to the harbor. Now, with the cleanup of Boston Harbor, natural ecosystems have the opportunity to renew themselves. People are rediscovering the harbor as a setting for personal renewal and tranquility.

Sub-themes

RENEWING THE HARBOR

Boston Harbor has one of the most advanced wastewater treatment systems in America, with the result that the water is cleaner now than it has been in decades, thus serving as a catalyst to reconnect the city with the harbor.

CONNECTING TO NATIVE AMERICAN HERITAGE

American Indians value the Boston Harbor Islands as a place to celebrate and commemorate their cultural heritage.

OPPORTUNITIES FOR PERSONAL RENEWAL

During the 1800s and early 1900s, the Boston Harbor Islands were places for people to seek relaxation and personal renewal; today these opportunities are once again increasing.

PIONEERS IN LAND STEWARDSHIP

Individually, organizations that are members of the Boston Harbor Islands Partnership have been pioneers in the stewardship of our nation's natural and cultural heritage. Collectively, they are in the forefront of national park stewardship.

A BEACON FOR SUSTAINABLE DEVELOPMENT AND RENEWABLE RESOURCES

The Boston Harbor islands and their management can demonstrate the use of renewable resources and "green" technology to meet present needs without compromising the ability of future generations to meet their needs.



Renewal and Reconnection

APPENDIX 4: REVISION OF THE NATIONAL PARK SERVICE'S THEMATIC FRAMEWORK

Preamble
Over half of the units within the National Park Service (NPS) are cultural sites commemorating America's multi-faceted history. The NPS preserves these cultural resources – which include historic buildings, structures, landscapes and archaeological sites, as tangible evidence of the past – and strives to ensure that associated educational programming conveys an accurate and comprehensive view of history. The service also administers the National Historic Landmarks Program to recognize nationally significant cultural resources outside the park service. A conceptual tool for evaluating the significance of cultural resources within or outside the NPS is the service's "thematic framework" for history and prehistory. The framework is an outline of major themes and concepts that help us to conceptualize American history. It is used to help identify cultural resources that embody America's past and to describe and analyze the multiple layers of history encapsulated within each resource.

The first NPS thematic framework, adopted in 1936, consisted of several broad themes in American history. It was conceived in terms of the "stages of American progress" and focused mainly on the achievements of military and political figures. Revisions in 1970 and 1987 applied more detail in chronological and topical approaches and greatly expanded the number of themes and subthemes. However, the basic conceptualization of the past remained the same.

Thus, the 1987 framework did not adequately reflect how new scholarship has dramatically changed the way we look at the past. In the introduction to The New American History (1991), historian Eric Foner described this transformation:

In the course of the past twenty years, American history has been remade. Inspired initially by the social movements of the 1960s and 1970s which shattered the "consensus" vision that had dominated historical writing and influenced by new methods borrowed from other disciplines, American historians redefined the very nature of historical study.

That remaking of American's past has expanded the boundaries of historical inquiry to encompass not only great men and events but also ordinary people and everyday life. Public Law 101-628, Section 1209 (1991) directed the NPS to revise the 1987 thematic framework to incorporate these new approaches to examining and understanding America's past. This resulted in a gathering of academic scholars and NPS professionals in Washington, DC, June 18-20, 1993, to discuss the strengths and weaknesses of the old framework and to develop a rough draft of a revised framework. The meeting, cosponsored by the Organization of American Historians and the National Coordinating Committee for the Promotion of History, and supported by the American Historical Association, resulted in a completely rethought, revised thematic framework. Through eight concepts that encompass the multi-faceted and interrelated nature of human experience, the revised thematic framework reflects a more interdisciplinary, less compartmentalized approach to American history.

The revised thematic framework is a significant departure from the thematic outlines previously used by the National Park Service. It, however, better serves the National Park Service and other interested parties in evaluating historic properties, in assessing how well American history is represented in existing park system units and other protected areas, and in enhancing park interpretive programs to provide a fuller understanding of the Nation's past.

Overview of the Revised Thematic Framework

The revised framework will guide the NPS, working independently and with its partners in the private and public sectors, in:

- evaluating the significance of resources for listing in the National Register of Historic Places, for designation as National Historic Landmarks, or for potential addition to the National Park System;
- assessing how well the themes are currently represented in existing units of the National Park System and in other recognized areas; and,
- expanding and enhancing the interpretive programs at existing units of the National Park System to provide a fuller understanding of our nation's past.

The use of the framework need not be limited to the federal level, however, for the conceptualization it provides can equally inform preservation and interpretation at local, state, and regional levels.

The framework's themes are represented in the following diagram. They embrace prehistory to the modern period and a multiplicity of human experiences. The diagram reflects how scholarship is dramatically changing the way we look at the past, reconstructing it as integrated, diverse, complex, human experience. Each segment in the diagram represents a significant aspect of the human experience. The reality of the interrelationships is reflected in the overlapping circles.

The framework draws upon the work of scholars across disciplines to provide a structure for capturing the complexity and

meaning of human experience and for understanding that past in coherent, integrated ways. For purposes of organization, the following outline, like the diagram, provides eight seemingly discrete categories, but they are not meant to be mutually exclusive. Cutting across and connecting the eight categories are three historical building blocks: people, time, and place.

People

The centrality of people may seem obvious but should not be taken for granted. In their work, recent scholars have emphasized that people are the primary agents of change and must be the focus when we try to recapture the past. The framework also recognizes the variety of people who have populated our past. In every category of the outline, consideration of the variables of race, ethnicity, class, and gender will help us better grasp the full range of human experience. This approach does not mean forsaking the whole and breaking up our past into small unrelated pieces, but rather recognizing how the whole has been shaped by our varied histories.

Time

Time is central to both prehistory and history, not simply as a mechanism to locate or isolate events in history, but also as the focus of our concern with process and change over time. The emphasis is not only on "what happened" but also on "how and why," on the transformations that turn the past into the present.

There is no assumption of progress or inevitability in interpreting these transformations. Instead, the emphasis is on the tension between change and continuity and on understanding why and how particular choices were made. There is no fixed periodization scheme in this new framework. While the committee of scholars who worked on this revision recognizes that there are moments of significant change in our past, it has not proved valuable to break the past up into rigid segments of time that often ignore or obscure the complexity of historical change.

Place

The outline that follows was developed to address issues of national significance, yet it recognizes that region, community, and other dimensions of place are relevant. This framework acknowledges the richness of local and regional experiences and recognizes difference in place, particularly regional difference as an important factor in a fuller understanding of both the origins of national change and the impact of national trends and events.

Because place is the concrete context in which our history unfolds, a richer reconstruction of the past must include local and regional experience to help build appreciation for our national experience.

People, time, and place reach across all eight themes and contribute to the interconnections among the themes. One example that can be used to illustrate this interconnectedness is a Southern plantation dating from the 1830s. A quick survey suggests that the significance of this site cuts across every category of the outline. The move of a planter, his family, and his sizable household of slaves from Tidewater Virginia to land purchased from the Choctaws in Alabama would fall obviously under "Peopling Places," but the economic imperatives and agricultural developments that triggered the move and the adaptation of the plantation system to the new environment would fit under "Developing the American Economy," "Expanding Science and Technology," and "Transforming the Environment." While the lives of the plantation's white and black, male and female inhabitants fall under "Peopling Places" and "Creating Social Institutions and Movements," the design and construction of the distinctive "big house" and other plantation architecture illustrates the theme of "Expressing Cultural Values." The transfer of the planter's political power from Virginia to Alabama and the role of the planter class in antebellum Alabama falls under "Shaping the Political Landscape." Finally, the planter's dependence on the cotton economy and his influential role in international trade on the eve of the Civil War tie directly into "Developing the American Economy" and "Changing Role of the U.S. in the World." The outline suggests that users think broadly, not narrowly, that they look beyond traditional categories of historical significance in an effort to recapture the larger meaning and depth of past experience.

This conceptualization assists the National Park Service in deepening and broadening its identification and interpretation of sites. It suggests fresh opportunities to assess the significance of sites from new perspectives and at regional and local as well as national levels.

The framework rests on the assumption that, just as our understanding of the past has been reshaped in recent decades, so it will continue to evolve in the future. It should not be viewed as a final document or definitive statement. It is a part of an ongoing effort to ensure that the preservation and interpretation of our nation's historic and prehistoric resources continue to be informed by the best scholarship available.

The Revised Thematic Framework

I. Peopling Places

This theme examines human population movement and change through prehistoric and historic times. It also looks at family formation, at different concepts of gender, family, and sexual division of labor, and at how they have been expressed in the American past. While patterns of daily life, birth, marriage, childrearing, are often taken for granted, they have a profound influence on public life.

Life in America began with migrations many thousands of years ago. Centuries of migrations and encounters have resulted in diverse forms of individual and group interaction, from peaceful accommodation to warfare and extermination through exposure to new diseases.

Communities, too, have evolved according to cultural norms, historical circumstances, and environmental contingencies. The nature of communities is varied, dynamic, and complex. Ethnic homelands are a special type of community that existed before incorporation into the political entity known as the United States. For example, many Indian sites, such as Canyon de Chelly National Monument in Arizona, are on tribal lands occupied by Indians for centuries. Similarly, Hispanic communities, such as those represented by San Antonio Missions National Historical Park, had their origins in Spanish and Mexican history. Distinctive and important regional patterns join together to create microcosms of America's history and to form the "national experience."

Topics that help define this theme include:
1. family and the life cycle
2. health, nutrition, and disease
3. migration from outside and within
4. community and neighborhood
5. ethnic homelands
6. encounters, conflicts, and colonization

II. Creating Social Institutions and Movements

This theme focuses upon the diverse formal and informal structures such as schools or voluntary associations through which people express values and live their lives. Americans generate temporary movements and create enduring institutions in order to define, sustain, or reform these values. Why people organize to transform their institutions is as important to understand as how they choose to do so. Thus, both the diverse motivations people act on and the strategies they employ are critical concerns of social history.

Sites such as Women's Rights National Historical Park in Seneca Falls, New York, and the Eugene V. Debs National Historic Landmark in Indiana illustrate the diversity and changeable nature of social institutions. Hancock Shaker Village, a National Historic Landmark, and Touro Synagogue, a National Historic Site, reflect religious diversity. This category will also encompass temporary movements that influenced American history but did not produce permanent institutions.

Topics that help define this theme include:
1. clubs and organizations
2. reform movements
3. religious institutions
4. recreational activities

III. Expressing Cultural Values

This theme covers expressions of culture and people's beliefs about themselves and the world they inhabit. For example, Boston African American Historic Site reflects the role of ordinary Americans and the diversity of the American cultural landscape. Ivy Green, the birthplace of Helen Keller in Alabama, and the rural Kentucky Pine Mountain Settlement School illustrate educational currents. Walnut Street Theater in Pennsylvania, Louis Armstrong's house in New York City, the Chautauqua Historic District in New York, and the Cincinnati Music Hall, all National Historic Landmarks, reflect diverse aspects of the performing arts.

This theme also encompasses the ways that people communicate their moral and aesthetic values. The gardens and studio in New Hampshire of Augustus Saint-Gaudens, one of America's most eminent sculptors, and Connemara, the farm in North Carolina of the noted poet Carl Sandburg, both National Historic Sites, illustrate this theme.

Topics that help define this theme include:
1. educational and intellectual currents
2. visual and performing arts
3. literature
4. mass media
5. architecture, landscape architecture, and urban design
6. popular and traditional culture

IV. Shaping the Political Landscape

This theme encompasses tribal, local, state, and federal political and governmental institutions that create public policy and those groups that seek to shape both policies and institutions. Sites associated with political leaders, theorists, organizations, movements, campaigns, and grassroots political activities all illustrate aspects of the political environment. Independence Hall is an example of democratic aspirations and reflects political ideas.

Places associated with this theme include battlefields and forts, such as Saratoga National Historical Park in New York and Fort Sumter National Monument in South Carolina, as well as sites such as Appomattox Court House National Historical Park in Virginia that commemorate watershed events in the life of the nation.

The political landscape has been shaped by military events and decisions, by transitory movements and protests, as well as by political parties. Places associated with leaders in the development of the American constitutional system such as Abraham Lincoln's home in Illinois and the birthplace of Martin Luther King, Jr., in Atlanta, both National Historic Sites, embody key aspects of the political landscape.

Topics that help define this theme include:
1. parties, protests, and movements
2. governmental institutions
3. military institutions and activities
4. political ideas, cultures, and theories

V. Developing the American Economy

This theme reflects the ways Americans have worked, including slavery, servitude, and non-wage as well as paid labor. It also reflects the ways they have materially sustained themselves by the processes of extraction, agriculture, production, distribution, and consumption of goods and services.

Vital aspects of economic history are frequently manifested in regional centers, for example, ranching on the Great Plains illustrated by Grant-Kohrs Ranch National Historic Site in Montana. Individual economic sites, such as Lowell National Historical Park in Massachusetts, may be distinctive in representing both the lives of workers and technological innovations.

In examining the diverse working experiences of the American people, this theme encompasses the activities of farmers, workers, entrepreneurs, and managers, as well as the technology around them. It also takes into account the historical "layering" of economic society, including class formation and changing standards of living in diverse sectors of the nation. Knowledge of both the Irish laborer and the banker, for example, are important in understanding the economy of the 1840s.

Topics that help define this theme include:
1. extraction and production
2. distribution and consumption
3. transportation and communication
4. workers and work culture
5. labor organizations and protests
6. exchange and trade
7. governmental policies and practices
8. economic theory

VI. Expanding Science and Technology

This theme focuses on science, which is modern civilization's way of organizing and conceptualizing knowledge about the

world and the universe beyond. This is done through the physical sciences, the social sciences, and medicine. Technology is the application of human ingenuity to modification of the environment in both modern and traditional cultures. Alibates Flint Quarries National Monument in Texas reflects pre-Columbian innovations while Edison National Historic Site in New Jersey reflects technological advancement in historic times. Technologies can be particular to certain regions and cultures.

Topics that help define this theme include:
1. experimentation and invention
2. technological applications
3. scientific thought and theory
4. effects on lifestyle and health

VII. Transforming the Environment

This theme examines the variable and changing relationships between people and their environment, which continuously interact. The environment is where people live, the place that supports and sustains life. The American environment today is largely a human artifact, so thoroughly has human occupation affected all its features. Cuyahoga Valley National Recreation Area, which includes portions of the Ohio and Erie Canal, for example, is a cultural landscape that links natural and human systems, including cities, suburbs, towns, countryside, forest, wilderness, and water bodies.

This theme acknowledges that the use and development of the physical setting is rooted in evolving perceptions and attitudes. Sites such as John Muir National Historic Site in California and Sagamore Hill National Historic Site in New York, the home of President Theodore Roosevelt, reflect the contributions of leading conservationists. While conservation represents a portion of this theme, the focus here is on recognizing the interplay between human activity and the environment as reflected in particular places, such as Hoover Dam, a National Historic Landmark.

Topics that help define this theme include:
1. manipulating the environment and its resources
2. adverse consequences and stresses on the environment
3. protecting and preserving the environment

VIII. Changing Role of the United States in the World Community

This theme explores diplomacy, trade, cultural exchange, security and defense, expansionism, and, at times, imperialism. The interactions among indigenous peoples, between this nation and native peoples, and this nation and the world have all contributed to American history. Additionally, this theme addresses regional variations, since, for example, in the eighteenth century, the Spanish southwest, French and Canadian middle west, and British eastern seaboard had different diplomatic histories.

America has never existed in isolation. While the United States, especially in the nineteenth and twentieth centuries, has left an imprint on the world community, other nations and immigrants to the United States have had a profound influence on the course of American history.

The emphasis in this category is on people and institutions, from the principals who define and formulate diplomatic policy, such as presidents, secretaries of state, and labor and immigrant leaders, to the private institutions, such as the Carnegie Endowment for International Peace, that influence America's diplomatic, cultural, social, and economic affairs. Monticello, the Virginia home of Thomas Jefferson, a National Historic Landmark, reflects the diplomatic aspirations of the early nation.

Topics that help define this theme include:
1. international relations
2. commerce
3. expansionism and imperialism
4. immigration and emigration policies

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