Bodie Island Light Station

Cape Hatteras National Seashore

Cultural Landscape Report

August 2014

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National Park Service

Southeast Region

Cultural Resources, Partnerships & Science

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Cover Image: Bodie Island Light Station, 1893 (CAHA Collection)

Bodie Island Light Station
Cape Hatteras National Seashore
Cultural Landscape Report

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Foreword

We are pleased to make available this cultural landscape report, part of our ongoing effort to provide comprehensive documentation for the landscapes and historic structures of National Park Service (NPS) units in the Southeast Region (SER). A number of individuals and institutions contributed to the successful completion of this work. We would particularly like to thank the staff at Cape Hatteras National Seashore (CAHA) for their assistance throughout the process. We hope this study will be a useful tool for park management in continuing efforts to preserve the cultural landscape and to others interested in the significance of the park's many cultural resources.

Dan Scheidt, Chief
Cultural Resources, Partnerships & Science
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Introduction

Management Summary

The light station is located on Bodie Island of the Cape Hatteras National Seashore in Dare County, North Carolina. The station is set back about eight-tenths of a mile from the Atlantic Ocean and one hundred yards or so from the marshy Roanoke Sound to the west. Between the shoreline and the lighthouse is North Carolina 12 (NC 12), connecting the communities of Nags Head about eleven miles to the north and Hatteras about fifty miles to the south. The Bodie Island Light Station encompasses a striking combination of historic resources and a near-pristine marine environment.

Congress authorized Cape Hatteras as the first National Seashore in 1937, but it was another sixteen years before the park was officially established in January of 1953. On October 15, 1953, the Bodie Island Light Station was declared surplus property by the U. S. Coast Guard (USCG) and transferred to the National Park Service (NPS) as part of the Cape Hatteras National Seashore. Excluded were the lighthouse and the land on which it stood, 100' on a side. On July 13, 2000, the USCG transferred title of the lighthouse and approximately .22 of an acre to the NPS. In 2005, the USCG transferred the Fresnel lens and the operation of the lamp as an active aid to navigation to the NPS.[1]

The Bodie Island Light Station was listed in the National Register of Historic Places in 2003. It is significant in the areas of architecture, engineering, maritime history, and transportation. The centerpiece of the original 15-acre site is the 1872 brick tower and cast-iron lantern with an attached brick oil house/workroom. The tower reflects a standardized design used for many first-order

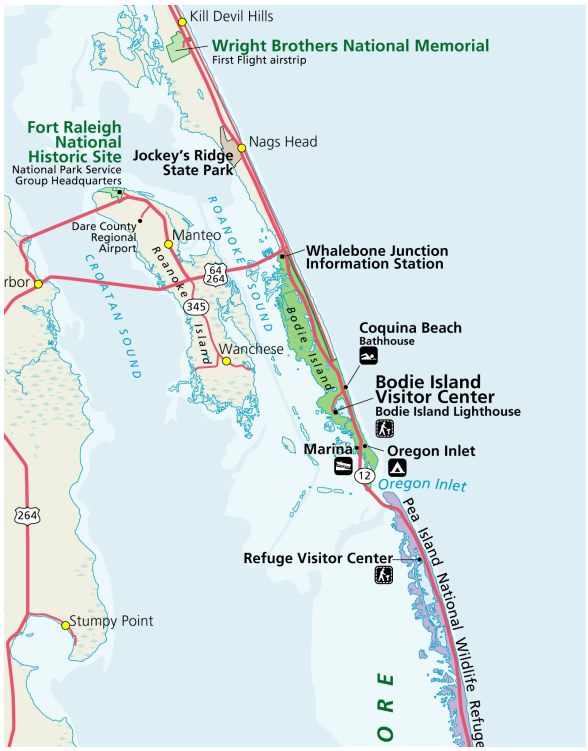


FIGURE 1. Bodie Island site map. (Harpers Ferry Center/ NPS)

lighthouses, a standardization process begun by the U.S. Light-House Board (Light-House Board) after its establishment in 1852. The Bodie Island Lighthouse retains its 1871 Fresnel lens, and several contributing features remain in the historic station cultural landscape.[2]

Cultural landscapes are settings that humans have created in the natural world. They reveal fundamental ties between people and the land because of our need to grow food, give form to our settlements, meet requirements for recreation, and find suitable places to bury our dead. Landscapes are intertwined patterns of things both natural and constructed: plants and fences, waterways and buildings. They range from formal gardens to historic cotton fields, military parade grounds to community settlements. They are special

1. Chief, Land Resources Program Center, Southeast Region to Superintendent, Cape Hatteras National Seashore, September 22, 2000, CAHA Collection 5602, Accession 359, Folder 4; Joseph K. Oppermann – Architect, P.A., *Bodie Island Light Station Double Keepers Quarters Historic Structure Report* (Atlanta, GA: Southeast Regional Office, 2009), 32; Cheryl Shelton-Roberts and Bruce Roberts, *Bodie Island Lighthouse: Its History & Restoration* (Morehead City, NC: Lighthouse Publications, 2010), 21.

2. Candace Clifford, "Bodie Island Light Station National Register Nomination" (July 2002, photocopy), 5-6, 17; in 1822, French physicist Augustin Fresnel developed a complex lens that concentrated light into a powerful beam.

places—expressions of human manipulation and adaptation of the land.

The purpose of this cultural landscape report (CLR) is to document the physical development of the Bodie Island Light Station beginning with the completion of the first Bodie Island Lighthouse in 1848 to the present. A site history is followed by a description of the current condition of the property and an analysis of historical significance and integrity. This includes an evaluation of the light station's historic and contemporary landscape characteristics, such as changes in spatial organization, circulation, and vegetation. With an understanding of the historic fabric, character-defining features of the cultural landscape are identified. The report then presents treatment issues and recommendations to direct the active management of the cultural landscape.

Historical Summary

Native American occupation of coastal North Carolina emerged about 1,200 years ago. These indigenous cultures at the time of white settlement were linguistically associated with either the Algonquian or Iroquoian traditions. European settlement led to the eventual disintegration of the aboriginal populations, mainly by disease and warfare. After the defeat of the Iroquoian tribes in the Tuscarora War of 1711-1715, American Indians eventually disappeared from eastern North Carolina.[3]

The Outer Banks were first explored by Giovanni da Verrazzano's 1524 expedition for the French. In 1584, a reconnaissance voyage for Sir Walter Raleigh's English venture landed above Cape Hatteras. The colonists of the subsequent 1587 settlement on Roanoke Island under the command of John White, known as the "Lost Colony," were discovered missing when a supply ship returned in 1590.

Permanent settlement of North Carolina did not begin until the mid-seventeenth century, when fur trappers, Indian traders, and planters from Virginia's southern frontier moved into the area. By the time North Carolina became a state in 1789, about 1,000 permanent residents lived on the Outer Banks, where winds, water, sand, and storms have continually shaped the landscape and the culture.

This isolated land has challenged navigation along its shore since the grounding of Richard Grenville's flagship Tyger at Ocracoke Inlet in 1585. Since then, the number of ships lost along this treacherous coastline gave rise to its being known as the "Graveyard of the Atlantic."[4]

Prompted by a need for aids to navigation, the Department of the Treasury built three lighthouses to protect the southern portion of the Outer Banks but left the area to the north of Cape Hatteras without a light. On March 3, 1837, Congress appropriated $5,000 to build a lighthouse on Pea Island, just south of Bodie, but Stephen Pleasonton, Fifth Auditor of the Department of the Treasury, decided on Bodie Island as the location.[5]

Between 1848 and 1872, three lighthouses were constructed on Bodie Island. The first succumbed to a poor foundation, and the original tower was abandoned and then razed. In 1851, Congress replaced Pleasonton with a nine-member Light-House Board, which oversaw the construction of a second lighthouse that was completed in 1859. During the Civil War, retreating Confederate troops destroyed the Bodie Island Lighthouse to prevent Union troops from using it as a lookout. Because Oregon Inlet had moved to within 400 yards of the previous site, the Light-House Board sought a new location across the inlet for a third lighthouse and acquired land from John B. Etheridge on June 13, 1871.[6]

Congress created the U.S. Bureau of Lighthouses, also known as the Lighthouse Service, in 1910, under the Department of Commerce. As the successor of the Light-House Board, it oversaw the administration of all lighthouses and lightvessels until 1939 when it was incorporated into the USCG. A major change in operation occurred at the Bodie Island Light Station the following year, when the USCG transferred the two keepers and operated the lighthouse by an electric generator operated with a timer. With the transfer of two keepers, the Nags Head Lifeboat Station attended the light.

3. http://www.nps.gov/seac/hnc/outline/index.htm; U. S. Army Corps of Engineers, *Cultural Resource Studies for Eastern North Carolina Above Cape Lookout* (Wilmington, NC: U. S. Army Corps of Engineers, 1986), 2-2.

4. David Stick, *The Outer Banks of North Carolina 1584-1958* (Chapel Hill: The University of North Carolina Press, 1958), 12-21, 72-77.

5. Gary S. Dunbar, *Historical Geography of the North Carolina Outer Banks* (Baton Rouge: Louisiana State University Press, 1958), 9; Oppermann, 8-9.

6. Francis R. Holland, Jr., *A History of the Bodie Island Light Station* (Washington, DC: National Park Service, 1967), 23; Roberts, 5; Oppermann, 14.

On October 15, 1953, the USCG declared Bodie Island Light Station surplus property (original 15-acre station and 40 plus acres acquired in 1945) and transferred it to the NPS as part of the Cape Hatteras National Seashore Recreation Area. Excluded were the lighthouse and the land on which the lighthouse stood, 100 feet on a side. Development efforts in the 1950s included an entrance road and parking area and the rehabilitation of buildings on site.[7]

Beginning in 1983, a series of inspections by different parties identified numerous deficiencies in the light tower and oil house. The deterioration of the lighthouse and the lack of preventive maintenance arose from a misunderstanding between the USCG and the NPS about who was responsible for maintaining the structure. In 1994, the Outer Banks Lighthouse Society formed to aid in the preservation of the buildings and artifacts of the lighthouses in the area.

On July 13, 2000, the transfer of the lighthouse from the USCG to the NPS occurred. In 2005, the USCG transferred the Fresnel lens and the operation of the lamp as an active aid to navigation to the NPS.[8]

Following the completion of a historic structure report for the lighthouse/oil house and preservation/rehabilitation plans, the NPS sought federal funding for lighthouse restoration in 2007 and 2008 but failed to receive any. The federal Omnibus Budget Bill of 2009-2010 included long-awaited funding ($3 million) for repair and replacement of ironwork as well as repair of masonry and stone, repair of floors and other interior treatments, lead paint abatement, painting, and installing new handrails and a fire suppression system. NPS received an additional $1.89 million in fiscal year 2012. The project concluded in December 2012. Except for one weekend in 1988, NPS opened the lighthouse for climbing in April 2013 for the first time in its history. Visitation will be limited to 380 climbers per day, who will be charged a special amenity fee. It is proposed that the lighthouse will be open from March through December.[9]

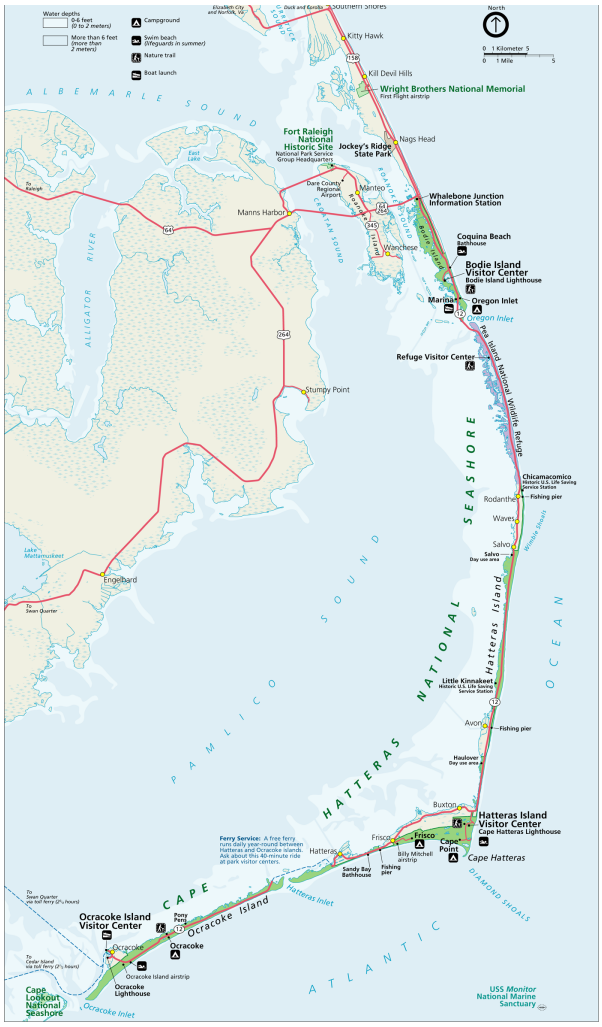


FIGURE 2. Cape Hatteras National Seashore. (Harpers Ferry Center/NPS)

Study Boundary

The station is located on Bodie Island in the Cape Hatteras National Seashore of the North Carolina Outer Banks in Dare County, North Carolina. The Bodie Island Light Station Historic District National Register boundary forms a large square demarcated by four stones that correspond to the original fifteen-acre site acquired from John and Fanny Etheridge on June 13, 1871. The USCG acquired an additional 40 plus acres in 1945 for future development. The cultural landscape report is limited to a study of the Bodie Island Light Station Historic District cultural landscape. No historic resources are located on the land acquired in 1945.

The larger setting is the barrier islands of the North Carolina Outer Banks, a thin slice of land separated from the mainland by a large expanse of shallow water, comprising the Albemarle, Croatan, and Pamlico Sounds. The formation of

7. Oppermann, 31-32; Hartramph Inc./Office of Jack Pyburn, *Bodie Island Lighthouse Historic Structure Report* (Atlanta, GA: Southeast Regional Office, 2004), 27-28.

8. Bodie Island Lighthouse Lens, April 14, 2005, CAHA Collection 5602, Accession 359, Folder 1.

9. CAHA Collection 5602, Accession 359, Folder 2.

these barrier islands began fifteen thousand years ago when the ocean level was 300 feet lower than today and North Carolina's coastline extended fifty to seventy-five miles east of its present location. Winds from the west piled up sediment to create a large dune at the easternmost edge of the continental landmass. Then, as glaciers melted and the sea level rose, the dunes became barrier islands paralleling the coastline.[10]

Project Methodology

The cultural landscapes program of the Southeast Region Cultural Resources Division (SER-CRD) completed the study. SER-CRD staff performed archival research, prepared the site history, documented existing conditions, and prepared comparative analyses, integrity evaluations, and treatment recommendations. The site history, existing conditions, and analysis and evaluation sections identify the historical values associated with the landscape, document extant landscape characteristics and features, and define the significance and integrity of the landscape. Treatment recommendations enable the park to better manage its cultural landscape.

Archival research and existing conditions documentation were conducted during site visits in June 2012 and July 2013. During the site visit, SER-CRD staff met with key park staff to discuss management issues and treatment concerns regarding the cultural landscape. These issues include the need for additional parking to accommodate an expected increase in visitation when the lighthouse reopens in April 2013, staging of visitors waiting to climb the lighthouse, removal of pines planted in the 1960s, and a desire to reduce the area of mowing. During the site visit, SER-CRD staff ground-truthed and annotated base maps and completed digital photography as part of the existing conditions survey.

SER-CRD staff completed comparative analyses and integrity evaluations by comparing historical information—taken from the written site history and historic maps and photographs—to existing conditions data in order to understand how the landscape had changed over time. The landscape characteristics and associated features, values, and associations that make a landscape historically significant were identified. Integrity evaluations used the seven aspects of historic integrity as described in *A Guide to Cultural Landscape Reports* and standards set by the National Register of Historic Places.

Appropriate treatment recommendations were developed from the condition assessments and the results of the comparative analyses and integrity evaluations. Recommendations responded to existing issues and offered suggestions that would preserve and enhance Bodie Island Light Station's historic landscape character

The best documentation and evaluation of the landscape features is the 2003 National Register nomination prepared by Candace Clifford, the 2009 double keepers' quarters historic structure report prepared by Joseph K. Oppermann - Architect, P.A., the 1982 *Study of the Shrubs and Vegetation Patterns on Bodie Island, North Carolina From 1932 to 1982* written by Mary T. Shroh, the 1987 Research/Resources Management Report SER-85 *Vegetation Changes on Bodie Island, Cape Hatteras National Seashore, North Carolina* written by Ian Firth, and "Vegetation Community Monitoring at Cape Hatteras National Seashore, 2010" compiled by Michael W. Byrne, Sarah L. Corbett, and Joseph C. DeVivo.

Other park planning documents included the 2004 lighthouse and oil house historic structure report prepared by Hartramph Inc., *A History of the Bodie Island Light Station* written by Francis R. Holland, Jr., *The Creation and Establishment of Cape Hatteras National Seashore* written by Cameron Binkley, *Vegetation Responses to Fire on Cape Hatteras National Seashore, North Carolina, NPS-CPSU Technical Report 25* written by Kathryn L. Davison, and *Birds of the Bodie Island Lighthouse Pond* written by Jim Boone.

Other sources that guided preparation of the cultural landscape report were *Bodie Island Lighthouse: Its History and Restoration* written by Cheryl Shelton-Roberts and Bruce Roberts, *The Outer Banks of North Carolina* written by David Stick, *Historical Geography of the North Carolina Outer Banks* written by Gary S. Dunbar, and *The Outer Banks of North Carolina* written by Robert Dolan and Harry Lins.

Additional archival research for the CLR was undertaken at the Cape Hatteras archives. Field work conducted in 2012 and 2013 resulted in updated information about the site.

10. Oppermann, 7-8.

Summary of Findings

The centerpiece of the Bodie Island Light Station is the lighthouse with its first-order Fresnel lens. The Light-House Board oversaw the design and construction of nineteenth-century light stations after its establishment in 1852, and the tower reflects a standardized design used for many first-order lighthouses. The Light-house Board classified lighthouses according to its position and use. Primary coast lights were located at the most prominent points along the coast. The more important the classification, the larger the order of lens used. First-order lenses provided the largest range.[11]

The layout of the site was consistent with other light stations of the day, where support buildings were clustered for easy access. A rectilinear arrangement resulted in a primary northeast-southwest axis linking the light tower and integral oil house and the double keepers' quarters. Support buildings were placed along the northwest-southeast axis flanking the double keepers' quarters. The station was enclosed by a wooden fence and walkways connected the various buildings on site. Although the site lacks its original outbuildings (other than the three cisterns), it retains remnants of the original circulation system, which linked major features of the station.

Plantings at the site historically have been limited to native vegetation, with no trees or shrubs noted in regular inspections made at the station during the administration by the Light-House Board and the USCG. Garden plots located at the rear (east) of the station were noted as being unprofitable in early reports. The NPS planted pines along the entrance road and parking area in the 1960s.

Although its design integrity remained intact, the preservation of the Bodie Island Lighthouse was threatened until funding was secured for its restoration in the 2009-2010 Omnibus Budget Bill. The deteriorative effects of time, the harsh marine environment, and the corrosion of original cast-iron elements resulted in significant damage to historic fabric. The NPS received additional funding in January 2012 and completed the project in December 2012. Except for one weekend in 1988, the lighthouse opened to the public for climbing for the first time in its history in 2013.

11. Candace Clifford and Mary Louise Clifford, *Nineteenth-century Lights: Historic Images of American Lighthouses* (Alexandria, VA: Cypress Communications, 2000), 78.

Period of Significance

The period of significance for the cultural landscape of the Bodie Island Light Station spans the years 1872-1956, beginning with the construction of the light tower, oil house, double keepers' quarters, and outbuildings. The lighthouse, with its Fresnel lens in place, has been a critical federal aid to national and international navigation from 1872 until present. Development at the light station ended in 1956 when the NPS completed an access road and parking area, designed by the Eastern Office of Design and Construction.

Integrity

Integrity of location, setting, feeling, workmanship, materials, and association remains high. The station retains a nineteenth and early twentieth-century appearance with few modifications.

Treatment

The overarching treatment associated with the historic landscape is preservation/rehabilitation. The lighthouse and integral oil house underwent a multi-phased restoration effort that was completed in December 2012. Treatment recommendations address parking and staging issues related to an expected increase in visitation when the lighthouse reopens in 2013. These include a new parking area; adaptively reusing the woodshed foundation as a shade structure; new site furnishings; reducing mowing regimes; and removal of pines blocking views to the west.[12]

12. A number of the treatment recommendations at the site were carried out by the park in 2013 prior to reopening of the lighthouse. See Record of Treatment for a list of the work accomplished in 2013 prior to the signing of the cultural landscape report. Existing conditions in the report are described as recorded during a 2012 site visit.

Site History

Geologic History

The Outer Banks of North Carolina refer to a thin slice of land separated from the mainland by a large expanse of shallow water, comprising the Albemarle, Croatan, and Pamplico Sounds. The term "banks" is a topographic term that refers to a series of undersea sand bars or "sand banks," as they were called in the earliest references such as John Lawson's *A New Voyage to Carolina*.

Scientists generally agree that sea level during the past one-half million years has alternated between periods of interglacial conditions when continental ice melted causing shorelines to advance inland across the Continental Shelf and periods of glaciation when water was withdrawn from the seas and stored as glacial ice causing shorelines to move seaward. When the last period of glaciation ended between 14,000 and 18,000 years ago, the ocean level was 300 feet lower than today, and North Carolina's coastline extended 50 to 75 miles east of its present location.

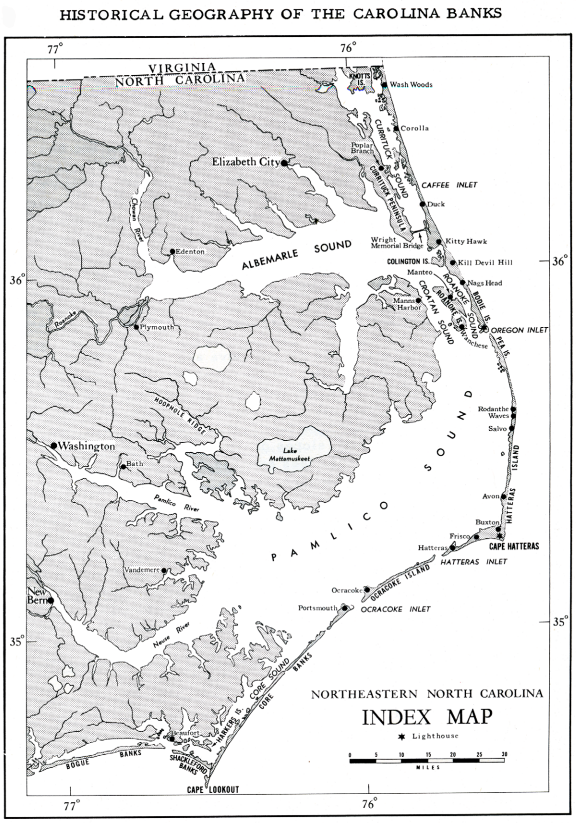


FIGURE 3. The Outer Banks of North Carolina (Reprinted from *Historical Geography of the North Carolina Outer Banks*).

Vegetation stabilized the Outer Banks when sufficient rainfall removed the salinity from the sand and pushed the underlying saltwater table downward and to the sides so that a large pocket of fresh water was formed beneath the banks. Seeds carried in the air or transported by shore birds took hold. Grasses anchored the sand, which allowed shrubs to survive. Finally, cedar, pine, and live oak, mixed with dense grape vine, covered areas that had once been bare sand beach.[2]

Native American Occupation

The Late Woodland cultures in coastal North Carolina emerged about 1,200 years ago. These indigenous cultures at the time of white settlement were linguistically associated with either the Algonquian or Iroquoian traditions. Shell and

1. Robert Dolan and Harry Lins, T*he Outer Banks of North Carolina*, USGS Professional Paper 1177-B (Washington, DC: U.S. Geological Survey/U.S. Dept. of the Interior, 1986), 11-13; Oppermann, 1.

2. Stick, 2-3; John Lawson, *A New Voyage to Carolina; Containing the Exact Description and Natural History of That Country: Together with the Present State Thereof. And a Journal of a Thousand Miles, Travel'd Thro' Several Nations of Indians. Giving a Particular Account of Their Customs, Manners, &c.* (London: [s.n.], 1709), 68.

Site History and Landscape Characteristics

grit-tempered pottery, horticulture supplemented by hunting and gathering, burial ossuaries, bow-and-arrow technology, and palisaded villages typify these cultures.

Contact with Europeans occurred around 1520. The Algonquin tribes included the Pasquotank, Yeopim, Poteskeet, Chowanoc, Machapunga, Bay or Bear River, Pamlico, Hatteras, Neusioc, and possibly the Coree. They lived in an area extending from the Virginia border southward to Bogue Inlet and from the Outer Banks as far inland as present Plymouth, Washington, and New Bern.

Tribes associated with the Iroquoian tradition were the Tuscorora and the Meherrin. The more powerful and warlike Tuscorora lived just to the west of the Algonquin tribes. The Meherrin were confined to the east bank of the Chowan River.

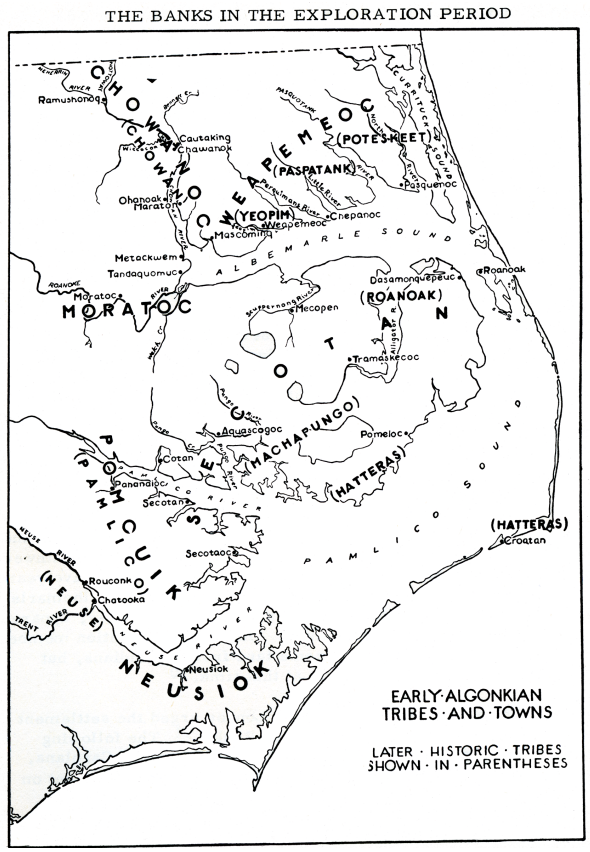


FIGURE 4. Early Algonquin tribes and towns (Reprinted from *Historical Geography of the North Carolina Outer Banks*)

European settlement led to the eventual disintegration of the aboriginal populations, mainly by disease and warfare. An epidemic in 1695 devastated the Pamlico and the Chowanoc were wiped out by war in 1677. By the eighteenth century, the only Native Americans living permanently on the Outer Banks were the Hatteras Indians, whose villages were in the wooded area west of Cape Hatteras. After the Tuscarora War of 1711-1715, Indians eventually disappeared from eastern North Carolina.[3]

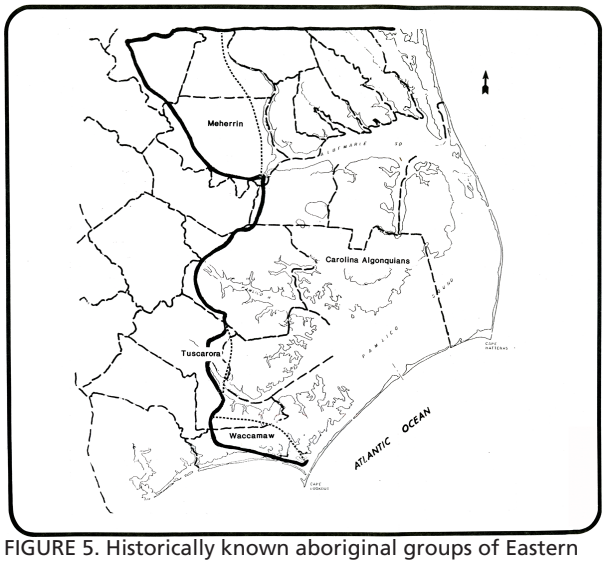


FIGURE 5. Historically known aboriginal groups of Eastern North Carolina. (Reprinted from *Cultural Resource Studies Eastern North Carolina Above Cape Lookout*)

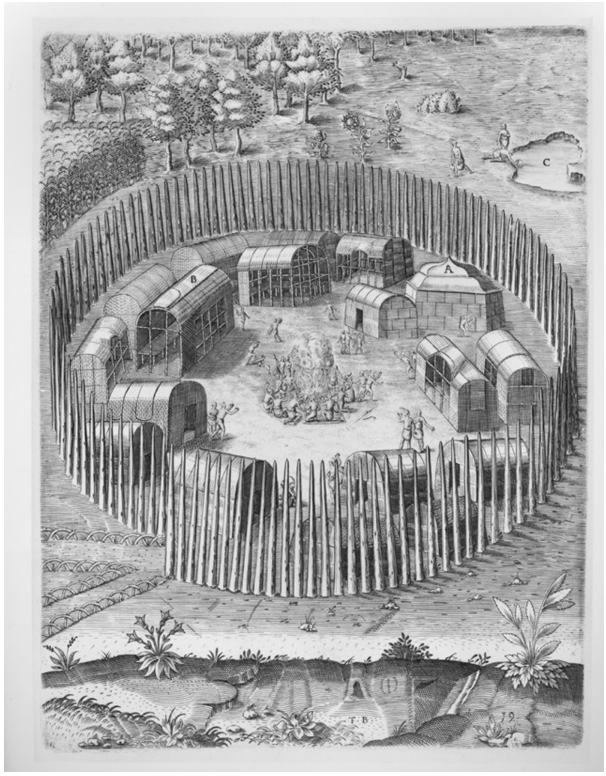


FIGURE 6. The Indian Village of Pomeiooc, Theodor de Bry's engraving of John White watercolor, c. 1590. (Courtesy of the John Carter Library at Brown University)

3. http://www.nps.gov/seac/hnc/outline/04-woodland/index.htm; U. S. Army Corps of Engineers, 2-2.

European Exploration and Permanent Settlement of the Outer Banks

The Outer Banks were first explored by Giovanni da Verrazzano's 1524 expedition for the French, who mistook the North Carolina sounds on the other side of the land mass for the Pacific Ocean. In 1584, a reconnaissance voyage for Sir Walter Raleigh's English venture landed above Cape Hatteras, commanded by Captains Arthur Barlowe and Philip Amadas. Captain Barlowe described the natural systems of the Outer Banks in 1584:

> Wee viewed the lande about us, being . . . very sandie, and lowe towards the water side, but so full of grapes, as the very beating, and surge of the Sea overflowed them, of which we founde such plenty . . . that I thinke in all the world the like aboundance is not to be founde.
>
> We passed from the Sea side towardes the toppes of those hils . . . being but of meane height, and from thence wee behelde the Sea on both sides to the North, and to the South, finding on ende any of both waies. This lande laye stretching it selfe to the West, which after wee founde to be but an Island of twentie leagues long, and not above sixe miles broade. Under the banke or hill, whereon we stoode, we behelde the vallies replenished with goodly Cedar trees, and having discharged our harquebushot, such a flocke of Cranes (the most part white) arose under us, with such a crye redoubled by many Ecchoes, as if an armie of men had showted all together.
>
> This island had many goodly woods, full or Deere, Conies, Hares, and Fowle, even in the middest of Summer, in incredible abundance . . . [and] the highest, reddest Cedars of the world.[4]

The colonists of a 1587 settlement on Roanoke Island led by John White were discovered missing when he returned with a supply ship in 1590. The mystery of their disappearance, except for the words "Croatoan" carved on a post at the entrance to the palisade and "Cro" on a tree, has never been solved. White assumed the clues referred to Croatoan Island (now Hatteras Island), but he was unable to persuade his party, who feared the treacherous nature of the coast, to sail to Croatoan Island. White was forced to return to England without looking for the settlers, known as the "Lost Colony.

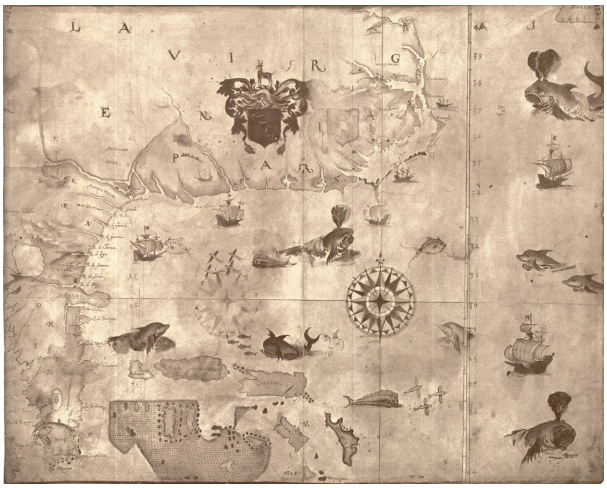


FIGURE 7. John White water-color drawing from 1584 exploratory trip. (Courtesy of State Archives of North Carolina)

Permanent settlement did not begin until the mid-seventeenth century, when fur trappers, Indian traders, and planters from Virginia's southern frontier moved into the area. Indian habitation of the Outer Banks at the time of white settlement was sparse, and some used the area only for seasonal hunting. The Hatteras Indians lived in a town on the sound side of Cape Hatteras. Francis Yeardley of Virginia sponsored a group that visited Indians on Roanoke Island in 1654 and bought land in eastern North Carolina. A fur trading post operated by Nathaniel Batts is recorded on the Comberford Map of 1657 at the western end of Albemarle Sound.[5]

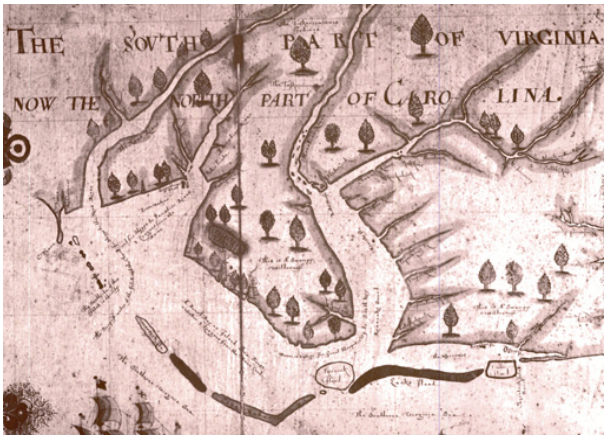


FIGURE 8. Portion of Comberford map of 1657 south of Albemarle Sound. (Courtesy of State Archives of North Carolina)

4. Stick, 14-15.

5. Stick, 12-21; Dunbar, 8-11, 16-19; U. S. Army Corps of Engineers, 2-4.

The first land grant was issued by the Lords Proprietors in 1663, following receipt of their royal charter, to Sir John Colleton who set up a plantation on Colington Island. Other large land grants held by absentee landowners followed, but many more who sought smaller parcels were of more modest means. Most chose the wooded hammocks on the sound side of the island, where their building sites were clustered near sloughs and creeks and where they found protection from strong winds and high tides.[6]

A lack of deep-water ports and navigable tributaries such as those found in Virginia and South Carolina retarded the commerce and prosperity of North Carolina. Accessing the ports that the colony did possess to reach small river settlements and plantations required sailing through treacherous inlets along the Outer Banks and across shallow sounds. Some felt that these limitations were actually helpful in time of war. Early explorer and naturalist John Lawson commented:

> the Difficulty of that Sound to Strangers, hinders them from attempting any Hostilities against us; and at the same time, if we consider the Advantages thereof, nothing can appear to be a better situation, than to be fronted with such a Bulwark, which secures us from our Enemies.[7]

Before 1700, most settlers located between Roanoke and Currituck Inlets. They lived in small, scattered settlements with fenced gardens and free-ranging livestock. They were sustained by fishing, grazing stock, farming, and whaling. Most had migrated from Virginia and were joined by a few shipwreck survivors. The Outer Banks had a reputation as a refuge for Virginia outlaws and runaway slaves, but most settlers were small landholders trying to get foothold in the new colony. The death of the infamous pirate, Blackbeard, at Ocracoke Inlet in 1718 signaled the end of large-scale piracy and paved the way for the settlement of the lower Outer Banks. The shallow inlets and channels made resident pilots who helped navigate ships of commerce a necessity.

The shoaling and eventual closing of both Roanoke and Currituck Inlets led to a shift in maritime traffic to Ocracoke Inlet, seventy-five miles south. By 1750, hundreds of ships were using Ocracoke Inlet as a trade route, and by the 1770s, the two largest communities on the Outer Banks were located there—the town of Portsmouth on the south side and Pilot Town or Ocracoke Village on the north.[8]

By the time North Carolina became a state in 1789, about 1,000 permanent residents lived on the Outer Banks. The economy of the Federal period was not that different from colonial times. Garden patches largely accounted for "farming" in the region. In 1810, it was noted of the Portsmouth area that "the soil is not used for agricultural purposes,



FIGURE 9. Collett map of 1770 (Courtesy of State Archives of North Carolina)

6. Stick, 22-25; Robert Dolan and Harry Lins, *The Outer Banks of North Carolina*, USGS Professional Paper 1177-B (Washington, DC: U.S. Geological Survey/U.S. Dept. of the Interior, 1986), 18; Dunbar, 105.

7. Stick, 2; John Lawson, *A New Voyage to Carolina; Containing the Exact Description and Natural History of That Country: Together with the Present State Thereof. And a Journal of a Thousand Miles, Travel'd Thro' Several Nations of Indians. Giving a Particular Account of Their Customs, Manners, &c.* (London: [s.n.], 1709), 175; Mike McNamara, "A New and Correct Map of the Province of North Carolina: The Discovery of a 1737 North Carolina Manuscript Map," http://www.mesdajournal.org/2012/correct-map-province-north-carolina/

8. Stick, 12-26, 42; Dunbar, 26-28, 105; Dolan, 18.



FIGURE 10. Moll map of 1730. (Courtesy of State Archives of North Carolina)

more than in Gardens & the raising of a few sweet potatoes, for the growth of which article, it appears to be particularly well adapted." In the 1850 census, there were two farmers at Portsmouth, none on Ocracoke and Hatteras Islands, eleven on the North Outer Banks, and eighteen on Roanoke Island. The 1860 census showed no farmers on Portsmouth, Ocracoke, and Hatteras, but twenty-six on the North Banks and thirty-nine on Roanoke Island. Prominent agriculturist Edmund Ruffin observed in 1856:

> Roanoke Island, (which, however I did not see, because of accidental delays in the water trip,) . . . is very productive, and especially in potatoes and garden vegetables.[9]

Slave ownership was not widespread except for large landowners. The 1850 census showed 503 slaves for the entire Outer Banks, with 168 on Roanoke Island far exceeding any other location. Records indicate that children of free black William Meekins owned 140 acres at Cape Hatteras and 50 acres at "Kinnakeet Banks" in the late 1700s.[10]

The lack of depth of Ocracoke Inlet eventually led to the ascendency of Hatteras Inlet in the years leading up to the Civil War. In the 1850 census, there were 57 pilots living at Ocracoke and Portsmouth and only 11 at or near Hatteras Inlet. By 1860, Hatteras Inlet, with about 35 pilots, had about 8 more pilots than Ocracoke Inlet. By 1880, there were 26 pilots at Hatteras and none at Ocracoke.

Before the Civil War, fishing had become the most prominent occupation according to the 1850 and 1860 census, with the job title "fisherman" and "mariner" far exceeding any other category. The isolated setting and its dangers required a self-sufficient and independent minded people, who grew their own food, caught their own fish, put up their own houses, and built and sailed their own boats. These same people would be called upon to man the lighthouses and life-saving stations of the Outer Banks.[11]

9. Dunbar, 30-31.

10. Stick, 73, 89; Impact Assessment, Inc., *Ethnohistorical Description of the Eight Village Adjoining Cape Hatteras National Seashore and Interpretive Themes of History and Heritage* (Manteo, NC: Cape Hatteras National Seashore, 2005), 14.

11. Dunbar, 29-35; Stick, 72-77.

Bodie Island

The origin of the name Bodie Island is unclear but it was apparently in use by 1709, when John Lawson's *A New Voyage to Carolina* first mentioned the name in print, referring to English rabbits: "I was told of several that were upon Bodies Island by Ronoak, which came from that Ship of Bodies; but I never saw any." The name also appears on Moll's 1730 "Map of the Province of Carolina" (see Figure 10).

Known at various times as Body's Island, Bodies Island, Body Island, Micher Island, and Cow Island, its land mass in the 1770s extended from Roanoke Inlet at the north end, nine and one-half miles south. Roanoke Inlet began to shoal and eventually closed around 1811, joining the land now known as Bodie Island to the land to the north. An 1846 hurricane opened Oregon Inlet, severing the lower part of the island. Nonetheless, the name continues to this day for the land that straddles both sides of the inlet.[12]

Lawson describes several inlets through the barrier islands that have since been closed by storms, and his journal gives a glimpse of the Outer Banks as they were in the early 1700s. He describes Roanoke Inlet:

> Ronoak Inlet has Ten Foot Water, the Course over the Bar is almost W. which leads you thro' the best of the Channel. This Bar, as well as Carrituck, often shifts by the Violence of the N.E. Storms, both lying expo'd to those Winds. Notwithstanding which, a considerable Trade might be carry'd on, provided there was a Pilot to bring them in; for it lies convenient for a large Part of the Colony, whose Product would very easily allow of that Charge; Lat. 35 deg. 50 min.[13]

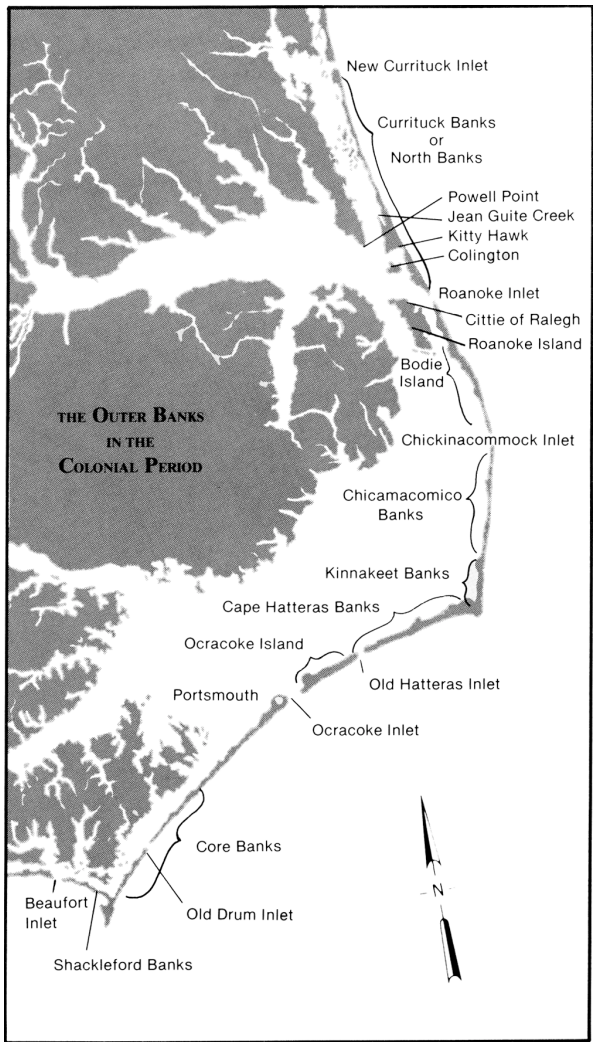


FIGURE 11. The Outer Banks in the Colonial Period (Reprinted from *Historical Geography of the North Carolina Outer Banks*)

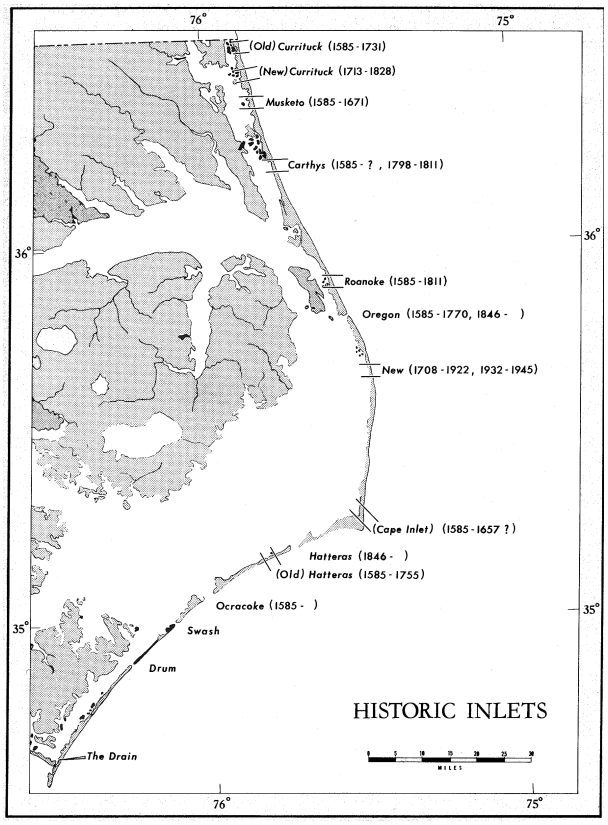


FIGURE 12. Historic Inlets (Reprinted from *Historical Geography of the North Carolina Outer Banks*)

12. Oppermann, 8; Lawson, 128.

13. Lawson, 68.

The Graveyard of the Atlantic

Secretary of the Treasury Alexander Hamilton has been credited with declaring the ocean off the Outer Banks "the Graveyard of the Atlantic" for the extraordinary number of ships buried there. The Labrador Current that increased the speed of sailing ships also brought them perilously close to the shifting sand bars of the Outer Banks. If they did not veer east out to sea at Bodie Island, notorious Diamond Shoals awaited them. Once grounded, ships were soon torn apart by the turbulent waters, their crews doomed without assistance. Historian David Stick vividly describes the sea conditions: "the northbound Gulf Stream and the cold currents coming down from the Arctic run head-on into each other, tossing their spumy spray a hundred feet or better into the air and dropping sand and shells and sea life at the point of impact." Mariners then had to avoid the opposite-flowing Gulf Stream, a maneuver called "threading the needle."[14]

In 1789, Congress created the U.S. Lighthouse Establishment, operated under the Department of the Treasury, which became the federal lighthouse authority. Aids to navigation were needed, and the Department of the Treasury built a series of lighthouses to protect mariners and their cargo. Beginning with Ocracoke and Cape Hatteras in 1803 and Cape Lookout in 1812, these towers protected the southern portion of the Outer Banks but left the area to the north of Cape Hatteras without a light, leaving Bodie Island "literally covered with wrecks." It was not until the 1830s that attention was finally directed toward Bodie Island.

In February 1837, the Secretary of the Treasury selected Lieutenant Napoleon L. Coste to examine the coast south of Chesapeake Bay. Coste made numerous recommendations for the placement of lighthouses, lightships, and beacons and considered Bodie Island "of great importance." He stated:

> More vessels are lost there than on any other part of our coast. It is the eastern-most point of land on the coast of North Carolina, forming, in fact, a cape. It is my opinion, that, by the erection of a lighthouse on it, much property would be saved, and the navigation of the coast facilitated.

14. Stick, 1; Oppermann, 8; Roberts, 2-3.



FIGURE 13. Wreck of an unknown schooner. (CAHA Collection)

Coast surveys eventually chose light station sites about forty miles apart so that a passing ship picked up the next light on its bow before losing one on its stern.[15]

Building the Bodie Island Lighthouse, 1837-1872

The First Bodie Island Lighthouse

On March 3, 1837, Congress appropriated $5,000 to build a lighthouse on Pea Island, just south of Bodie. Captain Charles W. Skinner, tasked with examining the site, felt that Bodie Island would be a better location because the vast majority of the vessels came from the north and passed close to the land to avoid the Gulf Stream. In addition, land would be cheaper, and it would be easier to get construction materials to the site. Collector of Customs Thomas H. Blount disagreed, arguing that a lighthouse on Pea Island would be "secure from the storms . . . and much more comfortable for the keeper."[16]

Based on Captain Skinner's recommendation, Stephen Pleasonton, Fifth Auditor of the Department of the Treasury, decided the following year to locate the lighthouse on Bodie Island, and Blount was instructed to purchase the land. Skinner felt that four acres would be adequate for a lighthouse, keeper's dwelling, and vegetable garden.

15. Oppermann, 9; Roberts, 8; Holland, 17.

16. Holland, 17-18; Oppermann, 13.

A series of complicated land transactions and inadequate funding delayed the construction of the lighthouse, prompting Blount's appeal to Congress in 1843:

> …I presume the reason why it has not been commenced is that the appropriation was insufficient and will require one of the first class [lights]. There is no part of the Coast of the U.S. which requires a Light House more than Body's island—'tis' in the direct route of all going North or South & of all foreign vessel bound into the Chesapeake, & when there during the last summer, there were fifteen wrecks in sight at one place, & within the last month, a Brig bound into Norfolk was wrecked there worth more than would have built the light house.
>
> You will excuse my calling your attention to this subject, but many of your constituents have suffered and will continue to do so unless a light is placed there, & not only yours but the north are, from their owning more shipping than the south, still more interested.[17]

Congress made an additional appropriation in 1847, and Pleasonton advertised in the National Intelligencer on May 15, 1847, for a contractor to build a brick tower and a wood dwelling for the keeper. Francis A. Gibbons of Baltimore, who later became a prominent lighthouse builder on the West Coast, won the contract.

Concerns about the foundation of the first lighthouse arose early in the construction process when questions surfaced about Captain Skinner's finding of a "good stiff clay" after digging two feet down. Rather than clay, a local resident reported the soil as mud with only a thin layer of sand, which would require piles to support the lighthouse structure. Apparently the matter was never resolved, and construction went forward without intervention. The first Bodie Island Lighthouse was completed and its light displayed in early 1848. The station consisted of a brick tower on the south side of Oregon Inlet, an unpainted wood single dwelling, a 2,000-gallon brick cistern, and two privies.[18]

Within two years of completion, uneven settling of the brick foundation caused the tower to be one foot out of plumb and canted eastward. Fifth Auditor Pleasonton wanted the problem fixed and authorized an estimate to straighten the tower. The lighthouse keeper supervised the work, which an "experienced mechanic" carried out, although it is not known exactly what was done. By 1851, the light tower needed extensive repair work, mainly to the lighting apparatus, which was most likely thrown out of kilter by the leaning tower. By 1858, the poor foundation was beyond repair, and the original tower was abandoned and eventually razed.[19]

The Second Bodie Island Lighthouse

In 1852, Congress replaced Pleasonton with a nine-member Light-House Board. In 1858, the Light-House Board requested and received $25,000 to build a new lighthouse with a third order Fresnel lens, an upgrade from the first tower, which was lighted with Argand reflector lamps. French physicist Augustin Fresnel devised a lens in 1822 that used prisms to refract light to the center of the lens, where it was concentrated into a powerful beam. The Fresnel lens became the standard adopted by the Light-House Board, replacing the less powerful reflector lamps.

In order to avoid foundation problems, the Light-House Board assigned topographical engineer Lorenzo Sitgreaves to assist with site selection and supervise construction. Plans called for a stone foundation to rest on piles. Masons erected a brick tower reaching eighty feet surmounted with a lantern containing a third order Fresnel lens that flashed every ninety seconds. Completed in 1859, a mariner could see the light for a distance of fifteen miles. As the new lens required two people for operation, the Light-House Board constructed a new dwelling for the new assistant keeper, and the keeper's house was repaired.[20]

During the Civil War, the strategic value of the North Carolina Outer Banks was coveted by both sides. After North Carolina seceded from the Union in May 1861, a series of forts was built along the Outer Banks to protect the inlets and sounds. Union forces attacked the forts, and retreating Confederate troops destroyed the Bodie Island

17. Correspondence from Thos. H. Blount to Hon. Ed Stanly, U.S. Representative, dated January 20, 1843; in National Archives (Washington , DC), Entry 17C, "Letters Received from Superintendent of Lights, 1803-52," found in National Register nomination, p. 23.

18. Holland, 20-26.

19. Holland, 23; Roberts, 5; Clifford, 24.

20. Holland, 23-33; Oppermann, 11.

Lighthouse tower to prevent Union troops from using it as a lookout. Apparently the lens was not destroyed, as Light-House Board records indicate that its Fresnel lens was shipped to the Lighthouse Inspector in New York in 1862.

Upon inspection of the lighthouse site after its destruction, the engineer assigned to the wartime 4th and 5th Lighthouse District found the tower in ruins but the dwelling undamaged. The Light-House Board chose not to restore the light, as the Cape Hatteras Light had already been put back into operation. For the duration of the Civil War, 120 miles of hazardous coast between Cape Hatteras and Cape Henry was without navigational aid.[21]

The Third Bodie Island Lighthouse

Although initial recommendations after the Civil War were to replace the Bodie Island Lighthouse with one further up the coast, the Light-House Board eventually decided to return to Bodie Island. Because Oregon Inlet had moved to within 400 yards of the previous lighthouse, the Light-House Board sought a new location one-and-one half miles north of the first two sites on the north side of Oregon Inlet. They acquired land from John B. Etheridge, a former keeper of the first Bodie Island Lighthouse. Etheridge acquired 240 acres of land by grant from the state of North Carolina in 1860. He sold 15 acres to the Light-House Board on June 13, 1871.

> The new site is 1½ nautical miles north of Oregon Inlet, ¾ mile from the Atlantic and ⅜ mile from Roanoke Sound. It is protected on the west by Roanoke Island from the action of storms tending to drive the waters of Pamlico Sound towards the sea. It is a square piece of land 15 acres in extent, and was purchased of John B. Etheridge and wife, June 13, 1871, for $150. The character of the soil is sandy and unfit for cultivation, but by covering it with marsh mud some slight crops could be raised.

Before construction on the tower could begin, temporary support structures to house workers and materials were needed, including temporary storage buildings, workmen's quarters, and a wharf. The Lighthouse Engineer for the Fifth District, Captain Peter C. Hains, sent Dexter Stetson to supervise the project, which started

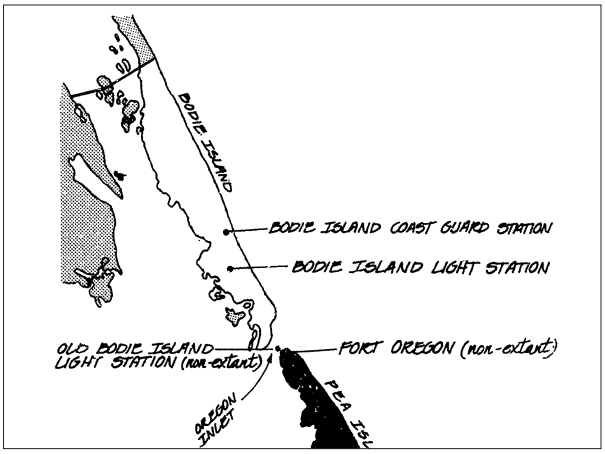


FIGURE 14. Map of current and old locations, 1985. (Denver Service Center etic 603/25001A detail)

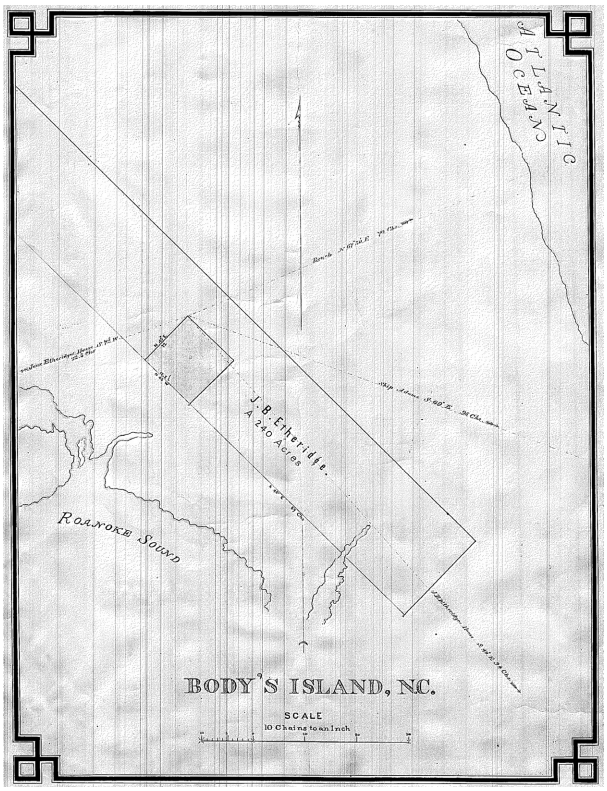


FIGURE 15. Etheridge land plat, 1871. (CAHA Collection)

in the middle of June, 1871.[22] The crews used materials from temporary structures being taken down at the Cape Hatteras Light Station, where construction was coming to an end. The Hatteras tramway reemerged on Bodie Island, where supplies loaded on the tram were led to

21. Holland, 32-36; Roberts, 9; Oppermann, 14.

22. Dexter Stetson also supervised construction of the lighthouses at Cape Hatteras (1870) and Currituck Beach (1875). He trained as a carpenter, first building summer cottages in Massachusetts, then moving to New Orleans where he built large government storehouses. He later transferred to the coast where he built lighthouses from Florida to North Carolina, Oppermann, 23.



FIGURE 16. Bodie Island Light Station, 1893. (CAHA Collection)

the construction site by a mule. In early August 1871, Captain Hains reported on the temporary structures to the Light-House Board, including:

> a blacksmiths' shop, a store house for cement, engine room, stable and carpenters shop. A temporary building for an office and quarters is nearly completed. Two scows for landing supplies have been commenced and nearly finished. An embankment on which to lay the railroad track where it crosses the marsh has been thrown up. The most of the material used in these temporary structures is that taken from Cape Hatteras.

Crews constructed a pier to hold a derrick for off-loading ships. Three Baltimore firms provided most of the materials: Nicholas M. Smith supplied the brick, Andrews and Johnson supplied the dressed granite, and McClenahan & Brothers supplied the foundation granite. Paulding, Kemble & Co. of West Point Foundry, New York, supplied the iron work.[23]

In order to ensure a sound foundation, the construction crew placed a wood grillage laid in two courses at the bottom of a pit seven feet deep, upon which they laid large granite blocks. Courses of rubble block grouted with hydraulic Portland cement raised the foundation an additional five feet. On this foundation was placed the base of the tower, consisting of cut granite on the outside and rubble set cement on the inside.[24]

Work began on the keepers' quarters in May 1872. Hains informed Stetson that the structure was to face the light tower. Since there was no road to the station until the 1920s, this spatial arrangement made sense. By mid-August, Hains reported that the "tower and keepers' dwelling are now well advanced toward completion." The November monthly report stated:

> [Carpenters] have been engaged in getting out material for and completing back piazza of the keeper's dwelling; making and putting down main steps and three pairs of end steps to piazza; laying two wooden walks, leading

23. Oppermann, 23-24; Holland, 38-39.

24. Clifford, 27; Roberts, 10; Holland, 37-39.

> from the dwelling to wood-house and privies; building a double privy; reboarding and fitting up the carpenter shop for use as a wood house; . . . and hanging two gates; [illeg.] putting up various fastenings on dwelling house, sheds, etc.
>
> The blacksmith has been employed in putting flashing on piazzas, setting holes in dwelling walls for piazza ceiling strips, building two wooden platforms as cisterns; . . . putting ladder rods under piazza, and assisting in whitewashing fence, taking down cement shed . . ..[25]

The third Bodie Island Lighthouse was a brick tower rising 156 feet from the mean high water mark to the focal point of the light. The Light-House Board classified a "tall brick tower type" that measured over 150 feet as a first-order lighthouse, a term used to organize lighthouses according to construction types. Its alternating bands of black and white were a daymark used by mariners between sunrise and sunset to identify lighthouses located near each other and similar in shape (Hatteras and Bodie for example). These unique patterns of contrasting colors could be easily recognized during daylight. Fifth District Engineer Peter Hains designed the daymark system. The cast-iron lantern held a first-order Fresnel lens that exhibited a fixed white light that could be seen for over 18 nautical miles manufactured by Barbier and Fenestre in Paris, France, in 1871.[26]

Operation of the Light Station, 1872-1910

The light station exhibited its light for the first time on October 1, 1872. Hains pointed out that the lighthouse would "supply a want long felt by the commerce of the country, as may be readily seen from the number of wrecks that have been strewn along the beach . . . for twenty miles to the south and the same distance north of the lighthouse."[27]

An accident that caused considerable damage to the lighthouse lens occurred on October 29, 1872, when a flock of wild geese flew into the tower and seriously damaged the lens. To prevent a recurrence, a screen was installed to protect the glass portion of the lantern. Lightning also proved to be a problem, as the interior spiral stairway acted as a lightning rod, resulting in small cracks on the interior wall of the tower. In 1884, the Light-House Board finally approved the installation of a cable inside the tower that would run from the lantern to a cast iron plate buried in the ground.

In the summer of 1893, Herbert Bamber, Lighthouse District Superintendent of Construction, surveyed the light station and produced a detailed site plan and a series of photographs. These show the spatial order of the light station, dominated by a central northeast to southwest axis aligned with the brick tower/oil house, the double keepers' quarters, and the brick walk that connected them. Cisterns flanked the keepers' quarters. A storehouse and woodshed sat southeast of the keepers' quarters and another storehouse sat northwest of the keepers' quarters. A wooden fence enclosed this portion of the light station, with privies just on the outside of the fence, more or less lined up with the outbuildings on either side. In fact, all of the outbuildings were on axis with the keepers' quarters at this time. East of the house is a "driven well." Also just outside the fence on the north edge of the property sat some kind of unpainted storage shed.[28]

Telephone service came to Bodie Island in 1898. The War Department decided that national defense could be served if several lighthouses on the North Carolina and Virginia coasts were tied into existing lines connecting Life Saving Stations on the Outer Banks.[29]

As the century ended, the Light-House Board agreed a new keeper's quarters was needed, and in 1899 explained the appropriation request:

> The present dwelling at the station is too small for the accommodation of the keeper and two assistants, and it is impossible for the keepers to have their families reside at the station for the lack of proper and sufficient accommodations; this does not tend to make the keepers contented, and to take the interest in the Station necessary to maintain it in the best condition.

25. Oppermann, 25.

26. Clifford, 6, 9, 31; Roberts, 20, 30; http://www.tybeelighthouse.org/daymarks.htm.

27. Holland, 36-42; Oppermann, 24-25.

28. A driven well is a small pipe with a strainer on the end and a hand pump attached to the top. The pipe, perhaps only two or three inches wide, was driven into the ground twenty feet or less until it reached fresh water; Oppermann, 40.

29. Holland, 42-46.

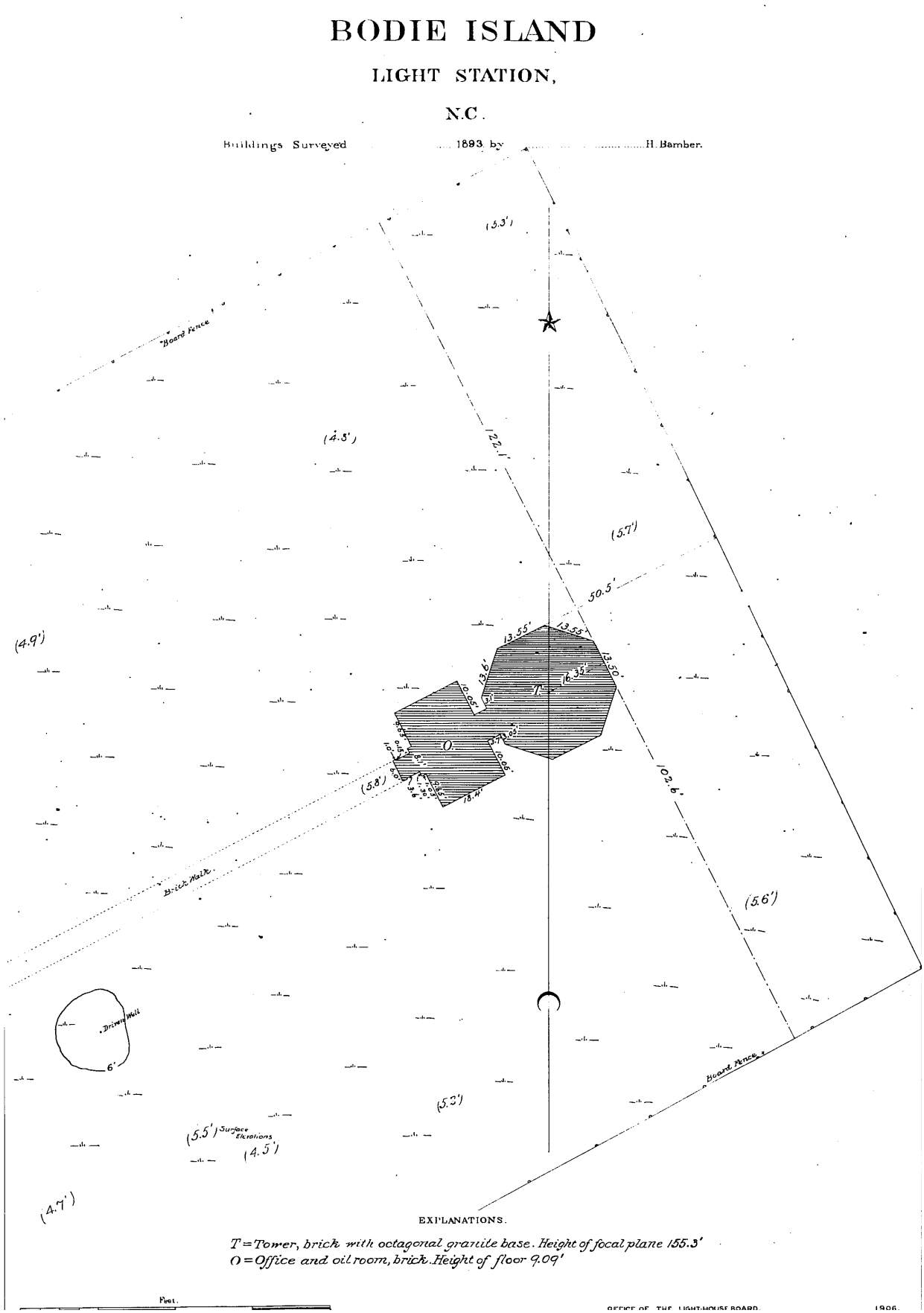


FIGURE 17. Bamber site plan B, 1893. (CAHA Collection)

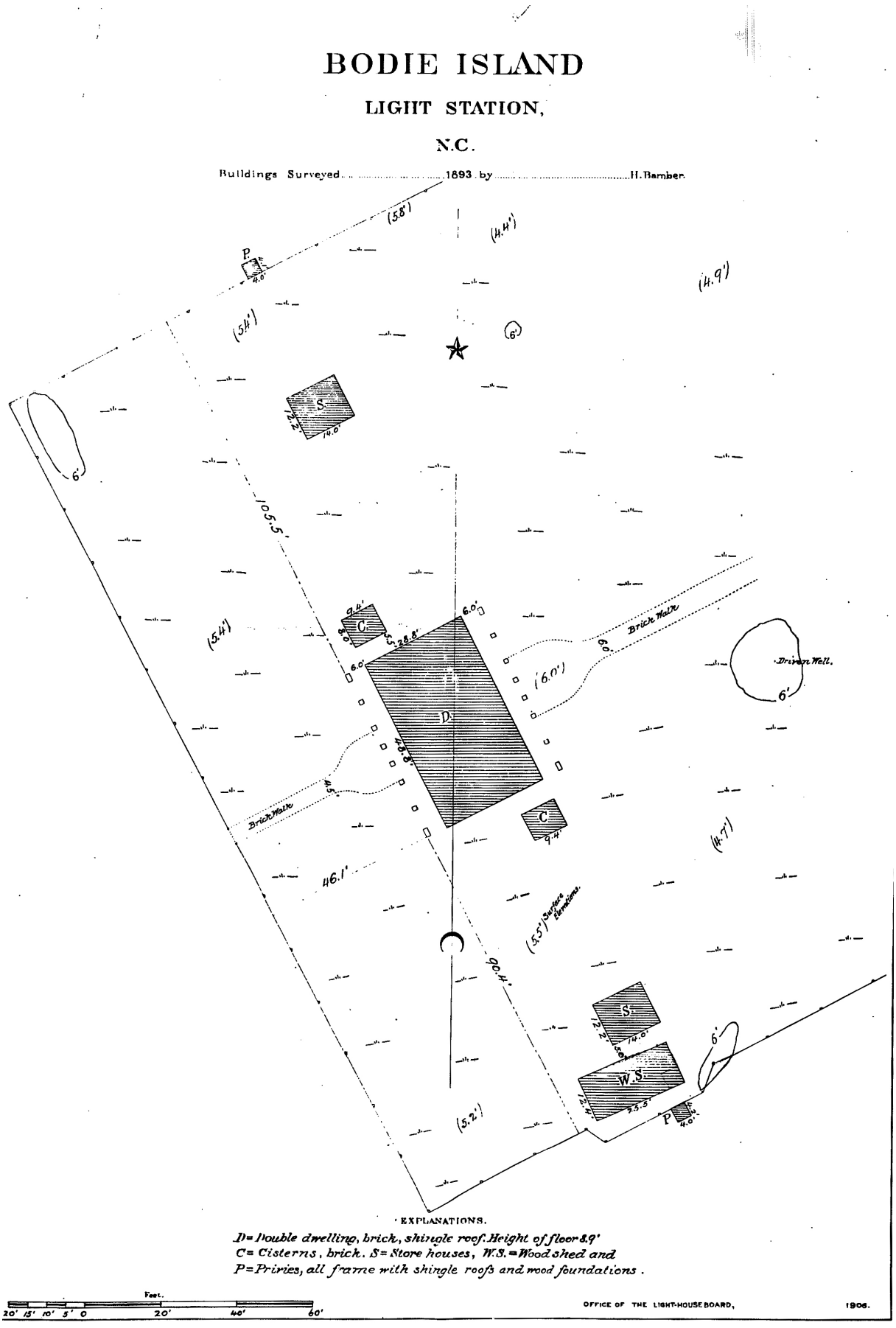


FIGURE 18. Bamber site plan C, 1893. (CAHA Collection)



FIGURE 19. Bodie Island Light Station, 1893. (CAHA Collection)



FIGURE 20. Bodie Island Light Station, 1893. (CAHA Collection)

Failed attempts at securing the funding derailed the project and no action was ever taken.[30]

The substitution of mineral oil (kerosene) for the original lard oil as fuel for the light brought about the construction of a sheet metal oil house in 1896.

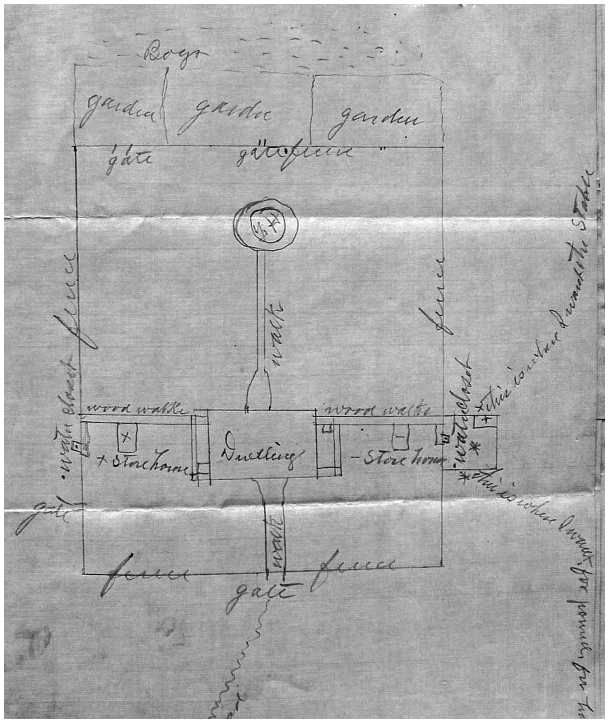


FIGURE 21. 1897 plan. (CAHA Collection)

In 1897, Keeper Peter G. Gallop wanted to build a stable where he could keep a horse and cart to help haul supplies from the wharf. He submitted a sketch of the station showing his proposed location for the stable outside the fence line behind the south privy. The sketch shows the general spatial layout of the site, with the tower and keepers' quarters at right angles to the storage buildings and privies. Brick walkways from the keepers' dwelling run northeast to southwest; wooden walkways run southeast to northwest. Missing from the plan is the woodshed, although on the 1893 plan the woodshed was shown near Gallop's proposed stable site.

The enclosing fence is shown with gates at several locations on the periphery of the site, including three at the east edge opening into three large rectangular garden plots. Keepers were encouraged to cultivate the land associated with onshore stations. The 1897 plan is the only one found that shows a garden for growing food. Exactly what was grown in the garden is unknown. Later reports indicate that the garden was not a success.[31] The area east of the garden plots is labeled "Bogs."

In 1900, extensive repairs were made to the keepers' quarters and other station structures. This work included constructing a new cistern and replacing fencing and walkways.

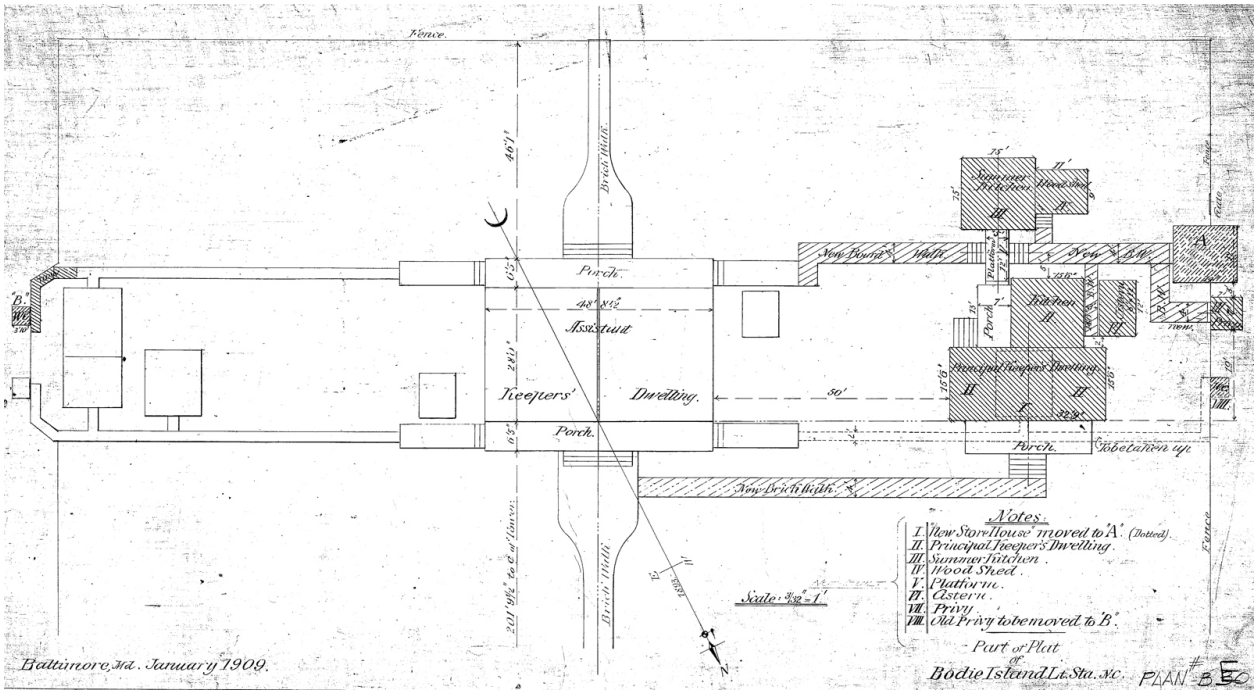


FIGURE 22. 1909 plan. Note direction of north arrow. (CAHA Collection)

30. Oppermann, 29-30.

31. Ibid., 40-41.

Records indicate the Light-House Board gave permission for a stable in 1897, but another request for a stable, as well as a chicken house, was made in 1902. A 1909 report listed a stable as among the buildings at the station, which also included one storehouse west (north) of the keepers' quarters, one storehouse east (south) of the keepers' quarters, two privies, three cisterns, one chicken house, a one-acre garden, and the enclosing wood fence. No site plan is known to have accompanied the report. A 1909 site plan that accompanied a request to build another keeper's quarters and additional outbuildings shows a similar layout of the site as shown on the 1893 site plan. Funding problems prevented construction of this proposed group of buildings. [32]

Bodie Island Lighthouse Pond

Throughout the latter part of the nineteenth century, sportsmen from the North began to establish clubs along the Outer Banks. Three were located on Bodie Island: The Bodie Island Club, the Goosewing Club, and the Lone Cedar Club. The Bodie Island Club acquired the sound end of the island in 1904 and built a clubhouse near the light station. The pond at the light station is a freshwater pond noted on the 1893 site plans as a shallow pond of three inches. The Bodie Island Club impounded an area of almost 150 hectares in the early 1900s by diking and flooding a portion of the marsh with floodgates constructed on inlets near the clubhouse. Club superintendent Nathaniel Gould directed the construction work that created a much deeper pond to improve habitat for waterfowl and provide hunting space for club members.[33]

Children who lived at the light station remembered rowing a small skiff into Lighthouse Pond.

> There is a large fresh water pond in back of the lighthouse, about ½ wide and 3 miles long. It was man made by constructing a dam across two creeks. There were gates in the dams to control the height of the water. It was owned by the hunting club, except a very small section on lighthouse property. It was prime hunting there during the winter when the ducks and geese were flying. It was also a fine place for us kids to play in an old skiff we had and as the water wasn't deep we were safe from drowning.[34]



FIGURE 23. View of the Bodie Island Club looking south from the lighthouse, c. 1930. (CAHA Collection)



FIGURE 24. Bodie Island Lighthouse Pond with lighthouse in the background, 1954. (CAHA Collection)

U.S. Bureau of Lighthouses, 1910-1939

In 1910, Congress dissolved the Light-House Board and created in its place the civilian U.S. Bureau of Lighthouses under the Department of Commerce. The legislation referred to the bureau as the Lighthouse Service, its more commonly known name.

Beginning in 1919, Vernon Lloyd Gaskill, Sr. took over as Principal Keeper, a position he retained until 1939. During these years, the life of the keepers and their families was little changed from

32. Ibid., 29-30, 41-42.

33. Firth, 12-13; Jim Boone, *Birds of the Bodie Island Lighthouse Pond and the Roadside Ponds and Marshes, Cape Hatteras National Seashore, North Carolina* (Athens: University of Georgia Institute of Ecology, 1988), 11; A. C. Stratton and James R. Hollowell, *Methods of Sand Fixation and Beach Erosion Control* (Washington, D.C.: National Park Service, 1940), 9.

34. Roberts, 14; John Gaskill, *John Gaskill Remembers* (La Porte City, IA: La Porte City Printing & Design, 2007), 41.



FIGURE 25. View of light station across Bodie Island Lighthouse Pond, 1959. (CAHA Collection)



FIGURE 26. View of light station across Bodie Island Lighthouse Pond, 1962. (CAHA Collection)

earlier times. Cisterns that stored rain water were the only source of fresh water. Families used an outside hand pump as well as one at the kitchen sink to draw water for cooking, baths, and washing dishes or clothes. Before the automobile, travel once on the island was often by horse cart. Privies were still used, although the Lighthouse Service installed a bathtub and plumbing to pump water to the bathroom in the 1930s.[35]

In 1934, a project to build artificial barrier dunes from the Virginia line to Ocracoke Inlet was begun using Works Progress Administration (WPA), Civilian Conservation Camp (CCC), and National Youth Administration (NYA) labor authorized under the New Deal policies of President Franklin D. Roosevelt. This work was directed by the NPS before the establishment of the Cape Hatteras National Seashore and used sand fences to raise a line of barrier dunes. By 1938, multiple lines of fences had been erected at Oregon Inlet with additional fencing on the ocean side of Lighthouse Pond.[36] Assistant Director of the NPS, H. Earl Weatherwax, described the rationale for this project:



FIGURE 27. Vernon Gaskill on the porch of the double keepers' quarters, undated. (CAHA Collection)



FIGURE 28. Visitors at the light station on a horse cart, c. 1925. (The Outer Banks History Center, Manteo, NC, Edna Evans Bell Collection)

35. Roberts, 14.

36. Firth, 15.

> We must not only correct the devastation which had been going on for more than a century (storms, grazing, etc.), but during the progress of the work must adopt measures for the protection of the coastal community against tidal inundation by both sound and sea.[37]

The Cape Hatteras National Seashore was authorized on August 11, 1937. In 1938, the Department of the Interior inquired if the light station land was to be declared surplus, as the acreage was a prime target for inclusion in the park.[38]

Bodie Island Lighthouse Pond

A hurricane damaged the Lighthouse Pond floodgates in 1933, and they were not repaired at that time. The Bodie Island club's use declined in the 1930s after the passage of laws shortening the shooting season, lowering the bag limit, and restricting the types of batteries, guns, and decoys that could be used. The condition of the pond in the late 1930s was probably similar to that on Pea Island, whose manager described the newly established Migratory Waterfowl Refuge:

> With the dikes all broken we have no means of controlling the water. The refuge may be dry one week and flooded the next week. North and northeast winds blow the water away, draining the ponds and marshes, and cause them to go dry, that is, if the winds blow from this direction for several days. On the other hand, if the winds blow southwest or west, water is blown to the refuge filling the ponds and marshes. Therefore, we have been entirely dependent upon the winds for water on the refuge, which of course makes very poor conditions. [39]

U. S. Coast Guard, 1939-1953

In 1939, the Lighthouse Service was incorporated into the USCG. A major change to the operation of the light station occurred the following year, when the USCG transferred two keepers and operated the lighthouse by an electric generator with a timer.

With the transfer of the two keepers, the Nags Head Lifeboat Station attended the light. In 1941, the candlepower of the light was reduced from 160,000 to 13,000.

The USCG undertook a survey of the site in 1940. Unchanged is the spatial relationship of the light tower/oil house and the double keepers' dwelling. Although the three cisterns remain in their original locations, the other outbuildings are slightly different. Northwest of the dwelling are a privy (outside the fence), garage, shed, and two cisterns. Southeast of the dwelling are a cistern, woodshed (this may have only been its concrete foundation), garage, and privy (now inside the fence). The garages correspond to the storehouses listed in the 1909 report. The shed was built around 1920. Southeast of the light tower are two outbuildings, one still labeled "oil house" despite its use as a generator building at this time. A fence encloses the complex. Although walkways are not shown, a ten-foot right-of-way enters the site from the southwest (probably from the road) and tracks the north cisterns before making a jog and turning northeast along the brick walkway that joins the keepers' dwelling and light tower.

A more detailed 1944 USCG site plan shows a cistern, privy, and storehouse northwest of the keepers' dwelling linked by a walkway; a privy, two storehouses, and cistern southeast of the keepers'

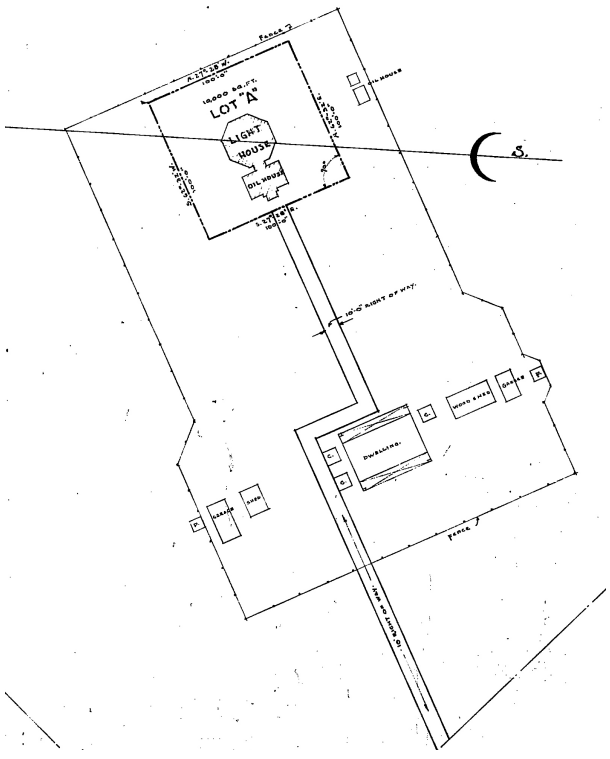


FIGURE 29. 1940 plan. (CAHA Collection)

37. Mary Stroh, "A Study of the Shrub and Vegetation Patterns on Bodie Island," 1982, 1.

38. Holland, 50-52; Oppermann, 30-32, 43.

39. Firth, 14, 18.

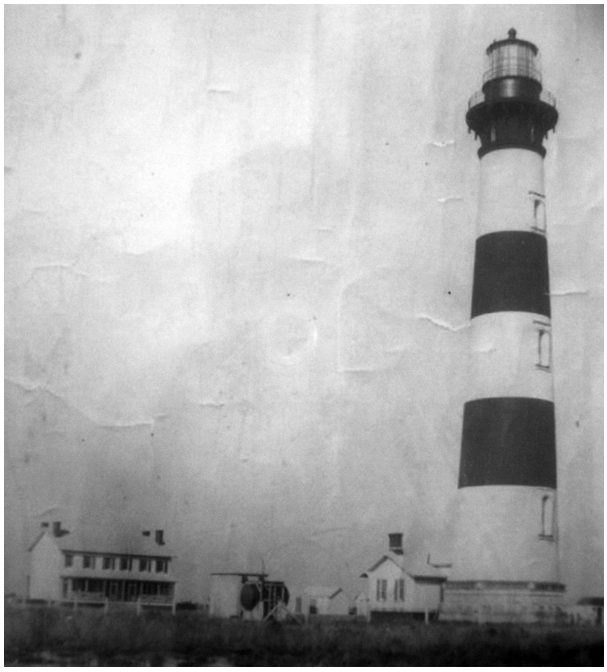


FIGURE 30. Bodie Island Light Station, 1935. (CAHA Collection)

dwelling are linked by walkways. A walkway also connects the keepers' dwelling and light tower/oil house; the plan also denotes a fence around the walk. There are two small areas enclosed by fences northeast (with storage shed) and southeast of the light tower outside the fence line. The use of these areas is unknown. Not shown is the 1896 oil house, although images from 1944 indicate that one still existed at this time (see Figure 107).[40]

During World War II (WWII), the U. S. Navy used the lighthouse as a lookout tower. Lurking German submarines were a constant worry. Unobstructed views in all directions on a barrier island made the tower a valuable strategic resource.

The size of the light station increased by a little more than forty acres in 1945 when the USCG acquired additional acreage west of the light station for future development. A "steel tower" and a "power hut" were the only features noted on a USCG plot of the acreage. After WWII, the two original frame storehouses, one northwest of the keepers' quarters and one southeast of the keepers' quarters were sold, moved, and made into cottages.[41]

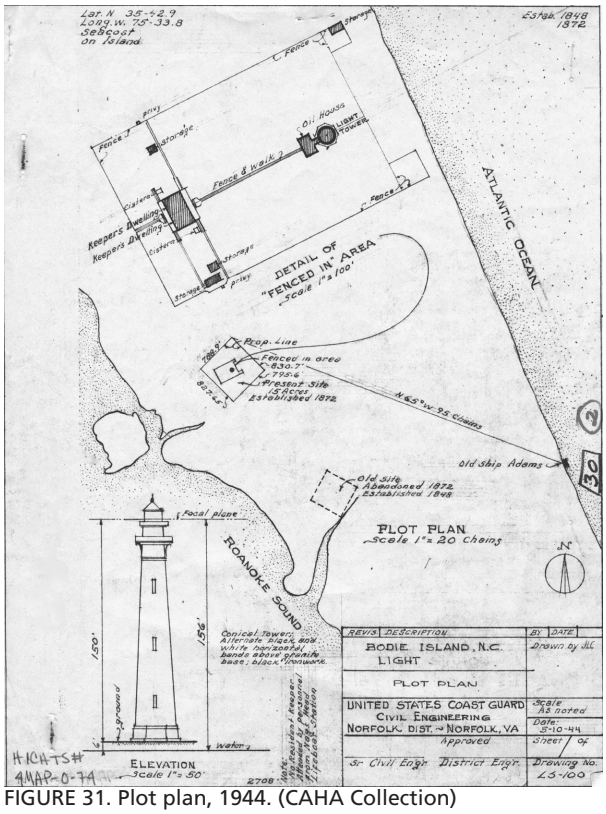


FIGURE 31. Plot plan, 1944. (CAHA Collection)

National Park Service, 1953-Present

Congress had authorized Cape Hatteras as the first National Seashore in 1937, but it was another sixteen years before the park was officially established in January of 1953. On October 15, 1953, the USCG declared the 56 plus-acre Bodie Island Light Station property surplus and transferred it to the NPS as part of the Cape Hatteras National Seashore Recreation Area.

Excluded was the land on which the lighthouse stood, 100' on a side. In October 1953, the lighthouse's electrical source was converted from generator to commercial power, leaving the existing generator for emergency power only. Work in 1963 included a new lamp changer, a new generator and flashers installed, and the candlepower increased to 80,000.[42]

The Bodie Island Coast Guard Station was the location of the Cape Hatteras National Seashore headquarters from 1954 until headquarters were moved back to Roanoke Island in 1966. The "Ash Wednesday Storm" of March 1962, one of

40. Oppermann, 43; Clifford, 12-14; Hartramph, 27.

41. Holland, 50; Hartramph, 27; Clifford, 14; Oppermann, 31-32.

42. Oppermann, 32; Hartramph, 27-28.

the strongest storms of the twentieth century, convinced NPS staff that administrative offices should not remain on Bodie Island, which was directly exposed to the sea. Weather conditions on Roanoke Island were far better for staff during the winter, in addition to many more services being available including an airport at Manteo.[43]

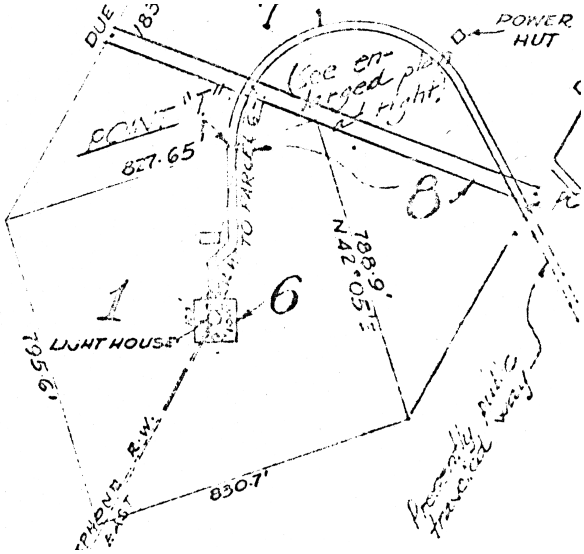


FIGURE 32. USCG plot showing light station parcel (1) and parcel to be retained by the USCG (6), 1953. (Taken from *History of the Bodie Island Light Station*)

NPS Development Plans

The NPS began development plans for Cape Hatteras National Seashore shortly after its establishment in January 1953. The USCG transferred 56.37 acres of the Bodie Island Light Station to the NPS in October 1953. 1954 plans from the Eastern Office of Design and Construction outlined two variations of development at the light station based on the axial spatial order of the site. Although this was a transitional time for NPS planning between the end of the Park Development Era in 1941 and the beginning of Mission 66 in 1956, the plans reflect the design aesthetic characteristic of the Park Development Era with straight lines and axial geometry. Both plans submitted for the station called for a primary axis running through the center of the site aligned with the light tower, brick walkway, and double keepers' quarters, the latter of which was to be converted to a natural history museum. Both variations included two privies flanking the double keepers' quarters to be used as

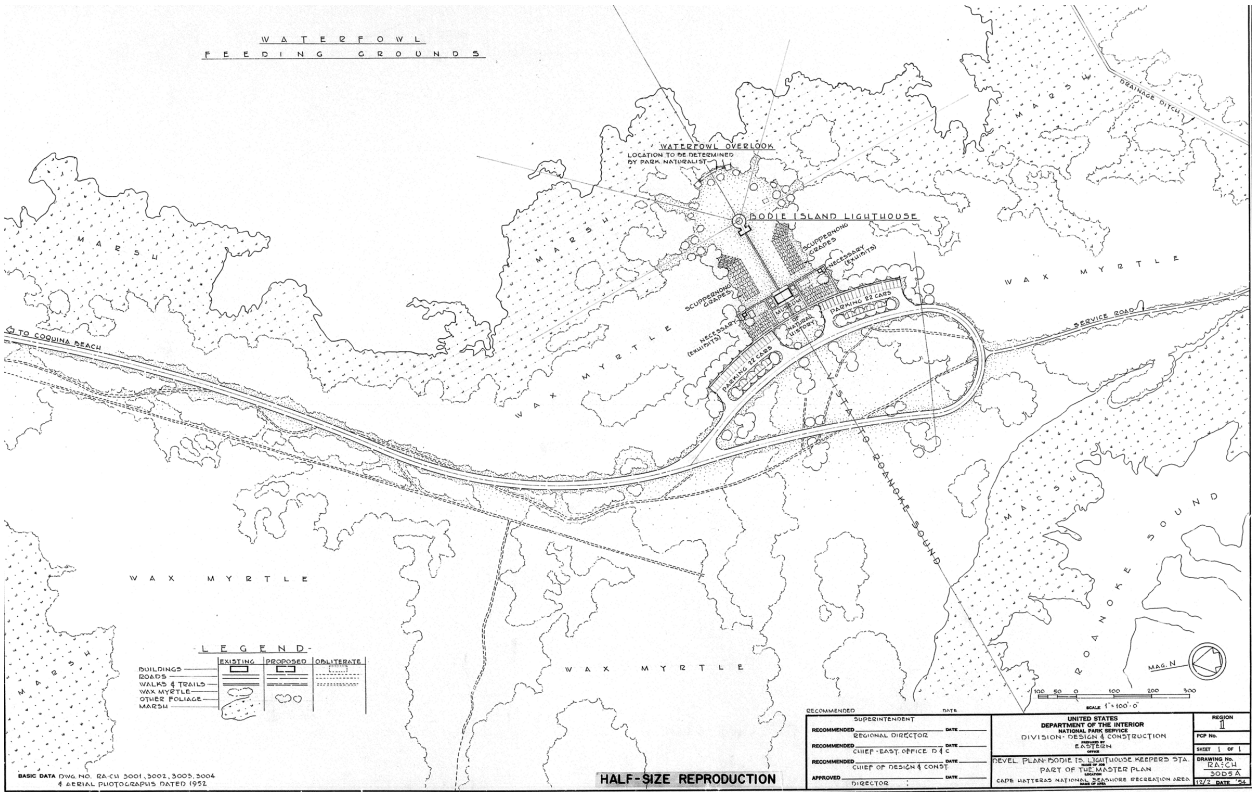


FIGURE 33. NPS Development Plan for Bodie Island Light Station, 1954. (Denver Service Center etic 603/3005A)

43. Cameron Binkley, *The Creation and Establishment of Cape Hatteras National Seashore* (Atlanta, GA: Southeast Regional Office, 2007), 130, 163-68.

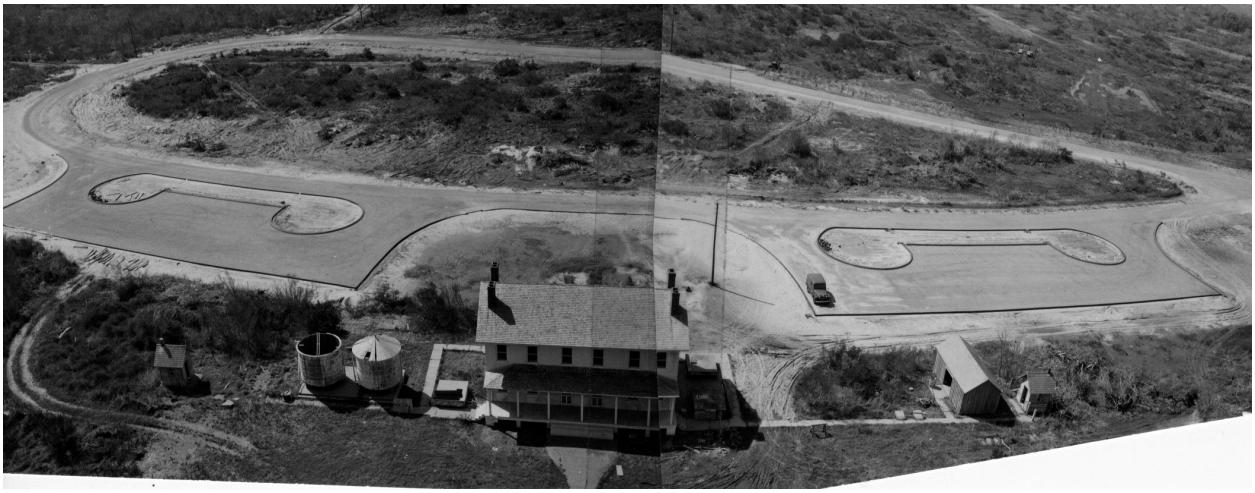


FIGURE 34. View of the newly constructed parking area and loop road, 1955. (CAHA Collection)

exhibit space, scuppernongs planted on either side of the brick walkway, and a waterfowl overlook on the marsh side of the site. Vistas to Roanoke Sound and the Atlantic Ocean were possible through the windswept topography. Both included parking areas symmetrically laid out around the central axis but differed in their layout of the access road. One version laid out the parking area around a loop road that circled back out of the site. Another version included a proposed road to Oregon Inlet continuing past the station with turnoffs into the parking area.[44]

The NPS chose to construct the version with the loop road as seen in images from 1956 but retained the surviving outbuildings without constructing the proposed site features around the central axis. Aerial images from 1955 show that when the parking area was laid out, three outbuildings were still on site. The original brick walkway connecting the double keepers' quarters and the oil house/ light tower remained, but at some point, a new wooden walkway running north to south changed the approach to the double keepers' quarters on the west, which had always been axially aligned with the brick walk on the east elevation.

Plans for the double keepers' quarters called for the structure to be converted to a "Museum of Natural History," which required significant changes to the interior. Major exterior changes were limited to the porches. By the 1960s, it was also being used as a visitor center.[45]



FIGURE 35. View of the light station from the loop road, 1957. (CAHA Collection)

Mission 66

In January 1956, NPS Director Conrad Wirth outlined Mission 66, a ten-year park development program aimed at upgrading the conditions and meeting the demands of the postwar era. The primary Mission 66 plans for Bodie Island were recreational facilities at Coquina Beach, located directly across the island, completed in 1956. Developed as a day use area, facilities included shade structures designed to resist wind and storm damage. It was eventually decided that a separate visitor center for Bodie Island was not needed after the Cape Point visitor center's construction on Hatteras Island.[46]

44. CAHA Collection 5602, Accession 359, Folder 4.

45. Oppermann, 33-36.

46. Cameron Binkley, *The Creation and Establishment of Cape Hatteras National Seashore* (Atlanta, GA: Southeast Regional Office, 2007), 130, 163-68.

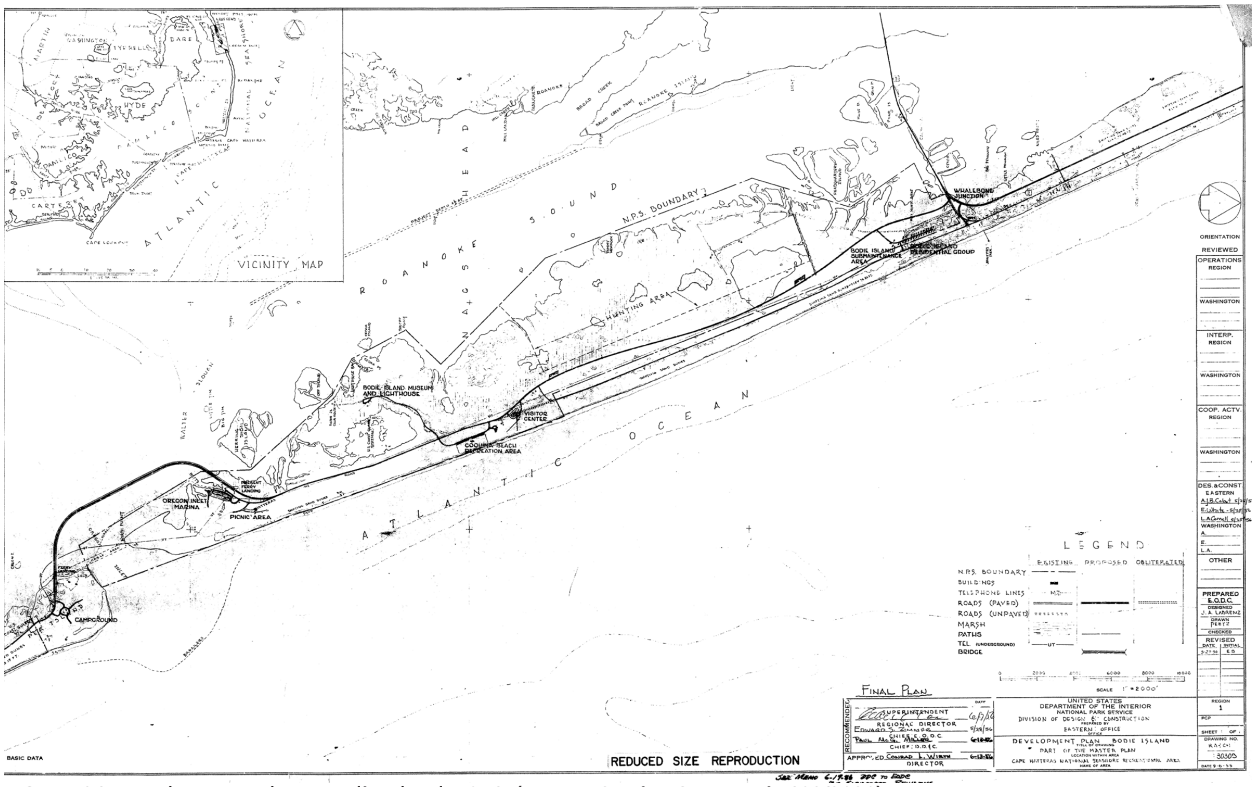


FIGURE 36. Development Plan – Bodie Island, 1956. (Denver Service Center etic 603/3030)

By 1962, the NPS had erected an observation platform on the site of the former detached oil house. A nature trail from the platform led to the marsh. Images from the 1960s show two wood stave tanks over the woodshed foundation, which were shown on the 1954 plans for the keepers' quarters. By 1969, two of the outbuildings (the privies shown in National Geographic image) had been removed. The NPS retained the 1920s storehouse. An image from 1977 shows a small shed-roofed building east of the back porch of the double keepers' dwelling and an image from the 1980s shows a larger building adjacent to the woodshed foundation, whose dates of construction and uses are unknown. Their use and date of demolition are unknown.[47]



FIGURE 37. Shade structures at Coquina Beach, 1956. (CAHA Collection)

Site Development 1990-Present

The double keepers' quarters underwent a massive repair campaign from 1990 to 1992 that addressed several issues and restored the alignment of the west front walk. The NPS re-graded the site, took up the NPS-era wooden north-south walkway, and constructed a universally accessible concrete walk and wooden ramp that followed the alignment of the original brick walk, disguising its true purpose as a wheelchair ramp. On the porch, a beveled wood board served as a reducer to provide a wheelchair-negotiable change in grade from porch deck to building interior. Also part of this project was the construction of a wooden HVAC enclosure.[48]

The NPS added a new restroom building north of the double keepers' quarters in 1992. In 2010, a new boardwalk with observation tower that begins at the edge of the north parking area and travels out into the marsh and the water beyond

47. Hartramph, 28.

48. Firth, 17-18; Oppermann, 37.



FIGURE 38. Observation platform, 1962. (CAHA Collection)



FIGURE 39. Wood stave tanks, 1956. (CAHA Collection)



FIGURE 40. Aerial view showing privies and stave tanks removed, undated. (The Outer Banks History Center, Manteo, NC, Aycock Brown Collection)



FIGURE 41. Image showing shed behind the double keepers' quarters, 1977. (CAHA Collection)



FIGURE 42. Image showing a shed near the woodshed foundation, c. 1980s. (CAHA Collection)

was installed by the State of North Carolina and donated to the NPS.

Transfer of the Lighthouse to the NPS

In 1972, the USCG and the NPS began discussions about allowing public access to a portion of the inside of the lighthouse. These talks led to a 1973 agreement calling for the NPS to make some required safety modifications for the protection and safety of the visitor. A use permit for visitation in place by 1976 was apparently only for the grounds around the lighthouse. NPS historical architect John C. Garner, Jr. noted that the spiral stairs were not supported between landings and that there was "considerable movement when traversed." A group of engineers and NPS personnel met on site in October 1976 and concluded that the structure was unsafe for public use.[49] Beginning in 1983, a series of inspections by

49. Hartramph, 29-30.



FIGURE 43. The site under construction, 1990. (SERO Collection)



FIGURE 44. Double keepers' quarters with wooden ramp, 1996. (SERO Collection)

different parties identified numerous deficiencies in the light tower and oil house. The deterioration of the lighthouse and the lack of preventive maintenance arose from a misunderstanding between the USCG and the NPS about who was responsible for maintaining the structure. The 1994 USCG inspector noted that the grounds of the light station and the associated outbuildings, owned by the NPS, were well cared for. In 1996, the Commander of the USCG Group Cape Hatteras noted that "structural deterioration at Bodie Island Light is making the light unsafe for personnel to maintain the light gallery and optics."

In 1994, the Outer Banks Lighthouse Society formed to aid in the preservation of the buildings and artifacts of the lighthouses in the area. They asked for a structural evaluation of the Bodie Island Lighthouse in 1996 by Alden and Associates of Reading, Pennsylvania, who concluded that the structural integrity of the tower might be in doubt.[50]

High levels of lead paint prompted the USCG to repair and repaint the lighthouse in 1997. Also included were replacement of windows, repointing of interior brickwork, installation of steel covers for the damaged stair treads, and other repairs. The Outer Banks Lighthouse Society funded another report on the condition of the lighthouse in 1997, carried out by Cullen Chambers of the Tybee Island Historical Society. The chief concern was the condition of the metal parts, particularly those of the deck supporting the lantern and surrounding galleries and ornamental ironwork. The report warned of falling metal parts, which got the attention of the NPS, who cordoned off the area around the lighthouse to protect visitors from falling debris.[51]

On July 13, 2000, the USCG transferred the lighthouse and approximately .22 of an acre to the NPS. This transfer did not include the Fresnel lens, as the USCG considers lighthouse lenses personal property rather than real property. The lens remained the property of the USCG, managed by the USCG Curator. The NPS installed a wooden board fence around the lighthouse to prevent



FIGURE 45. Bodie Island Lighthouse, 1996. (SERO Collection)

50. Ibid., 33-45.

51. Ibid., 46-48.

injury from falling metal from the platform at the top.[52]

In 2001, the Outer Banks Lighthouse Society paid International Chimney Corporation to inspect failing ironwork and other damaged areas. Following a National Register nomination written by Candace Clifford in 2002, the Bodie Island Light Station was listed in the National Register of Historic Places in July 2003. In 2004, the Outer Banks Lighthouse Society sponsored an inspection of the first-order Fresnel lens and sought to keep the lens in place until lighthouse restoration. On August 9, two cast-iron pieces fell from the gallery level, resulting in the closure of the base of the tower to visitors and an expansion of the size of the fence around the lighthouse. In 2005, the USCG transferred the Fresnel lens and the operation of the lamp as an active aid to navigation to the NPS.[53]

Following the completion of a historic structure report for the lighthouse/oil house and preservation/rehabilitation plans, the North Carolina Department of Cultural Resources concurred in 2007 with a determination of no adverse effect, provided that the number of stair treads replaced did not exceed 21. The NPS sought federal funding in 2007 and 2008 but failed to receive any. The federal Omnibus Budget Bill of 2009-2010 included long-awaited funding ($3 million) for repair and replacement of ironwork as well as repair of masonry and stone, repair of floors and other interior treatments, lead paint abatement, painting, and installing new handrails and a fire suppression system. The NPS received an additional $2.5 million in fiscal year 2012 and completed the project in December 2012.

The NPS opened the lighthouse for climbing in April 2013 "officially" for the first time in its history. According to John Gaskill, son of Keeper Vernon Gaskill, visitors were allowed to tour the lighthouse during this father's tenure from 1919 to 1940 if they could get there, but few could navigate driving the beach before roads were built. According to NPS historian Doug Stover, the USCG left the door unlocked so that locals could climb the tower, and the NPS opened the doors, as staffing was available, so that visitors could look inside. Visitation will be limited to 380 climbers per day, who will be charged a special amenity fee. It is proposed that the lighthouse will be open from March through December.[54]



FIGURE 46. View of Bodie Island Lighthouse in July 2012. (SERO Collection)

52. Superintendent's Annual Report, 2000, 6; Bodie Island Lighthouse Lens, April 14, 2005, CAHA Collection 5602, Accession 359, Folder 1.

53. Roberts, 21; personal communication, Doug Stover.

54. CAHA Collection 5602, Accession 359, Folder 2; http://www.miamiherald.com/2013/04/18/3352357/bodie-island-lighthouse-to-open.html; womacknewspapers.com/articles/2013/04/24/top_stories/tops252.txt

Landscape Characteristics

Landscape characteristics include tangible and intangible aspects of the cultural landscape that individually and collectively give a landscape its historic character. Landscape characteristics range from large-scale patterns to site details and materials. These landscape character-defining features are used throughout the report to focus on the definition and details of the cultural landscape as it has evolved through time to the present.

Spatial Organization

Light Station Components

The term "light station" refers to the tower as well as any support buildings. Light stations initially consisted of a light tower, a dwelling, a garden site, a place to store oil, and maybe a chicken house and shelter for a milk cow. The increased complexity of operation, with the introduction of the more sophisticated Fresnel lens in the 1850s, brought about a need for more personnel, which in turn required additional housing and other support buildings such as workshops, cisterns and water catchment basins, storage buildings, garages, radio buildings, boathouses and tramways, among others. By the 1920s and 1930s, however, the majority of light stations had electric service, reducing the number of staff necessary to operate the station. As ancillary buildings at many stations were rendered useless, the makeup of the light station began to change. In the 1960s, the automation of many light stations led to the surplussing or demolition of many obsolete, yet historic buildings.

The tower served principally as a support for the lantern that housed the light. The earliest materials used for lighthouse construction were wood and/or rubblestone. Later cut stone and brick were used, allowing towers to reach an increased height for better visibility. The lantern was typically a cast-iron enclosure surrounded by an exterior stone or cast-iron gallery with railing. Access to the lantern at the top of the tower was via stone, wood, or cast-iron stairs that either wound around a central column or spiraled along the interior sides of the tower walls (a few had straight sets of stairs that ran from landings around the tower interior). Windows in the tower were positioned to provide daylight onto the stairs. For taller towers, landings were provided at regular intervals. The top landing ended at the watch room where the keeper on duty ensured the optic was functioning properly. The lantern room above was usually reached via a ladder.

Second in importance to the light tower, dwellings for light keepers and their families were generally in the early days simple, 1½-story wooden or stone structures. Since lighthouses had only one keeper, there was only one dwelling. After 1852, the newly appointed Light-House Board assigned more keepers to light stations, and living accommodations became larger. The Light-House Board published books of drawings that served as templates for quarters, which could be single, double, triple, or even quadruple dwellings that reflected the prevailing architectural styles, adaptations to geographical conditions, or regional tastes. Complaints by keepers concerning lack of privacy for their families finally persuaded the Light-House Board not to build tri-plex housing. By 1913, the Lighthouse Service stressed that "recent practice favors detached houses, insuring greater privacy, and giving better opportunity for yards and gardens." By this time, the Light-House Board had a standardized design for keepers' dwellings.

Before the use of kerosene, oil was often stored in the lighthouse. Some lighthouse towers were constructed with attached oil room and workroom structures that were generally one-story masonry buildings with gable roofs with modest detailing. By 1890, all but a few lighthouses were using kerosene. The volatile nature of the illuminant necessitated the construction of separate oil houses, which were usually built of fireproof materials such as brick, stone, iron plate, and concrete. Congress issued a series of small appropriations for the construction of separate oil houses at each light station. Installation of these buildings began in 1888 and completed about 1918. Oil houses were simple and functional, usually with a gabled or pyramid roof. When oil was no longer required, the building was converted to another use, often storage.

Many onshore stations had separate frame or masonry storehouses where provisions, spare parts, and other items could be stored. Some light stations received government-built barns where horses and perhaps a milk cow could be sheltered. With the coming of the automobile, light stations

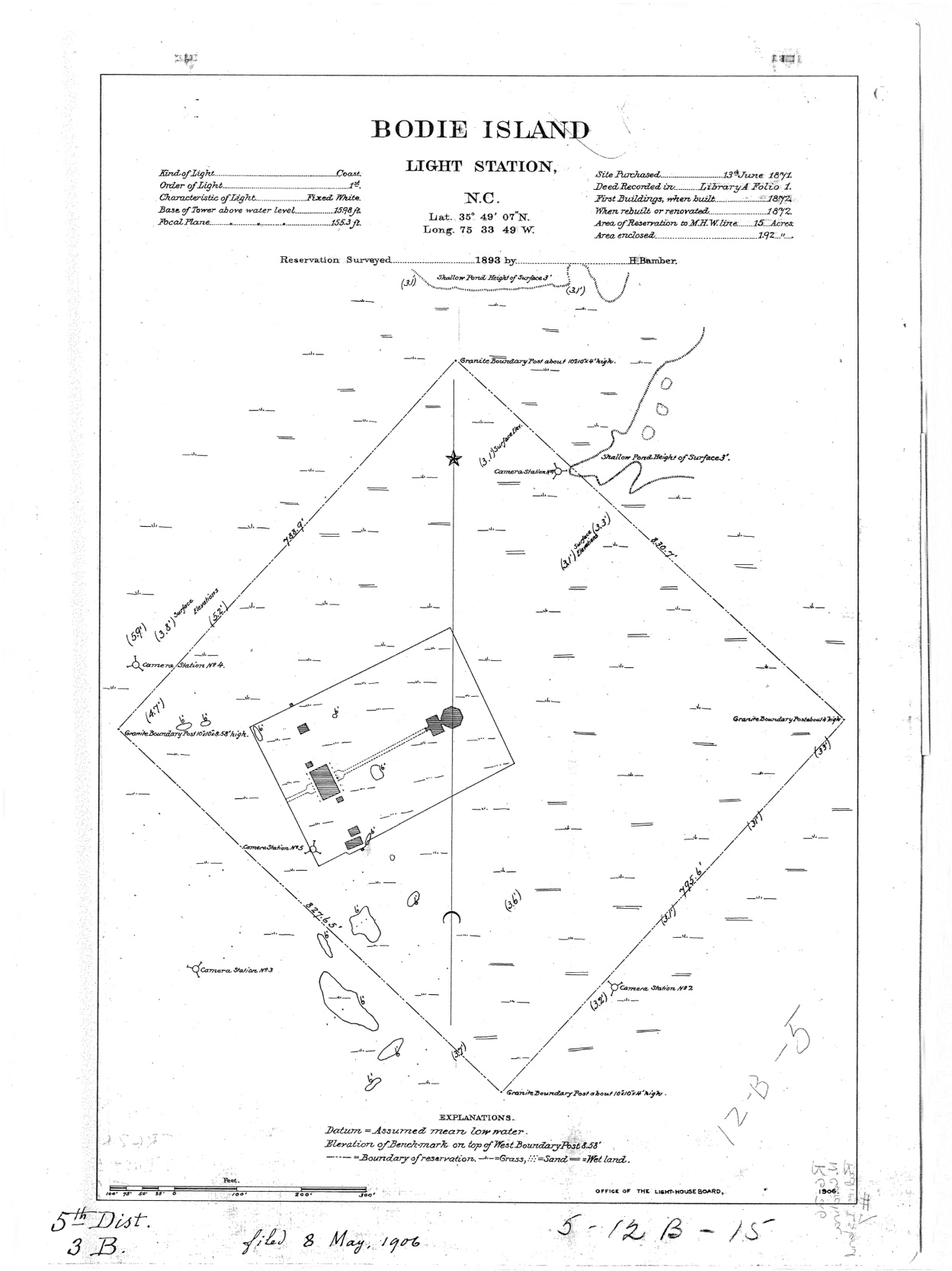


FIGURE 47. Bamber site plan, 1893. (CAHA Collection)

began to include garages. These buildings were simple, standard garage structures with up to three bays. Many barns were converted to garages. The privy at onshore stations was a simple building usually constructed of wood, although some had detailing to match the keeper's quarters.

All light stations needed water. Some stations used wells. Often, water collection systems that collected rain water from the roof of buildings and channeled the water into gutters and downspouts to pipes going to water reservoirs provided water for drinking and washing. Where the underground water level was too high, a light station may have wooden water storage tanks aboveground.

A number of light stations had tramway tracks running from landings to the light station. The tramways were principally used to unload supplies and equipment from the lighthouse tender.[55]

Bodie Island Light Station

The spatial organization at the Bodie Island Light Station reflected a landscape pattern of support buildings clustered around the lighthouse characteristic of other light stations with tall towers. A rectilinear arrangement centered around a central northeast to southwest axis that was aligned with the brick tower/oil house, the double keepers' quarters, and the brick walk that connected them. Until a road was built in the 1920s, the east façade of the double keepers' quarters, which faced the brick tower/oil house, was referred to as the "front." A secondary northwest-southeast axis flanking the double keepers' quarters aligned support buildings and cisterns. A wooden fence enclosed the station and walkways connected the various buildings on site. Garden plots at the rear of the property (east) were reported to be a failure.

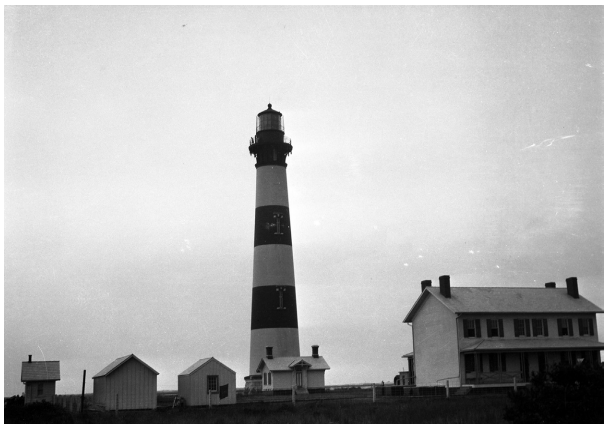


FIGURE 48. Bodie Island Light Station, c. 1928. (The Outer Banks History Center, Manteo, NC, Meekins Collection)

55. Excerpted from draft National Register of Historic Places Multiple Property Documentation form for "Light Stations of the United States;" George R. Putnam, *Lighthouses and Lightships of the United States* (Boston and New York: Houghlin Mifflin Co., 1917); and Ross Holland, *America's Lighthouses: An Illustrated History* (New York: Dover Publications, 1981 reprint); Oppermann, 24-28.

Topography

Bodie Island Light Station

In the early 1900s, the Bodie Island Club impounded a portion of the marsh to create a much deeper pond to improve habitat for waterfowl and provide hunting space for club members. A 1909 report of the station described the topography:

Between station and boat landing. Sandy in places but mostly low and marshy. Between station and ocean deep muddy ponds - NW and N of station low flat borrow sands - SE and Slow sandy hillocks and creeks.

Starting from boat landing to station about half the way is low and very muddy – as it is covered with water almost every flood tide. The other half is sandy, covered with a coarse grass.[56]



FIGURE 49. Aerial view of the topography of the station, 1960. (CAHA Collection)

56. Oppermann, 29; "Description of Light-House Tower, Buildings, and Premises, March 6, 1909, found in Hartramph HSR Appendix.

Bodie Island was called the "flats" in the 1930s for its flat, sandy expanses. Nor'easters caused flooding across the island from the ocean to Roanoke Sound. Storms from the opposite direction caused flooding from the sound to the ocean and often returned the island to its pre-storm width.[57]

Erosion Control on Bodie Island

Erosion control was a primary component of Mission 66 work at Cape Hatteras. It was intended to carry on the work begun by the Works Progress Administration and the Civilian Conservation Corps in the 1930s and 1940s. With the assistance of the North Carolina Highway Department, the NPS installed thousands of feet of snow fencing, created tens of thousands of cubic yards of dunes, and planted thousands of square feet of grass to protect the park and the state highway from erosion and storm damage. In 1957, Superintendent Hanks announced that 21,000 pine seedlings would be planted to help prevent erosion on the islands of the Outer Banks.



FIGURE 50. Fence construction along the Outer Banks, 1938. (CAHA Collection)



FIGURE 51. Grass planting on Pea Island, 1957. (CAHA Collection)

On Bodie Island, workers used tractor-driven mechanical grass planters near Coquina Beach. An experiment set up before the "Ash Wednesday" storm of 1962, however, showed massive change, with its large barrier dune eroded over 100 feet from the ocean, and park officials became increasingly concerned about the efficacy of their techniques. In truth, the fight against these natural forces was failing.



FIGURE 52. Workers planting grass using tractor near Coquina Beach, 1959. (CAHA Collection)

A series of scientific reports in the 1970s concluded that barrier dunes constructed since the 1930s had actually contributed to a loss of up to 150 feet of beaches and had dramatically altered the ecological and topographical characteristics of the Outer Banks. In 1973, the NPS embraced an entirely new management plan based on the principle that permanent structures in a natural beach setting were unsustainable and that important historic resources might require relocation. This new policy led the NPS to end artificial dune maintenance on park property on Bodie Island in 1982.[58]

Drainage Projects on Bodie Island

A series of projects undertaken after the park was established in 1954 affected the drainage of the marshes. In 1960, the NPS developed a mosquito control program that included constructing a series of impoundments and drainage systems plus filling

57. Stroh, 2.

58. Binkley, 174-179, 201-203; Stroh, 2.

small areas in the salt marshes. Only parts of this program were undertaken on Bodie Island in order to preserve the pristine marsh ecology. In 1963, drainage ditches were dug in three areas: the flats between NC 12 and Hatteras Road, the high marsh north of the Goosewing Club dikes, and the low marshes beside the sound near the lighthouse. The Lighthouse Pond impoundment was restored and new ditches dug to drain the margins of the area towards the pond.[59]



FIGURE 53. Mosquito control pond, 1963. (CAHA Collection)

Vegetation

Bodie Island

The 1849 U. S. Coast Survey of Bodie Island showed extensive grassy sand flats with interior pockets of wetlands and marshes beside the sound on the south end of the island. Trees are shown in three locations north of the future lighthouse station site. There is no evidence there were ever woods comparable to those at Nags Head and Kitty Hawk. Images from the 1893 survey showed a grassy sand flat with no vegetation above knee height. A 1915 U. S. Coast Survey mapped the vegetation in far less detail than the 1849 survey, with no differentiation between sand flats and grassy areas. No trees or shrubs are shown. Ian Firth interviewed several people for his 1987 report Vegetation Changes on Bodie Island to get a sense of the conditions there during the 1920s. All remembered sparse vegetation and low shifting dunes, with wax myrtles on sand hills in the vicinity of the light station that were low enough to keep the views unobstructed across the island.[60]

The artificial barrier dunes constructed in the 1930s protected the interior of the island from the impacts of salt spray, sand movement, and overwash, encouraging succession towards shrub and tree communities with a decrease in the area of sand flats and marsh. The expansion of the shrub community was primarily at the expense of the cordgrass communities. Before the dunes were stabilized, a few shrubs grew in the drifting sand near the lighthouse. By 1979, this same area was covered with a dense growth of shrubs, as was the entire center of the island.

Most of the stands of pines that now rise above the shrubs on Bodie Island were part of a planting program undertaken by Cape Hatteras National Seashore staff in the late 1950s and early 1960s. The various construction and drainage projects undertaken after the establishment of the park have increased the spread of woody species. The embankment carrying NC 12 is a place for the growth of woody species, but mowing keeps this growth largely in check. Draining the area between NC 12 and the old Hatteras Road resulted in a dense thicket of shrubs. The excavation of mosquito control ditches left spoil piles that shrubs colonized.[61]

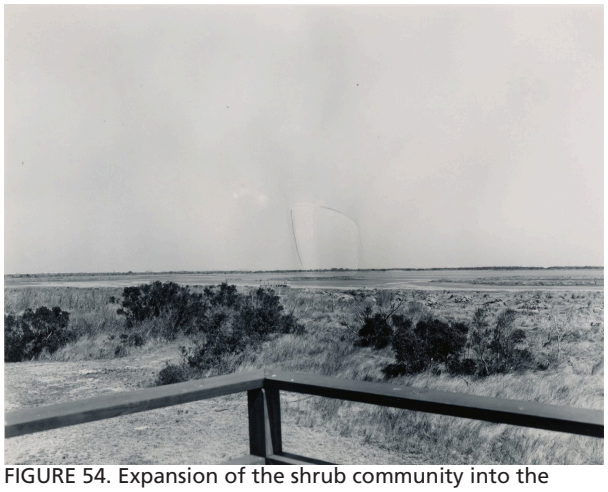


FIGURE 54. Expansion of the shrub community into the marsh, 1963. (CAHA Collection)

Phragmites

Phragmites australis or common reed is thought to be one of the most widespread plants on Earth and is found in marsh systems world-wide. It is an erect perennial grass that remains standing through all seasons and is fairly easily recognized by its plume-like inflorescences. Although the species name 'australis' suggests it is native to Australia, it is believed to have originated from the Middle East. European forms of *Phragmites* were probably

59. Firth, 18.

60. Firth, 5, 21.

61. Firth, 20-25; Dolan, 35-36; Stroh, 1-3, 10-11.

introduced to North America by accident in ships' ballast material. Recent research using genetic markers has demonstrated that three separate lineages occur in North America – one endemic and widespread (native), one whose origin is not certain that occurs across the southern United States from California to Florida and into Mexico and Central America ('Gulf Coast' type), and one from Europe (introduced invasive). The European *Phragmites* first established along the Atlantic coast and then spread across the continent over the course of the twentieth century. The native form was historically more widespread, occurring throughout Canada and most of the United States except for the Southeast (Texas to Florida and north to North Carolina). It remains fairly widespread in the western United States.

Native Americans used common reed for arrow shafts, musical instruments, ceremonial objects, cigarettes, and leaves and stems for constructing mats. Preserved remains of native *Phragmites* 40,000 years old have been found in the southwestern United States indicating that it is a part of the native flora of that region. In coastal areas, preserved rhizome fragments dating back 3,000-4,000 years before present have also been found in salt marsh sediments indicating that it is also native to these habitats. Both native and introduced forms have been used for duck blinds.[62]

Several clonal stands of common reed have invaded Bodie Island. Its establishment in the wetlands along the Atlantic coast is detrimental to native systems. It forms monospecific stands, reducing salt marsh community diversity and habitat quality.[63]

Bodie Island Light Station

Historic images show a site devoid of trees and shrubs (see Figure 48). In 1928, keeper Vernon L. Gaskill, Sr. reported that one of his duties was to "keep grass cut on lawn." His son, John, and Julian Austin, Jr., son of assistant keeper Julian H. Austin, Sr., also remembered being tasked with keeping the grass cut around the tower and keepers' dwelling. John remembered: "It was one of those push mowers and that was a lot of grass out there!" They never cultivated any grass, just mowed it within the lighthouse fence. John also recalled that there was vegetation south of the lighthouse because the Bodie Island Club put up a fence from ocean to sound that prevented grazing. North of the fence it was bare. He remembered the stand of pines to the south as far back as the 1920s; his father believed they were there much earlier.[64]



FIGURE 55. Looking south from the light station, c. 1928. (The Outer Banks History Center, Manteo, NC, Meekins Collection)

Beginning in the 1940s, images show an increase in successional vegetation. Between 1954 and 1956, the NPS returned the site to a lawn of grass around the tower and outbuildings that was regularly maintained. The NPS planted pines lining the entrance road and west side of the parking lot. It is unclear exactly when they were planted. The 2003 National Register nomination states they were planted in 1954, but a 1956 aerial does not show the pines. Ian Firth suggests they were planted in 1963 or 1964.[65]



FIGURE 56. Aerial image of the site, 1944. (CAHA Collection)

62. http://www.nps.gov/plants/alien/pubs/midatlantic/phau.htm.

63. http://www.nmca.org/PHRAG_FIELD_GUIDE.pdf; Kathryn L. Davison, *Vegetation Responses to Fire on Cape Hatteras National Seashore, North Carolina* (Athens: University of Georgia Institute of Ecology, 1986), 20.

64. Clifford, 32; Roberts, 14; Gaskill, 42; Bodie Island Vegetation and Animals, CAHA Collection 5602, Accession 359, Folder 9.

65. Clifford, 5; Firth, 23.



FIGURE 57. Successional vegetation at the light station, 1954. (CAHA Collection)



FIGURE 58. View from the light tower looking back to the dwelling, 1954. (CAHA Collection)



FIGURE 59. Aerial view of the site before pines were planted, 1956. (CAHA Collection)



FIGURE 60. Aerial view of the site after pines were planted, 1969. (CAHA Collection)

Garden Plots. Three garden plots at the light station were documented in the 1897 sketch that accompanied the keeper's request to build a stable. The garden was one acre in size and located at the rear of the site. The garden was described in a 1909 report of the light station as being "unprofitable" with "attempts . . . made to grow shrubbery, but the salt tides destroyed it in every instance." Apparently, amending the soil as originally suggested by the Light-House Board was not enough to overcome site conditions. John Gaskill confirmed that the garden was a failure, as the soil was too sandy. He stated that assistant keeper Bill Etheridge tried "several times but I don't think he had much luck with it." Growing food in such a remote location would have supplemented what the keepers received by tender.[66]

66. "Description of Light-House Tower, Buildings, and Premises, March 6, 1909, found in Hartramph HSR Appendix; Oppermann, 42; Firth, 6; Bodie Island Lighthouse Buildings, 2-3, CAHA Collection 5602, Accession 359, Folder 9.

Buildings and Structures

The Light-House Board classified lighthouses according to their position and use. Primary coast lights were located at the most prominent points along the coast. The Light-House Board believed that lights on prominent points should be at least 150 feet above mean sea level. The more important the classification, the larger the order of lens used. First-order lenses provided the largest range; sixth-order provided the smallest. The Light-House Board also developed a system with different numbers of flashes at timed intervals, as well as use of color.[67]

First Bodie Island Lighthouse

The first Bodie Island Lighthouse (1848) was a tower fifty-four feet tall, crowned by a lantern ten feet in diameter with fourteen Argand lamps. Its design was a flashing signal achieved by completing a revolution every three minutes. It suffered from a poor foundation that eventually damaged the lighting apparatus, which was probably thrown out of kilter by the leaning tower. Although repaired in 1851, the newly created Light-House Board replaced the Argand lamp in 1854 with a fourth-order Fresnel lens with a fixed white light, varied by red and white flashes. Foundation defects led to the abandonment and eventual razing of the first lighthouse.[68]

Second Bodie Island Lighthouse

The second Bodie Island Lighthouse (1859) was a white brick tower rising eighty feet crowned by a lantern with a third-order Fresnel lens that revolved, flashing every ninety seconds. Retreating Confederate troops destroyed the light tower in 1862, but the lens was saved and shipped to New York.[69]

Third Bodie Island Lighthouse

The third Bodie Island Lighthouse (1872) was a tall brick tower rising 156 feet. Its cast-iron lantern held a first-order Fresnel lens that exhibited a fixed white light that could be seen for over 18 nautical miles. In 1883, the Light-House Board changed illuminants from the original lard oil to mineral oil (kerosene) and the following year installed regular kerosene lamps. The low flash point of the kerosene led to the construction of an oil storage building separate from the lighthouse in 1896. In 1912, they introduced an incandescent oil vapor lamp as the principal source of light. In 1932, electrification of the lighting apparatus occurred using two generators and a large battery. At this time, the light changed from a fixed light to a flashing one.[70]

A major project to repaint the tower began in 1934. At the request of Keeper Gaskill, the Commissioner of Lighthouses agreed to let him hire local labor to complete the work. John Gaskill described the process they used to paint the tower over the years. He noted that painting was done from the "top down" and that the most difficult part was painting underneath the balcony and the roof of the tower.

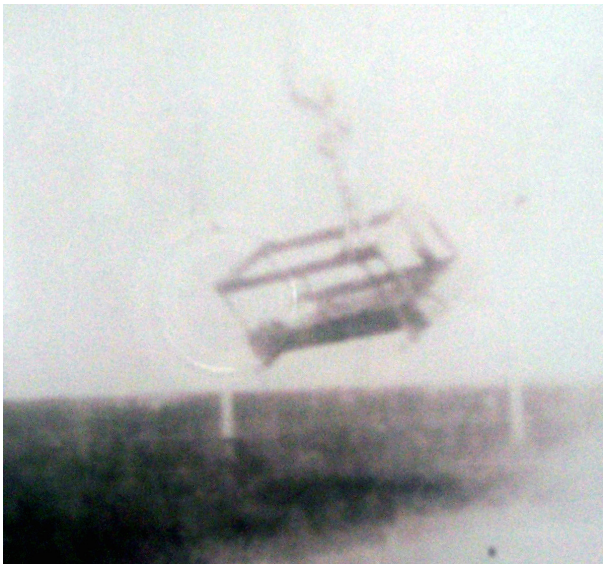


FIGURE 61. Box used to paint light tower, 1938. (CAHA Collection)

67. Clifford, Nineteenth-century Lights, 78.

68. Holland, 26-32.

69. Holland, 35; Roberts, 9.

70. Holland, 49-50; Gaskill, 34.



FIGURE 62. Light tower plan, 1871. (CAHA Collection)



FIGURE 63. Light tower, 1893. (CAHA Collection)



FIGURE 64. Light tower and oil house, c. 1928. (The Outer Banks History Center, Manteo, NC, Meekins Collection)

During the USCG operation of the lighthouse, commercial electric power replaced two original Kohler generators in 1953. The light tower was repaired and painted several times over the years of the USCG's tenure. Replacement of the gallery railings occurred in 1964.[71]

In 1973, the USCG signed an agreement with the NPS to allow public access to a portion of the interior of the lighthouse, provided that the NPS made some safety modifications to the tower, including rebuilding and modifying the gallery structure by installing additional railing and repairing, replacing, and restoring existing railing. Additionally, the NPS would maintain other elements of the tower and oil house open to the public. By 1977, the roof and front door of the oil house had been replaced. By 1981, inspection reports noted an increasing number of maintenance items and structural concerns.

In 1984, a security fence was installed at the bottom of the spiral stairs and one window replaced in

71. Hartramph, 26-28; Gaskill, 35.

the lower level. In 1989, the U. S. Army Corps of Engineers undertook the first of a series of inspections to the lighthouse. They found the tower and oil house to be in generally good condition structurally but noted deterioration of the ornamental iron work of the exterior edge of the lantern gallery. Later in 1989, the USCG reported that the electrical wiring needed to be inspected and replaced as needed, and the work was apparently completed in 1992, although several of the tower stairs were damaged by falling conduit.

The inspector for the 1992 report described the lighthouse as being "in the worst shape out of any that I inspected on this trip." Years of deferred maintenance and harsh coastal conditions had finally caught up with the Bodie Island Lighthouse, yet it was years before any repair work was undertaken. Finally in 1997, the lighthouse was repaired and repainted, but nothing was done to address the deteriorated ironwork.[72]

Additional reports in 1997 and 2000 affirmed the findings of earlier studies and warned of potential falling debris from the support system of the gallery deck. The NPS took ownership of the lighthouse in 2000. As a first step towards preservation and rehabilitation, the NPS initiated development of a historic structure report (HSR) in 2002. Findings of the physical investigation and review of historic documents indicated that substantial repair of the cast-iron components was necessary to retain both the structural and historic integrity of the building. Additionally, repairs to the windows, doors, historic ventilating system, masonry, marble finishes, and minor architectural components of both the lighthouse and oil house were needed.[73]

Two cast-iron pieces fell from the gallery level in 2004, closing the base of the tower to visitors. Preservation/rehabilitation studies and plans were completed in 2006, and the North Carolina Department of Cultural Resources concurred in 2007 with a determination of no adverse impact, provided that the number of stair treads replaced did not exceed 21. Federal funding requests failed the next two years.

Congress finally appropriated $3.1 million in the 2009-2010 Omnibus Budget Bill for repair and replacement of ironwork as well as repair of masonry and stone, treatment of floors, and other interior treatments. Funds had already been secured for restoration of the first-order Fresnel lens. Work stopped in 2009 when metal braces supporting the gallery and lantern decks were discovered to be cracked and had to be replaced before any other work could move forward. The NPS received an additional $1.89 million in 2012 and completed the project in December.[74]



FIGURE 65. Light tower, 2001. (HABS NC-395-5)



FIGURE 66. Bodie Island Lighthouse, 2013. Note climbers on the lantern. (SERO Collection)

72. Hartramph, 29-45.

73. Renee Gladhill-Earley to Michael B. Murray, June 5, 2007; "Bodie Light House Restoration Project," undated, CAHA Collection 5602, Accession 359, Folder 2; Roberts, 21.

74. Roberts, 21.

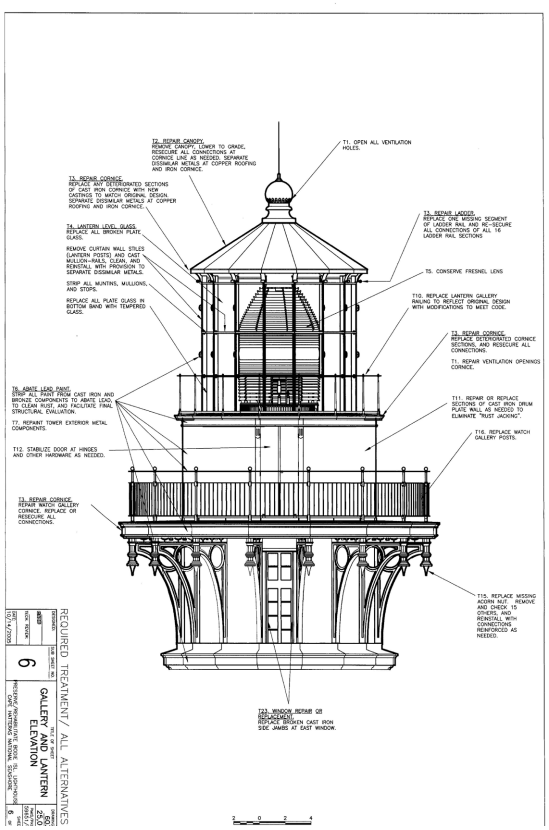


FIGURE 67. Lantern treatment plan, 2005. (Denver Service Center etic 604/25014)

Oil House

A one-story, side-gabled brick building with granite details attached on the west to the light tower was constructed at the same time as the lighthouse in 1872. A workroom was located to the left (north) where the keeper kept the station log and other records. An oil room was located to the right (south) where fuel was stored until the conversion to kerosene, which necessitated the construction of a new oil house a safe distance from the tower.[75] There is little documentation as to maintenance on the oil house before acquisition by the NPS. Although the building originally had a wood shingle roof, John Gaskill recalled that the building never had wooden shingles during his father's tenure, so it is likely the change from wooden shingles occurred around or before 1920. It appears that roofs were routinely replaced without documentation in reports. Workers scraped and painted the oil house in 1959 and again in 1963. By November of 1977, the USCG had replaced the main entrance door and reroofed the building with asphalt shingles. Repainting occurred in 1978.

The biennial 1984 inspection report noted termite damage to the door and window frames and the

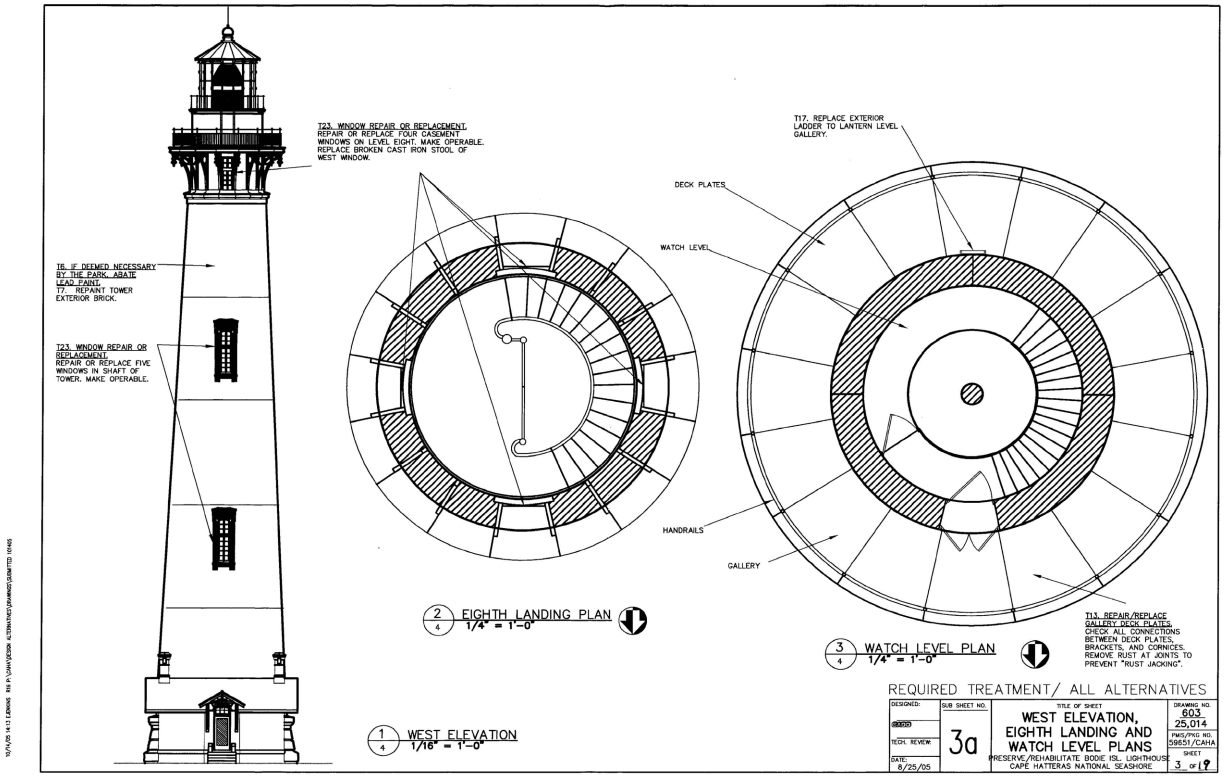


FIGURE 68. Light tower treatment plan, 2005. (Denver Service Center etic 604/25014)

75. National Register nomination, 10.

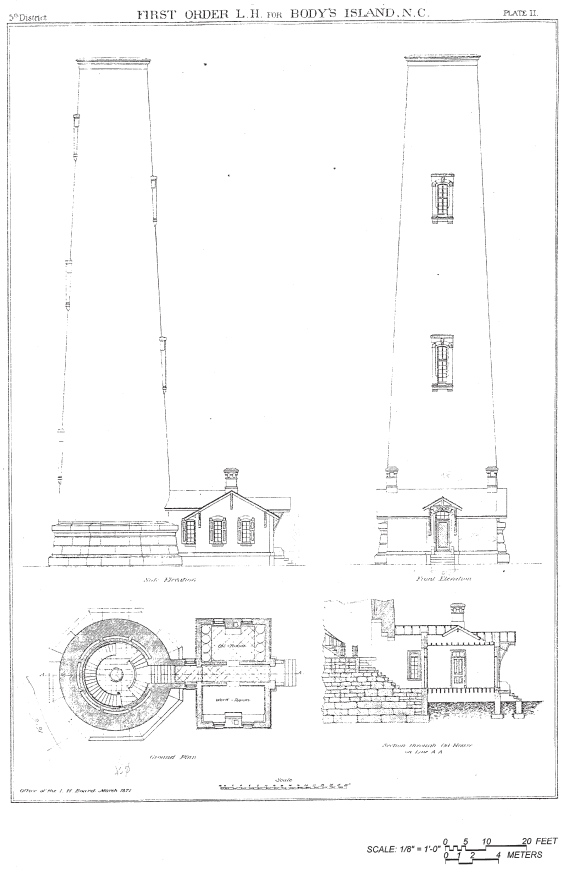


FIGURE 69. 1871plan. (CAHA Collection)



FIGURE 70. Oil house, 1893. (CAHA Collection)



FIGURE 71. Oil house, 1948. Note garage and storehouse in background. (CAHA Collection)



FIGURE 72. Oil house, 1964. Note observation platform to the right. (CAHA Collection)

ceiling of the oil house. Repair work began in 1986. In 1989, the U. S. Army Corps of Engineers inspected the tower and oil house and reported water damage to the interior of the building probably caused by deteriorated chimney flashing or bricks. A 1996 inspection requested by the Outer Banks Lighthouse Society noted the same water damage, as well as rotted roof sheathing. The report mentioned a cementitious coating applied over the brick that needed repair. A 1997 inspection by Cullen Chambers reported widespread dry rot on exterior wood elements.[76]

Funding to rehabilitate or replace the marble floor, roof, windows and framing of the oil house and to replace asphalt roof shingles with historic wood shingles was included with the appropriations for the recent lighthouse restoration.

76. Hartramph, 28-44, Appendix.



FIGURE 73. Oil house, 1996. (SERO Collection)

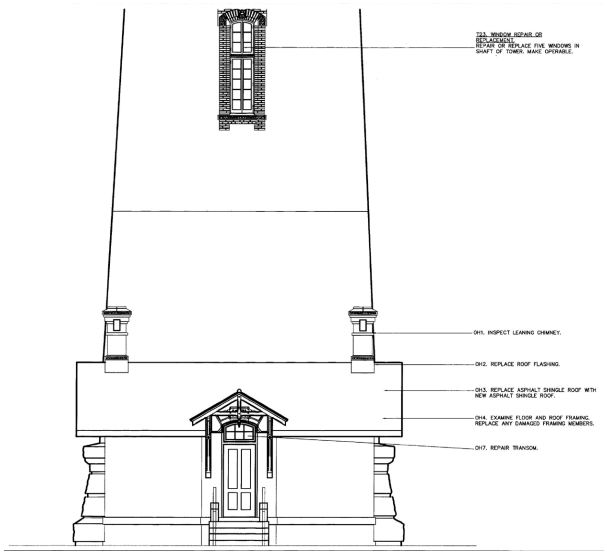


FIGURE 74. Oil house treatment plan, 2005. (Denver Service Center etic 603/25014)

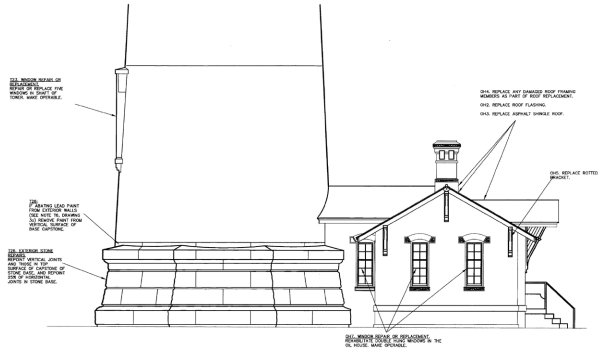


FIGURE 75. Oil house treatment plan, 2005. (Denver Service Center etic 603/25014)

Double Keepers' Quarters

The keeper's quarters for the first Bodie Island Lighthouse was described in 1858 as a 1½-story frame house with unpainted "natural" wood shingles. Inside were five rooms to serve a keeper's family. Although it survived the Civil War, when a new site was chosen for the third tower on the opposite side of the inlet, the Light-House Board sold the land in 1873.[77]

Work on the double keepers' quarters began in 1872 to house the principal keeper and assistant keepers and their families. On April 4, 1872, District Engineer Hains wrote Major George H. Elliott, Engineering Secretary of the Light-House Board:

> Have you any particular plans for keepers dwelling at Body's Island, NC? I would suggest that as it is extremely expensive to make repairs in this locality, it would be advisable to build the dwelling of permanent material—as brick. This would afford additional safely against fire. I am having a tracing made of keepers dwelling for First Order Light-houses from Plate 85-V,VI and VII-Volume ?? of Drawings published by Light-House Board.

Apparently, Hains felt that the plans submitted by the Light-House Board were too "elaborate and costly" and submitted his own plans traced from old Light-House Board drawings. The plans show a two-story, side-gabled brick house with six bays of six-over-six windows on the upper story, and a corresponding six bays on the lower level with the two center bays used as entrances. A full-front porch rests on piers, and four interior end chimneys pierce the roof. Front stairs are the width of the two interior hallways. Front and back elevations appear identical with the exception of porch steps. At the back, two narrower sets of steps are centered not on the entrance doors, but roughly on the inner kitchen window of each apartment. Lattice screening was to span the spaces between the porch's foundation piers.

1893 photographs of the keepers' quarters, the earliest known images of the site, suggest that elements of the 1872 plans may have been changed in the first two decades or more likely were omitted before construction. Although the 1872 elevations show the six fenestration bays evenly spaced, the 1893 photographs show the arrangement as found today, with the two central bays closer together. The 1872 floor plans also show the arrangements as built, giving further credence that the changes were considered before actual construction.

77. Oppermann, 14; Clifford, 30.

A closer look reveals that the spacing of the doorways is different on the two elevations. The doorways of the east elevation, towards the light tower, are closer together than those on the west façade. The reason for this is not known. In a letter of May 5, 1872, District Engineer Hains wrote to Mr. Dexter Stetson, "Sir: your suggestion relative to changing the positions of the doors and windows in the keepers dwelling is approved, and you are authorized to make them."[78]



FIGURE 76. Double keepers' quarters plan, 1872. (CAHA Collection)



FIGURE 77. Double keepers' quarters, possibly a 1920s reproduction of one of the Bamber photographs. (CAHA Collection)

The 1872 design of the porch also differs from the 1893 photographs. The original design depicts the house with the nine bays of porch delineated by square 4" x 4" posts with simple square 6" x 6" bases and capitals. The nine bays are evenly spaced, but show no correlation with the six bays of the house. The porch is topped by a shed roof.

In the photographs, both porches are covered by hipped roofs rather than the shed roof shown in the 1872 plans; the porches are divided into six bays rather than nine; and both porches have an X-braced railing while the 1872 plans show none. Also of interest are the paired posts on the 1893 photograph of the back porch rather than the single posts shown in 1872 plans. Detail of the front posts is unclear in the photographs.

According to the 1872 plans, front steps were to be wide and centered at the entrance bays with two narrower sets of steps at the back. The 1893 photographs show both front and back steps with the same wide center stair rather than the two smaller sets of steps at the back, although this detail is somewhat obscured by a fence in the photograph. A 1933 photograph also shows a single set of back steps, wide and centered.

Another change may have been the porch's side steps. In the 1872 plans, no side steps were present, yet District Engineer Hains' letter of August, 1872 reports "putting down main steps and three pairs of end steps to the piazza." The fourth set apparently was added before 1909 when a site plan shows side steps on both porches extending to narrower walkways to existing buildings.

Other elements of the 1872 plans appear never to have been built, including a paneled frieze across the front of the building and a scroll-sawn corner bracket, which are absent in 1893 and later photographs and a 1954 elevation.[79]

Major repairs to the dwelling occurred in 1900. The shingle roofs were "renewed," screening replaced at doors and windows, and plaster cracks pointed in six rooms and the halls. Other repairs were to rotting porch members and window sills. Repairs were made to brickwork and woodwork throughout the house, and new exterior shutters were added.

A 1909 site plan shows the desired layout of a new keeper's quarters and several new outbuildings, as well as identifying "new brick walks" and specifying the locations of two buildings to be moved (see Figure 21). Rising funding costs apparently derailed the project, and the dwelling was never built. An unpaved road built in the 1920s reversed the arrangement of the keepers' quarters, with the west façade considered the front.[80]

78. Oppermann, 24-26.

79. Oppermann, 26-27.

80. Oppermann, 29-31.

After the acquisition of the light station by the NPS in 1953, plans for the keepers' quarters called for the building to be converted into a natural history museum. Although major alterations occurred to the interior, the only significant changes to the exterior were to the porches. Single posts replaced the existing paired posts, four exterior doors were rehung and a screen door installed at each, new gutters were to be added as needed, certain downspouts replaced, and new splash blocks set. All sets of steps were retained. Work on the building ended in 1955.



FIGURE 78. Plans for Museum of Natural History, 1954. (Denver Service Center 603/2032)



FIGURE 79. Double keepers' quarters, 1957. (CAHA Collection)

Images taken in the 1960s and 1970s indicate that few changes occurred after the 1950s. Roof replacement occurred in 1975. The State Historic Preservation Office documented the building in 1974 and 1981 and photographs show no significant changes. Its use changed to a visitor center in the 1960s.[81]

81. Oppermann, 33-36.



FIGURE 80. Double keepers' quarters, 1966. (CAHA Collection)



FIGURE 81. Double keepers' quarters, 1971. (CAHA Collection)

Over the years the building fell into disrepair. During a massive repair campaign of 1990-92, the NPS addressed three principal objectives. The first was to correct the considerable maintenance deficiencies of the building. The NPS made extensive repairs to the wood framing and installed additional masonry foundation piers. Work also included: a new wood shingle roof; galvanized steel gutters and downspouts; repair to the open porches, including cinder block infill added to the west porch foundation; and upgrades to the electrical and mechanical systems.

The second objective was to use the building fabric itself to tell the story of the building's former use as living quarters for the lighthouse keepers. Replacement of missing elements, such as a section of handrail and balustrade of the missing north staircase, the first-floor fireplace mantels, and numerous interior doors, helped restore some of the building's interior features. Where whole walls had been removed, wing walls were constructed to provide a semblance of the original room configurations.

The third objective was to facilitate universal accessibility. Re-grading of the site along the west side of the building and constructing a new wood plank walk on a gradual rise to connect the site's walkway to the building's open porch provided a wheelchair ramp that resembles an historic feature, disguising its true purpose. On the porch, a beveled wood board serves as a reducer to provide a wheelchair-negotiable change in grade from porch deck to building interior.[82]



FIGURE 82. Double keepers' quarters during repair work, 1990. (SERO Collection)



FIGURE 83. Double keepers' quarters, 2001. (HABS NC-385-27)

Sheet Metal Oil House

The low flashpoint of kerosene necessitated a detached oil storage building, which was built in 1896. A 1909 report described the building as 10 x 16 feet, constructed of brick and iron, and located 50 feet southeast of the tower. A 1921 Estimate of Cost of Proposed Works stated that the existing oil house had been removed and "all serviceable material" used in the construction of a concrete house. John Gaskill described it as concrete with a metal door and stated: "Later they built a tank and piped the kerosene inside the house from the tank." Its use changed in 1932 to a generator building when Bodie's lighting apparatus was converted to electricity. After the conversion of the keepers' quarters to a natural history museum in 1954, the generator building was no longer needed. The NPS replaced it with an observation platform.[83]



FIGURE 84. Sheet metal oil house, 1944. (CAHA Collection)

Cisterns

Rainwater, collected off the roof of the double keepers' quarters, was fed by galvanized gutters into cisterns on the north and south corners of the dwelling each with a capacity of 2,500 gallons. An 1898 inspection trip showed that one of the two cisterns constructed in 1872 needed to be replaced.

This work apparently occurred in 1900, when monthly reports described the building of a new cistern, pump, and gutter system. The cistern dimensions were 8 x 9 ½ feet in plan. A new hand pump was installed with a wooden base and a trough for carrying off the waste water and an overflow pipe put in and holes cut for ventilating the cistern. To feed the cistern, new galvanized gutters were installed on the porches, new spouting put up for conducting the water from the dwelling to the cistern, and brick gutters laid to carry the water from the spouting on the porches.

82. Oppermann, 36-39.

83. Oppermann, 40, 43; Hartrampf, 25; Holland, 46; Clifford, 15; Bodie Island Lighthouse Buildings, 2-3, CAHA Collection 5602, Accession 359, Folder 9.

In 1911, the Light-House Board Inspector reported that rotten boards had been replaced in the walks in front of the cisterns. Other work included replacing the downspouts and cutoffs.[84]

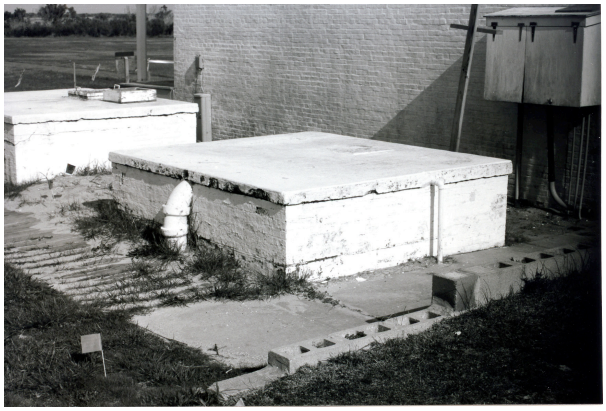


FIGURE 85. North cisterns, 1990. (SERO Collection)



FIGURE 86. South cistern, 1990. (SERO Collection)

Storehouses/Garages

Original to the light station were two frame storehouses, one 60 feet northwest of the keepers' quarters and one 60 feet southeast of the keepers' quarters. These were identified on several site plans, and John Gaskill remembered that they were later converted to garages, and after WWII, they were sold, moved, and made into cottages. An image from 1948 of the oil house shows one of the garages still on site (see Figure 71).

According to John Gaskill, the outbuilding remaining on site was built in 1920 as a storehouse located between the original northwest storehouse and its privy. He reported that tools and maintenance equipment were stored here, as well as tackle, paints, and equipment to paint the tower.



FIGURE 87. Storehouse to the far left of image, 1933. (CAHA Collection)

It can be seen in photographs from the late 1920s



FIGURE 88. Storehouse, 1957. Note privies still standing. (CAHA Collection)

(see Figure 48) and early 1930s and is identified on the 1940 site survey as "garage." It is also sometimes referred to as the "pony barn."

In 1975, the NPS installed a wood shingle roof. In 1990, the NPS repaired the building and modified the interior to serve as the electrical hub of the light station complex, including sistering the floor joists, replacing a section of sill, completing minor floor repair, replacement of window sash with four-light fixed sashes and repair of the double doors and board-and-batten siding. The building was also raised about a foot and set on eight brick piers on concrete pads. [85]

84. Holland, 46; Oppemann, 41-42.

85. Oppermann, 36, 43; Clifford, 12, 14.



FIGURE 89. Storehouse before rehabilitation, 1990. (SERO Collection)



FIGURE 90. Storehouse after rehabilitation, 1996. (SERO Collection)

Stable `

In 1897, Keeper Gallop requested a stable that he proposed to build outside the fence beyond the south privy. Records indicate the Light-House Board gave permission, but another request for a stable, as well as a chicken house, was made in 1902. A 1909 report listed a stable and a chicken house as among the buildings on the site. It is not known when these disappeared.[86]

Woodshed

The woodshed sat southeast of the keepers' quarters on the 1893 site plan. It is missing from the 1897 plan, although on the 1893 plan the woodshed was shown near Gallop's proposed stable site.

A woodshed with a concrete floor was built in 1930 with its east side left open for easy access. Knowing the power of ocean winds, Keeper Gaskill advised against the open side. His advice was ignored, and a major hurricane destroyed the structure in 1933, leaving only the concrete foundation still present today.[87]



FIGURE 91. Woodshed foundation, 1990. (SERO Collection)

Privies

Two privies were shown on the 1893 light station plan on the northwest and southeast margins of the enclosed site (see Figures 18-20). Improvements occurred in 1900, when the engineer wrote: "The fronts of the water closets have been repaired, new base boards put on, and flaps made, fitted and hinged on the outsides of the buildings."[88]

Privies were periodically rebuilt, with the last privies dating to 1921, and were used throughout the occupancy of the keepers' quarters (see Figure



FIGURE 92. Privy in an undated postcard of the site. Note blue color. (The Outer Banks History Center, Manteo, NC)

86. Oppermann, 41; Bodie Island Lighthouse Buildings, 1, CAHA Collection 5602, Accession 359, Folder 9.

87. Gaskill, 31; Oppermann, 42.

88. Hinged flap-doors were put on the back of privies for cleaning out the deep pits; Oppermann, 42.

48). They appear in images of the station as late as 1962 and show the surviving privy was painted blue.[89]

Pier

A landing was located about one-half mile west of the station. Workers built a 12' x 12' pier in 1871 to hold a derrick for off-loading ships. Light Service tenders could then pull up to the pier and use the derrick to unload building materials. In 1909, there was only a landing, no wharf noted.[90]

Modern Additions

In the 1960s, the NPS replaced the sheet metal oil house with an observation platform and a nature trail with a small wooden deck (see Figures 72, 81, and 98). According to George Perrot, the observation platform was no longer there in 1973.[91]

In 1992, the NPS built a universally accessible public restroom building north of the keepers' quarters. Designed in a size, scale, and proportion of early outbuildings, and using similar materials, the result is a visually unobtrusive addition to the site that once had many such buildings. Also built during the 1990-92 site improvements was



FIGURE 93. Edge of observation platform, 1963. (CAHA Collection)

89. Oppermann, 40-43; National Register nomination, 15; Bodie Island Lighthouse Buildings, 2, CAHA Collection 5602, Accession 359, Folder 9.

90. Holland, 40; Clifford, 15; "Description of Light-House Tower, Buildings, and Premises, March 6, 1909," found in Hartramph HSR Appendix.

91. George Perrot began work at CAHA in 1973; he supervised the work on the site from 1990-92.



FIGURE 94. Enclosure for mechanical equipment, 2001. (HABS image NC-395-28)

an enclosure for mechanical equipment on the southwest corner of the visitor center/bookstore.[92]

Circulation

Walkways

An 1893 site plan shows brick walkways laid out in an axial arrangement linking the front door of the oil house, the double keepers' quarters, and the front gate. The brick was left over from the tower construction.

In 1897, the Light-House Board authorized 360 feet of old walkway to be relaid and 2,200 square feet of new wood walkways. The walkways appear on an 1897 site plan that shows the brick walks extending from the front and rear of the double keepers' quarters and wood walks flanking the dwelling and linking it with outbuildings on either side. These boardwalks would have been needed to traverse the sandy topography of the site.[93]

A 1909 survey map shows the walkways unchanged. In 1911, an inspector reported that rotten boards had been cut out of the walks in front of the cisterns and replaced with Georgia pine. Walkways of this material would have needed repair or replacement at regular intervals. John Gaskill recalled that the path down to the boat landing was initially grass. "Later Daddy got a boardwalk built from the high ground down to the

92. Oppermann, 43.

93. Oppermann, 41.

land, but that was a long time getting there." A 1921 "Estimate of Cost of Proposed Works" proposed removing the wooden boardwalks and replacing them with 4-inch-thick, 3-foot-wide cement walks.[94]



FIGURE 95. Visitors sitting on a concrete walkway, c. 1925. (The Outer Banks History Center, Manteo, NC, Edna Evans Bell Collection)



FIGURE 96. Undated postcard of the site showing concrete and wooden walks c. 1960. Note sheet metal oil house in the background. (The Outer Banks History Center, Manteo, NC)

94. Bodie Island Lighthouse Buildings, 2-3, CAHA Collection 5602, Accession 359, Folder 9.

Construction of an entrance road and parking area concluded in 1956. By 1959, the NPS installed a new section of wooden walk to bring visitors to the natural history museum from the parking spaces, creating an approach that had never been there historically. It is likely that the curvilinear section of walkway that runs from the surviving, original brick walk (east) to the parking lot was also installed at this time. The construction date of the section of walk that links the parking lot with the 1920s shed is unknown, but it was in place by 1969.



FIGURE 97. Wooden walkway, 1959. (CAHA Collection)



FIGURE 98. Aerial view of the station showing layout of walkways, 1969. Note observation platform and nature trail. (CAHA Collection)

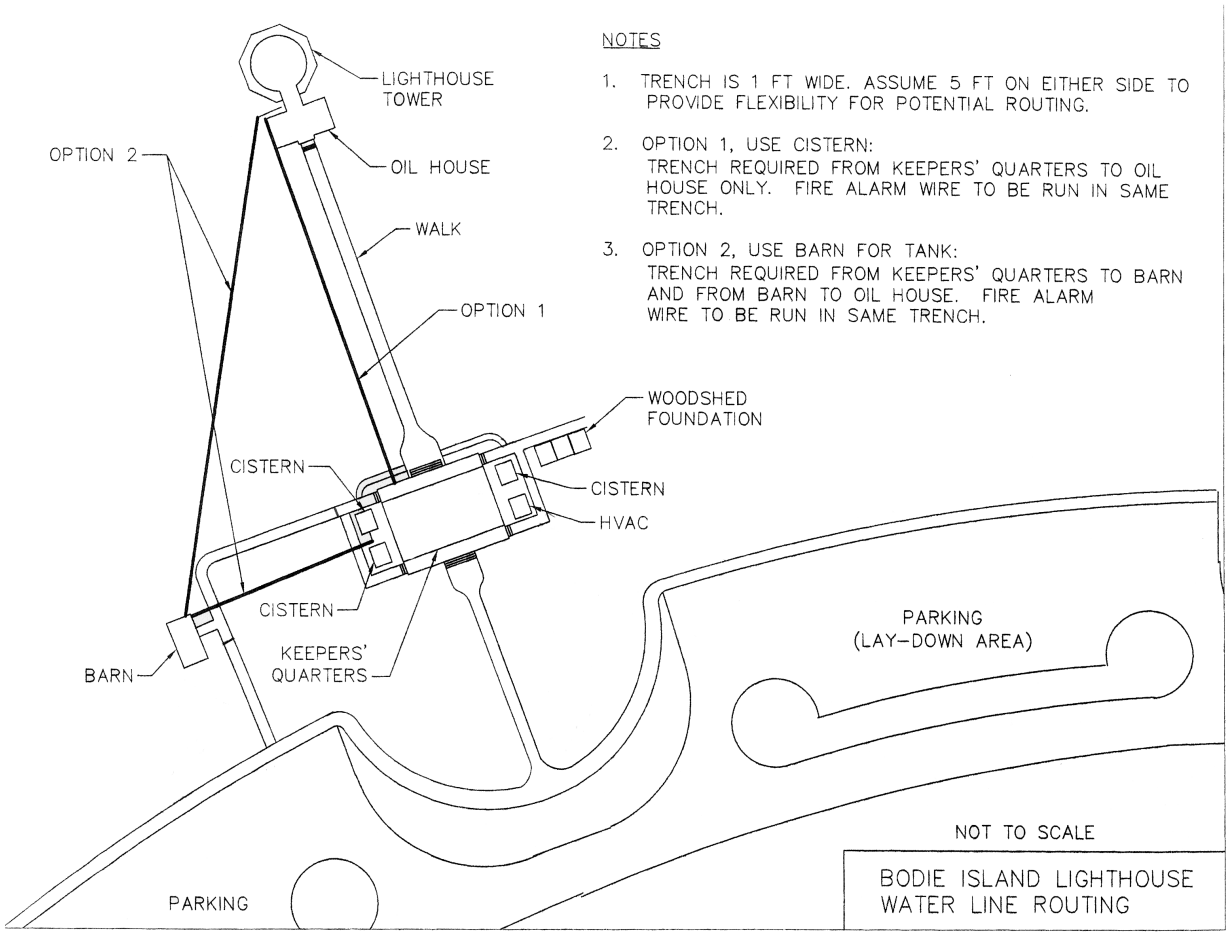


FIGURE 99. Water line routing plan that shows layout of walkways, c. 1992. (CAHA Collection)



FIGURE 100. HABS image before addition of southwest walkway, 2001. (HABS NC-385-27)



FIGURE 101. View of the walkways, 2009. Note southwest walk. (CAHA Collection)

In 1992, the NPS replaced the nonhistoric section of wooden walk that brought visitors to the entrance of the visitor center/bookstore from the parking lot with a wooden ramp that provided ADA access to the building and a walk that mimicked the original alignment of the non-extant brick walk (west) shown on historic maps. A curved section of walk was then needed to connect the west end of the new axial walkway with the two sections of the parking area. The construction date of the southwest walkway that links the building and the parking area is unknown. It does not show up in HABS images from 2001.

Also part of the 1992 work at the site was the repair of the historic brick walkway that links the visitor center/bookstore with the oil house. The damaged sections consisted of bricks whose bond had been broken by unknown circumstances and had fallen below the original installation grade. The brick walk at two different heights posed a safety issue for visitors and also provided the opportunity for loose historic bricks to be removed. All bricks were numbered, photographed, and documented before removal for cleaning of excess mortar. Broken bricks were replaced with brick removed from the crawl space under the visitor center/bookstore or with Williamsburg Brick that was specially manufactured for the project. After bricks were cleaned, new mortar that consisted of six parts sand, three parts lime, and one part grey Portland cement was mixed and used to form a correct elevated bed and to bond the bricks. All bricks were soaked in water before being laid and were placed in their original location according to documentation.[95]



FIGURE 102. Repair work done on historic brick walkway, 1992. (SERO Collection)

At some point an additional concrete walk was constructed to connect the tower and the sheet metal oil house, constructed in 1896 and removed at some point after 1954 and replaced with an observation platform and nature trail out to the marsh. The extant portion of the nature trail began at the edge of the marsh, where a boardwalk led out to a viewing area. This option proved problematic, as visitors had to traverse the open lawn to reach the nature trail. In 2010, the NPS installed a new boardwalk with observation tower that begins at the edge of the north parking area and travels out into the marsh and the water beyond. In 2011, the NPS replaced the remaining wooden walks with concrete walks because of buckling after bad storms. [96]



FIGURE 103. Boardwalk with observation tower, 2012. (CAHA Collection)



FIGURE 104. New section of concrete walkway, 2012. (SERO Collection)

95. George Perrot to Bebe Woody, August 10, 1992, CAHA Collection, not catalogued.

96. Oppermann, 42-43; personal communication, Doug Stover.

Roadways

Access to Bodie Island was by boat only until the 1920s, when an unpaved road of sorts was first in use. Getting to the island from the north required using the main road to Whalebone Junction (now US 158) and then following sandy ruts along the shoreline at low tide. In the 1940s, paved roads first connected some of the villages on Hatteras Island. Later, a road was completed south from Whalebone to the ferry at Oregon Inlet, and in late 1952, a road was built through Pea Island to the village of Hatteras. NC 12's construction was from 1958 to 1959. John Gaskill described how difficult driving before the roads were built:

> When we were driving it we had small tires and two wheel drive. The first thing we had to do was let some air out of our tires to flatten them to get better traction. We tried to make our trips at low water so we could ride at the edge of the surf where the sand is saturated with water and therefore hard and smooth. If we couldn't do that we took the inside route, on the west side of the sand dunes where there were a few real sandy places where it was easy to get stuck. The worse part when we drove the surf was leaving the surf to go inland to the lighthouse. Any route there was the possibility of getting stuck. When you did you hunted up some boards which were usually plentiful, jacked the car up, placed the boards under the wheels, took the jack out and got ready to go. You gave her the gun and hoped to make it but often it took more than one try.

A 1945/1953 survey and aerial images from 1936 and the 1940s show that from the Hatteras Road an unpaved sandy road led to the light station and continued south to the Bodie Island Club. A double-track drive entered the station from the unpaved road. When the NPS built an access road and parking area in 1956, it followed the alignment of the unpaved road, which entered the site from the south and looped back around. A service road continued to the Bodie Island Hunt Club. Images taken in 1955 just after the construction of the road and parking area show the two track drive into the site still extant (see Figure 34).[97]



FIGURE 105. 1936 aerial view. Note road into the station. (CAHA Collection)



FIGURE 106. 1944 aerial image of the station. Note double-track drive. (CAHA Collection)

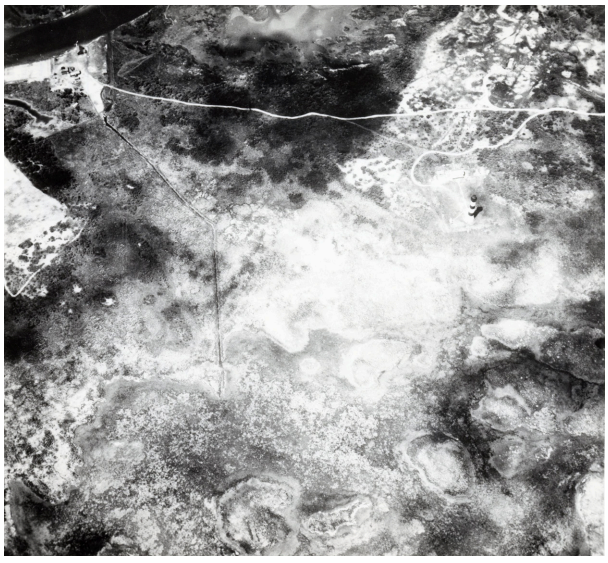


FIGURE 107. 1947 aerial image. Note road into the station and layout of the road that continued to the Bodie Island Hunt Club. (CAHA Collection)

97. Oppermann, 25; Binkley, 58; Roberts, 15; Gaskill, 34; Hartramph Appendix.

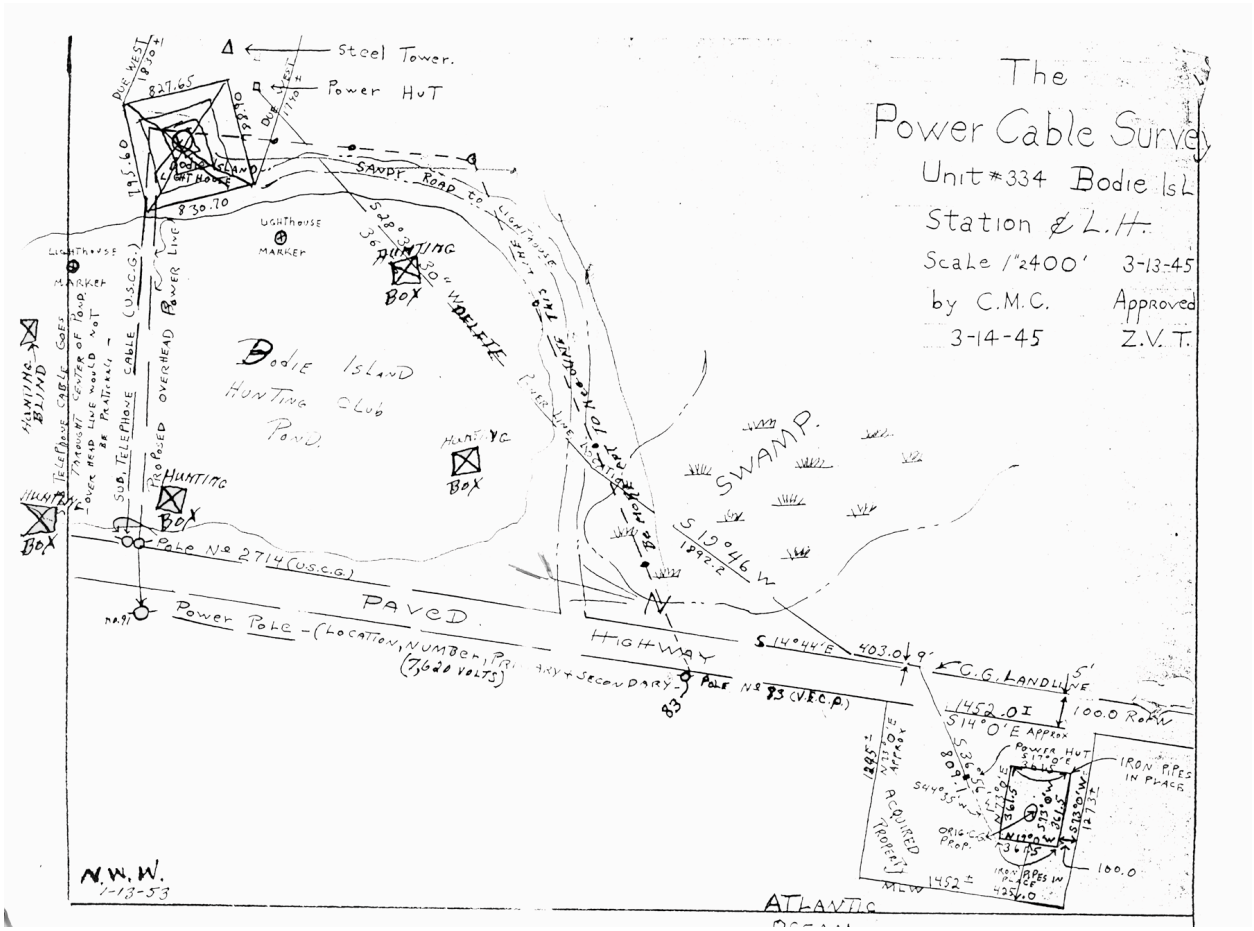


FIGURE 108. Power Cable Survey. Note road into the station. (Bodie Island Lighthouse HSR appendix)

Small-Scale Features

Fencing

The Outer Banks. Fencing on the Outer Banks would probably have been picket, brush, or post-and-rail. Bankers rarely used Virginia or worm fences, which were so popular on the mainland but required more wood and space. As late as 1870, 96 percent of the rural fences in North Carolina were worm fences.[98]

Bodie Island Light Station. A wooden board fence enclosed 1.92 acres of the station, shown on the 1893 site plan. Images taken at the same time show the fence to be a post-and-rail fence. On May 1, 1900, the lighthouse engineer reported:

> About 1200 lineal feet of new fence has been built; containing 152 posts, 7200 feet of rails and caps and 160 battens on the posts. Three
>
> new gates have been made and two old gates fitted, hung, and fastenings put on, and the fence whitewashed.

In 1925, the station acquired a more practical wire and concrete post fence of 1,380 linear feet. According to a 1921 estimate of the work to be done, it was to be 47-inches-high with concrete posts 16 feet apart with one 10-foot double drive gate and three 3-foot single walk gates. John Gaskill recalled that the fence was a heavy galvanized wire fence painted with Portland cement to preserve it. The fence is visible in several historic images of the site (see Figures 19, 20, 30, 48, 63, 64, 70, 77, and 84).[99]

98. Dunbar, 126.

99. Oppermann, 40-44; Clifford, 15; Bodie Island Lighthouse Buildings, 2, CAHA Collection 5602, Accession 359, Folder 9.



FIGURE 109. Fencing around the light station. (The Outer Banks History Center, Manteo, NC, Edna Evans Bell Collection)

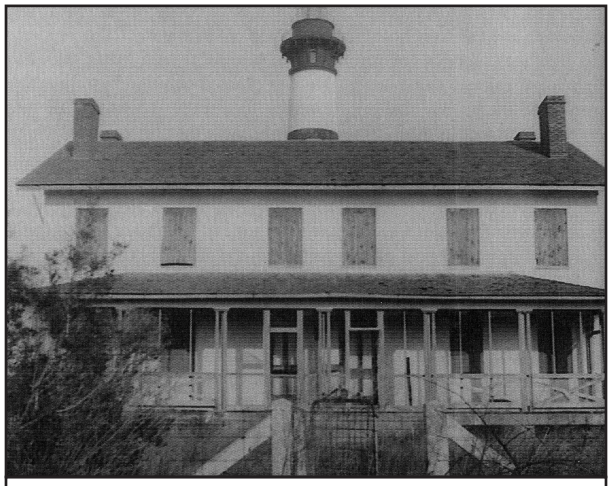


FIGURE 110. Front gate and fence, early 1950s. (Taken from *John Gaskill Remembers*)

The site was described as "open ground" in the Cullen Chambers report of 1997. In 2000, the NPS cordoned off and then enclosed the area around the lighthouse with a wooden board fence for visitor protection. After an incident of falling debris in 2004, the NPS expanded the fence. The larger station remained unfenced.[100]

Boundary Markers

Four granite boundary markers, probably installed when the property was acquired in 1871, correspond to the corner markers on the 1893 site plan.[101]

100. Hartramph, 48; Superintendent's Annual Report, 2000; personal communication with Doug Stover.

101. National Register nomination, 13.

Views and Vistas

Historically views would have been open across the station, which historically had no vegetation other than grass and a few wax myrtles except in the garden plots. Views out of the light tower would have been unobstructed to the sound and ocean with no development other than the Bodie Island Hunt Club and the Lifesaving and USCG Stations. In the 1960s, development at Coquina Beach would have been visible from the top of the lighthouse.



FIGURE 111. View from the gallery of the light tower, 1955. (CAHA Collection)

The 1988 installation of VHF-FM Hi-Level Site Communication Antenna by USCG on the watch gallery railing of the lighthouse impacted views of the tower. The North Carolina Department of Cultural Resources objections were to the visual impacts of the power cables to the lighthouse. The NPS removed this antenna in 1995.[102]

Natural Systems and Features

The Outer Banks of North Carolina refer to a thin slice of land separated from the mainland by a large expanse of shallow water, comprising the Albemarle, Croatan, and Pamplico Sounds. The formation of these barrier islands began fifteen thousand years ago when the ocean level was 300 feet lower than today and North Carolina's coastline extended fifty to seventy-five miles east of its present location. Winds from the west piled up sediment to create a large dune at the easternmost edge of the continental landmass. Then, as glaciers melted and the sea level rose, the dunes became

102. Hartramph, 34; personal communication, Doug Stover, 2013.

barrier islands paralleling the coastline. Although the sea continues to rise, the Outer Banks have slowly moved to the west and remained intact because of the unique combination of wind, waves, and weather.[103]

Inlets

By protruding so far into the Atlantic, the Outer Banks are particularly vulnerable to hurricanes and storms that continually resculpt the fragile landscape. Inlets are formed when storm surge and high waves drive water across the islands to the sounds. As the seawater moves into areas of progressively lower topography, channels form and may erode to the depths that permit a reverse flow (sound to sea) during ebb tide. Most such inlets are temporary features that only last a few days. Historical records dating from 1585 document more than twenty-four different inlets cutting across the Outer Banks at various times. Geographic formations indicate that almost half of the Outer Banks has been covered by inlets at one time or another. Today there are six inlets between Morehead City and the Virginia state line.[104]

Sand Dunes

All mid-Atlantic barrier islands have dunes of various sizes landward of the beach, formed when sand particles are transported by wind across the beach face and deposited within the overwash flats and vegetated zones, which trap and stabilize the sediment. The oldest and largest dunes on the Outer Banks date to 3,000 to 4,000 years ago. As the islands were forming, alternating periods of erosion and accretion resulted in the development of parallel dune ridges with depressions or swales between them. These dunes were covered with maritime forests of pine and oak.[105]

A characteristic island configuration is: a broad beach, a dune field, overwash terraces, and a fringing marsh on the sound side of the island. Early settlements patterns on the sound side of the island reflected an awareness of the hazards associated with erosion and storm overwash. During the 1930s and late 1950s, stabilization efforts focused on the construction of sand fences to control these forces of nature. Trapped wind-blown sand formed an unbroken chain of barrier dunes, which were planted with vegetation to further stabilize them. Consequently, all but the most severe storm overwashes were contained seaward of the barrier dunes. These efforts changed the Outer Banks from a system dominated by natural processes to a stabilized system and allowed rapid development seaward to the barrier dunes.

One major difference between stabilized barrier islands and natural barrier islands is the change in vegetation patterns that results when the stabilized dune line stops overwash and salt spray and enables vegetation, which usually grows farther away from the natural beach, to survive on its backslope. Shrub thickets 10 to 15 feet high have rapidly progressed seaward especially on Bodie Island. Before dune stabilization, only a few shrubs grew in the sand flats near the light station. By 1979, this same area was covered with a dense growth of shrubs, as was the entire center of the island.[106]

Archeological Resources

An archeological survey conducted in 2006 prior to the design of a fire suppression system in the oil house concluded that no archeological resources would be affected. No unique, intact cultural deposits were located during the survey that would require additional excavations prior to the installation of a fire suppression system.[107]

Land Use

Because of the need for navigational aid north of Cape Hatteras, the Lighthouse Service built a series of light stations on this section of Bodie Island beginning in 1848. As a result, lighthouse keepers and their families lived at the Bodie Island Light Station until 1940. In 1939, the Lighthouse Service was incorporated into the USCG. A major change to the operation of the light occurred the following year, when the Bodie Island Light Station became an unmanned light, lit by an electric generator

103. Oppermann, 7.

104. Hartramph, 7; Dolan, 8.

105. Dolan, 16.

106. Dolan, 26, 35-36.

107. Steven Kidd to Director, Southeast Archeological Center, "Trip Report on Archeological Survey for the Installation of a Fire Suppression System at the Bodie Island Lighthouse," Cape Hatteras National Seashore, August 1, 2006.

operated by timer. On October 15, 1953, the Bodie Island Light Station property was declared surplus by the USCG and transferred to the NPS as part of the Cape Hatteras National Seashore, with the exclusion of the land on which the lighthouse stood, 100' on a side. The USCG continued to operate the lighthouse as a navigational aid until 2005, at which time the first-order Fresnel lens was transferred to the NPS.

Land use as part of the Cape Hatteras National Seashore has included recreation, interpretation, law enforcement, maintenance, and administration.

Ethnography

From the earliest times of permanent settlement, fishing was a primary occupation on the Outer Banks. The use of small boats and local modifications in gear became Outer Banks folkways, largely because of the shallowness of the sounds. Light keepers and lifesavers became increasingly important after the Civil War, and this was especially true on Bodie Island, which had no villages but had both a light station, a lifesaving station, and later a Coast Guard station.

After the fall of Roanoke Island in 1862, freed slaves flocked to the north end of the island and built more than 500 houses on land appropriated for their use. With most of the able-bodied men drafted into Federal service, however, the community was left with only women, children, and elderly men. Acting on an order issued in 1865, the Assistant Commissioner for Freedmen's Affairs, concerned that the community could not make it through the winter, reported in November 1866 that land would be restored to the former owners in order to compel the freedmen on Roanoke Island to leave and seek employment.[108]

108. Dunbar, 105-107; David Stick, Dare County A Brief History (Raleigh: North Carolina Division of Archives and History, 1970), 26; Stick, The Outer Banks of North Carolina, 166.

Existing Conditions

This chapter reflects existing conditions observed on a site visit in June 2012 and restoration work completed in December 2012. In 2013, the NPS undertook a major project to prepare the site for the April reopening of the lighthouse. See Record of Treatment for a list of the work accomplished as part of this treatment.

Spatial Organization

The station is set back about eight-tenths of a mile from the Atlantic Ocean to the east and one hundred yards or so from the marshy Roanoke Sound to the west. NC 12, which connects the communities of Nags Head about eleven miles to the north and Hatteras about fifty miles to the south, parallels the shoreline. A NPS access road branches off just to the north of the station and circles west and then southward to paved parking areas on the east side of the entrance road. Off Island Hunt Club Road is an unpaved road that leads to a boat dock for Off Island, where the modern Hunt Club is located. The road is accessed through a gate just south of the NPS access road. Old Dike Trail is a public walking path used for various recreational activities that branches off to the east of Off Island Hunt Club Road.

Seventy-one parking spaces currently flank the NPS bookstore/visitor center (formerly the double keepers' quarters). Overflow parking is currently on a grassed area of the entrance road, although some visitors park along the curb of the southern section of the entrance road. From the parking area, visitors typically enter the bookstore/exhibit space or use paved walkways to circulate about the station. Visitors are not encouraged to walk out into the grass because of rattlesnakes that inhabit the area. Paved walks connect all resources of the site and a boardwalk leads out to the marsh and overlook.

The 15-acre station is dominated by the 164-foot brick lighthouse with its bands of black and white and its attached brick oil house. An original brick walkway links the tower and attached oil house and the NPS bookstore/visitor center. The axial layout of the site is preserved by the surviving walkways,



FIGURE 112. Spatial layout of the station, 2009. (CAHA Collection)



FIGURE 113. Approach to visitor center from parking area, 2012. (SERO Collection)



FIGURE 114. Overflow parking along the curb, 2012. (SERO Collection)

now paved in concrete. On the north side of the keepers' quarters, one historic outbuilding dating to around 1920 and two cisterns survive; on the south side a cistern and the foundation of a 1930 woodshed remain. No original outbuildings survive.

Modern visitor amenities include a wooden boardwalk installed in 2010 at the north end of the



FIGURE 115. Bodie Island Light Station, 2012. (Chuck Liddy, 2012)

parking lot that leads to a 1992 restroom building and beyond to an overlook with views out over the marsh and pond to the east. South of the bookstore/visitor center is a louvered enclosure for the HVAC system. A universally accessible wooden ramp constructed in 1990-92 replaced the front steps and apron of the brick walk that originally led out to a board fence and gate. On the porch, a beveled wood board serves as a reducer to provide a wheelchair-negotiable change in grade from porch deck to building interior. The NPS constructed the ramp to mimic the footprint of the



FIGURE 116. Universally accessible wooden ramp and HVAC enclosure on the right, 2012. (SERO Collection)



FIGURE 117. Boardwalk leading out to the marsh, 2012. (SERO Collection)

apron of the original brick walkway, a portion of which is buried under the ramp.

Topography

Barrier Islands

A typical cross section of a natural barrier island shows several characteristic features. Storm waves and tides carried sand and shells from the beach face to form a broad berm that slopes gently toward the interior of the island. This wide, bare berm serves as a buffer zone in which the wave energy of a moderate storm can be dissipated. Small dunes form on the berm between storms. Behind the wide berm is a zone of low, irregular dunes. Storm tides carry sand into the interior of the island through the depressions between dunes. The dunes form as sand accumulates around salt marsh cordgrass (*Spartina patens*) and sea oats (*Uniola paniculata*). Behind the dunes, storms leave a series of overwash terraces. The distribution of plants found on these flats depends on the elevation of each terrace above sea level. Broad salt marshes border the sound side of the barrier island.

Stabilized barrier islands have an altered beach, dune, and marsh morphology. The most striking

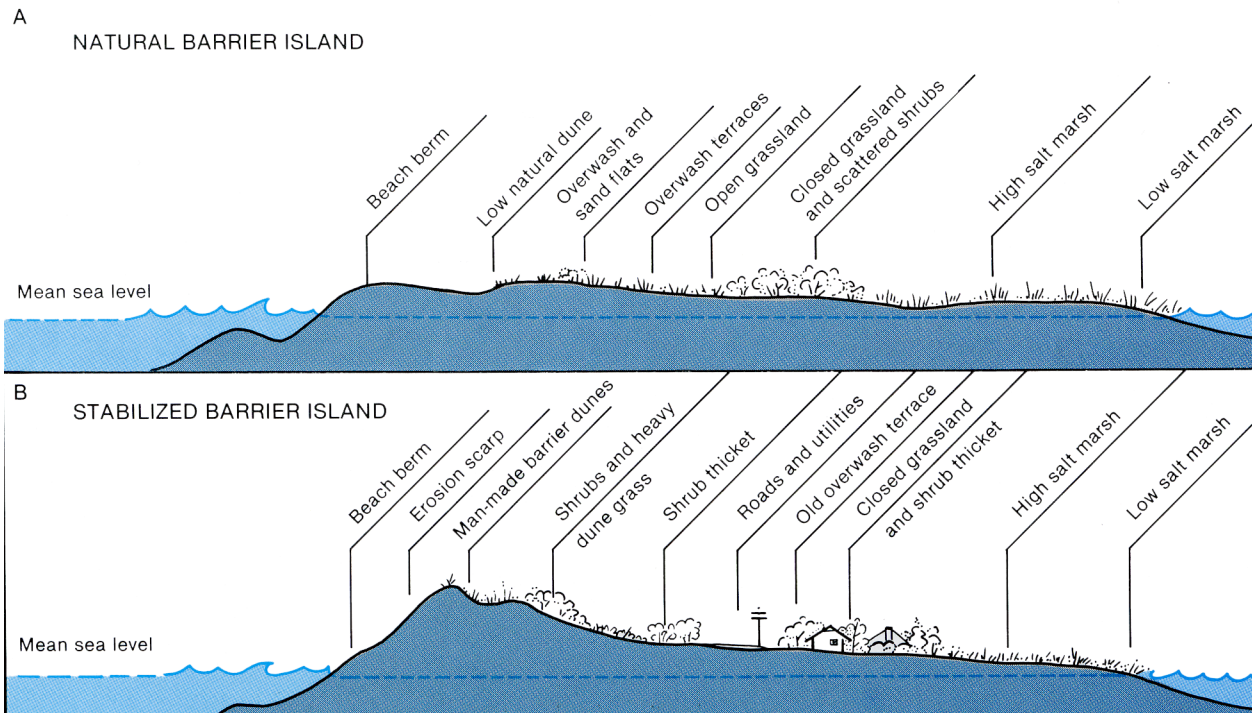


FIGURE 118. Barrier island cross section before and after dune stabilization. (Reprinted from *The Outer Banks of North Carolina, USGS Professional Paper 1177-B*)

difference, other than the artificial barrier dune system, is a much narrower beach width. The stabilized dune line stops storm overwash and salt spray, allowing plants that usually grow farther away from the natural beach to survive on the back slope.[1]

Inlets

By protruding so far into the Atlantic, the Outer Banks are particularly vulnerable to hurricanes and storms that continually resculpt the fragile landscape. Inlets are formed when storm surge and high waves drive water across the islands to the sounds. As the seawater moves into areas of progressively lower topography, channels form and may erode to the depths that permit a reverse flow (sound to sea) during ebb tide. Most such inlets are temporary features that only last a few days. Historical records dating from 1585 document more than twenty-four different inlets cutting across the Outer Banks at various times. Geographic formations indicate that almost half of the Outer Banks has been covered by inlets at one time or another. During the past 125 years, three inlets remained open as dominant waterways along the coast: Ocracoke, Hatteras, and Oregon.[2]

Bodie Island Light Station

The location of the present Bodie Island Lighthouse is deceptive to some visitors, as it appears to be set far back from the sea. The Light-House Board simply wanted to make sure that it was sited away from the eroding inlet and placed it halfway between the ocean and sound. Both former sites are underwater in Oregon Inlet.[3]

A wide vista of flat sand bordered by ocean and sound once surrounded the complex. Today the station is separated from the ocean by NC 12 and barrier dunes built in the 1930s. Vegetation succession since the 1930s allowed shrub thickets dominated by wax myrtle (*Morella cerifera*) to invade parts of the island, but this process has been slowed since a change in management policy in 1973. The soil is sandy and the water table is high, typically just a few feet below grade. Site elevation is low, just three feet above sea level.

Regrading of the light station site in 1992 addressed drainage problems, especially around the double keepers' quarters. After completion of the

1. Dolan, 33-35.

2. Hartramph, 7; Dolan, 8-9.

3. Roberts, 10.



FIGURE 119. NC 12 and barrier dunes across Bodie Island Pond, 2012. (SERO Collection)



FIGURE 120. Topography of the site after completion of lighthouse restoration, 2013. (SERO Collection)

lighthouse restoration project in December 2012, the grounds were graded and seeded.[4]

Mosquito ditches are not being actively managed. The NPS has discussed removing the ditches and allowing the area to revert to natural conditions. A project of this magnitude would require partnering with other groups.[5]

Bodie Island Lighthouse Pond. The Bodie Island Lighthouse Pond is a large pond (nearly 1 mile long and 0.5 mile wide) with an extensive shoreline bordered by brackish marsh vegetation. The Bodie Island Club created this fresh to slightly brackish pond in the early 1900s by placing a dam on a small outlet stream to Pamlico Sound, one of which is located on the west side of the road to the Bodie Island Club boat ramp.[6]

For most of the year, thousands of waterbirds forage in the mud and shallow water at the pond. Blacknecked stilts have been observed nesting in vegetation at the edge of the pond in years past, as have several species of waterfowl, including black duck, gadwall, and blue-winged teal. During the warmer months, herons, egrets, and ibises forage at the pond, along with a large variety of shorebirds. Several uncommon shorebird species have been observed to occur annually, such as Hudsonian godwit and Wilson's phalarope. The black rail, a state and federal species of concern, has been heard calling in summer and may nest in the area. From early autumn into spring, the pond is often covered with waterfowl, including tundra swans, Canada geese, and snow geese. Dabbling ducks such as northern pintail and green-winged teal are abundant. The peregrine falcon, a state endangered species, has been observed passing through the area during the fall migration and is sometimes present near the pond during fall and winter.[7]

The pond currently has no functioning water control structures so that natural systems can function unimpeded. The NPS is not managing the water level, and water fluctuations are based essentially on precipitation and evaporation rates. The pond itself is slowly being reduced in size as various marsh plants expand into the edges of the pond, and shrub growth is increasing in the marsh. Over time, the pond may gradually be converted to a marsh through natural succession. In 2011, the



FIGURE 121. Bodie Island Lighthouse Pond, 2012. (SERO Collection)

4. Oppermann, 37, 51; Phillip L. Tant, *Dare County Soil Survey* (Washington, D. C.: U. S. Department of Agriculture, 1986), 11-24.

5. Personnel communication, Sara Strickland, 2103.

6. Boone, 11.

7. Cape Hatteras National Seashore Natural Heritage Area Registry, 2011.

Lighthouse Pond and marsh was designated to the N.C. Registry of Natural Heritage Areas.[8]

Bodie Island Light Station Soils. The USDA Soil Conservation Service considers the soil type underlying the Bodie Island Light Station, Duckston fine sand, to be nearly level, poorly drained soil occurring on flats and in slight depressions. Areas are irregular in shape and range from 5 to 50 acres in size. This soil is occasionally flooded by storm tides for brief periods. It is exposed to varying amounts of salt spray, depending on the proximity to the ocean.

Duckston is classified mainly as habitat for wildlife. It is not suitable for cropland or woodland because of exposure to salt spray, the hazard of flooding, and lack of adequate drainage outlets. It is not generally used for urban or recreational development because of flooding, wetness, and the sandy texture of the soil.

Also present are small areas of Conaby, Corolla, Newhan, and Osier soils. Corolla soils are on low knolls, and Newhan soils are on the higher knolls. Conaby soils are on flats and in troughs and depressions, and Osier soils are along marshes and in depressions.[9]

Vegetation

The immediate grounds of the station are a choppy mix of Bermuda grass, clover, and other forbs surrounded on three sides by pines and to the east by Bodie Island Lighthouse Pond, extending from the station to the main beach road. There are no ornamentals planted on the grounds. Tall pines planted around 1960 lining the lighthouse entrance road and ellipse have been reduced over the years by various storms.

The native vegetation within the station includes wax myrtle (*Myrica cerifera*), yaupon (*Ilex vomitoria*), greenbrier (*Smilax* spp.), eastern baccharis (*Baccharis halimifolia*), redbay (*Persea borbonia*), loblolly pine (*Pinus taeda*), plum (*Prunus* sp.) blueberry (*Vaccinium corymbosum*), muscadine (*Vitus rotundifolia*), Virginia creeper (*Parthenocissus quinquefolia*), climbing hempvine

8. Boone, 11; Charles Andrew Cole and Kent Turner, eds., *Barrier Island Ecology of the Mid-Atlantic: A Symposium* (Atlanta, GA: National Park Service, 1992), 101; Doug Stover, 2012.

9. Phillip L. Tant, *Dare County Soil Survey* (Washington, D. C.: U. S. Department of Agriculture, 1986), 11-24.



FIGURE 122. Turfgrass at the Bodie Island Light Station, 2013. (SERO Collection)



FIGURE 123. Pines north of the station and Bodie Island Lighthouse Pond, 2012. (SERO Collection)



FIGURE 124. Pines planted in the parking ellipse, 2012. (SERO Collection)



FIGURE 125. Marsh vegetation with pines in the background, 2012. (SERO Collection)

(*Mikania scandens*), erect centella (*Centella erecta*), and other groundcover species.[10]

The marsh vegetation that lines most of the western shoreline north and south of the boardwalk is dominated by salt marsh cordgrass (*Spartina patens*), black needle-rush (*Juncus roemerianus*), narrowleaf cat-tail (*Typha angustifolia*), saltgrass (*Distichlis spicata*), and a large population of Olney's threesquare (*Schoenoplectus americanus*). Small, slightly elevated mounds are scattered among the marsh. These low mounds support species of plants that appear to be less tolerant of frequent flooding. Two Significantly Rare species, salt marsh spikerush (*Eleocharis halophila*) and beaked spikerush (*Eleocharis rostellata*), co-occur on one such mound at the base of an interpretive sign on the north side of the boardwalk, along with common species such as marsh fern (*Thelypteris palustris*), Virginia creeper, poison ivy (*Toxicodendron radicans*) and wax myrtle. These mounds occur commonly within the marsh, and the composition of each mound probably results from a combination of niche specialization and stochastic processes related to colonization events and survivorship.[11]

Vegetation succession since the 1930s has increased the shrub and tree cover on the island. Establishment of artificial dunes and a highway running the length of the seashore stabilized much of the landscape, and drainage projects impacted the marshlands. Shrubs, dominated by wax myrtle, invaded areas historically vegetated by grasses and forbs.[12]

Storm events can impact the spread of shrubs on the island. In 2011, Hurricane Irene caused Bodie Island to be inundated by saltwater, thus killing off some of the less salt-tolerant woody vegetation. Prescribed fire has been used as a management tool for controlling shrub invasion. There were some prescribed burns on Bodie Island in the early 1970s and then more in the 1980s. The NPS recently began prescribed burning again on Bodie Island, with the thought that fire may provide the disturbance necessary to reduce shrub coverage. In 2012, the NPS burned 600 acres of the south end of the island and 600 acres of the north end of the island. The area around the lighthouse was burned in February 2012, and the NPS is monitoring vegetation to see how it responds over time. The Cape Hatteras National Seashore Fire Management Plan was undergoing revision in 2013. Budget cuts may limit the use of prescribed burns in the foreseeable future.[13]



FIGURE 126. Controlled burn, 2012. (CAHA Collection)

Phragmites

Large areas of intermittently-flooded brackish flats are infested with common reed (*Phragmites australis*), an exotic invasive plant. The dominance of common reed in many tidal wetlands today often indicates human-induced disturbance, either through direct habitat manipulation or through passive introduction of this species to naturally disturbed sites. Common reed can completely dominate areas, excluding native wetland plant species.[14]

The *Phragmites* infestation on Bodie Island is not manageable with the park's limited staff and budget at this time. The infestation is so large that it will require aerial herbicide spraying. However, NCDOT has agreed to treat fifty plus acres of *Phragmites* monoculture around the Lighthouse Pond for five consecutive years. Otherwise, the park is seeking funding to treat some of the smaller

10. Michael W. Byrne, Sarah L. Corbett, and Joseph C. DeVivo, "Vegetation Community Monitoring at Cape Hatteras National Seashore, 2010," Natural Resource Report NPS/SECN/NRDS—2012/257 (Fort Collins, CO: National Park Service Natural Resource Stewardship and Science, 2010), 18-25.

11. Cape Hatteras National Seashore Natural Heritage Area Registry, 2011.

12. Kathryn L. Davison, Vegetation Responses to Fire on Cape Hatteras National Seashore, North Carolina, NPS-CPSU Technical Report 25 (Athens: UGA Institute of Ecology, 1986), 4.

13. Personnel communication, Sara Strickland, 2013.

14. http://www.nps.gov/caha/naturescience/plants

patches and at the very least keep *Phragmites* from spreading beyond current boundaries.[15]



FIGURE 127. *Phragmites* growing up to the margins of the boardwalk, 2012. (SERO Collection)

Building and Structures

Bodie Island Lighthouse (LCS# 00114)

A brick tower with octagonal, rough-cut granite base and gallery and lantern room constructed in 1872 primarily of cast-iron. The tower section is a symmetrical, tapering cylinder painted black and white. There are nine windows in the shaft section of the lighthouse, each with a granite casing. Five windows are recessed in the shaft section and are encased by raised brick and stone arched frames on the exterior. Two windows are located in the black stripes and face west towards the keepers' quarters, and three windows are located in the white stripes and face east. Four windows directly under the lantern face north, south, east, and west. The tower is topped by a cast-iron polygonal (sixteen-sided) lantern that houses a first-order Fresnel lens. Three rows of glass panes, sixteen per row, surround the lens, separated by vertical wrought-iron posts finished with bronze and horizontal bronze sash bars. The lantern is capped with a copper-sheet roof and copper ventilator ball surmounted by a bronze pinnacle with a platinum tip. Eight iron rods protrude from the roof and connect to an iron spider that secures the top of the lens. The distance from ground level to the top of the ventilator ball is 164.4 feet.

The lantern has two decks. The lower deck, referred to as the "watch room gallery" on the plans, consists of iron plates supported by sixteen cast-iron brackets. The iron gallery deck area is protected by an iron railing. The brackets are seated on a brick ledge covered with cast-iron, which is called a belt course. The upper deck, referred to as the "lantern gallery" on the plans, is accessible from the lens area. This deck is also surrounded by a wrought-iron railing and a cornice below it.[16]

In December 2012, the NPS completed a multi-year lighthouse restoration project for repair and replacement of ironwork as well as repair of masonry and stone, treatment of floors, and other interior treatments. Since the Fresnel lens had to be disassembled and taken to ground level in order to protect it during the lighthouse restoration project, it was also restored. Except for one weekend in 1988, the lighthouse will be opened to the public for climbing for the first time in its history in April 2013 (see Record of Treatment).



FIGURE 128. Lighthouse under restoration, 2012. (SERO Collection)

15. Personal communication, Sara Strickland, 2013.

16. Hartramph 63-65; Clifford, 6-8.

Oil House (LCS #000114)

A one-story, side gabled brick building with granite details constructed in 1872 that is attached on the west to the light tower. The front (west) elevation has a Stick-styled, cantilevered, gabled roof supported by three brackets over the front stoop. Over the front door is a 3/3 transom light. Flanking the front door is a pavilion-like projection of brick. Below a water table of cut stone is an inset brick base. The north and south elevations feature two 4/6 light windows, two crawl space vents, and the same water table and brick base as the west elevation. The roof is pierced by two inset brick chimneys. The hall connection to the light tower features one 4/6 light window approximately centered on the wall (north and south elevations).[17]

In December 2012, the NPS completed a major rehabilitation project that included the marble floor, roof, windows, and framing. Wood shingles used historically replaced asphalt composition shingles (See Record of Treatment).



FIGURE 129. Oil house under rehabilitation, 2012. (SERO Collection)

Double Keepers' Quarters (LCS # 007244)

Built in 1872, the two-story, side gabled roof duplex was built to house the principal keeper and assistant keepers and their families. It is constructed of brick laid in a 1:6 common bond with brick jack arch lintels at doors and windows. Symmetrical fenestration features two levels of six bays. The original windows remain in place. Two original doorways, with their original doors and transoms, are at the two first-floor center bays of each elevation. Spanning the first level of each long elevation is an open porch. The two gable ends have no fenestration, but each has a pair of inset brick chimneys. Wood shingles cover the hip roof of each porch and the gable roof.

Today the double keepers' quarters serves as the visitor center/bookstore. Work to convert the building to its current use occurred from 1990 to 1992 and included significant repair work that addressed the poor structural integrity of the building.[18] In 1999 and 2011, Hurricanes Floyd and Irene flooded the visitor center/bookstore. The building is in good condition and was painted in 2012 (see Record of Treatment).



FIGURE 130. Double keepers' quarters, 2012. (SERO Collection)

Cisterns (LCS # 091898)

Three cisterns constructed between 1872 and 1900 remain at the site. One southeast of the visitor center/bookstore measures 9'6" x 8'2" with the top 2'4" above grade. One northeast of the visitor center measures 11'3" x 8'2" with the top 3" above grade. The third cistern at the northwest corner

17. Hartramph, 59-63.

18. Oppermann, 3, 37, 52.

of the visitor center measures 9'7" x 8'4" with the top 2'5" above grade. Today, two of the cisterns (southeast and northwest) are still connected to the gutter system, which is causing deterioration and staining of the brick, especially in the northwest cistern. A section of the overflow valve of the southeast cistern is broken. The cisterns are in fair condition (See Record of Treatment).[19]



FIGURE 131. Southeast cistern, 2012. (SERO Collection)



FIGURE 132. Northwest cistern, 2012. (SERO Collection)

Storehouse (LCS # 007249)

A one-story, frame building with board-and-batten exterior and a cedar shake side-gabled roof and open eave/cornice constructed in 1920. Front (S) elevation has double vertical wood panel door; other three sides have four-light fixed sashes. It rests on brick piers. Since 1992, it has served as the central distribution facility for electrical power to the light station. The structure received a new roof



FIGURE 133. Storehouse, 2012. (SERO Collection)

and was painted in 2010. It is in good condition (see Record of Treatment).[20]

Woodshed

South of the south-side cistern is the poured concrete foundation of the woodshed constructed in 1930. Height above grade is about 1'0". The interior subdivision of rooms can be determined by imprints on the top of the slab.[21]



FIGURE 134. Woodshed foundation, 2012. (SERO Collection)

Modern Features

Restroom building – A board-and-batten-sided public restroom building constructed in 1992 is located north of the storehouse. Although it sits outside the historic district, its design was modeled on the storehouse (see Record of Treatment).

19. Clifford, 11; Oppermann, 25,41.

20. List of Classified Structures; Clifford, 12.

21. Oppermann, 86.

Mechanical system enclosure – on the south side of the visitor center/bookstore near the west corner is an enclosure for mechanical equipment constructed during the 1990-1992 site improvements. The base of the perimeter wall is brick construction of a similar appearance to the three cisterns. A louvered enclosure without a cover sits atop the base.[22]



FIGURE 135. Restroom building, 2012. (SERO Collection)



FIGURE 136. Mechanical system enclosure, 2012. (SERO Collection)

Circulation

Vehicles enter the site from an NPS access road off NC 12, which was widened, restriped, and repaved in fiscal year 2012 to bring it up to modern standards. The entrance road currently loops around to the south, then turns east into the parking area where 71 parking spaces flank the NPS bookstore/visitor center. Off Island Hunt Club Road is an unpaved road that leads to a boat



FIGURE 137. Parking area loop road, 2013. (SERO Collection)



FIGURE 138. Gate to Off Island Hunt Club Road, 2012. (SERO Collection)

dock for Hunt Club members. The road is accessed through a gate just south of the NPS access road. Old Dike Trail is a public walking path used for various recreational activities that branches off to the east of Off Island Hunt Club Road.

The visitor center/bookstore is typically approached from the west via a concrete walk and a modern board ramp. At grade, there are four sections of concrete walk (two on the east and two on the west) that are historic, constructed to connect the porches of the double keepers' quarters with the historic outbuildings. A remnant of a historic concrete walk also remains that connected the light tower/oil house with the previously existing sheet metal oil house southeast of the tower. All other sections of concrete date from fiscal year 2011, when the NPS replaced wooden walkways and an existing concrete walkway with brushed concrete. This change eliminated a problem with buckling of the wood after bad storms. The NPS maintained the alignment of the pathways when the switch occurred, except for the addition of a new

22. Oppermann, 86-89.

triangular section near the west elevation of the visitor center.[23]

One original brick path remains aboveground linking the bookstore/visitor center and the oil house/light tower. It is thought that the brick walk that originally linked the west elevation and the enclosing fence may be covered with sand



FIGURE 139. Visitor approach from parking lot via modern concrete walk, 2013. (SERO Collection)



FIGURE 140. Section of historic concrete walkway, 2012. (SERO Collection)

23. Clifford, 12; personal communication, Doug Stover.



FIGURE 141. Section of historic concrete walkway, 2012. (SERO Collection)



FIGURE 142. Section of historic concrete walkway, 2012. (SERO Collection)



FIGURE 143. HIstoric concrete path to woodshed foundation, 2012. (SERO Collection)



FIGURE 144. Historic path to the site of the sheet metal oil house, 2013. (SERO Collection)



FIGURE 145. Historic brick walk and 2011 concrete walks, 2012. (SERO Collection)

underneath the current concrete walk and wooden ramp.[24]

In 2010, the State of North Carolina installed a new boardwalk with observation tower and donated it to the NPS. It begins at the edge of the north parking area and travels out into the marsh and the water beyond for a distance of 2,500 feet. Previous to the addition of the new boardwalk, visitors had



FIGURE 146. Boardwalk installed by the State of North Carolina, 2012. (SERO Collection)

24. Personal communication with maintenance staff.

to traverse the length of the station through grass to reach the 1960s-era boardwalk.

Small-Scale Features

Cistern Pumps (LCS # 202972)

Two hand pumps on white painted brick pedestals are located on the northeast and southeast sides of the visitor center/bookstore. Each cistern pump is comprised of a 2-foot, 2-inch-tall, battered concrete pedestal upon which is mounted an iron, hand-operated water pump. A large opening transects the pedestal, originally allowing access to the main water pump pipe (since removed). These were mentioned by John Gaskill when he described how the bathtubs were filled and were installed around 1900 when the third cistern was constructed. The cistern pumps are in good condition. Maintenance crews paint the metal handle and base as needed (See Record of Treatment).[25]



FIGURE 147. Cistern pumps on the southeast side (left) and northeast side (right) of the visitor center/bookstore, 2012. (SERO Collection)

Boundary Markers

Four granite stones (LCS # 207229 north; 207370 west; 207362 south; 207294 east) mark the corners of the original boundary of the fifteen-acre site. Each boundary marker is approximately 10" x 10" wide and 3-4' high with no markings. The east marker is in fair condition. The other three markers are in good condition.



FIGURE 148. North boundary marker. (LCS# 207229)



FIGURE 149. East boundary marker. (LCS# 207362)



FIGURE 150. South boundary marker. (LCS# 207294)

25. List of Classified Structures; Gaskill, 38.



FIGURE 151. West boundary marker. (LCS# 207370)

National Register of Historic Places Plaque

A National Register of Historic Places plaque from 2003 is mounted on a metal base that mimics the lighthouse. It sits at the edge of the north section of the parking area (See Record of Treatment).



FIGURE 152. National Register plaque, 2012. (SERO Collection)

Trashcans

Aggregate stone trashcans flank the side porch steps to the visitor center/bookstore (See Record of Treatment).



FIGURE 153. Aggregate stone trashcan, 2012. (SERO Collection)

Fence

A four-rail wooden fence surrounds the lighthouse. The NPS erected it in 2000 for safely measures to protect visitors from the possible danger of falling objects from the light tower. It was expanded in 2004 following an incident of falling debris from the lantern and is currently the only fence on site (See Record of Treatment).[26]



FIGURE 154. Four-rail wooden fence around the lighthouse, 2012. (SERO Collection)

26. Superintendent's Annual Report, 2000.

Views and Vistas

Views from the light station are nearly pristine in all directions but are not unobstructed. Pines planted by the NPS in the 1960s in the parking ellipse and along the entrance road are partially obstructing views to Roanoke Sound to the west. Stands of pines planted by the NPS beyond the parking ellipse and to the north and south and shrub thickets that grew up on Bodie Island after construction of artificial barrier dunes in the 1930s are also blocking views that would once have been open. Views to Lighthouse Pond remain unobstructed. Views beyond NC 12 to the Atlantic Ocean on the east are blocked by artificial barrier dunes. A distant view of power lines can now be seen along NC 12 to the east. Pines block distant views of Nags Head. Views from the top of the lighthouse are expansive and include the sound to the west, the Atlantic Ocean to the east, and distant views of Nags Head. After the reopening of the lighthouse in April 2013, Bruce Roberts, co-founder of the Outer Banks Lighthouse Society, commented on the views from the top of the tower:

> It's one of the few lighthouses where you can climb to the top and look in every direction, and it could be 1900. There are no intrusions of highway trucks or gas stations. Bodie is one of the true lighthouses where you have the feeling that it looks as it did 100 years ago.[27]

One of the best views of the light station is from the boardwalk leading out to the observation tower looking back into the station. From this vantage point, the entire station can be seen with the visitor center/bookstore in the background. Another important site line is from the visitor center/bookstore to the lighthouse. During the historic period, this was the main axis of the station.

Two communications towers can be seen from the light station. A Navy tower is scheduled to be replaced by satellite communications in the future. A USCG tower will remain as part of the Homeland Security system. Views of the Navy tower from within the station are partially blocked by the stand of trees north of the station. The USCG tower can be seen in the far distance next to the Herbert Bonner Bridge.



FIGURE 155. Pines in parking ellipse and entrance road, 2012. (SERO Collection)



FIGURE 156. Pines north of the light station, 2012. (SERO Collection)



FIGURE 157. View of Lighthouse Pond and NC 12 to the east, 2012. (SERO Collection)

27. http://www.miamiherald.com/2013/04/18/3352357/bodie-island-lighthouse-to-open.html#storylink=cpy



FIGURE 158. View of light station from boardwalk, 2012. (SERO Collection)



FIGURE 159. Coast Guard tower, 2012. (SERO Collection)



FIGURE 160. Navy tower, 2012. (SERO Collection)

Natural Systems and Features

Barrier islands are narrow, low-lying, dynamic landforms that parallel ocean coasts, are separated from the mainland, and are constantly moving and reshaping in response to storms, ocean currents, sea level changes, and wave and wind action. The processes of erosion and accretion of the shoreline; overwash across the islands; and the formation, migration, and closure of the inlets continue to influence the islands today.

These forces of nature, combined with human activities on these islands, have resulted in the development and constant change of beach, dune, grassland, shrub thicket, maritime forest, and salt marsh habitats throughout the islands. Each of these habitats supports a great variety of wildlife, some commonly observed and some not so easily spotted. Although many of the plants and animals are common to eastern North Carolina, the Seashore does also support several threatened and endangered species, such as the piping plover and loggerhead sea turtle.[28]

The estuaries and sounds behind the barrier islands are among the richest and most productive ecosystems known. Nurseries, shelter, and food are provided for many species of fish, shellfish, and wildlife.[29]

Flora

The ecological zonation of Cape Hatteras National Seashore is resultant in part due to nature and in part due to human activity. The most important landscape altering activities by humans were: (1) early efforts at mosquito control and waterfowl management, which involved excavation of drainage ditches and construction of water control structures; and (2) construction and vegetative stabilization of primary dunes along the length of the Seashore.

Beach and Dunes Vegetation. Vegetative cover on the beach and dunes is variable, depending on the amount of exposure to wave and wind action. Many of the plant species found in these areas are well-adapted to these harsh conditions. On the upper beach, vegetation cover is a sparse (20% cover) monoculture of American searocket (*Cakile edentula* ssp. *edentula*). Seabeach amaranth (*Amaranthus pumilus*), a federally-listed threatened species, may occur here. Vegetative cover on dune slopes ranges from sparse to dense (30-80% cover) patches of some easily recognizable species, including seaoats (*Uniola paniculata*), shore little bluestem (*Schizachyrium littorale*), salt marsh cordgrass, largeleaf pennywort (*Hydrocotyle bonariensis*) and firewheel (*Gaillardia pulchella*), lanceleaf greenbrier (*Smilax smallii*), and prickly pear cactus

28. http://www.nps.gov/caha/naturescience/index.htm

29. Dolan, 2.

(*Opuntia pusilla*).

Wetlands Vegetation. Large and small ponds, wetlands, and marshes occur throughout the Seashore and have variable vegetation cover. Among the commonly encountered species are: narrowleaf cat-tail, inland saltgrass, Jamaica swamp sawgrass, marsh fimbry (*Fimbristylis castanea*), largeleaf pennywort, needle-rush, salt marsh cordgrass, sturdy bulrush (*Schoenoplectus robustus*), marsh bristlegrass (*Setaria parviflora*), seaside goldenrod (*Solidago sempervirens*), perennial saltmarsh aster (*Symphyotrichum tenuifolium*), and eastern annual saltmarsh aster (*Symphyotrichum subulatum*). Large areas of intermittently-flooded brackish flats within the Seashore are infested with common reed, an exotic invasive plant.

Shrub Thickets. Many different types of shrub thickets can be found throughout the Seashore, each of which is characterized by having moderate to very dense (50-90% cover) vegetative cover. Each of the different shrub thickets types is dominated by one of the following species: salt-pruned live oak (*Quercus virginiana*), southern red cedar (*Juniperus virginiana*), wax myrtle (*Morella cerifera*), eastern baccharis, yaupon (*Ilex vomitoria*), Jesuit's bark (*Iva frutescens*), or bushy seaside tansy (*Borrichia frutescens*). Some patches of shrub thicket may be blanketed in thick vines, such as earleaf greenbrier (*Smilax auriculata*), peppervine (*Ampelopsis arborea*), saw greenbrier (*Smilax bona-nox*), or eastern poison ivy (*Toxicodendron radicans*). Within the Seashore, marshlands are typically bounded by shrub thickets which often also qualify as wetlands as defined by the NPS and the US Army Corps of Engineers.

Maritime Forests. Maritime forests are characterized by having moderate to dense vegetative cover, dominated by live oak or loblolly pine and many of the following species in the tree sub-canopy and shrub layers: black cherry (*Prunus serotina*), red bay, Darlington oak (*Quercus hemisphaerica*), buckthorn bully (*Sideroxylon lycioides*), blackgum (*Nyssa sylvatica*), American holly (*Ilex opaca*), swamp bay (*Persea palustris*), wax myrtle, yaupon, black highbush blueberry, and blue huckleberry (*Gaylussacia frondosa*). Vines commonly found in patches of maritime forest include Virginia creeper, saw greenbrier, eastern poison ivy, muscadine (*Vitis rotundifolia*), peppervine, and climbing hempvine (*Mikania scandens*). The ground surface may be thick with pine needles, leaves, or moderately vegetated with herbaceous species including beaked spikerush, bushy seaside tansy, blood panicgrass (*Dichanthelium consanguineum*), largeleaf pennywort, needlegrass rush, royal fern (*Osmunda regalis*). On Hatteras Island, Buxton Woods is an excellent example of the naturally-occurring, Atlantic Coast maritime evergreen forest vegetation community. Elsewhere in the Seashore, plantations of loblolly pine (*Pinus taeda*), slash pine (*Pinus elliottii*), or maritime pine (*Pinus pinaster*), were established in the early to mid-1900s to reduce erosion and migration of beach sands.[30]

All of these communities occur on Bodie Island, with the exception of maritime forests. About half of the Bodie Island Light Station native vegetation is shrub thicket and half is wetlands/marsh.

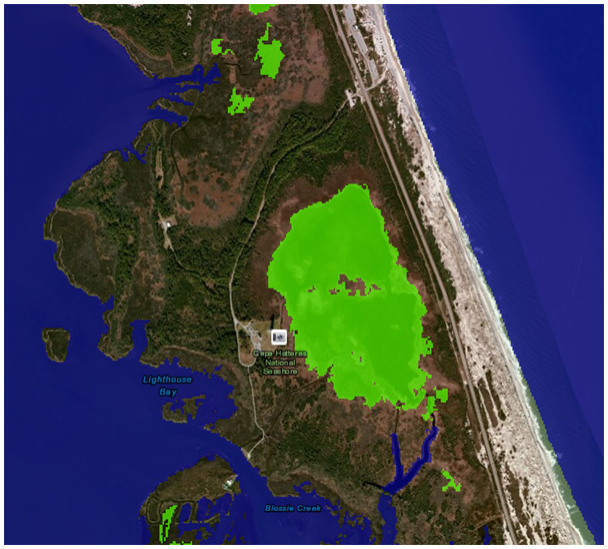


FIGURE 161. Current view of vegetation on Bodie Island. (Graphic courtesy Janet Cakir and NOAA Digital Coast)

Fauna

Reptiles. Reptiles are a significant component of the native biodiversity in virtually every natural terrestrial and freshwater habitat in the southeastern United States. Despite being often overlooked, reptiles are vital components of southeastern ecosystems. They can serve important roles as both predators and prey, forming critical trophic links in many ecosystems, and can serve as indicators of environmental integrity.

According to recent investigations of reptile occurrences on the Outer Banks, fifty-nine species of reptiles have been documented in Dare County, North Carolina, since 1588. Of these, thirty-two species of reptiles have been documented at Cape Hatteras National Seashore.

30. http://www.nps.gov/caha/learn/nature/plants.htm

Birds. Some coastal birds nest in colonies on the open beach. Safety comes in numbers, providing protection from potential predators. Colonial nesting waterbirds at Cape Hatteras include the least tern, common tern, gull-billed tern, and black skimmer. Terns can be identified by pale gray or white feathering, forked tails and black caps. Black skimmers stand out with black plumage and large orange and black beaks.

Terns and skimmers nest on the upper beach, out of reach of most tidal waters. Their nests are merely scrapes in the sand where two or three pale speckled eggs are laid, blending perfectly with the surroundings. Chicks are born fully feathered and begin walking after two days. Parents bring meals of small fish to their chicks. After three to four weeks the young begin to fly.

Terns are extremely agile flyers with keen sight, catching fish near the water's surface. Black skimmers fly low over the water, day or night, and catch fish by skimming their long narrow lower bill just below the water surface.

Many shorebirds, such as the American oystercatcher and the threatened piping plover, are solitary nesters. These birds will actively chase away any other birds of their own species that enter their breeding territories. The American oystercatcher is a large, prominent shorebird with dark brown and white plumage, orange chisel-like bill, and loud call. The small, pale, buff-colored piping plover is more inconspicuous, blending with the sandy habitat. Its soft, plaintive "peep-lo" call is often heard before the bird is seen.

Both species need large undisturbed beaches to breed successfully. They lay a clutch of well-camouflaged eggs in the sand. The chicks are born fully feathered and can run short distances within hours of hatching. Parents may move the young over long distances for food and protection. Plover chicks feed on insects and small marine invertebrates. They can fly at four to five weeks. Oystercatcher chicks usually begin to fly at five weeks but remain dependent on adults for their shellfish diet during their first two months.[31]

Climate Change

Observed Climate Change. Long-term temperature records in the southeast show that average annual temperatures have not significantly changed during the last century; however, since 1970 average annual temperature has increased 2°F. Annual temperature increases in the Caribbean since 1970 have been about 1.5°F. During this time period the greatest changes in average annual temperature occurred during the winter months and the number of freezing days per year decreased. Precipitation records (1901-2007) indicate a regional reduction in rainfall in the summer, winter, and spring from 10 to 25%; however, precipitation increased during the fall by as much as 30%. Precipitation patterns are also changing, with the intensity of storms and the occurrence and severity of droughts increasing since 1970.

An increase in sea surface temperature since 1970 has been accompanied by an increase in the destructive potential of Atlantic hurricanes that make landfall in the Southeast region, although changes in the frequency of landfalling hurricanes has not been established. Summer wave heights have increased along parts of the U.S. Atlantic coastline since 1975, attributed to the increase in tropical storm intensity in the Atlantic Basin.

Projected Climate Change. Temperature projections indicate continued warming in all seasons across the southeast along with an increase in the rate of temperature increase through 2099. Projected rates of warming are twice the rates of temperature increases experienced in the southeast since 1975, with the greatest temperature increases projected to occur during the summer months. The number of days with peak temperatures over 90°F are predicted to increase at a greater rate than average temperature. Temperature projections vary based on emission scenarios, with lower emissions scenarios projecting an average temperature increase of about 4.5°F by 2080, while a higher emissions scenario projects an average annual temperature increase of about 9°F, including a 10.5°F increase in summer, and a much higher heat index for the southeastern United States. In the Caribbean, temperature is predicted to increase by about 4°F by 2080, somewhat below the global average. Climate models also project a continuing decline in days below freezing across the entire region during the coming decades.

Sea surface temperature is projected to increase globally as the oceans absorb increasing heat energy from corresponding projected annual air temperature increases. Tropical storm and hurricane activity is likely to increase in the Atlantic hurricane formation region with global warming as a function of globally observed higher sea surface

31. http://www.nps.gov/caha/learn/nature/birds.htm

temperatures. If the intensity of Atlantic tropical storms increases, southeastern ecosystems will likely be exposed to higher peak wind speeds, rainfall intensity, storm surge, and wave heights.

Climate models provide divergent results for future average annual precipitation for most of the southeast and Caribbean; however, data suggests that southeastern states will tend to have less rainfall in winter, spring, and summer and precipitation in the Caribbean is expected to decline by about 12%. Because corresponding predicted temperature increases will lead to increased evapotranspiration, moisture deficits and droughts are likely to continue.

Predicted average annual temperature increases will warm oceans and increase the rate that land ice melts. Global average mean sea levels are expected to increase up to 2 feet or more by 2100. Increasing the rate and magnitude of sea-level rise has serious implications for low-lying southeastern coastal wetlands and barrier islands. Many coastal environments along the South Atlantic and Gulf of Mexico coastal margins are experiencing land surface subsidence due to factors such as groundwater withdrawals, changes in sediment delivery via rivers, and the drainage of soils for coastal development. Even if hurricanes do not increase in intensity, an increase in mean sea level will amplify coastal inundation and erosion during hurricane landfall.

There are currently 5,000 square miles of dry land within 2 feet of mean sea-level in the coastal areas of the continental United States. While the majority of this land is currently undeveloped, coastal development in the southeast is predicted to increase more than any coastal region in the United States, and any terrain within a few feet above mean sea level could be inundated; just a 2-foot rise in sea level would inundate an area the size of Massachusetts and Delaware. Currently, sea levels are rising at 0.07 inches per year. Predictions of future sea-level rise through 2100 are between 0.6 to 2 feet. Impacts of rising sea levels include coastal erosion; coastal inundation (including wetlands); increased storm surge; loss of habitat, property, and cultural resources; and degradation of surface and groundwater quality. Highly productive coastal wetland ecosystems, which provide habitat for many species, act as filters to improve ground and surface water quality, provide an economic base for many coastal communities, offer recreational opportunities, and protect local areas from flooding, are particularly vulnerable to sea-level rise.[32]

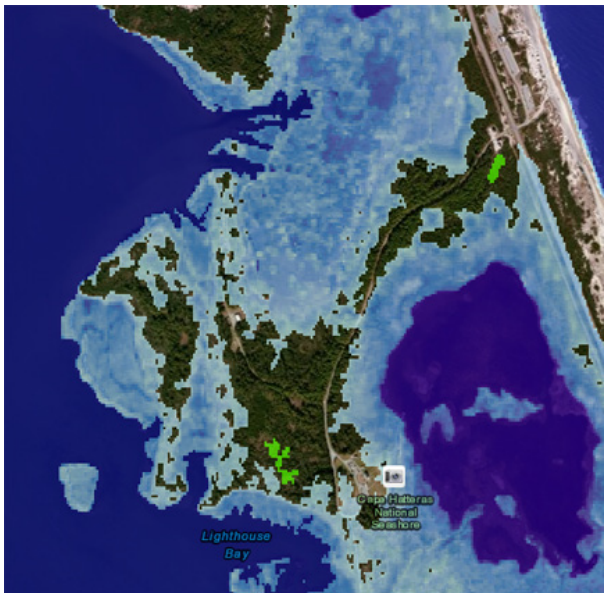


FIGURE 162. 2-foot sea-level rise scenario for Bodie Island. (Graphic courtesy Janet Cakir and NOAA Digital Coast)

The most likely increase in sea-level rise for the Outer Banks in the next century is estimated to be from 1.6 feet to 3.3 feet according to a 1995 EPA report. A study prepared by the Virginia Institute of Marine Science suggests that even small changes in sea-level rise over the next 100 years show a rapid increase in the amount of salt marsh lost to open water and that increases of 3.3 feet or higher would result in large scale losses of salt marshes in the Cape Hatteras National Seashore area.[33]

A study to determine the impact of sea-level rise on cultural resources was funded in 2013. A 2011 study by Lautzenheiser, Bamann, and Gosser documented the disappearance of archaeological sites through coastal erosion in North Carolina. The authors attempted to revisit six prehistoric archaeological sites along the sound side of the Outer Banks, the mainland, and on Roanoke Island. Five of these six sites have been adversely impacted by coastal erosion and rising sea levels.

32. Sonya A. Jones and Melinda S. Dalton, comps., U. S. Department of the Interior Southeast Climate Science Center Science Plan: U.S. Geological Survey Open-File Report 2012–1034, 2012, 8-11, http://pubs.usgs.gov/of/2012/1034/

33. Christopher R. Perle, An Analysis of the Effects of Sea Level Rise on the Salt Marshes of Cape Hatteras National Seashore, North Carolina (Williamsburg, VA: Virginia Institute of Marine Science, 1996), 43-61.



CAPE HATTERAS NATIONAL SEASHORE, BODIE ISLAND LIGHTHOUSE
PHOTOS AND SEA-LEVEL RISE MODEL COURTESY OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION DIGITAL COAST. 2014

FIGURE 163. Simulated flooding scenario for the light station. (Courtesy of Janet Cakir and NOAA Digital Coast)

Increasing erosion forced the NPS to move the Cape Hatteras Lighthouse further inland in 1999.[34]

Land Use

Current land uses include recreation, interpretation, law enforcement, and maintenance. With the completion of the work on the lighthouse, its use as a navigational aid returned in 2013.

Ethnography

Since the 1953 establishment of Cape Hatteras National Seashore, the NPS has come to be neighbor, friend, and nemesis to residents of the Outer Banks. On the one hand, Bankers are thankful that the federal government has protected much of the Outer Banks from commercial development. On the other hand, they resent some of the management policies and practices that the NPS has imposed on their lives. Nevertheless, the historic sites, artifacts, and natural areas that the NPS maintains are of deep symbolic significance to the villagers and provide tangible links to their not-too-distant past.

In 2001, the NPS, describing eight villages as "living exponents of the human history and maritime cultures" of Hatteras and Ocracoke Islands, called for an ethnographic and ethnohistorical study to better understand the neighboring communities along the Cape Hatteras National Seashore. The study, Ethnohistorical Description of the Eight Villages Adjoining Cape Hatteras National Seashore and Interpretive Themes of History and Heritage, was published in 2005. Information collected for this research will help preserve the past and document the dynamic, changing culture that is an outgrowth of that past. Better integration of ethnographic data with the cultural interpretation of sites and artifacts will result in a "living history" that is inclusive of modern day villagers. A deeper understanding of and appreciation for the cultural resources of Hatteras and Ocracoke should also help improve relations between the NPS and Outer Banks residents. One goal of this project was to develop a description of social and cultural change, particularly pertaining to the interpretive theme of "seashore living and a fishing economy." The cyclical nature of various fisheries has an impact on island life, as do major fisheries policy shifts. Among features that remain constant is the region's vulnerability to "Mother Nature," including Hurricane Isabel that devastated Hatteras village in 2003 and Hurricane Irene, whose storm surge destroyed a 900-foot section of NC 12, stranding hundreds of residents and workers and cutting off tourist access to the area.[35] The transcripts of the oral history of John Gaskill are in the Cape Hatteras National Seashore archives.

34. Dawson, Audrey R. and Tamara S. Wilson, The Effects of Climate Change on Cultural Resources: A Preliminary Assessment (Columbia, SC: South Carolina Institute of Archaeology and Anthropology, 2012), 10-11.

35. Impact Assessment, Inc., 2-4.

Bodie Island Light Station
Existing Conditions

National Park Service
U.S. Department of the Interior

LEGEND

- Bodie Island Lighthouse
- Buildings
- Road
- Concrete Walkway
- Brick Walkway
- Boardwalk
- Lighthouse Fence
- Cisterns
- Woodshed Foundation
- 1960s Planted Pines
- Forest
- Marsh
- Granite Boundary Markers

N

Map created by Laura R. Bradford
Southeast Reginal Office
National Park Service

Overlook
1
Marsh
Restroom Building
Boardwalk
1956 Entrance Road and Parking Area
Storage Shed
Oil House
Lighthouse Fence
North Cisterns
Lighthouse Tower
Historic Brick Walkway
Visitors Center
South Cistern
HVAC
Historic Concrete Walkway
Woodshed Foundation
2
1960s Planted Pines
Marsh
4
3

Bodie Island Light Station
Cape Hatteras National Seashore

National Park Service
U.S. Department of the Interior



Bodie Island Storehouse
IDLCS# 07249
July 10, 2012



Water Pump (North)
IDLCS# 202818
July 10, 2012



Northeast and Northwest Cisterns
IDLCS 091898
July 9, 2012



Double Keepers Quarters
IDLCS# 07244
July 9, 2012



Southeast Cistern
IDLCS 091898
June 29, 2011



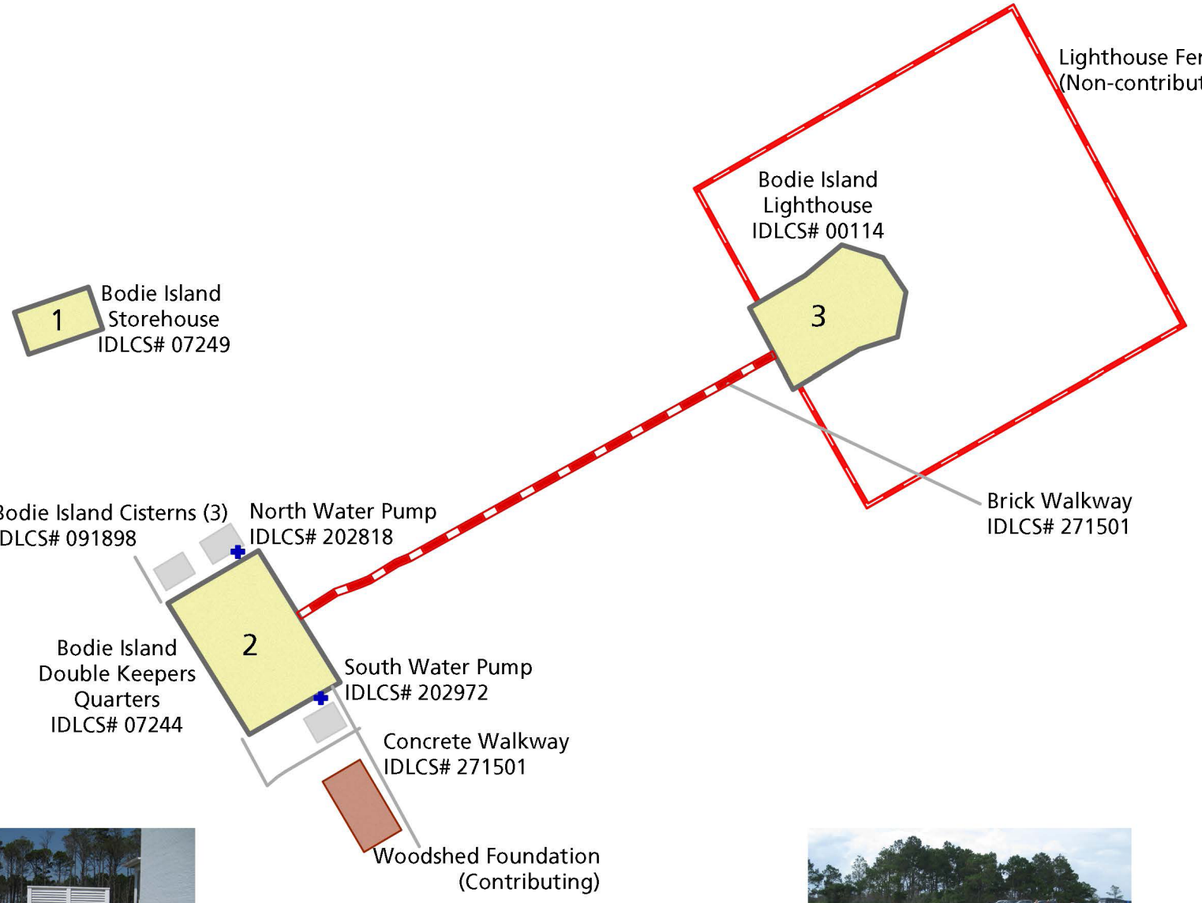
Bodie Island Lighthouse
IDLCS# 00114
July 9, 2012



Woodshed Foundation
IDLCS# 271007
July 9, 2012



Water Pump (South)
IDLCS# 202972
July 9, 2012



LEGEND

- Water Pumps
- Lighthouse Fence
- Brick Walkway
- Concrete Walkway
- Woodshed Foundation
- Cisterns
- LCS Structures
  - 1- Storehouse
  - 2- Double Keepers Quarters
  - 3- Lighthouse

National Park Service
Outer Banks Group
Resource Management
Map Modified by
Laura Bradford
August 11, 2014

25 0 25 50 Feet

1 : 600 1 inch = 50.00 feet

Analysis and Evaluation

Significance Evaluation

Current National Register Status

The Bodie Island Light Station was listed in the National Register of Historic Places on July 4, 2003. It is significant in the areas of maritime history and transportation under Criterion A (associated with events that have made a significant contribution to the broad patterns of our history) and architecture and engineering under Criterion C (embodies distinctive characteristics of a type, period, or method of construction, represents the work of a master, or possesses high artistic values). The period of significance for the National Register nomination is 1872-1953. It was not extended past 1953 because of the fifty-year criterion for resources to be considered historic.

CLR Significance Evaluation

The existing National Register documentation served as the foundation document for evaluating the significance of the Bodie Island Light Station as part of this CLR. The documentation was reviewed in terms of relevant National Register criteria and the guidance provided in the National Register Bulletin How to Apply the National Register Criteria for Evaluation. The comprehensive investigation into the history of the light station, coupled with the comprehensive review of the landscape, suggested aspects beyond that afforded by the existing nomination.

Period of Significance

The period of significance for the cultural landscape of the Bodie Island Light Station spans the years 1872-1956, beginning with the construction of the light tower, oil house, double keepers' quarters, and outbuildings. The lighthouse, with its Fresnel lens in place, has been a critical federal aid to national and international navigation from 1872 until present. Development at the site ended in 1956, when the NPS completed the construction of an access road and parking area designed by the Eastern Office of Design and Construction much in the style of earlier Park Development Era plans.

Statement of Significance

The construction of the light station is directly associated with federal government efforts to provide an integrated system of navigational aids for national and international shipping on the Atlantic coast. The Bodie Island Light Station also provided safe passage for maritime trade along the hazardous waters of the Outer Banks, often referred to as the "Graveyard of the Atlantic." The lighthouses on the Outer Banks, located at Currituck Beach, Bodie Island, Cape Hatteras, and Ocracoke, guided both national and international shipping along the coast. This national significance meets Criterion A.

The tower and the original first-order lens are nationally significant for engineering. They are among a small number of nineteenth-century resources on the East Coast of the United States that reflect the important accomplishments that went into the design of these tall brick structures that featured first-order lenses, a large precision instrument that could project a small flame twenty miles out to sea. Brick towers over 150 feet tall were first designed in the 1850s to support first-order Fresnel lenses, the most powerful of the seven orders of lenses introduced by the newly formed Light-House Board. For the low-lying and featureless barrier islands of the Outer Banks, both the tall towers and the high powered lenses were critical to safe navigation given the shoaling and rough seas along the coast. The Fresnel lens in the Bodie Island Lighthouse in one of the rarest first-order lenses still operating in its original tower. This national significance meets Criterion C.[1]

The 1872 tower reflected a standardized design used for many first-order lighthouses built by the Light-House Board. The design of the tall brick towers was a double wall with a hollow space between the walls, thereby lightening the load, creating an insulation "member," and reducing

1. Roberts, 10, 12.

the overall cost by using fewer bricks. Of the 640 surviving lighthouses in the United State, Bodie Island is one of only 14 that are brick and over 150 feet in height. The distinctive architectural features of the tower and its integral oil house and the double keepers' quarters are locally significant and meet Criterion C for architecture.[2]

Analysis of Landscape Characteristics

In order to better understand the relationship between the existing landscape of the Bodie Island Light Station and its character historically, this chapter includes a comparative analysis of historic and existing conditions. The focus of this section is to identify the broad patterns and specific features associated with the historic periods and to evaluate to what extent they survive today.

Spatial Organization

The spatial organization of the Bodie Island Light Station was consistent with the components of other light stations. Of primary importance was the light tower followed by the keeper's (s') dwelling. Support buildings were clustered around these two structures. At Bodie Island, a rectilinear arrangement resulted in a primary northeast-southwest axis linking the light tower and attached oil house and the double keepers' quarters. Support buildings were placed along the northwest-southeast axis flanking the double keepers' quarters. The station was enclosed by a wooden fence and walkways connected the various buildings on site. Garden plots at the rear of the property (east) are documented on an 1897 map of the site.

Park development plans completed in 1956 included an entrance road and parking area laid out in a similar pattern to an existing two-track road into the site. Other plans included an observation platform constructed in the location of the sheet metal oil house and a nature trail out to the marsh.

The footprint of the spatial layout of the site survives much as it was when documented by Bamber in 1893 and is a character-defining feature. The Bamber site plan shows the axial relationship of the light tower/oil house, double keepers' quarters, and outbuildings. The principal loss has been the original outbuildings that provided support for the site. The remaining shed is not original but dates to 1920. The three cisterns were in place by 1900. Remnants of the historic circulation patterns survive, although in some cases materials have changed.

Contributing features include the spatial pattern of the lighthouse and support buildings/structures on site, dominated by a central northeast to southwest axis aligned with the brick tower/oil house and the double keepers' quarters; historic circulation system that linked the lighthouse, double keepers' quarters, and historic outbuildings; and the layout of the 1956 entrance road. Non-contributing features include the layout of the boardwalk constructed in 2010 that carries visitors out to a marsh overlook. Missing features include the garden plots seen on the 1897 site plan and the historic enclosing fence line.

Topography

Topographic changes are part of the cultural geography of the Outer Banks of North Carolina, where the opening and closing of inlets, which permit water to flow through the banks between the ocean and the sound, is commonplace. Over the years, at least six different inlets have been located between the present day Bodie Island Lighthouse and Rodanthe approximately seventeen miles to the south. The instability of this landscape has resulted in the reshaping of the size and even the location of Bodie Island over the years.[3]

The land now known as Bodie Island has not been an island since about 1811 when Roanoke Inlet closed. Oregon Inlet was subsequently opened by an 1846 hurricane, further confusing geographic identity. With the cutting of the Oregon Inlet, the lower part of the island was severed. Nonetheless, the name would linger long after the island was gone, a moniker that continues to this day for the land that straddles both sides of the inlet. When the current lighthouse was completed in 1872 on the north side of Oregon Inlet, it retained the name as the Bodie Island Lighthouse.[4]

At the time of statehood in 1789, the Outer Banks featured areas of dense woods that stretched almost to the sea in some places interspersed with low and barren stretches of "bald beaches," which usually marked the sites of former inlets. In striking

2. Clifford, 17-18.

3. Stick, 277.

4. Oppermann, 8.

topographic contrast were the high, windswept sand dunes, constantly changing shape with the direction of prevailing longshore currents.[5]

The 1849 U. S. Coast Survey showed the northern half of the island as bare sand flats, except for a broken line of marshes along the sound. Trees appeared in three locations. The southern half had extensive grassy sand flats behind a broad beach with interior pockets of wetlands and marshes beside the sound. Changes in the outline of the island are evident in a 1915 U. S. Coast Survey. Since it opened in 1846, Oregon Inlet has moved steadily to the south as a result of the south shore being cut away and the north shore building up. This action washed away the sites of the early Bodie Island lighthouses, and the inlet is now located where they once stood.[6]

The flat, windswept topography of the light station landscape is a character-defining feature. Although artificial barrier dunes were constructed across NC 12, the light station site topography remained relatively unchanged except for the impoundment of portions of marsh to create the Bodie Island Lighthouse Pond in the early 1900s and the digging of mosquito ditches in the 1960s. Because of the flat topography and lack of identifiable landmarks in such a remote location, lighthouses helped mariners determine their position both by day and night. The contrast between the flat topographic features of the site and the lighthouse rising to 164 feet is also a character-defining feature. Presently, the Bodie Island Lighthouse Pond is managed as part of a natural system without functioning water control devices, but it continues to be a contributing feature of the cultural landscape.

Vegetation

Disturbances related to human intervention have reinforced and modified the natural processes on Bodie Island. Before the 1930s, vegetation at the Bodie Island Light Station was limited to grassy sandflats, a few low wax myrtles, and marsh. Disturbances prevented or reversed vegetation succession. Since the 1930s, human activities have encouraged and accelerated the development of shrub and tree communities.

Vegetation Changes

Ian Firth's 1988 report outlined several factors that led to a gradual change in the vegetation on the island. A brief recap of those that occurred around the light station included:

Grazing Stock. By 1846, livestock had been grazing

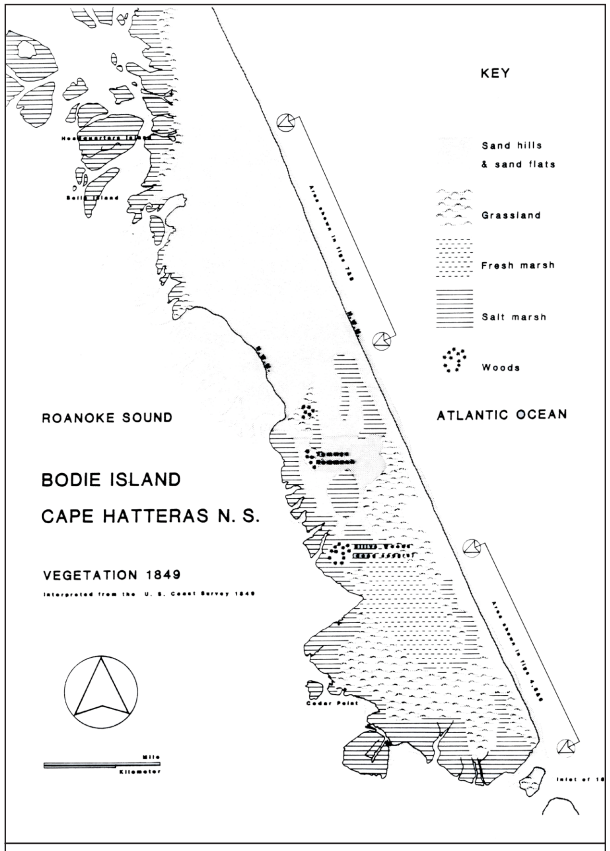


FIGURE 164. Vegetation in 1849. (Taken from *Vegetation Changes on Bodie Island*)

the Outer Banks for at least 150 years, although no early descriptions of stock raising on Bodie Island have been found. In the 1920s, a large number of cattle, sheep, and horses remained on Bodie Island. Hogs on the islands could still be found in the woods at Nags Head and Kitty Hawk. The best grazing was found in the marshes, especially those near Oregon Inlet, where winds from the southwest made insects less troublesome. Stock sometimes had to graze on wax myrtle and yaupon when grasses were not available.

The Bodie Island Club fenced the area around Lighthouse Pond after 1904, but conflict with stock owners made it difficult to maintain them. The fence that enclosed the light station, first seen in the 1893 survey, continued to exclude stock throughout the light station's history. The numbers of stock declined in the early 1930s after the passage of the 1935 North Carolina Stock Law,

5. Stick, 74; Dolan, 4.

6. Stick, 280; Ian Firth, *Vegetation Changes on Bodie Island, Cape Hatteras National Seashore, North Carolina* (Atlanta, GA: Southeast Regional Office, 1987), 5-6.

which banned free range stock on the Outer Banks between Caffey's Inlet and Hatteras Inlet.[7]

Burning Marshes. The practice of burning the marshes to facilitate grazing and hunting is an old one mentioned in John Lawson's A New Voyage to Carolina. Bankers remembered the marshes on Bodie Island being burned in the 1920s and early 1930s. The practice ended with the removal of stock in the 1930s, when a period of fire suppression began.[8]

Impounding Ponds. The Bodie Island Club built dikes to impound almost 150 hectares near the lighthouse. Other clubs created ponds at additional locations on the island.[9]

Building and Planting Dunes. Nathaniel Gould, superintendent of the Bodie Island Club from 1904 to 1924, tried to prevent sand from moving into Lighthouse Pond by erecting sand fences made from young pines. He described the grass planted on the dunes that formed over the fences as Cape Cod grass (probably *Ammophila breviligulata*).[10]

In 1934, the North Carolina Beach Erosion Control Project began with a dune building program at Nags Head. Its objective was to build a line of dunes from the Virginia line to Ocracoke Inlet using Works Progress Administration (WPA), Civilian Conservation Camp (CCC), and National Youth Administration (NYA) labor authorized under the New Deal policies of President Franklin D. Roosevelt. This work was directed by the NPS before the establishment of the Cape Hatteras National Seashore and used sand fences to raise a line of barrier dunes. By 1938, work on Bodie Island was nearing completion on the ocean side of the Lighthouse Pond, and the dunes were planted with American beach grass (*Ammophila breviligulata*). Behind the dunes, seedlings of approximately 20,000 loblolly pine, black locust (*Robinia pseudoacacia*), and dogwood (*Cornus florida*) were planted between Whalebone Junction and Lighthouse Pond.

America's entry into World War II in 1941 suspended the program until 1954. After the establishment of the Cape Hatteras National Seashore, bulldozers that could obtain immediate dune mass and height replaced sand fences. The



FIGURE 165. Crews erecting sand fence,1938. (CAHA Collection)

NPS planted six types of grass: American beach grass, sea oats (*Uniola paniculata*), running beach grass (*Panicum amarum*), silver beach grass (*Panicum amarulem*), salt meadow grass, and smooth cordgrass (*Spartina alterniflora*). The tree planting program began anew. Between 1956 and 1961, workers planted 21,000 pine seedlings. In 1961, the superintendent reported the receipt of 100,000 loblolly and slash pines (*Pinus elliottii*). 11,500 eastern red cedar (*Juniperus virginiana*) and bald cypress (*Taxodium distichum*) were also planted on Bodie Island.

The 1962 Ash Wednesday Storm damaged 75% of the dunes along the Seashore. On Bodie Island, the erosion of the beach was thought to equal that of the previous twenty-five years. Reconstruction work continued through 1963, but a reevaluation of the program resulted in a new management policy to allow natural barrier island dynamics to occur.[11]

A comparison of aerial photographs shows a significant increase in shrub and tree cover from 1934 to 1974. Around Lighthouse Pond in 1934, shrub savanna occupied the slopes of the sand hills on the sound side of the lighthouse. By 1952, the shrub zone had surrounded the pond and became dense along the tracks between the lighthouse and Hatteras Road. In 1934, shrub savanna occupied 25.9 hectares within the area shown on Figure 168; by 1952, the shrub zone extended over 105.9 hectares within this same area. A 1944 aerial (see Figure 106) indicates that much of this increase in the shrub zone had already taken place. Between 1952 and 1974, the increase expanded further to

7. Firth, 9-11.

8. Firth, 11; Lawson, 128.

9. Firth, 13.

10. Ibid., 14.

11. Firth, 15-17.



FIGURE 166. Crews planting grass by hand, 1957. (CAHA Collection)



FIGURE 167. Crews planting grass by tractor, 1959. (CAHA Collection)

151.7 hectares or 35% of the total area. Trees had grown up in several locations, and the density of the shrub zone had increased on all sides of the pond. The occurrence of major storms in 1955, 1958, and 1962 did not affect the spread of the shrub zone, except around the southeastern corner of Lighthouse Pond, where overwash entered the pond in the 1962 Ash Wednesday storm. Since 1974, there has been no further expansion, although some increases in density can be detected on the sound side sand hills. The most notable change since 1974 is an increase in the height of trees, particularly those beside the road leading to the lighthouse.

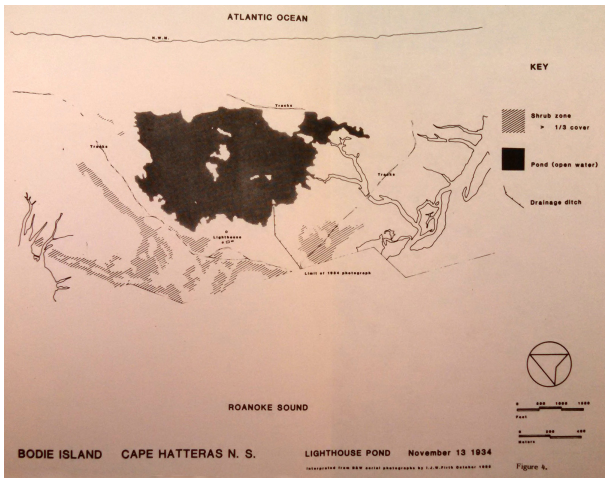


FIGURE 168. Bodie Island Lighthouse Pond, 1934. (Reprinted from *Vegetation Changes on Bodie Island*)

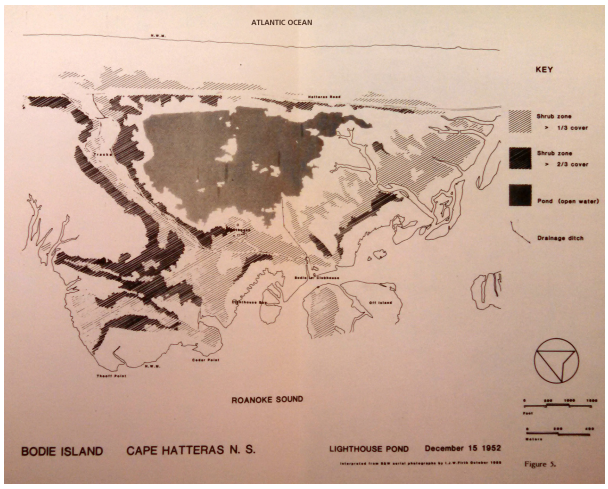


FIGURE 169. Bodie Island Lighthouse Pond, 1952. (Reprinted from *Vegetation Changes on Bodie Island*)

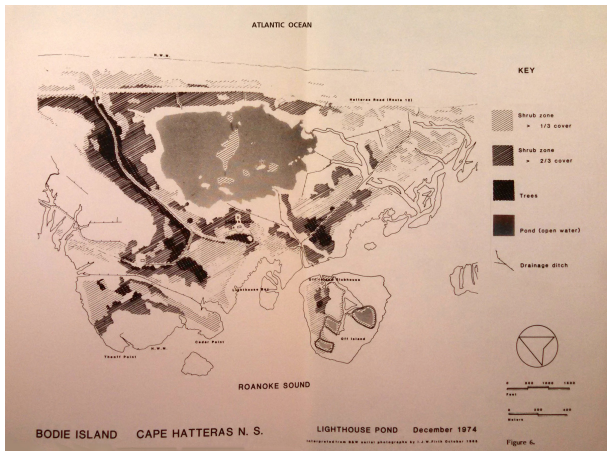


FIGURE 170. Bodie Island Lighthouse Pond, 1974. (Reprinted from *Vegetation Changes on Bodie Island*)

Natural limiting factors such as inundation by brackish water from the sound in the marshes and the xeric and exposed conditions on the sand hills are probably restricting the development of woody plant communities. With a change in management policy, barrier dunes are being allowed to erode, although, because of the man-made and -maintained dunes that protect NC 12, only major storm events allow salt spray, sand movement, and overwash to impact vulnerable shrub communities. The shrub thickets along NC 12 are the most likely to be affected by storm damage if the barrier dunes are breached.[12]



FIGURE 171. Aerial view of Bodie Island Light Station, 1956. (CAHA Collection)



FIGURE 172. 1950s aerial of Bodie Island. Note increase in shrub vegetation to the west. (CAHA Collection)



FIGURE 173. Successional vegetation across Bodie Island Lighthouse Pond,1959. (CAHA Collection)

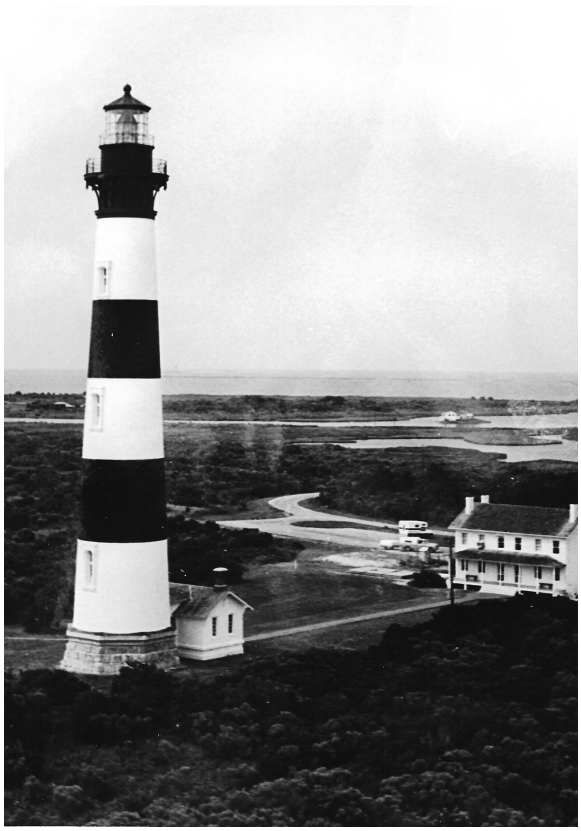


FIGURE 174. 1950s view of light station. Note vegetation growing up to mown areas. (Outer Banks History Center, Manteo, NC, Aycock Brown Collection)



FIGURE 175. Aerial image showing pines planted by NPS and successional vegetation, 1969. (CAHA Collection)

12. Firth 6-8, 20-25; Dolan, 35-36.

Prescribed Burns. Marshes of the Outer Banks were historically burned by waterfowl hunters and muskrat trappers to freshen forage for game. A policy of fire suppression began in the 1930s after the removal of free range stock from Caffey's Inlet and Hatteras Inlet. In 1984, a fire ignited from a powerline transformer burned approximately three acres of saltmarsh about one mile south of the light station access road on Bodie Island. The fire reduced shrub cover where it penetrated, but in general, shrub clumps did not burn well. Blackneedle rush and Jesuit's bark were also reduced in favor of saltmeadow cordgrass, saltgrass, bullrush, and bushy seaside tansy, which represents a more historically accurate species composition and provides better forage for wildlife.

Although useful in the modification of areas colonized by shrubs, fire cannot replace salt water overwash to re-establish pre-1930 vegetation patterns. Fire does not eliminate woody species, but temporarily reduces their cover, whereas salt water often kills woody species. Fire generally increases soil fertility, whereas overwash increases soil salinity, which is unfavorable to many species.[13]

The artificial barrier dunes constructed in the 1930s have protected the interior of the island from the impacts of salt spray, sand movement, and overwash, encouraging succession towards shrub and tree communities with a decrease in the area of sand flats and marsh. The expansion of the shrub community was primarily at the expense of the cordgrass communities. Before the dunes were stabilized, a few shrubs grew in the drifting sand near the lighthouse. By 1979, this same area was covered with a dense growth of shrubs, as was the entire center of the island.

Most of the stands of pines that now rise above the shrubs on Bodie Island were part of a planting program undertaken by park staff in the late 1950s and early 1960s. The various construction and drainage projects undertaken after the establishment of the park have increased the spread of woody species. The embankment carrying NC 12 is a place for the growth of woody species, but mowing keeps this growth largely in check. Draining the area between NC 12 and the old Hatteras Road resulted in a dense thicket of shrubs. The excavation of mosquito control ditches left spoil piles that shrubs colonized.

13. Davison, 9, 19-20.



FIGURE 176. Successional vegetation with mosquito control ditch in the background, 1963. (CAHA Collection)

Bodie Island Light Station

The vegetation of the 15-acre light station includes the lawn of Bermuda grass and forbs, native marsh grasses, wax myrtles and other native shrub thicket vegetation, and pines. Large areas of intermittently-flooded brackish flats within the station are infested with common reed (*Phragmites australis*). Contributing vegetation includes the lawn, native marsh grasses, and wax myrtles. Non-contributing vegetation includes the stand of pines planted in the 1960s in the parking ellipse and along the entrance road, individual pines that are growing up within the boundaries of the station, and *Phragmites* that is threatening to take over the marsh. A lack of cultural vegetation, other than grass and a few wax myrtles, is a character-defining feature of the historic landscape.

Buildings and Structures

Bodie Island Lighthouse

A conical brick tower topped with cast-iron polygonal lantern that houses a first-order Fresnel lens and rests on a dressed granite base and granite foundation and is attached to a brick oil house/ workroom. A multi-year restoration project concluded in December 2012. The lighthouse retains its original characteristics and is a contributing feature.

Oil House

A one-story, side-gabled brick building with a passageway connecting to the base of the light tower constructed at the same time as the lighthouse in 1872. A workroom was located to the left (north) where the keeper kept the station

log and other records. An oil room was located to the right (south) where fuel was stored until the conversion to kerosene, which necessitated the construction of a new oil house a safe distance from the tower. A multi-year restoration project concluded in December 2012. The building retains its original characteristics and is a contributing feature.[14]

Double Keepers' Quarters

The dwelling retains, to a great extent, its original characteristics. It is rectangular in plan, two stories in height with a gable roof covered in wood shingles. It is constructed of brick laid in a 1:6 common bond with brick jack arch lintels at doors and windows.

The building's exterior appearance remained largely intact throughout the period of service as living quarters for the light station crew, at least until 1940 and perhaps longer. But when administration of the Quarters transferred to the NPS in 1953, plans called for the reorganization of the interior rooms for use as a natural history museum, with spaces for exhibits, offices, retail operations, and other functions. Changes essentially created one functional unit where previously there had been two.

Used as a visitor center since the 1960s, a project from 1990-92 included significant repair work that addressed structural integrity issues. The building is a contributing feature of the historic landscape.[15]

Storehouse

A one-story, frame outbuilding constructed in 1920 as a storehouse located between the original northwest storehouse and its privy. It housed tools and maintenance equipment, as well as tackle, paints, and equipment to paint the tower. The building is a contributing feature of the historic landscape.[16]

Cisterns

Rainwater, collected off the roof of the double keepers' quarters, was fed by galvanized gutters into cisterns on the northeast, northwest, and southeast corners of the Double Keepers' Quarters. All three cisterns are contributing features of the historic landscape.

Woodshed Foundation

South of the south-side cistern a woodshed with a concrete floor was built in 1930 with its east side left open for easy access. A major hurricane destroyed the structure in the 1930s, leaving only the concrete foundation still present today. The structure is a contributing feature of the historic landscape.[17]

Modern Features

In 1992, the NPS built a new public restroom building, fully accessible by the handicapped north of the keepers' quarters. Its design was of a size, scale, and proportion of early outbuildings using similar materials. Also during this time, an enclosure for mechanical equipment was constructed on the southwest side of the visitor center/bookstore. All of these features are non-contributing.

Circulation

Access to Bodie Island was by boat only until the 1920s, when an unpaved road of sorts was built. Getting to the island from the north required using the main road to Whalebone Junction (now US 158) and then following sandy ruts along the shoreline at low tide. A series of paved roads began to be built beginning in the 1940s, culminating with NC 12 in 1958.

Access into the station was by a double track drive from an unpaved road. The NPS built an access road and parking area in 1956 that followed the alignment of the unpaved road, which entered the site from the south and looped back around.[18]

Within the light station, an 1893 site plan shows brick walkways laid out in an axial arrangement linking the front door of the oil house, the double keepers' quarters, and the front gate. In 1897, the Light-House Board authorized 360 feet of old walkway to be relaid and 2,200 square feet of new wood walkways that flanked the double keepers' quarters and linked it with outbuildings on either side. At some point an additional walk connected the tower and the sheet metal oil house, constructed in 1896.

14. Clifford, 10.

15. Oppermann, 3, 37.

16. Opperman, 43; Clifford, 12.

17. Oppermann, 42.

18. Oppermann, 25; Binkley, 58; Roberts, 15.

After construction of the parking area in 1956, the NPS installed a new section of wooden walk to bring visitors to the natural history museum from the parking spaces, creating an approach that had never been there historically. The design of the parking area created circulation problems for the site because of the need for walkways that did not seem compatible with the historic character of the site. Even after the NPS installed a wooden ramp and a walkway that mimicked the alignment of the original brick walk shown on historic maps, new walks were needed to make the connection with the parking area. In 2011, the NPS replaced all wooden walks with concrete walks because of buckling after bad storms.[19]

Contributing features include the historic brick and concrete walkways and the 1956 entrance road. Non-contributing features include the 1992 ramp, the 2011 concrete walks, and the 2010 boardwalk out to the marsh.

Views and Vistas

Visitors and residents interviewed by Firth recalled an open, windswept landscape with unobstructed views in all directions through the 1920s. Aerial photographs of the site show a gradual change with more trees and shrubs present in the landscape after the 1930s (see Figure 179).

Views to the west are partially blocked by pines planted by the NPS in the 1960s in the parking ellipse. Stands of pines planted by the NPS beyond the parking ellipse and to the north and south and shrub thickets that grew up on Bodie Island after construction of artificial barrier dunes in the 1930s are also impacting views that would once have been unobstructed from the ground. Dominant views to the Bodie Island Pond and beyond are intact. The panoramic views from the top of the lighthouse are a character-defining feature of the historic landscape.

Views of Lighthouse Pond and the marsh beyond, views of Albermarle Sound to the west, views into the station from the Bodie Island Pond, and views in all directions from the top of the lighthouse are contributing. The sight lines along the primary northeast-southwest axis linking the light tower and integral oil house and the double keepers'quarters and the northwest-southeast axis flanking the double keepers' quarters are contributing. Views of the pines planted in the 1960s in the parking ellipse, views of the restroom building, and views of *Phragmites* are non-contributing.

Small-Scale Features

Fencing

A wooden post-and-rail fence enclosed the station, shown on the 1893 site plan. In 1925, the station acquired a more practical wire and concrete post fence. The fence and a metal gate are visible in historic images of the site (see Figures 109 and 110). All historic fencing has been removed from the site. Current fencing dates to 2000 and is non-contributing.[20]

Hand Pumps

Hand pumps used to retrieve water from the cisterns are contributing.

Boundary Markers

Four granite boundary markers, probably installed when the property was acquired in 1871, correspond to the corner markers on the 1893 site plan. They are contributing.[21]

Modern Features

Trash cans, signage, and a National Register of Historic Places plaque are non-contributing.

The appendix shows the contributing features identified in the List of Classified Structures (LCS) for the Bodie Island Light Station, as well as other landscape features not included in the LCS.[22]

Evaluation of Integrity

Landscapes possessing integrity have the ability to convey historical significance through extant landscape features and characteristics. The effort

19. Oppermann, 41-43; personal communication, Doug Stover.

20. Oppermann, 40-42; Clifford, 15.

21. Clifford, 13.

22. Structures listed on the LCS must meet one of the following criteria: either the structure is listed individually or is eligible for the National Register or the structure is a contributing element of an historic site or district that is listed or is eligible for the National Register. In addition, the LCS includes other structures, moved or reconstructed, commemorative structures, and structures which have achieved significance within the last fifty years that are managed as cultural resources.



FIGURE 177. Comparison of the view to the sound from the 1930s (top) and from 2009 (bottom). (CAHA Collection)

to determine a landscape's significance according to National Register criteria focuses on seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association. The persistence of these qualities as they apply to the landscape determines whether the landscape retains enough of its important features to convey its historically significant appearance or associations.

Location

The location of the third Bodie Island Light Station on the north side of Oregon Inlet is unchanged. Two earlier light station sites were lost to the encroaching sea on the south side of Oregon Inlet. The site was chosen because a light station at Oregon Inlet was critical to navigating the dangerous shoals of the "Graveyard of the Atlantic."

The location of the site, complemented by its remote setting, reflects the character of the landscape during the period of significance. Because of the flat topography and lack of identifiable landmarks in such a remote location, lighthouses helped mariners determine their position both by day and night. No resources within the light station have been relocated. The buildings and structures are in their original locations. The historic circulation features are essentially in their historic alignments. The site retains a high degree of integrity of location.

Setting

The physical environment surrounding the site includes both natural systems and cultural land use patterns. The isolated setting today retains an undeveloped, naturalistic appearance with few modifications. A communications tower can be seen in the far distance next to the Herbert Bonner Bridge, although the bridge's low profile does not detract from the setting.

A character-defining feature of the Bodie Island Light Station is the open, windswept terrain with unobstructed views in all directions from the top of the lighthouse. The impact of pines planted by the NPS in the 1960s and successional vegetation that has grown up since the construction of artificial barrier dunes in the 1930s is predominately to the viewsheds from the ground plane that would historically have been unobstructed to the north, south, and west.

With the area surrounding the station protected from development, the historic setting retains a high level of integrity. Bodie Island Lighthouse scholars attending the reopening in April 2013 commented on the scene from ocean to sound from the top of the tower being much as it was 100 years ago.

Design

The present light tower embodies a distinctive design and method of construction that typified first-order coastal lighthouses (those measuring over 150 feet) on the East Coast of the United States during the second half of the nineteenth century. Coastal lights, as opposed to harbor lights, were generally taller and used more powerful optics. In tall towers, the light from these lenses could be seen up to 20 nautical miles.

Measuring 164 feet from ground level to the tower to the top of the ventilator ball, Bodie Island is a first-order lighthouse built to a similar design. The Light-House Board used the 1871 plans for the Bodie tower, signed off by the Engineering Secretary, Major George H. Elliot, for subsequent lighthouses including the tower at St. Augustine, Florida (1874), as well as the tower at Sand Island, Alabama (1873).[23]

A character-defining feature of the Bodie Island Light Station is the axial relationship of the light tower, oil house, double keepers' quarters, storehouse, and cisterns. Even with the loss of the original outbuildings (other than the three cisterns), the site retains remnants of the original circulation system, which linked major features of the station. The layout of the site was consistent with other light stations of the day, where a clustering of support buildings facilitated easy access.

The design of the 1956 entrance road has achieved significance in its own right. The original design was characteristic of earlier Park Development Era layouts, and as was often the case, the more formal parts of the design were never implemented. The site retains a high level of design integrity.

Materials

Brick is the most popular construction material of the surviving 640 lighthouse towers in the United

23. Clifford, National Register nomination, 21.

States.[24] In addition to brick, other historic building materials used in the construction of the Bodie Island Light Station were granite, iron, copper, bronze, wood, and later concrete for walkways in the 1920s. Plantings at the site historically have been limited to native vegetation, with no trees or shrubs noted in regular inspections made at the station during the administration by the Light-House Board and the USCG. Garden plots located at the rear (east) of the station were noted as being unprofitable in early reports. Many of the planted pines in the ellipse and along the entrance road in the 1960s have been lost over the years to storms and are non-contributing.

Pedestrian circulation materials are different from those used historically in some cases. At the visitor center/bookstore, four sections of concrete walk (two at the east porch and two at the west porch) survive from the period of significance. Another remnant that linked the oilhouse/light tower with the sheet metal oil house survives. The material of the original brick walkways has not changed. All other walkways were changed from wood to concrete in fiscal year 2011 to prevent buckling after storm events. Vehicular circulation was unpaved before the construction of the 1956 entrance road and parking lot, which has remained asphalt. No historic fencing materials survive, although the non-contributing fence around the lighthouse is constructed of wood.

Repair work undertaken during the 1990-92 building campaign replaced materials in kind. Restoration work completed in December 2012 to the light tower and oil house repaired and replaced materials in kind. Overall, the Bodie Island Light Station retains a high level of integrity of materials.

Workmanship

Bodie Island Lighthouse

Repairs to the stair treads completed in 1997 included metal plates installed over the damaged stair treads. According to the 2002 historic structure report, these metal plates did not meet the criterion for "repairing in kind." In a compliance letter of January 30, 2006, the North Carolina State Historic Preservation Office (SHPO) responded to a Value Analysis study and stated that the metal staircase appeared to be almost completely intact with minor repairs consisting of a few metal plates attached over the damaged treads. They questioned "the inherent risk of causing further damage in tread replacement" and suggested having custom plates made to attach over the damaged treads where possible. The NPS's response was that only thirty treads had been identified for replacement. Applying a plate to the top of the tread would result in uneven riser heights and violate life safety codes. The Value Analysis study recommended replacing the cracked treads with new treads cast to the original detail. In a subsequent letter, the North Carolina SHPO agreed to the replacement of twenty-one stair treads. However, they were still concerned about the possibility of additional breakage of surrounding and intact portions of the historic stair. Reid Thomas, Restoration Specialist in the North Carolina SHPO Eastern Office, inspected stair tread removal testing on October 30, 2008, and found the contractor was able to carefully take apart a section of the original iron stair to remove a cracked tread. The North Carolina SHPO was satisfied with the results and concurred that replacement of the remaining cracked treads would not have an adverse impact on the lighthouse.[25]

As a stop gap measure to prevent failing pieces of ironwork intact prior to restoration, the iron lantern room deck was held together by cables and chicken wire. The canopy, or top of the lantern room, was tied down by cables to keep it from blowing off in high winds, which are common at a height of 165 feet. Ill-fitting windows that allowed moisture to penetrate had damaged interior and exterior cast-iron window casings and surrounds. As a temporary fix, workmen blew foam into cracks in an attempt to keep outside moisture from causing further damage. After removal of these stop gap measures, the cast-iron was reworked or, in cases where the metal was too corroded, replaced. Any replacement of the windows was consistent with the original windows.

Cast-iron pieces chosen for restoration were melted down at a foundry, and a spectrometer tested for the correct ratio of carbon, silica, and iron. After correcting any imbalance, the foundry recast the components. Workmen on site used sandblasting, repair, and repainting to rehabilitate the lantern deck and safety handrails.

Restoration of the first-order Fresnel lens was done to exacting standards by lens conservators and volunteers. The entire lens system was relocated to

24. Ibid.,22.

25. Hartramph, 46; Renee Gladhill-Earley to Michael B. Murray, November 25, 2008, CAHA Collection 5602, Accession 359, Folder 7.

an offsite NPS location, and was reinstalled in early 2013 before the lighthouse officially reopened in April.[26]

Double Keepers' Quarters

Repair and remodeling campaigns in 1954 and especially in 1990-92 retained and reused the original 1872 elements in the same places of origin. Workmen replicated sections or whole units of damaged or missing elements. When there was a need for new room configurations, the component architectural elements matched in appearance the designs of the original 1872 elements. Examples include baseboards, door casings, and doors. If evidence was lacking as to the original 1872 elements, other plausible late-nineteenth-century designs were selected. Examples include door and window hardware, doorsteps, and picture molding.[27]

Storage Shed

Repairs to the 1920 storage shed retained original elements such as the board-and-batten siding. Other features such as the windows and door strap hinges were replaced with the same style and size having been used previously.

Modern Additions

During the 1990-92 building campaign, the NPS constructed an enclosure for mechanical equipment and a public restroom building. The base of the enclosure resembles the appearance of the brick cisterns. The public restroom building's form and materials are consistent with the historic buildings of the light station.

Overall, the light station retains a high level of integrity of workmanship.

Feeling

The Bodie Island Light Station retains integrity of feeling. Although the vegetation has changed since the building of dunes in the 1930s, Bodie Island still retains a wild, undeveloped character reminiscent of the nineteenth century when lighthouses were being built along the Outer Banks of North Carolina to protect coastal shipping. There are no modern intrusions, except for a restroom building and HVAC enclosure that do not undermine the ability of the site to convey the feeling of a nineteenth-century light station.

Association

Integrity of association remains high for the Bodie Island Light Station. The Fresnel lens and the operation of the lamp as an active aid to navigation remained under the jurisdiction of the USCG until 2005, when it was transferred to the NPS. Now that the restoration work to the light tower and oil house is completed, the first-order Fresnel lens will be returned and relighted, providing a tangible link to the maritime history of the Outer Banks and its relationship with the USCG.

One objective of repairs to the visitor center/bookstore that occurred in 1990-92 was using the building fabric to tell the story of the building's former use as living quarters for the lighthouse keepers. Missing elements, such as a section of handrail and balustrade of the missing north staircase, the first-floor fireplace mantels, and numerous interior doors, were replaced. Where entire walls were removed, wing walls provided a semblance of the original room configurations.[28] Until recently, John Gaskill, son of Keeper Vernon Gaskill, worked as a volunteer in the visitor center/bookstore, where he lived as a boy, continuing the long association of the keepers of the Bodie Island Light Station with the site.

Summary

The centerpiece of the Bodie Island Light Station is the lighthouse with its first-order Fresnel lens. The Light-House Board oversaw the design and construction of nineteenth-century light stations after its establishment in 1852, and the tower reflects a standardized design used for many first-order lighthouses. The layout of the site was consistent with other light stations of the day, where support buildings were clustered for easy access.

A rectilinear arrangement resulted in a primary northeast-southwest axis linking the light tower and integral oil house and the double keepers' quarters. Support buildings were placed along the northwest-southeast axis flanking the double keepers' quarters. The station was enclosed by a wooden fence and walkways connected the various buildings on site. Although the site lacks its original outbuildings (other than the three cisterns), it

26. Roberts, 23-29.

27. Oppermann, 63.

28. Oppermann, 3.

retains remnants of the original circulation system, which linked major features of the station.

Plantings at the site historically have been limited to native vegetation, with no trees or shrubs noted in regular inspections made at the station during the administration by the Light-House Board and the USCG. Garden plots located at the rear (east) of the station were noted as being unprofitable in early reports. The NPS planted pines along the entrance road after acquiring the light station in 1953. Successional vegetation grew up around the station after artificial barrier dunes were constructed in the 1930s.

Although its design integrity remained intact, the preservation of the Bodie Island Lighthouse was threatened until funding was secured for its restoration in the 2009-2010 Omnibus Budget Bill. The deteriorative effects of time, the harsh marine environment, and the corrosion of original cast-iron elements resulted in significant damage to historic fabric. Contractors completed restoration work on schedule in December 2012 in preparation for opening the lighthouse for climbing in April 2013.

Integrity of location, setting, feeling, workmanship, materials, and association remain high. The station retains a nineteenth and early twentieth-century appearance with few modifications.

Treatment Recommendations

The Bodie Island Light Station is a nationally significant example of mid-nineteenth-century engineering. The tower and the original first-order lens are among a small number of extant nineteenth-century resources on the East Coast of the United States that reflect the important accomplishments that went into the design of these tall brick structures topped by a large precision instrument that could project a small flame twenty miles out to sea. The 1872 tower reflected a standardized design used for many first-order lighthouses built by the Light-House Board. The Fresnel lens in the Bodie Island Lighthouse in one of the rarest first-order lenses still operating in its original tower.

The overarching treatment associated with the historic landscape is preservation/rehabilitation. The lighthouse and integral oil house underwent a multi-phased restoration effort, which was completed in December 2012.

Spatial Organization

The spatial organization of the Bodie Island Light Station was consistent with the components of other light stations. Of primary importance was the light tower followed by the keeper's (s') dwelling. Support buildings were clustered around these two structures. At Bodie Island, a rectilinear arrangement resulted in a primary northeast-southwest axis linking the light tower and attached oil house and the double keepers' quarters. Support buildings were placed along the northwest-southeast axis flanking the double keepers' quarters. The station was enclosed by a wooden fence and walkways connected the various buildings on site. Development plans in the 1950s included the conversion of the double keepers' quarters to a natural history museum (later visitor center/bookstore) and the construction of an entrance road and parking area.

A character-defining feature of the Bodie Island Light Station is the axial relationship of the light tower, oil house, double keepers' quarters, storehouse, and cisterns. Even with the loss of the original outbuildings (other than the three cisterns), the site retains remnants of the original circulation system, which linked major features of the station.



FIGURE 178. Clustering of light tower, double keepers' quarters, cisterns, and oil house, 2013. (SERO Collection)

- Preserve the spatial footprint of the light station, including the spaces between buildings that are no longer extant.

- Preserve the sight lines along the primary northeast-southwest axis linking the light tower and integral oil house and the double keepers' quarters and the northwest-southeast axis flanking the double keepers' quarters.

Historic vegetation was sparse, with wax myrtles on sand hills in the vicinity of the light station that were low enough to keep the views unobstructed across the island. The remainder of the light station was characterized by open expanses of grass.

- Preserve the open character of the light station, which was historically a sandy, windswept landscape with no development. No modern intrusions should be constructed within the historic district. Use historic images as guidance.



FIGURE 179. Primary northeast-southwest axis looking west, 2013. (SERO Collection)



FIGURE 180. Primary northeast-southwest axis looking east, 2013. (SERO Collection)



FIGURE 181. Open character of the site, looking north, 2012. (SERO Collection)

- Do not block sight lines, especially the primary northeast-southwest axis linking the light tower and integral oil house and the double keepers' quarters and the northwest-southeast axis flanking the double keepers' quarters.



FIGURE 182. Open character of the site, looking south, 2012. (SERO Collection)

- Do not plant trees or shrubs around the light tower or visitor center/bookstore, which had no foundation plantings historically.

Buildings and Structures

Lighthouse

- Preserve the lighthouse.
- All recommendations for the brick tower and iron lantern should be based on those in the HSR completed in 2004 and the 2013 restoration project and be in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties. The lighthouse will be open to the public for climbing for the first time in its history in 2013.
- Special consideration should be taken to preserve the pristine nature of the setting of the lighthouse.

Oil House

- Preserve the oil house.
- All recommendations for the oil house should be based on those in the HSR completed in 2004 and the 2013 restoration project and be in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties.
- The interior may be used as a staging area for visitors waiting to climb the light tower or to manage fee collection.



FIGURE 183. Bodie Island Lighthouse, 2013. (SERO Collection)



FIGURE 184. Oil house, 2013. (SERO Collection)

Double Keepers' Quarters (Visitor Center/Bookstore)

- Preserve the double keepers' quarters.
- All recommendations for the double keepers' quarters should be based on those in the HSR completed in 2009 and be in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties.
- No changes should be made that detract from the historic character of the site, especially the relationship between the flat topography of the site and the lighthouse rising to 164 feet.
- Shades in the windows are needed to screen objects that can be seen from the building's exterior.



FIGURE 185. Double keepers' quarters, 2013. (SERO Collection)

Storehouse

- Preserve the 1920s storehouse.
- Repairs should replace materials in kind.
- Any changes to the building should comply with the Secretary of the Interior's Standards for the Treatment of Historic Properties.
- No changes should be made that detract from the historic character of the site.



FIGURE 186. 1920s storehouse, 2013. (SERO Collection)

Woodshed Foundation

The woodshed was constructed in 1930 but a hurricane destroyed it only a few years later. To date, no images have been found, although according to John Gaskill, it was constructed with only three sides.

- Preserve woodshed foundation and consult with Regional Office to seek a Determination of Eligibility for possible inclusion in the National Register of Historic Places and the List of Classified Structures.

- The woodshed foundation may be adaptively reused as a shade structure for visitors as long as the structure is incompatible in size, scale, material, and color. For example, a two-post hip structure is a simple design that would be compatible with the existing buildings on site. A company like Shade Structures (http://www.shadestructures.net) has a GSA contract.



FIGURE 187. Woodshed foundation, 2013. (SERO Collection)

Cisterns

- Re-point the three cisterns to bring their condition from fair to good.*

- Consider filling the cisterns with sand and installing French drains to channel water from the downspouts away from the cisterns. Today, two of the cisterns (southeast and northwest) are still connected to the gutter system, which is causing deterioration of the brick in the northwest cistern.*

Modern Additions

- A restroom building constructed outside the historic district in 1992 may be removed and a new ADA compliant restroom building constructed to accommodate the increase in visitors expected in future years. The new building would be located in the new parking area outside of the historic district.



FIGURE 188. Northeast and northwest cisterns, 2013.(SERO Collection)



FIGURE 189. Detail of northwest cistern where brick is deteriorated, 2012. (SERO Collection)



FIGURE 190. Southeast cistern, 2012.(SERO Collection)



FIGURE 191. Restroom building, 2012. (SERO Collection)



FIGURE 192. Area to the south of the light tower where mowing can be discontinued, 2013. See Treatment Map. (SERO Collection)

Interpretation

- Consider using waysides with historic photographs to interpret historic structures and missing outbuildings.

- Waysides would be placed near the locations of the missing buildings. Historic images could also be used inside the double keepers' quarters if it is ever converted into a museum.

Vegetation

Plantings at the site historically have been limited to native vegetation with no trees or shrubs noted around the buildings in regular inspections made at the station during the administration by the Light-House Board and the USCG Garden plots located at the rear (east) of the station were noted as being unprofitable in early reports.

Before the construction of artificial barrier dunes in the 1930s, the site consisted of sparse vegetation and low shifting dunes, with wax myrtles on sand hills in the vicinity of the light station that were low enough to keep the views unobstructed across the island. Stabilization of the dunes encouraged succession towards shrub and tree communities with a decrease in the area of sand flats and marsh. Distant pine groves to the north, south, and west frame the site and serve as backdrop. The NPS planted pines along/inside the entrance road ellipse in the 1960s, which are currently blocking views to the west.

The following guidelines apply to vegetation management:

- Current mowing regimes include areas that would not have been mown historically, especially to the south of the lighthouse. Mowing can be discontinued in any area not mown historically. Historic photographs show that the grass was never manicured but rather quite choppy.

- Pines planted along/inside the entrance road ellipse in the 1960s were not part of the 1956 Development Plan. They may be removed as needed and should not be replanted.*

- Individual pines that have succeeded along the perimeter of the station (along the boardwalk, for example) are not contributing and could be removed after consultation with natural resources.

- Continue use of prescribed burns as a tool for vegetation management.

- Weeds under the visitor center/bookstore back porch should be treated with an approved herbicide or pulled by hand if a herbicide cannot be used.

- Consult with Cape Hatteras National Seashore exotic plant management staff for approval before planting any introduced plant material.

- Consult with Cape Hatteras National Seashore natural resource management staff before removal of any native vegetation.

- Avoid altering the habitats of rare, threatened, or endangered species or species of special concern. Evaluate the potential impact to wildlife habitat prior to undertaking any construction or vegetation removal project.



FIGURE 193.2009 aerial image showing pines planted in the 1960s. (SERO Collection)

Topography

The flat, windswept topography of the light station landscape is a character-defining feature. Although artificial barrier dunes were constructed across NC 12, the light station site topography remained relatively unchanged except for the impoundment of portions of marsh to create the Bodie Island Lighthouse Pond in the early 1900s. The contrast between the flat topography of the site and the lighthouse rising to 164 feet is also a character-defining feature.



FIGURE 194. Topographic relationship between the light tower and the double keepers' quarters, 2013. (SERO Collection)



FIGURE 195. *Phragmites* growing along the boardwalk, 2012. (SERO Collection)

- No changes to the topographic relationship of the buildings and site should occur.

Lighthouse Pond currently has no functioning water control structures and is left to natural systems.

- The NPS may wish to alter present management strategies and attempt to control the water level in the pond to keep habitat available for waterfowl and shorebirds.

- Another concern is the potential spread of *Phragmites* throughout the marsh. The NPS should monitor the clumps of this reed very carefully and attempt to control or eliminate it, should it begin to overrun other marsh plants.

- Should maintenance or new construction be proposed to the wildlife viewing boardwalk, special care must be taken to avoid disturbing the ground where salt marsh spikerush (*Eleocharis halophila*) and beaked spikerush (*Eleocharis rostellata*) occur. These rare plants occupy a specialized niche within the pond, where they receive just the right influence of hydrology, sunlight, and reduced competition from the more robust marsh plants.

- Lighthouse Pond should not be used for kayaking, kite boarding, or any other recreational activity.

Circulation

The historic circulation system is a character-defining feature of the historic landscape.

- Preserve brick walkway linking the visitor center/bookstore and the oil house/lighthouse. Material should be replaced in-kind.
- Preserve the concrete walkway renmants, which are historic. Material should continue to be concrete when repairs are needed.
- Preserve the portion of the brick walkway that is visible under the east steps of the visitor center/bookstore.
- Preserve the concrete remnant that once linked the double keepers' quarters and the woodshed and outbuildings beyond. Repair cracks as needed instead of paving over with new concrete to distinguish from new brushed concrete walks and keep clear of weeds and grass. Material should be replaced in-kind if replacement is needed.
- The concrete remnant that once linked the oil house and the sheet metal oil house may be allowed to grow over but should not be removed.
- Preserve the alignment of the entrance road, which dates to 1956.
- The current parking lot also dates to 1956 and was part of a development plan for the site. Its design created circulation patterns that never existing historically. A new parking area with support buildings is being developed to accommodate an expected increase in visitation to the site. The current proposal is to locate the new parking area inside the ellipse after the pines are removed.
- A comprehensive plan that considers cultural and natural resource concerns in conjunction with park management goals in the layout of the parking area and support buildings is needed before a final design is agreed upon.
- Any changes to the 1956 parking lot must go through Section 106 of the National Historic



FIGURE 196. Historic brick walkway, 2012. (SERO Collection)



FIGURE 197. Historic concrete walkway, 2012. (SERO Collection)



FIGURE 198. Entrance road and parking area, 2009. (CAHA Collection)

Preservation Act (NHPA) compliance process and would include mitigation.

- A walkway across the ellipse may be needed to link new parking to the visitor center/bookstore.

Views and Vistas

Near pristine views are a character-defining feature of the historic landscape.

- Preserve 360 degree viewshed from the top of the light tower that includes: to the east the marshlands, pond, barrier dunes, and Atlantic Ocean; to the west Roanoke Sound stretching to Roanoke Island; and to the north, south, and west, the distant pine groves framing the site and serving as backdrop. Any new structures like wind turbines should be placed far enough away so that they disappear from view from the top of the light tower.



FIGURE 199. View east over Lighthouse Pond, 2009. (CAHA Collection)



FIGURE 200. View west over the sound, 2009. (CAHA Collection)



FIGURE 201. View north looking towards the pines, 2009. (CAHA Collection)

- The viewshed from the bottom of the light tower should also be preserved so that structures like wind turbines cannot be seen from the base of the light tower.

- Preserve the sight lines along the primary northeast-southwest axis linking the light tower and integral oil house and the double keepers' quarters and the northwest-southeast axis flanking the double keepers' quarters.

- Pines planted in the 1960s inside the parking ellipse and entrance road are blocking views to the west and may be thinned or removed.*

- Individual pines that are blocking views along the perimeter of the site may be removed as needed.

- Views into the site from the boardwalk and observation tower in Bodie Island Pond should also be protected.



FIGURE 202. Primary site lines, 2012. (SERO Collection)



FIGURE 203. Views into the light station from the boardwalk, 2013. Note climbers on the gallery. (SERO Collection)

Small-Scale Features

- Preserve the hand pumps that accompany two of the cisterns. Consult with Museum Services if a metal conservator is needed.

- Preserve the four granite boundary markers. The east marker is in fair condition and needs conservation. Consult with Museum Services if a stone conservator is needed.



FIGURE 204. South hand pump, 2012. (SERO Collection)



FIGURE 205. North hand pump, 2012. (SERO Collection)

- A National Register of Historic Places plaque from 2003 is mounted on a metal base that mimics the lighthouse. It sits at the edge of the north section of the parking area. It may be moved to a more desirable location as long as it does not detract from the setting of the site.*

- Aggregate stone trashcans flank the side porch steps to the visitor center/bookstore. They should be replaced with a design that does not detract from the character of the setting, such as a Rodman Style Flare Top Trash Receptacle.*

- The original fence line, which enclosed the nineteenth-century footprint of the station, cannot be fully restored due to the present configuration of the 1956 parking lot and the current layout of the sidewalks on the west. A new fence that more closely approximates the

original fence line documented in the Bamber plan could be constructed if it can be done without creating a false sense of history.

- Any fencing used at the site should be constructed of wood and/or wire.
- If picnic tables are added, they should be a traditional design of wood, not plastic.
- Bicycle racks may be added as long as they do not detract from the setting of the site. A simple design should be chosen, such as a traditional galvanized bike rack for eight bicycles.*
- Use consistent, unobtrusive informational and directional signage.*



FIGURE 206. Aggregate stone trash can, 2012. (SERO Collection)

Climate Change

Barrier islands such as Bodie will be especially vulnerable to the effects of climate change and sea-level rise.

- Consult with Janet Cakir, NPS SER Climate Change, Socioeconomics, and Adaptation Coordinator, to guide management policies.
- The Bodie Island Double Keepers' Quarters (visitor center/bookstore) would be an excellent case study for the "Structure Decision Making" process being introduced in response to climate change. Contact Janet Cakir, NPS SER Climate Change, Socioeconomics, and Adaptation Coordinator.
- Use results from the climate change study "Identify Cultural Resources Sites Affected by Sea-Level Rise at CAHA" to guide management policies.

* See Record of Treatment

Bodie Island Light Station
Proposed Treatment Site Plan

National Park Service
U.S. Department of the Interior

Proposed Sidewalks

Proposed Crosswalks

Proposed Bus Parking

Granite Boundary Markers

Preserve alignment of 1956 entrance road

NORTH CISTERNS
Fill cisterns with sand, divert downspout to a French drain, and re-point the brick

MARSH
Continue controlled burns of the marsh

Overlook

RESTROOM BUILDING
Restroom building may be replaced with universally accessible building

OIL HOUSE
Preserve oil house; preserve view back to visitor center/bookstore

1956 Entrance Road and Parking Area

Boardwalk

LIGHTHOUSE FENCE
Expand lighthouse fence to more closely relfect historic fencline

LIGHTHOUSE TOWER
Preserve light tower; preserve 360 degree views from tower

Preserve views of the marsh and barrier dunes beyond

1960s PINES
May be removed to allow construction of additional parking areas and support buildings

HISTORIC BRICK WALKWAY
Preserve historic brick walkway

HVAC

HISTORIC CONCRETE WALKWAY
Preserve historic concrete walkway; keep free of grass and weeds

SOUTH CISTERN
Fill cisterns with sand, divert downspout to a French drain, and re-point the brick

VISITOR CENTER/ BOOKSTORE
Preserve visitor center/ bookstore; preserve relationship of flat topography of the site and lighthouse towe; preserve site line to oil house and lighthouse tower.

MOWING REDUCTION AREA

WOODSHED FOUNDATION
Preserve woodshed foundation; may be adaptively reused as a shade structure

1 2 3 4

N

Map by Laura R. Bradford
National Park Service- Southeast Regional Office
University of Georgia- Cultural Landscape Laboratory

Record of Treatment

The record of treatment provides an accurate account of the implementation treatment to be used for the historical record. It describes the as-built physical work, including any changes between the proposed and actual treatments. The intent is to document treatment actions, not preservation maintenance.

In April 2013, the Bodie Island Lighthouse opened to climbing for the first time in its history. In preparation for this historic event, the NPS completed a number of the treatment recommendations made in the cultural landscape report and some that were not included. The NPS completed all the work internally except for the removal of the pines and the installation of the temporary restroom trailer, which were completed by a contractor. This work occurred between February and April 2013 at a cost of $16,000 for park staff work and $3,000 to remove the trees.

Buildings and Structures

Bodie Island Lighthouse

- The Fresnel lens was reinstalled in February 2013.



FIGURE 207. Fresnel Lens, 2013. (CAHA Collection)

Oil House

- A metal hand railing was installed at the front steps of the oil house.



FIGURE 208. Metal hand railing on oil house, 2013. (SERO Collection)

Double Keepers' Quarters (Visitor center/bookstore)

- A wooden hand railing was installed at the back steps.
- Four sets of side steps (two on each porch)



FIGURE 209. Wooden hand railings on double keepers' quarters, 2013. (SERO Collection)

extending to narrower walkways that lead to the cisterns and other outbuildings were removed. The NPS removed them as a safety hazard to keep visitors from falling off the porches.

- Wooden hand railings were installed when the side steps were removed.



FIGURE 210. Wooden railing where side steps were removed (front), 2013. (SERO Collection)



FIGURE 211. Wooden railings where side steps were removed (back), 2013. (SERO Collection)

Storehouse

- The storehouse was painted in 2013.



FIGURE 212. Storehouse, 2013. (SERO Collection)



FIGURE 213. Southeast cistern, 2013. (SERO Collection)



FIGURE 214. Northeast and northwest cisterns, 2013. (SERO Collection)

Cisterns

- All cisterns were re-pointed and painted to bring their condition from fair to good.
- The cisterns were filled with sand.
- The broken section of the overflow valve on the cistern adjacent to the HVAC was removed.
- Cistern pump bases were painted.



FIGURE 215. South hand pump, 2013. (SERO Collection)



FIGURE 216. North hand pump, 2013. (SERO Collection)

Modern Additions

- A contractor installed a temporary restroom trailer north of the 1992 restroom building, which is being rented for $400/month.



FIGURE 217. Temporary trailer and restroom building, 2013. (SERO Collection)

Vegetation

- A contractor removed the pines planted in the entrance road ellipse in the 1960s. Stumps were ground, fill was added, and the ellipse was graded and seeded at a cost of $3,000.



FIGURE 218. Removal of pines, 2013. (CAHA Collection)



FIGURE 219. Parking ellipse after removal of pines and reseeding, 2013. (SERO Collection)

Views and Vistas

- Pines planted in the 1960s inside the parking ellipse were removed and helped partially restore views to the west.



FIGURE 220. Vista to the west after removal of pines, 2013. (CAHA Collection)

Small-Scale Features

- A National Register of Historic Places plaque from 2003 was moved from the north section of the parking area to the inside of the visitor center/bookstore.

- Aggregate stone trashcans that flanked the side porch steps were replaced with a wildlife proof trash can/recycling center that now sits at the edge of the sidewalk in the north parking area.



FIGURE 221. New trash can/recycling center, 2013. (SERO Collection)

- The wooden fence around the lighthouse was expanded by sixteen feet on either side to more closely approximates the original fence line documented in the Bamber plan and also expanded out beyond the oil house to contain visitors waiting to climb the lighthouse.

- A bicycle rack made from recycled material was added near the restroom building. It will be relocated to the new parking lot when it is completed.

- A new sign for the site is located in front of the first parking space in the north parking area. It will be moved to the new parking lot when it is completed.



FIGURE 222. Expansion of fence, 2013. (SERO Collection)



FIGURE 223.Expansion of fence, 2013. (SERO Collection)



FIGURE 224. New bicycle rack, 2013. (SERO Collection)

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Appendix A

List of Features in the Cultural Landscape

Feature	LCS #	Construction Date	FMSS #	Contributing	Treatment
Bodie Island Lighthouse	114	1872	28923	Yes	Preserve
Oil House	114	1872	229422	Yes	Preserve
Double Keepers' Quarters	7244	1872	28924	Yes	Preserve
Cisterns	91898	1872/1900	28927	Yes	Preserve
Storehouse	7249	1920	28926	Yes	Preserve
Woodshed foundation		1930	1464309	Yes	Preserve
Brick walkway		1872	1461589	Yes	Preserve
Concrete walkways		1921	1464321	Yes	Preserve
Concrete walkway remnant from lighthouse towards southeast		1921	1464610	Yes	Preserve
Concrete walkway remnant from DKQ to woodshed foundation		1921	1464611	Yes	Preserve
Cistern pumps	202972	1872		Yes	Preserve
Boundary marker north	207229	1872	1464613	Yes	Preserve
Boundary marker west	207370	1872	1464613	Yes	Preserve
Boundary marker south	207362	1872	1464613	Yes	Preserve
Boundary marker east	207294	1872	1464613	Yes	Preserve
Spatial pattern between buildings		1872		Yes	Preserve
1956 entry road		1956	109034	Yes	Preserve
Bodie Island Pond		1904		Yes	Monitor *Phragmites*
Flat, windswept topography		1872		Yes	Preserve
Open area of lawn		1872		Yes	Preserve
Stand of pines in parking ellipse, volunteers		1960s		No	Remove
Phragmites				No	Continue to treat
Restroom building		1992	28928	No	
National Register plaque		2003		No	
HVAC enclosure		1992		No	
Wooden fence		2000	1164900	No	
Modern concrete walkways		2011	1464614	No	
Boardwalk and overlook		2010	232144	No	
Universally accessible ramp		1992		No	
Bicycle rack		2013	1270638	No	
Trash can/recycling center		2013	1270634	No	
Sight lines along primary northeast-southwest axis and the northwest-southeast axis		1872		Yes	Preserve
Views to the Albemarle Sound		1872		Yes	Remove pines
Views to Bodie Island Pond		1872		Yes	Preserve
360° views from top of lighthouse		1872		Yes	Preserve
Views into light station from Bodie Island Pond		1904		Yes	Preserve
View of restroom building		1992		No	
View of pines in parking ellipse		1960s		No	Remove
View of *Phragmites*				No	Continue to treat



As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.



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