

Appendix C:

**DRAFT Statement of Findings
for Floodplains**

for

Relocation of

Bodie Island U.S. Coast Guard Station Complex

Cape Hatteras National Seashore

Nags Head, Buxton, and Ocracoke, North Carolina

Recommended: _____
Superintendent, Cape Hatteras National Seashore Date

Concurred: _____
Chief, Water Resources Division Date

Approved: _____
Southeast Regional Director Date

This page intentionally left blank.

Introduction

Executive Order 11988 (Floodplain Management) requires the National Park Service (NPS) and other federal agencies to evaluate the likely impacts of actions in floodplains. The objectives of the Executive Order is to avoid, as much as possible, the short- and long-term adverse impacts associated with occupancy, modification, or destruction of floodplains and to avoid indirect support of development and new construction in such areas where there is a practicable alternative. NPS Director's Order #77-2: *Floodplain Management* provides NPS procedures for complying with E.O. 11988. This Statement of Findings (SOF) has been prepared in accordance with the guidelines in NPS DO #77-2. The purpose of this SOF is to present the rationale for the proposed relocation of the Bodie Island Complex in the floodplain area and to document the anticipated effects on these resources.

Cape Hatteras National Seashore (CAHA) has prepared and made available an environmental assessment (EA) for proposed relocation of the Bodie Island U.S. Coast Guard Station Complex (the Complex). The Complex is comprised of three historic structures: 1879 U.S. Life-Saving Station (USLS Station), 1916 Boat House, and 1925 U.S. Coast Guard Station (USCG Station).

The project area is located in a high hazard area is classified as a Class III Action, according to DO #77-2. Avoidance of impacts to floodplains is not possible because the three historic structures are currently located in the 100-year floodplain of Bodie Island. Relocation of these historic structures to a site in the 100-year floodplain is consistent with the historic setting and context for these types of structures.

Relocation of the Complex is being proposed with the intent of meeting the following objectives:

- Protecting the structures from encroachment of the Atlantic Ocean and shoreline erosion;
- Protecting the historic and structural integrity of the structures;
- Minimizing the distance from the sites upon which the structures were originally constructed;
- Maintaining the historic relationship of the structures to the Ocean and the other maritime life-saving structures built along the coastline;
- Maintaining the historic use of the structures;
- Avoiding or minimizing adverse impacts to cultural and natural resources, including direct adverse impacts to archeological resources and wetlands; and
- Avoiding or minimizing adverse impacts to park operations and visitor experience of the Seashore.

Since NPS policy is to allow natural shoreline processes to occur unimpeded on barrier islands and North Carolina law does not allow hardening shorelines, relocation of these historic structures is the only means by which they can be protected from the Atlantic Ocean within the next five years.

Proposed Action

Under this alternative, all three historic structures would be relocated to a nearby site on Bodie Island (Figure C1 and C2). The relocation site is located approximately 0.6 miles south of the site currently occupied by the structures.

The building configuration proposed was designed with the primary objectives of maintaining the historic groupings and orientation of the structures to each other and the Ocean, facilitate park operations using these structures, and avoid wetland impacts. The USCG Station would be relocated to a site immediately north of the Lighthouse Bay Drive, while the USLS Station and Boat House would be relocated to a site immediately south of the Lighthouse Bay Drive. This arrangement mimics the historic arrangement and alignments of the structures as they were in 1925, following the construction of the USCG Station building.

The USLS Station and Boat House are currently on wood piling foundation, while the USCG Station is currently located on a concrete foundation. All three structures would be released from their foundations to be transported to the relocation site. The concrete foundation of the USCG Station and the wood pilings for the USLS Station and Boat House would remain on-site because these components are considered culturally significant features of the historic structures. The access roads, parking areas, and concrete walkways would remain on-site to be considered for use as potential staging areas for a future action (see “Widening and Repaving of NC 12” section in Chapter 4 of the EA for details) and potentially removed as mitigation for floodplain impacts resulting from that action. Septic systems would be removed or closed in accordance with applicable state and federal regulations. The site would be revegetated. The 0.3-mile long stretch of the dune located immediately east of the Complex would not be repaired unless dune blow-out results in sand accumulation on NC 12 that impedes vehicular passage. The NPS would work with NCDOT to restore normal traffic passage on NC 12.

The relocated structures would be secured on wood pilings at a finished floor height above the base flood elevation of 10 feet, in accordance with the National Flood Insurance Program V zone construction standards. Support facilities (e.g., walkways, parking areas, septic mound systems and other utilities) would be installed to facilitate use of the structures for park operations.

Relocation of the NPS Bodie Island Law Enforcement Office to the Bodie Island Maintenance Area would be necessary to allow for relocation of the USLS Station and Boat House. The Law Enforcement operation would return to the USLS Station and Boat House as quickly as possible following relocation of these structures. The USCG Station is currently not in use, but would be used in support of park operations in the future.

Of the two alternatives analyzed in the *Relocation of the Bodie Island USCG Complex Environmental Assessment* (November 2008), Alternative B was identified as the Preferred Alternative primarily because it would best allow for the protection of the three historic structures while avoiding wetland impacts and minimizing adverse impacts on other natural resources. Alternative B would best restore natural shoreline conditions and allow natural shoreline processes to continue without interference (Section 4.8.1.1, NPS Management Policies, 2006).

The proposed relocation of the three historic structures in a high hazard area is classified as a Class III Action, according to DO #77-2. Avoidance of impacts to floodplains is not possible because the entire project area is within the 100-year floodplain. Minimization of floodplain impacts was accomplished through design by minimizing the footprint of the structures at their relocation sites by elevating the structures on wood pilings above the base flood elevation for the site, use of porous pavers for new parking areas, and use of pervious materials for ADA-compliant walkways. The net result of relocating these historic structures and creating new pervious parking areas is on 0.51 acre of the 100-year floodplain in the project area. Of the 0.51 acres impacted, 0.14 acre would be treated with porous pavers to allow for some infiltration of precipitation and natural function of the floodplain. A negligible acreage of ADA-compliant walkways would be constructed using pervious materials. Floodplain impacts for the

No Action Alternative (Alternative A) and the action alternative (Alternative B) were analyzed in the EA and are summarized below in Table 1.

Table 1. Floodplain Impact Summary

STRUCTURE	ALTERNATIVE A NO ACTION	ALTERNATIVE B PREFERRED
Remain at Currently Occupied Site		
<i>U.S. Coast Guard Station</i>		
Building Footprint	2,185 sq. ft. concrete	2,185 sq. ft. concrete
Septic System	1,400 sq. ft. tank and field	1,400 sq. ft. tank and field
Parking Area	2,000 sq. ft. asphalt	2,000 sq. ft. asphalt
Driveway	23,760 sq. ft. asphalt	23,760 sq. ft. asphalt
Walkway	90 sq. ft. concrete	90 sq. ft. concrete
<i>U.S. Life-Saving Station</i>		
Building Footprint	11 sq. ft. wood pilings	11 sq. ft. wood pilings
Septic System	720 sq. ft. tank and field	720 sq. ft. tank and field
Parking Area	1,220 sq. ft. asphalt	1,220 sq. ft. asphalt
Driveway	2,200 sq. ft. asphalt	2,200 sq. ft. asphalt
Walkway	290 sq. ft. concrete	290 sq. ft. concrete
<i>Boat House</i>		
Building Footprint	9 sq. ft. wood pilings	9 sq. ft. wood pilings
<i>Sub-total</i>	<i>33,885 sq. ft. (0.78 acre)</i>	<i>33,885 sq. ft. (0.78 acre)</i>
New Construction at Relocation Site		
<i>U.S. Coast Guard Station</i>		
Building Footprint	NA	18 sq. ft. wood pilings
Septic System		5,000 sq. ft. mound system
Parking Area		4,000 sq. ft. porous pavers
Driveway		100 sq. ft. porous pavers
Walkway		50 sq. ft. pervious materials
<i>U.S. Life-Saving Station</i>		
Building Footprint	NA	11 sq. ft. wood pilings
Septic System		3,750 sq. ft. mound system
Parking Area		2,000 sq. ft. porous pavers
Driveway		100 sq. ft. porous pavers
Walkway		50 sq. ft. pervious materials
<i>Boat House</i>		
Building Footprint	NA	9 sq. ft. wood pilings
<i>Sub-total</i>	<i>0</i>	<i>15,088 sq. ft. (0.35 acre)</i>
NET RESULT	0	+15,088 sq. ft. (0.35 acre), of which 6,200 sq. ft. (0.14 acre) is treated with porous pavers

Minimization of impact on the 100-year floodplain in the project area would be achieved by relocating the USCG Station from its concrete foundation to elevation upon a wood piling foundation. The 2,185 sq. ft. concrete foundation upon which the USCG Station currently resides is historically significant and would remain in place.

The 0.68 acre of other impervious surfaces (e.g., asphalt parking area, asphalt driveway entrance, concrete walkways) at the abandoned site would be used as a staging area for other construction projects in the vicinity, including the widening and repaving of NC 12. Once these other projects are completed, the 0.68 acre of other impervious surfaces would potentially be removed as a mitigation for floodplain impacts resulting from a future action (see “Widening and Repaving of NC 12” section in Chapter 4 of the EA for details).

At the relocation site, driveways and parking areas would be constructed using porous pavers. Of the 0.51 acre of floodplain impact at the relocation site, 0.14 acre would be surfaced with porous pavers. ADA-compliant walkways would be constructed using pervious materials.

Mitigation would also be provided by incorporating methods for protecting human safety and protection of investment.

Site Description

Elevations in the immediate vicinity of the project corridor range from sea level to 35 feet above sea level. A single, narrow dune is located between the Atlantic Ocean and NC 12. The peak of the dune elevation immediately northeast of the USLS Station is among the highest dune peaks in the project area. This dune line is broken in various places and is only 9 feet high in certain segments. The three historic structures are currently situated at approximately 9 feet above sea level.

The relocation site is located approximately 0.10 miles west of the dune line. The maximum dune height near the relocation site is approximately 21 feet above sea level. The relocation site is located at 5 to 6 feet above sea level. The relocated structures would be set upon wood pilings with a finished floor height above the base flood elevation of 10 feet.

Due to the low topography, the entire project area on Bodie Island is located within the 100-year flood zone, is subject to inundation during extreme storm events, and where base flood elevations range between 10 and 11 feet. Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps show that the project area is within 100-year-flood floodplain (Figures C3-C5). The current location of these buildings is within the “VE” flood zone, the coastal flood zone where there is a velocity hazard and the base flood elevation is 11 feet above sea level. The relocation site is within the “AE” flood zone where the base flood elevation is 10 feet above sea level.

Justification for the Use of Floodplains

The purpose of this project is to relocate the USCG Station and Life-Saving Station from their current location in an area of severe storm surge and dune breach to a nearby site that offers more protection from the surrounding environment. Currently, the buildings are located only 75 feet from the Atlantic Ocean at high tide. The proposed relocation site would position the buildings approximately 1,000 feet from the Atlantic Ocean at high tide, thereby reducing its potential for being swallowed by the Ocean in a storm. The relocation site is located approximately 750 feet from the first line of natural stable vegetation, and meets the NCDRC setback requirement (650 feet).

The historic setting of these structures is within the 100-year floodplain and within a short line of sight of the Atlantic Ocean. Relocating the structures outside of the 100-year floodplain or short visual distance of the Atlantic Ocean would remove them from their historic context and affect their National Register status.

Investigation of Alternate Sites

Careful consideration of five potential relocation sites demonstrates due diligence in attempting to achieve avoidance of wetland impacts and minimization of impacts to floodplains. In addition to the relocation site identified in the NPS Preferred Alternative (Alternative B), five other potential sites were considered and ultimately dismissed. Brief descriptions of these potential alternative sites, and reasons for their dismissal from further analysis, are outlined below. Additional detail is provided in Chapter 2 of the the *Bodie Island Complex Relocation Environmental Assessment* (November 2008).

1. Whalebone Junction Intersection

- a. West Side of NC 12. Relocation of the three historic structures to this previously disturbed site in the 100-year floodplain would require substantial expansion of the parking area, which would result in the direct loss and impacts to NPS, USACE, and North Carolina coastal wetlands. The USACE would not support relocation of the structures to the west side of NC 12 since implementation of the NPS Preferred Alternative (Alternative B) would result in avoidance of wetland impacts. Therefore, the alternative of relocating the structures to the west side of NC 12 at the Whalebone Junction Intersection was considered but dismissed.
 - b. East Side of NC 12. Relocation of the three historic structures to this previously disturbed site in the 100-year floodplain would require substantial vegetation clearing on the Seashore boundary with privately owned properties in the town of South Nags Head. Placement of the structures in this context would not be respectful of the historic setting in which these structures were originally constructed. Additionally, clearing of wetland vegetation and filling of wetlands would be required. The USACE would not support relocation of the structures to the east side of NC 12 since implementation of the NPS Preferred Alternative (Alternative B) would result in avoidance of wetland impacts. Therefore, the alternative of relocating the structures to the east side of NC 12 at the Whalebone Junction Intersection was considered but dismissed.
2. Bodie Island Firing Range / Old Ground Water Tank Area. Relocation of the three historic structures to this previously disturbed site in the 100-year floodplain would result in the filling of at least 2.5 acres of wetlands and additional direct, adverse impacts to wetlands. The USACE would not support relocation of the structures to this site since implementation of the NPS Preferred Alternative (Alternative B) would result in avoidance of wetland impacts. Therefore, the alternative of relocating the structures to the Bodie Island Firing Range / Old Ground Water Tank Area was considered but dismissed.
 3. Bodie Island Light Station (Outside the Historic District). Relocation of the three historic structures to this previously disturbed site in the 100-year floodplain would result in adverse effects on the cultural landscape and viewsheds associated with the Bodie Island Lighthouse Historic District, diminishment of the Complex's historic relationship to the Ocean, and potential for adverse impacts on wetlands resulting from filling. Therefore, the alternative of relocating the structures to an area near the Bodie Island Light Station was considered but dismissed.

4. Oregon Inlet Campground. Relocation of the three historic structures to this previously disturbed site in the 100-year floodplain would not reduce the threat of their loss associated with beach erosion and threat of dune deterioration. Placement and use of the structures for the Bodie Island District Law Enforcement office would conflict with traffic, circulation, and visitor use of the Campground. Therefore, the alternative of relocating the structures to the Oregon Inlet Campground was considered but dismissed.

Impacts to Floodplain Functions and Values

Implementation of the Preferred Alternative (Alternative B) would result in short-term impacts to the 100-year floodplain surrounding the structures at their current site. Preparation of the structures for relocation is expected to result in temporary disturbance of soils. All site activities would be limited to a 0.15 acre (or less) at the site currently occupied by the USLS Station and Boat House site, and activities would be limited to 0.9 acre (or less) at the site currently occupied by the USCG Station. The building foundations would remain on-site because these components are considered culturally significant features of the historic structures. The access roads, parking areas, and concrete walkways would remain on-site to be considered for use as potential staging areas for a future action (see “Widening and Repaving of NC 12” section in Chapter 4 of the EA for details) and potentially removed as mitigation for floodplain impacts resulting from that action. The 100-year floodplain would continue to be occupied by these structures, a total of 29,435 sq. ft. (0.68 acre) at the USCG Station and a total of 4,450 sq. ft. (0.10 acre) at the USLS Station / Boat House site.

Preparation activities at the relocation site would temporarily impact 0.38 acre north of Lighthouse Bay Drive and 0.38 acre south of Lighthouse Bay Drive. These activities include vegetation clearing and grubbing; installation of pilings to support the buildings; modification of existing underground utilities to provide service to the relocated buildings; establishment of two mound septic systems; installation of the structures and porous pavers as the parking area surface. The long-term impact area associated with relocation of the buildings (e.g., walkways, parking areas, septic mound systems and other utilities) is 0.21 acre north of Lighthouse Bay Drive and 0.14 acre south of Lighthouse Bay Drive. Overall, the new impact to floodplain functions and values in the short-term would be minor, adverse and occur on 1.81 acres. The long-term impacts to the floodplain functions and values of relocating the three historic structures and establishment of support facilities would be negligible, adverse, and limited to a total area of 0.35 acre.

Relocation of the historic structures and establishment of support facilities would result in 0.35 acre of new impact to the 100-year floodplain. Present and reasonably foreseeable future actions have and would contribute to cumulative impacts to floodplain functions and values in and around the project area. Replacement of the underground water main along NC 12, repaving and widening NC 12, and widening of Lighthouse Bay Drive would collectively have a long-term, moderate, and adverse cumulative impact on floodplains. By using the abandoned Complex access roads and parking areas as staging areas for these other projects, there is no need to create new staging areas. In the long-term, impacts to the 100-year floodplain on Bodie Island resulting from the relocation of the Complex and implementation of these other proposed actions would be offset by the potential removal of the support facilities (e.g., access roads, parking areas, walkways) and potential restoration of 0.68 acre of the 100-year floodplain.

Minimization of Harm or Risks to Life and Property

Mitigation would be provided by incorporating methods for protecting human safety and protection of investment. Minimization of harm or risk to life and property was accomplished by proposing to relocate

the structures on pilings and establishing that the base floor height would be above the base flood elevation of 10 feet.

The protection of human health and safety and property is paramount for the NPS on North Carolina's Outer Banks. Cape Hatteras National Seashore is one of the three parks (Fort Raleigh National Historic Site and the Wright Brothers National Memorial) collectively managed by NPS staff at the Outer Banks Group Office in Manteo, NC. The NPS – Outer Banks Group annually updates its Hurricane Plan (NPS 2008), which describes the Incident Command System (ICS) priorities, procedures, and timelines for the protection of human safety, property, and park resources and values in the event of a hurricane or other emergency.

The 2008 Hurricane Plan details actions to be taken at the beginning of hurricane season (June 1), at critical intervals from 96 hours prior to storm force winds through landfall of a hurricane, recovery, and re-entry. As early as 96 hours prior to storm force winds, the Superintendent activates the ICS and the following would occur on Bodie Island:

- Visitors would be informed of weather conditions, park status, and recommended actions. Hurricane watch notices are posted at all visitor centers, campground kiosks, and on the Seashore's website.
- Visitors are advised to leave the island or be prepared for short notice evacuation. Ocracoke must be evacuated prior to termination of ferry services or prior to onset of gale-force winds.
- Normal park operations and visitor facilities (e.g., visitor centers, campgrounds, swim beaches) close.
- Concessionaires and local businesses are notified of the Seashore status.
- All non-assigned personnel are released by noon to permit daylight evacuation.
- All non-essential vehicles and equipment are secured.

Since the three historic structures and their support facilities can not be assured of protection from all future damage related to flood/storm events, the NPS would tolerate risk to these structures and facilities, and would simply repair or reconstruct when damage occurs. In the event of storm damage of the structures, the NPS would collect and properly dispose of debris that could not be recycled. The NPS would close the structures while evaluating the need for repair or relocation of the structures and support facilities (e.g., septic systems, access roads, parking areas). The need to repair or relocate the structures or support facilities would be evaluated in consultation with other Federal and state agencies prior to repair or relocation of damaged structures or facilities. The decision to repair or relocate structures or facilities would be made by the NPS. If the NPS decides to repair or relocate damaged structures or facilities, these activities would be planned and implemented in accordance with applicable Federal and state regulations. In the event that the NPS decides not to repair or relocate the structures or facilities, restoration of the site would be undertaken in accordance with applicable Federal and state regulations.

Compliance

National Environmental Policy Act

An environmental assessment has been prepared for the proposed project pursuant to the National Environmental Policy Act (NEPA) and a Finding of No Significant Impact (FONSI) is expected to be signed by the Regional Director.

Coastal Zone Management Act and North Carolina's Coastal Area Management Act

The Coastal Zone Management Act of 1972 was enacted by Congress to protect the coastal environment from growing demands associated with residential, recreational, commercial, and industrial uses (e.g., State and Federal offshore oil and gas development). The provisions of this Act help States develop coastal management programs to manage and balance competing uses of the coastal zone. A request for concurrence on a Federal Consistency Determination has been requested from the State of North Carolina (see Appendix B). The NPS anticipates a concurrence finding resulting from the State of North Carolina under the Coastal Zone Management Act and applicable components of North Carolina's Coastal Area Management Act.

The *Relocation of the Bodie Island Complex Environmental Assessment* (November 2008), Statement of Findings for Floodplains, and the FONSI, when signed, would complete the requirements for NEPA for this project.

Conclusion

The protection of people and property is of high priority to the NPS. The proposed relocation of the three historic structures (1879 USLS Station, 1916 Boat House, and 1925 USCG Station) and the proposed floodplain mitigative actions would occur on NPS land. The NPS concludes that there is no other practicable alternative for the proposed relocation of these structures. The proposed relocation of these buildings is necessary to protect these historic structures.

Implementation of the Preferred Alternative (Alternative B) would result in short-term impact to 1.81 acres of 100-year floodplain in the project area. Of these 1.81 acres impacted in the short-term, 0.35 acres of the 100-year floodplain would be impacted in the long-term. Relocation of the three historic structures and establishment of support facilities would not affect flood storage capacity of Bodie Island as a whole or the flood storage capacity in the vicinity of the project area.

Mitigation for the proposed relocation does include good design through sustainable design principles, appropriate siting, best management practices during and after construction, as well as implementation of non-structural methods through flood warning and evacuation procedures.

The NPS finds the proposal to be consistent with Executive Order 11988. The NPS finds that this proposed action is consistent with the policies and procedures of NPS Special Directive 93-4 (Floodplain Management Guidelines).

References

Buie, J. C. 1996. Relative Risk Assessment for Cape Hatteras National Seashore. Center for Coastal Management and Policy, Virginia Institute of Marine Science, College of William and Mary, Gloucester Point, VA.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of Wetlands and Deepwater

Habitats of the United States. U.S. Fish and Wildlife Service, Office of Biological Services, Washington, D.C.

Division of Coastal Management, North Carolina Department of Environment and Natural Resources. 1999. NC-CREWS: North Carolina Coastal Region Evaluation of Wetland Significance, A Report of the Strategic Plan for Improving Coastal Management in North Carolina. North Carolina Department of Environment and Natural Resources, Division of Coastal Management, Raleigh, NC.

National Park Service. 1993. Special Directive 93-4: Floodplain Management Guideline. Washington, D.C.

_____. 2008. 2008 Hurricane Plan: National Park Service, Outer Banks Group.

Riggs, S. R., D. V. Ames, S. J. Culver, D. J. Mallinson, D. R. Corbett, and J. P. Walsh. *In preparation*. In the eye of a human hurricane: Oregon Inlet, Pea Island, and the northern islands of the Outer Banks of North Carolina. East Carolina University, Greenville, N.C.



Figure C1. Project area map, showing the current locations and relocation site the USCG Station and Life-Saving Station on Bodie Island, NC.



Bodie Island U.S. Coast Guard Station Complex

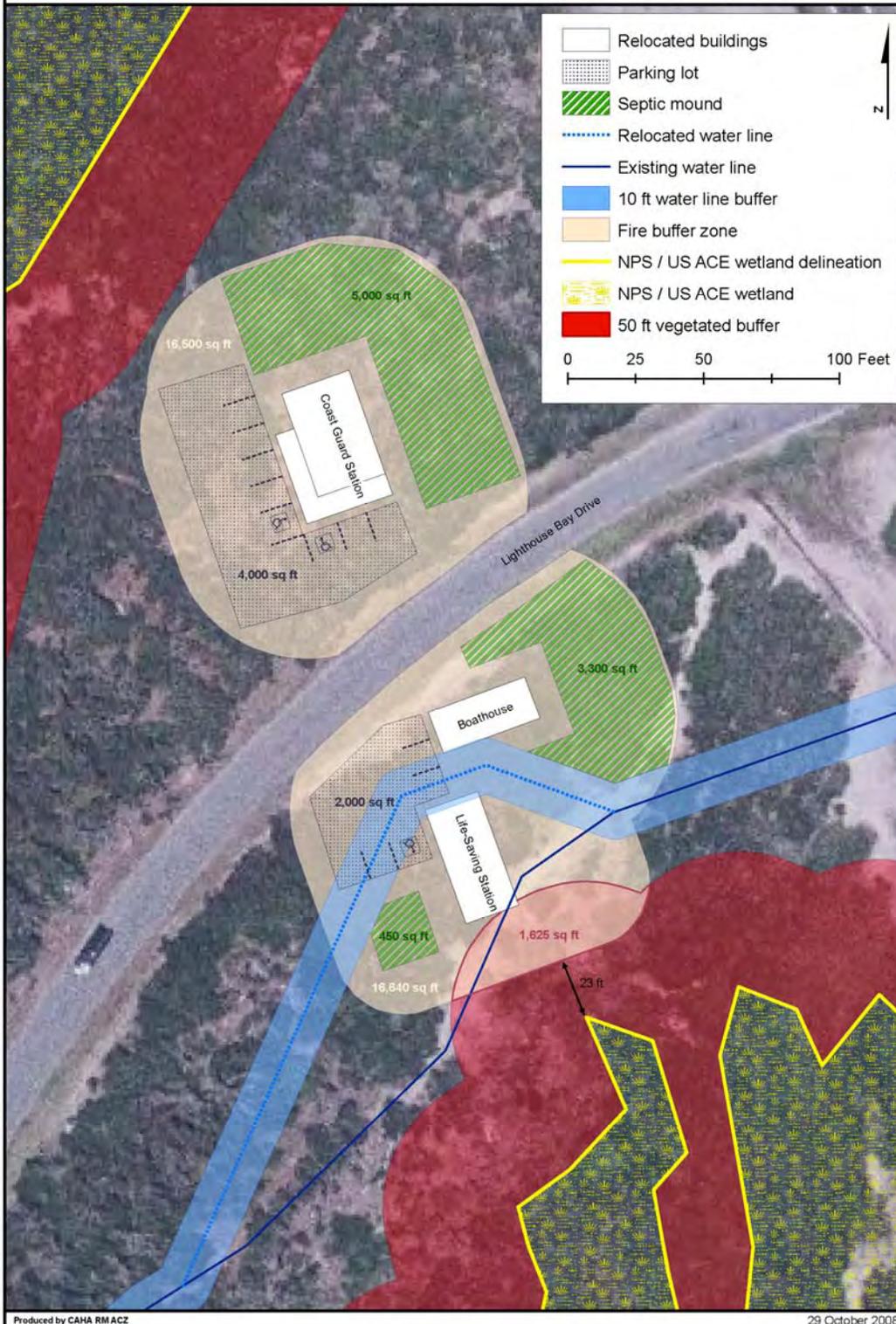


Figure C2. Relocation site plan.

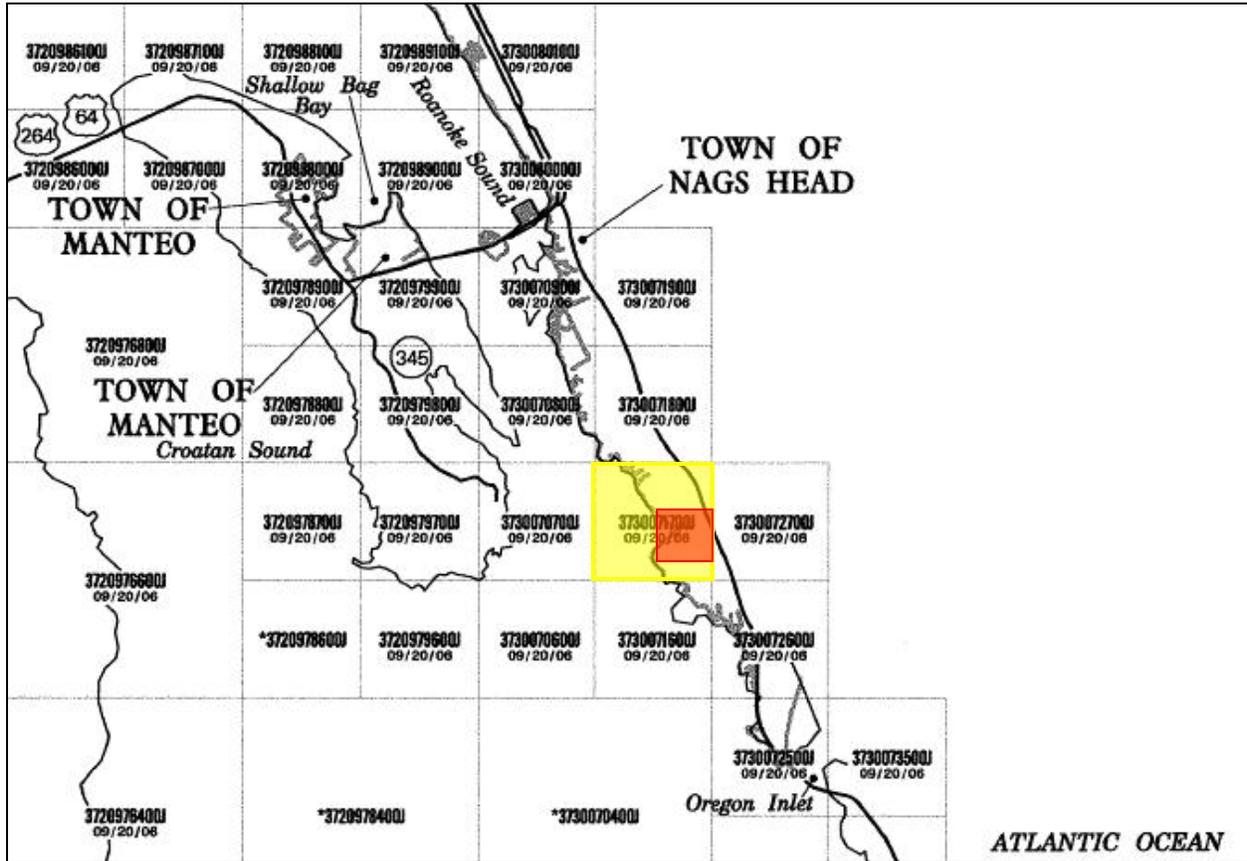


Figure C3. FEMA Flood Insurance Maps (Panel 3730071700J [dated 09/20/06]) for the project area on Bodie Island, NC (red shaded).

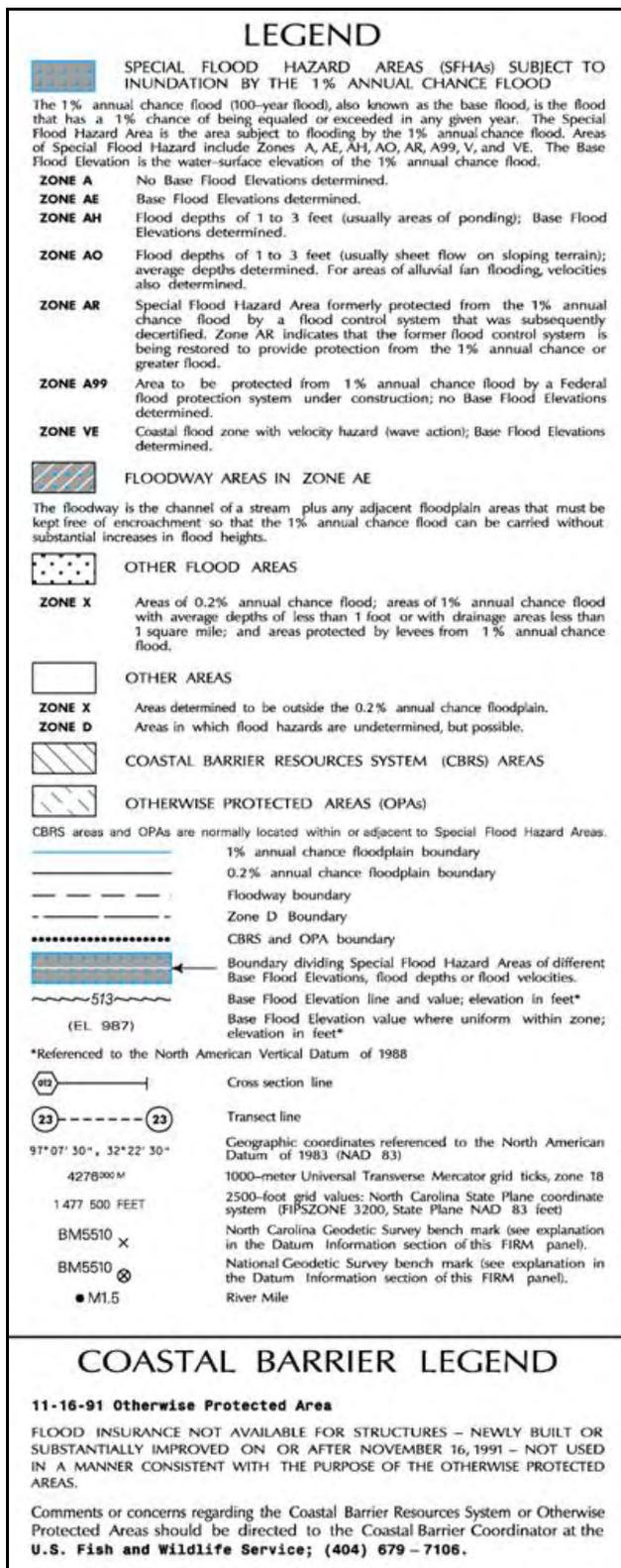


Figure C5. FEMA Flood Insurance Map legend.

This page intentionally left blank.



As the nation's principal conservation agency, the Department of the Interior has the 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.