

SECTION 1.0 – PROJECT PURPOSE

1.1 PURPOSE AND NEED STATEMENT

The purpose of the Village of Bald Head Island Shoreline Protection Project is to address on-going and chronic erosion at the western end of South Beach and to thereby protect public infrastructure, roads, homes, businesses and rental properties, golf course, beaches, recreational assets, and protective dunes.

The west end of South Beach experiences on-going and chronic erosion resulting in considerable sand loss and shoreline recession. Severe erosion has been chronicled along this section of shoreline since the 1970s (Dennison 1998). In 1992, an approximate 10,000-linear foot (lf) segment of the western end of South Beach received approximately 350,000 cubic yards (cy) of sand as part of an authorized Section 933 Project by the US Army Corps of Engineers (USACE). Within 18 months of the placement of this material, the entire beach fill (plus additional natural material) had reportedly eroded away (Dennison 1998). Under more recent detailed physical monitoring, Olsen Associates, Inc. (2011) reported that the Island's gross volumetric loss (excluding East Beach) over the November 2000 to May 2011 timeframe was approximately 4.363 Mcy (corresponding to an average annualized loss of 415,000 cy). The highest rates of sand loss have occurred principally at the extreme west end of South Beach in the vicinity of the Cape Fear River entrance. Similarly, physical monitoring data collected by the USACE identify the presence of an approximate 2,050- to 3,400-lf section of the western end of South Beach prone to accentuated rates of littoral

transport resulting in chronic erosion and shoreline recession (USACE 2010 and USACE 2011).

Over the course of the USACE's physical monitoring period (August 2000 to September 2009), the shoreline of concern on the western end of South Beach has retreated by as much as 315 ft (USACE 2011). Over this same time period, there was nearly 6M cy of sand placement on South Beach through federal disposal events and Village-sponsored nourishment and disposal projects. The threat to existing homes and infrastructure as a result of the erosion and shoreline recession has prompted the Village to seek other alternatives for long-term protection of its and its citizens' resources.

1.2 PROJECT GOAL AND OBJECTIVES

The overall goal of the project is to reduce beach and dune erosion and thereby protect Island residences, public infrastructure, roads, and beaches/dunes including their associated functions (e.g. recreation) and values (e.g. storm protection).

Given the threat of loss of homes, roads, businesses, infrastructure, and protective dunes along the western end of South Beach and the resultant need for long-term solutions to this problem, the following project objectives have been formulated:

- (1) To reduce sand losses from beach disposal or construction (either federal disposal actions or Village-sponsored beach nourishment projects) along the inlet margin; and
- (2) To effectively control shoreline alignment along the westernmost segment of South Beach in such a manner to reduce alongshore transport rates and shoreline recession.

1.3 PROJECT LOCATION

Bald Head Island is a 3-mile long south-facing barrier island located immediately eastward of the mouth of the Cape Fear River at 33.85°N, 77.9889°W (NAD27). The island forms the southern terminus of the Smith Island complex at Cape Fear Point from which Frying Pan Shoals extend over twenty miles southeastward into the Atlantic Ocean.

Bald Head Island's east and south shorelines (East Beach and South Beach, respectively) front the Atlantic Ocean. The western shoreline (a.k.a. West Beach) is located immediately adjacent to the Cape Fear River entrance. The north side of the island is bounded by the Bald Head Creek estuary. The remainder of Smith Island is composed of interior tidal creeks (including Cape Creek and Deep Creek), associated tidal marsh, Middle Island, and Bluff Island. The mouth of the Cape Fear River (over one mile in width) separates Bald Head Island from the eastern end of Oak Island (or Caswell Beach). The enclosed nautical chart (Figure 1.1) depicts the location of these islands relative to the Cape Fear River entrance channel and its associated shoal formations.

1.4 INLET AND SHORELINE MANAGEMENT TO DATE

The State of North Carolina began navigation improvements to the Cape Fear River entrance in 1822 and continued until such time when the Federal government assumed responsibility for maintaining safe navigation in 1829. Modification to the Cape Fear River entrance channel has continued since that time, and channel depths have gradually increased to accommodate the increasingly larger vessels calling at the Port of Wilmington (USACE 2000). Since the implementation of the Wilmington Harbor Deepening Project in 2000, the Cape Fear River entrance channels have been regularly maintained at an authorized depth of -44 ft Mean Lower Low Water (MLLW) (+2 ft overdepth).

The Village of Bald Head Island has relied on a variety of shoreline management actions in response to chronic erosion of the western end of South Beach, the Point, and West Beach over the last 18 years. Various responses to erosion have included the use of periodic nourishment; retreat (e.g. relocation and eventual demolition of the Bald Head Island Inn); beach scraping; sand bag revetments; and the installation and maintenance of a sixteen sand-tube groinfield. Shoreline management has been influenced by federal dredge and disposal actions particularly since 2000 with the implementation of the Wilmington Harbor Sand Management Plan (SMP), which has included the disposal of beach-quality dredged material from the Wilmington Harbor Channel along Bald Head Island and Caswell Beach at federal expense.).

The following is a summary of inlet modifications to date, associated federal disposal, and Village-sponsored nourishment on the southern and western shorelines of Bald Head Island.

1.4.1 Wilmington Harbor Entrance Channel and the Sand Management Plan

Substantial navigation improvements of the Cape Fear River entrance began in 1871 with the construction of a 12-foot deep and 100-ft wide channel along the general alignment of the Bald Head Shoal Channel. Prior to this action, the river entrance was characterized by the presence of two equally-sized channels, the Western Bar Channel and the Baldhead Shoal Channel. Deepening of the single channel entrance (Baldhead Shoal Channel) continued throughout the late 1800's and 1900's. In 1911, the bar channel was deepened to 26 feet and widened to 400 ft (USACE 1989). Subsequent channel improvements through 1968 are listed below in Table 1.1.

Table 1.1. Cape Fear River Entrance Channel Improvements (1925 through 1972).¹

Year Constructed	Depth (ft below MLW)	Width (ft)
1925-26	30	400
1949	32	400
1956	35	400
1968	40	500

In 2000, the USACE implemented the “Wilmington Harbor 96 Act Project” (also known as the Wilmington Harbor Deepening Project) which included the deepening of the ocean entrance channels to -44 feet (MLLW) and the extension and realignment of the Baldhead Shoal Channel. Note that this more recent channel modification is discussed in more detail below.

Prior to the National Environmental Policy Act of 1969 and the Federal Water Pollution Control Act of 1972, dredged material was often considered a waste material. As such, its treatment often consisted of unconfined disposal into waters and wetlands adjacent to navigation channels. In the latter part of the last century, material from the Wilmington Harbor entrance channels was deposited within confined disposal islands or transported to the Ocean Dredged Material Disposal Site (ODMDS) approximately 4 miles offshore from Bald Head Island (USACE 2000).

Since ocean disposal of dredged material can remove sand from the active littoral system, it is no longer considered a preferable practice if other cost-efficient, engineeringly sound, and environmentally acceptable options are available. Per the tenets of the Sand Management Plan (SMP) (implemented by way of the construction of the Wilmington Harbor Deepening Project in 2000), beach quality sand derived from navigation channel maintenance is now disposed of primarily on the shorelines of Bald Head Island and Oak Island. Such action was determined to represent the least costly, engineeringly feasible and environmentally

¹ Adapted from USACE Reconnaissance Report (Section 111, PL 90-483) (January 1989).

acceptable action and is in keeping with North Carolina coastal zone management policy to ensure, when practical, that beach quality sand is not removed from the active littoral system. Note that dredged material not suitable for beach or littoral zone placement (due to silt/clay content in excess of 10%, excessive shell, or other incompatibility with beach material) continues to be transported to the new ODMDS approximately 7 miles offshore (USACE 2000). Furthermore, when navigation maintenance is required for small volumes (for example less than 100,000 cy), dredged material (regardless of content) may be transported to the ODMDS for disposal (USACE 2000).

The Wilmington Harbor Entrance Channel, which extends seaward of Bald Head Island, is not stabilized by jetties and until channel modifications initiated in 2000, had been maintained at a single location and orientation by dredging since the late 1800's. In recent time, prior to the modifications of the Harbor Deepening Project in 2000, maintenance of the entrance channel typically required the removal of between 500,000 and 1,000,000 cy of material each year. Beginning in 2000, the federal navigation channel was deepened by four feet and widened at several locations. Since initial construction in 2000, four (4) maintenance dredging operations have been conducted within the channel (with the fourth maintenance operation completed in April 2013). It should be noted that the seven-mile long ocean entrance segment of the channel was likewise reoriented in 2000 from its historical southwesterly alignment to a more south-southwest orientation through Bald Head Shoals. The new alignment follows the old channel (Baldhead Shoal Channel) from the inlet (Sta 0+00) seaward approximately 4,500 lf to a new 15-degree turn (at Sta 45+00); then proceeds about 4,300 lf to a second turn of 14 degrees (at Sta 88+43); and then proceeds seaward through the former ODMDS to the 46-ft depth contour located approximately 7.0 miles outside the inlet. Note that the realignment also included a single 200-ft channel widener along the first 4,500 lf seaward from the inlet and two 200-ft wideners along the next 4,300 lf of channel (refer to Figure 1.2). The new alignment was recommended based upon several advantages including an approximate \$40-million cost savings (by avoiding rock removal) and avoiding ecologically valuable hardbottom in the path of the 3.5-mile channel extension.

Wilmington Harbor Sand Management Plan

The Wilmington Harbor Sand Management Plan (SMP) was formulated as a disposal plan in the planning and environmental assessment process for the 2000 deepening project for Wilmington Harbor. The SMP identifies the methods by which USACE will dispose of material from its operations associated with the Wilmington Harbor Project. While recognizing the primary purpose of the project as navigation, one objective of the SMP was the retention of beach quality sand within the littoral system (USACE 2000).

As a result, over a typical six-year channel maintenance cycle, the initial SMP anticipated that approximately 1.0 Mcy of sand would have to be dredged from the channel, and would then be placed on the beaches of Bald Head Island in years two and four (after completion of initial construction of the channel) and on Oak Island/Caswell Beach during year six. The cycle would then repeat. Since completion of the deepening project in 2002, the Corps dredged the channel with beach disposal in 2004/2005, 2007, 2009 and 2013.

As an adjunct to the SMP, and as specifically addressed by the Wilmington Harbor Navigation Project Environmental Assessment, the USACE initiated a physical monitoring program to assess the effectiveness of the 6-year sand distribution scheme. Reports are prepared on an annual basis and the associated data are intended to ultimately evaluate and modify the SMP, as determined necessary (after coordination with interested parties).

1.4.2 Summary of Beach Disposal and Nourishment Events

The limits and magnitude, as well as the source of major beach fill/disposal placement operations along South Beach, have varied over the last two decades. Major beach fill/disposal placements occurring principally on South Beach since 1991 are depicted in Table 1.2.

Table 1.2. Beach Fill/Disposal Placement Events on South Beach, Bald Head Island (since 1991).

Year	Volume	Location	Sponsor	Federal or State Funding (Percent Contribution)
1991	0.35 Mcy	Sta 24+00 to Sta 138+60	VBHI	0%
1996	0.70± Mcy	Sta 24+00 to Sta 142+00	VBHI	0%
1997	0.45 Mcy	Sta 24+00 to Sta 128+00	VBHI	0%
2001	1.849 Mcy	Sta 41+60 to 205+50	Federal	100%
2004/2005	1.217 Mcy	Sta 46+00 to 130+00	Federal	100%
2006	0.0478 Mcy	38+00 – 64+00	VBHI	0%
2007	.9785 Mcy	Sta 44+00 to Sta 91+00 and Sta 110+00 to 170+00	Federal	100%
2010	1.85 Mcy	Sta 56+56 – 218+00	VBHI	0%
2012	0.102 Mcy	38+00 – 74+00	VBHI	100%
2013	1.525 Mcy	Sta 8+00 to Sta 28+00 and Sta 44+00 to 150+00	Federal	100%

Nourishment projects sponsored by the Village of Bald Head Island were funded entirely by the Village with the exception of the 2012 post-Irene nourishment which was reimbursed 100% by the Federal Emergency Management Agency (FEMA). The 2001 disposal resulted from sand excavated during the construction of the last channel widening and deepening project (to -44 ft MLW). Subsequently, the sand berms constructed by the Corps of

Engineers have been in accordance with the Wilmington Harbor SMP. In past disposal actions, the USACE has placed maintenance material as far westward as Sta 45+00 on South Beach. Since that time, monitoring has indicated that, when properly maintained, the sand tube groinfield reduces (but does not eliminate) sand losses from each sand placement project back to the navigation channel. In addition, the existence of the groinfield has reduced or prevented damage to public infrastructure and Bald Head Wynd in the vicinity of Sta 63+00 to Sta 70+00 where the roadway and associated subgrade utilities are closest to the ocean. A more detailed description of the configuration and functioning of the sand tube groinfield is provided below (Section 1.4.3).

A small scale non-federal West Beach nourishment project was constructed by the Village in 2006 with beach-suitable sand sourced from the mouth of Bald Head Creek. In response to erosion of the western end of South Beach, the Village designed and implemented a larger beach restoration project that resulted in the placement of 1.85 Mcy of beach sand during the 2009/2010 dredge and nourishment window. The sand source site for this project was the distal, subtidal portions of Jay Bird Shoals.

Sand losses subsequent to the 1.85 Mcy project in 2010 prompted the Village to identify and permit the use of an approximate 21-acre sand source site at the mouth of Bald Head Creek. The purpose of the project was to provide supplemental sand to an eroded segment of western South Beach. In March 2012, the Village completed the dredge and placement of 140,000 cy at a cost of \$1.25M. Most recently, during the Winter and early Spring of 2013, the maintenance dredging of the Federal channel has resulted in the disposal of approximately 1.525 Mcy along South Beach between Sta 44+00 and 150+00 and along a portion of West Beach.

1.4.3 Sand Tube Groinfield

Presently, the 5,300 ft. westernmost segment of South Beach of Bald Head Island is quasi-stabilized by a sixteen (16) structure sand tube groinfield originally constructed in 1995 and subsequently replaced in its entirety in both 2005 and 2010. With the last two reconstruction programs, minor design changes to groin location, groin length, and (most importantly) geotextile materials comprising the individual tube structures have occurred in accordance with the original design precepts. During the offshore passage of Hurricane Irene in the summer of 2012, the ends of four sand tubes were damaged. The affected groins were numbered as 16 (as relocated), 1, 2 and 3. In the spring of 2013, immediately following a federal beach disposal operation along the westernmost portion of South Beach, the four sand tube groins were removed and replaced in their entirety.

The sand tube groinfield was authorized by CAMA Major Permit No. 9-95 (USACE Action ID No. SAW-1994-04687). Note that the CAMA Major Permit was issued by way of a variance in 1995 and is compliant with North Carolina G.S. 113A-115.1(c).

The current location, individual lengths and spacing of the sixteen (16) sand tube groins are depicted by Figure 1.3. The structures currently exist along South Beach between survey baseline Station 47+50 (on the west) and Station 100+00 (on the east). The groin tubes vary in length from 250 ft. to 350 ft. Each geotube is tapered and varies in height from 5.7 ft. to about 4 ft., at its seaward tip. For purposes of installation, the beach is excavated to elevation +2 ft. NGVD. Each tube is then filled within the excavated beach (*i.e.* in a trench) which is subsequently backfilled. During each beach fill operation, the groins are essentially buried (*i.e.* overfilled) by design and therefore remain inactive until the fill berm equilibrates to the point that the tubes are exposed to wave energy. Their effectiveness in reducing littoral transport and maintaining a protective beach berm within each groin cell (located between any two groins) varies over time depending on their level of interaction with waves. Long-term data (Olsen 2003, Olsen 2004, Olsen 2005, Olsen 2006, Olsen 2007) have indicated that the sand tube groinfield, when properly maintained, has performed as

intended by reducing sediment losses above the MHWL. This measured performance of the groinfield likewise reduces the rate of shoaling of material from BHI into the adjacent segment of the navigation project channel (bordering the Point).

While the groinfield has had a positive influence on retaining material within the area of the groinfield, it can also have a negative impact on the beach. Failure or degradation of the groinfield can create a “domino-like” progressive failure and result in rapid beach erosion. An example of this is documented in the USACE’s Monitoring Report 7 (USACE 2010), detailing the process on Bald Head Island in the 2008/2009 timeframe.

1.4.4 Sand Bag Revetment

In July 2011, the North Carolina Division of Coastal Management (NCDCM) granted a minor modification of existing Permit No. 9-95 thereby authorizing the construction of a 350 linear-foot sandbag revetment beginning at sand tube groin No. 16 and extending in a general northwesterly alignment. The purpose of the temporary structure was to address chronic inlet-related beach and dune erosion and recession occurring westward of the last sand tube groin. Subsequently, in 2012 a second minor modification was issued to the Village which allowed for the placement of up to 1,200 cy of sand to be placed on top of the sand bag revetment. The source of the sand was the 2009-2010 Village beach fill project berm located to the east of the revetment. The selection of borrow areas was based upon existing dry beach width. All of the area subject to temporary borrowing was subsequently filled as a result of a large scale (1.8 Mcy) federal navigation maintenance project with beach disposal undertaken in the spring of 2013.

1.5 SUMMARY OF EIS PROCESS

According to the Council of Environmental Quality (CEQ), a federal agency must prepare an EIS if it is proposing a major federal action (including federal approval of a non-federal action) significantly affecting the quality of the human environment (CEQ 2007). The Draft Environmental Impact Statement (DEIS) objectively evaluates all reasonable alternatives which substantially meet the stated purpose and need. In addition to the purpose and need and identification of reasonable alternatives, the DEIS will contain the environmental effects of the alternatives and a description of the environment that would be affected by the various alternatives. The environmental analysis should also account for the practicability and feasibility of implementing each potential alternative. The Final EIS (FEIS) will consider all comments received during the NEPA Process, including those from government agencies and the general public.

1.6 PERMITS, LICENSES AND ENTITLEMENTS

The following section provides a description of Federal and State laws applicable to the environmental review process for the Village of Bald Head Island Shoreline Protection Project.

1.6.1 National Environmental Policy Act of 1969

The National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321-4347), set forth requirements for agencies of the federal government in Title I and established the Council on Environmental Quality (CEQ) in Title II. NEPA requires federal agencies to consider the effects of all actions on the environment, consider alternatives that reduce impacts, and prepare detailed statements for public and federal agency review where significant impacts may occur. Agencies are required to solicit and respond to comments from the public, affected interests, and relevant government agencies on the impacts of

proposed actions before and after environmental documentation is developed. Documentation consists of an Environmental Assessment (EA) or an EIS.

1.6.2 Rivers and Harbors Act of 1899

The Rivers and Harbors Act of 1899 focuses on maintaining navigation and protecting waters of the United States from pollution. Various sections of the Act establish permit requirements to prevent unauthorized obstruction or alteration of any navigable water of the United States. Section 10 of the Rivers and Harbors Act covers construction, excavation, or deposition of materials in, over, or under such waters, or any work which would affect the course, location, condition, or capacity of those waters. Activities requiring Section 10 permits include structures (e.g., piers, wharfs, breakwaters, bulkheads, jetties, weirs, transmission lines, etc.) and work such as dredging or disposal of dredged material, or excavation, filling, or other modifications to the navigable waters of the United States. Section 10 permits are regulated through the USACE (USACE 2013).

1.6.3 Migratory Bird Treaty Act of 1918

The Migratory Bird Treaty Act is the primary legislation protecting native birds in the United States. This legislation makes it unlawful to pursue, hunt, take, capture, kill, offer for sale, purchase or offer for shipment any bird, or the parts, eggs, or nest protected under several migratory bird treaties, except as permitted under federal regulation (USFWS 2013).

1.6.4 Fish and Wildlife Coordination Act of 1958 (16 U.S.C. 661 et seq.)

The Act of March 10, 1934 authorizes the Secretaries of Agriculture and Commerce to provide assistance to and cooperate with Federal and State agencies to protect, rear, stock, and increase the supply of game and fur-bearing animals, as well as to study the effects of domestic sewage, trade wastes, and other polluting substances on wildlife. The 1958 amendments added provisions to the Act of March 10, 1934 to recognize the vital contribution of wildlife resources to the nation and to require equal consideration and

coordination of wildlife conservation with other water resources development programs and authorized the Secretary of Interior to provide public fishing areas and accept donations of lands and funds. The amendments also titled the law as the Fish and Wildlife Coordination Act and expanded the instances in which diversions or modifications to water bodies would require consultation with the Fish and Wildlife Service. These amendments permitted lands valuable to the Migratory Bird Management Program to be made available to the State agency exercising control over wildlife resources (USFWS 2013).

1.6.5 National Historic Preservation Act of 1966 (16 U.S.C. 470 et seq.)

The National Historic Preservation Act (NHPA) of 1966 expresses a general policy of supporting and encouraging the preservation of prehistoric and historic resources and underwater archeology. NHPA created the role of the State Historic Preservation Office (SHPO) to administer state historic preservation programs and consult with federal agencies on their proposed actions (NCSHPO 2013). This Act also established the National Register of Historic Places.

1.6.6 Clean Water Act of 1972

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of dredged and fill material into the Waters of the United States (including wetlands) and regulating quality standards for surface waters. The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained (USEPA 2013). This Act is jointly administered by the Environmental Protection Agency (EPA) and the USACE.

Section 404 of the Clean Water Act established a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Activities in waters of the United States regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports) and mining projects. Section 404 requires a permit before dredged or fill

material may be discharged into waters of the United States, unless the activity is exempt from Section 404 regulation (e.g. certain farming and forestry activities). The USACE is the federal agency responsible for issuing 404 permits (USEPA 2013).

Section 401 of the federal Clean Water Act provides states with the authority to ensure that federal agencies will not issue permits or licenses that violate the established water quality standards through a process known as water quality certification. In North Carolina, the Division of Water Quality (DWQ) is the state agency responsible for issuing 401 water quality certifications (WQC). A 401 WQC is required for any federally permitted or licensed activity that may result in a discharge to waters of the U.S. Issuance of a 401 certification certifies that a given project will not degrade Waters of the State or violate State water quality standards (NCDWQ 2013).

1.6.7 Coastal Zone Management Act of 1972

The U.S. Congress recognized the importance of meeting the challenge of continued growth in the coastal zone by passing the Coastal Zone Management Act (CZMA) in 1972. The Act encourages states to keep the coasts healthy by establishing programs to manage, protect and promote our country's fragile coastal resources. The NC Division of Coastal Management (DCM) carries out the CZMA in the twenty designated coastal counties, using rules and policies of the NC CRC. DCM receives oversight and partial funding from the Office of Ocean and Coastal Resource Management, part of the National Oceanic and Atmospheric Administration (NCDCM 2013).

1.6.8 Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.)

Through federal action and by encouraging the establishment of state programs, the 1973 Endangered Species Act provided for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend. Section 7 of the Endangered Species Act requires federal agencies to ensure that any action authorized, funded or carried out by them is not likely to jeopardize the continued existence of listed species or modify

their critical habitat. A Biological Assessment of the proposed action has been prepared in consultation with the USFWS and NOAA in accordance with 50 CFR §402.12. Previous Section 7 consultations exist for the Wilmington Harbor Project (1996), modifications to the Harbor Project (2000) and the Village-sponsored Bald Head Island Beach Restoration Project that resulted in the placement of approximately 1.8 Mcy (cumulatively) on South Beach and West Beach.

1.6.9 Coastal Barrier Resources Act and Coastal Barrier Improvement Act of 1990

The Coastal Barrier Resources Act (CBRA) of 1982 established a defined set of coastal barrier units located along the Atlantic, Gulf of Mexico, Great Lakes, Puerto Rico, and U.S. Virgin Island coasts known as the John H. Chafee Coastal Barrier Resources System (CBRS). Most new federal expenditures and financial assistance are prohibited within the CBRS. Congress enacted CBRA to minimize the loss of human life, wasteful federal expenditures and the damage to natural resources associated with coastal barriers. There are no restrictions on development utilizing non-federal funds; however, federal flood insurance through the National Flood Insurance Program is not available for new or substantially improved structures within the CBRS (USFWS 2013).

The Coastal Barrier Improvement Act (CBIA) of 1990 expanded the CBRS and added a new category of coastal barriers called "otherwise protected areas" (OPAs). OPAs are generally comprised of lands held by a qualified organization primarily for wildlife refuge, sanctuary, recreational or natural resource conservation purposes. Portions of the northern Bald Head Island complex are designated as OPA (Cape Fear Unit NC-07P). The only federal spending prohibition within the limits of the OPA is the prohibition on federal flood insurance (USFWS 2013).

1.6.10 Magnuson-Stevens Fishery Conservation and Management Act of 1996

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) is the primary law governing marine fisheries management in United States federal waters. The Act was first

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enacted in 1976 and amended in 1996. The 1996 amendments focused on rebuilding overfished fisheries, protecting essential fish habitat and reducing bycatch. The Magnuson-Stevens Reauthorization Act of 2006 established new requirements to end and prevent overfishing through the use of annual catch limit and accountability measures. The Act also specified additional requirements for the role of scientific advice in this process, specifically through the Councils' Scientific and Statistical Committees.

The MSA, implemented through the National Oceanic and Atmospheric Administration and (NOAA) Fisheries, created eight regional fishery management councils to manage fisheries and promote conservation and established procedures designed to identify, conserve, and enhance Essential Fish Habitat (EFH) for those species regulated under a federal fisheries management plan (NOAA 2013). The EFH Guidelines outline the process for federal agencies, NOAA Fisheries and the South Atlantic Fishery Management Council (SAFMC) to satisfy the EFH consultation requirement of the MSA. As part of the EFH consultation process, the guidelines require federal agencies to prepare a written EFH Assessment describing the effects of a proposed action on EFH. The EFH Assessment included in this EIS was prepared in accordance with the EFH guidelines set forth in the MSA.

1.6.11 North Carolina Environmental Policy Act (as amended)

The purpose of the North Carolina Environmental Policy Act (NCEPA) is to protect natural resources and to keep the public informed of actions that may affect their natural resource interests. NCEPA also provides a method for state agencies to consider the environmental aspects and consequences of a proposed development. The NC Department of Administration adopts rules to implement NCEPA, ensures compliance with the Act and maintains a State Environmental Review Clearinghouse of information; however, a state agency, must take the lead on the NCEPA review of the project. The NC DCM will be the lead agency during the NCEPA review of the Village of Bald Head Island Shoreline Protection Project. This EIS has been developed in accordance with the requirements of the State Clearinghouse review process under NCEPA. Upon preparation and submittal of the Final

EIS, additional filing under the NCEPA will not be required. Clearinghouse distribution under the federal NEPA process will satisfy the requirements of NCEPA.

1.6.12 North Carolina Coastal Area Management Act of 1974

The North Carolina General Assembly passed the Coastal Area Management Act (CAMA) in an effort to preserve the physical, aesthetic, cultural and recreational values of the North Carolina coast. CAMA established the Coastal Resources Commission (CRC), required local land use planning in the twenty coastal counties and provided for a program for regulating development. As a part of this program, the CRC designated "Areas of Environmental Concern" within the twenty coastal counties and set rules for managing development within these areas. The four designated AECs in the State of North Carolina include; the estuarine and ocean system, the ocean hazard system, public water supplies and natural and cultural resource areas (NCDCCM 2013). A CAMA permit is required for development within any AEC.

1.6.13 North Carolina Dredge and Fill Law

In accordance with the CAMA Dredge and Fill Law, a permit must be obtained prior to excavation or filling in any estuarine waters, tidelands, marshlands, or State-owned lakes. Permits will be granted for dredge or fill projects that are not expected to prevent use of the water by the public; take away from the value or enjoyment of the land of adjoining property owners; adversely impact water supplies, or public health, safety, and welfare; or adversely affect wildlife or fisheries.

1.6.14 North Carolina Surface and Water Quality Standards

Water quality standards are state regulations or rules that protect lakes, rivers, streams and other surface water bodies from pollution. The rules are identified in Title 15A of the North Carolina Administrative Code (NCAC). Water quality standards are used to determine if the designated uses of a water body are being protected.

The lower section of the Cape Fear River, from Federal Point to the Atlantic Ocean, is designated as Class “SA” and are suitable for marketable shellfishing and all uses identified under the “SC” and “SB” classes (15 NC AC 2B .0311). The waters of the Atlantic Ocean in the vicinity of the mouth of the Cape Fear River are designated “SB”. “SB” waters are suitable for primary recreational uses as well as all uses identified for “SC” waters (e.g. fishing, fish and wildlife propagation, and secondary recreation) (15 NC AC 2B .0311).

1.6.15 Ownership of Lands

According to NC Administrative Code 15A NCAC 07H .0207, public trust areas include all waters of the “Atlantic Ocean and the lands thereunder from the mean high water (MHW) mark to the seaward limit of state jurisdiction” (approx. 3 miles offshore). The position of the MHW boundary is continually altered by physical processes influencing the deposition and/or loss of material in the nearshore zone. The proposed action will include the placement of beach-compatible sand in the littoral zone updrift of the structure. This will include both the existing dry beach and the intertidal and subtidal areas below the current MHW line. This area has been nourished several times over the last 20 years (see Table 1.2). With regard to the ocean shoreline, North Carolina General Statute §§ 146-6(f) provides that “the title to land in or immediately along the Atlantic Ocean raised above the mean high water mark by publicly financed projects which involve hydraulic dredging or other deposition of spoil materials or sand vest in the state.” The placement of structure below the MHW in public trust bottom will require an easement from the North Carolina State Property Office.

1.6.16 North Carolina Senate Bill 110 and Senate Bill 151

In June 2011, the General Assembly of North Carolina ratified Senate Bill 110 (*An Act To Authorize The Permitting And Construction Of Up To Four Terminal Groins at Inlets Under Certain Conditions*). The Act authorized the Coastal Resources Commission (CRC) to permit the construction of a terminal groin under a terminal groin pilot project provided the applicant demonstrated that specific criteria as outlined in the bill were met.

In July 2013, the General Assembly ratified Senate Bill 151 (An Act to Amend Marine Fisheries Laws; Amend the Laws Governing the Construction of Terminal Groins; and Clarify that Cities May Enforce Ordinances within the State's Public Trust Areas. Under the new legislation and in addition to requirements of Part 4 of Article 7 of Chapter 113A of the General Statutes, an applicant seeking authorization to construct a terminal groin must submit all of the following: (i) information to demonstrate that structures or infrastructure are threatened by erosion; (ii) an Environmental Impact Statement that satisfies the requirements of G.S. 113A-4 (note that an EIS prepared pursuant to NEPA, 42 U.S.C. § 4321, et seq., shall satisfy this requirement); (iii) a list of property owners and local governments that may be affected by the construction of the groin and proof of notification to these owners and local governments of the application for construction of the terminal groin and its accompanying beach fill project; (iv) a plan for the construction and maintenance of the groin and its accompanying beach fill prepared by a professional engineer licensed to practice in North Carolina; (v) a plan for the management of the inlet and the estuarine and ocean shorelines immediately adjacent to and under the influence of the inlet; (vi) proof of financial assurance sufficient to implement long-term maintenance and monitoring, implementation of mitigation measures, and modification or removal of the groin. The legislation includes various requirements that must be met prior to issuance of a CAMA Major Permit for a terminal groin. In addition, the legislation states that the CRC may issue no more than four permits for such structures. Refer to Appendix A for a copy of the entire SB 151 legislation.

The applicant and its coastal engineer, Olsen Associates, Inc., have provided information in response to these requirements (refer to Appendix B, Inlet management Plan).