



North Carolina Department of Environment and Natural Resources
Division of Coastal Management

Beverly Hayes Perdue
Governor

Braxton G. Davis
Director

Dee Freeman
Secretary

July 20, 2012

U.S. Army Corps of Engineers - Wilmington District
c/o Mickey Sugg, Project Manager
69 Darlington Avenue
Wilmington NC 28403-1343

Dear Sirs:

The Division of Coastal Management (DCM) has completed our review of the Draft Environmental Impact Statement (DEIS) for the proposed Figure Eight Island Shoreline Management Project located in New Hanover County, North Carolina. As you are aware, in 2011 the General Assembly of North Carolina enacted Senate Bill 110 (SB 110), that amended the Coastal Area Management Act (CAMA) to allow for the permitting of up to four terminal groins in North Carolina. For communities pursuing a terminal groin project, SB 110 set out several specific requirements that must be met before a CAMA permit can be issued. DCM staff have therefore reviewed the DEIS with these requirements of the Senate Bill in mind, and we provide the following comments for your consideration.

General Comments

- The tax value information presented throughout the document is based upon 2007 New Hanover County Tax valuations. However, according to the New Hanover County Tax Office web page, current county tax value information is based upon a new tax valuation that took effect on January 1, 2012. DCM would like to see all tax value information presented in the document based upon the current New Hanover County tax data.
- The document appears to use data collected in 2007 to represent current site conditions (i.e. inlet location, mean high water line). Additionally, shoreline change analysis data appears to end in 2007. However, based on recent site visits by DCM staff, it appears that significant changes in these conditions have taken place between 2007 and the present. DCM suggests that the document include more current data related to existing site conditions.
- Information should be presented in the document on how the existing sandbag structures would be removed in association with the studied alternatives.

- SB 110 mandates that before a terminal groin proposal can be permitted, the applicant must demonstrate that nonstructural approaches to erosion, including relocation of threatened structures, are impractical. DCM would like to request that the document do a more thorough job of describing why each of the nonstructural alternatives was deemed impractical based on the analysis provided.
- DCM is not certain if the cost estimates for alternatives that involve periodic sand placement on the beach include the cost for any future sediment criteria analysis that may be required. Clarification of this issue would be appreciated.

Specific Comments

Chapter 2, Purpose and Need

- Page 22 - The statement that the loss of all 19 homes with existing sandbag revetments would result in a 23.8 million dollar reduction in tax base should be re-considered. While the loss of a structure to oceanfront erosion would eliminate the tax value of that structure, there would likely still be some tax value associated with the properties in question, at least until such time as the properties are entirely lost to erosion. This concern also applies to similar statements made elsewhere in the document.
- DCM questions whether the analysis of economic impacts associated with the relocation or demolition of individual structures should also include an estimate of economic gains associated with properties and/or structures until such time as there are relocated or demolished.
- Page 26, 2nd paragraph - The sentence that starts “While the Figure Eight HOA, by virtue.....” does not appear to be a complete sentence.

Chapter 3, Project Alternatives

Alternative 1, No Action

- This section states that there are currently 93 undeveloped lots on Figure Eight Island (31 oceanfront and 45 sound side). Given this number of currently undeveloped lots, why is it anticipated that just 10 structures will be relocated?

Alternative 2, Abandon/Retreat

- This section states that there are currently 93 undeveloped lots on Figure Eight Island (31 oceanfront and 45 sound side). Given this number of currently undeveloped lots, why is it anticipated that just 10 structures will be relocated?

Alternative 4, Beach Nourishment without Inlet Management

- Page 47, Implementation Cost - It appears that the cost per event of the periodic nourishment for Alternative 4 is higher than the cost per event for periodic nourishment for Alternative 3, although the dredge volumes for both alternatives are relatively similar. Is this discrepancy due to the borrow area for Alternative 3 being closer than the borrow areas for Alternative 4? If so, the document should include such a statement.

Alternative 5, Beach Fill with Terminal Groin

- This alternative appears to have included potential terminal groin designs with angles of 10, 20, and 30 degrees towards Figure Eight Island. DCM would caution the applicant that SB110 defines a terminal groin as a structure constructed "generally perpendicular to the shoreline...".
- Page 47, Alternative 5 (Beach fill with Terminal Groin) – The definition of a terminal groin is more properly stated as "a structure that is constructed on the side of an inlet at the terminus of an island generally perpendicular to the shoreline to limit or control sediment passage into the inlet channel."

Alternative 5A, Terminal Groin with Beach Fill from the Maintenance of the Nixon Channel Navigation Channel and Connector Channel

- Page 61 (Implementation Cost) – Based on requirements of SB 110, projects proposing the use of a terminal groin must plan for and be prepared to implement numerous monitoring, mitigation and remedial action measures. The cost associated with these requirements should be factored into the implementation costs for this option (see DCM comments relating to Chapter 6, Avoidance and Minimization, Response Triggers, Monitoring Plan, and SB 110 compliance).
- Page 62 (Implementation Cost). DCM is not certain how the total implementation cost and the annual equivalent cost relate to each other. For example, if the annual equivalent cost of \$1,863,000 is multiplied by 30 years, a cost value of \$55,890,000 is derived. Please clarify how these values were calculated.

Alternative 5B, Terminal Groin with Beach Fill from Other Sources

- Page 66 (Implementation Cost) – Based on requirements of SB 110, projects proposing the use of a terminal groin must plan for and be prepared to implement numerous monitoring, mitigation and remedial action measures. The cost associated with these requirements should be factored into the implementation costs for this option.

- Page 71, Areas of Environmental Concern, first paragraph -- This section should be modified to more clearly state that while the current Inlet Hazard Area boundaries have been in place for more than 30 years, they are still in force at this time, and it is not certain if or when new boundaries will be officially adopted.
- Page 150, Recreational Resources and Navigation Sections -- DCM would like to see this section significantly expanded. During the June 7th, 2012 public hearing on the proposed project, several members of the public made mention of their recreational usage of Hutaff Island, Rich's Inlet, and the sandy intertidal spit within the inlet. The document should attempt to provide more quantitative data on the public usage of these resources.
- Page 151, Socio-Economic Resources -- This section should be expanded to include economic data relating to recreational usage of the public trust resources within the study area. For example, what is the estimated economic value relating to public usage of the sand spit located within Rich's Inlet.
- Page 154, last paragraph --Please change "Environmental" to "Environment" on the first sentence. Also, the Shellfish Sanitation Section is now a part of the Division of Marine Fisheries and not the Division of Environmental Health.
- Page 194, Sea Level Rise -- The N.C. Coastal Resources Commission has not adopted a planning benchmark for sea level rise, and no such benchmark is currently under consideration. Please revise this section accordingly.

Chapter 5 – Environmental Consequences

- This Chapter lists alternatives that were not defined in Chapter 3. For example, Chapter 3 described a single Abandon/Retreat alternative (Alternative 2). However, Chapter 5 lists two Abandon/Retreat alternatives (2A and 2B). The document should be revised so that the descriptions and naming of the alternatives are consistent throughout.

Alternative 2, Abandon/Retreat

- In the discussion of the Delft3D model outcomes, Alternative 2 is referred to as the "no action alternative". In the discussion of Alternatives in Chapter 4, Alternative 1 is the "no action" alternative. Please revise accordingly.

DCM would like to see this section expanded to provide for a monitoring plan, response triggers and potential mitigation measures for the public trust resources of the Rich Inlet complex, including navigational usage and the sandy intertidal flats within the inlet.

Response Trigger

- This section proposes implementation of mitigative measures if surveys indicate that shoreline erosion is exceeding the lower 90% confidence levels for two consecutive years for two or more adjacent transects. DCM is concerned that this proposed criterion, especially the proposed timeframe, may not be sufficient to identify and offset potential adverse impacts to individual properties or structures. More simply stated, DCM is concerned that by the time mitigation may be formally triggered, loss of individual structures or property may have already occurred. DCM suggests that the response trigger proposal be modified, or additional components added, that would minimize the risk of such property or structural loss occurring.

Monitoring Plan

- On page 327, the document states that at the end of two years, the monitoring plan will be reassessed to determine whether it would be appropriate to change twice yearly surveys to once a year. However, on Page 343, it is stated that twice yearly monitoring would take place for the first three years, followed by a switch to yearly monitoring. Please clarify this discrepancy.

How Does the Construction of the Terminal Groin relate to Figure Eight Island?

- The cost of monitoring is listed as \$480,000, which appears to be based upon the expectation that monitoring will change from twice a year to once a year after either two or three years. However, because the change from conducting surveys twice a year to once a year will only happen if the proposed project functions as proposed and if the agencies concur with the change in monitoring frequency, it is possible that twice a year surveys may have to be done for more than the first two to three years. Therefore, it would seem that the \$480,000 cost estimate is the best case scenario. DCM would suggest a survey implementation cost range be developed, as opposed to using just the best case scenario.
- On page 344, it is stated that maintenance of the terminal groin is not anticipated. However, SB 110 requires that the applicant for a terminal groin must plan for maintenance and modification of the terminal groin structure. Therefore, DCM believes that potential maintenance and modification of the

groin must be addressed, including the estimated cost necessary to implement the maintenance and/or modifications.

- On page 344, it is stated that no additional mitigation is expected for Figure Eight Island beyond the proposed beach nourishment once every five years. Additionally, no mitigation is proposed at all for Hutaff Island. DCM does not believe that these proposals meet the requirements of SB 110. For example, the document sets up a monitoring plan with mitigation triggers, which could lead to the placement of sand on portions of the beach more frequently than once every five years. Additionally, the fact that no structures exist on Hutaff Island would not preclude the need to implement mitigation in the form of beach nourishment if mitigation triggers are exceeded. This section should be updated accordingly, and the associated cost estimates modified to address these possibilities.
- On page 344, as well as elsewhere in the document, the cost to remove the groin is listed as \$1,000,000. This value only includes an estimate for removal of the groin and not the shore anchorage section. Since shoreline change monitoring will likely take place for the entire 30 year project period, it is possible that adverse impacts may occur after the anchorage system is built, potentially leading to the removal of the entire groin/anchorage structure. This cost should therefore be adjusted to the \$2,500,000 value listed elsewhere in the document.

Technical Comments

The following are DCM comments relating to our interpretation of the technical data contained in the document and appendices.

- DCM suggests that the applicant consider adding shore-parallel monitoring transects to the southern end of Hutaff Island and northeastern end of Figure Eight Island. The purpose of these additional transects would be to track any northeastern migration of the Hutaff Island inlet shoreline or southwestern migration of the Figure Eight inlet shoreline.

Rich Inlet EIS Appendix May 1 2009.pdf.

- DCM found this document hard to follow. For example, erosion graphs appear to have a significant amount of data behind them. However, DCM did not see any graphic in this document that could be used to associate the data with a point on the ground. Figure 42 references transect locations in Figure 36, however, this figure is not part of the document. Instead, DCM had to reference the "Rich Inlet EIS Final Figs April 27 2009.pdf" document.

- Beginning with Figure 38, Alternative 3a. 1 (illustrates construction of terminal groin, and simulated erosion) - DCM interprets the data as indicating that in a relatively short period of time (2-5 years), erosion of the fill area at the Figure Eight Island side of the groin would appear to be "significant." Is DCM's interpretation of this data accurate?
- When looking at the DELFT3D model output images (Figs. 79-101), it appears that oblique terminal groin structures transfer erosion to residents on Figure Eight Island who are south of the structure. Is DCM's interpretation of this data accurate?
- On the Alternative 3 DELFT3D model output maps (Figs. 9 and 11), there appears to be accelerated erosion. Is DCM's interpretation of this data accurate? If so, would this accelerated erosion be the direct result of "managing the inlet" (Alt. 3)?

If possible, DCM would like to get copies of the following data (GIS format - NC State plane NAD83 Feet):

- Permit Area (as defined in map on pages 8 & 70 of EIS, Figure 1.1 & 4.1)
- Project Fill Limits (as illustrated on map pages 8, 58, 59 of EIS, Figures 1.1, 3.13a & b.)
- Rich Inlet History (p. 16) – Can we get copy of historic data (channel location, shorelines)?
- Permitted Dredge Area (map on pg. 27, Figure 3.1)
- Borrow sites (proposed and actual)
- Project design (location of terminal groin) example on pg. 60, Figure 3.14
- Biological data and boundaries (sampling and/or groundtruthing data) Figures 4.3, 4.4a, & b.

The Division of Coastal Management appreciates the opportunity to comment on this project, and we look forward to further discussions on the issues raised in this letter. If you have any questions concerning any of these comments, please feel free to contact me at (252) 808-2808 ext. 212.

Sincerely



Doug Huggett
Manager, Major Permits & Federal Consistency Section

Cc: Braxton Davis, DCM
Ted Tyndall, DCM
Melba McGee, DENR



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

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RECEIVED

JUL 02 2012

REG. WILM. FLD. OFD.

June 28, 2012

US Army Corps of Engineers, Wilmington District
Regulatory Field Office, Attn: Mr. Mickey T. Sugg
69 Darlington Avenue
Wilmington, NC 28403

SUBJECT: Draft Environmental Impact Statement (DEIS) for Figure Eight Island Inlet and Shoreline Management Project, Terminal Groin Installation and Supplemental Beach Nourishment, Implementation, New Hanover County, NC; CEQ Number: 20120158; ERP Number: COE-E39086-NC; CEQ Federal Register Date: 05/25/2012

Dear Mr. Sugg:

Pursuant to Section 309 of the Clean Air Act and Section 102(2)(C) of the National Environmental Policy Act (NEPA), EPA Region 4 has reviewed the Draft Environmental Impact Statement (DEIS) for the Figure Eight Island Inlet and Shoreline Management Project. This DEIS features an evaluation of the environmental consequences of a proposed management plan for North Carolina's Rich Inlet that would mitigate chronic erosion on the northern portion of Figure Eight Island with a goal of preserving the integrity of its infrastructure, providing protection to existing development, and ensuring the continued use of the oceanfront beach along the northernmost three miles of its shoreline. EPA understands that the Figure Eight Beach Homeowners Association is seeking Federal and State permits to allow development of this management plan for Rich Inlet. The DEIS, prepared by the Wilmington District, Corps of Engineers, Regulatory Division (COE), assesses this proposed management plan, which features a proposed "terminal groin" installation with supplemental beach nourishment. EPA notes that Figure Eight Island is located in northeastern New Hanover County, and is currently an unincorporated privately developed residential North Carolina barrier island with 465 homes and 93 undeveloped lots. The island is bordered to the south by Mason Inlet and Wrightsville Beach and to the north by Rich Inlet and Hutaff Island, an undeveloped, privately-owned island. Hutaff Island is recognized as one of the few remaining undeveloped and vehicle-free barrier islands on the North Carolina coast, and is considered to be "among the largest near-pristine barrier island and salt marsh systems in the region" according to the DEIS.

Figure Eight Island covers approximately 1300 acres, is approximately 5.0 miles long and approximately 0.4 miles wide. The proposed project is located along the oceanfront shoreline on the northeast end of the island, and within Nixon Channel and Rich Inlet. A number of studies (cited in the DEIS) have demonstrated that chronic erosion problems along the northern sections of Figure Eight Island have been directly linked to changes in the orientation and position of the main ebb channel through Rich Inlet. EPA notes that the DEIS appropriately includes a section on "purpose and need" for the project that includes the following justifications:

- Reducing or mitigating erosion along 2.34 miles of Figure Eight Island oceanfront shoreline south of Rich Inlet and 0.34 miles of backbarrier shoreline on Figure Eight Island along Nixon Channel;
- Providing reasonable short-term protection to imminently threatened residential structures over the next five years;
- Providing long-term protection to Figure Eight Island homes and infrastructure over the next 30 years;
- Acquiring compatible beach material in compliance with the North Carolina State Sediment Criteria for shore protection project;
- Maintaining the navigability within Rich Inlet and Nixon Channel;
- Balancing the needs of the human environment with the protection of existing natural resources;
- Maintaining existing recreational resources; and
- Maintaining the tax value of the homes and infrastructure on Figure Eight Island.

EPA also notes that the DEIS appropriately considers detailed alternatives for responding to the on-going erosion along the north side of Figure Eight Island. The DEIS includes detailed discussions of each alternative, how each was formulated and the costs of implementation. An economic impact assessment on the existing island development and infrastructure is also included in the DEIS (Chapter 5). As requested by EPA for similar coastal erosion projects studied by the COE, both “no action” and “abandon/retreat” were considered in the DEIS among the detailed alternatives:

- Alternative 1 – No Action
- Alternative 2 - Abandon/Retreat
- Alternative 3 - Rich Inlet Management with Beach Fill
- Alternative 4 - Beach Nourishment without Inlet Management
- Alternative 5A - Terminal Groin with Beach Fill from Maintenance of the Nixon Channel
- Navigation Channel and Connector Channel
- Alternative 5B - Terminal Groin with Beach Fill From Other Sources

The DEIS reports that development of the recommended channel modifications and inlet management plan for Rich Inlet involved a screening process utilizing “Delft3D” computer model simulations (“runs”) in which various designs for Nixon Channel, Green Channel and the main entrance channel were evaluated. The results of all screening runs are included in the DEIS (Appendix B), as well as the morphologic conditions/history of Rich Inlet developed by Dr. William Cleary of the University of North Carolina at Wilmington, which are included with the DEIS (Sub-Appendix A in Appendix B).

Alternative 5B has been identified in the DEIS as the “Applicant’s Preferred Alternative,” and this alternative features a “terminal groin” with beach fill (from other sources). The terminal groin in 5B would have the same design as that described for Alternative 5A, as would the beach fill plan proposed along Nixon Channel. Analysis of the Delft3D model results for Alternative 5A indicated the initial beach fill was excessive, particularly along the segment of

the beach south of station 80+00. The DEIS reports that beach fill design associated with Alternative 5A was based upon the “optimal utilization of the material removed to construct the new channel connector” from the inlet gorge into Nixon Channel and not on the beach fill volume needed to offset shoreline erosion. Since Alternative 5B does not include the excavation of a new connector channel into Nixon Channel, the beach fill for 5B was designed to address only erosion protection needs.

In addition to appropriately including information on “purpose and need” and including a detailed alternatives analysis, EPA notes that the DEIS complies with NEPA by including a chapter on the “affected environment” and identifying existing resources which occur in the project area. Further, the DEIS also includes a chapter on environmental consequences and evaluates the project alternatives and discusses the anticipated changes to the existing environment including “direct, indirect, and cumulative effects.” Finally, the DEIS appropriately includes a chapter on avoidance and minimization and describes several actions and measures incorporated to avoid or minimize adverse effects to resources. EPA offers the following comments on the DEIS for your consideration:

Detailed Comments

1. Material for periodic nourishment of Alternative 5B is proposed to come from maintenance dredging of the existing permit area in Nixon Channel using by a 16-inch to 20-inch cutter-suction pipeline dredge (the same size dredge proposed for use for initial construction). The DEIS states that “should the available shoal volume be less than needed to maintain the beach fill, some supplemental fill could be obtained from the upland disposal areas next to the AIWW.” EPA recommends that the FEIS identify these potential upland areas (preferably including a map) and fully discuss material transportation issues associated with their use.
2. EPA understands that two areas of potential hardbottom resources located offshore Figure Eight Island and Hutaff Island were identified in 2000 and that in order to verify the presence of hardbottom communities within the project area, a sidescan sonar survey was conducted off Figure Eight Island in April 2009. Following analysis and interpretation of the sidescan sonar data, a groundtruthing investigation of several sites was conducted in June 2009 (report included in Appendix D), and no hard bottom communities were found. If further updated investigations are conducted as part of future permitting requirements, the presence of rock outcrops or hardbottom communities (either exposed or buried) within the Permit Area should be noted in the FEIS.
3. The North Carolina Recreational Water Quality Program (RWQ) monitors the quality of N.C.'s coastal recreational waters and notifies the public when bacteriological standards for safe bodily contact are exceeded. The RWQ tests for Enterococci bacteria at three RWQ sampling stations that are located within the Permit Area. These stations include Station 50 (located in the AIWW between Mason’s Creek and Pages Creek), 50A (located in Middle Sound at the south end of Figure Eight Island), and 50B (located in Nixon’s Channel). Information taken at the stations reportedly includes salinity readings. The DEIS includes information from these stations taken during 2007 and if more recent information is available

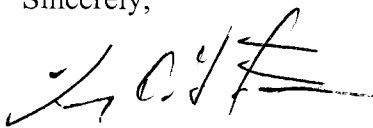
it should be included in the FEIS.

4. The DEIS reports the State of North Carolina also performed preliminary water quality monitoring at 13 sites within the Permit Area in March 2007. Physical parameters collected included depth, temperature, specific conductivity, dissolved oxygen, pH, and turbidity. All dissolved oxygen observations were above the State Standard of 5.0 mg/l with an average value of 8.2 mg/l. If more recent information is available it should be included in the FEIS.
5. The DEIS notes that five species of threatened or endangered sea turtles utilize the waters of North Carolina for breeding, feeding and development and that the threatened green sea turtle has been observed in Brunswick, Carteret, Dare, Hyde, New Hanover, Onslow and Pender Counties. According to data supplied in the DEIS (2008), no green sea turtle nest have been observed in the study area on either Figure Eight Island or Hutaff Island. Also, since monitoring began, only one Kemp's ridley nest has been observed within in the project area on Figure Eight Island (2010) and that no leatherback sea turtle nest have been reported within the project area "within recent years." The U.S. Fish and Wildlife Service (USFWS) North Carolina Office reports that the presence of hawksbill sea turtles along the North Carolina coast is rare and the DEIS states that "none are expected to be present" in the study area. If updated information is available on any turtle nesting observations it should be included in the FEIS.
6. EPA recommends that all project construction and dredging operations avoid the Civil War era shipwreck, the Wild Dayrell and that follow-up geophysical investigations continue to keep this cultural resource accurately mapped in order to protect it during all construction activities, as well as future maintenance operations (including dredging and periodic nourishment).
7. EPA notes that the COE appropriately invited participation in the NEPA process by federal, state, local government agencies and other interested organizations and persons. Currently the COE is reportedly conducting consultation efforts with the U.S. Fish and Wildlife Service (USFWS) under the Endangered Species Act and the Fish and Wildlife Coordination Act; with the National Marine Fisheries Service (NMFS) under the Magnuson-Stevens Act and Endangered Species Act; and with the North Carolina State Historic Preservation Office (NCSHPO) under the National Historic Preservation Act. EPA recommends that the COE's consultation with the USFWS regarding species listed under the Endangered Species Act (ESA) result in the development of a Biological Assessment (BA). EPA further recommends that the COE's consultation with the NMFS regarding essential fish habitat result in the development of an Essential Fish Habitat (EFH) assessment.
8. Because the NEPA process includes an assessment of potential water quality impacts pursuant to Section 401 of the Clean Water Act, EPA concurs with the COE's efforts to coordinate with the North Carolina Division of Water Quality (DWQ) and seek a DWQ Section 410 water quality certification. Further, EPA concurs with the COE's coordination with the North Carolina Division of Coastal Management (DCM) to ensure the full compliance with all State Environmental Policy Act (SEPA) requirements and to determine consistency with the Coastal Zone Management Act (CZMA). EPA recommends that the

FEIS document all of these efforts at coordination and include in the appendices all certifications.

Thank you for the opportunity to comment on this DEIS. Based upon our review, a NEPA rating of EC- 2 has been assigned to this DEIS, meaning we have environmental concerns and have requested that the FEIS include updated information (where available) on a number of areas and issues. If we can be of further assistance, please contact me at (404) 562-9611 or Mueller.heinz@epa.gov, or Paul Gagliano, P.E., at (404) 562-9373 or gagliano.paul@epa.gov, or Dan Holliman at (404) 562-9531 at holliman.daniel@epa.gov.

Sincerely,



FOR

Heinz J. Mueller, Chief
NEPA Program Office
Office of Policy and Management



North Carolina Department of Environment and Natural Resources
Division of Marine Fisheries

Beverly Eaves Perdue
Governor

Dr. Louis B. Daniel III
Director

Dee Freeman
Secretary

MEMORANDUM:

TO: Mickey T. Sugg, Project Manager, Wilmington USACE Regulatory Field Office
Melba McGee, DENR Environmental Coordinator

THROUGH: Anne Deaton, DMF Habitat Section Chief *Anne Deaton*

FROM: Jessi Baker, DMF Habitat Alteration Permit Reviewer *JOB*

SUBJECT: Figure Eight Shoreline Management Project Draft EIS

DATE: July 18, 2012

The North Carolina Division of Marine Fisheries (DMF) submits the following comments pursuant to General Statute 113-131. DMF has reviewed the Figure Eight Shoreline Management Project DEIS. The applicant's preferred alternative is Alternative 5b, which includes 1) installation of a 700-foot terminal groin; 2) installation of buried sheet pile (900 ft long, 20 ft deep) from the landward terminus of the groin to the backside of the island, and 3) supplemental beach nourishment using sand from Nixon Channel and spoil islands. Beach fill would be deposited along 1,800 ft of the Nixon Channel shoreline, and 12,500 ft of the ocean shoreline south of the proposed groin. Other alternatives provided were no action, abandon/retreat, inlet management with beach fill, beach fill only, inlet management with beach fill and groin, and beach fill with groin.

Rich's Inlet separates Figure Eight Island to the south, and Hutaff Island to the north. Hutaff Island is undeveloped and managed by the Audubon Society. The inlet was classified as a "stable" inlet by Cleary and Marden (1999), having a channel that fluctuates (wags) back and forth cyclically within a fairly stable footprint. The process of channel fluctuation results in formation of large sandbar complexes that support productive intertidal beach communities. Rich's Inlet is not regularly dredged for navigation, but has remained open and navigable to motorized vessels. The inlet is a locally favored fishing spot, with flounder, red drum, trout, and bluefish among the common species caught. The DMF has concerns with alteration of an inlet that is critical to fishery resources and currently unaltered and highly functional.

Approximately 90% of fish species occurring in North Carolina are estuarine dependent, migrating through inlets at some point in their life history. One of the key functions of an inlet such as Rich's Inlet, is to allow passage of ocean spawned larvae to be carried with the currents into their estuarine nursery grounds. Studies in North Carolina have documented over 60 species passing through inlets north of Riches Inlet (Hettler and Barker 1993; Peters et al. 1995; Peters and Settle 1994). Peak larval abundances typically occur between September and April (*from 2010 CHPP*).

The 2010 Coastal Habitat Protection Plan (CHPP) summarizes the latest scientific information available to assess the status and threats to marine fish habitats. The CHPP process brings state regulatory agencies together to implement the recommendations from the CHPP. The CHPP states that research is needed to determine when and where recruitment to adult fish stocks is limited by larval ingress to estuarine nursery habitats. The CHPP also states that the long-term consequences of hardened structures on larval transport and recruitment should also be thoroughly assessed prior to approval of such structures. Many fish species congregate in and around distinct topographic features of the subtidal bottom, such as the cape shoals, sandbars, sloughs, and ebb tide deltas during various times of the year, presumably to enhance successful prey acquisition or reproduction. The CHPP concluded that the natural processes that create these features need to be maintained. DMF has concerns that terminal groins will alter larval transport and impact important fish habitats.

Overall concerns

Overall the document should be updated using more recent references particularly since much of this science is still developing. Throughout the document, reference to the 2005 CHPP should be confirmed in and updated to the 2010 CHPP. There have also been several amendments to existing and new DMF Fisheries Management Plans developed that should be referenced. Where noted, examples will be pointed out in specific comments below.

The only alternatives for which Delft 3D model results are provided in the DEIS are alternatives 2, 3, and 5A. Results for alternative 4 are included in Appendix B, Sub-appendix B to the Engineering Report. Each of these alternatives include very different dredge footprints. Because of this, no comparisons can be made against the predictions for the existing conditions or with the preferred alternative of 5B. At the very least, model predictions for the preferred alternative should be included in the EIS.

Calculation of total loss of beach by adding repetitive beach fill loss to overall distance of erosion to arrive at a total loss for a segment of beach may exaggerate erosion potential. It is possible that the amount of "total" erosion in a particular segment of beach actually depends on the amount of nourishment in that reach. Further explanation of this technique is needed.

Although tidal prism is mentioned in chapter 5, there is no discussion of how changing the tidal prism of an inlet system can affect adjacent habitats. This discussion should be included. Tidal prism changes are included for alternative 2 (-13%), alternative 3 (-4.2%) and for alternative 5A, the change in tidal prism is reported as "5% greater than what is indicated for Alternative 2". Please clarify this amount of change in tidal prism and discuss impacts associated with this change. Changes in tidal prism should also be included for the preferred alternative (5B).

An expanded section reviewing relevant research regarding larval transport through inlets, especially inlets with hardened structures, should be included.

DMF is satisfied with the pre- and post-construction habitat monitoring plan. The current pre-construction shoreline transect data was collected in 2007. Shoreline monitoring transects should be completed again as a baseline in the year preceding construction of the terminal groin.

Impacts to Larval Transport

Terminal groins can potentially interfere with the passage of larvae and early juveniles from offshore spawning grounds into estuarine nursery areas. Successful transport of larvae through the inlet occurs within a narrow zone parallel to the shoreline and is highly dependent on along-shore transport processes (Blanton et al. 1999; Churchill et al. 1999; Hare et al. 1999). Obstacles such as jetties or groins adjacent to inlets block the natural passage for larvae into inlets and reduce recruitment success (Kapolnai et al. 1996; Churchill et al. 1997; Blanton et al. 1999) (*from 2010 CHPP*).

DMF requests a fine-scale hydrodynamic circulation model be utilized to evaluate existing and expected changes to larval transport patterns. After consulting with an expert in hydrological modeling, it appears that this evaluation could be done using the Delft 3D model with the addition of a particle tracking module. The applicant should conduct a hypothetical larval ingress/egress sensitivity analysis to compare circulation fields with and without terminal groins and demonstrate effects on larval ingress within approximately 100 m of shore. DMF recommends that the applicant contact Dr. Luettich, at UNC Institute of Marine Sciences, for further information regarding methodology.

Impacts to Fish Habitat

DMF has significant concerns about the use of hardened shoreline stabilization techniques along high energy ocean shorelines due to accelerated erosion in some location along the shore as a result of the longshore sediment transport being altered. These structures may also modify sediment grain size, increases turbidity in the surf zone, narrow and steepen beaches, and result in reduced intertidal habitat and diversity and abundance of macroinvertebrates. Anchoring inlets may also prevent shoal formation and diminish ebb tidal deltas, which are important foraging grounds for many fish species (Deaton et al. 2010). Changes to the surf zone or inlet could affect species that depend on these areas for nursery, spawning, or foraging.

DMF requests a field investigation of the current distribution of larval and juvenile fishes in the vicinity of the inlet and proposed groin locations as well as another similar inlet as a control. With the exception of some studies near Wrightsville Beach, DMF is not aware of any existing studies/data regarding larval or juvenile distribution in the Rich's Inlet system. Collected data should identify the most highly utilized habitat areas and serve as baseline data to compare larval and juvenile fish monitoring data that should be collected after groin construction.

Specific comments

The bulleted items below are in need of revision.

- List of PDT members is out of date
- p.13 refers to North Topsail Beach
- p. 75 Several inaccuracies occur in the section entitled "Benefits of salt marsh habitats to fishery resources". See the 2010 CHPP.
- p.76 Update recent status of SAV coverage in NC. See 2010 CHPP.
- p.81 "Benefits of SAV areas to fishery resources" should be expanded. Although important, this may not be the appropriate section to discuss the life history of the blue crab. See SAV Chapter of 2010 CHPP. Also, larval and juvenile fish do not spawn.
- p.91 Update sections using the most recent amendments to hard clam (2008) and oyster (2008) FMPs.
- p.92 Update section using the most recent amendment to the bay scallop FMP (2007).

- p.95 update section “Benefits of Tidal Flats and Shoals to Fishery Resources”. These areas may also provide refuge, corridor, nursery, and spawning habitat. See 2010 CHPP.
- p.102 Update discussion of DMF stock status.
- p.107 Expand and update section on larval transport. See 2010 CHPP.
- p.154 Shellfish Sanitation and Recreational Water Quality is now a part of the Division of Marine Fisheries
- p.196 Update and expand discussion of dredging impacts to infaunal resources and to all life stages of fish. Impacts to all life stages of fish from dredging are highly likely to occur regardless of season or vicinity to the main channel. See 2010 CHPP.
- p.211, 240, 254, and 293 Impacts to all life stages of fish from dredging are highly likely to occur regardless of season or vicinity to the main channel. See 2010 CHPP.
- p. 263 Intertidal flats and shoals may also provide refuge, corridor, nursery, and spawning habitat. See 2010 CHPP.p.271 DMF does not concur that based on available information, the proposed terminal groin will not act as a barrier to migrating fish.
- p.273 DMF does not concur that based on available information, bypassing action around and over the proposed terminal groin will “reduce any impacts to” larval transport.
- p.281 The lack of dredging activity does not equate to no impact to intertidal flats and shoals due to a terminal groin. Erosion expected due to the groin and sheetpile wall could eliminate flats and shoal from the entire inlet area on Figure 8. Future erosion impacts due to the sheetpile wall should be addressed.
- p.282 Although minimal change to the tidal prism is very important in these projects, that does not necessarily mean that “sediment movement and distribution will be minimally affected”. DMF considers rapid erosion of habitats and eventual re-establishment of these habitats in new locations, an impact to fish and their habitat.
- Add DMF to monitoring report distribution

Thank you for the opportunity to review and comment. Please feel free to contact Jessi Baker at (252) 808-8064 or jessi.baker@ncdenr.gov if you have any further questions or concerns.

Literature Cited

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◊ North Carolina Wildlife Resources Commission ◊

Gordon Myers, Executive Director

MEMORANDUM

To: Mickey Sugg
US Army Corps of Engineers

From: Molly Ellwood
NC Wildlife Resources Commission

Date: August 3, 2012

Re: Response to DEIS for the Figure Eight Island Shoreline Management Project, Figure Eight Island, New Hanover County; Corps Action ID #: SAW-2006-41158

Biologists with the NC Wildlife Resources Commission (NCWRC) have reviewed this Draft Environmental Impact Statement (DEIS) with regards to potential impacts to fish and wildlife resources. Our comments are provided in accordance with provisions of the Coastal Area Management Act (G.S. 113A-100 through 113A-128), as amended, and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). Representatives from the NCWRC were present at Project Development Team meetings during the planning and scoping phases of this project.

Figure Eight Beach Homeowners Association (F8 HOA) is seeking Federal and State permits for development of a management plan for Rich Inlet, which includes the construction of a terminal groin along with supplemental dredging for the northern end of the island in New Hanover County. The purpose noted in the DEIS includes a management plan for Rich Inlet to “mitigate chronic erosion on the northern portion of Figure Eight Island so as to preserve the integrity of its infrastructure, provide protection to existing development, and ensure the continued use of the oceanfront beach along the northernmost three miles of its oceanfront shoreline.” The preferred alternative noted in the DEIS is Alternative 5B, “for the construction of a terminal groin with beach fill from other sources,” where beach compatible material will come from the previously permitted section of Nixon Channel and nearby spoil islands.

According to the DEIS, F8 HOA would construct an approximately 1,600 ft terminal groin on the northern end of Figure Eight Island. 700 ft of the groin would project seaward and the other 900 ft will be buried landward towards Nixon Channel and be constructed of sheet pile wrapped with rock. The F8 HOA has determined that the terminal groin alternative would result in an improved project in terms of economic benefits and reduced environmental impacts. The DEIS indicates that nourishment events associated with this project should occur at a minimum of every five years and proposes that all construction and nourishment events only occur from 16 November through 31 March. Figure Eight Island currently has regular beach nourishment events through the dredging of Mason Inlet and Nixon

Channel to provide beach compatible sand for the entire island. Sand bags have been previously placed along stretches of oceanfront shoreline to protect imminently threatened structures.

The DEIS outlines the purpose and need for the proposed terminal groin and associated work as “to reduce and/or mitigate for erosion along 2.34 miles of oceanfront shoreline south of Rich Inlet and 0.34 miles of back barrier shorelines along Nixon Channel; provide reasonable short-term protection to imminently threatened residential structures over the next five years; provide long term protection to F8 homes and infrastructure over the next 30 years; acquire compatible beach material in compliance with North Carolina State sediment criteria for shore protection project; maintain navigation conditions within Rich Inlet and Nixon Channel; balance the needs of the human environment with the protection of existing natural resources; maintain existing recreational resources; and maintain the tax value of the homes and infrastructure on Figure Eight Island.” Figure Eight Island has had ongoing beach erosion concerns and with the recent passing of Senate Bill 110 the installation of a terminal groin can be considered, provided the applicant meets a suite of requirements, including the preparation of an Environmental Impact Statement, proof of financial assurance to cover post construction monitoring and mitigation for any adverse impacts.

Projects that affect oceanfront beaches and natural inlet processes such as beach nourishment, inlet dredging, inlet relocation and the construction of hardened structures on or along beaches may adversely affect nesting sea turtles and shorebird foraging and nesting areas. Due to the scope of this project and the documented use of the beaches of Figure Eight Island by sea turtles and shorebirds, including the federally listed piping plover, the NCWRC has the following comments and recommendations:

- The NCWRC has an established sea turtle nesting moratorium that reduces the potential for unintended impacts to nesting sea turtle species that frequent the coast of North Carolina. To avoid impacts to these species, all work on the oceanfront shoreline, including mobilization and demobilization for all beach nourishment events and the construction of the terminal groin structure, should be conducted outside of the sea turtle nesting season which runs from 01 May until 15 November, or until the last known sea turtle nest has hatched.
- Inlet areas provide suitable nesting, foraging and roosting areas for multiple shorebird species. Nesting birds are sensitive to increased human activity and other disturbances around their nesting areas. To limit unintended impacts to nesting bird species in and near the project area, please avoid all work during the shorebird nesting period which runs from 01 April until 31 August.
- In the DEIS there was only a brief mention of the significance of Rich Inlet as critical wintering habitat for piping plovers. Preconstruction monitoring should be incorporated into the EIS for overwintering birds to better establish the use of the inlet area by these species. NC Audubon has collected data on the use of Rich Inlet by piping plovers during the migration seasons (July to November and March to May) and during the winter months (December to February) from 2008-2011. This information is beneficial in evaluating any impacts to the use of Rich Inlet by these bird species post construction during seasons that may not have been previously monitored by the applicant outside of the breeding season.

- The NCWRC is concerned that building a structure that is dependent upon regular nourishment events could potentially impact benthic invertebrate populations found in intertidal habitats. Benthic invertebrates are an important food source for foraging birds, both resident and migratory, during both the breeding and nonbreeding seasons. Regular beach nourishment events, such as every five years, can reduce benthic populations when populations are not given appropriate time for recovery. To better understand the potential impacts upon these species from regular nourishment events, the NCWRC requests that benthic sampling be conducted pre- and post-construction of the terminal groin and associated beach nourishment events. The collection of pre-construction data will provide the necessary baseline data to assess impacts from the proposed work and inform future habitat management efforts.
- The NCWRC is concerned that the construction of a terminal groin may lead to a possible increase in requests to conduct emergency beach nourishment during ecologically sensitive times of the year, i.e. the nesting shorebird and nesting sea turtle moratoriums, due to potential increases in erosion rates around the groin structure. Please incorporate a discussion into the EIS that addresses the influence the groin may have on localized erosion rates on the northern end of the island and how the F8 HOA has modeled for the appropriate nourishment needs for the groin to function properly and maintain the desired beach profile between the stated 5 year beach nourishment intervals.
- The NCWRC requests the EIS include information about what the F8 HOA will do with the sandbags currently installed along the ocean shoreline at Comber Rd. We recommend that these sandbags be removed prior to nourishment events.
- Please provide more information about the need for the 900 ft shore anchorage section of the proposed terminal groin to protect against possible flanking of the landward end of the structure. Under Alternative 5A of the DEIS it states, “The shore anchorage section would essentially follow the 1970 inlet shoreline [before existing development] and terminate near the Nixon Channel shoreline”. The NCWRC is concerned with this section of the proposed groin structure and the possible loss of the undeveloped, northern most section of the island. As proposed, the anchoring section of the structure could significantly inhibit the natural processes that provide the important habitats associated with inlet areas. These areas are important for nesting shorebirds and waterbirds, while also providing important roosting, foraging and overwintering habitat as well. Rich Inlet is designated as critical habitat for wintering piping plover by the US Fish and Wildlife Service and also provides nesting habitat for colonial nesting shorebirds and waterbird species during the breeding season.
- The NCWRC is concerned about permanent, cumulative habitat loss and changes to the Rich Inlet complex, the northern end of Figure Eight Island, and Hutaff Island. “Coastal engineering projects can potentially create, enhance, degrade, or destroy foraging and nesting habitat at important coastal bird breeding, stopover, or wintering sites” (Harrington 2008). Senate Bill 110 (e)(5)(c) states the plan must provide for mitigation measures to be implemented if adverse impacts reach the thresholds defined in the plan. Mitigation would need to create or protect a similar habitat type that would offset the loss of this inlet area. Please provide a discussion on the

potential mitigation options that may be available to offset any unintended direct and indirect impacts from the proposed terminal groin.

Thank you for the opportunity to review and comment on the DEIS for this project. Please feel free to contact me at (910) 796-7427 if there are any questions or comments pertaining to this project.

Works Cited

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<http://el.erd.usace.army.mil/dots/doer/>.

Cc: Sara Schweitzer, NCWRC
Matthew Godfrey, NCWRC
Jessi Baker, NCDMF
Doug Huggett, NCDCM
Debbie Wilson, NCDCM
Robb Mairs, NCDCM
Melba McGee, NCOLIA
John Ellis, USFWS
Fritz Rohde, NOAA



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
(727) 824-5317; FAX (727) 824-5300
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June 29, 2012

F/SER4: FR/pw

(Sent via electronic mail)

Colonel Steven A. Baker, Commander
US Army Corps of Engineers Wilmington District
69 Darlington Avenue
Wilmington, North Carolina 28403-1398

Attention: Mickey Sugg

Dear Colonel Baker:

NOAA's National Marine Fisheries Service (NMFS) has reviewed Action ID No. SAW-2006-41158, dated May 18, 2012. Figure Eight Beach Homeowners Association proposes to construct a terminal groin at the northern end of Figure Eight Island adjacent to Rich Inlet in New Hanover County. The Wilmington District (through a contractor) has prepared a draft Environmental Impact Statement (EIS) for the Figure Eight Shoreline Management Project. The draft EIS does not include an essential fish habitat (EFH) assessment because the Wilmington District has elected to postpone making its determination regarding impacts to EFH until later in the review process, which is the District's prerogative under the EFH regulations. As the nation's federal trustee for the conservation and management of marine, estuarine, and diadromous fishery resources, the following comments are provided pursuant to authorities of the Fish and Wildlife Coordination Act and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). These comments will be augmented when the EFH assessment is provided to NMFS for review, and that augmentation may include EFH conservation recommendations if adverse impacts to EFH are proposed.

Description of the Proposed Project

Chronic erosion problems along the northern sections of Figure Eight Island have been directly linked to changes in the orientation and position of the main ebb channel through Rich Inlet. In addition to erosion along the ocean shoreline, erosion is prevalent along 1,800 feet of the Nixon Channel shoreline extending from Rich Inlet northwestward to the entrance to Nixon Creek.

Initially, the applicant's preferred alternative was relocation of the main channel within Rich Inlet; however, passage of Session Law 2011-387, Senate Bill 110, by the North Carolina Legislature in 2011 allowed for consideration of construction of terminal groins near tidal inlets. Since then, the applicant's preferred alternative involves the construction of a terminal groin 700 feet in length with a 900-foot shore anchorage section to protect against possible flanking of the landward end of the structure. The groin would be constructed to allow littoral transport of sand over, around, and through the structure by leaving large voids between the rocks. In addition to the groin, several areas of shoreline would be nourished with material excavated from the previously permitted area within Nixon Channel and from three upland dredged material disposal sites. The Nixon Channel beach fill would require 65,000 cubic yards and the



ocean beach fill would be 224,800 cubic yards.

General Comment on Draft EIS

More than 75% of the species important to commercial and recreational fisheries off the southeastern Atlantic coast have estuarine life stages (Fox 1992). The common life-history strategy for the majority of these fishes involves fall-winter spawning on the continental shelf followed by larval transport to nearshore habitats (e.g., surf zone) or through tidal inlets where they enter and settle into the shallow estuarine nursery habitats (Miller 1988; Ortner et al. 1999). A critical stage is the passage through inlets, such as Rich Inlet and the connecting Nixon Channel. The draft EIS on page 293 states “Dredging within Nixon Channel and the connector channel along with the nourishment of the estuarine and oceanfront shoreline of Figure Eight Island are scheduled to occur between November 16th and March 31st. The timing of construction activities was specifically scheduled to occur outside of the sea turtle nesting season, the West Indian manatee summer occurrence in North Carolina, the piping plover (and other shorebirds) migratory and breeding seasons, and the seabeach amaranth flowering period and “to avoid periods of peak biological activity including fish and larval passageway.” While this statement about timing may be correct for sea turtles, manatees, shorebirds, and amaranth, this is not correct for the fall-winter spawned fishes and crustaceans, such as Atlantic menhaden, spot, Atlantic croaker, pigfish, striped mullet, three species of flounder, and two species of shrimp. This dredging timeframe occurs during the peak of larval passage through Rich Inlet and Nixon Channel.

Specific Comments on the Draft EIS

Chapter 4 Affected Environment

- Page 68. Third paragraph, line 5. Masonboro Island is larger than Hutaff Island.
- Page 75. Second paragraph.
 - line 2 – Need to spell out EFH, plus there should at least be a paragraph about EFH
 - line 3 – Blue crab is not an EFH species. Coastal sharks and cobia would be in deeper water adjacent to the salt marsh and would be better viewed as transient species
 - line 4 – Red drum is no longer an EFH species (as of November 5, 2008)
 - line 6 – Mummichogs are also a killifish – no need to separate it from the others
 - line 7 – *Coryphopterus* is not a salt marsh species; this and species in the following two lines are found offshore primarily over hardbottom habitats
 - line 8 – *G. xanthiprora* and *Microgobius carri* are not salt marsh species
 - line 9 – *Evermannichthys* is not a salt marsh species
 - line 11 – River herrings do not spawn near the marsh but rather way up the rivers into fresh water
 - line 14 – Red drum spend the first several years of their life in the salt marsh – not a good example of a transient species
 - line 14 – Neither of these two flounder families occur in this region of North Carolina
 - line 19 – Incorrect generic names for shrimp
- Page 76. Second paragraph, line 1 and 8. Don Field is Dr. Don Field.
- Page 81 HAPC’s not defined, just the acronym is given.
- Page 96. Second paragraph. The following species are not found on tidal flats and shoals of NC: black grouper, blueline tilefish, mahogany snapper, margate, mutton snapper, ocean and queen triggerfish, red porgy, red snapper, schoolmaster, banded rudderfish, black snapper, bluestriped grunt, cero, dog snapper, goldface tilefish, goliath grouper, gray triggerfish, and tomato. These all occur farther offshore primarily around hardbottoms. Also wrong generic names for the shrimp species.
- Page 100. First paragraph.
 - The Florida pompano (*Trachinotus carolinus*) should be listed, not the African pompano.
 - The pinfish species listed is the spottail pinfish, not *Lagodon rhomboides*

- The section on Marine Habitat is confusing since it starts off on page 100 just being confined to the ocean but then the subsection on soft bottom includes the estuarine areas Nixon and Green channels.
- Page 102, first paragraph, last sentence. Coastal inlets are not federal HAPCs for blue crab or red drum.
- Page 149. Public Safety. Officers of the Wildlife Resources Commission, not the Division of Marine Fisheries, police boating activities.
- Page 196. Fourth paragraph. Disagree with statement about impacts to fish and larval biota. The dredge area is directly in the main part of Nixon Channel.
- Page 211. First full paragraph. The dredging time frame is probably the worst time for larval fishes for the winter-early spring spawners: spot, Atlantic croaker, southern and summer flounders, menhaden, etc.
- Page 240. Larval transport paragraph. Same comment as above.
- Page 254. Larval transport paragraph. Same comment as above.
- Page 293. Construction schedule. Disagree with statement about avoiding peak biological activity and larval fish.

Need for an Essential Fish Habitat Assessment

Hackney et al. (1996) provide the most recent review of the scant scientific literature that is available about the surf zone. Surf zones typically harbor a diverse fish fauna. Nearly 50 species of fish have been reported from the surf zone of North Carolina beaches, including many species that are commercially or recreationally important or serve as prey for such species. This number is suspected to be considerably lower than the actual number because over 130 species of fishes have been recorded in studies of the surf zone in South Carolina and Georgia. Many of the life stages of fishes found within the surf zone are also found in nearby estuaries, suggesting that the surf zone is a nursery habitat; Florida pompano and Gulf kingfish are the species most likely to rely upon the surf zone as their principal nursery habitat. Late spring to early summer is the major recruitment period for larval and juvenile fishes to the surf zone, which is later than the period of maximal recruitment to estuarine nursery areas (discussed below). In terms of biomass, peak use of the surf zone occurs in the fall when juvenile and adult fish leave the estuaries and migrate along the coast. It is generally thought that use of the surf zone as a migratory corridor is vastly under documented with respect to their actual use. The more common fishes within the surf zone consume both benthic invertebrates and plankton. Siphon cropping (grazing) also has been reported among surf zone fishes when clams, such as coquina clams, were present. If siphon cropping is common, reported rates of secondary production within the surf zone would likely be underestimates if the measurements were based only on standing-stock biomass. In short, little is known about the value of surf zone habitat to fishes, but the limited literature that is available suggests the value is high.

Based on coordination with your staff, we understand that an EFH Assessment will be prepared for this project but separate from the EIS. Based on the location of the proposed project, we confirm that the EFH Assessment is necessary. Given the importance of surf zone habitat and tidal inlets to federally-managed fishery species and to state-managed fishery species, we recommend the focal species for the EFH Assessment include: white shrimp, brown shrimp, pink shrimp, Atlantic sharpnose shark and other small coastal sharks, smooth dogfish, crevalle jack, bluefish, sheepshead, black sea bass, gag, Spanish mackerel, king mackerel, cobia, and summer flounder. In addition to these federally-managed species, this area also provides habitat for blue crab, Atlantic menhaden, Florida pompano, Gulf kingfish, red drum, and black drum, which are important prey for federally-managed species and should be included in the assessment. Please note that Atlantic population of red drum was managed under the Magnuson-Stevens Act until November 5, 2008; hence guidance on EFH Assessments prepared before that date may indicate a requirement to describe impacts to red drum EFH. For your EFH Assessment, discussions of potential impacts to red drum should be grouped with the state-managed species.

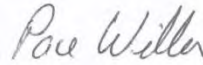
Recommendations

NMFS recommends the following studies be included in the EFH Assessment to address concerns with impacts to the surf zone and to larval transport through Rich Inlet.

- Use of surf zone and nearshore areas by larval fish. Able et al. (2010) provide an excellent example for how this study could be done.
- Characterization of the migration of larval and young juvenile fish through Rich Inlet.

Thank you for the opportunity to provide these comments. Related questions or comments should be directed to the attention of Mr. Fritz Rohde at our Beaufort Field Office, 101 Pivers Island Road, Beaufort, North Carolina 28516 or at (252) 838-0828.

Sincerely,



/ for

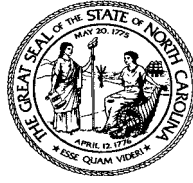
Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

cc:

COE, Mickey.T.Sugg@usace.amry.mil
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Literature Cited

- Able, K.W., D.H. Wilber, A. Muzeni-Corino, and D.G. Clarke. 2010. Spring and summer larval fish assemblages in the surf zone and nearshore off northern New Jersey, USA. *Estuaries and Coasts* 33: 211-222.
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- Hackney, C.T., M. Posey, S. Ross, and A. Norris. 1996. A review and synthesis of data on surf zone fishes and invertebrates in the South Atlantic Bight and the potential impacts from beach renourishment. For Wilmington District, US Army Corps of Engineers, Wilmington, North Carolina.
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North Carolina Department of Cultural Resources
State Historic Preservation Office

Ramona M. Bartos, Administrator

Beverly Eaves Perdue, Governor
Linda A. Carlisle, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

June 25, 2012

Mickey Sugg
US Army Corps of Engineers
69 Darlington Avenue,
Wilmington, NC 28403

Re: Figure Eight Island Shoreline Management Plan, Install Terminal Groin along Rich Inlet and Beach Nourishment, SAW 2006-41158, New Hanover County, ER 12-0927

Dear Mr. Sugg:

We have reviewed the above public notice and Draft Environmental Impact Statement concerning Figure "8" Beach Homeowners Association's proposal to perform dredging and beach nourishment.

The Office of State Archaeology underwater research files have references to extensive maritime activities and shipwreck losses in the general project vicinity; therefore, much of the project area holds a high potential for containing submerged cultural resources. The report "Terrestrial and Submerged Cultural Resource Survey Rich Inlet, Figure Eight Island, North Carolina," submitted by Tidewater Atlantic Research (TAR) identifies and addresses these resources.

The remote sensing survey identified five magnetic anomalies/acoustic targets that contain signature characteristics suggestive of potentially significant cultural material. These anomalies identified as RI-1 through RI-5 in Appendix B of the above mentioned report must be avoided with the recommended 100 foot and/or 150 foot buffers. If these areas cannot be avoided additional investigations are required prior to disturbance. The wreck of the *Wild Dayrell* (0001RII) is also located in the inlet and must be avoided with the recommended 400 foot by 600 foot buffer zone as noted in the report "Location of the Remains of the Wild Dayrell in Rich Inlet, Pender County, North Carolina," submitted by TAR.

Additionally, we would like your agency, its affiliates, and all equipment operators to be aware that the possibility exists that the beach renourishment work may unearth an unknown beached shipwreck which may have been washed up on Figure 8 Island and buried over the last 450 years. In the event that such occurs, work should move to another area and the Underwater Archaeology Branch be contacted immediately (910.458.9042). A staff member will be sent to make an assessment of the wreckage and determine the proper course of action.

This caution also applies to the two areas of Rich Inlet inaccessible for TAR's survey. If during dredging operations submerged archaeological materials are encountered, such as shipwreck remains, it is the responsibility of the Army Corps of Engineers-Wilmington District to notify us immediately, pursuant to Section 106 of the National Historic Preservation Act of 1966. In addition, the area is protected by North Carolina legislation G.S. 121-22 to 28, Article 3, supported by the Abandoned Shipwreck Act of 1987 (P.L. 100-298)

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/807-6579. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,



for Ramona M. Bartos



North Carolina Department of Administration

Beverly Eaves Perdue, Governor

Moses Carey, Jr., Secretary

July 20, 2012

Mr. Mickey Sugg
U. S. Army Corps of Engineers
Wilmington District
69 Darlington Avenue
Wilmington, North Carolina 28403

Re: SCH File # 13-E-0000-0010; DEIS for the Figure Eight Island Shoreline Management Project - project will install a terminal groin structure along the southern shoulder of Rich Inlet and conduct supplemental beach nourishment.

Dear Mr. Sugg:

The above referenced environmental impact information has been submitted to the State Clearinghouse under the provisions of the National Environmental Policy Act. According to G.S. 113A-10, when a state agency is required to prepare an environmental document under the provisions of federal law, the environmental document meets the provisions of the State Environmental Policy Act. Attached to this letter for your consideration are the comments made by agencies in the course of this review.

If any further environmental review documents are prepared for this project, they should be forwarded to this office for intergovernmental review.

Should you have any questions, please do not hesitate to call.

Sincerely,

A handwritten signature in black ink, appearing to read "W. E. H. Creech".

William E. H. Creech

Attachments

cc: Region O

Mailing Address:
1301 Mail Service Center
Raleigh, NC 27699-1301

Telephone: (919)807-2425
Fax (919)733-9571
State Courier #51-01-00
e-mail state.clearinghouse@doa.nc.gov

Location Address:
116 West Jones Street
Raleigh, North Carolina



North Carolina Department of Environment and Natural Resources

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

MEMORANDUM

TO: Zeke Creech
State Clearinghouse

FROM: Melba McGee ✓
Environmental Review Coordinator

RE: 13-0010 DEIS Figure Eight Island Shoreline Management Project,
Install Terminal Groin Structure Along Southern Shoulder of
Rich Inlet in New Hanover County

DATE: July 19, 2012



The Department of Environment and Natural Resources has reviewed the proposed information. The attached comments are for the applicant's information. Comments have not been received from the Division of Marine Fisheries, Division of Coastal Management or the NC Wildlife Resources Commission. Should comments be provided copies will be forwarded to you for your file.

Thank you for the opportunity to review.

Attachments



North Carolina Department of Environment and Natural Resources
Office of Conservation, Planning, and Community Affairs

Beverly Eaves Perdue
Governor

Linda Pearsall
Director

Dee Freeman
Secretary

July 11, 2012



MEMORANDUM

TO: Melba McGee, DENR Environmental Coordinator

FROM: ^{NZ} Harry LeGrand, Natural Heritage Program

SUBJECT: DEIS – Figure Eight Shoreline Management Project – Install a Terminal Groin Structure along the southern shoulder of Rich Inlet and conduct supplemental beach nourishment; Figure Eight Island, New Hanover County

REFERENCE: 13-0010

The Natural Heritage Program has numerous records of rare species from the vicinity of the northern end of Figure Eight Island and Rich Inlet. The 2011 Colonial Waterbird Survey, conducted by the N.C. Wildlife Resources Commission, located a total of 157 bird nests at “Rich Inlet, Southside” = north end of Figure Eight Island (colony NC-NH-032-02) (see enclosed material). Of these, 155 were of the Least Tern (*Sternula antillarum*), and one each were of the Black Skimmer (*Rynchops niger*) and Common Tern (*Sterna hirundo*); each of these species is State Special Concern. Though no nests of Piping Plover were located in 2011 or in the previous few years at the north end of Figure Eight Island, it has nested occasionally in the past. A year-round survey of shorebirds at several inlets in the southern part of the state, conducted by the National Audubon Society, revealed that the Federally Threatened Piping Plover (*Charadrius melodus*) occurs frequently in the Rich Inlet area, including at the northern end of Figure Eight Island (see enclosures).

Other Federally listed species occur at the northern end of Figure Eight Island, as presented in the DEIS. The Federally Threatened Loggerhead Turtle (*Caretta caretta*) nests in good numbers on the front beaches of the island, and the Federally Threatened seabeach amaranth (*Amaranthus pumilus*) is present sporadically on the island, more frequently at the southern end, where there is more accreting sand.

Installing a terminal groin at the tip of Figure Eight Island will almost certainly mean that, within one to several years, there should be little sand north of the groin. There would be sand placement behind the groin on the front beach, but such habitat is very poor for nesting birds, and perhaps for nesting turtles. A groin at the southern end of Rich Inlet might mean that within a few years, the southern end of Hutaff Island grows southward, as Rich Inlet migrates southward toward the groin. This might create more sand flat habitat north of the inlet; this situation has been seen at Oregon Inlet, where the terminal groin at the south end (the northern tip

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of Pea Island), built to protect a public structure (the Bonner Bridge) from being undermined at its southern end, has stopped the southward erosion of the island and has allowed more sand to be deposited at the southern end of Bodie Island and especially more sand deposited inside the inlet to create new islands.

Our Program prefers not to see such beach hardening structures, as they upset the natural movement of sand and can have potentially negative impacts to plants and animals, such as colonial nesting waterbirds and sea turtles. There is no guarantee that, after a groin is built, there will be no net loss of breeding birds and nesting sea turtles in the area. As a result, we prefer Alternative 1 (No Action), whereby “the Figure Eight HOA and individual property owners would continue to respond to erosion threats in the same manner as in the past”, which can include bulldozing of the beach, intermittent sand deposition, and deployment of sandbags. Alternative 2 (Abandon/Retreat) -- “the Figure 8 HOA and the individual property owners would not take any action to slow erosion” -- is also suitable to our Program, as it allows the natural beach processes to occur in an unimpeded manner, which should maintain if not improve the habitat for wildlife in the Rich Inlet vicinity.

Please do not hesitate to contact me at 919-707-8603 if you have questions or need further information.

Enclosures



North Carolina Department of Environment and Natural Resources

Beverly Eaves Perdue
Governor

Dee Freeman
Secretary

MEMORANDUM



TO: Zeke Creech
State Clearinghouse

FROM: Melba McGee *ML*
Project Review Coordinator

RE: 13-0010 DEIS for the Figure Eight Island Shoreline Management
Project in New Hanover County

DATE: July 20, 2012

The attached comments were received by this office after the response due date. These comments should be forwarded to the US Army Corps of Engineers and made a part of our previous comment package. The department encourages the Corps of Engineers to work directly with the Division of Marine Fisheries prior to finalizing the FEIS. This will help avoid further delays in the environmental review process and during the permit application phase.

Thank you for the opportunity to respond.

Attachment



North Carolina Department of Environment and Natural Resources
Division of Marine Fisheries

Beverly Eaves Perdue
Governor

Dr. Louis B. Daniel III
Director

Dee Freeman
Secretary

MEMORANDUM:

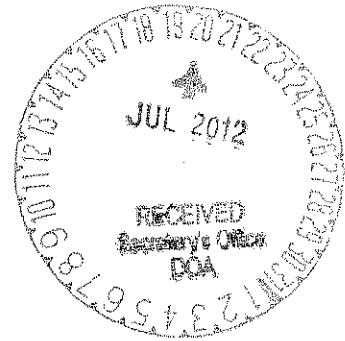
TO: Mickey T. Sugg, Project Manager, Wilmington USACE Regulatory Field Office
Melba McGee, DENR Environmental Coordinator

THROUGH: Anne Deaton, DMF Habitat Section Chief *Anne Deaton*

FROM: Jessi Baker, DMF Habitat Alteration Permit Reviewer *JOB*

SUBJECT: Figure Eight Shoreline Management Project Draft EIS

DATE: July 18, 2012



The North Carolina Division of Marine Fisheries (DMF) submits the following comments pursuant to General Statute 113-131. DMF has reviewed the Figure Eight Shoreline Management Project DEIS. The applicant's preferred alternative is Alternative 5b, which includes 1) installation of a 700-foot terminal groin; 2) installation of buried sheet pile (900 ft long, 20 ft deep) from the landward terminus of the groin to the backside of the island, and 3) supplemental beach nourishment using sand from Nixon Channel and spoil islands. Beach fill would be deposited along 1,800 ft of the Nixon Channel shoreline, and 12,500 ft of the ocean shoreline south of the proposed groin. Other alternatives provided were no action, abandon/retreat, inlet management with beach fill, beach fill only, inlet management with beach fill and groin, and beach fill with groin.

Rich's Inlet separates Figure Eight Island to the south, and Hutaff Island to the north. Hutaff Island is undeveloped and managed by the Audubon Society. The inlet was classified as a "stable" inlet by Cleary and Marden (1999), having a channel that fluctuates (wags) back and forth cyclically within a fairly stable footprint. The process of channel fluctuation results in formation of large sandbar complexes that support productive intertidal beach communities. Rich's Inlet is not regularly dredged for navigation, but has remained open and navigable to motorized vessels. The inlet is a locally favored fishing spot, with flounder, red drum, trout, and bluefish among the common species caught. The DMF has concerns with alteration of an inlet that is critical to fishery resources and currently unaltered and highly functional.

Approximately 90% of fish species occurring in North Carolina are estuarine dependent, migrating through inlets at some point in their life history. One of the key functions of an inlet such as Rich's Inlet, is to allow passage of ocean spawned larvae to be carried with the currents into their estuarine nursery grounds. Studies in North Carolina have documented over 60 species passing through inlets north of Riches Inlet (Hettler and Barker 1993; Peters et al. 1995; Peters and Settle 1994). Peak larval abundances typically occur between September and April (*from 2010 CHPP*).

The 2010 Coastal Habitat Protection Plan (CHPP) summarizes the latest scientific information available to assess the status and threats to marine fish habitats. The CHPP process brings state regulatory agencies together to implement the recommendations from the CHPP. The CHPP states that research is needed to determine when and where recruitment to adult fish stocks is limited by larval ingress to estuarine nursery habitats. The CHPP also states that the long-term consequences of hardened structures on larval transport and recruitment should also be thoroughly assessed prior to approval of such structures. Many fish species congregate in and around distinct topographic features of the subtidal bottom, such as the cape shoals, sandbars, sloughs, and ebb tide deltas during various times of the year, presumably to enhance successful prey acquisition or reproduction. The CHPP concluded that the natural processes that create these features need to be maintained. DMF has concerns that terminal groins will alter larval transport and impact important fish habitats.

Overall concerns

Overall the document should be updated using more recent references particularly since much of this science is still developing. Throughout the document, reference to the 2005 CHPP should be confirmed in and updated to the 2010 CHPP. There have also been several amendments to existing and new DMF Fisheries Management Plans developed that should be referenced. Where noted, examples will be pointed out in specific comments below.

The only alternatives for which Delft 3D model results are provided in the DEIS are alternatives 2, 3, and 5A. Results for alternative 4 are included in Appendix B, Sub-appendix B to the Engineering Report. Each of these alternatives include very different dredge footprints. Because of this, no comparisons can be made against the predictions for the existing conditions or with the preferred alternative of 5B. At the very least, model predictions for the preferred alternative should be included in the EIS.

Calculation of total loss of beach by adding repetitive beach fill loss to overall distance of erosion to arrive at a total loss for a segment of beach may exaggerate erosion potential. It is possible that the amount of "total" erosion in a particular segment of beach actually depends on the amount of nourishment in that reach. Further explanation of this technique is needed.

Although tidal prism is mentioned in chapter 5, there is no discussion of how changing the tidal prism of an inlet system can affect adjacent habitats. This discussion should be included. Tidal prism changes are included for alternative 2 (-13%), alternative 3 (-4.2%) and for alternative 5A, the change in tidal prism is reported as "5% greater than what is indicated for Alternative 2". Please clarify this amount of change in tidal prism and discuss impacts associated with this change. Changes in tidal prism should also be included for the preferred alternative (5B).

An expanded section reviewing relevant research regarding larval transport through inlets, especially inlets with hardened structures, should be included.

DMF is satisfied with the pre- and post-construction habitat monitoring plan. The current pre-construction shoreline transect data was collected in 2007. Shoreline monitoring transects should be completed again as a baseline in the year preceding construction of the terminal groin.

Impacts to Larval Transport

Terminal groins can potentially interfere with the passage of larvae and early juveniles from offshore spawning grounds into estuarine nursery areas. Successful transport of larvae through the inlet occurs within a narrow zone parallel to the shoreline and is highly dependent on along-shore transport processes (Blanton et al. 1999; Churchill et al. 1999; Hare et al. 1999). Obstacles such as jetties or groins adjacent to inlets block the natural passage for larvae into inlets and reduce recruitment success (Kapolnai et al. 1996; Churchill et al. 1997; Blanton et al. 1999) (*from 2010 CHPP*).

DMF requests a fine-scale hydrodynamic circulation model be utilized to evaluate existing and expected changes to larval transport patterns. After consulting with an expert in hydrological modeling, it appears that this evaluation could be done using the Delft 3D model with the addition of a particle tracking module. The applicant should conduct a hypothetical larval ingress/egress sensitivity analysis to compare circulation fields with and without terminal groins and demonstrate effects on larval ingress within approximately 100 m of shore. DMF recommends that the applicant contact Dr. Luettich, at UNC Institute of Marine Sciences, for further information regarding methodology.

Impacts to Fish Habitat

DMF has significant concerns about the use of hardened shoreline stabilization techniques along high energy ocean shorelines due to accelerated erosion in some location along the shore as a result of the longshore sediment transport being altered. These structures may also modify sediment grain size, increases turbidity in the surf zone, narrow and steepen beaches, and result in reduced intertidal habitat and diversity and abundance of macroinvertebrates. Anchoring inlets may also prevent shoal formation and diminish ebb tidal deltas, which are important foraging grounds for many fish species (Deaton et al. 2010). Changes to the surf zone or inlet could affect species that depend on these areas for nursery, spawning, or foraging.

DMF requests a field investigation of the current distribution of larval and juvenile fishes in the vicinity of the inlet and proposed groin locations as well as another similar inlet as a control. With the exception of some studies near Wrightsville Beach, DMF is not aware of any existing studies/data regarding larval or juvenile distribution in the Rich's Inlet system. Collected data should identify the most highly utilized habitat areas and serve as baseline data to compare larval and juvenile fish monitoring data that should be collected after groin construction.

Specific comments

The bulleted items below are in need of revision.

- List of PDT members is out of date
- p.13 refers to North Topsail Beach
- p. 75 Several inaccuracies occur in the section entitled "Benefits of salt marsh habitats to fishery resources". See the 2010 CHPP.
- p.76 Update recent status of SAV coverage in NC. See 2010 CHPP.
- p.81 "Benefits of SAV areas to fishery resources" should be expanded. Although important, this may not be the appropriate section to discuss the life history of the blue crab. See SAV Chapter of 2010 CHPP. Also, larval and juvenile fish do not spawn.
- p.91 Update sections using the most recent amendments to hard clam (2008) and oyster (2008) FMPs.
- p.92 Update section using the most recent amendment to the bay scallop FMP (2007).

- p.95 update section “Benefits of Tidal Flats and Shoals to Fishery Resources”. These areas may also provide refuge, corridor, nursery, and spawning habitat. See 2010 CHPP.
- p.102 Update discussion of DMF stock status.
- p.107 Expand and update section on larval transport. See 2010 CHPP.
- p.154 Shellfish Sanitation and Recreational Water Quality is now a part of the Division of Marine Fisheries
- p.196 Update and expand discussion of dredging impacts to infaunal resources and to all life stages of fish. Impacts to all life stages of fish from dredging are highly likely to occur regardless of season or vicinity to the main channel. See 2010 CHPP.
- p.211, 240, 254, and 293 Impacts to all life stages of fish from dredging are highly likely to occur regardless of season or vicinity to the main channel. See 2010 CHPP.
- p. 263 Intertidal flats and shoals may also provide refuge, corridor, nursery, and spawning habitat. See 2010 CHPP.p.271 DMF does not concur that based on available information, the proposed terminal groin will not act as a barrier to migrating fish.
- p.273 DMF does not concur that based on available information, bypassing action around and over the proposed terminal groin will “reduce any impacts to” larval transport.
- p.281 The lack of dredging activity does not equate to no impact to intertidal flats and shoals due to a terminal groin. Erosion expected due to the groin and sheetpile wall could eliminate flats and shoal from the entire inlet area on Figure 8. Future erosion impacts due to the sheetpile wall should be addressed.
- p.282 Although minimal change to the tidal prism is very important in these projects, that does not necessarily mean that “sediment movement and distribution will be minimally affected”. DMF considers rapid erosion of habitats and eventual re-establishment of these habitats in new locations, an impact to fish and their habitat.
- Add DMF to monitoring report distribution

Thank you for the opportunity to review and comment. Please feel free to contact Jessi Baker at (252) 808-8064 or jessi.baker@ncdenr.gov if you have any further questions or concerns.

Literature Cited

- Blanton, J. O., F.E. Werner, A. Kapolnai, B.O. Blanton, D. Knott, and E.L. Wenner. 1999. Wind-generated transport of fictitious passive larvae into shallow tidal estuaries. *Fisheries Oceanography* 8(2): 210-223.
- Churchill, J. H., F.E. Werner, R. Luettich, and J.O. Blanton. 1997. Flood tide circulation near Beaufort Inlet, NC: implications for larval recruitment. *Estuaries* 22(in press).
- Churchill, J. H., R.B. Forward, R.A. Luettich, J.J. Hensch, W.F. Hettler, L.B. Crowder, and J.O. Blanton. 1999. Circulation and larval fish transport within a tidally dominated estuary. *Fisheries Oceanography*. 8 (Suppl. 2): 173-189.
- Cleary, W. J. and T. P. Marden. 1999. A pictorial atlas of North Carolina inlets. NC Sea Grant, Raleigh, NC, UNC-SG-99-04 , 51 p.
- Deaton, A.S., W.S. Chappell, K. Hart, J. O'Neal, B. Boutin. 2010. North Carolina Coastal Habitat Protection Plan. North Carolina Department of Environment and Natural Resources. Division of Marine Fisheries, NC. 639 p.
- Hare, J. O., J.A. Quinlan, F.E. Werner, B.O. Blanton, J.J. Govini, R.B. Forward, L.R. Settle, and D.E. Hoss. 1999. Larval transport during winter in the SABRE study area: results of a coupled vertical larval behavior-three-dimensional circulation model. *Fisheries Oceanography*. 8(2): 57-76.
- Hettler, W. F. J. and D.L. Barker. 1993. Distribution and abundance of larval fish at two North Carolina inlets. *Estuarine, Coastal, and Shelf Sciences* 37: 161-179.
- Kapolnai, A., R.E. Werner, and J.O. Blanton. 1996. Circulation, mixing, and exchange processes in the vicinity of tidal inlets. *Journal of Geophysical Research* 101(14): 253-268.
- Peters, D. S. and L.R. Settle. 1994. Larval fish abundance in vicinity of Beaufort Inlet prior to berm construction. NMFS data summary report of project funded by the US Army Corps of Engineers. NMFS, Beaufort, NC, 38 p.
- Peters, D. S., L.R. Settle, and J.D. Fuss. 1995. Larval fish abundance in the vicinity of Beaufort Inlet prior to berm construction. NMFS, Beaufort, NC, NMFS Progress Report , 20 p.

NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

COUNTY: NEW HANOVER

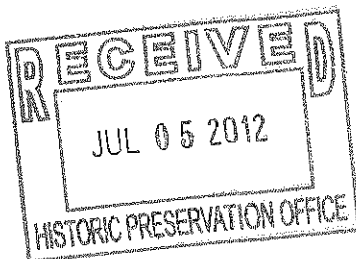
H12: OTHER

STATE NUMBER: 13-E-0000-0010

DATE RECEIVED: 07/02/2012

AGENCY RESPONSE: 07/16/2012

REVIEW CLOSED: 07/19/2012



MS RENEE GLEDHILL-EARLEY
CLEARINGHOUSE COORDINATOR
DEPT OF CULTURAL RESOURCES
STATE HISTORIC PRESERVATION OFFICE
MSC 4617 - ARCHIVES BUILDING
RALEIGH NC

ER 12-0927

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DENR - COASTAL MGT
DENR LEGISLATIVE AFFAIRS
DEPT OF CULTURAL RESOURCES
DEPT OF TRANSPORTATION

PROJECT INFORMATION

APPLICANT: U. S. Army Corps of Engineers
TYPE: National Environmental Policy Act
Draft Environmental Impact Statement

DESC: DEIS for the Figure Eight Island Shoreline Management Project - project will install a terminal groin structure along the southern shoulder of Rich Inlet and conduct supplemental beach nourishment. - view documents at:
<http://www.saw.usace.army.mil/wetlands/Projects/Figure8TerminalGroin/index.html>

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: NO COMMENT COMMENTS ATTACHED

SIGNED BY:

Renee Gledhill Earley

DATE:

7-9-12





North Carolina Department of Cultural Resources
State Historic Preservation Office

Ramona M. Bartos, Administrator

Beverly Eaves Perdue, Governor
Linda A. Carlisle, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

June 25, 2012

Mickey Sugg
US Army Corps of Engineers
69 Darlington Avenue,
Wilmington, NC 28403

Re: Figure Eight Island Shoreline Management Plan, Install Terminal Groin along Rich Inlet and Beach Nourishment, SAW 2006-41158, New Hanover County, ER 12-0927

Dear Mr. Sugg:

We have reviewed the above public notice and Draft Environmental Impact Statement concerning Figure "8" Beach Homeowners Association's proposal to perform dredging and beach nourishment.

The Office of State Archaeology underwater research files have references to extensive maritime activities and shipwreck losses in the general project vicinity; therefore, much of the project area holds a high potential for containing submerged cultural resources. The report "Terrestrial and Submerged Cultural Resource Survey Rich Inlet, Figure Eight Island, North Carolina," submitted by Tidewater Atlantic Research (TAR) identifies and addresses these resources.

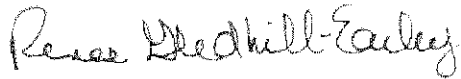
The remote sensing survey identified five magnetic anomalies/acoustic targets that contain signature characteristics suggestive of potentially significant cultural material. These anomalies identified as RI-1 through RI-5 in Appendix B of the above mentioned report must be avoided with the recommended 100 foot and/or 150 foot buffers. If these areas cannot be avoided additional investigations are required prior to disturbance. The wreck of the *Wild Dayrell* (0001RII) is also located in the inlet and must be avoided with the recommended 400 foot by 600 foot buffer zone as noted in the report "Location of the Remains of the Wild Dayrell in Rich Inlet, Pender County, North Carolina," submitted by TAR.


Additionally, we would like your agency, its affiliates, and all equipment operators to be aware that the possibility exists that the beach renourishment work may unearth an unknown beached shipwreck which may have been washed up on Figure 8 Island and buried over the last 450 years. In the event that such occurs, work should move to another area and the Underwater Archaeology Branch be contacted immediately (910.458.9042). A staff member will be sent to make an assessment of the wreckage and determine the proper course of action.

This caution also applies to the two areas of Rich Inlet inaccessible for TAR's survey. If during dredging operations submerged archaeological materials are encountered, such as shipwreck remains, it is the responsibility of the Army Corps of Engineers-Wilmington District to notify us immediately, pursuant to Section 106 of the National Historic Preservation Act of 1966. In addition, the area is protected by North Carolina legislation G.S. 121-22 to 28, Article 3, supported by the Abandoned Shipwreck Act of 1987 (P.L. 100-298)

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/807-6579. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

A handwritten signature in cursive script that reads "Renee Gledhill-Earley".

 for Ramona M. Bartos

NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

Shane York

COUNTY: NEW HANOVER

H12: OTHER

STATE NUMBER: 13-E-0000-0010

DATE RECEIVED: 07/02/2012

AGENCY RESPONSE: 07/16/2012

REVIEW CLOSED: 07/19/2012

MS CARRIE ATKINSON
CLEARINGHOUSE COORDINATOR
DEPT OF TRANSPORTATION
STATEWIDE PLANNING - MSC #1554
RALEIGH NC



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DENR LEGISLATIVE AFFAIRS
DEPT OF CULTURAL RESOURCES
DEPT OF TRANSPORTATION

PROJECT INFORMATION

APPLICANT: U. S. Army Corps of Engineers
TYPE: National Environmental Policy Act
Draft Environmental Impact Statement

DESC: DEIS for the Figure Eight Island Shoreline Management Project - project will install a terminal groin structure along the southern shoulder of Rich Inlet and conduct supplemental beach nourishment. - view documents at:
<http://www.saw.usace.army.mil/wetlands/Projects/Figure8TerminalGroin/index.html>

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If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: NO COMMENT COMMENTS ATTACHED

SIGNED BY:

Shane York

DATE:

7/09/12



United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
Richard B. Russell Federal Building
75 Spring Street, S.W.
Atlanta, Georgia 30303



ER 12/383
9043.1

August 3, 2012

Mickey Sugg
US Army Corps of Engineers
69 Darlington Avenue
Wilmington, NC 28403

Re: Comments on the Figure Eight Island Inlet and Shoreline Management Project, Terminal Groin Installation and Supplemental Beach Nourishment, Implementation Project in New Hanover, County, NC

Dear Mr. Sugg:

The U.S. Department of the Interior (Department) has reviewed the Figure Eight Island Inlet and Shoreline Management Project, Terminal Groin Installation and Supplemental Beach Nourishment, Implementation. We have no comments at this time.

I can be reached on (404) 331-4524 or via email at joyce_stanley@ios.doi.gov.

Sincerely,

Joyce Stanley, MPA
Regional Environmental Protection Assistant

for

Gregory Hogue
Regional Environmental Officer

cc: Jerry Ziewitz – FWS – Region 4
Brenda Johnson - USGS
Anita Barnett – NPS
Tommy Broussard – BOEM
Li-Tai Sikiu Bilbao - OSMRE
OEPC – WASH



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

July 3, 2012

RECEIVED

JUL 16 2012

REG. WILM. FLD. OFF

Mickey T. Sugg
Wilmington Regulatory Field Office
U. S. Army Corps of Engineers
69 Darlington Ave.
Wilmington, North Carolina 28403

Subject: Figure "8" Beach Homeowners Association, Inc., New Hanover County
USACE Action ID #SAW-2006-41158

Dear Mr. Sugg:

This is in response to your May 31, 2012 Public Notice, requesting comments on the Draft Environmental Impact Statement (DEIS) for the Figure Eight Island Shoreline Management Project. Figure "8" Beach Homeowners Association, Inc. has applied for Department of Army (DA) authorization to construct a terminal groin and conduct beach nourishment along approximately 2.0 miles of oceanfront beach and 1,800 linear feet of back barrier shoreline on Figure Eight Island, in New Hanover County, North Carolina. The U.S. Fish and Wildlife Service, Raleigh Ecological Services office (Service) has reviewed the public notice and DEIS for the project and our comments are listed below. These comments are submitted in accordance with the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661-667d). Comments related to the FWCA are to be used in your determination of compliance with 404(b)(1) guidelines (40 CFR 230) and in your public interest review (33 CFR 320.4) in relation to the protection of fish and wildlife resources. Additional comments are provided regarding the District Engineer's determination of project impacts pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

Project Area, Proposed Activities, and Anticipated Impacts

The project area is the northern end of Figure Eight Island and the adjacent Atlantic Ocean, Rich Inlet, and Nixon Channel. The purposes and needs stated in the DEIS for the project include: 1) to reduce or mitigate erosion along the Figure Eight Island oceanfront and the back barrier shoreline along Nixon Channel; 2) to provide short-term protection to imminently threatened residential structures over the next five years; 3) to provide long-term protection to Figure Eight Island homes over the next 30 years; 4) to acquire compatible beach material; 5) to maintain navigation conditions within Rich Inlet and Nixon Channel; 6) to balance the needs of the human environment with the protection of existing natural resources; 7) to maintain existing recreational

resources; and 8) to maintain the tax value of the homes and infrastructure on Figure Eight Island.

Six alternatives are proposed: 1) No Action, 2) Abandon/ Retreat, 3) Rich Inlet Management with Beach Fill, 4) Beach Nourishment without Inlet Management, 5A) Terminal Groin with Beach Fill from Maintenance of Nixon Channel and Connector Channel, and 5B) Terminal Groin with Beach Fill from Other Sources. The applicant's preferred alternative is Alternative 5B, which involves the construction of a 1600-foot long terminal groin at the extreme north end of Figure Eight Island (south of Rich Inlet).

The timing of construction of the terminal groin is not clear. On page 66, the DEIS states that the initial construction of the terminal groin is expected to take approximately 6.5 months. However, on Pages 196 and 293, the DEIS states that dredging is proposed to occur between November 16 and March 31, which only provides a 3.5-month window. Further, on the last page of the document (page 344), the DEIS states that the construction of the terminal groin will be completed in stages. The first stage involves the seaward or rubblemound portion of the structure. The landward shore anchorage section would not be constructed until the need for that section becomes apparent. No further information is provided on the staged construction of the terminal groin.

The preferred alternative 5B also proposes beach nourishment along a stretch of oceanfront (linear footage is not specifically provided, but is assumed to be 4,000 linear feet based on other statements in the DEIS), and along 1,800 linear feet of back barrier shoreline. Borrow materials would be derived from the maintenance of the existing permitted area in Nixon Channel. Three AIWW upland disposal sites would serve as contingency sediment sources if needed.

Federal Protected Species

The DEIS provides no preliminary determination of effects to Federal protected species. The DEIS lists the following Federal listed species (under the authority of the Service) within the project area: West Indian manatee (*Trichechus manatus*), piping plover (*Charadrius melodus*), seabeach amaranth (*Amaranthus pumilus*), and the Kemp's Ridley (*Lepidochelys kempi*), hawksbill (*Eretmochelys imbricata*), leatherback (*Dermochelys coriacea*), loggerhead (*Caretta caretta*), and green (*Chelonia mydas*) sea turtles. Of the five sea turtle species, the loggerhead, green, Kemp's ridley, and leatherback sea turtle may nest in the project area. The ESA Section 7 evaluation can be limited to these four turtle species. Whales, shortnose sturgeon (*Acipenser brevirostrum*), Atlantic sturgeon (*Acipenser oxyrinchus*), and sea turtles in the water are under the jurisdiction of NOAA Fisheries' Protected Species Division. The Service is pleased that piping plover, seabeach amaranth, and sea turtle monitoring efforts have consistently been conducted over the past several years on Figure Eight Island and Hutaff Island, and we

recommend that the monitoring efforts be required to continue. The Service looks forward to reviewing the Biological Assessment (BA).

West Indian Manatee

Manatees, designated as federally endangered, move along the Atlantic Coast during summer months and are seasonal transients in North Carolina, primarily from June through October. Manatees may be found in water over one meter (3.3 feet) deep. Individuals move extensively when in North Carolina waters and past occurrence records cannot be used to precisely determine the likelihood that a manatee will be present at a particular construction site. Manatees may migrate through the project area during the warmer month of the year, primarily from June through October. It is unclear how the timing of the project may affect manatees.

Piping Plover

Piping plovers, designated as federally threatened, are known to occur in the project area. Plovers may nest in the project area during the summer months, and overwinter in the project area during the winter months. The project area includes portions of Critical Habitat Unit NC-11 for wintering piping plovers, as described on page 140 of the DEIS and in 50 CFR Part 17 (66 FR 36038). Piping plovers from the federally endangered Great Lakes population as well birds from the threatened populations of the Atlantic Coast and Northern Great Plains overwinter on North Carolina beaches. Overwintering plovers may arrive as early as July, although most individuals arrive in early to mid-fall. Studies of wintering piping plovers indicate that they spend most of their time foraging on worms, fly larvae, beetles, crustaceans, molluscs, and other invertebrates (Bent 1929, Nicholls and Baldassarre 1990). In late February, piping plovers begin leaving the wintering grounds to migrate back to breeding sites. Northward migration peaks in late March, and by late May most birds have left the wintering grounds. North Carolina is the only state where the piping plover's breeding and wintering ranges overlap and the birds are present year-round.

Piping plovers nest above the high tide line on coastal beaches; on sand flats at the ends of sand spits and barrier islands; on gently sloping foredunes; in blowout areas behind primary dunes (overwashes); in sparsely vegetated dunes; and in overwash areas cut into or between dunes. The species requires broad, open, sand flats for feeding, and undisturbed flats with low dunes and sparse dune grasses for nesting. Piping plovers arrive on their breeding grounds in late March or early April. Following establishment of nesting territories and courtship rituals, the pair forms a depression in the sand, where the female lays her eggs. By early September both adults and young depart for their wintering areas.

As proposed in the DEIS, the initial construction of the preferred alternative is proposed to take place during the winter months (November 15 to March 31), which may adversely affect overwintering piping plovers and the critical habitat unit. Little discussion of potential impacts to designated critical habitat is provided in the DEIS, and the document does not acknowledge that the plover overwinters in the project area.

The Service also has concerns for the potential losses of nesting and foraging habitat due to both direct and indirect impacts, particularly within the Critical Habitat Unit. On pages 266 and 282 of the DEIS, the applicant discusses the loss of nesting and foraging habitat on Pea Island due to the construction of a terminal groin at Oregon Inlet. Within years after the construction of the terminal groin, the stabilization of the area allowed encroachment of vegetation, effectively eliminating the intertidal flats on the downshore side of the structure. The DEIS does not address this loss of nesting and foraging habitat, other than to state that other areas on Pea Island are still utilized by the piping plover. The BA and final EIS should address the potential loss of designated critical habitat over time, as a result of the construction of the terminal groin.

The Service is concerned about the lack of information provided for the timing of the terminal groin construction. There is one statement at the very end of the DEIS text (page 344) which indicates that the construction of the terminal groin will be completed in stages, with the waterward section being completed first. However, there is no discussion elsewhere in the DEIS about this “staged” construction for the groin. All of the model runs for the terminal groin alternatives (Alternatives 5A and 5B) assume construction of the entire groin. If the terminal groin construction is going to be staged, the EIS should provide a concise and complete discussion of the potential impacts for the timing of construction (two windows of construction instead of one) and the triggers that would result in a need to construct the landward end. As the landward end of the terminal groin is proposed to be located within Critical Habitat Unit NC-11 for the piping plover, the proposed timing, triggers, construction methods, and potential effects should be discussed in the BA.

Seabeach Amaranth

Seabeach amaranth is an annual plant that exists adjacent to inlets, along beaches between dunes and the high tide line, and in areas of extreme overwash. The plant helps to trap sand and build dunes. The species is listed as threatened by both the federal government and the State of North Carolina. Suitable habitat for this plant occurs in the project area. Seabeach amaranth begins to flower as soon as plants have reached sufficient size, sometimes as early as June, but more typically commencing in July and continuing until the death of the plant in late fall. Seed production begins in July or August and peaks in September during most years, but continues until the death of the plant. The Service recommends that sediment be placed during the winter months (after the first frost), when only seeds are present. Sediment placement may bury seeds

on the beach and delay germination the following year, but the seeds are likely to remain viable and may germinate when the imported sand washes away. The main long-term threat to this plant on Figure Eight Island would be an increased frequency of large-scale sediment placements. As sea level continues to rise, major portions of the beach may need additional sand on an annual basis. If buried seeds are not given an opportunity to germinate and produce seeds, the population of the threatened plant on Figure Eight Island could be reduced in the future.

Similar to concerns for the piping plover, the construction timing for the landward portion of terminal groin is a concern for the seabeach amaranth. The ESA Section 7 evaluation should address the potential for affects from the construction timing, and also the potential effects of long-term stabilization of the shoreline.

Sea Turtles

Sea turtle nesting habitat is present within the proposed project area. While all five Atlantic sea turtles are protected by the ESA and may occur in the coastal waters of North Carolina, we believe that Section 7 evaluation can be limited to a consideration of loggerhead, Kemp's Ridley, leatherback, and green sea turtles. The most important aspects of any beach construction effort are the construction schedule and the compatibility of the material imported for beach fill. In general, the DEIS states that the material will be compatible because it will meet the North Carolina Sediment Criteria Rule (technical standards for beach fill projects - 15A NCAC 07H .0312). This rule sets standards for allowable variations in gravel, silt, and shell content between the recipient beach and the borrow source. However, as mentioned on page 294 of the DEIS, the state rule does not include criteria for mineral content, organic content, and color, factors that may also influence sea turtle nesting success. The Service recommends that the permit include the requirement to consider mineral content, organic content, and color of the nourishment material. Sediment placement on the beach may have both direct and indirect impacts on sea turtle reproduction. Disposal operations and subsequent grading during the sea turtle nesting and incubation season (May 1 through November 15) may result in the burial or crushing of nests or hatchlings or loss of sea turtles through disruption of nesting activity. As mentioned above, the Service remains concerned about the timing of the construction project.

The Service is pleased that Hutaff Island material was used as a proxy to determine the likely characteristics of the native beach material for Figure Eight Island. The average Munsell color values provided for the material on Hutaff Island ranged from 6 to 5 (dry and wet color, respectively). The values of material in Rich Inlet and Nixon Inlet ranged from 7 to 6. However, the color of the material on the upland AIWW spoil islands (Alternative 5B) was not discussed in the DEIS. From the raw data provided in Appendix 29, it appears that the values of the samples from the upland borrow sites ranged from 8 to 5. The material in these spoil islands is from dredging the confluence of Nixon Creek and the AIWW over several years, and so the

Service would be more concerned about the compatibility of this material than that from Nixon channel. A complete characterization of the material should be included in the text of the EIS.

On page 297, the DEIS states that several observation efforts will be undertaken by the applicant to monitor construction practices, including monitoring of color of the nourishment material, escarpments, bird monitoring, seabeach amaranth, sea turtles, and manatees. In order to ensure quality sea turtle nesting habitat over the entire duration of the project, the monitoring program should have objective criteria for rejecting fill material based on color. Wet sand with a value of less than 5 would be darker than what the Service considers acceptable for normal sea turtle incubation, because the darker color may cause higher incubation temperatures and greatly skew the sex ratio towards female (Mrosovsky et al. 1984, Mrosovsky & Provancha 1992). The Service recommends that the DA permit require minimal standards for beachfill color that compares the imported material to the color of the Hutaff Island material. Specifically, we recommend that material with a Munsell color value of less than 5 (for wet sand) should not be considered compatible. A remediation plan should be developed to correct any placement of incompatibly-colored sand on the beaches. The Service also recommends that the DA permit require monitoring of the beach nourishment area for both compaction and escarpment formation at the end of the construction period, and prior to the next three sea turtle nesting seasons.

General Comments

In general, the DEIS appears disorganized, and specific information on the various alternatives proposed and project impacts was difficult to find. Although Appendix E did provide a Summary Impacts Table, the executive summary did not provide a concise summary of the alternatives or a table by which alternatives, impacts, and costs could be readily compared. Specific information on the alternatives was spread throughout the large document, which made it difficult to develop a cohesive picture of the alternatives and potential impacts. For example, it was difficult to determine the length of beach that was proposed for the preferred Alternative 5B. Furthermore, the Service would appreciate a section dedicated to potential impacts to endangered and threatened species, rather than having the information spread throughout the document.

Alternatives Analysis

On page 6 of the DEIS (Executive Summary) the applicant states that the Rich Inlet management with beach fill alternative (Alternative 3) meets the purpose and needs of the project, and that it is practicable. However, the applicant believes that the terminal groin alternative (preferred alternative 5B) will result in improved economic benefits and reduced environmental impacts. This statement is not expanded upon in any detail in the DEIS, although the environmental impacts are discussed (separately) in subsequent chapters. Because of the Service's concerns for potential impacts to piping plover, Critical Habitat Unit NC-11, seabeach amaranth, and sea

turtles, it currently appears that Alternative 5B may have greater impacts to our trust resources than Alternative 3. Further, Chapter 1, page 14 of the DEIS discusses the limitations on terminal groins and North Carolina Session Law 2011-387. The DEIS does not recognize Session Law 2011-387's requirement that "nonstructural approaches to erosion control are [found to be] impractical" in order to permit the construction of a terminal groin. The DEIS should discuss this requirement and how the proposed project will comply, given that Alternative 3 appears to be practicable.

Economic Costs and Benefits

The DEIS Executive Summary and other Chapters discuss the assessed tax value of all properties on Figure Eight Island, rather than just the value of the properties in the project area. As the proposed work is not intended to protect the tax value of every property on Figure Eight Island, the Service recommends that the Final EIS instead include references to the value of homes in the project area. Also, at various points (pages 28, 214, 223, and 224), the DEIS assumes that a certain number of structures will have to be demolished, and adds that cost to the cost of the alternative being considered. For example, the DEIS states that there are 40 homes that are or may be imminently threatened over the next 30 years, and there are currently 93 vacant lots on the island. The text of the DEIS does not provide any justification for the statement that 30 homes will need to be demolished under Alternative 1 (pages 28 and 214). For Alternative 2, (pages 223-224, the DEIS states that of the 93 vacant lots, 16 are currently for sale, so only 16 homes could be possibly relocated over the next 30 years. Without further explanation, the DEIS then goes on to state that similar to Alternative 1, 30 of the 40 imminently threatened structures (over the next 30 years) would need to be demolished, and only 10 would be relocated.

Nixon Channel Shoreline

The Service is concerned that continued erosion of the Nixon Channel side of Figure Eight Island has not been adequately addressed in the DEIS. It doesn't appear that the back barrier segments were modeled using the GENESIS model. The discussion of shoreline change monitoring in Chapter 6 did not include shoreline changes on the estuarine side of Figure Eight and Hutaff Islands. Shoreline erosion at the north end of North Beach road, south and west of the landward end of the groin and on the Nixon Channel shoreline, was not discussed in detail in the DEIS. The maps in Figures 5.2 through 5.25 are of such small scale that it is very difficult to see what is depicted for those areas in the modeling runs. The final EIS should include more discussion of the potential biological benefits and/or impacts to the estuarine shoreline of Figure Eight Island, and whether the proposed five-year nourishment schedule will be adequate to protect this area.

Sea Level Rise and Nourishment Intervals

Page 193-194 of the DEIS states that a 1-meter sea level rise by 2100 is recommended for planning purposes. Then, without clarifying the rationale, the DEIS goes on to use historic rates of sea level rise in Wilmington, Southport, and Beaufort, North Carolina (approximately 0.84 feet/century and 0.68 feet per century, respectively) as a basis for analysis, instead of the planning recommendation. Further, the Engineering Report (Appendix A, page 17) indicates that sea level change rates in Sewells Point, VA, Beaufort, NC, and Charleston, SC were used in the development of the models, resulting in an estimated sea level rise of 0.0111 ft/year (or 1.11 feet over 100 years). There is no discussion of this rate of rise in the body of the DEIS. The DEIS also refers to historic rates of nourishment and Federal Storm Damage Reduction Project schedules for Wrightsville and Carolina Beaches, to establish that erosion of the shoreline has not accelerated over time. However, no data or detail is provided for the reader to consider. Wrightsville Beach is nourished every four years based on funding schedules from the DA, while Carolina Beach is nourished every three years. It is not clear in the DEIS whether the DA would provide nourishment at a shorter interval than provided in the funding schedule, if erosion rates warranted it. Further, portions of Wrightsville Beach have also recently been nourished by dredge spoil from Mason Inlet, as mentioned in the Cumulative Effects Assessment, and by at least one privately-funded activity in 2005. Carolina Beach has a rock revetment on the northern end to protect homes from beach erosion, which may effectively allow for a longer interval between nourishment events. Based on information provided in the DEIS (Table 6-2 of the Engineering Report), most northern sections of beach on Figure Eight Island have been nourished every two-four years, with other sand management activities (such as beach scraping) occurring almost every year in between. However, a nourishment schedule of five years is proposed for this project. The Service would be concerned with the acceleration of nourishment schedules based upon increased storm surge or sea level rise, or other factors. The Service recommends that any permit for this project include conditions requiring that beach nourishment be conducted no more often than once every five years.

Summary of Service Recommendations

1. Based upon our concerns outlined above for potential impacts to trust resources, at this time the Service recommends denial of the DA permit for the project as proposed. We look forward to working with the DA and the applicant to address our concerns, which are listed below.
2. The BA and final EIS should address the potential loss of designated critical habitat over time, as a result of the construction of the terminal groin. If the terminal groin construction is going to be staged, the Final EIS should provide a concise and complete discussion of the potential impacts for the timing of construction (two windows of construction instead of one) and the triggers that would result in a need to construct the landward end. As the landward end of the

terminal groin is proposed to be located within Critical Habitat Unit NC-11 for the piping plover, the proposed timing, triggers, construction methods, and potential effects should be discussed in the BA. If the terminal groin construction is not going to be staged, then the statements on page 344 of the DEIS should be deleted.

3. The BA and Final EIS should address the potential for affects to seabeach amaranth from the construction timing, and also the potential effects of long-term stabilization of the shoreline.

4. The permit should include the requirement to consider mineral content, organic content, and color of the nourishment material. In order to ensure quality sea turtle nesting habitat over the entire duration of the project, the monitoring program should have objective criteria for rejecting fill material based on color. Wet sand with a value of less than 5 would be darker than what the Service considers acceptable for normal sea turtle incubation. The Service recommends that the DA permit require minimal standards for beachfill color that compares the imported material to the color of the Hutaff Island material. Specifically, we recommend that material with a Munsell color value of less than 5 (for wet sand) should not be considered compatible. A remediation plan should be developed to correct any placement of incompatibly-colored sand on the beaches.

5. The Service recommends that the existing piping plover, seabeach amaranth, and sea turtle monitoring efforts be required to continue for the life of the permit.

6. The Service recommends that the DA permit require monitoring of the beach nourishment area for both compaction and escarpment formation at the end of the construction period, and prior to the next three sea turtle nesting seasons.

7. The DEIS states that Alternative 3 is practicable, but the applicant believes that the terminal groin alternative (preferred alternative 5B) will result in improved economic benefits and reduced environmental impacts. This statement is not expanded upon in any detail in the DEIS, although the environmental impacts are discussed (separately) in subsequent chapters. Because of the Service's concerns for potential impacts to piping plover, Critical Habitat Unit NC-11, seabeach amaranth, and sea turtles, it currently appears that Alternative 5B may have greater impacts to our trust resources than Alternative 3.

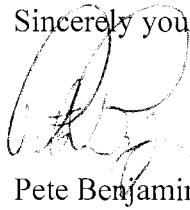
8. The DEIS does not recognize Session Law 2011-387's requirement that "nonstructural approaches to erosion control are [found to be] impractical" in order to permit the construction of a terminal groin. The DEIS should discuss this requirement and how the proposed project will comply, given that Alternative 3 appears to be practicable.

9. The final EIS should include more discussion of the potential benefits and impacts to the estuarine shoreline of Figure Eight Island, and whether the proposed five-year nourishment schedule will be adequate to protect this area.

10. The Service would be concerned with the acceleration of nourishment schedules based upon increased storm surge or sea level rise, or other factors. The Service recommends that any permit for this project include conditions requiring that beach nourishment be conducted no more often than once every five years.

Thank you for the opportunity to comment on this project. We look forward to the ESA Section 7 evaluation process. If you have any questions or comments, please contact Kathy Matthews at 919-856-4520, x27.

Sincerely yours,



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