

**Final General Reevaluation Report  
and  
Final Environmental Impact Statement**

**on**

**Hurricane Protection and Beach Erosion Control**

**WEST ONSLOW BEACH AND NEW RIVER INLET  
(TOPSAIL BEACH), NORTH CAROLINA**

**Appendix T**

**Comments and Responses**



## **APPENDIX T**

### **Comments and Responses**

Comments received on the Draft Integrated General Reevaluation Report and Environmental Impact Statement, Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach), North Carolina, Volumes I and II, dated June 2006 and the U. S. Army Corps of Engineers, Wilmington District response to each comment.



## 1.0 INTRODUCTION

This Appendix includes all comments received on the Draft Integrated General Reevaluation Report and Environmental Impact Statement, Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach), North Carolina, Volumes I and II and responses by the U. S. Army Corps of Engineers, (USACE) Wilmington District. These comments are listed in the following order: Federal, State, and local agencies; elected officials, conservation groups. No comments were received from interested businesses, groups, and individuals.

The Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA), 40 CFR Part 1503.4 Response to Comments (b), states, "All substantive comments received on the draft statement (or summaries thereof where the response has been exceptionally voluminous), should be attached to the final statement whether or not the comment is thought to merit individual discussion by the agency in the text of the statement." Additionally, the Environmental Quality; Procedures for Implementing the National Environmental Policy Act (NEPA); Final Rule, 33 CFR 230.19 (c) Comments Received on the Draft EIS, states, "District commanders will avoid lengthy or repetitive verbatim reporting of comments and will keep responses clear and concise."

In keeping with these regulations, the USACE will respond to summaries of lengthy written comments. Additionally, in order to reduce repetition, responses will be made once to a comment and a particular issue. If the issue appears again, in another letter, the reader will be referred to the initial comment and response. Detailed responses will not be given to comments which repeat information in the Draft GRR/EIS or state opinions on the proposed action. Form letters and signed petitions with multiple signatures are not responded to individually. In many instances, our response to a comment is indicated as "Noted." Noted means that the comment was evaluated and it will be considered in making the decision on whether to sign the Record of Decision.

## 2.0 PUBLIC AND AGENCY COORDINATION

On June 23, 2006 the Draft GRR/EIS referenced above was mailed to Federal and State agencies and the interested public for a 45-day review and comment period. Comments on the DEIS were received from the following:

### **Federal Agencies**

- US Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service
- US Department of Agriculture, Natural Resources Conservation Service
- US Environmental Protection Agency, Region IV
- US Department of the Interior, Fish and Wildlife Service
- US Department of the Interior, Minerals Management Service

### **State Agencies**

- NC Department of Administration
- NC Department of Environment and Natural Resources
- NC Division of Coastal Management
- NC Department of Cultural Resources
- NC Division of Water Quality
- NC Wildlife Resources Commission
- NC Division of Marine Fisheries

### **Local Agencies/Municipalities**

- Town of Topsail Beach, Town Manager

### **Conservation Groups**

- Environmental Defense

## **3.00 RESPONSES TO COMMENTS ON THE DEIS**

### **3.01 U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NMFS), two letters dated August 1, 2006 from David M. Bernhart, Assistant Regional Administrator for Protected Resources**

**3.01.1 NMFS Comment:** Potential impacts to ESA-listed humpback and right whales, sea turtles, and shortnose sturgeon stemming from the use of pipeline and hopper dredges are encompassed by the September 27, 1997, regional biological opinion (RBO) to the COE's South Atlantic Division on the continued hopper dredging of channels and borrow areas in the southeastern United States. The RBO, which incorporated by reference a November 25, 1991, biological opinion, concluded that pipeline dredges were not likely to adversely affect listed species. There is no new information to change the basis for that finding. Any takes of sea turtles and shortnose sturgeon by the hopper dredge shall be counted against the COE's South Atlantic Division per-fiscal-year limit on sea turtles and shortnose sturgeon, as authorized by the 1997 RBO.

**Corps Response:** Noted. All work will be done in accordance with the provisions of the Regional Biological Opinion. In addition, the even more protective measures of the Corps' South Atlantic Division Hopper Dredging protocol will be followed when appropriate.

**3.01.2 NMFS Comment:** No new species listed under the ESA in the interim since the RBO was issued will be affected by the proposed action. Therefore, as the effects of the proposed action are included in the RBO and we have no new information to change the basis of the RBO's findings, you are not required to consult with us on this proposed action. However, consultation must be

reinitiated if a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action.

**Corps Response:** Noted.

**3.02 US Department of Agriculture, Natural Resources Conservation Service (NRCS), letter dated July 26, 2006 from Michael J. Hinton, Planning Specialist**

**3.02.1 NRCS Comment:** The Natural Resources Conservation Service does not have any comments at this time.

**Corps Response:** Noted.

**3.03 U.S. Environmental Protection Agency (EPA), Region IV, letter dated August 15, 2006 from Heinz J. Mueller, Chief, NEPA Program Office**

**3.03.1 EPA Comment:** While this is the only reach (Topsail Beach) being assessed in this DEIS, it has been our experience that the necessary economic justification to broaden the scope of investigation to other nearby coastal areas is just a function of development and time. For example, the southward migration of New Topsail Inlet has essentially created Reach 1-2 since 1990. In this instance there are ownership, Piping Plover, and Coastal Barrier Resources Act impediments to encroachment. However, as an example, if Inlet and Shoreline Drives were extended [as has happened in other areas], this would allow the present development [which just marginally penetrates Reach 2] to expand westward. The transition zone of the subject project could be widened and moved accordingly to protect any new at-risk property.

**Corps Response:** Future development of the New Topsail Inlet area is a matter of speculation. A change in this recommended project would be very unlikely due to the following reasons: First, a new General Reevaluation Report would need to be authorized and conducted in the future in response to changes in conditions. Next, the benefits of protecting any such development along extensions to Inlet and Shoreline Drives would be very low due to their distances from the shoreline. Finally, the extension of the project beachfill or transition section into the CBRA zone or the Piping Plover Critical Habitat would not be recommended for environmental reasons, even if benefits to Inlet and Shoreline Drives would financially justify the cost of the extension.

**3.03.2 EPA Comment:** In regard to these economic justifications, certain of the bases used to calculate the benefit/cost ratio [3.9/1] bear thought. For example, the value of property at Topsail appears to be calculated [in part] in recognition of the effects of the noted erosive forces. That is, this value is computed on the

basis of the cost of interior lots rather than beach front property [with its greater current value]. Given the major thrust of the subject DEIS, this composite valuation is obvious and appropriate. However, subtracting at least a subset of the cost of maintaining the beach at a particular location from the notional value of all parcels would also seem to be proper. Moreover, as a result of recent hurricane episodes, the cost of property insurance [especially reimbursement of damage incurred from storm surge] for these properties has dramatically escalated recently and would appear to bear on the financial desirability of owning property anywhere on these exposed barrier features.

**Corps Response:** Comment noted. Oceanfront lots are typically more expensive than interior lots and therefore the interior values are used to prevent overstatement of the damages and benefits.

It is true that the analysis of land losses is based on interior lot sales as compared to first or second row lots. Recent data have shown that ocean front lots average about \$70 per square foot, while second row average about \$60 per square foot. The interior lots average about \$50 per square foot. The observation that property insurance rates have drastically increased due to storm damage is accurate. However, the analysis neither assumes that insurance rates will decline due to hurricane and storm damage reduction measures nor assumes any benefit from changing insurance rates will be realized. Preventable losses are claimed as a benefit to both the general public as property owners or the insurance providers that pay claims for damages. Homeowners should take into account the cost of homeowners, wind, hail, and flood insurance when deciding to move to or move from coastal areas.

**3.03.3 EPA Comment:** The structures on the front row of houses may be destroyed to some greater or lesser degree, but the beach front would then just be transferred rearward adding value to the composite of all landward properties regardless of personal ownership. This progression of re-evaluation across individual boundaries would occur until a nonfunctional remnant of land remains or the life of the project occurs which ever comes first. On the basis our current understanding of the interior lot valuation, it looks as if computations were made using some type of "movable beach front" formula in lieu of just ownership [of the most expensive parcels] at the shoreline.

**Corps Response:** Comment noted. Oceanfront lots are typically more expensive than interior lots and therefore the interior values are used to prevent overstatement of the damages and benefits.

You provide what may be a fair description of how land values are used in the analysis of long term erosion losses; however, the U.S. Army Corps of Engineers would prefer to avoid overstatement of the damages and benefits. It is true that the analysis of land losses is based on interior lot sales as compared to first or second row lots. Recent data have shown that ocean front lots average about

\$70 per square foot, while second row average about \$60 per square foot. The interior lots average about \$50 per square foot.

**3.03.4 EPA Comment:** From conversation with District staff, we understand that the majority of benefits and damages accrue from high frequency events, viz., the one through five year storms. Further, while the constructed beach and dune systems provide some absolute protection to structures and associated infrastructure from these weather events, lesser frequency [greater intensity] storms completely overwhelm the additional sand on the beach and dune. Hence, it is not immediately clear how the planning objective of "reduce the adverse economic and environmental effects of hurricanes ..." will be realized.

**Corps Response:** The goals are listed in Section 4.01 and the alternatives to achieve these goals are developed and evaluated in subsequent sections of the report.

**3.03.5 EPA Comment:** It would be helpful if some information were provided to describe the rationale of the storm erosion benefits that development [all reaches] north of Ocean Boulevard receives from the project.

**Corps Response:** Storm erosion damages are calculated for both the with and without project conditions. The decrease in erosion damage can be claimed as a benefit to the plan. Lesser storms will undermine the road and damage the road itself. More severe storms will erode away the road and undermine the structures beyond the road. The economic damage model includes structures within approximately 500 feet of the shoreline, which includes the road and several rows of structures beyond in most reaches.

**3.03.6 EPA Comment:** Given the very limited degree of physical protection afforded by the subject berm/dune system, the exact mechanism of how the additional sand would protect adjacent development from hurricane wave overwash may be overstated [EIS Page 77]

**Corps Response:** Noted.

**3.03.7 EPA Comment:** We offer that since the COE has numerous commitments involving public funds to nourish eroding shorelines on a recurrent basis, this relationship warrants direct investigation. For example, what is the connection between intensity of development, i.e., high rise construction, for an eroding shoreline which has an authorized nourishment project compared to a similar affected reach without a federally funded project?

**Corps Response:** IWR Report 96-PS-1, FINAL REPORT: An Analysis of the U.S. Army Corps of Engineers Shore Protection Program, June 1996 supports

this conclusion as follows. “Corps projects have been found to have no measurable effect on development, and it appears that Corps activity has little effect on the relocation and/or construction decisions of developers, homeowners, or housing investors.”

The Corps is not aware of any definitive studies that support the assertions that beach nourishment projects induce development. In response to an Office of Management directive, the Corps of Engineers, under the auspices of the Water Resources Support Center, Institute for Water Resources, conducted a study of its shore protection program and evaluated the possible relationship between beach development and coastal protection projects. The final report was published in June 1996 as IWR Report 96-PS entitled “An Analysis of the Corps of Engineers Shore Protection Program. Chapter 6 of that report, which was prepared by economic consultants from George Washington University, specifically addresses the induced development issue. The conclusions of that study were:

“Conclusion: Corps projects have been found to have no measurable effect on development, and it appears that Corps activity has little effect on the relocation and/or construction decision of developers, homeowners, or housing investors.”

IWR Report 96-PS-1 is available at <http://iwr.usace.army.mil> in PDF format.

The entire coast of North Carolina has undergone tremendous development during the last two decades, for the most part, in the absence of beach nourishment. There are only three storm damage reduction projects in the State, Wrightsville Beach, Carolina Beach, and Kure Beach. Wrightsville Beach and Carolina Beach were both constructed in 1965 while Kure Beach was completed in 1998. These three projects only cover approximately 8.5 miles of the North Carolina coast. All three of these storm damage reduction projects were constructed along areas that were essentially fully developed at the time of their construction. In this regard, the requirements for Federal participation in coastal storm damage reduction projects essentially dictates that these projects be constructed along areas that have a high degree of development. That is, in order for the Federal Government to cost share in 65 percent of the initial construction of the project, at least 50 percent of the project's benefits must be for storm damage reduction. Over the years, some improvements have been made in the character of the development in Wrightsville Beach and Carolina Beach, however, the overall density has not been significantly changed. Furthermore, the character of the new structures at Carolina Beach and Wrightsville Beach is not unlike the structures being constructed in unprotected areas. The replacement structures must meet modern building codes which are more stringent than the ones in place when the original structures were built. As a result, the replacement structures are more resistant to wind and flood damage.

Even if beach protection projects were preferred over unprotected areas, structures protected by these projects are subject to less risk and less damage than structures located in unprotected areas. This was graphically demonstrated in Hurricane Fran as damage to ocean front development at Wrightsville Beach and Carolina Beach due to ocean waves and storm surge was minimal compared to the damage experienced by neighboring unprotected beaches.

**3.03.8 EPA Comment:** Notwithstanding either the short- or long-term risk of shore front development to marine processes, the prevalence of ever more expensive structures is readily apparent [EIS-Page 50]. This raises the issue of how the overall public interest will be affected by the providing the subject protection. Recent events in Mississippi, Louisiana, and Texas [Hurricanes Katrina and Rita] would support the argument that this issue needs to be re-examined.

**Corps Response:** IWR Report 96-PS-1, FINAL REPORT: An Analysis of the U.S. Army Corps of Engineers Shore Protection Program, June 1996 supports this conclusion as follows. "Corps projects have been found to have no measurable effect on development, and it appears that Corps activity has little effect on the relocation and/or construction decisions of developers, homeowners, or housing investors."

While structures are expected to be more expensive than the older structures they may replace. The new structures are more damage resistant to wind, wave, storm erosion, and flooding. The continued enforcement of flood plain regulations and strict building codes is strongly supported by the U. S. Army Corps of Engineers. The most important element in saving lives of the public is the continued and improved enforcement of evacuation of potentially threatened beach communities by state and local officials.

**3.03.9 EPA Comment:** The District may wish to re-examine the relationship between sea level rise and its effects on this project. On the basis of responses to previous inquiries these effects are deemed to be just a relatively small component of the erosional damages. It would be instructive to learn just how these values were calculated and the assumptions used in their preparation. Since it was noted in the DEIS that existing sediments in the nearshore system were incapable of maintaining the historic beach profile, it would seem that even a small increment of sea level rise could significantly affect the project.

**Corps Response:** Sea level rise rates were based on NOS historical data for the Wilmington, NC station (No. 865810), which indicated sea level rise of about 0.008 ft/yr from 1953 to 1993. This rate was applied uniformly for the entire 50-yr project life.

**3.03.10 EPA Comment:** Table 3.2 notes that there are more than \$240,000 in total damages within Reach 4 of the Topsail Beach. However, since there are no houses within this reach south of Ocean Boulevard, the basis of the "storm damage, flood, and wave categories is not clear. If it is a function of damages to houses [or perhaps infrastructures] north of Ocean Boulevard, this would be useful information.

**Corps Response:** Hurricane and storm damages landward of Ocean Boulevard are estimated in the GRANDUC economic damage model based on a number of variables whose values are shown in the Structure File, Attachment B-3 to Appendix B. Variables include the type of structure (COL #9), the first floor elevation of the structure (COL #13), the elevation of the ground at the structure (COL #12), and the distance of the structure from the designated reference line (COL# 6). In addition to the estimated value of the structures, including streets and highways, the structure distance affects the magnitude of storm erosion damages. The flood damages and wave damages are estimated based on distances plus the more important elevations of the first floor and the ground. In areas where homes and cottages have been destroyed by previous storms, the ocean front structure threatened in Reach 4 would be primarily the road, Ocean Boulevard. Storm erosion would impact structures landward of Ocean Boulevard once the erosion undermines the road. The economic damage model includes structure within approximately 500 feet of the shoreline and Reach 4 has at least 25 structures within that distance.

**3.03.11 EPA Comment:** Reaches 1-2 were dropped from additional study because they did not currently have any shore front housing. From Figure A-2 it appears this is also the case for Reaches 3-5, but they were included in these additional studies. The reason for this disparity is not clear.

**Corps Response:** While Ocean Boulevard is the most vulnerable to erosion damages in Reaches 4 and 5, the structures landward of Ocean Boulevard are also vulnerable to storm erosion damage from severe storms. Please see response to Item # 3.03.10. The U. S. Army Corps of Engineers does not promote the rebuilding of structures lost to storms in the 1990's with or without hurricane and storm damage reduction measures. If a lot cannot meet the setback requirements, no replacement structure will be assumed.

**3.03.12 EPA Comment:** No recreational benefits are assigned to the non-structural plan with the rationale that it would not prevent beach erosion [EIS Page 54]. We acknowledge that the retreat/relocation option has no effect on erosion, but recreational benefits are not necessarily a function of absolutely preventing beach loss. The GRANDUC program was modified to delete all of the front row of houses [as necessary depending on a particular reach] for the non-structural alternative. Therefore, some "beach" would be available for tourists and residents of the remaining properties. Further, some of the reaches are

experiencing only nominal amounts of erosion and would have sufficient amount of recreational beach available for decades. Since the B/C ratio was close to unity [.92], could the additional of at least a subset of recreational benefits make this an economically feasible alternative?

**Corps Response:** Further analysis of changes in recreation value of the nonstructural plan would most likely result in a negative value of recreational benefits, because there would be less lodging available for visitors. The B/C ratio of 0.92 was developed using the most optimistic assumptions.

**3.03.13 EPA Comment:** The finger canals between Godwin and Trout Avenues pose a risk to the stability of Topsail Beach because they are located immediately southwest of the zone of maximum erosion [Reach 5-7]. We raised this concern to the District in a previous communication and in response, were told that it would be socially unacceptable to fill them..... Hence, to make the observation that reconstituting the original physiography of the island would be socially unacceptable may be true in a limited sense, but appears contrary to some of the stated goals of the project, i.e., reduction of economic losses and maintaining community cohesion along the subject reach.

**Corps Response:** Coastal modeling does not indicate a significant risk of breakthrough in the vicinity of the finger canals. Existing bulkheading should adequately stabilize the finger canals. In addition, overwash during severe storms possibly even results in some filling of the finger canals with sand.

**3.03.14 EPA Comment:** It was noted that not all parts of Topsail Beach are experiencing the significant erosional losses observed within Reaches 5-7 [3 feet/year]. In fact, Reaches 1-4 are actually accreting. Nonetheless, they [2-4] are included in the project transition although it was noted [EIS Page 55] that the damages there are unbalanced. Given this variability over adjacent reaches, it would have been instructive if the underlying cause[s] of erosion had been explained in more detail. This situation is made more perplexing, by the fact net sediment transport was cited as occurring to the north [by a factor of 2], but the Inlet is moving south. Hence, the relationship between the accretion in Reaches 1-4 [which lie essentially south] and erosion of Reaches 5-7 to the north is not immediately clear.

**Corps Response:** Evaluation of shoreline change rates is rather precarious in the vicinity of inlets, as is the case here. Shoreline change rates were computed based on the 2002 and 1963 shoreline positions. However, in 1963 the southern end of Topsail Island didn't even extend into reaches 1 or 2, making it impossible to compute a shoreline change rate for those reaches; and reaches 3 and 4 consisted of the recurved north shoulder of the inlet. Therefore, as the inlet migrated further southward, the recurved shoreline in reaches 3 and 4 built out and aligned itself with the northern adjoining shoreline, resulting in accretion. As the inlet has continued to migrate further south over time, shoreline change in

reaches 3 and 4 will pattern itself more like the adjoining northern reaches, i.e. erosional. If a more recent starting shoreline position were used in the analysis (e.g., over the last 5 to 10 years), these reaches would likely not be accreting.

**3.03.15 EPA Comment:** Irrespective of cost, we understand that a terminal groin can often produce a "sand shadow" as well as trap sediments, but in this instance there is an interposing inlet [southward] and the predominant sediment drift was stated to move north. Hence, it would be helpful for us to understand how the omitted groin factored [if at all] into the change in maintenance schedule [two to four years, respectively].

**Corps Response:** Because of the net northerly longshore transport and the continued southward migration of New Topsail Inlet since 1990, shoreline modeling for the GRR did not show any improved project performance with a terminal groin. Since this eliminated the terminal groin from any future consideration in the GRR, it was not a factor during the subsequent evaluation of the renourishment interval.

**3.03.16 EPA Comment:** The selected plan will extend the seaward slope of the berm to mean low water at a 15H to 1V profile [EIS Page 65]. It would be instructive to learn how this profile compares to the slope of a natural, un-nourished beach [which could be added to Figure 7.1]. It appears that this steepened profile will definitely affect subsequent erosion, i.e., the District projects that the without project erosion rates of 0 to 3'/year will increase to 4' to 17' with a beach fill project in place [EIS Page 104]. More material may be needed, but if the profile were flattened, what effect would this have on erosion [and by extension the project's maintenance frequency?]

**Corps Response:** The 15H to 1V profile slope is a construction profile that is expected to realign itself to mimic the natural profile. Material along the seaward slope of this construction berm will also be redistributed naturally to fill the offshore portion of the design profile, since placement of material below the water line is impracticable. Refer to Figure D-3 in Appendix D - Coastal Appendix and accompanying text for additional information.

**3.03.17 EPA Comment:** We did not understand why the assumption was made that no allowance would be given for future placement of intracoastal waterway maintenance material at Topsail. For decades material resulting from this maintenance dredging [and connecting channels] has been placed in the vicinity of Reaches 5-6 to address a portion of the subject erosion. While the frequency of placement and amount of this material varies, deposition occurs every 3-4 years and averages [incrementally less] than 100,000 cubic yards. The one time placement of 200,000 cubic yards after Hurricane Fran in 1997 was an exception to this general rule. Unless it is assumed that the AIWA will no longer require dredging, it seems reasonable that this material would be factored into the project's sand budget and be included in the beach fill monitoring [EIS Page 69].

We acknowledge that the amount/timing of these sediments is unspecified, but they are being used and their presence should reduce the stated damages.

**Corps Response:** We do agree that some limited, short-term benefit will be realized following placement of the material from the AIWW. However, because of the highly variable nature of the quantities/timing of these placements, it didn't seem prudent to formulate the project based on availability of this material. As stated in section 7.03.5, beach monitoring surveys conducted prior to scheduled renourishments will show whether renourishment volumes in those reaches that may have received waterway maintenance material can be reduced, thereby reducing long-term project costs.

**3.03.18 EPA Comment:** We were pleased to note that all of these sites are seaward of the "closure depth" for this reach of shoreline; therefore, the problem of sand mining [interference with the normal profile fluctuations] should not be an issue.

**Corps Response:** Noted.

**3.03.19 EPA Comment:** Some of these offshore (borrow) areas [D, E, and F] appear to be in relatively deep water [up to 60']. Hence, the need for the need for the hopper dredge to transfer sediment to an offshore pumping station buoy system and then onto shore. We would be interested in a qualitative estimate [cost/cubic yard] of a hopper dredge with sufficient drag boom capability to acquire sediments from these onshore sites versus the equipment to suction material from more shallow areas. From a long-term perspective there is the possibility that the more remote areas would be financially impracticable [as long as sand can be excavated from more proximate sites].

**Corps Response:** The borrow sites shown are the only sites available. Less shallow areas for hopper dredges would be closer to the pumpout areas and would be less expensive; however, there would still need to be approximately 25 to 30 feet of water to operate effectively. The quantitative comparison would be governed by the distance from the pumpout location.

**3.03.20 EPA Comment:** The overfill ratio for the Banks Channel [BC] material was only 1.08 whereas the sediments from the borrow area [A] selected for initial use will require an overfill ratio of 1.35. Given this overfill value [coupled with problems with unanticipated amounts of "fines" on previous nourishment projects], we were pleased to note the District will continue its practice of having on-site personnel present during the period of initial construction [EIS Page 74].

**Corps Response:** Noted.

**3.03.21 EPA Comment:** It would be helpful if a literature citation were provided in the final document to address the issue of overfill values and how sediment compatibility affects post-project water quality.

**Corps Response:** A literature search did not identify any references which specifically address the issue of overfill values and sediment compatibility effects on post-project water quality. However, Appendix E illustrates the sediment identified in the offshore borrow areas has been determined to be compatible with the native beach sediment using the proposed Coastal Resource Commission sediment compatibility standards dated March 24, 2006. The borrow areas have less than 6% silt by weighted average.

The literature search did identify references which have studied the impacts of turbidity associated with beach fill operations. The USACE, New York District conducted a post construction study for a beach erosion control project and concluded the effects of beach fill operations on short-term turbidity appeared to be limited to the immediate area of the operation, but appeared to decay rapidly with dispersal through the surf zone. Beyond the swash zone, the increase in turbidity over normal conditions appeared negligible. Total suspended sediment concentrations outside the swash zone seldom exceeded 25 milligrams per liter, a value comparable to concentrations many species experience in estuaries or during storms (USACE New York District 2001). Van Dolah reached a similar conclusion (Van Dolah et al. 1994). Therefore, because the project borrow area sediments generally consist of a low percentage of silts, post-project impacts to water quality are expected to be minimal.

USACE New York District, 2001. The New York District's Biological Monitoring Program for the Atlantic Coast of New Jersey, Asbury Park to Manasquan Section Beach Erosion Control Project, Phases II-III, Final Report, Waterways Experiment Station, Vicksburg, MS.

Van Dolah, R.F., R.M. Martore, A.E. Lynch, M. Levinsen, P.H. Wendt, D.J. Whitaker, and W.D. Anderson. 1994. Final Report to the U.S. Army Corps of Engineers, Charleston District: Environmental Evaluation of the Folly Beach Nourishment Project. Marine Resources Division, South Carolina Department of Natural Resources, Charleston, S.C.

**3.03.22 EPA Comment:** Regardless, we agree with the plan to refine the original borrow area assessment to ensure more confidence in the material's compatibility with the native sediments on the beach. From a sediment size perspective Site E also looks promising [but admittedly is limited resource-wise and further offshore of Top Sail]. As noted in the document, compatibility of re-nourishment sediments also is very important in terms of subsequent erosion. If excessive erosion were to occur, sand flat and shoal development in New Topsail Inlet could become problematic [EIS Page 84].

**Corps Response:** As indicated in Section 7.03.5 (Beachfill Monitoring), annual hydrographic surveys of New Topsail Inlet are planned, which will help to identify any unanticipated project impacts on sand flat and shoal development in the inlet.

**3.03.23 EPA Comment:** Notwithstanding CBRA issues, could a small hopper dredge [Currituck] acquire the BC material and deposit it directly on the beach? The characteristics of the BC sediments makes it an excellent resource which warrants consideration of its use [rather than just disposal] in some capacity.

**Corps Response:** Yes, however, the use of Banks Channel to supplement a renourishment cycle would require the mobilization of a second dredge for a negligible amount of material. In addition, expansion of the borrow area in Banks Channel beyond the authorized navigation channel boundaries to the 1992 borrow area boundaries, would require extensive coordination with the environmental agencies. Also, this would potentially increase mitigation requirements, due to the fact that this area contains the constituent elements of piping plover habitat as well as other estuarine resources. Therefore, Banks Channel was eliminated as a borrow area for this project.

**3.03.24 EPA Comment:** The public access to the beach [23 "walk-overs"] and parking associated with this project should serve as a template for all similar re-nourishment actions within the South Atlantic Division. In too many instances, especially in Florida, access to federally funded projects of this nature is curtailed to the point that [realistically] only local residents or renters can use the enlarged beach. Wilmington planning staff and the local sponsor are to be commended for their efforts in this regard.

**Corps Response:** Noted.

**3.03.25 EPA Comment:** However, we are concerned that the annual costs [\$21,000.] for maintenance is too low to sustain this desirable access.

**Corps Response:** Once access is provided, the only costs expected are for occasional maintenance of the walkover structures.

**3.03.26 EPA Comment:** We support the proposal to monitor the berm profile on a routine basis to lengthen the maintenance frequency as necessary.

**Corps Response:** Noted.

**3.03.27 EPA Comment:** There is the potential for this project's zone of influence to extend into adjacent offshore hard bottom communities, we suggest it would also be prudent to monitor for any inundation after initial placement and the first re-nourishment to establish a trend. If surveys reveal that significant

areas are covered by sand, it would be reasonable to consider some form of mitigation.

**Corps Response:** As identified in Appendix R, the side scan and multibeam survey results did not identify hardbottom resources within the -23' depth of closure limit of the project but rather very shallow depressional features located perpendicular to shore. These features are consistent with Rippled Scour Depressions (RSD's), Rippled Channel Depressions (RCD's), and or sorted bedforms as identified in the literature. During the equilibration process, the nourished sediment will move offshore as the constructed beach profile equilibrates to a more natural beach profile. The total area of the RSD, RCD, and/or sorted bedform features that occurs within the -23 ft. depth of closure limit is 0.3834 acres. Though nourished sediment could gradually move within the depressional features, it is likely that the features will be maintained as a preferential morphologic state through the repeating, self-reinforcing pattern of forcing and sedimentary response which causes the features to be maintained as sediment starved bedforms responding to both along-and across shore flows (Thieler *et. al.*, 2001).

**3.04 U. S. Department of the Interior, Fish and Wildlife Service (USFWS), letter dated August 15, 2006 from Pete Benjamin, Field Supervisor.**

**3.04.1 USFWS Comment:** This letter acknowledges the U.S. Fish and Wildlife Service's (Service) June 28, 2006, receipt of your June 23, 2006, letter requesting initiation of formal section 7 consultation under the Endangered Species Act. The consultation concerns the possible effects of your proposed West Onslow Beach and New River Inlet (Topsail Beach) Project, in Pender County, North Carolina, on the piping plover (*Charadrius melodus*), seabeach amaranth (*Amaranthus pumilus*), and two species of sea turtle, loggerhead (*Caretta caretta*) and green (*Chelonia mydas*), which are most likely to nest on the beaches of the project area.

**Corps Response:** Noted.

**3.04.2 USFWS Comment:** We have assigned log number 42420-2006-F0248 to this consultation. Please refer to that number in future correspondence on this consultation.

**Corps Response:** Noted.

**3.05 U. S. Department of the Interior, Fish and Wildlife Service (USFWS), letter dated September 13, 2006 from Pete Benjamin, Field Supervisor.**

**3.05.1 USFWS Comment:** In general, the Draft GRR/EIS is well organized and contains much useful information on the project area and the proposed actions. The discussion of the affected environment (Section 2.0) is good. The document benefits from having separate sections for plan formulation (Section 5.0) and plan selection (Section 6.0). The discussion of environmental effects (Section 8.0) covers all the biological, physical, and social components of the project area.

**Corps Response:** Noted.

**3.05.2 USFWS Comment:** The consideration of project impacts focuses exclusively on initial construction and the early years of the 50-year project. This may be based on the assumption that the environmental impacts of the 12 reconstruction Operations would be essentially similar to those of initial construction. It is likely that the environmental consequences of seeking to maintain a berm and dune in a fixed location on a dynamic barrier island will change over 50 years. Such changes would result from two, dynamic, natural phenomena which are not adequately addressed in the Draft GRR/EIS. These are the rise in global sea level and the natural process whereby barrier islands are pushed landward as sea level rises (island migration).

**Corps Response:** Agree. We assume that environmental impacts of the 12 reconstruction Operations would be essentially similar to those of initial construction. However, pursuant to NEPA, a supplement to the FEIS is required if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. Additionally, since the shoreline structures are assumed to remain in place for the 50-yr project life, the dune location is assumed to remain fixed as well. However, as indicated in the Addendum to the Coastal Engineering Appendix, the GRANDUC model used to formulate the dune and berm project does explicitly account for long term erosion due to sea level rise.

**3.05.3 USFWS Comment:** The scoping letter of the Service (March 2001) requested that feasible alternatives should be based on a consideration of the rise in sea level. Project planning should use the best available information on present rates of global sea level rise and possible increases in the rate of sea level rise. The Draft GRR/EIS does not fully consider the impact of global sea level rise over 50 years of project. The document mentions (p. D-8) that sea level data from Wilmington, North Carolina, during the 1953-1993 period, indicates a rise of 0.008 feet per year, or 0.8 feet per 100 years. This figure should be updated to reflect current information. Riggs and Ames (2003, p. 64) state that sea level is currently rising at a rate of 1.0 to 1.5 feet per 100 years. The rate of sea level rise in the recent past should not be projected into the future.

**Corps Response:** Using the Riggs and Ames sea level rise rates would result in an additional sea level increase of only 0.1 to 0.35 feet over the 50-year

project life, and only .05 to .175 feet over the first 25 years. A tremendous amount of effort would be required to generate the revised storm responses for these relatively small differences in sea level. The computational precision, rounding, curve-fitting, built-in uncertainty, etc. that is part of the analysis could possibly mask any expected differences in outcome. Further, it is likely that the without-project condition (with its diminished dune and berm) is going to be more sensitive to sea level rise than the with-project condition will be, which will only increase the net benefits for the beachfill project.

**3.05.4 USFWS Comment:** The rate of sea level rise is increasing. The U. S. Environmental Protection Agency (EPA) and others have estimated that sea level along the Atlantic and Gulf coasts may rise one foot by 2050 (US EPA 2006). The EPA estimates that an increase of two feet is likely within a period of 100 years, but a rise of four feet is possible. Recent findings (Alley et al. 2005) suggest that the projections of sea level rise may need to be revised upward. Riggs and Ames (2003, p. 66) cite the Intergovernmental Panel on Climate Change (IPCC, 2001.) which gives an average estimated rise of 1.6 feet by 2100, but with an upper limit of 2.9 feet of increase. The upper range of estimate rise, about three feet, would have profound implications for Topsail Island which has an average elevation of only nine feet (Pilkey et al. 1998, p. 171).

**Corps Response:** See response to USFWS comment 3.05.3, above. An increase in sea level over the life of the project will result in additional erosion and increase the renourishment volume requirements for the project, however, the non-storm erosion rates used in the analysis do account for this.

**3.05.5 USFWS Comment:** The Draft GRR/EIS does not consider the natural response of barrier islands during periods of rising sea level. Rising sea level over the past several thousand years would have eliminated low relief barrier islands unless there were natural, geologic processes that pushed them landward. Pilkey et al. (1998, pp. 41-48) describe the stages of island migration, or island transgression. During major storms, ocean beaches retreats (actually a movement to higher ground) as sediment is removed from the beaches and primary dunes. Sediment is carried across the island to form sandy overwash fans which often extend into estuarine areas behind the island, cause the island to widen in a landward direction. Overwash fans create new salt marshes and replaces sediment lost to wave erosion on the estuarine shoreline. The sand pushed landward becomes part of the new beach which has the same appearance as the former beach, but simply occupies a more landward position.

**Corps Response:** Based on the geologic record of sea level rise, sea level rose at an extremely rapid rate from 20 thousand years before present to 6 thousand years before present. The rate of rise during this 15 thousand year period was 0.8 meters/century (Department of Energy 1988). Over the last 6 thousand years,

the geologic record indicates that sea level has slowed to 0.08 meters/century (Department of Energy 1988). The geologic record also indicates that the modern day barrier islands are approximately 5 to 6 thousand years old. Based on this geologic record, barrier island migration was probably active during the period of rapid rise in sea level (20 thousand to 6 thousand years before present) but slowed or ceased when the rate of sea level rise decreased 6 thousand years ago. Comparative analysis of barrier island changes dating from the mid 1800's to the mid 1940's indicates that the barrier islands did not migrate during this 75 year period. The Wilmington District compared detailed maps of the barrier islands from Rodanthe south to Beaufort Inlet as well as Masonboro Island, located along the southern portion of the North Carolina coast. The comparative analysis determined changes in the ocean shoreline position, changes in the sound shoreline position, and changes in the marsh vegetation line over the approximately 75 year period. Note that the marsh vegetation line is the line that separates the upland areas of the barrier islands from the soundside marsh. This particular time period was selected for analysis as it did not include significant impacts of the artificial dune building program on Hatteras and Ocracoke Islands that began in the mid to late 1930's. The general findings of this analysis are reported in the Phase II General Design Memorandum for the Manteo (Shallowbag) Bay project (also known as the Oregon Inlet project) as well as in Shore and Beach (publication of the American Beach Preservation Association). The study found that all of the barrier islands, including Core and Shackleford Banks which were not included in the dune building program, are experiencing general erosion on both the ocean and sound sides. Also, the marsh vegetation line generally moved seaward. These measured changes were deemed to be consistent with changes one would expect as a result of a 0.75 to 1.0 foot rise in sea level during the analysis period. The only area exhibiting classic barrier island retreat characteristics was the east end of Ocracoke Island which "rolled over" in response to a sediment deficit created by the opening of Hatteras Inlet in 1846. The general findings of the Wilmington District study were verified by subsequent work of Everts, Battley, and Gibson in a report entitled "Shoreline Movement" which was published as a Coastal Engineering Research Center Technical Report TR CERC-83-1. Everts, et al also found that the islands from Virginia Beach south to Cape Hatteras were eroding on both the ocean and sound side. Recently, Dr. Stan Riggs of East Carolina University, has put forth a new theory regarding the future of the barrier islands that appears to agree with the historic changes that have taken place over the last 150 years. Dr. Riggs hypothesizes that the islands will gradually erode and become so narrow that the advent of a category 4 or 5 hurricane in the next 20 to 30 years will breach the islands in several places, resulting in a series of islands from Oregon Inlet south to Cape Hatteras. While we do not necessarily agree with the timing of Dr. Riggs' predictions, Dr. Riggs apparently recognizes the threat that ocean and sound side erosion poses to the barrier islands. His predictions are not unlike what occurred to the Isles Dernieres off the Louisiana coast between 1978 and 1983 (Department of Energy 1988) in which the island responded to an accelerated rate of relative sea level rise by deteriorating into a series of 5 small islands. In

summary, while barrier island migration apparently played a major role in the development of the present-day barrier island system, the geologic record does not provide any indication that this process is continuing or having any influence of the present physical make-up of the barrier islands. The overwash episodes that have occurred during the last 150 years have rarely penetrated beyond the sound side shoreline. Most overwash episodes resulted in sediment deposition either on the upland portion of the islands or just beyond the marsh line defined above. Accordingly, barrier island migration and/or rollover is not considered to be a significant factor in the management of the barrier islands over the next 50 to 100 years. (Department of Energy, Workshop on Sea Level Rise and Coastal Processes, Office of Energy Research, Office of Basic Energy Sciences, Carbon Dioxide Research Division, DOEINBB-0088, Palm Coast, Florida, March 9-11, 1988. )

**3.05.6 USFWS Comment:** From the perspective of a fixed, oceanfront structure, the process of islands migration appears to eliminate the beach in front of the structure. This loss of beach could lead to the complete loss of sea turtle nesting habitat (p. 43), Past and future losses of sea turtle habitat should not be attributed entirely to erosion. The beach is being squeezed between rising ocean waters and fixed, oceanfront structures. It would be more accurate to state that the beaches are narrowing due to the interruption of natural island migration by the desire to maintain the fixed location of oceanfront structures.

**Corps Response:** Environmental forces are not completely responsible for the environmental degradation on Topsail Beach. We acknowledge that the narrowing of the beach is a result of natural and man-made factors and the Final GRR/EIS will be revised to reflect this.

**3.05.7 USFWS Comment:** The planning document would benefit by acknowledging that island migration is a natural process within the project area. The Draft GRR/EIS states (p. 60) that implementing a non-structural approach would allow beach erosion to continue and areas of sand washed inland would expand and new overwash areas would form. Actually these areas of overwashed sand are the beach which has not been lost to erosion, but simply moved inland. The beach created by island overwash occupies a natural position dictated by current sea level. By bulldozing the newly created beach (p. B-8) off the roads and back to the area between oceanfront houses and the ocean, the amount of sand lost to the deeper ocean increases and the overall elevation of the island decrease. This exposes structures to greater storm damage. Pushing the beach off the higher, interior areas back to lower ground near the ocean's edge contributes to the diminishing width of the beach and the permanent loss of sea turtle nesting habitat.

**Corps Response:** See response to USFWS comment 3.05.5. The Corps disagrees that barrier island migration is an active process affecting the developed barrier islands along our coast.

**3.05.8 USFWS Comment:** The Draft GRR/EIS benefits from a clear distinction between storm damage (including the movement of sand offshore to deeper waters) and "long-term erosion," or land loss, which occurs continuously as sea level rises (p. 41; B-19/20). However, project planning should consider the permanent inundation of the ocean shoreline and the likelihood that the rate of inundation will increase over the course of the 50-year project. Leatherman (2001, p. 189) states that over 90 percent of shoreline recession is due to erosion and the rest can be attributed to inundation which is the permanent submergence of low-lying land and does not result from any movement of sediment. Riggs and Ames (2003, p. 64) also note that the continued rise in sea level will result in the flooding of low, coastal land and the widespread recession of North Carolina's shorelines.

**Corps Response:** See response to USFWS comment 3.05.3.

**3.05.9 USFWS Comment:** The need for federal action should clearly demonstrate that the goals of the non-federal sponsor are consistent with federal authorities, policies and guidelines.

**Corps Response:** Based on coordination with the non-federal sponsor, thorough policy review by Corps' Headquarters and as documented throughout the Draft GRR/EIS, the goals of the non-federal sponsor are consistent with federal authorities, policies and guidelines.

**3.05.10 USFWS Comment:** The Draft GRR/EIS states (p. 48) that the current narrowing of the beach endangers important habitat for a variety of plants and animals and failure to construct the proposed project would result in losses of habitat for sea turtle nesting and seabeach amaranth. A need to reduce the adverse environmental effects of storms (p. 49) should elaborate on the mechanisms whereby storms produce any long-term permanent elimination of habitat in the absence of development. The discussion should consider that these species have survived the last 15,000 years as global sea level rose approximately 300 feet (Pilkey et al. 1998, p. 41) and the barrier islands were impacted by countless hurricanes.

**Corps Response:** Disagree. Topsail Beach is a completely developed area and that is the assumption made throughout the Draft report. Discussion that considers barrier island storm response and habitat/species impacts in the absence of development is not relevant to Topsail Beach.

**3.05.11 USFWS Comment:** The purpose of proposed work varies throughout the Draft GRR/EIS. The first goal (p. 49) is to "reduce the adverse economic and environmental effects of hurricanes and other storms at Topsail Beach." The Real Estate Plan states (p. M-2) that the constructed berm, will serve two primary purposes: as a stockpile of sand on the beach to serve as sacrificial material to reduce the erosion of the high ground beach during storm events and to provide storm damage protection to beachfront structures by moving the point of erosion seaward, away from the structures. The Regional Economic Development Impacts notes (p. B-46) that local governments seek to preserve the tax base and encourage the growth in overall property values as well as benefit the labor force. The steady growth of the local community and surrounding region is considered a worthy goal by the state and local governments.

**Corps Response:** In general, the overarching goal of the project is to reduce the adverse economic and environmental effects of hurricanes and other storms at Topsail Beach. The project purpose doesn't vary, but serves multiple purposes, as documented throughout the report. Each section of the report discusses the project as it relates to that particular section, such as environment, economics, real estate, etc.

**3.05.12 USFWS Comment:** The planning goal (p. 49) of reducing the adverse environmental effects of hurricanes and other storms at Topsail Beach should be revised. Hurricanes are natural phenomena and fish and wildlife species of the coast are adapted to these periodic disturbances. Di Silvestro (2006) states that barrier islands erode and rebuild naturally and many species that use them, particularly birds, adapt to their destruction by moving to undamaged habitat. Alexander and Lazell (2000, 38) write that violent weather is an integral part of life" on the Outer Banks where plants and animal are well-adapted to foul weather. However, when viewed in the short-term, coastal storms can produce a loss of habitat at a particular location, but identical habitat can be created elsewhere in very dynamic coastal areas. If coastal storms are considered a natural part of the environment, then this goal suggests that the federal effort seeks to protect the environment from the environment.

**Corps Response:** Disagree that the planning goal should be revised. We agree that hurricanes are natural phenomena and that fish and wildlife species of the coast are adapted to these periodic disturbances. However, the extensive development at Topsail Beach drastically affects barrier island response to storms and undamaged habitat is not typically created.

**3.05.13 USFWS Comment:** If the Final GRR/EIS retains the purpose of maintaining habitat for coastal species, it should be acknowledged that environmental forces are not responsible for environmental degradation. Since barrier islands can adjust to sea level rise and coastal species can recover from short-term hurricane impacts, a more accurate statement of the project purpose may be to rectify the damage resulting from the interruption of natural island

migration which is squeezing the beach between a rising sea and fixed coastline structures. The Final GRR/EIS should not attribute the narrowing of the beaches entirely to natural phenomena such as coastal storms, but acknowledge that the narrowing of beach is the result of two factors; one natural and one man-made. A federal purpose of preserving important habitat for species dependent on the beach would best be achieved by adapting development to allow the island to naturally respond to the increase in sea level.

**Corps Response:** We acknowledge that the narrowing of the beach is a result of natural and man-made factors and, where appropriate, the Final GRR/EIS will be revised to reflect this.

**3.05.14 USFWS Comment:** The Final GRR/EIS should provide greater clarity on conditions which would exist without federal action. This discussion should note that on undeveloped barrier islands, a wide, recreational beach remains immediately after a hurricane. Pilkey et al. (1998, p. 56) notes that storm survivors on North Carolina's islands have found a "beautiful, flat, and broad" beach after a storm. The post-storm beach may consist, in part, of overwash fans. Furthermore, beaches may gradually recover sand pushed seaward during a storm as sand moved to shallow, offshore waters is pushed shoreward by fair-weather waves.

**Corps Response:** The project area is developed, therefore a wide recreational beach does not remain following storms. Without Federal action the beach will continue to narrow as shoreline erosion "squeezes" the beach front between the ocean and the first row of development.

**3.05.15 USFWS Comment:** The no action alternative does not consider conditions which would exist if natural island migration is allowed to occur. The recreational beaches would be maintained in the absence of federal and non-federal actions. The continued deterioration of beach appearance and berm width noted in Table 5.3 (p. 59) would not occur. The expansion of existing overwash areas and the formation of new overwash areas would be, in part, the beach.

**Corps Response:** The project area is a developed area, therefore "natural" barrier island processes do not occur. Disagree that recreational beaches would be maintained in the absence of Federal and non-Federal actions or that continued deterioration of beach appearance and berm width would not occur. Lastly, the expansion of existing overwash areas and the formation of new overwash areas is drastically impeded by existing development.

**3.05.16 USFWS Comment:** The Draft GRR/EIS acknowledges (p. 76) that the project would not eliminate all storm damage (specifically wind damage and damage from sound side flooding). Since a category 3 hurricane can produce a 12-foot storm surge (Pilkey et al. 1998, p. 23) and the island may be completely

submerged (Pilkey et al. 1998, p. 173), structures on the island will remain at risk. The risk will increase as global sea level rises. Table 5.3 would be more accurate by noting that the no action alternative would result in greater damage during category 1 and 2 hurricanes. The proposed plan is likely to provide little, if any, storm, damage reduction from hurricane of category three or higher.

**Corps Response:** Disagree. The plan reduces damages caused by erosion to lands supporting structures. Because most structures in the study area are elevated, flood and wave damages are a small proportion of total damages. Note the successful performance of the existing beachfill projects at Wrightsville Beach and Carolina Beach during Hurricanes Bertha, Fran, Bonnie, and Floyd.

**3.05.17 USFWS Comment:** There should be a greater effort to differentiate the adverse impacts of no action among wildlife species, the non-resident public, and oceanfront property owners. Post-storm conditions are likely to include a wide beach which continues to benefit sea turtles, Shorebirds, non-resident tourists, and structures which are basically intact, but economically at risk due to threats to water supply and sewage disposal. There should be an analysis of harm to the non-resident public if island migration maintains the recreational beach.

**Corps Response:** Disagree. Post-storm conditions at Topsail Beach typically do not include a wide beach, thus adversely impacting sea turtles, shorebirds and humans.

**3.05.18 USFWS Comment:** It is difficult to evaluate the no action alternative without knowing the non-federal efforts which would be undertaken to maintain the present oceanfront structures. The Draft GRR/EIS does address (pp. B-6; B-8; Appendix B, Attachment 4; P-5) some small scale "emergency" erosion prevention measures. However, beach scraping and sandbag placement are considered "ineffective" for storm damage reduction in the long run (p. B-32). Apparently these small-scale, privately funded efforts are considered in the conditions which would exist with the no action alternative. However, the planning document does not consider the possibility of beach construction without federal funds. Currently a non-federally funded beach construction effort is being developed for approximately 11 miles at the northern end of Topsail Island for a 30-year period. Figure 8 Island, south of the project area, has implemented several privately funded beach construction projects in recent years. The Final GRR/EIS should discuss whether the conditions given in Table 5.3 for a no action alternative reflect no efforts by the federal government or no efforts by all government and private entities.

**Corps Response:** The actions considered by Topsail Beach are small volume projects and intended as a temporary project until the more cost effective federal project is started. This is not significant in the 50-year period of analysis. Section 5.06.5 will be revised to explain that No Action in Table 5.3 means no action by the Federal Government on this proposed shore protection project.

**3.05.19 USFWS Comment:** Some aspects of the evaluation of the non-structural approaches should be clarified. Table 5.3 states (p. 59) that non-structural methods would allow a more natural appearance along the beach and maintain the existing recreational capacity. However, with regard to natural communities (p. 60), the same approaches would continue to erode the beach while new overwash fans arise and old ones expand. As noted, the overwash fans would constitute part of the beach which would remain available to both tourists and wildlife. These conflicting statements should be reconciled.

**Corps Response:** Text will be revised to clarify and will reflect that recreation capacity would decrease as the beach erodes.

**3.05.20 USFWS Comment:** Table 5.3 states (p. 59) that the non-structural approaches would eliminate the need for future protection of structures. This would be true if these approaches were accepted by private citizens and non-federal government entities. As noted above, non-federal measures to stabilize the beach may be employed, including complete berm and dune construction.

**Corps Response:** The comment implies that non-federal berm and dune construction may follow a nonstructural plan. This is unlikely because non-federal governments also consider benefits and costs, which do not favor building a berm and dune at an undeveloped site.

**3.05.21 USFWS Comment:** If the federal interest is solely to reduce storm damage without a commitment to maintain the existing oceanfront structures, one non-structural alternative would be to gradually buy the land for public use as structures became threatened. Examples of this approach are discussed by Dean (1999, pp. 210-234). The establishment of a state or federal park would permanently reduce storm damage cost and would likely provide an economic boom for nearby communities on the mainland. However, if there is a federal interest in maintaining the existing development, this option is not appropriate.

**Corps Response:** The nonstructural plan was not determined to be the NED plan. When analysis of the nonstructural plan indicated that it would not be feasible, further analysis was stopped. Phasing in a nonstructural plan may reduce costs, but it also reduces benefits.

**3.05.22 USFWS Comment:** The Service requested (Appendix K) that special attention be given to one type of relocation. This option would consist of a systematic program to use the uplands created by natural island overwash as relocation sites for threatened, oceanfront structures. The Corps informed the Service that "many acres of marsh" at Topsail Beach have been buried in sand to the extent that these areas have become uplands suitable for buildings (Figure 4 of the Service scoping comments). The Service requests that the Corps quantify the area of buildable uplands (areas not requiring any wetland fill) created by the

hurricanes in the 1996-1999 period and compare that area to the area of oceanfront land lost to shoreline recession. The alternative analysis could then include a detailed description and analysis of a systematic, long-term program for relocating threatened oceanfront structures to uplands created by natural island overwash.

**Corps Response:** Due to the extremely high demand for coastal development, it is unlikely that any suitable land created by overwash, would remain undeveloped and available as a relocation site.

**3.05.23 USFWS Comment:** Another non-structural approach is a policy of "rolling easements." The U. S. Environmental Protection Agency (2006) notes that to protect public assets in coastal areas, several states have adopted policies to ensure that beaches and dunes are able to migrate inland as sea level rises. Maine, South Carolina, and Texas have implemented some version of "rolling easements" in which people are allowed to build, but only on the condition that they will remove the structure if and when it is threatened by the advancing shoreline. Titus (1998) states that a policy of rolling easements allows development but prohibit property owners from holding back the sea. A rolling easement allows construction near to the shore, but requires the property owner to recognize nature's right of way to advance inland as sea level rises.

**Corps Response:** Although rolling easements may be beneficial in some areas, they would be very difficult to implement on an existing developed beach, such as Topsail.

**3.05.24 USFWS Comment:** Regarding structural approaches, fill material was considered to reduce land losses due to long-term erosion (p. B-20). However, no suitable upland borrow sites were identified. This is contradicted by the earlier statement (B-13) that following hurricane Ophelia in 2005, the Town requested approval from the Federal Emergency Management Agency (FEMA) to haul in approximately 22,000 cy of sand to distribute over 7,000 linear feet of beach. Furthermore, earlier this year the Town of Surf City, immediately north of the project area, sought a permit to supplement beach scraping with truck-hauled sand from a commercial sand mine on the mainland. Therefore, the use of imported upland sand should not be dismissed as a structural alternative.

**Corps Response:** The quantities described for FEMA funded emergency beachfill are very small compared to the proposed dune and berm project. It is feasible and mostly expedient to use upland sources for these very small projects. However, it is not feasible to use upland sources for the large quantity of material required for the proposed project.

**3.05.25 USFWS Comment:** If hardbottoms are adversely affected, the project should include specific measures to mitigate any adverse impacts. Such measures could include the establishment of artificial reefs. Even with mitigation

measures, the impacts of 50 years of offshore dredging and sediment running off the constructed beaches are likely to adversely affect fisheries resources. The economic losses to both commercial and recreational fishing interests should be fully considered in selecting a course of action.

**Corps Response:** Potential offshore hardbottoms will be avoided and no hardbottoms exist in the nearshore. Therefore, no hardbottoms are expected to be adversely affected by the proposed project.

**3.05.26 USFWS Comment:** The physical characteristics of the fill material used for beach construction have a significant influence on the impacts of the work. The fill should closely match the characteristics of the native beach. The summary data presented in Table E-15 (p. E-29) indicates that the grain size and shell content of the offshore borrow areas are similar to those of the native beach. However, these data are based on selective samples and large area of silt and mud could be interspersed within otherwise compatible sand.

**Corps Response:** Comment noted. Further evaluation of the potential borrow areas will be conducted to comply with the CRC proposed characterization standard for borrow sites as stated in section 7.04.1.6 of the report.

**3.05.27 USFWS Comment:** The schedule given on page 129 (sand placements from November 16 through April 30) should be reconciled with earlier statements (pp. 72-73) that after initial construction, each additional placement using a hopper dredge would occur during the December 1 to March 31 period. The shorter schedule would be necessary for compliance with the required hopper dredging window established to protect sea turtles in offshore waters.

**Corps Response:** As identified in Section 7.04.1.4 (Recommended Construction Plan) (pp. 72-73), initial construction will be performed utilizing a hydraulic cutterhead pipeline dredge between 15 November through 30 April to the maximum extent practicable. As identified on page 129, though nourishment activities will occur in the month of April, the work at that time will be outside of the known piping plover and shorebird nesting area at the southern end of Topsail Beach. Therefore, no direct impacts to nesting activity are expected. However, prior to each nourishment event, the Corps will coordinate with the NCWRC and USFWS to address any new piping plover and/or other shorebird concerns within the project area and will work with the agencies to reduce any impacts to the maximum extent practicable. For periodic nourishments it was determined that a hopper dredge with pumpout would be the most suitable method to place sand on the beach based on the borrow area depths and proximity to the beach. The periodic renourishment construction time for placement of 866,000 cubic yards is estimated to take approximately 60 days in addition to 30 days for mobilization and 30 days for demobilization. In order to reduce impacts to sea turtles, the Wilmington District windows hopper dredging activities to the cooler water months between 1 December and 31 March when

the risk of sea turtle interactions are reduced. Therefore, understanding that a total of approximately 120 days will be required for all dredging, mobilization, and demobilization actions, the 1 December to 31 March hopper dredging window for renourishment intervals will adhere to the appropriate environmental windows (15 November to 1 April (bird and sea turtle nesting)) to the maximum extent practicable.

**3.05.28 USFWS Comment:** It seems likely that the periodic sand replacements could be accomplished during a four-month period of December through March. Each periodic sand replacement is estimated to require 866,000 cy (p. 73). At a production rate of 14,000 cy per day (p. 72), an uninterrupted period of 61 days should be sufficient. This 61-day period represents only half of the 121 day from December 1 through March 31. Therefore, each sand replacement operation should be possible without work during April.

**Corps Response:** Concur (with hopper renourishment) however, the initial nourishment construction will use the entire environmental window.

**3.05.29 USFWS Comment:** The Service reiterates our recommendation that these long-term beach construction projects should allocate funds for research on the life cycle requirements of the important beach invertebrates.

**Corps Response:** On October 22, 2003, the Corps met with representatives from State and Federal agencies and research biologist from UNC Wilmington and UNC Chapel Hill to discuss the feasibility of reseeding a nourished beach through the relocation of mole crabs and coquina clams or through aquaculture practices. In follow-up meetings it was agreed by all participants that continuing a large scale approach towards addressing all potential impacts to benthic invertebrates for each specific beach project may not be the best approach, but rather more focused scientific studies that identify specific objectives to satisfy an overall goal of reduced impacts may be a better approach. Based on consensus from these discussions, as a component of the Corps' Morehead City Section 933 project, in 2003, the Corps contributed funds towards a study performed by Skip Kemp of the Carteret Community College to understand the feasibility of harvesting, holding, and culturing *Donax* spp. for resource enhancement aquaculture. This study helped identify a few of the many unanswered questions that the team identified as needing to be studied to help better understand the life history patterns of benthic invertebrates in order to reduce and/or mitigate impacts from beach placement projects. As stated in the EIS, Section 7.03.6 Environmental Monitoring and Commitments, the Corps is committed, as a component of the Topsail Beach project, to re-convene this working group in order to identify what the next objectives are to be studied and provide funds towards answering these critical questions regarding life cycle requirements of benthic invertebrates.

**3.05.30 USFWS Comment:** The Draft GRR/EIS notes (pp. 90-91) that some refilling of the depressions created during sediment removal is expected over time, but does not consider the consequence of this occurrence. The majority of follow up studies from offshore borrow sites have shown a decrease in the mean grain size, including, in some cases, increases in the percentage of silts and clays in the borrow site (National Research Council [hereafter NRCI 1995, p. 118). The finer material or other significant alterations in the physical characteristics of the substrate may not provide suitable habitat for the organisms that formerly occupied bottom sediment. The areas mined can refill with decomposed organic matter that is silty and anaerobic, hydrogen sulfide level may increase, and eventually, the area may become anoxic (Greene 2002, p. 12). Some areas may never recover from these dredging events (Greene 2002, p. 12). The long-term impacts on the offshore sand extraction sites should be considered.

**Corps Response:** The Corps concurs, and documents in the Draft GRR/EIS, that though significant infilling is not expected, some sediment characterization differences may occur as a result of finer sediments falling out in the borrow site or changes in sediment type as a result of dredging through sediment layers. Due to the opportunistic nature of the species that inhabit these areas, recovery is expected to occur within 1-2 years. However, a potential change in species composition, population, and community structure may occur resulting in the potential for longer recovery times (2-3 years). According to Turbeville and Marsh (1982), long term effects of borrowing site at Hillsboro Beach, FL, indicated that species diversity was higher at the borrow site than at the control site. According to Section 7.04.1.6 (Borrow Utilization), a cutterhead pipeline dredge will be used during initial construction with a range of dredging depths between 6'-10' resulting in a maximum post dredging depth of 60' (assuming existing depths of 40'-50'). During initial construction, maximum dredging production rates will be achieved by utilizing all available sediment within any given portion of the borrow site. Therefore, assuming that all available sediment is dredged and no significant infilling is expected, portions of borrow site A that are dredged by a cutterhead pipeline dredge will not be repeatedly dredged. All renourishment intervals will be performed by hopper dredges which will be dredging shallower depths of approximately 3' over larger areas rather than dredging to greater depths and smaller areas. According to Jutte et al. (1999a and 2001), hopper dredging creates a series of ridges and furrows, with the ridges representing areas missed by the hopper dredge, due to the dredge's inability to completely remove all of the sediment resulting in rapid recolonization rates. Furthermore, dredging to shallow depths also likely led to less modification in wave energy and currents at the site, and infilling of less fine grained sediments (Van Dolah, 2002). The Corps disagrees with the Services statement that borrow areas for this project will "refill with decomposed organic matter that is silty and anaerobic, hydrogen sulfide level may increase, and eventually, the area may become anoxic," and that the identified areas "may never recover from these dredging events." Though these instances are

documented in the literature, it is also suggested that these concerns are more related to deep estuarine type borrow sites. It is not expected that the utilization plan of the borrow sites identified for this project will result in the inability to recover.

**3.05.31 USFWS Comment:** Alteration of depth and substrate characteristics of offshore borrow areas may adversely affect microalgal biomass and diversity. The production of microalgae is concentrated in the surface layer of bottom sediment. Cahoon and Cooke (1992) state that primary production data from Onslow Bay (the ocean off Topsail Beach) indicate that the sediment-water interface must be viewed as a dynamic part of continental shelf habitat. Benthic microalgae provide a dependable food source for both benthic deposit feeders and suspension feeders. Cahoon et al (1990) conclude that the presence of benthic chlorophyll a indicates a productive benthic microflora in Onslow Bay. Concentrations of chlorophyll a decrease as water depth increases, and thus sand mining that produces permanent depressions in offshore areas may lower primary productivity. There is also a reduction in the number of algae species with depth. Therefore, the depressions created by sediment removal may result in lower species diversity (Schneider 1976 as cited in Cahoon et al. 1990).

**Corps Response:** According to Cahoon et al. (1990, 1992), primary production in Onslow Bay is characterized as being dominated by benthic microalgae, rather than phytoplankton. Therefore, Onslow Bay food web interactions with demersal zooplankton grazers is significant. However, as identified in section 8.01.7 of the Draft GRR/EIS, existing depths of the proposed borrow areas range from 40' to 50'. Maximum depth of proposed dredging is 10' with a range of 3' to 10' depending on the dredging method (hydraulic cutterhead or hopper dredge). According to Cahoon (Personal Communication, Dr. Larry Cahoon (24 October 2006), though a direct short-term dredging impact will occur, benthic microalgae are very adaptable to disturbance and the effects of dredging will likely be no more significant than big storm events. The chlorophyll a concentrations decrease as depth increases; however, solar irradiance at 60' is not a limiting factor and recruitment of benthic microalgae at the proposed post dredging depths (maximum of 60') will occur fairly quickly (about 4-6 weeks). Furthermore, microalgae biomass is less in the winter; thus, considering that the initial construction dredging window is 15 November through 1 April and the periodic re-nourishment interval is 1 December through 31 March, biomass will be low during periods of impact and upon termination of dredging window, spring time recruitment will begin (Personal Communication, Dr. Larry Cahoon (24 October 2006)).

**3.05.32 USFWS Comment:** The Service is concerned that nearshore hardbottoms "have the potential to be gradually buried by the movement of sand during equilibrium profile translation." (p. 96). The Draft GRR/EIS acknowledges (p. 95) that secondary impacts are possible "through sedimentation and/or chronic turbidity." This "translation" may refer to the process whereby the

waterward edge of the beachfill is placed at a slope steeper than that dictated by natural conditions (NRC 1995, p. 86). After construction, ocean waves will reduce the slope by washing away excess material. It is the offshore movement of this sediment that may pose a threat to nearshore hardbottoms. If 866,000 cy of new sediment would need to be added to the artificial beach every four years, an average of 216,500 cy of material would be lost from the constructed beach every year. Some of the sediment loss can be expected to move offshore. Sand placed on Wrightsville Beach, south of the project area, has washed off the beach and buried extensive hardbottoms on the inner continental shelf (Riggs 1994, p. 17). These hardbottoms were prime fishing locations, but are out of production due to a covering of two to six inches of sand. Riggs (1994, p. 17) concludes that beach nourishment and the preservation of hardbottoms represents a very serious conflict which is going to get much bigger.

**Corps Response:** As identified in Appendix R, the side scan and multibeam survey results did not identify hardbottom resources within the -23' depth of closure limit of the project but rather very shallow depressional features located perpendicular to shore. These features are consistent with Rippled Scour Depressions (RSD's), Rippled Channel Depressions (RCD's), and or sorted bedforms as identified in the literature. Based on the nearshore survey results, hardbottoms are not present in the nearshore zone off of Topsail Beach.

**3.05.33 USFWS Comment:** The Draft GRR/EIS acknowledges (p. 96) that epibenthic hardbottom communities may "shift towards less diverse more stressed ephemeral communities." Such potential impacts are not given in Table 5.3 (p. 60). Appendix J notes (p. J-7) that while the best available data do not suggest the presence of high relief, nearshore hardbottoms off Topsail Beach, a survey for nearshore hardbottom will be conducted using side-scan and multi-beam sonar. This potential should be fully addressed in the Final EIS after the forthcoming surveys have been completed.

**Corps Response:** Noted. Nearshore surveys did not document the presence of hardbottoms in the project vicinity.

**3.05.34 USFWS Comment:** A potential indirect impact of the proposed work is sediment starvation of the sound side shoreline by preventing cross island overwash of sand during storms. The Service scoping letter noted that following the destruction of the dunes on Topsail Island by Hurricane Bertha in July 1996, Hurricane Fran in September pushed sand across the island and deposited it along the sound side shoreline. This is part of the island migration process which ensures the continued existence of the island. An artificial berm and dune system prevents island overwashes from maintaining the sound side shoreline. Dunes constructed on the Outer Banks precluded new marsh growth and increased the sound side erosion rate (Pilkey et al. 1980, p. 29). Eventually, erosion of sound side marshes will also become a threat to structures and additional efforts will be required to protect development.

**Corps Response:** Although, some overwash will continue to occur during the more severe storm events, the extent to which overwash will be reduced cannot be quantified. A significant impedance to cross island overwash is the existing development on the island. On the positive side, the proposed project will add sand to the system, which is continually being sand-depleted by natural and man-made forces.

**3.05.35 USFWS Comment:** The combined effects of a rising sea and protective structures will eliminate the estuarine marshes that are such a valuable nursery habitat for fish. Riggs and Ames (2003, p. 85-86) write that human intervention on Hatteras Island altered the pre-1962 stability of the entire back barrier segment, changing the rate of estuarine erosion. Minimizing island overwash reduces sediment inputs which renew the back-barrier sand supply. Reduced sand inflows along with dredging within the Pamlico Sound allowed increased wave energy to reach the shoreline. Without the natural replacement sand from the beach, the rate of shoreline erosion has increased. The sediment washed over the island provides the base for salt marsh growth. Salt marshes trap additional sediment and build up the back side of the island, protecting the estuarine shoreline from erosion. The potential environmental harm to sound side marshes from the elimination of new sand from island overwash and the additional man-made erosion control structures should be discussed in the Final EIS.

**Corps Response:** See response to USFWS comment 3.05.34, above.

**3.05.36 USFWS Comment:** There is concern that changing conditions in the project area, primarily an increase sea level along with stronger and/or more frequent hurricanes, would require shorter intervals between sand replacement operations, Pilkey et al. (1998, p. 96) state that "replenished beaches almost always disappear at a faster rate than their natural predecessors." Furthermore, nourished beaches generally recover much less sand after a storm than natural beaches (Pilkey et al. 1998, p. 57). The faster loss of artificial beaches may be related to two factors, both of which are associated with sea level rise.

**Corps Response:** Project formulation accounted for increased losses of beachfill material across the entire project area. Without-project erosion rates ranged from zero for interior reaches up to 4 ft/yr for the southern project reaches; however, the beachfill was assumed to erode from 4 to 17 ft/yr, with the greatest erosion occurring at the northern and southern ends of the beachfill.

**3.05.37 USFWS Comment:** First, attempting to maintain the present oceanfront structures by placing sand seaward of the beach location consistent with sea level would create a steeper slope on the shoreface. The shoreface extends to the innermost continental shelf at depths of 30-40 feet (Pilkey et al. 1998, p. 48). While the project would place sand on the upper part of the shoreface (the beach), the lower shoreface may continue to loose sand to deeper water. The

steeper shoreface would result in a faster loss of the artificial beach. The sand would slide down the steeper slope at an every increasing rate. The "significant sediment losses from the shoreface" mentioned in the Draft GRRIEIS (p. 43) may increase over 50 years. Second, a higher sea level allows waves to strike higher on the beach (Leatherman 2001, p. 189). The Bruun model suggests that increasing sea level enables high-energy, short-period waves to attack farther up the beach and transport sand offshore (Leatherman 2001, p. 190) On a steeper shoreface, storm wave energy would have less contact with shallow water and have a greater impact on the constructed beach (Pilkey et al. 1998, p. 56).

**Corps Response:** Adequate quantities of material are placed on the shoreface during construction to allow for sediment movement offshore to fill the design template out to the estimated closure depth of -23 ft-msl. Project formulation accounted for increased losses of beachfill material across the entire project area. Without-project erosion rates ranged from zero for interior reaches up to 4 ft/yr for the southern project reaches; however, the beachfill was assumed to erode from 4 to 17 ft/yr, with the greatest erosion occurring at the northern and southern ends of the beachfill.

**3.05.38 USFWS Comment:** The Final EIS should carefully consider whether the four-year replacement interval can be maintained over 50 years. Any contingency plans for replacing the beach between the planned maintenance operations should be discussed. Hurricanes Bertha and Fran "decimated" the existing dune (p. 43) during a two-month period in 1996. If a berm and dune can be eliminated in a single season, it is possible that any beach build in the winter of one year could be completely gone within 6-7 months. The Final EIS should indicate whether such an occurrence would leave the oceanfront structures protected by only small-scale emergency measures (sandbags, scraped sand) for three and a half years or the berm and dune would be replaced, as needed, within the framework of this project.

**Corps Response:** The GRANDUC plan formulation analysis does account for the uncertainty and variability in storm severity from year to year as well as increases in shoreline erosion due to sea level rise. One thousand equally likely storm sequences are simulated and modeled to determine the average cost and benefits associated with each plan. This analysis indicated that a 4-year replacement cycle can be maintained throughout the project life. The federal shore protection projects at Wrightsville Beach and Carolina Beach performed very well during hurricanes Bertha and Fran. Beaches along Topsail Island did not have a shore protection project in place. Public Law 84-99 authorizes repair of seriously damaged beachfill projects between scheduled renourishment, but economic justification must be shown.

**3.05.39 USFWS Comment:** Outside the framework of the current project, but still in regard to the sand replacement cycle, the role which FEMA would have in replacing sand lost during declared emergencies, this should be discussed. In

some cases, a constructed beach can be considered to be part of a town's "infrastructure," which may be replaced with federal funds following a declared disaster. Currently, FEMA has authorized the replacement of 1,107,560 cy of material washed, off the beaches of three communities on Bogue Banks, northeast of the project area, by Hurricane Ophelia in September 2005. If similar post-disaster, replacement efforts can be expected for the local sponsor, the amount of material to be drawn from offshore sand resources would exceed the amounts considered in the Draft GRR/EIS.

**Corps Response:** Disagree. FEMA only provides funding to repair nonfederal shore protection projects.

**3.05.40 USFWS Comment:** The consideration of environmental impacts appears to be based on an assumption that major sand replacements would occur every four years with the first operation in 2014 and the final one in 2058 (p 79). With the rise in global sea level and the occurrence of stronger and/or more numerous hurricanes, it is doubtful that a precise four-year replacement cycle could be maintained. By the latter half of this century, hurricane protection could require reconstruction of the dune and berm on a two-year or annual cycle. If the replacement cycle was reduced, the frequency of short-term construction impacts would increase. Important adverse impacts would include: (1) less recovery time for beach invertebrates; (2) more turbidity and sediment at the offshore sand extraction sites; and, (3) more turbidity and sedimentation in nearshore waters and hardbottoms. If the berm and dune would only be replaced on the proposed four-year cycle regardless of when they are washed away, this point should be emphasized in the Final EIS.

**Corps Response:** The GRANDUC plan formulation analysis does account for the uncertainty and variability in storm severity from year to year as well as increases in shoreline erosion due to sea level rise. One thousand equally likely storm sequences are simulated and modeled to determine the average cost and benefits associated with each plan. However there is no intentional escalation of storm severity over the 50 year period. This analysis indicated that a 4-year replacement cycle can be maintained throughout the project life. However, as stated previously if conditions change significantly then the project, including the renourishment interval, could be reassessed. Additionally, pursuant to NEPA, a supplement to the FEIS is required if there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts. Lastly, if the project sustains significant damage from a hurricane, PL84-99 authorizes the repair of that project so long as it is economically justified.

**3.05.41 USFWS Comment:** Greene (2002, pp. 106-107) presents a summary of "ocean beach management projects" in coastal North Carolina. This table considers federal projects which exist now, are authorized, or have been requested as well as non-federal local projects. After eliminating overlapping

projects such as areas which may received periodic dredge disposal as well as formal shore protection sand, this review estimated that 176 miles, or 55 percent of the North Carolina shoreline is, or could be, subjected to sand placements. The Final EIS should review these data which are available online and revise the CEA as required.

**Corps Response:** The report referenced by the commenter (Greene, 2002) includes approximately 70 miles of proposed beach activity for North Carolina Highway 12 (NC12) on Hatteras and Ocracoke Islands. The cumulative effects analysis in the present document does not include this mileage for several reasons. First, the NC12 project is not far enough in the planning process to accurately forecast what amount, if any, will be proposed for beach activities. Secondly, based on past experience the Wilmington District feels that management restrictions and past reluctance of the National Park Service to allow beach renourishment activities in their management areas, there is little likelihood of those areas accepting beach renourishment material in the reasonably foreseeable future. Removing the NC12 numbers from the 176 miles reported by Greene (2002), results in a number of shoreline mileage impact comparable to the number reported in the present document.

**3.05.42 USFWS Comment:** As noted above, federal funds from the FEMA could be used for additional beach construction in the project area following a declared disaster. Furthermore, non-federal beach construction could occur in the project area following a disaster if federal funds are not provided. The Corps should consider the potential for such additional construction within the CEA.

**Corps Response:** FEMA only provides funding to repair non-federal shore protection projects. The present CEA addresses all "reasonably foreseeable" impacts to beach resources. The analysis focuses on beach related impacts due to the nature of the proposed action; expansion of the state-wide analysis to include all actions with potential to impact natural resources is unrealistic and beyond the scope of the present document. There is no reasonable way to accurately forecast the impacts of potential events that occur in either widely diffuse or concentrated areas and are of relatively short duration, such as emergency placement of relatively small (as compared to a shore protection project) amounts of material following a declared disaster.

**3.05.43 USFWS Comment:** The Service is concerned that the proposed construction would promote additional development within the Town which will continue to experience storm damage. The Draft GR.R/EIS states (p. 118) that "placement of beachfill will occur in the floodplain of area beaches." However, most of the island, not just the beaches, can be considered to be within the 100-year floodplain (Pilkey et al. 1998, p. 171). The Corps states that this placement would be conducted specifically for its beneficial effect in offsetting erosion and restoring damaged beaches, and is, therefore judged acceptable. The action may

induce additional development within the floodplain, but is not expected to significantly increase the effect on the floodplain (p. 119).

**Corps Response:** IWR Report 96-PS-1, FINAL REPORT: An Analysis of the U.S. Army Corps of Engineers Shore Protection Program, June 1996 supports this conclusion as follows. "Corps projects have been found to have no measurable effect on development, and it appears that Corps activity has little effect on the relocation and/or construction decisions of developers, homeowners, or housing investors." See response to EPA comment 3.03.7

**3.05.44 USFWS Comment:** However, the appendix on non-structural alternatives suggests (p. P-5) that such alternatives "would result in a reduction in the tax base and growth potential of the community." Presumably, a structural approach, such as maintaining berm and dune for 50 years, would increase the tax base and growth potential. Implementation of effective damage reduction measures will ensure that the current growth trends in population and recreation visitation will continue (B-47). These statements suggest that the constructed berm and dune are expected to lead to growth in the project area.

**Corps Response:** This concern by USFWS is shared by others, however, the study results presented in IWR Report 96-PS demonstrate a different conclusion. Please see response to item 3.03.7. No change in the mix of residential and commercial development is assumed in the analysis. Recreation benefits are based on increased beach width not the addition of high-rise hotels or condominiums.

**3.05.45 USFWS Comment:** Overall, shoreline management creates an upward spiral of initial protective measures resulting in more expensive development which leads to the need for more and larger protective measures.

**Corps Response:** We do not accept this hypothesis for the following reasons. The study presented in IWR Report 96-PS concludes that Corps projects have been found to have no measurable effect on development (see response to item 3.03.7). One reason residential structures are more expensive is that more wind, wave, and flood resistant features are required to be built in. As a result, the more expensive structures experience less damages. For example, a newly built ocean front home has a first floor elevation above the more frequent storm surges. Flood plain regulations required for flood insurance prohibit the use of ground level space for anything prone to flood damage. The only exclusions are parking, temporary storage, and access features, such as a staircase for elevator shaft. This new structure would also be required to have pilings 16 feet below the ground level or 8 feet below mean sea level. Storm erosion damage to such a structure in our economic damage model limit damages to 20 percent of the total value of the structure as compared to structures built prior to 1986

**3.05.46 USFWS Comment:** The Final EIS should include a reconsideration of compliance with EO 11988. Development may be continuing on the barrier islands because of a perception that some form of beach maintenance will be provided. It is unclear whether the conclusions of the IWR study would apply if it was widely accepted that no major beach construction would be undertaken. The Draft GRR/EIS states (p. 48) that "the floodplain in the Topsail Beach area is currently being adversely affected by erosion and the continued deterioration of the beach and dune complex. These effects will become more pronounced as the beach continues to erode and future storms encroach upon the area." Land loss and long-term erosion eventually renders lots unbuildable with a significantly lower economic value (B-47). It is unclear whether development would continue to increase in the absence of any major effort, either federal or non-federal, to combat the effects of sea level rise.

**Corps Response:** Compliance with EO 11988 has been reconsidered and more information has been included in the Final EIS to support EO11988 compliance. The conclusions of the IWR study are based on an analysis of the Corps' shore protection program. According to the IWR report: "The presence of a Corps project has little effect on new housing production. The econometric results presented imply that general economic growth of inland communities is sufficient by itself to drive residential development of beachfront areas at a rapid pace. The statistical evidence indicates that the effect of the Corps on induced development is, at most, insignificant, compared to the general forces of economic growth which are stimulating development in these areas, many of which are induced through other municipal infrastructure developments such as roads, wastewater treatment facilities, etc. The results presented for beachfront housing price appreciation are consistent with the findings from the more general econometric model of real estate development in beachfront communities. The increasing demand for beachfront development can be directed related to the economic growth occurring in inland areas. There is no observable significant effect on the differential between price appreciation in inland and beachfront areas due to Corps activity. The housing price study could not demonstrate that Corps shore protection projects influence development. Corps activity typically follows significant development." In fact, the requirements for Federal participation in coastal storm damage reduction projects essentially dictate that these projects be constructed along areas that have a high degree of development.

**3.05.47 USFWS Comment:** In the reconsideration of compliance with EO 11988, the Corps should evaluate the role of the proposed work in creating a perception of permanency for nearshore lots. To the extent that a 50-year federal commitment to maintain a berm and dune contributes to the perception of permanency, the project represents support for floodplain development. This is development which would not be completely protected from storm damage. Landfall by a major hurricane (categories 3-5) in southeastern North Carolina is likely to repeat the "complete devastation" (Pilkey et al. 1998, p. 171) produced by Hurricane Fran on Topsail Island. With the federal project in place, rebuilding

would occur as the beach is extended back into the ocean. This process may occur several times over the course of the 50-year project. The question to be answered is whether such repeated destruction and rebuilding represents unwise floodplain development for which E.O. 11988 seeks to avoid federal support. Whether state and local funds would be periodically provided to construct the beach is not the issue, the issue is whether federally funded beach construction supports development in an inherently dangerous location.

**Corps Response:** See response to USFWS comment 3.05.46, above. The statistical evidence indicates that the effect of the Corps on induced development is, at most, insignificant, compared to the general forces of economic growth, which are stimulating development in these areas (IWR, 1996). Therefore, Federal shore protection projects have insignificant effects on floodplain development.

**3.05.48 USFWS Comment:** In light of the dynamic nature of the project area, the Service recommends that the 50 year scope for beach construction and maintenance be reduced. A planning period on the order of ten years would allow for a reassessment of sea level rise, changing needs for sand resources, and environmental impacts to fish and wildlife resources.

**Corps Response:** Disagree. A 50-year authorization does not preclude reevaluation of the project in the future.

**3.06 U. S. Department of the Interior, Fish and Wildlife Service, letter dated January 9, 2007 from Pete Benjamin, Field Supervisor in response to a letter dated December 14, 2006 from Coleman Long, Planning and Environmental Chief, U. S. Army Corps of Engineers, Wilmington District (Appendix T, page 108)**

**3.06.1 USFWS Comment:** This letter responds to your letter of December 14, 2006, regarding section 7 consultation for the West Onslow Beach and New River Inlet (Topsail) Shore Protection Project located in Pender County, North Carolina. This project was described in a Draft Integrated General Reevaluation Report and Environmental Impact Statement (Draft GRR/EIS) released by the Wilmington Corps District (Corps) in June 2006. Appendix I of the Draft GRR/EIS was the Biological Assessment (BA) of project impacts on federally listed species. The cover letter of the Draft GRR/DEIS, dated June 23, 2006, stated that the Corps had determined that the proposed project "may affect" federal listed species and requested a Biological Opinion (BO) through formal consultation under section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This letter is provided in accordance with the aforementioned section of the ESA.

**Corps Response:** Noted.

**3.06.2 USFWS Comment:** The BA provides (Table I- 1) an accurate list of the federally listed species that could occur in the project area. Some species are under the jurisdiction of the National Marine Fisheries Service (NMFS). The species under the jurisdiction of the USFWS are the West Indian manatee (*Trichechus manatus*), piping plover (*Charadrius melodus*), seabeach amaranth (*Amaranthus pumilus*), and the five species of sea turtles which are known to occur in the ocean and estuarine waters of North Carolina. These sea turtles are the loggerhead (*Caretta caretta*), green (*Chelonia mydas*), leatherback (*Dermochelys coriacea*), hawksbill (*Eretmochelys imbricata*), and Kemp's ridley (*Lepidochelys kempi*). Both loggerhead and green sea turtles have been documented to nest on the beaches of the project area. However, all five species of sea turtles have the potential to become stranded on project area beaches and must be considered in section 7 planning.

**Corps Response:** Noted.

**3.06.3 USFWS Comment:** The BA concluded that the proposed work "may affect" the five species of sea turtles, piping plover, and seabeach amaranth. However, the BA did not discuss whether the effects would be adverse or could be considered as not likely to adversely affect. Since the plan includes Service guidelines, entitled "Precautions for General Construction in Areas Which May Be Used by the West Indian Manatee in North Carolina," the BA concluded that the work is not likely to adversely affect the manatee. Based on the proposed work schedule and the implementation of our manatee guidelines, the Service concurs with the Corps' determination for this species.

**Corps Response:** Noted.

**3.06.4 USFWS Comment:** The New Topsail Inlet spit directly south of the project area is part of a designated unit (Unit NC-I 1) of critical overwintering habitat for piping plovers. The proposed period of initial sediment placement, November 16 through April 30, would include the early part of the species' reproductive period (April 1 through July 3 1). The BA states that the work would result in short-term impacts on breeding, foraging, sheltering, and roosting habitat. There is the potential for impacts on nesting habitat. The BA concluded that the work would not directly impact critical habitat Unit NC-1 1. Actual sediment disposal would stop at the boundary to the unit. The Service concurs with this determination, but we believe that secondary adverse impacts associated with large sediments placements in proximity to the critical habitat could occur. Sediment pushed from the constructed beach by alongshore currents into the unit may impact beach invertebrates which serve as a food source for overwintering plovers. However, such impacts would not rise to the level of an adverse modification.

**Corps Response:** Concur.

**3.06.5 USFWS Comment:** While formal consultation is usually associated with projects which may affect and are likely to adversely affect federally listed species, the Service agreed to initiate formal consultation. In the course of our review of the Draft GRRIEIS, we determined that only a few protective measures needed to be incorporated into the plan to reduce the impacts to all federally listed species to the point consistent with a determination of "may affect, but is not likely to adversely affect." These were: (1) a program to detect and rescue stranded sea turtles; and (2) planning each construction event to move from south to north. The latter is important so that early work would be near New Topsail Inlet and move north. In this way construction would be as far away from the inlet as possible during late winter or early spring when piping plover breeding activities begin.

**Corps Response:** Noted.

**3.06.6 USFWS Comment:** During the fall of 2006, the Service discussed these measures with your planning staff and we were informed that both measures could be incorporated into the plan. In fact, efforts to rescue stranded sea turtles are becoming standard provisions of beach construction projects. The Service recommended that section 7 requirements could be handled informally since the reasonable and prudent measures and well as the terms and conditions which would be contained in a BO would be consistent with the proposed plan.

**Corps Response:** Noted.

**3.06.7 USFWS Comment:** Your letter states that the Corps is committed to work within the sea turtle and bird nesting windows. However, it is unclear whether the two protective measures will be incorporated into the plan. At this time we believe that the inclusion of these two protective measures can be discussed informally. In a November 29, 2006, conversation with Mr. Piatkowski of your staff and Dr. Matthew Godfrey, the North Carolina Wildlife Resources Commission Sea Turtle Coordinator, the Service was informed that procedures are in place for detecting and reporting stranded sea turtles. Mr. Piatkowski indicated that he was aware of these procedures. We hope that project plan can specify that each construction event would start at the southern end of the project area and move northward.

**Corps Response:** Agreed. See Section 7.03.6 Environmental Monitoring and Commitments.

**3.06.8 USFWS Comment:** The Service believes that informal consultation is appropriate for resolving any remaining section 7 issues for this project. Informal consultation should include details on several measures to ensure sea turtle

nesting. The BA states (p. I- 14) that the Corps plan includes measures to protect sea turtle

Nesting that "are now common practices or commonly listed conditions on permits... such as contingency plans, sediment quality monitoring, compaction tests, tilling, leveling scarps, and monitoring for nests." The Service strongly supports these measures.

**Corps Response:** Noted.

**3.06.9 USFWS Comment:** The Final EIS should provide additional information of the measures to help stranded sea turtles and minimize harm to sea turtle nesting. The procedures to detect and report stranded sea turtles should be discussed.

**Corps Response:** Concur. The final EIS includes additional information, as requested.

**3.06.10 USFWS Comment:** Regarding escarpments, visual surveys for escarpments should be made along the project immediately after completion of the sediment placement and prior to May 1. Additional surveys should be made for three years following initial construction. Considering that reconstruction is scheduled for every four years between 2010 and 2058, escarpment survey should be made each year of the project. Survey results should be submitted to the Service prior to any action being taken. After discussion with the Service, escarpments that interfere with sea turtle nesting or exceed 18 inches in height for a distance of 100 feet should be leveled to the natural beach contour by May 1. The Service should be contacted immediately if new escarpments that interfere with sea turtle nesting or exceed 18 inches in height for a distance of 100 feet form during the nesting and hatching season to determine the appropriate action to be taken. If it is determined that escarpment leveling is required during the nesting or hatching season, the Service will provide a brief written authorization that describes methods to be used to reduce the likelihood of impacting existing nests. An annual summary of escarpment surveys and actions should to be submitted to the Service.

**Corps Response:** The beach will be monitored for escarpment formation prior to each nesting season. Escarpments that are identified prior to and/or during the nesting season that interfere with sea turtle nesting (exceed 18 inches in height for a distance of 100 ft.) will be leveled. If it is determined that escarpment leveling is required during the nesting or hatching season, leveling actions should be directed by the USFWS.

**3.06.11 USFWS Comment:** Regarding sediment compacts, monitoring should not begin until the material has been graded and dressed to the final slope. A period of time should be allowed for finer particles to be washed away and final settling of the material to occur prior to compaction monitoring. Normally

compaction data should be collected prior to April 1 in order to allow any required remedial action to be completed prior to May 1, the start of the sea turtle nesting season. This schedule can be used for all the periodic reconstruction events which are scheduled to end by March 31. For initial construction, which will extent to April 30, it will be necessary to conduct compaction monitoring in stages. The overall beach can be divided into sections and monitored separately. If the earlier sections require remedial action, it is likely that the later sections will also require the same measures.

**Corps Response:** USFWS compaction assessment guidelines will be followed and tilling will be performed as deemed necessary by the USFWS and NCWRC.

**3.06.12 USFWS Comment:** The Service position is that compaction monitoring should occur after each construction event and for three subsequent years. With the four-year reconstruction cycle, this cycle would require compaction monitoring during each year of the project. However, compaction monitoring would not be required if the sediment used to construct the beach is completely washed away.

**Corps Response:** Noted. See response to USFWS comment 3.06.11.

**3.06.13 USFWS Comment:** Beach tilling should only be performed as a result of an identified compaction problem and not performed routinely in place of compaction monitoring. An annual summary of compaction surveys and the actions taken should be submitted to the Service. This summary will be evaluated to determine whether any corrective actions, such as a more compatible sand source, are needed to maintain sea turtle nesting habitat.

**Corps Response:** See response to USFWS comment 3.06.11.

**3.06.14 USFWS Comment:** Both escarpment formation and sediment compaction occur, in part, as a result of placing incompatible material on the shoreline. The Draft **GRR/EIS** indicates that the Corps seeks to use compatible material and will monitor the beach fill during construction. Such quality control measures should help to reduce the need for corrective actions for escarpment and compact sediment.

**Corps Response:** Noted.

**3.06.15 USFWS Comment:** If the measures discussed in this letter are included in the Final EIS along with the environmental commitments contained in the Draft GRR/EIS, it is likely that the Service would concur with a determination by the District Engineer that the project is not likely to adversely affect any federally threatened or endangered species, or designated critical habitat for such species. The Corps' requirements of section 7 of the ESA would

be fulfilled. However, the Corps must reconsider its obligations under section 7 if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner which was not considered in this review; or, (3) a new species is listed or critical habitat determined that may be affected by the identified action.

**Corps Response:** Agreed.

**3.06.16 USFWS Comment:** With regard to the second condition, project modification, you state that occasional, unforeseen circumstances may arise that result in the need for a short-term extension of the project construction window. The Service understands that circumstances, such as bad weather and equipment failures may alter the construction schedules given in the Draft GRR/EIS . As we noted in our comments of September 13, 2006, there is a possibility that rising sea level may require the current four-year reconstruction interval to be shortened. Such project modifications would require new consultation which, as you noted, could be conducted informally on a case-by-case basis.

**Corps Response:** Concur.

**3.06.17 USFWS Comment:** At this time, the Service recommends that the Corps incorporate all the protective measures for federally-listed species into a revised BA. As appropriate, the effect determination for each species may be revised to state that the project may affect, but is not likely to adversely affect the species.

**Corps Response:** Agreed. The BA has been revised as recommended.

**3.07 U. S. Department of the Interior, Minerals Management Service (MMS), memo dated October 3, 2006 from Barry Drucker Leasing Division, Marine Minerals Branch**

**3.07.1 MMS Comment:** Page 12, Section 2.01.2, Inlet, second sentence: which direction is the inlet migrating?

**Corps Response:** The inlet has been migrating to the southwest.

**3.07.2 MMS Comment:** Page 19, Section 2.01.10, Hard Bottoms: Make title all one word, since that is how it is used in the paragraph.

**Corps Response:** Concur. The heading of section 2.01.10 will be changed to read: 2.01.10 Hardbottoms

**3.07.3 MMS Comment:** Page 37, Section 2.07.1, Air, Noise, and Water Pollution: There should be estimates of the amount of air pollutants released from the project, NOx, CO, etc.

**Corps Response:** Emissions are dependent on the type, age and size of the dredge. Since we do not know what dredging company or equipment may be used, it is very difficult, if not impossible to estimate air emissions. However, all dredges must comply with the applicable EPA standards. Additionally, ozone is North Carolina's most widespread air quality problem, particularly during the warmer months. High ozone levels generally occur on hot sunny days with little wind, when pollutants such as nitrogen oxides and hydrocarbons react in the air. High levels of fine particles are more of a problem in the western Piedmont region but can occur throughout the year, particularly during episodes of stagnant air and wildfires. This project is in an attainment area and with the exception of initial construction that will extend into April, the project will be started and completed outside of ozone season. As stated in Section 8.08.1 a conformity determination is not required. Section 8.08.1 of the Draft GRR/EIS has been revised to reflect the information above.

**3.07.4 MMS Comment:** Appendix A: the maps showing the Borrow Areas should have the 3 nautical mile line to show where Federal jurisdiction begins and any of the nearby artificial reefs should be shown on the borrow area maps as well.

**Corps Response:** Figures A-1 and A-2 have been modified to show the 3 nautical mile line. Figure A-1, "Environmental Planning Considerations" shows the only artificial reef (AR-360) in the project area.

**3.08 North Carolina Department of Administration (NCDA), letter dated June 28, 2006 from Ms. Chrys Baggett, Environmental Policy Act Coordinator**

**3.08.1 NCDA Comment:** The N. C. State Clearinghouse has received the above project for intergovernmental review. This project has been assigned State Application Number 06-E-0000-0378. Please use this number with all inquiries or correspondence with this office.

**Corps Response:** Noted.

**3.09 North Carolina Department of Administration (NCDA), letter dated September 12, 2006 from Ms. Chrys Baggett, Environmental Policy Act Coordinator**

**3.09.1 NCDA Comment:** 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.

**Corps Response:** Noted.

**3.10 North Carolina Department of Environment and Natural Resources, memorandum dated August 22, 2006 from Melba McGee, Project Review Coordinator, Office of Legislative and Intergovernmental Affairs, NCDENR, to Chrys Baggett, Environmental Policy Act Coordinator, State Clearinghouse.**

**3.10.1 NCDENR Comment:** The department encourages the applicant to continue coordinating with the N.C. Wildlife Resources Commission, the Division of Coastal Management and the Division of Marine Fisheries prior to finalizing project plans. This will help avoid unnecessary delays during the permitting process.

**Corps Response:** Noted.

**3.11 North Carolina Wildlife Resources Commission (NCWRC), memorandum dated August 2, 2006, from Steven H. Everhart, Habitat Conservation Program to Melba McGee, Office of Legislative and Intergovernmental Affairs, NCDENR.**

**3.11.1 NCWRC Comment:** With the increasing number of leatherback sea turtle nests in NC, it should be considered a potential nesting species on Topsail Island. We recommend that it be added to the list of potential sea turtles nesting on Topsail Island.

**Corps Response:** Concur. Corrections have been made to sections 3.02.4 and 3.02.5 of Appendix I to reflect the potential for leatherback nesting on Topsail Beach.

**3.11.2 NCWRC Comment:** Section 7.03.6 Environmental Monitoring and Commitments and Section 7.04.1.3 Dredging Window do not include the moratoria for beach deposition during the nesting seasons for shorebirds (April 1 – August 31) and sea turtles (May 1 – November 15). We recommend they be included here. We also recommend pre- and post-nourishment monitoring of shorebird foraging and nesting.

**Corps Response:** Section 7.03.6 will be updated to include the bird and sea turtle nesting windows. Replace Section 7.04.1.3 with: "In determining the optimum borrow use plan, pipeline dredging window restrictions for initial construction were evaluated, with respect to nesting sea turtles, using a 16 November to 30 April dredging window. This plan considers that the initial construction will be performed in one season for the project. In order to complete initial construction in one season, the project will extend into the first 30 days of the bird nesting window of 1 April - 31 August. However, as identified in the "Recommended Construction Plan (Section 7.04.1.4)", a 4-year periodic nourishment cycle using hopper dredges is considered for the 50-year life of the project. The Wilmington District hopper dredging window is from 1 December to 31 March in order to avoid turtles in the offshore environment. Considering the reduced sediment requirements for periodic nourishment as well as the adherence to a hopper dredge window ending 31 March, the periodic nourishment events will avoid the bird nesting window. A summary for the recommended construction plan follows with a brief discussion of start-stop times, number of contracts required, type and number of dredges required, and dredging presence in the project area during the life of the project."

**3.11.3 NCWRC Comment:** Section 8.02.3 Birds discusses the shorebird moratorium mentioned above but dismisses its implementation. "Though initial nourishment activities will extend into the 1 April bird nesting timeframe, to the maximum extent practicable the Corps will work with the NCWRC to plan construction around designated nesting areas. Under normal conditions, no construction should occur after 1 May, which is the established sea turtle nesting window. Based on the following considerations, the proposed construction activities will not significantly impact breeding and nesting shorebirds or colonial waterbirds within the project area: 1.) timing of the initial construction activities should only extend into the first month of the nesting timeframe, 2.) for the period of time when construction will extend into the nesting timeframe, the Corps will coordinate with the NCWRC to plan construction activities around potential nesting areas, and 3.) beach nourishment and construction activities would avoid the designated Piping Plover Critical Habitat at the south end of Topsail Island. This area is most likely to support potential nesting shorebirds." We recommend that extensions into the shorebird and/or the sea turtle moratoria not be allowed after the initial project (that is, beginning with the second deposition period) except as emergency modifications and then only through proper modification request. Thus, the dredging/deposition window after the initial nourishment becomes November 16 – March 31 without modification.

**Corps Response:** Noted. Section 8.02.3 will be updated to state: "Though initial nourishment activities will extend into the 1 April bird nesting timeframe, to the maximum extent practicable, the Corps will work with the NCWRC to plan construction around designated nesting areas. During initial construction, under normal conditions no construction should occur after 1 May, which is the established sea turtle nesting window. Based on the following considerations, the

proposed construction activities will not significantly impact breeding and nesting shorebirds or colonial waterbirds within the project area: 1.) timing of the initial construction activities should only extend into the first month of the bird nesting timeframe with subsequent periodic nourishments adhering to the 1 April to 31 August bird nesting window, 2.) for the period of time when construction will extend into the nesting timeframe, the Corps will coordinate with the NCWRC to plan construction activities around potential nesting areas, and 3.) beach nourishment and construction activities would avoid the designated Piping Plover Critical Habitat at the south end of Topsail Island. This area is most likely to support potential nesting shorebirds."

**3.11.4 NCWRC Comment:** Overwash is the single most important factor in the creation and maintenance of shorebird nesting habitat. Beach nourishment eliminates overwash and, thus, impacts habitat availability in a natural system. The DEIS should reflect the fact that even nourishment of the developed section of shoreline leads to impacts on nesting habitat.

**Corps Response:** The Corps recognizes that overwash is an important factor in the creation and maintenance of shorebird nesting habitat and has avoided any impacts to the south end of Topsail Island in order to preserve this natural habitat; thus, allowing for these natural processes to occur where development pressure does not exist. However, we disagree that the without project condition for the rest of Topsail Beach is a natural system that is supportive of these habitat features. As identified in Section 3.03 of the report, the Corps' without project future economic condition assumes that all structures impacted by hurricane and storm erosion damages will be replaced to a level similar to the existing distribution of residential and commercial use. Furthermore, it is assumed that residential structures removed by long-term erosion will not be replaced during the 50-year period of analysis; however, the second row structures will become first row structures. Therefore, in regards to the Corps evaluation of without project conditions relative to economics, post-storm structural losses will be replaced and any washover fan formation that occurs within property limits that are deemed rebuildable by the state will have a new structure rather than offering new bird habitat. The project area is, and will continue to be, a highly developed beach whose residential and commercial development practices have led to the degradation of available washover habitat prior to the construction of a shoreline protection project. Though the proposed project is designed to offer protection to these commercial and residential structures, it is not the project design that is degrading or preventing the habitat potential, but rather development.

**3.11.5 NCWRC Comment:** We do not object to the project provided our recommendations are included as modifications. However, we reserve the right to further comment based on a more thorough reading of the 2076 page document.

**Corps Response:** Noted.

**3.12 North Carolina Wildlife Resources Commission (NCWRC), memorandum dated October 23, 2006, from Steven H. Everhart, Habitat Conservation Program to Melba McGee, Office of Legislative and Intergovernmental Affairs, NCDENR.**

**3.12.1 NCWRC Comment:** Initially our waterbird biologist, Susan Cameron, was unable to download the huge document because of a slow internet connection and her review could not be incorporated into the original comments (see 3.11, above). After her review of a copy on CD we offer the following additional comments.

**Corps Response:** Noted.

**3.12.2 NCWRC Comment:** Syllabus (second page, first paragraph) – The DEIS incorrectly states piping plovers are most common as a winter resident of the state. We actually see more birds during migration. NC is unique in that we can see piping plovers every month of the year.

**Corps Response:** Noted. This Section has been revised to state, "The recommended plan of improvement is considered to be environmentally acceptable. However, piping plover were documented to feed along the primary study area. This species is common throughout the year in North Carolina as either a migrant or winter resident and frequently uses the surf zone. The project may affect piping plover foraging distribution on the beach since beach food resources may be affected by beachfill operations. The green sea turtle, loggerhead sea turtle, Kemp's ridley sea turtle, and leatherback sea turtle are known to nest in North Carolina and could nest in the project area. For this reason, they could be affected by initial project construction and periodic nourishment. These sea turtles occur in offshore waters and may also be affected if hopper dredges are used. Periodic nourishment activities will be timed, to the extent practicable, to avoid the sea turtle nesting season and avoid hopper dredging during months when water temperatures are warm and turtles may be present. The project combined GRR and Environmental Impact Statement will include a biological assessment of project impacts. The U.S. Fish and Wildlife Service and the National Marine Fisheries will review this biological assessment. The requirements of Section 404(r) of Public Law 92-500, as amended, have been met."

**3.12.3 NCWRC Comment:** p. 29 – Black skimmers, least terns and common terns are present during the breeding season and during migration.

**Corps Response:** Noted. This Section has been revised to state, "The black skimmer, least tern, and common tern are state listed species of concern for Pender County, North Carolina and are found on Topsail Beach year round

during both the breeding season and during migration with peak abundance occurring in the summer months. Terns feed by diving from the air upon insects and small fish and the black skimmer feeds on shrimp or small fish by flying just above the water with the tip of the long lower mandible shearing the surface. All of these bird species may use Topsail Beach for roosting, foraging, breeding, and nesting (Potter et al., 1980).

**3.12.4 NCWRC Comment:** The DEIS needs to stress the importance of the south end of Topsail Island to breeding birds including terns, skimmers, piping plovers, Wilson's plovers and American oystercatchers. The DEIS only stresses the importance of estuarine sites to these species when in fact, most birds in this region nest on the barrier island beaches (South Topsail/Lea and Hutaff). While the estuarine islands get some use, most of the dredge islands in this region are diked and used by only small numbers of nesting waterbirds.

**Corps Response:** Concur. The second to last paragraph of Section 2.03.3 will be changed to read: "Colonially nesting waterbirds (gulls, terns, and wading birds) are an important part of the project area ecosystem. These species formerly nested primarily on the barrier islands of the region but have had most of these nesting sites usurped by development or recreational activities. With the loss of their traditional nesting areas, these species have retreated to the relatively undisturbed dredged material disposal islands, which border the navigation channels throughout the state. These islands often offer ideal nesting areas as they are close to food sources, well removed from human activities, and are isolated from mammalian egg and nestling predators. Other species also use the islands for loafing or roosting during migratory periods or the winter months including painted buntings. Surveys by the NCWRC for American oystercatchers and Wilson's plovers this year indicated that the dredge islands, natural islands and shell rakes behind Topsail Island are very important nesting areas for these species. However, dredged material islands within the immediate vicinity of the project area that are diked are used by only a small number of nesting waterbirds. Though most of the project area is heavily developed, the southern end of Topsail island, as well as nearby Lea and Hutaff island, provides important and unique undeveloped habitat for breeding birds including terns, skimmers, piping plovers, Wilson's plovers, and American oystercatchers. These undeveloped barrier island areas are rare within the project vicinity and are very important breeding habitats for these species."

**3.12.5 NCWRC Comment:** p. 30 (2nd paragraph) – The state listed gull-billed tern, Wilson's plover, and American oystercatchers should also be included.

**Corps Response:** Concur. These species were included in Table 2.6 but were inadvertently left out of Section 2.02.4. This paragraph in Section 2.02.4 will be revised to state: "An updated list of state listed species for Pender County, North Carolina was obtained from the North Carolina Natural Heritage Program website (<http://www.ncnhp.org/>). From this list, species that may be present within the

project vicinity are the black skimmer (*Rynchops niger*) (species of concern), least tern (*Sterna antillarum*) (species of concern), common tern (*Sterna hirundo*) (species of concern), gull billed tern (*Sterna nilotica*) (threatened), Wilson's plover (*Charadrius wilsonia*) (significantly rare), American oystercatcher (*Haematopus palliatus*) (significantly rare), and Carolina diamondback terrapin (*Malaclemys terrapin centrata*) (species of concern). Bird species are addressed within Sections 2.02.3 and 8.02.3 and the Carolina diamondback terrapin is addressed in Sections 2.01.2 and 8.01.2 of this EIS."

**3.12.6 NCWRC Comment:** The planning goal (p. 49) of reducing environmental effects of hurricanes and other storms should be revised. Plants and animals are adapted to the dynamic nature of barrier islands and many rely on storms to create the habitat they need to survive.

**Corps Response:** Disagree. See Comment 3.11.4. Though the Corps agrees that plants and animals are adapted to the dynamic nature of barrier islands and many rely on storms to create the habitat they need to survive, the Corps' without project condition assumes rebuilding of residential and commercial structures impacted by hurricanes and other storms. Thus, existing and future development pressures negate the potential for species utilization of dynamic habitat types such as washover fans. Considering these assumptions, the only available habitat for foraging, loafing, nesting, etc. is the beach front habitat that exists seaward of the first row of buildable lots. The with project condition would maintain a dune and berm template throughout the 50 year life of the project that supports this beach front habitat that would otherwise be in a constant erosive state.

**3.12.7 NCWRC Comment:** p. 102 – references Brunswick Co. study – It should be noted that the study did not look at foraging efficiency of birds and lacked statistical power to draw conclusions about impacts of nourishment so some impacts could have gone undetected (CZR 2003).

**Corps Response:** Noted.

**3.12.8 NCWRC Comment:** Potential indirect impacts to Lea/Hutaff Island should be addressed. Lea/Hutaff Island is one of the most important sites in the state for breeding and non-breeding waterbirds. Adjacent islands have been impacted in other projects (e.g. Masonboro Island is experiencing increased erosion from nourishment on Wrightsville Beach). If Lea/Hutaff and/or the south end of Topsail Beach are negatively impacted by the project, mitigation should be required as part of the permit agreement.

**Corps Response:** Unlike the Wrightsville Beach project, there is no terminal structure or inlet dredging associated with this project which could disrupt natural inlet processes and sediment transport to/from adjacent barrier islands.

**3.12.9 NCWRC Comment:** The operational procedure if incompatible material is encountered is not described. It should be a permit condition that dredging will be quickly halted if this happens.

**Corps Response:** Section 7.04.1.7 of the Final report includes the following changes , “Borrow area compatibility is determined based on grain size analyses from borings taken prior to construction, during both the feasibility study and plans and specifications phase. The borings conducted during the plans and specifications phase will provide any additional data necessary to help further refine borrow area compatibility limits. The final spacing of both sets of borings will range from 500 ft. to 1000 ft. apart. This additional characterization of the borrow material will increase the level of confidence for borrow material compatibility and decrease the degree of interpolation between boring locations. Qualitative visual characterizations of the in-place material will be made by representatives of the U.S. Army Corps of Engineers (USACE) construction and environmental offices throughout the project construction.

Furthermore, dredging production rates are specific to each dredge and its operation and can be quantified. The recommended construction plan identified in Section 7.04.1.4 discusses the use of a hydraulic cutterhead pipeline dredge during initial construction and the use of hopper dredges during each periodic nourishment event. For hydraulic cutterhead pipeline dredges, once production rates are known for a given contract, a prediction can be made of the dredging time and volume of material between the instantaneous dredge location and the next known boring location of suitable material. Thus, a qualitative and quantitative assessment can be made of whether this volume of potentially incompatible material is significant relative to the overall project. Results from these calculations will be used by appropriate USACE personnel to determine whether the cutterhead dredge should continue in the dredge’s present location or relocate. During periodic nourishment events, hopper dredges will utilize pumpout facilities for each dredged hopper load. Considering hopper dredges have a maximum capacity per load and are self propelled, potential incompatible material can feasibly be managed by the Corps.

Federal and state environmental agencies will be notified if, and how much, potentially incompatible material is encountered during dredging operations. If necessary, the Wilmington District will make the decision on a suitable contingency measure which may include moving the dredge to another site within the borrow area or to another borrow area, depending on availability of sediment, and will notify the agencies of this contingency measure.

**3.12.10 NCWRC Comment:** I-20 – It should be noted that project beaches are also very important during migration. Also, the document states that beach erosion is a factor limiting availability of habitat and successful nesting. This is not the case. It’s actually the development that limits habitat and success. If

islands were permitted to migrate naturally, the beach would simply be moving landward, but instead the beach gets squeezed between a rising ocean and permanent structures.

**Corps Response:** Noted.

**3.12.11 NCWRC Comment:** I-21 (third paragraph)- It should be noted that delaying nesting of piping plovers and other waterbirds can impact the outcome of the breeding season (i.e. birds may decide not to nest or nest late and late nests are typically less successful).

**Corps Response:** Concur. This section has been changed to state: "(3) Relationship to Critical Periods in Life Cycle. Beach placement of sand derived from identified borrow sites is expected to occur from 16 November to 30 April during initial construction and 1 December to 31 March for each periodic nourishment interval. Therefore, the breeding and nesting season (April 1 through 31 July) will be impacted for a period of about 30 days during initial construction. Delaying potential breeding and nesting of piping plovers could affect the outcome of the breeding season. Birds may decide not to nest or may nest late in the season, a time when nests are typically less successful. However, considering that only 7 nesting attempts have been made in the area since 1999, only one quarter of the nesting season will be impacted during initial construction, and avoidance of the piping plover critical habitat will allow for unimpacted portions of the beach during the breeding and nesting season, impacts to the piping plover nesting season are expected to be minimal. However, designated constituent elements of the critical habitat for piping plovers may be impacted by the project; thus, foraging, sheltering, and roosting habitat may be temporarily impacted."

**3.12.12 NCWRC Comment:** Under "vicinity impacts", the BA states a large percentage of beaches in the vicinity are impacted at this time (potentially 64%). This is significant and should not be discounted.

**Corps Response:** The Corps has not "discounted" the significance of the impacts of beach renourishment or disposal in the project vicinity. The percentage reflected in the analysis is simply the result of the project location and its proximity to other existing and proposed projects.

**3.12.13 NCWRC Comment:** The cumulative impacts assessment does not fully address coastal projects that are occurring on our beaches. The state wide impacts assessment should include all activities that have the potential to impact natural resources. For example, beach scraping and inlet stabilization projects appear to be excluded from state wide analysis. Additionally, protected beaches and nourishment restricted beaches appear to be discounted in analysis, yet activities also occur in these areas that can greatly impact natural resources. For example, approximately 56 miles of continuous dune line is maintained to protect

State Highway 12, which runs through Pea Island National Wildlife Refuge and Cape Hatteras National Seashore (USFWS 1996). As a result, piping plovers nest only on the roadless spits at Cape Hatteras National Seashore. CBRA zones are also experiencing development and have proposed projects. Furthermore, indirect impacts to undeveloped beach adjacent to project areas should also be considered (e.g. Masonboro is impacted by project on Wrightsville beach, Onslow Beach may be impacted by New River Inlet channel relocation project). Finally, other activities such as artificial creation of dunes and vegetation planting also limit habitat availability. A more comprehensive list of all activities would be useful.

**Corps Response:** The present analysis addresses all "reasonably foreseeable" impacts to beach resources. The analysis focuses on beach related impacts associated with actions similar to the proposed action. There is no reasonable way to accurately forecast the impacts of potential events that occur in either widely diffuse or concentrated areas and that are of relatively short duration, such as beach scraping, emergency shore protection, or development in CBRA zones. Additionally, expansion of the state-wide analysis to address all actions with potential to impact natural resources is beyond the scope of the present document.

**3.12.14 NCWRC Comment:** The DEIS needs to discuss the April 1st - Aug. 31st bird nesting moratorium. While we realize it won't be possible to adhere to the window during initial construction, we expect the dredge/fill activities to take place outside of the nesting season during future events. Since less material will be needed for subsequent nourishment events, completion of dredging should be possible by the end of March. Completing construction prior to April will also aide in faster recovery of beach invertebrates.

**Corps Response:** Agree. See response to comments 3.05.2, 3.11.2 and 3.11.3.

**3.12.15 NCWRC Comment:** The DEIS notes that invertebrate populations are expected to recover relatively quickly following nourishment events. While high quality beach fill material and timing of placement will minimize impacts to beach invertebrates, we still have concerns over short term, long term and cumulative impacts of this project. First, it is unclear when peak recruitment time for macroinvertebrates occurs on Topsail Beach. A study on Pea Island found peak recruitment of coquina clams was in March and concluded that nourishment in March or April would depress the population in the region of nourishment for at least a full year (Donoghue 1999). Even if invertebrate populations fully recover within one year of the project, this is still a significant amount of time with depressed food resources available to foraging shorebirds over a large area. Lastly, it is not clear what impacts the project will have over the long term on wave energy climate and beach slope. These are two key factors important to macroinvertebrates (McLachlan 1990 and McArdle and McLachlan 1992).

Peterson et al. (2000) also raises this concerns writing "...longer-term impacts are possible arising from persistent modifications of the physical environment."

**Corps Response:** According to Hackney et. Al (1996) in their "Review and Synthesis of Data on Surf Zone Fishes and Invertebrates in the South Atlantic bight and the Potential Impacts From Beach Nourishment," recruitment for most surf zone invertebrates and fishes occurs primarily between April and September. Specifically, *Donax variabilis* peak abundance occurs between May and September with recruitment occurring in June and July. Peak abundance of *Emerita talpoidea* occurs from May through October with two periods of recruitment occurring in August and September and November and December. Breeding of *Emerita talpoidea* generally occurs in the summer months with greatest reproductive effort during July. Though Donoghue (1999) documents a site specific peak period of recruitment on Pea Island occurring during March, Hackney et. al. (1996) review and summarize all existing information on representative surf zone fish and invertebrate species at various locations to make presence, peak abundance, and recruitment assessments throughout the year. After review of all existing literature, the proposed plan attempts to minimize environmental impacts by designing the project to (1) avoid periods of peak abundance, breeding, and recruitment times, (2) utilize sediment that is compatible to the native beach, and (3) short re-nourishment intervals (1 December through 31 March) will be implemented in order to limit direct and indirect impacts. Nonetheless, the Corps recognizes organism distributions are shown to be closely associated with beach geomorphology and swash hydrodynamics (Donoghue, 1999) and recognizes the importance of gathering information on this subject as well as gathering data to better understand the surf zone community, including feeding relationships and recruitment of the juveniles of trophically important species (Hackney et. al., 1996). As identified in Comment #6, the Corps will contribute funding towards gathering information on these critical unknown variables in order to provide the data that supports the development of models to potentially predict long term and cumulative impacts.

**3.12.16 NCWRC Comment:** While quite a bit of work has been done examining the impacts of beach nourishment on invertebrate populations, we still do not fully understand effects on the natural resources. For example, we do not know what the cumulative impacts of multiple nourishment events are on invertebrate populations. There is simply not enough information to say there will be no long term impacts on invertebrate populations from a 50-year project. Also, few studies associated with beach nourishment have looked at body size of invertebrates in addition to abundance on renourished beaches (Peterson and Bishop 2005). It is possible that most repopulation occurs from larval recruitment thus decreasing the size of prey items available to shorebirds. Finally much work is needed to fully understand fundamental processes in the natural beach system (Peterson and Bishop 2005).

**Corps Response:** See response to USFWS comment 3.05.29. In North Carolina, the majority of invertebrate species recruit between May and September (Hackney et al., 1996; Diaz, 1980; Reilly and Bellis, 1978). The timing of this project would avoid peak recruitment during both initial construction and each periodic nourishment interval. Furthermore, unimpacted adjacent foraging habitat as well as recruitment sources would be available throughout the duration of the project. Over the years the Corps has funded a myriad of benthic monitoring projects, many of which document a recovery to pre-project conditions between 1-3 years depending on sediment compatibility as identified in the report. Furthermore, pre-, during, and post-construction monitoring of benthic invertebrate populations is a component of the Dare County Beaches Shore Protection Project of which pre-project monitoring is currently underway. Though most of these studies did not investigate long term impacts, the short term results from these studies indicating post project recovery can not be discounted. Understanding the difficulty of investigating cumulative and long-term effects of beach nourishment actions on benthic invertebrates through continued individual monitoring efforts, the Corps has identified an interest in working with the agencies to utilize the existing monitoring data to help identify and direct future studies towards understanding fundamental processes in the natural beach system.

**3.12.17 NCWRC Comment:** The DEIS fails to fully recognize the importance of barrier island migration to natural resources and the health of barrier island habitats and the role beach stabilization plays in preventing this important process. Nourishment and dune construction prevents overwash and contributes to a loss of habitat for breeding and non-breeding waterbirds, including piping plovers. For example, tidal flats and ponds are important feeding areas to piping plovers at the start of the nesting season and at other times of the year (Fraser 2005). These areas are created during storm-caused overwash and other erosional processes (Leatherman 1982), and beach stabilization efforts reduce the number and extent of these overwash events (Dean 1999). If other alternatives were considered (e.g. non-structural plan), the beach would overwash as it migrated landward during natural processes and habitat would be created. Furthermore, the prevention of island overwash can also lead to sediment starvation on the sound side. The DEIS does not consider loss of marsh on the back side of the island as a result of preventing island overwash. Finally, large scale nourishment projects can lead to increased development based on a false sense of security. This further contributes to habitat loss and can actually increase storm damage as more and larger buildings are constructed. It is therefore reasonable to conclude that large nourishment projects such as this have unavoidable impacts on waterbirds, especially given the extent to which beach altering projects are occurring along our coast.

**Corps Response:** As discussed in response to comment 3.05.5, the Corps disagrees that barrier island migration is an active process affecting the developed barrier islands along our coast.

**3.12.18 NCWRC Comment:** Protect important bird nesting and foraging habitat elsewhere. For example, funding could be provided for purchase, management (e.g. increase in protection of birds on south end by strictly enforcing the leash law) and/or monitoring of South Topsail or other locations.

**Corps Response:** Though shorebirds would benefit from the purchase, management, and monitoring of bird nesting and foraging sites, considering the measures that have been incorporated into the development of this project in order to avoid impacts, these requirements are not justified. The Corps has developed a project to avoid the critical nesting and foraging habitat on Topsail Island as well as avoiding the bird nesting windows during each periodic nourishment interval. Also, pre-project conditions do not reflect significant nesting within the project area do to heavy development and recreational use. In regards to foraging impacts, as identified in comment 3.05.29, the Corps has recognized the need to gather additional information regarding life cycle requirements, etc. of the benthic invertebrate foraging base for shorebirds and is willing to contribute funds towards this effort.

**3.12.19 NCWRC Comment:** Change dredging practices in New Topsail Inlet to benefit waterbird habitat on Lea Island. Currently, the channel is dredged every year following the deepest water. This activity does not allow the channel to migrate naturally and restricts the range of its movement, which contributes to accelerated erosion on Lea Island. Recently, a channel has been trying to break through to the north of its current location within the inlet. We recommend that ACOE follow a channel that attempts to break through to the north thus allowing for more natural conditions within the inlet.

**Corps Response:** Disagree. Dredging of New Topsail Inlet was authorized on April 7, 1996, under Section 107, River and Harbor Act of July 14, 1960. Under this authority, the channel through New Topsail Inlet would be dredged at 8 ft. deep and 150 ft. wide, to the inlet gorge and would follow the existing deep water of the channel. Changing the way New Topsail Inlet is dredged would be outside of the Corps authority. Nonetheless, the method the Corps uses to dredge New Topsail inlet does not restrict the range of the channels movement and does allow for the channel to migrate naturally. A sidecast dredge has been identified as the most cost effective method to maintain New Topsail Inlet. Sidecast dredges keep sediment in the littoral system by dredging and disposing of sediment into the open water down drift of the dredged channel. Considering that the Corps follows existing deep water and sediment is not removed from the littoral system, the dredging of New Topsail Inlet does follow natural inlet migration rather than maintaining a deep stable channel. The Corps has surveyed the channel vicinity to evaluate the potential for a deep channel breaking through to the north of its current location but did not identify the area

as deep water. If this area were to be dredged and maintained the natural movement of deep water would be lost and subsequent erosion and habitat loss may occur elsewhere.

**3.12.20 NCWRC Comment:** The recommended nourishment cycle is four years. From a natural resources standpoint, we would recommend a seven year cycle. Part of the concern is that there will inevitably be emergency work and sporadic dredging activities in some areas in between nourishment events, which will shorten the cycle of events. Another way to offset impacts would be to stagger when different sections of shoreline are nourished to enhance recovery of invertebrate populations by providing source populations to reseed impacted areas.

**Corps Response:** The renourishment interval is a product of the planning process to maximize the net benefits and is predicted based on the storm history, coastal dynamics, etc. of the Topsail Beach shoreline and subsequent environmental effects. Though a 7 year cycle has slightly higher net benefits, there are concerns relative to dredging windows and impacts to the environment, storm protection, and recreation due to significant scarping. As identified in Section 7 (c.), "Recommended Renourishment Interval," of Appendix D in the report, "Because of concerns over dredging window constraints and impacts on turtle nesting, recreation, and storm protection due to loss of the berm and scarping of the dune with a 7-year renourishment interval, the District and the local sponsor agree that it would be prudent to recommend a shorter renourishment interval. Since Figure D-10 shows a more pronounced reduction in net benefits for intervals less than 4 year, it is recommended that the renourishment interval be reduced from 7 years to 4 years. Annual surveys will also be used to monitor the project performance. Should monitoring indicate that renourishment is not needed after 4 years (perhaps due to less severe storm activity or sporadic placement of sand from nearby channel maintenance dredging), renourishment can be delayed beyond 4 years as appropriate." Though increasing the dredging interval to 7-years would presumably reduce impacts to benthic invertebrates by allowing for more recovery time, in actuality, because of the increased quantity of sediment necessary to re-establish the project template during each 7-year re-nourishment interval (rather than 4-years) and considering the recommended environmental dredging windows, disposal would occur over a period of two seasons resulting in two consecutive disposal impacts to benthic invertebrates. Also, the extreme level of scarping that would occur after 7-years, as a result of sediment loss, would have a significant impact on sea turtle nesting and hatching as well as potential impacts to nesting and foraging shorebirds. Considering that adjacent un-impacted areas will be located on each end of the project to allow for recruitment, staggering disposal intervals throughout the project area would not be cost effective or provide significant environmental benefit given the project length and the dredging window. The increased time required to construct a staggered beach would likely exceed the recommended dredging window and require an extension of the project into the

following years dredging season which would; thus, be counter productive to the benthic invertebrate population.

**3.12.21 NCWRC Comment:** Participate in research projects to get at some unanswered questions about impacts to invertebrate populations.

**Corps Response:** See response to comment 3.05.29.

**3.12.22 NCWRC Comment:** Hopper dredging should be confined between months of January through March; due to known takes of turtles by hopper dredges in NC waters during December (ACOE unpublished data).

**Corps Response:** Concur. As Identified in Appendix I (Section 4.0), The National Marine Fisheries Service Regional Biological Opinion (RBO) for the continued hopper dredging of channels and borrow areas in the southeastern United States dated 25 September, 1997 will be strictly adhered to. Though the 1997 RBO does not impose a window for hopper dredging activities in North Carolina, the Wilmington District hopper dredging practice is to avoid periods when the risk of incidental sea turtle take due to hopper dredging activities is high. Understanding that, based on the project duration, the hopper dredging operation could not avoid sea turtles entirely, the project delivery team utilized existing sea turtle distribution literature, sea surface water temperature data, etc. to assess low risk timeframes for incidental take of sea turtles from hopper dredging activities within the project vicinity. According to Epperly et. al. (1995), the distribution of turtles is related to water temperatures, with turtles occurring mostly in waters greater than or equal to 11° C. Historically, a majority of SAW hopper dredging sea turtle incidental takes (N=37) have occurred when dredging activities extended into warm water months (>15° C). Based on this analysis, it was recommended that the period of time that hopper dredging could occur with a reduced risk would be from 1 December through 31 March.

**3.12.23 NCWRC Comment:** We would like to monitor sand and nest temperatures to assess the impact of nourishment on the thermal habitat of sea turtle nests. Although current criteria for sediment stress that fill material be "compatible", at the current time the criteria allow for darker material to be placed on NC beaches during nourishment. Darker sand is known to increase sand/nest temperatures and thus potentially affect sex ratios of produced hatchlings (e.g. Hays et al. 2001). We request funds to purchase dataloggers and also to compensate some of the salary of the NC WRC sea turtle biologist who will spend time collecting and analyzing data.

**Corps Response:** The Corps recognizes the NCWRC concern regarding impacts of sediment color on incubation temperatures and is interested in this type of study to help understand the threshold of color change and resultant heat conduction on impacting temperature dependent sex determination of sea turtles. The Corps is interested in contributing funds to continue these studies in order to

gather nest temperatures on nourished beaches throughout the state, including Topsail Beach, in comparison to non-nourished native sediment temperatures. This data could be used to help develop management criteria for sediment color guidelines.

**3.12.24 NCWRC Comment:** Page 38: Topsail Sea Turtle Hospital is not the only sea turtle rehabilitation in the state. There is a second rehabilitation center located in Manteo and run jointly by NEST and the NC Aquarium in Manteo. The other two NC Aquariums (Pine Knoll Shores and Fort Fisher) also occasionally contribute time and space to rehabilitating cold-stunned turtles and the NCSU-College of Veterinary Medicine contributes space and expertise in the rehabilitation of some injured sea turtles.

**Corps Response:** Noted. Text has been revised.

**3.12.25 NCWRC Comment:** Page 8 Appendix I: There was another nest laid by a Kemp's Ridley on Cape Lookout in 2003.

**Corps Response:** Noted. This Section has been revised to reflect this change.

**3.13 North Carolina Division of Marine Fisheries (NCDMF), memorandum dated August 22, 2006, from Fritz Rohde to Melba McGee, Office of Legislative and Intergovernmental Affairs, NCDENR**

**3.13.1 NCDMF Comment:** The Division of Marine Fisheries is working very closely with the Corps of Engineers regarding this project.

**Corps Response:** Noted.

**3.14 North Carolina Department of Cultural Resources, memorandum dated July 27, 2006 from Renee Gledhill-Earley, Clearinghouse Coordinator, Department of Cultural Resources to the State Clearinghouse**

**3.14.1 NC Dept of Cultural Resources Comment:** No Comment.

**Corps Response:** Noted.

**3.15 North Carolina Department of Environment and Natural Resources (NCDENR), Wilmington Regional Office, Intergovernmental Review – Project Comment form, dated August 17, 2006**

**3.15.1 NCDENR Comment:** The Sedimentation Pollution Control Act of 1973 must be properly addressed for any land disturbing activity. An erosion & sedimentation

control plan will be required if one or more acres to be disturbed. Plan filed with proper Regional Office (Land Quality Section) at least 30 days before beginning activity. A fee of \$50 for the first acre or any part of an acre.

**Corps Response:** Noted.

**4.15.2 NCDENR Comment:** A 401 Water Quality Certification is required.

**Corps Response:** Noted. An application for the required 401 Water Quality Certification will be submitted to the NC Division of Water Quality with the Final GRR/EIS. A 401 Certification will be obtained prior to start of any work on the proposed project.

**3.16 North Carolina Division of Coastal Management (NCDCM), letter dated July 12, 2006, from Stephen Rynas, Federal Consistency Coordinator**

**3.16.1 NCDCM Comment:** DCM staff has reviewed the consistency submission and determined that the submission is incomplete since it does not meet the information requirements of 15 CFR 930.39. The consistency analysis is primarily contained within in Section 10.12 of the DEIS. Based on the requirements of 15 CFR 930.39 the consistency analysis must be based on an evaluation of the relevant enforceable policies of the State's coastal management program. Additionally the consistency determination must include a detailed description Of the activity, its associated facilities, and their expected coastal effects. Below, by DEIS section, is a breakdown of why the submission is incomplete. Please note that some of the comments below are recommendations that the Corps may want to consider for future consistency submissions.

**Corps Response:** Noted.

**3.16.2 NCDCM Comment:** Section 10.02.1 Section 401 of the Clean Water Act. While there is no requirement that this discussion be relocated, the Corps (in the future) may want to consider placing the 401 water quality certification and the erosion and sedimentation control discussions under Section 10.12.2 which discusses "Other State Policies" that are germane to the coastal program consistency analysis.

**Corps Response:** As addressed by letter dated September 6, 2006, from the U. S. Army Corps of Engineers to Mr. Stephen Rynas, Section 10.02.1 of the EIS has been revised to better address consistency.

**3.16.3 NCDCM Comment:** In terms of sequencing the permitting and concurrence process, DCM normally does not issue a concurrence until all required State approvals (such as the 401 water quality certification and erosion and sedimentation control plan approval) have been obtained.

**Corps Response:** In regard to sequencing the permitting and concurrence process, we fully understand that the DCM does not issue consistency concurrence until all required State approvals have been obtained. Although we do not expect to receive consistency concurrence until State approvals have been received, we believe that the proposed shore protection project at Topsail Beach is consistent with the approved North Carolina Coastal Management Program.

**3.16.4 NCDCM Comment:** Section 10.12.1 (Areas of Environmental Concern). This section focuses the standard of review on Subchapter 7H. For projects located in an AEC the relevant enforceable policies of **both** Subchapters 7H and 7M apply. Some of the applicable policies of Subchapter 7M are inappropriately cited under "*Other State Policies*"<sup>2</sup> Additional relevant enforceable policies of Subchapter 7M that should be evaluated in Section 10.12.1 of the DEIS are: 15A NCAC 07M .0200, 15A NCAC 07M .0300, 15A NCAC 07M .0700, 15A NCAC 07M .0800, 15A NCAC 07M .1100, and 15A NCAC 07M .1200. This section lists many allowable uses and many uses that are not allowable; however this section only contains conclusory sentences stating that the proposed action is consistent. For example the Public Trust<sup>3</sup> paragraph simply states that: "*The select plan is an acceptable use within public trust areas. The plan will not be detrimental to the biological and physical functions of public trust waters.*", Additionally, the Coastal Shoreline<sup>4</sup> paragraph concludes that: "*The proposed project would not be expected to negatively impact coastal shorelines.*" While these conclusions may be correct, analysis documenting how the conclusions were reached must be provided. For this section to conform to the requirements of 15 CFR 930.39 an analysis must be provided on how the project conforms to the relevant enforceable policies of Subchapters 7H and 7M. For example 15A NCAC 07H .0208 lists various use standards. Will the proposed project affect any of the following: primary nursery areas, Outstanding Resource Waters (ORW), and/or submerged vegetation (SAV)? If so how has the project been designed to avoid adverse effects to those resources? If adverse impacts cannot be avoided, how has the project been designed to minimize and mitigate the unavoidable adverse impacts?

**Corps Response:** Section 10.02.1 of the EIS has been revised to resolve the comments.

**3.16.5 NCDCM Comment:** A cursory review of the "*Table of Contents*" did not disclose the presence of any tables and/or figures that would show the relationship of the proposed project to the resources discussed in Subchapters 7H and 7M; such as (but not limited to) ORW waters, submerged vegetation, and the first line of stable natural vegetation. Considering the size of this document, the information may be contained within the document. Should that be the case, references to where this information can be read should be

provided.

**Corps Response:** The report has been revised to resolve the comment.

**3.16.6 NCDCM Comment:** Section 15A NCAC 07M .0202(d) requires that "*The entire restored portion of the beach shall be in permanent public ownership;*". Is conformance with this requirement of 15A NCAC 07M .0202 (including the other requirements of 15A NCAC 07M .0202) discussed within the DEIS? If not, such an analysis should be provided.

**Corps Response:** As stated in the revised Section 10.02.1, the entire restored portion of the beach in public ownership. Other requirements of Section 15A NCAC 07M .0202 are discussed within the FEIS.

**3.16.7 NCDCM Comment:** In summary, Section 10.12 .1 of the DEIS must demonstrate through analysis specifically citing the relevant enforceable policies how the proposed action *is* compatible with the AEC management objectives that mandate the protection of public rights for navigation and recreation, and to conserve and manage the public trust areas so as to safeguard and perpetuate their biological, economic, and aesthetic value.

**Corps Response:** Section 10.12.1 of the FEIS has been revised to address the comment.

**3.16.8 NCDCM Comment:** Section 10.12.2 (Other State Policies) references North Carolina Mining Law. Though this reference has some applicability the consistency submission should be primarily focused on referencing the State's coastal management program, which has its own definition of mining in Section 15A NCAC 07H .0106 of Chapter 7 of Title 15A of North Carolina's Administrative Code. Additionally Sections 15A NCAC 07H .0208(b)(12) and 15A NCAC 07M .1200 contain the policies related to Ocean Mining. The consistency submission should therefore contain an analysis that evaluates how the proposed burrowing and deposition activities would be consistent with the use standards of Subchapter 7H and with Subchapter 7M.

**Corps Response:** Section 10.12.1 of the FEIS has been revised to address the comments.

**3.16.9 NCDCM Comment:** North Carolina Dredge and Fill Law is not cited, see G.S. § 113-229. An analysis of how the proposed action would be consistent with this law should be provided.

**Corps Response:** The report has been revised to address the NC Dredge and Fill Law

**3.16.10 NCDCM Comment:** DCM recommends, in the future, that Section 10.12.2 evaluate other State agency policies that are not specifically part of the State's certified coastal management program. DCM recommends, in the future, that the relevant enforceable policies of the State's coastal program be contained in Section 10.12.1 and that Section 10.12.1 be renamed to reflect this change in emphasis.

**Corps Response:** Agree.

**3.16.11 NCDCM Comment: Section 10.12.3 (Local Land Use Plans)** simply states that the proposed project is consistent with the local land use plans for Topsail Beach and Pender County. For this section to conform to the analysis requirements of 15 CFR 930.39 the analysis must be analytical evaluating how the proposed project conforms with the policies of these land use documents, land uses allowed, and zoning. Since the document is over 2,000 pages in length, I acknowledge that some of this information may be located in other parts of the document. A cursory review of the "*Table of Contents*" did not disclose the presence of any references to land use plans, tables, and/or figures. A review of Sections 2.04 and 8.04 of the DEIS did not disclose any discussion of the local land use plans, the policies contained within those plans, land use classifications, and/or zoning.

**Corps Response:** The report has been revised to resolve the comment.

**3.16.12 NCDCM Comment:** Section 10.15 (Sedimentation and Erosion Control Plan). Consistency concurrences are normally issued by DCM after all required State approvals/permits are obtained. This applies to both Section 401 water quality certifications and erosion and sedimentation control plans. The Corps will need to provide documentation that the NC Division of Land Quality has approved an erosion and sedimentation control plan as part of the consistency concurrence process.

**Corps Response:** Noted.

**3.16.13 NCDCM Comment:** Section 10.15 (Sedimentation and Erosion Control Plan). While there is no requirement that this discussion be relocated, the Corps (in the future) may want to consider moving the erosion and sedimentation control discussion to Section 10.12.2 which discusses "*Other State Policies*" that are germane to the coastal program consistency analysis.

**Corps Response:** We have modified the document as much a possible to comply with DCM formatting requests. Corps NEPA documents must be written to satisfy numerous Federal and State agencies, so it is often a challenge to organize our reports to fully meet each agency's specific, yet differing, needs.

**3.16.14 NCDCM Comment:** Pursuant to 15 CFR 930.41 DCM review of the consistency submission will not be initiated until DCM receives from the Corps all the information and analysis required by 15 CFR 930.39.

**Corps Response:** Noted.

**3.16.15 NCDCM Comment:** For future reference, consistency submissions are to be made directly to the Division of Coastal Management at the address shown on the first page. Documents for NEPA review are still to be sent to Ms. Baggett of the NC State Clearinghouse. Please note, the Corps will be making two simultaneous but discrete submissions to the State, one for consistency review and the other for NEPA review.

**Corps Response:** Noted.

**3.17 North Carolina Division of Coastal Management (NCDCM), letter dated August 4, 2006, from Stephen Rynas, Federal Consistency Coordinator to Melba McGee, Office of Legislative and Intergovernmental Affairs, NC DENR**

**3.17.1 NCDCM Comment:** The DEIS correctly notes that the proposed project will require Federal Consistency review under the Coastal Zone Management Act (CZMA). The North Carolina Division of Coastal Management (DCM) sent a separate letter (July 12, 2006) to the Corps advising the Corps on how to complete the consistency submission to DCM.

**Corps Response:** Noted.

**3.17.2 NCDCM Comment:** The "Affected Environment" section (from the perspective of evaluating the proposed project with the State's local coastal management program) lacks graphics displaying resources in the study area such as (but not limited to), Primary Nursery Areas (PNA), Outstanding Resource Waters (ORW), and beds of submerged aquatic vegetation (SAV) in relationship to the proposed project.

**Corps Response:** Agreed. Graphics have been added to the report.

**3.17.3 NCDCM Comment:** Additional issues that the Corps may want to review in the "Affected Environment" section and evaluated in the "Environmental Effects" section would include the effect of the proposed project on shellfishing, frontal dunes, and the first line of stable natural vegetation. Dredging operations, for example, could result in the closure of waters that are currently open to shellfishing that would constitute an adverse environmental effect.

**Corps Response:** The report has been revised to include effects on shellfishing, frontal dunes and first line of stable vegetation.

**3.17.4 NCDCM Comment:** DCM recommends that the FEIS, since it is to be used as part of the Corps' consistency determination to DCM, contain analysis and graphics depicting the location of resources that are of State interest in relationship to the proposed project and the effect of the proposed project on those resources.

**Corps Response:** Agreed. Text has been revised and graphics added to the EIS.

**3.17.5 NCDCM Comment:** Section 5.01 of the DEIS discusses formulation and evaluation criteria. One sentence states that the "Plan must comply with applicable State and local laws and regulations, to the maximum extent practicable;" (emphasis added). The phrase "to the maximum extent practicable" is commonly misunderstood. Pursuant to 15 CFR 930.32 this phrase means that a proposed project must be fully consistent with the enforceable policies of the State's coastal management program unless full consistency is prohibited by existing law applicable to the Federal agency. DCM recommends that this definition be included to minimize the potential for misinterpretation.

**Corps Response:** Although our intent is to be fully consistent with the enforceable policies of the State's coastal management program unless full consistency is prohibited by existing law applicable to the Federal agency, our use of the term "to the maximum extent practicable" was not meant to be interpreted as defined by 15 CFR 930.32. Maximum Extent Practicable (MEP) is a technology-based standard established by Congress in the Clean Water Act. No precise definition of MEP exists. However, for our purposes, it means that in the planning, construction, operation and maintenance of the proposed project, we will take into account the best available technology, cost effectiveness, and other issues such as human safety and welfare, endangered and threatened species, significant resources, historic properties and geographic features. MEP allows flexibility in meeting the performance standards and may vary based on the performance standards, site conditions and applicable local, State and Federal regulations.

**3.17.6 NCDCM Comment:** DCM recommends that the environmental criteria entry be modified. This entry currently reads, "Plan may not result in unacceptable adverse impacts on the environment". DCM recommends, based on North Carolina's Environmental Policy Act of 1971 (GS §113A-1), that the concepts of avoidance and mitigation be added. As an example of alternative wording: "Adverse impacts to the environment will be avoided. In cases where adverse impacts cannot be avoided, mitigation shall be provided to minimize impacts to at least a level of insignificance." Additionally, DCM recommends that 40 CFR 1508.20 be consulted for additional mitigation concepts.

**Corps Response:** Concur. Text in Section 5.01 of the final report has been revised.

**3.17.7 NCDCM Comment:** The DEIS does not contain a specific section devoted to summarizing mitigation commitments. Additionally in certain instances it is unclear whether the mitigation identified would actually be implemented or not. For example, on page two of the "Syllabus" the statement is made that "Periodic nourishment activities will be timed, to the extent practicable, to avoid the sea turtle nesting season ..." (emphasis added). Additionally, mitigation measures are dispersed throughout the DEIS which makes a full understanding, by the reader, of how the proposed project will resolve adverse environmental effects challenging. Some mitigation measures are included in Section 7.03 of the DEIS which discusses "Design and Construction Considerations". Additional mitigation measures are covered in Section 8 of the DEIS which covers "Environmental Effects". For example, Section 8.02.3 notes that beach nourishment and construction activities would avoid Piping Plover Critical Habitat. Finally, Section 10, which discusses "Compliance with Environmental Requirements", contains references to suggested coordination, other legal mandates, and adherence to moratorium periods.

**Corps Response:** Noted. A summary of the Corps' commitment to specific monitoring and/or mitigation measures, is included in the FEIS.

**3.17.8 NCDCM Comment:** DCM would encourage the inclusion of a clearly identified summary mitigation section and/or table.

**Corps Response:** See response to comment 3.17.7

**3.17.9 NCDCM Comment:** Comments on Section 10.12 of the DEIS concerning the State's coastal management program were made through a separate letter, dated July 12, 2006 to the Corps. A copy of this letter has been attached as part of our comments on the DEIS.

**Corps Response:** Noted.

**3.18 North Carolina Division of Coastal Management (NCDCM), letter dated September 22, 2006, from Stephen Rynas, Federal Consistency Coordinator**

**3.18.1 NCDCM Comment:** We received your consistency determination on June 28, 2006 for the proposed shore protection project at West Onslow Beach and New River Inlet (Topsail Beach), Onslow and Pender Counties, North Carolina. This submission was determined to be incomplete on July 12, 2006. The submission was filed complete, upon the receipt of additional information on September 13, 2006.

**Corps Response:** Noted.

**3.18.2 NCDCM Comment:** On September 15, 2006 we initiated the public review period. The project has been distributed to State agencies that would have a regulatory interest in the proposed activity for review and comment. Additionally, a public notice has been printed in the Wilmington Star-News on September 20, 2006. The public review period will close October 20, 2006. We intend to make a decision regarding whether the proposed activity would be consistent with the State's coastal program soon after.

**Corps Response:** Noted.

**3.18.3 NCDCM Comment:** Pursuant to 15 CFR 930.41 the State of North Carolina has sixty (60) days from the receipt of the consistency determination to either concur or object to your consistency determination unless an extension is requested. The sixtieth day is November 12, 2006.

**Corps Response:** Noted.

**3.18.4 NCDCM Comment:** The State is entitled to an extension of up to fifteen days if additional review time is necessary. Furthermore, final Federal agency action cannot be taken sooner than ninety days from the State's receipt of the consistency determination unless State concurrence is obtained.

**Corps Response:** Noted.

**3.19 Memorandum from Melissa Carle, Coastal Wetlands, Raleigh Office, DCM, dated October 18, 2006 to Stephen Rynas, AICP, Federal Consistency Coordinator**

**3.19.1 DCM Comment:** No comment.

**Corps Response:** Noted.

**3.20 Memorandum from Brian Strong, NCDENR, Division of Parks and Recreation (NCDPR), dated September 28, 2006, to Stephen Rynas, AICP, Federal Consistency Coordinator**

**3.20.1 NCDPR Comment:** No Comment.

**Corps Response:** Noted.

**3.21 Memorandum from James Carter, Town Manager, Town of Topsail Beach, dated September 28, 2006, to Stephen Rynas, AICP, Federal Consistency Coordinator**

**3.21.1 Topsail Beach Comment:** This office supports the project as proposed.

**Corps Response:** Noted.

**3.22 Memorandum from Bonnie Bendell, DCM Coastal Engineer, dated October 3, 2006, to Stephen Rynas, AICP, Federal Consistency Coordinator**

**3.22.1 DCM Comment:** No comment.

**Corps Response:** Noted.

**3.23 Memorandum from Steve Everhart, NCWRC, Division of Inland Fisheries, Habitat Conservation Program, dated October 6, 2006, to Stephen Rynas, AICP, Federal Consistency Coordinator**

**3.23.1 NCWRC Comment:** No comment.

**Corps Response:** Noted.

**3.24 Memorandum from County of Onslow, Habitat Conservation Program, dated October 6, 2006, to Stephen Rynas, AICP, Federal Consistency Coordinator**

**3.24.1 Onslow County Comment:** No comment.

**Corps Response:** Noted.

**3.25 Memorandum from Mike Street, NCDENR- Division of Marine Fisheries (NCDMF), dated October 6, 2006, to Stephen Rynas, AICP, Federal Consistency Coordinator**

**3.25.1 NCDMF Comment:** No comment.

**Corps Response:** Noted.

**3.26 Memorandum from Patty Fowler, NCDENR- Division of Environmental Health (NCDEH), Shellfish Sanitation District, dated October 6, 2006, to Stephen Rynas, AICP, Federal Consistency Coordinator**

**3.26.1 NCDEH Comment:** No comment.

**Corps Response:** Noted.

**3.27 Memorandum from John Fear, NC National Estuarine Research Reserve (NCNERR), dated October 6, 2006, to Stephen Rynas, AICP, Federal Consistency Coordinator**

**3.27.1 NCNERR Comment:** No comment.

**Corps Response:** Noted.

**3.28 Memorandum from Renee Gledhill-Earley, State Historic Preservation Officer (SHPO), dated October 20, 2006, to Stephen Rynas, AICP, Federal Consistency Coordinator**

**3.28.1 SHPO Comment:** No comment.

**Corps Response:** Noted.

**3.29 Memorandum from Fritz Rohde, NCDMF, dated October 19, 2006, to Stephen Rynas, AICP, Federal Consistency Coordinator**

**3.29.1 SHPO Comment:** No comment.

**Corps Response:** Noted.

**3.30 NC Division of Coastal Management, letter dated November 7, 2006 from Mr. Doug Huggett, Manager, Major Permits and Consistency Unit in response to letter (and supplemental information) dated September 6, 2006, from John E. Pulliam, Jr., Colonel, U. S. Army Corps of Engineers, District Commander, Wilmington District (Appendix T, page 106).**

**3.30.1 NCDCM Comment:** DCM has reviewed the submitted information pursuant to the management objectives and enforceable policies of Subchapters 15A NCAC 07H and 15A NCAC 07M of Chapter 7 of Title 15A of North Carolina's Administrative Code which are a part of the State's certified coastal management program and concurs, as conditioned below (comments 133-149), that the proposed Federal activity is consistent, to the maximum extent practicable, with the enforceable policies of North Carolina's coastal management program.

**Corps Response:** Noted.

**3.30.2 NCDCM Comment:** In order to be found consistent with North Carolina's coastal management program, prior to initiating any beach disposal activities inland of the first line of stable vegetation; the Corps shall, if required, obtain an approval of an erosion and sediment control plan for the proposed project from the North Carolina Division of Land Resources.

**Corps Response:** Agreed. If required, an erosion and sediment control plan will be developed and approved.

**3.30.3 NCDCM Comment:** In order to be found consistent with North Carolina's coastal management program, prior to initiating any beach disposal activities Corps shall, if required, obtain a Section 401 Water Quality Certification from the North Carolina Division of Water Quality.

**Corps Response:** Concur. A 401 will be required. A 401 application has been submitted to the North Carolina Division of Water Quality (NCDWQ) with the Final EIS.

**3.30.4 NCDCM Comment:** The Corps shall adhere to the April 1st through August 31st bird nesting moratorium. Should the Corps believe that it would be necessary to conduct work during the moratorium period, the Corps shall consult with and obtain the approval of the North Carolina Wildlife Resources Commission prior to initiating any work within this period.

**Corps Response:** This has been and will continue to be coordinated with NCWRC. In order to complete initial construction in one season, the project will extend into the first 30 days of the bird nesting window of 1 April - 31 August. However, as identified in the "Recommended Construction Plan (Section 7.04.1.4)", a 4-year periodic nourishment cycle using hopper dredges is considered for the 50-year life of the project. The Wilmington District hopper dredging window is from 1 December to 31 March in order to avoid turtles in the offshore environment. Considering the reduced sediment requirements for periodic nourishment as well as the adherence to a hopper dredge window ending 31 March, the periodic nourishment events will avoid the bird nesting window.

**3.30.5 NCDCM Comment:** The Corps shall consult with and obtain the approval of the North Carolina Wildlife Resources Commission prior to any beach deposition during the months of March and April to minimize adverse impacts to macro invertebrates located on the beach.

**Corps Response:** Coordination with NCWRC ongoing.

**3.30.6 NCDCM Comment:** Should hopper dredges be used, the use of hopper dredges shall be limited to the months of January through March to minimize adverse impacts to sea turtles. Additionally, qualified sea turtle observers shall monitor and direct dredging operations to minimize adverse impacts to sea turtles. In the event that the Corps proposes to use hopper dredges outside this period, the Corps must first coordinate this with the Wildlife Resources Commission and DCM.

**Corps Response:** Agree.

**3.30.7 NCDCM Comment:** Sea turtles activity shall be monitored from May 1st to September 15th to assure that dredging operations will be conducted in such a manner that sea turtle nesting would not be adversely impacted by beach deposition.

**Corps Response:** Agree.

**3.30.8 NCDCM Comment:** Prior to the initiation of beach disposal, the Corps shall contact North Carolina Shellfish Sanitation to establish if a swimming advisory should be posted.

**Corps Response:** Agree.

**3.30.9 NCDCM Comment:** Prior to the initiation of any beach nourishment activity, the existing normal high water line must be surveyed, and a copy provided to the Division of Coastal Management. If nourishment activity is not initiated within sixty days (60) and/or there is a major shoreline change prior to the commencement of beach nourishment, a new survey must be conducted.

**Corps Response:** Agree.

**3.30.10 NCDCM Comment:** Prior to the initiation of any beach nourishment activity above the normal high water contour (NHW), easements from all property owners must be obtained.

**Corps Response:** Agree.

**3.30.11 NCDCM Comment:** In accordance with 15A NCAC 7H.0305(f), should the proposed project be considered "large scale" (ie. The project places more than a total volume of 200,000 cubic yards of sand at an average ratio of more than 50 cubic yards of sand per linear foot of shoreline; or the project is a Hurricane Protection project constructed by the U. S. Army Corps of Engineers), the Corps will first need to establish the first line of stable natural vegetation that exists within the project boundary immediately before project initiation. The establishment of this vegetation line, which must be coordinated with the Division of Coastal Management, must be conducted no more than 60 days prior to project initiation.

**Corps Response:** Agree.

**3.30.12 NCDCM Comment:** Only beach quality sand shall be used for beach nourishment purposes. Should the dredging operations encounter sand deemed non-compatible with native grain size or sorting characteristics of the native beach, the dredge operator shall immediately cease operation and contact the

NCDCM. Dredge operations will resume only after resolution of the issue of sand compatibility.

**Corps Response:** All borrow areas will be characterized to comply with the new Coastal Resources Commission sediment compatibility rules. As discussed in Section 8, Environmental Effects, the use of compatible beachfill material will have minimal resources impacts. Section 7.04.1.7, Borrow Area Contingency Plan, describes the process to comply with the compatibility rules.

**3.30.13 NCDCM Comment:** The Corps should be advised that the Coastal Resources Commission (CRC) is currently developing new sediment compatibility standards. Once these new standards are passed by the CRC, and assuming these standards are approved by OCRM as a federally approved component of the State's coastal management program, these new standards will apply to future beach nourishment projects from that point forward. The Corps is strongly encouraged to closely follow the development of these new standards. The Corps should also incorporate any such standards into the planning process for the proposed project.

**Corps Response:** Agree. Proposed borrow area sediments meet the new CRC compatibility standards.

**3.30.14 NCDCM Comment:** Land-based equipment necessary, for beach nourishment work shall be brought to the site through existing accesses- Should the work result in any damage to existing accesses, the accesses must be restored to pre-project conditions immediately upon project completion in that specific area.

**Corps Response:** Agree.

**3.30.15 NCDCM Comment:** Dune disturbance shall be kept to a minimum. Any alteration of existing dunes shall be coordinated with the Division of Coastal Management as well as the pertinent property owner. All disturbed areas must be restored to original contours and configuration with reference to the surveyed normal high water line and shall be revegetated immediately following project completion in that specific area.

**Corps Response:** Agree.

**3.30.16 NCDCM Comment:** The Corps shall implement and comply with all the mitigation measures (unless superceded by the mitigation measures stated above) contained in the Draft Integrated General Reevaluation Report and Environmental Impact Statement, Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach) dated June 2006. This adherence includes all associated attachments, such as Appendix 1.

**Corps Response:** Agree.

**3.30.17 NCDCM Comment:** Should the proposed action be modified, a revised consistency determination could be necessary. This might take the form of either a supplemental consistency determination pursuant to 15 CFR 930.46, or a new consistency determination pursuant to 15 CFR 930.36. Likewise, if further project assessments reveal environmental effects not previously considered by the proposed development, a supplemental consistency certification may be required.

**Corps Response:** Noted.

**3.31 Environmental Defense letter dated August 28, 2006 from Michelle Duval, Scientist**

**3.31.1 Environmental Defense Comment:** In general, Environmental Defense is not offering support nor requesting denial of the Topsail Beach project at this time due to the draft nature of the document and outstanding information (e.g. completion of the hardbottom survey, and benthic characterization of borrow sites) that is needed to offer such a directed assessment. We do have several specific suggestions regarding various topics as detailed below.

**Corps Response:** Noted.

**3.31.2 Environmental Defense Comment:** Although we understand that preliminary information indicates that some of the hard bottom areas in the project vicinity are ephemeral in nature and beyond the depth of closure, we strongly suggest that the Corps staff on both projects maintain a dialogue on this topic once the nearshore hard bottom survey is completed, as new data might dictate the use of a different profile.

**Corps Response:** Noted.

**3.31.3 Environmental Defense Comment:** The range of the borrow areas— from 1 mile to 53 miles offshore – subjects those residing in state waters to the use standards rules of the Coastal Resources Commission regarding use standards for mining activities. Specifically, 15A NCAC 07H .0208 (b)(12)(A)(iv) states: "Mining activities shall not be conducted on or within 500m of significant biological communities, such as high relief hardbottom areas. High relief for this standard is defined as relief greater than or equal to one-half meter per five meters of horizontal distance." As you may or may not be aware, the engineering firm contracted by the Town of N. Topsail Beach has proposed a 400ft (versus a 500m) buffer for the existing hard bottom adjacent to the proposed borrow sites for this project. As more data are collected regarding the

Topsail Beach project, we strongly suggest that the Corps examine those data with this rule in mind.

**Corps Response:** As identified in Section 8.01.8.2 (Impacts on Hard Bottoms), "According to Hall (2004), side scan sonar was used to define hardbottom locations throughout all six proposed borrow areas (A, B, C, D, E, and F). A review of these acoustic records indicate that there was no evidence of any hard bottom within the borrow area boundaries. In areas of moderate acoustic return, grab samples were performed to ground truth the acoustic records. Grab samples of areas of harder return confirmed that these areas were coarse sand associated with sand waves of 6" to 1' in height." Furthermore, according to offshore hardbottom and artificial reef evaluations within the project area provided by Moser and Taylor (1995), NCDMF, SEAMAP (2001), and the OSI (2004) geophysical report (Appendix C-3) (See Section 2.01.10), only borrow area sites D and F are within the vicinity of hardbottom sites classified by OSI as "Bedrock High Areas (See Appendix A; Figure A-1)." However, these sites are approximately 1,500 ft. (457 m) to 2,000 ft. (610 m) outside of the proposed borrow site limits.

**3.31.4 Environmental Defense Comment:** There does not appear to be a section regarding mitigation for damages to natural resources in the DEIS as a result of the project. We trust that this is an oversight which will be corrected in the final EIS.

**Corps Response:** Noted. A summary of the Corps' commitment to specific monitoring and/or mitigation measures, where appropriate, is included in the FEIS.

**3.31.5 Environmental Defense Comment:** Environmental Defense agrees with the US Fish and Wildlife Service regarding funding for directed mitigation and monitoring efforts that would provide a better understanding of life history characteristics of living marine resources that stand to be impacted by beach engineering projects. In particular, it appears that information is lacking on ghost crab (*Ocypode* spp.) reproductive behavior, and given that shore protection projects generally include dune construction which impacts that habitat, such studies would certainly contribute to effective management and mitigation measures. We strongly suggest inclusion of studies which would examine the cumulative, non-lethal effects of sand placement on intertidal invertebrates – impacts to foraging success, reproductive behavior, etc. – which could ideally be conducted in a laboratory mesocosm setting.

**Corps Response:** See response to comment 3.05.29.

**3.31.6 Environmental Defense Comment:** We disagree (and have disagreed in the past) with the method used in Appendix J (Tables J-1 through J-3) to determine borrow site impacts. While this maybe a conservative method by the

Corps' standards, it is not a precautionary method and does not take into account other proposed activities (such as the construction of an undersea warfare training range by the US Navy in Onslow Bay) or differences in habitat quality. We strongly recommend that funding be directed toward the development of a programmatic EIS for the Wilmington district's beach nourishment projects, as well as beach disposal projects. We recognize the difficulty in projecting reasonably foreseeable actions, and feel that a programmatic EIS which could be updated on a regular basis as "unforeseen\* projects are manifested would be a vast improvement over the current project-by-project approach. Also, a finite amount of compatible material exists for such projects, which also should be considered.

**Corps Response:** The Corps has used the methodology in Tables J-1 thru J-3 as a means to capture project impacts at different levels of scale. The analysis aims at being very conservative while acknowledging the uncertainties of forecasting reasonably foreseeable future actions. Programmatic EIS documents would not fulfill the goals envisioned by the commenter since each individual project would still require the preparation of a NEPA document to address project-specific impacts. Additionally, we do not have the authority or the funding to prepare a programmatic EIS and it is unlikely that we would ever be successful in obtaining such.

**3.31.7 Environmental Defense Comment:** As the Corps is well aware, the Coastal Resources Commission is in the process of finalizing proposed sediment compatibility standards for beach fill projects. This project would be subject to those rules should it move forward and we assume that the standards for fine material, coarse material and carbonate content' are being kept in mind as further characterization of borrow areas occurs.

**Corps Response:** Noted. The Corps evaluated the potential borrow areas for this project in accordance with the most recent CRC proposed sediment compatibility standards dated March 24, 2006. The current proposed borrow areas meet these standards and will be further evaluated to comply with the CRC proposed characterization standard for borrow sites as stated in section 7.04.1.6.

**3.31.8 Environmental Defense Comment:** Finally, we are supportive of the Corps effort to develop a borrow area contingency plan, and look forward to evaluating this in the final EIS. Presumably this would include mitigation in the event of unexpectedly encountering incompatible material.

**Corps Response:** Noted. The project will comply with the new Coastal Resources Commission sediment compatibility rules. Beachfill material quality will be achieved through characterization of the borrow material with an intense array of borings with horizontal spacing of 500 feet to 1,000 feet. Mitigation, if required, will be in accordance with Coastal Resources Commission recommendations.

**3.32 National Marine Fisheries Service (NMFS) email dated June 12, 2007, from Mr. Ron Sechler, Habitat Conservation Division**

**3.32.1 NMFS Comment:** The National Marine Fisheries Service (NMFS) is coordinating closely with the US Army Corps of Engineers (COE), Wilmington District, regarding our ongoing review of the Draft Topsail Beach (West Onslow) EIS. NMFS has indicated the need for an EFH assessment for this project and has coordinated with the COE regarding identification and clarification of potential hard/live bottom habitat offshore of Topsail Beach. We will continue to cooperate with the COE to develop a project that meets the applicants needs while protecting our trust resources.

**Corps Response:** Noted.

**Final General Reevaluation Report  
and  
Final Environmental Impact Statement**

**on**

**Hurricane Protection and Beach Erosion Control**

**WEST ONSLOW BEACH AND NEW RIVER INLET  
(TOPSAIL BEACH), NORTH CAROLINA**

**Appendix T - Comments and Responses**

**Attachment - Scanned Letters and Correspondence**



RECEIVED  
EXECUTIVE OFFICE

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**UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration**

NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office

263 13<sup>th</sup> Avenue South

St. Petersburg, FL 33701

(727) 824-5312, FAX 824-5309

<http://sero.nmfs.noaa.gov>

F/SER31:MCB

AUG 1 - 2006

Col. John E. Pulliam, Jr.  
Department of the Army  
Wilmington District Corps of Engineers  
P.O. Box 1890  
Wilmington, NC 28402-1890

**Routed: 07 Aug 2006 kj**  
**Action: TSD**  
**Susp Date:**  
**CF: Cdr, DCdr, DX, OPS, REG**

Dear Colonel Pulliam:

This letter responds to your June 23, 2006, letter, public notice, and draft environmental impact statement sent to the National Marine Fisheries Service (NMFS). You requested section 7 consultation pursuant to the Endangered Species Act (ESA) for the Corps of Engineers' (COE) shoreline protection proposal for West Onslow and Topsail Beaches, North Carolina. In your *Draft Integrated General Reevaluation Report and Environmental Impact Statement Shore Protection West Onslow Beach and New River Inlet (Topsail Beach), North Carolina*, you determined the proposed project will not likely adversely affect humpback and right whales, and shortnose sturgeon, but may affect green, loggerhead, hawksbill, Kemp's ridley, and leatherback sea turtles. You requested our concurrence on this determination.

The proposed project includes the construction of a 26,200-foot-long dune and berm system. Sand for this construction would be delivered from offshore borrow areas by pipeline dredge. The project will be constructed in FY2011 (November 2010 – April 2011), subject to availability of funds. Periodic renourishment utilizing a hopper dredge will be required at intervals of 4 years.

Potential impacts to ESA-listed humpback and right whales, sea turtles, and shortnose sturgeon stemming from the use of pipeline and hopper dredges are encompassed by the September 27, 1997, regional biological opinion (RBO) to the COE's South Atlantic Division on the continued hopper dredging of channels and borrow areas in the southeastern United States. The RBO, which incorporated by reference a November 25, 1991, biological opinion, concluded that pipeline dredges were not likely to adversely affect listed species. There is no new information to change the basis for that finding. Any takes of sea turtles and shortnose sturgeon by the hopper dredge shall be counted against the COE's South Atlantic Division per-fiscal-year limit on sea turtles and shortnose sturgeon, as authorized by the 1997 RBO.

No new species listed under the ESA in the interim since the RBO was issued will be affected by the proposed action. Therefore, as the effects of the proposed action are included in the RBO and



we have no new information to change the basis of the RBO's findings, you are not required to consult with us on this proposed action. However, consultation must be reinitiated if a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action. It is worth noting that NMFS and the COE will be working together on a new RBO, which may include separate quotas for regulatory projects such as this one.

Thank you for your continued cooperation in the conservation of threatened and endangered species under NMFS' purview. If you have any questions, please contact Michael Barnette at (727) 551-5794, or by e-mail at michael.barnette@noaa.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Bernhart", with a long horizontal flourish extending to the right.

David M. Bernhart  
Assistant Regional Administrator  
for Protected Resources

File: 1514-22.F.1.NC  
Ref: I/SER/2006/03090

United States Department of Agriculture



Natural Resources Conservation Service  
4405 Bland Road, Suite 205  
Raleigh, North Carolina 27609

Phone: (919) 873-2134  
Fax: (919) 873-2154  
Email: [mike.hinton@nc.usda.gov](mailto:mike.hinton@nc.usda.gov)

July 26, 2006

Ms. Jenny Owens  
U. S. Army Corps of Engineers  
Environmental Resources Section  
Wilmington District  
P. O. Box 1890  
Wilmington, NC 28402-1890

Dear Ms. Owens:

Thank you for the opportunity to provide comments on your letter dated June 23, 2006 regarding CESA-W-TS-PE-06-71-0001, Draft Integrated General Reevaluation Report and Environmental Impact Statement Shore Protection, West Onslow Beach an New River Inlet (Topsoil Beach), North Carolina.

The Natural Resources Conservation Service does not have any comments at this time.

If you need additional information, please feel free to contact me at (919) 873-2134.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael J. Hinton".

Michael J. Hinton  
Planning Specialist

*Helping People Help the Land*

An Equal Opportunity Provider and Employer





**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

REGION 4  
ATLANTA FEDERAL CENTER  
61 FORSYTH STREET  
ATLANTA, GEORGIA 30303-8960

**AUG 15 2006**

District Engineer  
Wilmington District, Corps of Engineers  
P.O. Box 1890  
Wilmington, NC 28502-1890  
Attention: Ms. Jenny Owens

**Subject: Draft Environmental Impact Statement (EIS) on Shore Protection,  
West Onslow Beach and New River Inlet [Topsail Beach], NC, [dated  
June 2006] -- CEQ# 20060272, ERP# COE-E11060-NC**

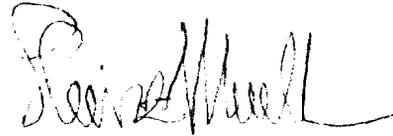
Dear Colonel Pulliam:

Pursuant to Section 309 of the Clean Air Act and Section 102 (2)© of the National Environmental Policy Act, EPA, Region 4 has reviewed the subject document, an evaluation of the proposal by the Wilmington District [District] to pump approximately 3.22 million cubic yards of sand onto the eroding shoreline of Topsail Beach [a 5-mile reach which approximates the city limits]. While a number of alternatives [to include no-action] were examined, the locally developed plan which consists of a sand dune fronted by a 50-foot wide beach berm [constructed to 12- and 7- feet, respectively] was selected as the preferred option. To provide a degree of stability for the dune portion of the system a variety of native vegetation will be planted on both slopes. Six sites [located 3 to 5.5 miles offshore] are proposed as a source of sand for initial construction and subsequent periodic nourishment [ca. four years via hopper dredge]. The initial nourishment [pipeline dredge] is scheduled for completion in the Spring of 2011.

The EIS generally is thoughtfully developed regarding the overall effects of this proposal. However, we have identified some issues which bear on its long-term consequences as well as having generic relevance to similar beach nourishment measures proposed for other barrier/coastal features within the District. Our ongoing interests in this regard focus on certain of the underlying assumptions being made about this category of project. See the attached Detailed Comments for further discussion of these observations.

On the basis of our review a rating of **EC-1** has been assigned. That is, we have some environmental concerns [**EC**] about the effects of the proposal, and there is sufficient information [**1**] in the document for us to make a reasoned appraisal of its overall impacts/ramifications. Thank you for the opportunity to comment. If we can be of further assistance, Dr. Gerald Miller (404-562-9626) will serve as initial point of contact.

Sincerely,

A handwritten signature in black ink, appearing to read "Heinz J. Mueller". The signature is fluid and cursive, with a long horizontal stroke at the end.

Heinz J. Mueller, Chief  
NEPA Program Office

## **DETAILED COMMENTS**

EPA's interest in the following matters is a function of the need to understand the District's bases/assumptions used to develop the matrix which describes the environmental losses, construction/maintenance costs, and project benefits associated with this beach nourishment project.

### **Background**

The ocean shoreline of all barrier features and Topsail Beach in particular are routinely, pervasively, and on occasion catastrophically influenced by marine processes, especially chronic erosion. In this instance, erosion exacerbated by weather systems [both summer and winter] have proved to be problematic in terms of the island's stability, especially on the surf shore within Reaches 5-7. This instability notwithstanding, all coastal zones, especially the most vulnerable its ocean hazard/erodible areas, are also experiencing pronounced development pressures as people literally crowd into the strand in pursuit of the recreational and other amenities found there. Once a particular segment of coast line becomes developed there is an obvious motivation on the part of all interests to protect this investment [to include the areal extent of the individual parcels, any attendant housing, and associated community infrastructure].

The combination of scarcity and rising cost of supportive infrastructure [especially sewerage and potable water] makes coastal property very expensive and adds another element to the equation of whether a re-nourishment project has financial feasibility. This union of factors results in an ironic situation in which an ever increasing monetary risk is being incurred for development which is in danger of eventually being washed away absent repeated intervention. Potential changes in climate [global warming] add another component to the risk profile, i.e., it may make storm events more likely, of greater intensity, and is layered upon varying degrees of possible sea level rise.

### **Risk Considerations**

Appendix B reveals the details of how all the risk stakeholders at Top Sail Beach can lessen their financial exposure as regards erosion. However, given that this protection is deemed to always involve recurrently nourishing the beach, nonstructural options are pre-empted. Various federal/state/local programs have evolved to accomplish the former objective and the nourishment process is now almost routinely managed. It should also be noted that there are other similar beach projects either funded or under consideration in this part of the North Carolina coast. This adds a cumulative effects' dimension to this individual action which the District is deliberating as regards its larger, long-term ramifications [Appendix J]. While this is the only reach

being assessed in this DEIS, it has been our experience that the necessary economic justification to broaden the scope of investigation to other nearby coastal areas is just a function of development and time.

For example, the southward migration of New Top Sail Inlet has essentially created Reach 1-2 since 1990. In this instance there are ownership, Piping Plover, and Coastal Barrier Resources Act impediments to encroachment. However, as an example, if Inlet and Shoreline Drives were extended [as has happened in other areas], this would allow the present development [which just marginally penetrates Reach 2] to expand westward. The transition zone of the subject project could be widened and moved accordingly to protect any new at-risk property.

### **Benefits/Costs Issues**

In regard to these economic justifications, certain of the bases used to calculate the benefit/cost ratio [3.9/1] bear thought. For example, the value of property at Top Sail appears to be calculated [in part] in recognition of the effects of the noted erosive forces. That is, this value is computed on the basis of the cost of interior lots rather than beach front property [with its greater current value]. Given the major thrust of the subject DEIS, this composite valuation is obvious and appropriate. However, subtracting at least a subset of the cost of maintaining the beach at a particular location from the notional value of all parcels would also seem to be proper. Moreover, as a result of recent hurricane episodes, the cost of property insurance [especially reimbursement of damage incurred from storm surge] for these properties has dramatically escalated recently and would appear to bear on the financial desirability of owning property anywhere on these exposed barrier features.

Further, the structures on the front rank of houses may be destroyed to some greater or lesser degree, but the beach *front* would then just be transferred rearward adding value to the composite of all landward properties regardless of personal ownership. This progression of re-evaluation across individual boundaries would occur until a nonfunctional remnant of land remains or the life of the project occurs which ever comes first. On the basis our current understanding of the interior lot valuation, it looks as if computations were made using some type of "movable beach front" formula in lieu of just ownership [of the most expensive parcels] at the shoreline.

From conversation with District staff, we understand that the majority of benefits and damages accrue from high frequency events, viz., the one through five year storms. Further, while the constructed beach/dune systems provide some absolute protection to structures and associated infrastructure from these weather events, lesser frequency [greater intensity] storms completely overwhelm the additional sand on the beach and dune. Hence, it is not immediately clear how the planning objective of "reduce the

adverse economic and environmental effects of hurricanes ...” will be realized. Further, it would be helpful if some information were provided to describe the rationale of the storm erosion benefits that development [all reaches] north of Ocean Boulevard receives from the project. Given the very limited degree of physical protection afforded by the subject berm/dune system, the exact mechanism of how the additional sand would protect adjacent development from hurricane wave overwash may be overstated [EIS Page 77].

In previous communications with the Corps of Engineers [COE] on similar projects, it was indicated that there is little research which demonstrates a relationship between beach nourishment and subsequent residential/commercial development [or equally important intensification]. In fact, we understand that the upward trend in costs associated with beach nourishment mandate that an eroding shoreline must be almost completely developed to sustain a favorable B/C ratio. Nonetheless, the magnitude of property losses [and health/safety considerations] associated with recent hurricanes was of such magnitude that some quantitative determination about induced land use changes would appear in order. There were some anecdotal accounts and/or small samples provided in previous documentation, but no definitive data were furnished. We offer that since the COE has numerous commitments involving public funds to nourish eroding shorelines on a recurrent basis, this relationship warrants direct investigation. For example, what is the connection between intensity of development, i.e., high rise construction, for an eroding shoreline which has an authorized nourishment project compared to a similar affected reach without a federally funded project?

Notwithstanding either the short- or long-term risk of shore front development to marine processes, the prevalence of ever more expensive structures is readily apparent [EIS-Page 50]. This raises the issue of how the overall public interest will be affected by the providing the subject protection. Recent events in Mississippi, Louisiana, and Texas [Hurricanes Katrina and Rita] would support the argument that this issue needs to be re-examined.

The District may wish to re-examine the relationship between sea level rise and its effects on this project. On the basis of responses to previous inquiries these effects are deemed to be just a relatively small component of the erosional damages. It would be instructive to learn just how these values were calculated and the assumptions used in their preparation. Since it was noted in the DEIS that existing sediments in the nearshore system were incapable of maintaining the historic beach profile, it would seem that even a small increment of sea level rise could significantly affect the project.

Table 3.2 notes that there are more than \$240,000 in total damages within Reach 4 of the Top Sail Beach. However, since there are no houses within this reach south of Ocean Boulevard, the basis of the “storm damage, flood, and wave categories is not

clear. If it is a function of damages to houses [or perhaps infrastructures] north of Ocean Boulevard, this would be useful information. In a related matter, Reaches 1-2 were dropped from additional study because they did not currently have any shore front housing. From Figure A-2 it appears this is also the case for Reaches 3-5, but they were included in these additional studies. The reason for this disparity is not clear.

No recreational benefits are assigned to the non-structural plan with the rationale that it would not prevent beach erosion [EIS Page 54]. We acknowledge that the retreat/relocation option has no effect on erosion, but recreational benefits are not necessarily a function of absolutely preventing beach loss. The *GRANDUC* program was modified to delete all of the front row of houses [as necessary depending on a particular reach] for the non-structural alternative. Therefore, some "beach" would be available for tourists and residents of the remaining properties. Further, some of the reaches are experiencing only nominal amounts of erosion and would have sufficient amount of recreational beach available for decades. Since the B/C ratio was close to unity [.92], could the additional of at least a subset of recreational benefits make this an economically feasible alternative?

### **Community Cohesion**

The finger canals between Godwin and Trout Avenues pose a risk to the stability of Top Sail Beach because they are located immediately southwest of the zone of maximum erosion [Reach 5-7]. We raised this concern to the District in a previous communication and in response, were told that it would be socially unacceptable to fill them. We understand the property owners along these canals might prefer other means to retard the City being divided by either an acute/chronic breakthrough. However, this possibility should not be viewed solely from the perspective of home owners bordering the canals. In part, their decision in this regard may derive from the loss of immediate water front access and is probably premised on the notion that their homes would be undamaged during this break through. Instead, it is much more likely that any nearby buildings would be destroyed, especially if a storm event created a new inlet. Keep in mind that the subject property owners are just a relatively small subset of the involved public. Hence, to make the observation that reconstituting the original physiography of the island would be socially unacceptable may be true in a limited sense, but appears contrary to some of the stated goals of the project, i.e., reduction of economic losses and maintaining community cohesion along the subject reach.

### **Erosional Processes**

It was noted that not all parts of Top Sail Beach are experiencing the significant erosional losses observed within Reaches 5-7 [3 feet/year]. In fact, Reaches 1-4 are actually accreting. Nonetheless, they [2-4] are included in the project transition

although it was noted [EIS Page 55] that the damages there are *unbalanced*. Given this variability over adjacent reaches, it would have been instructive if the underlying cause[s] of erosion had been explained in more detail. This situation is made more perplexing, by the fact net sediment transport was cited as occurring to the north [by a factor of 2], but the Inlet is moving south. Hence, the relationship between the accretion in Reaches 1-4 [which lie essentially south] and erosion of Reaches 5-7 to the north is not immediately clear.

The original terminal groin [“old” NED Plan] is considerably more expensive [\$2,900,000 versus \$600,000] than the transition zone [**Locally Preferred Plan**]; hence, its predilection by the local sponsor appears logical **and** comports with state law. Irrespective of cost, we understand that a terminal groin can often produce a “sand shadow” as well as trap sediments, but in this instance there is an interposing inlet [southward] and the predominant sediment drift was stated to move north. Hence, it would be helpful for us to understand how the omitted groin factored [if at all] into the change in maintenance schedule [two to four years, respectively].

The selected plan will extend the seaward slope of the berm to mean low water at a 15H to 1V profile [EIS Page 65]. It would be instructive to learn how this profile compares to the slope of a natural, un-nourished beach [which could be added to Figure 7.1]. It appears that this steepened profile will definitely affect subsequent erosion, i.e., the District projects that the without project erosion rates of 0 to 3'/year will increase to 4' to 17' with a beach fill project in place [EIS Page 104]. More material may be needed, but if the profile were flattened, what effect would this have on erosion [and by extension the project's maintenance frequency]?

### **Observations about Borrow Areas/Sediments**

We did not understand why the assumption was made that no allowance would be given for future placement of intercoastal waterway maintenance material at Top Sail. For decades material resulting from this maintenance dredging [and connecting channels] has been placed in the vicinity of Reaches 5-6 to address a portion of the subject erosion. While the frequency of placement and amount of this material varies, deposition occurs every 3-4 years and averages [incrementally less] than 100,000 cubic yards. The one time placement of 200,000 cubic yards after Hurricane Fran in 1997 was an exception to this general rule. Unless it is assumed that the AIWA will no longer require dredging, it seems reasonable that this material would be factored into the project's sand budget and be included in the beach fill monitoring [EIS Page 69]. We acknowledge that the amount/timing of these sediments is unspecified, but they are being used and their presence should reduce the stated damages.

Figure A-2 shows the borrow areas which will be used to provide the material for

the project. We were pleased to note that all of these sites are seaward of the “closure depth” for this reach of shoreline; therefore, the problem of *sand mining* [interference with the normal profile fluctuations] should not be an issue. In fact, some of these offshore areas [D, E, and F] appear to be in relatively deep water [up to 60’]. Hence, the need for the need for the hopper dredge to transfer sediment to an offshore pumping station buoy system and then onto shore. We would be interested in a qualitative estimate [cost/cubic yard] of a hopper dredge with sufficient drag boom capability to acquire sediments from these onshore sites versus the equipment to suction material from more shallow areas. From a long-term perspective there is the possibility that the more remote areas would be financially impracticable [as long as sand can be excavated from more proximate sites]. L

The overfill ratio for the Banks Channel [BC] material was only 1.08 whereas the sediments from the borrow area [A] selected for initial use will require an overfill ratio of 1.35. Given this overfill value [coupled with problems with unanticipated amounts of “fines” on previous nourishment projects], we were pleased to note the District will continue its practice of having on-site personnel present during the period of initial construction [EIS Page 74]. It would be helpful if a literature citation were provided in the final document to address the issue of overfill values and how sediment compatibility affects post-project water quality. Regardless, we agree with the plan to refine the original borrow area assessment to ensure more confidence in the material’s compatibility with the native sediments on the beach. From a sediment size perspective Site E also looks promising [but admittedly is limited resource-wise and further offshore of Top Sail]. As noted in the document, compatibility of re-nourishment sediments also is very important in terms of subsequent erosion. If excessive erosion were to occur, sand flat and shoal development in New Topsail Inlet could become problematic [EIS Page 84].

Notwithstanding CBRA issues, could a small hopper dredge [Currituck] acquire the BC material and deposit it directly on the beach? The characteristics of the BC sediments makes it an excellent resource which warrants consideration of its use [rather than just disposal] in some capacity.

### **Beach Access**

The public access to the beach [23 “walk-overs”] and parking associated with this project should serve as a template for all similar re-nourishment actions within the South Atlantic Division. In too many instances, especially in Florida, access to federally funded projects of this nature is curtailed to the point that [realistically] only local residents or renters can use the enlarged beach. Wilmington planning staff and the local sponsor are to be commended for their efforts in this regard. However, we are concerned that the annual costs [\$21,000.] for maintenance is too low to sustain this

desirable access.

### **Monitoring**

After initial construction, adverse environmental consequences of beach re-nourishment [both at the project and borrow sites] are a function of how often the habitat is re-disturbed. While the 7-year maintenance schedule of the NED plan would foster greater stability in the nearshore community [on the basis of “re-disturbance” issues], there are some compelling reason[s] why the shorter 4-year interval was selected for the LPP. However, we support the proposal to monitor the berm profile on a routine basis to lengthen the maintenance frequency as necessary. In a related matter, there is the potential for this project’s zone of influence to extend into adjacent offshore hard bottom communities, we suggest it would also be prudent to monitor for any inundation after initial placement and the first re-nourishment to establish a trend. If surveys reveal that significant areas are covered by sand, it would be reasonable to consider some form of mitigation.

# GPR 309 Performance Measures Form

Title: **Draft Environmental Impact Statement (EIS) on Shore Protection, West Onslow Beach and New River Inlet [Topsail Beach], NC, [dated June 2006] CEQ# 20060272, ERP# COE-E11060-NC**

Principal Reviewer(s): Gerald Miller Project Location: see above

CEQ Number(s): see above ERP Number (optional): see above

\*\*\*\*\*

\*

## Environmental Impacts, Alpha-Numeric Codes:

<u>Air Issues:</u> A1= Air Quality A2= General Conformity A3= Air Toxics A4= Transportation Conformity	<u>Water Issues:</u> B1: Wetlands B2: Groundwater B3: Surface Water B4: Sole Source Aquifer B5: Aquatic Resources B6: Sediment	<u>Other Issues:</u> C1: Toxics/Hazardous Waste C2: Noise C3: Habitat C4: Essential Fish Habitat C5: Pesticides C6: Radiation	<u>Other Issues:</u> D1: Farmland D2: Endangered Species D3: Environmental Justice D4: Historic Preservation D5: Indigenous Peoples E1: Other (please specify)
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### 1. Significant Environmental Impact:

Impact (Enter Alpha Numeric Code(s) for All that Apply): B1, B5, B6, C3,

\* \* \* \* \*

Prior To Draft Time Frame (if available) commented on the scoping document **Date of EPA Communication:** August 2006

### Description of Impact (Include Quantitative Data if Possible):

Proposal: Pump five miles of sand onto an eroding shoreline indefinitely [irrespective of rising sea level]

**Recommendation:** R-4 has and continues to question the overall merits of these "hurricane protection" projects which are really just a mechanism to sustain the front rank of housing.

**Result:** Decrease in Impact:  No Change:  Increase in Impact:

**Result:** \_\_\_\_\_

\* \* \* \* \*

### Draft (including Draft Supplements)

**Date of EPA Communication:**

Description of Impact (Include Quantitative Data if Possible): \_\_\_\_\_

**Recommendation:** \_\_\_\_\_

**Result:** Decrease in Impact:  No Change:  Increase in Impact:

**Result:**

\_\_\_\_\_  
\_\_\_\_\_

\* \* \* \* \*

**Final (including Final Supplements)**

**Date of EPA Communication: 30 May**

**06**

**Description of Impact (Include Quantitative Data if Possible):**

**Recommendation:** construct ASAP

**Result:** Decrease in Impact: C No Change:  C Increase in Impact: C

**Result:**

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_

**GENERAL INSTRUCTIONS-** Complete this form for each impact identified by EPA during the EIS 309 review process in accordance with instructions included on the form and indicated below and submit to Headquarters.

**SPECIFIC INSTRUCTIONS FOR GPRA 309 PERFORMANCE MEASURES FORM**

**OBJECT REFERENCE INFORMATION**

Title of the document (Enter the title as written in the Lotus notes database, if available).

**Principal Reviewer(s):** Enter the name of the EPA lead reviewer for the project. (If the lead reviewer changes during the project time frames, more than one name may be listed in this section.)

**Project Location:** Enter information regarding the location of this project. Depending on the relevant and available project information, the data may vary and could include: state, city, or county information, latitude or longitudinal coordinates, etc.

**CEQ Number(s):** Enter the CEQ number(s) for the draft and final time frames of the project (during the prior to draft time frame, the number(s) is not available and the field should be left blank).

**ERP Number:** Enter the family number for the project, if one is assigned (during the prior to draft time frame, the number is not available and the field should be left blank).

maximum extent practicable, an impact should correspond to one impact category on the table. However, for certain impacts, groupings of closely related categories is possible (i.e. sediment and surface water).

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**SIGNIFICANT ENVIRONMENTAL IMPACT**

**Impact:** Using the table of impact types listed on the form, reference the impact(s) that apply and enter the alpha-numeric codes in the space provided. To the

**\*\*Use Continuation Page, if necessary**

**PRIOR TO DRAFT**

**Date of EPA Communication:** Enter the date when EPA identified an impact during the prior to draft time frame and made recommendations to the agency. In the prior to draft time frame, this communication may include formal or informal meetings, emails, phone calls, etc.

***Summary Paragraph***

EPA has some environmental concerns about the long-term consequences of the proposal to dredge sand onto the eroding shoreline of Top Sail Beach.

Rating: EC-1



## United States Department of the Interior

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

August 15, 2006

RECEIVED  
EXECUTIVE  
06 AUG 17

Colonel John E. Pulliam, Jr.  
District Commander  
Wilmington District, U. S. Army Corps of Engineers  
P. O. Box 1890  
Wilmington, North Carolina 28402-1890

**Routed: 25 Aug 2006 kj**  
**Action: TSD**  
**Susp Date:**  
**CF: Cdr, DD, DX, DP, REG**

Dear Colonel Pulliam:

This letter acknowledges the U.S. Fish and Wildlife Service's (Service) June 28, 2006, receipt of your June 23, 2006, letter requesting initiation of formal section 7 consultation under the Endangered Species Act. The consultation concerns the possible effects of your proposed West Onslow Beach and New River Inlet (Topsail Beach) Project, in Pender County, North Carolina, on the piping plover (*Charadrius melodus*), seabeach amaranth (*Amaranthus pumilus*), and two species of sea turtle, loggerhead (*Caretta caretta*) and green (*Chelonia mydas*), which are most likely to nest on the beaches of the project area.

All information required of you to initiate consultation was either included with your letter or is otherwise accessible for our consideration and reference. We have assigned log number 42420-2006-F0248 to this consultation. Please refer to that number in future correspondence on this consultation.

Section 7 allows the Service up to 90 calendar days to conclude formal consultation with your agency and an additional 45 calendar days to prepare our biological opinion (unless we mutually agree to an extension). Therefore, we expect to provide you with our biological opinion no later than November 6, 2006. As a reminder, the Endangered Species Act requires that after initiation of formal consultation, the Federal action agency may not make any irreversible or irretrievable commitment of resources that limits future options. This practice ensures agency actions do not preclude the formulation or implementation of reasonable and prudent alternatives that avoid jeopardizing the continued existence of endangered or threatened species or destroying or modifying their critical habitats.

If you have any questions or concerns about this consultation or the consultation process in general, please feel free to contact me or Howard Hall at 919-856-4520, ext. 27 or by e-mail at < howard\_hall@fws.gov >.

Sincerely,



Pete Benjamin  
Field Supervisor

cc:

Ron Sechler, NOAA Fisheries, Beaufort, NC



## United States Department of the Interior

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

September 13, 2006

Colonel John E. Pulliam, Jr.  
District Engineer  
U.S. Army Corps of Engineers  
P.O. Box 1890  
Wilmington, North Carolina 28402-1890

Attention: Ms. Jenny Owens, Planning and Environmental Branch

Dear Colonel Pulliam:

The U.S. Fish and Wildlife Service (Service) provides the following comments on the Draft Integrated General Reevaluation Report (GRR) and Environmental Impact Statement (DEIS) for Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach), North Carolina. These reports, dated June 2006, were prepared by the Wilmington District of the U. S. Army Corps of Engineers (Corps) and consolidated into a single document (hereafter the Draft GRR/EIS). The reports present the results of studies to reexamine the feasibility of Federal shore protection for the Town of Topsail Beach (the Town), which is located on the southern end of Topsail Island.

Topsail Island is a 22-mile long and 0.5-mile wide barrier island in Pender and Onslow Counties, North Carolina. The Town occupies the southern end of Topsail Island and is the local sponsor. The Town has chosen another feasible plan similar to the National Economic Development (NED) plan, designated as the Locally Preferred Plan (LPP). The recommended plan is the LLP. Section 1.03 (p. 4) indicates that there is a need to reduce both storm damages and beach erosion along the 4.5-mile long ocean shoreline of the Town.

The work proposed by the Corps, the LPP, consists of a 26,200-foot long (5.0 miles) dune (12 feet high) and berm (50 feet wide) system. Sand for the beachfill would be delivered from offshore borrow areas by dredge. The plan has a main fill length of 23,200 feet (4.4 miles).

Six borrow areas are located in the ocean between one mile and 5.5 miles from the shoreline. These areas are between the 30-foot and 60-foot NGVD depth contour. The total volume of suitable material available from all six sites is approximately 21,100,000 cubic yards (cy) which is considered sufficient to meet the project requirements. About 6.5 square miles of sandy ocean bottom would be affected over the 50-year life of the project.

Initial construction will require approximately 3,223,000 cubic yards (cy) of sand. The material would be pumped to the beach by pipeline dredge and shaped on the beach by earth moving equipment. The initial construction profile will extend seaward of the final design berm profile a variable distance to cover anticipated sand movement during and immediately following construction.

Initial berm and dune construction would occur in FY2011 (November 2010 - April 2011), subject to availability of funds. Periodic beach reconstruction, at four year intervals, would require approximately 866,000 cy of sand. Material for beach reconstruction would be removed from the borrow areas by hopper dredge. Over the 50-year life of the project 13,615,000 cy of sand would be required.

The cover letter of the Draft GRR/EIS from the Corps, dated June 23, 2006, stated that the Corps had determined that the proposed project may affect federal listed species. Therefore, formal consultation under section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543) has been initiated. The Draft GRR/EIS contains (Appendix I) the Biological Assessment (BA). The primary species of concern are sea turtles, including the loggerhead sea turtle (*Caretta caretta*) and green sea turtle (*Chelonia mydas*), as well as the piping plover (*Charadrius melodus*), seabeach amaranth (*Amaranthus pumilus*), and the West Indian manatee (*Trichechus manatus*).

The Service will review the BA and determine whether the selected plan is likely to jeopardy or not jeopardy the continued existent of federally listed species. If the plan is likely to jeopardy any listed species, the Service will provide reasonable and prudent alternatives to the selected plan. If the plan is not likely to jeopardy any species, the Service will provide an incidental take statement which includes the amount or extent of take, reasonable and prudent measures, terms and conditions, and conservation measures.

## GENERAL COMMENTS

In general, the Draft GRR/EIS is well organized and contains much useful information on the project area and the proposed actions. The discussion of the affected environment (Section 2.0) is good. The document benefits from having separate sections for plan formulation (Section 5.0) and plan selection (Section 6.0). The discussion of environmental effects (Section 8.0) covers all the biological, physical, and social components of the project area. However, the consideration of project impacts focuses exclusively on initial construction and the early years of the 50-year project. This may be based on the assumption that the environmental impacts of the 12 reconstruction operations would be essentially similar to those of initial construction.

It is likely that the environmental consequences of seeking to maintain a berm and dune in a fixed location on a dynamic barrier island will change over 50 years. Such changes would result from two, dynamic, natural phenomena which are not adequately addressed in the Draft GRR/EIS. These are the rise in global sea level and the natural process whereby barrier islands are pushed landward as sea level rises (island migration).

The scoping letter of the Service (March 2001) requested that feasible alternatives should be based on a consideration of the rise in sea level. Project planning should use the best available information on present rates of global sea level rise and possible increases in the rate of sea level rise. The Draft GRR/EIS does not fully consider the impact of global sea level rise over 50 years of project. The document mentions (p. D-8) that sea level data from Wilmington, North Carolina, during the 1953-1993 period, indicate a rise of 0.008 feet per year, or 0.8 feet per 100 years. This figure should be updated to reflect current information. Riggs and Ames (2003, p. 64) state that sea level is currently rising at a rate of 1.0 to 1.5 feet per 100 years.

The rate of sea level rise in the recent past should not be projected into the future. The rate of sea level rise is increasing. The U. S. Environmental Protection Agency (EPA) and others have estimated that sea level along the Atlantic and Gulf coasts may rise one foot by 2050 (US EPA 2006). The EPA estimates that an increase of two feet is likely within a period of 100 years, but a rise of four feet is possible. Recent findings (Alley et al. 2005) suggest that the projections of sea level rise may need to be revised upward. Riggs and Ames (2003, p. 66) cite the Intergovernmental Panel on Climate Change (IPCC, 2001) which gives an average estimated rise of 1.6 feet by 2100, but with an upper limit of 2.9 feet of increase. The upper range of estimate rise, about three feet, would have profound implications for Topsail Island which has an average elevation of only nine feet (Pilkey et al. 1998, p. 171).

The Draft GRR/EIS does not consider the natural response of barrier islands during periods of rising sea level. Rising sea level over the past several thousand years would have eliminated low relief barrier islands unless there were natural, geologic processes that pushed them landward. Pilkey et al. (1998, pp. 41-48) describe the stages of island migration, or island transgression. During major storms, ocean beaches retreats (actually a movement to higher ground) as sediment is removed from the beaches and primary dunes. Sediment is carried across the island to form sandy overwash fans which often extend into estuarine areas behind the island, cause the island to widen in a landward direction. Overwash fans create new salt marshes and replaces sediment lost to wave erosion on the estuarine shoreline. The sand pushed landward becomes part of the new beach which has the same appearance as the former beach, but simply occupies a more landward position.

Barrier islands migrate landward in order to survive (Pilkey et al. 1998, p. 4). Kaufman and Pilkey (1983, p. 220) write that "as sea level rises, islands and beaches do not stand still and allow water to pass over them . . . they move back through a series of complex maneuvers." The National Park Service (NPS) has a policy of allowing natural shoreline processes, such as "erosion, deposition, dune formation, overwash, inlet formation, and shoreline migration," to continue without interference (National Park Service 2006). This policy implies that these processes are consistent with the mission of the NPS to preserve natural resources, processes, systems, and values of units of the national park system in an unimpaired condition.

From the perspective of a fixed, oceanfront structure, the process of islands migration appears to eliminate the beach in front of the structure. This loss of beach could lead to the complete loss of sea turtle nesting habitat (p. 43). Past and future losses of sea turtle habitat should not be attributed entirely to erosion. The beach is being squeezed between rising ocean waters and fixed, oceanfront structures. It would be more accurate to state that the beaches are narrowing due to the interruption of natural island migration by the desire to maintain the fixed location of oceanfront structures.

The planning document would benefit by acknowledging that island migration is a natural process within the project area. The Draft GRR/EIS states (p. 60) that implementing a non-structural approach would allow beach erosion to continue and areas of sand washed inland would expand and new overwash areas would form. Actually these areas of overwashed sand are the beach which has not been lost to erosion, but simply moved inland. The beach created by island overwash occupies a natural position dictated by current sea level. By bulldozing the newly created beach (p. B-8) off the roads and back to the area between oceanfront houses and the ocean, the amount of sand lost to the deeper ocean increases and the overall elevation of the island decrease. This exposes structures to greater storm damage. Pushing the beach off the higher, interior areas back to lower ground near the ocean's edge contributes to the diminishing width of the beach and the permanent loss of sea turtle nesting habitat.

The Draft GRR/EIS benefits from a clear distinction between storm damage (including the movement of sand offshore to deeper waters) and "long-term erosion," or land loss, which occurs continuously as sea level rises (p. 41; B-19/20). However, project planning should consider the permanent inundation of the ocean shoreline and the likelihood that the rate of inundation will increase over the course of the 50-year project. Leatherman (2001, p. 189) states that over 90 percent of shoreline recession is due to erosion and the rest can be attributed to inundation which is the permanent submergence of low-lying land and does not result from any movement of sediment. Riggs and Ames (2003, p. 64) also note that the continued rise in sea level will result in the flooding of low, coastal land and the widespread recession of North Carolina's shorelines.

## **SPECIFIC COMMENTS**

### **Need**

The need for federal action should clearly demonstrate that the goals of the non-federal sponsor are consistent with federal authorities, policies, and guidelines. The sponsor's concerns are economic losses resulting from: (1) storm damages to structures and their contents; and, (2) the loss of beachfront land due to progressive shoreline erosion (p. 41). The LPP would preserve the tax base and property values (p. B-47) which suggests a desire to maintain existing beachfront structures at their current location. A federal objective limited to reducing, direct storm damage could be addressed by the non-structural alternatives outlined in Appendix P. The twin objectives of the Town could not be met by a non-structural approach which would not address long-term erosion and inundation. For the Town, a federally maintained berm and dune would be both a means

to an end (block storm waves) and an end in itself (replace private land). A clear statement of the federal need for action would indicate whether any non-structural alternatives should be considered.

The Draft GRR/EIS states (p. 48) that the current narrowing of the beach endangers important habitat for a variety of plants and animals and failure to construct the proposed project would result in losses of habitat for sea turtle nesting and seabeach amaranth. A need to reduce the adverse environmental effects of storms (p. 49) should elaborate on the mechanisms whereby storms produce any long-term permanent elimination of habitat in the absence of development. The discussion should consider that these species have survived the last 15,000 years as global sea level rose approximately 300 feet (Pilkey et al. 1998, p. 41) and the barrier islands were impacted by countless hurricanes.

### Purpose

The purpose of proposed work varies throughout the Draft GRR/EIS. The first goal (p. 49) is to "reduce the adverse economic and environmental effects of hurricanes and other storms at Topsail Beach." The Real Estate Plan states (p. M-2) that the constructed berm, will serve two primary purposes: as a stockpile of sand on the beach to serve as sacrificial material to reduce the erosion of the high ground beach during storm events and to provide storm damage protection to beachfront structures by moving the point of erosion seaward, away from the structures. The Regional Economic Development Impacts notes (p. B-46) that local governments seek to preserve the tax base and encourage the growth in overall property values as well as benefit the labor force. The steady growth of the local community and surrounding region is considered a worthy goal by the state and local governments.

The planning goal (p. 49) of reducing the adverse environmental effects of hurricanes and other storms at Topsail Beach should be revised. Hurricanes are natural phenomena and fish and wildlife species of the coast are adapted to these periodic disturbances. Di Silvestro (2006) states that barrier islands erode and rebuild naturally and many species that use them, particularly birds, adapt to their destruction by moving to undamaged habitat. Alexander and Lazell (2000, 38) write that violent weather is an integral part of life" on the Outer Banks where plants and animal are well-adapted to foul weather. However, when viewed in the short-term, coastal storms can produce a loss of habitat at a particular location, but identical habitat can be created elsewhere in very dynamic coastal areas. If coastal storms are considered a natural part of the environment, then this goal suggests that the federal effort seeks to protect the environment from the environment.

If the Final GRR/EIS retains the purpose of maintaining habitat for coastal species, it should be acknowledged that environmental forces are not responsible for environmental degradation. Since barrier islands can adjust to sea level rise and coastal species can recover from short-term hurricane impacts, a more accurate statement of the project purpose may be to rectify the damage resulting from the interruption of natural island migration which is squeezing the beach between a rising sea and fixed coastline structures. The Final GRR/EIS should not attribute the narrowing of the beaches entirely,

to natural phenomena such as coastal storms, but acknowledge that the narrowing of beach is the result of two factors; one natural and one man-made. A federal purpose of preserving important habitat for species dependent on the beach would best be achieved by adapting development to allow the island to naturally respond to the increase in sea level.

### Alternatives

The Draft GRR/EIS does consider the three broad, courses of action (Section 5.02, pp. 51-52). These are no action, non-structural measures, and structural measures (beachfill, seawalls, bulkheads, breakwaters, and groins). A comparison of these broad categories is given in Table 5.3 (pp. 59-62).

The Final GRR/EIS should provide greater clarity on conditions which would exist without federal action. This discussion should note that on undeveloped barrier islands, a wide, recreational beach remains immediately after a hurricane. Pilkey et al. (1998, p. 56) notes that storm survivors on North Carolina's islands have found a "beautiful, flat, and broad" beach after a storm. The post-storm beach may consist, in part, of overwash fans. Furthermore, beaches may gradually recover sand pushed seaward during a storm as sand moved to shallow, offshore waters is pushed shoreward by fair-weather waves.

The no action alternative does not consider conditions which would exist if natural island migration is allowed to occur. The recreational beaches would be maintained in the absence of federal and non-federal actions. The continued deterioration of beach appearance and berm width noted in Table 5.3 (p. 59) would not occur. The expansion of existing overwash areas and the formation of new overwash areas would be, in part, the beach.

However, oceanfront property owners may have problems which cannot wait for the sand to return. The vertical scour around structural piles may not cause the building to collapse, but the open exposure caused by the storm-induced erosion and lower beach fronting the building may be sufficient to result in the complete loss of the economic value of the building even though the building may be left standing (p. B-19). The loss of economic value of the building may come from the inability of the owner to reestablish a useable sewer system or obtain potable water. Such loss of economic value is considered as "erosion damage" (p. B-19).

While the no action alternative would result in a continued threat to oceanfront land, roads/utilities, structures and personal property (p. 59), this threat is likely to remain regardless of actions taken. The Draft GRR/EIS acknowledges (p. 76) that the project would not eliminate all storm damage (specifically wind damage and damage from sound side flooding). Since a category 3 hurricane can produce a 12-foot storm surge (Pilkey et al. 1998, p. 23) and the island may be completely submerged (Pilkey et al. 1998, p. 173), structures on the island will remain at risk. The risk will increase as global sea level rises. Table 5.3 would be more accurate by noting that the no action alternative would result in greater damage during category 1 and 2 hurricanes. The proposed plan is likely

to provide little, if any, storm damage reduction from hurricane of category three or higher.

There should be a greater effort to differentiate the adverse impacts of no action among wildlife species, the non-resident public, and oceanfront property owners. Post-storm conditions are likely to include a wide beach which continues to benefit sea turtles, shorebirds, non-resident tourists, and structures which are basically intact, but economically at risk due to threats to water supply and sewage disposal. There should be an analysis of harm to the non-resident public if island migration maintains the recreational beach.

It is difficult to evaluate the no action alternative without knowing the non-federal efforts which would be undertaken to maintain the present oceanfront structures. The Draft GRR/EIS does address (pp. B-6; B-8; Appendix B, Attachment 4; P-5) some small scale "emergency" erosion prevention measures. However, beach scraping and sandbag placement are considered "ineffective" for storm damage reduction in the long run (p. B-32). Apparently these small-scale, privately funded efforts are considered in the conditions which would exist with the no action alternative. However, the planning document does not consider the possibility of beach construction without federal funds. Currently a non-federally funded beach construction effort is being developed for approximately 11 miles at the northern end of Topsail Island for a 30-year period. Figure 8 Island, south of the project area, has implemented several privately funded beach construction projects in recent years. The Final GRR/EIS should discuss whether the conditions given in Table 5.3 for a no action alternative reflect no efforts by the federal government or no efforts by all government and private entities.

Some aspects of the evaluation of the non-structural approaches should be clarified. Table 5.3 states (p. 59) that non-structural methods would allow a more natural appearance along the beach and maintain the existing recreational capacity. However, with regard to natural communities (p. 60), the same approaches would continue to erode the beach while new overwash fans arise and old ones expand. As noted, the overwash fans would constitute part of the beach which would remain available to both tourists and wildlife. These conflicting statements should be reconciled.

Table 5.3 states (p. 59) that the non-structural approaches would eliminate the need for future protection of structures. This would be true if these approaches were accepted by private citizens and non-federal government entities. As noted above, non-federal measures to stabilize the beach may be employed, including complete berm and dune construction.

If the federal interest is solely to reduce storm damage without a commitment to maintain the existing oceanfront structures, one non-structural alternative would be to gradually buy the land for public use as structures became threatened. Examples of this approach are discussed by Dean (1999, pp. 210-234). The establishment of a state or federal park would permanently reduce storm damage cost and would likely provide an economic

boom for nearby communities on the mainland. However, if there is a federal interest in maintaining the existing development, this option is not appropriate.

The Service requested (Appendix K) that special attention be given to one type of relocation. This option would consist of a systematic program to use the uplands created by natural island overwash as relocation sites for threatened, oceanfront structures. The Corps informed the Service that "many acres of marsh" at Topsail Beach have been buried in sand to the extent that these areas have become uplands suitable for buildings (Figure 4 of the Service scoping comments). The Service requests that the Corps quantify the area of buildable uplands (areas not requiring any wetland fill) created by the hurricanes in the 1996-1999 period and compare that area to the area of oceanfront land lost to shoreline recession. The alternative analysis could then include a detailed description and analysis of a systematic, long-term program for relocating threatened oceanfront structures to uplands created by natural island overwash.

Another non-structural approach is a policy of "rolling easements." The U. S. Environmental Protection Agency (2006) notes that to protect public assets in coastal areas, several states have adopted policies to ensure that beaches and dunes are able to migrate inland as sea level rises. Maine, South Carolina, and Texas have implemented some version of "rolling easements" in which people are allowed to build, but only on the condition that they will remove the structure if and when it is threatened by the advancing shoreline. Titus (1998) states that a policy of rolling easements allows development but prohibit property owners from holding back the sea. A rolling easement allows construction near to the shore, but requires the property owner to recognize nature's right of way to advance inland as sea level rises.

Regarding structural approaches, fill material was considered to reduce land losses due to long-term erosion (p. B-20). However, no suitable upland borrow sites were identified. This is contradicted by the earlier statement (B-13) that following hurricane Ophelia in 2005, the Town requested approval from the Federal Emergency Management Agency (FEMA) to haul in approximately 22,000 cy of sand to distribute over 7,000 linear feet of beach. Furthermore, earlier this year the Town of Surf City, immediately north of the project area, sought a permit to supplement beach scraping with truck-hauled sand from a commercial sand mine on the mainland. Therefore, the use of imported upland sand should not be dismissed as a structural alternative.

### **Short-term Environmental Impacts**

There are basically four, significant environmental issues associated with the direct, short-term impacts of berm and dune construction. These are: (1) protection of high value marine habitats, such as hardbottoms; (2) the compatibility of native beach sediment and the dredged material; (3) preserving beach invertebrates; and, (4) the annual scheduling of dredging and beach construction.

The Draft GRR/EIS presents a good description of hardbottoms and their ecological value (pp. 19-21). Project plans now indicate that dredging would not occur at offshore

hardbottom sites (p. 95), but there is an acknowledgement that sediment plumes from the overflow of hopper dredges have the potential to adversely affect nearby hardbottoms (pp. 95-97). There are, however, three mitigating factors (p. 97) including information that the proposed dredge sites are at least 2,000 feet from the nearest known offshore hardbottom area.

If hardbottoms are adversely affected, the project should include specific measures to mitigate any adverse impacts. Such measures could include the establishment of artificial reefs. Even with mitigation measures, the impacts of 50 years of offshore dredging and sediment running off the constructed beaches are likely to adversely affect fisheries resources. The economic losses to both commercial and recreational fishing interests should be fully considered in selecting a course of action.

The physical characteristics of the fill material used for beach construction have a significant influence on the impacts of the work. The fill should closely match the characteristics of the native beach. The summary data presented in Table E-15 (p. E-29) indicates that the grain size and shell content of the offshore borrow areas are similar to those of the native beach. However, these data are based on selective samples and large area of silt and mud could be interspersed within otherwise compatible sand.

The Service recommended (p. 129) the development of contingency plans to quickly halt the dredging operation if incompatible material is encountered. In response, the Draft GRR/EIS states (p. 74) that while the dredging and beach nourishment process does not lend itself to real time grain size distribution measurements, some quantitative and qualitative assessments of the operation can be made. Qualitative visual characterizations of the in-place material will be made by the Corps throughout project construction. Assessment can be made to determine whether the volume of potentially inconsistent material is significant relative to the overall project. Appropriate Corps personnel would determine whether dredging should continue at the site yielding the incompatible material. Furthermore, a contingency borrow area has been identified to function as a secondary source of sediment throughout the 50 years of the project if unsuitable material is encountered and relocation of the dredge to more suitable borrow areas is required. If rigorously applied these measures provide some level of protection to prevent large quantities of mud, silt, or large shell fragments from being placed on the beach.

The Service's scoping comments recommended that the long-term adverse impacts on populations of beach macroinvertebrates should be considered in the evaluation of all project alternatives. The Corps' response notes (p. 130) that separating sand placements by four years should allow these species to recover. Such recovery is expected to occur within a year or two. A four-year separation of sand replacement operations may benefit these organisms if all placements are scheduled during the winter months. Peterson et al. (2000, p. 376) state that beach construction should end before April or May when *Donax* and *Emerita* return to the intertidal beach.

The Service reiterates our recommendation that these long-term beach construction projects should allocate funds for research on the life cycle requirements of the important

beach invertebrates. It is encouraging to notes (p. 130) that the Corps "will consider providing funds to continue this type of data collection in order to develop management guidelines and effective measures to mitigate identified impacts to these resources."

The schedule given on page 129 (sand placements from November 16 through April 30) should be reconciled with earlier statements (pp. 72-73) that after initial construction, each additional placement using a hopper dredge would occur during the December 1 to March 31 period. The shorter schedule would be necessary for compliance with the required hopper dredging window established to protect sea turtles in offshore waters.

It seems likely that the periodic sand replacements could be accomplished during a four-month period of December through March. Each periodic sand replacement is estimated to require 866,000 cy (p. 73). At a production rate of 14,000 cy per day (p. 72), an uninterrupted period of 61 days should be sufficient. This 61-day period represents only half of the 121 day from December 1 through March 31. Therefore, each sand replacement operation should be possible without work during April.

### **Long-term, Indirect Environmental Impacts**

Long-term, indirect impacts are consequences of an action which occurs at a later time and/or at a different location. While direct impacts are generally easier to observe and quantify, they are not necessarily the most serious. If the disturbance is a one-time occurrence, resilient ecosystems may be able to regain pre-project habitat values and productivity. However, serious secondary impacts have the potential to cause irreparable damage, permanently lower biological productivity, and eliminate habitats.

The Draft GRR/EIS notes (pp. 90-91) that some refilling of the depressions created during sediment removal is expected over time, but does not consider the consequence of this occurrence. The majority of follow up studies from offshore borrow sites have shown a decrease in the mean grain size, including, in some cases, increases in the percentage of silts and clays in the borrow site (National Research Council [hereafter NRC] 1995, p. 118). The finer material or other significant alterations in the physical characteristics of the substrate may not provide suitable habitat for the organisms that formerly occupied bottom sediment. The areas mined can refill with decomposed organic matter that is silty and anaerobic, hydrogen sulfide level may increase, and eventually, the area may become anoxic (Greene 2002, p. 12). Some areas may never recover from these dredging events (Greene 2002, p. 12). The long-term impacts on the offshore sand extraction sites should be considered.

Alteration of depth and substrate characteristics of offshore borrow areas may adversely affect microalgal biomass and diversity. The production of microalgae is concentrated in the surface layer of bottom sediment. Cahoon and Cooke (1992) state that primary production data from Onslow Bay (the ocean off Topsail Beach) indicate that the sediment-water interface must be viewed as a dynamic part of continental shelf habitat. Benthic microalgae provide a dependable food source for both benthic deposit feeders and suspension feeders. Cahoon et al (1990) conclude that the presence of benthic

chlorophyll *a* indicates a productive benthic microflora in Onslow Bay. Concentrations of chlorophyll *a* decrease as water depth increases, and thus sand mining that produces permanent depressions in offshore areas may lower primary productivity. There is also a reduction in the number of algae species with depth. Therefore, the depressions created by sediment removal may result in lower species diversity (Schneider 1976 as cited in Cahoon et al. 1990).

The Service is concerned that nearshore hardbottoms "have the potential to be gradually buried by the movement of sand during equilibrium profile translation." (p. 96). The Draft GRR/EIS acknowledges (p. 95) that secondary impacts are possible "through sedimentation and/or chronic turbidity." This "translation" may refer to the process whereby the waterward edge of the beachfill is placed at a slope steeper than that dictated by natural conditions (NRC 1995, p. 86). After construction, ocean waves will reduce the slope by washing away excess material. It is the offshore movement of this sediment that may pose a threat to nearshore hardbottoms. If 866,000 cy of new sediment would need to be added to the artificial beach every four years, an average of 216,500 cy of material would be lost from the constructed beach every year. Some of the sediment loss can be expected to move offshore. Sand placed on Wrightsville Beach, south of the project area, has washed off the beach and buried extensive hardbottoms on the inner continental shelf (Riggs 1994, p. 17). These hardbottoms were prime fishing locations, but are out of production due to a covering of two to six inches of sand. Riggs (1994, p. 17) concludes that beach nourishment and the preservation of hardbottoms represents a very serious conflict which is going to get much bigger.

The Draft GRR/EIS acknowledges (p. 96) that epibenthic hardbottom communities may "shift towards less diverse more stressed ephemeral communities." Such potential impacts are not given in Table 5.3 (p. 60). Appendix J notes (p. J-7) that while the best available data do not suggest the presence of high relief, nearshore hardbottoms off Topsail Beach, a survey for nearshore hardbottom will be conducted using side-scan and multi-beam sonar. This potential should be fully addressed in the Final EIS after the forthcoming surveys have been completed.

A potential indirect impact of the proposed work is sediment starvation of the sound side shoreline by preventing cross island overwash of sand during storms. The Service scoping letter noted that following the destruction of the dunes on Topsail Island by Hurricane Bertha in July 1996, Hurricane Fran in September pushed sand across the island and deposited it along the sound side shoreline. This is part of the island migration process which ensures the continued existence of the island.

An artificial berm and dune system prevents island overwashes from maintaining the sound side shoreline. Dunes constructed on the Outer Banks precluded new marsh growth and increased the sound side erosion rate (Pilkey et al. 1980, p. 29). Eventually, erosion of sound side marshes will also become a threat to structures and additional efforts will be required to protect development. The combined effects of a rising sea and protective structures will eliminate the estuarine marshes that are such a valuable nursery habitat for fish. Riggs and Ames (2003, p. 85-86) write that human intervention on

Hatteras Island altered the pre-1962 stability of the entire back barrier segment, changing the rate of estuarine erosion. Minimizing island overwash reduces sediment inputs which renew the back-barrier sand supply. Reduced sand inflows along with dredging within the Pamlico Sound allowed increased wave energy to reach the shoreline. Without the natural replacement sand from the beach, the rate of shoreline erosion has increased. The sediment washed over the island provides the base for salt marsh growth. Salt marshes trap additional sediment and build up the back side of the island, protecting the estuarine shoreline from erosion. The potential environmental harm to sound side marshes from the elimination of new sand from island overwash and the additional man-made erosion control structures should be discussed in the Final EIS.

There is concern that changing conditions in the project area, primarily an increase sea level along with stronger and/or more frequent hurricanes, would require shorter intervals between sand replacement operations. Pilkey et al. (1998, p. 96) state that "replenished beaches almost always disappear at a faster rate than their natural predecessors." Furthermore, nourished beaches generally recover much less sand after a storm than natural beaches (Pilkey et al. 1998, p. 57). The faster loss of artificial beaches may be related to two factors, both of which are associated with sea level rise. First, attempting to maintain the present oceanfront structures by placing sand seaward of the beach location consistent with sea level would create a steeper slope on the shoreface. The shoreface extends to the innermost continental shelf at depths of 30-40 feet (Pilkey et al. 1998, p. 48). While the project would place sand on the upper part of the shoreface (the beach), the lower shoreface may continue to loose sand to deeper water. The steeper shoreface would result in a faster loss of the artificial beach. The sand would slide down the steeper slope at an every increasing rate. The "significant sediment losses from the shoreface" mentioned in the Draft GRR/EIS (p. 43) may increase over 50 years. Second, a higher sea level allows waves to strike higher on the beach (Leatherman 2001, p. 189). The Bruun model suggests that increasing sea level enables high-energy, short-period waves to attack farther up the beach and transport sand offshore (Leatherman 2001, p. 190). On a steeper shoreface, storm wave energy would have less contact with shallow water and have a greater impact on the constructed beach (Pilkey et al. 1998, p. 56).

The Final EIS should carefully consider whether the four-year replacement interval can be maintained over 50 years. Any contingency plans for replacing the beach between the planned maintenance operations should be discussed. Hurricanes Bertha and Fran "decimated" the existing dune (p. 43) during a two-month period in 1996. If a berm and dune can be eliminated in a single season, it is possible that any beach build in the winter of one year could be completely gone within 6-7 months. The Final EIS should indicate whether such an occurrence would leave the oceanfront structures protected by only small-scale emergency measures (sandbags, scraped sand) for three and a half years or the berm and dune would be replaced, as needed, within the framework of this project..

Outside the framework of the current project, but still in regard to the sand replacement cycle, the role which FEMA would have in replacing sand lost during declared emergencies, this should be discussed. In some cases, a constructed beach can be considered to be part of a town's "infrastructure," which may be replaced with federal

funds following a declared disaster. Currently, FEMA has authorized the replacement of 1,107,560 cy of material washed off the beaches of three communities on Bogue Banks, northeast of the project area, by Hurricane Ophelia in September 2005. If similar post-disaster, replacement efforts can be expected for the local sponsor, the amount of material to be drawn from offshore sand resources would exceed the amounts considered in the Draft GRR/EIS.

The consideration of environmental impacts appears to be based on an assumption that major sand replacements would occur every four years with the first operation in 2014 and the final one in 2058 (p 79). With the rise in global sea level and the occurrence of stronger and/or more numerous hurricanes, it is doubtful that a precise four-year replacement cycle could be maintained. By the latter half of this century, hurricane protection could require reconstruction of the dune and berm on a two-year or annual cycle. If the replacement cycle was reduced, the frequency of short-term construction impacts would increase. Important adverse impacts would include: (1) less recovery time for beach invertebrates; (2) more turbidity and sediment at the offshore sand extraction sites; and, (3) more turbidity and sedimentation in nearshore waters and hardbottoms. If the berm and dune would only be replaced on the proposed four-year cycle regardless of when they are washed away, this point should be emphasized in the Final EIS.

### **Cumulative Impacts**

For projects which impact unique habitats such as ocean beaches a thorough consideration of cumulative impacts is important. While a regional sediment budget has not been completed, the Corps expects that the proposed action and the combined effects of all other existing and proposed beach projects will have only a "minimal effect on shoreline and sand transport" (p. J-8).

Appendix J addresses these issues and states (p. J-4) that considering existing and proposed Federal nourishment projects, approximately 91 miles of approximately 320 miles of ocean beaches (28 percent) along the North Carolina coast could have private or federal beach nourishment projects by 2015. Furthermore, on a state-wide basis, the existing and approved disposal sites are well disturbed in northern, central, and southern parts of the state with undeveloped, protected beach, i.e., National/Federal and State Parks and Estuarine Reserves, in between (J-19). However, state and federal parks are not immune from beach building and other beach disturbing activities. Fort Fisher State Park on the shoreline of New Hanover County is now protected by a rock revetment. In some cases dredged material is placed on state and federal lands to counteract the influence of man-made structures. Sand dredged from Oregon Inlet is occasionally placed on Pea Island National Wildlife Refuge. Sand from Masonboro Inlet is placed on the beaches of the Masonboro Estuarine Reserve. Early planning has occurred on a proposal for beach and dune construction along 70 miles of Hatteras and Ocracoke Islands, most of which is within Cape Hatteras National Seashore.

Greene (2002, pp. 106-107) presents a summary of "ocean beach management projects" in coastal North Carolina. This table considers federal projects which exist now, are

authorize, or have been requested as well as non-federal local projects. After eliminating overlapping projects such as areas which may have received periodic dredge disposal as well as formal shore protection sand, this review estimated that 176 miles, or 55 percent of the North Carolina shoreline is, or could be, subjected to sand placements. The Final EIS should review these data which are available online and revise the CEA as required.

As noted above, federal funds from the FEMA could be used for additional beach construction in the project area following a declared disaster. Furthermore, non-federal beach construction could occur in the project area following a disaster if federal funds are not provided. The Corps should consider the potential for such additional construction within the CEA.

### **Executive Order 11988 (Floodplain Management)**

The Draft GRR/EIS states (p. 119) that the proposed berm and dune construction complies with Executive Order (EO) 11988. The Draft GRR/EIS states (p. J-8) that coastal areas of North Carolina will continue to grow and expand both with and without beach nourishment projects. A 1996 report by the Corps' Institute for Water Resources (IWR) states Corps projects have been found to have no measurable effect on development and it appears that Corps activity has little effect on the relocation and/or construction decisions of developers, homeowners, or housing interests. The current economic analysis claims no benefits due to induced development.

The Service is concerned that the proposed construction would promote additional development within the Town which will continue to experience storm damage. The Draft GRR/EIS states (p. 118) that "placement of beachfill will occur in the floodplain of area beaches." However, most of the island, not just the beaches, can be considered to be within the 100-year floodplain (Pilkey et al. 1998, p. 171). The Corps states that this placement would be conducted specifically for its beneficial effect in offsetting erosion and restoring damaged beaches, and is, therefore judged acceptable. The action may induce additional development within the floodplain, but is not expected to significantly increase the effect on the floodplain (p. 119). However, the appendix on non-structural alternatives suggests (p. P-5) that such alternatives "would result in a reduction in the tax base and growth potential of the community." Presumably, a structural approach, such as maintaining berm and dune for 50 years, would increase the tax base and growth potential. Implementation of effective damage reduction measures will ensure that the current growth trends in population and recreation visitation will continue (B-47). These statements suggest that the constructed berm and dune are expected to lead to growth in the project area.

While the precise role of beach construction in stimulating additional development continues to be debated, some authors believe that beach construction leads to greater development. Pilkey and Dixon (1996, p. 78) write that beach "replenishment frequently leads to more development in greater density within shorefront communities." Dean (1999, p. 106) also notes that the very existence of a beach nourishment project can encourage more development in coastal areas. The artificial dunes constructed in the

1930s on the Outer Banks are primarily responsible for the present state of development in that area.

Increased building density immediately adjacent to the beach often results as older buildings are replaced by much larger ones that accommodated more beach users. Following completion of a 1982 beach nourishment project in Miami, investment in new and updated facilities substantially increased tourism there (NRC 1995, p. 31). Following beach construction in 1982, Carolina Beach rapidly changed from a community of single-family homes to a multi-family/high-rise community (Pilkey et al. 1998, p. 107). Overall, shoreline management creates an upward spiral of initial protective measures resulting in more expensive development which leads to the need for more and larger protective measures. Leatherman (2001, p. 182) presents a diagram showing "a collision course" in the coast zone. This scenario involves the convergence of greater development with coastal engineering projects necessary to combat shoreline recession resulting from global sea level rise.

The Final EIS should include a reconsideration of compliance with EO 11988. Development may be continuing on the barrier islands because of a perception that some form of beach maintenance will be provided. It is unclear whether the conclusions of the IWR study would apply if it was widely accepted that no major beach construction would be undertaken. The Draft GRR/EIS states (p. 48) that "the floodplain in the Topsail Beach area is currently being adversely affected by erosion and the continued deterioration of the beach and dune complex. These effects will become more pronounced as the beach continues to erode and future storms encroach upon the area." Land loss and long-term erosion eventually renders lots unbuildable with a significantly lower economic value (B-47). It is unclear whether development would continue to increase in the absence of any major effort, either federal or non-federal, to combat the effects of sea level rise.

In the reconsideration of compliance with EO 11988, the Corps should evaluate the role of the proposed work in creating a perception of permanency for nearshore lots. To the extent that a 50-year federal commitment to maintain a berm and dune contributes to the perception of permanency, the project represents support for floodplain development. This is development which would not be completely protected from storm damage. Landfall by a major hurricane (categories 3-5) in southeastern North Carolina is likely to repeat the "complete devastation" (Pilkey et al. 1998, p. 171) produced by Hurricane Fran on Topsail Island. With the federal project in place, rebuilding would occur as the beach is extended back into the ocean. This process may occur several times over the course of the 50-year project. The question to be answered is whether such repeated destruction and rebuilding represents unwise floodplain development for which EO 11988 seeks to avoid federal support. Whether state and local funds would be periodically provided to construct the beach is not the issue, the issue is whether federally funded beach construction supports development in an inherently dangerous location.

## Summary and Conclusions

The planning document would benefit from greater clarity and precision on the need for and purpose of federal action. Regarding the threat to development within the Town, planning should incorporate the latest scientific information on global sea level rise and the natural process of island migration by which barrier islands adjust to sea level rise. These two, natural phenomena have significant implications for the development and evaluation of alternatives as well as the impacts of maintaining the artificial beach, especially in the final decades of the project.

If the purpose of federal action is the prevention of storm damage and the replacement of sand lost to inundation and erosion, there is basically a single action alternative, i.e., 50 years of berm and dune construction and replacement. If the artificial beach is both a means to an end and an end itself, there is no point in discussing non-structural alternatives.

The comparison of alternatives should also fully consider the process of island migration which would maintain the recreational beach and sea turtle nesting habitat despite the occurrence of periodic hurricanes. Planning should thoroughly consider potential non-federal actions to save oceanfront development without federal assistance. A private, non-federal beach construction effort, such as the one being planned for the northern 11 miles of Topsail Island, should be part of the no action alternative.

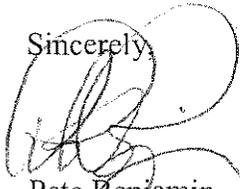
The evaluation of environmental impacts should fully consider the changes that will occur in the project as a result of global sea level rise. It seems unlikely that the four-year sand replacement cycle can be maintained over 50 years. Planning should not extrapolate the environmental impacts of initial construction into the final decades of the project when additional sand placements are likely to occur in an entirely different coastal environment. There should be a discussion of the environmental impacts associated with actions, both federal and non-federal, which would be taken if the artificial berm and dune are washed away within months of construction. If no actions would be taken the Town would be vulnerable to severe storm and shoreline recession for more than three years. Immediate replacement of the artificial beach after each loss would greatly increase the impacts on hardbottom habitats, beach invertebrates, and other fish and wildlife resources.

The planning process should reconsider the implications of EO 11988. While the federal effort is directed at preserving existing development, local governments seek to encourage growth on Topsail Island which is a 100-year floodplain. Future development on the floodplain in the absence of any artificially maintained berm-dune system would be fundamentally different from that which would occur if natural processes are allowed to dominate the area. Compliance with EO 11988 should be based on the actual results of action (the growth desired by the Town) rather than the claim that the federal support is not intended to encourage additional development.

In light of the dynamic nature of the project area, the Service recommends that the 50 year scope for beach construction and maintenance be reduced. A planning period on the order of ten years would allow for a reassessment of sea level rise, changing needs for sand resources, and environmental impacts to fish and wildlife resources.

The Service appreciates the opportunity to provide these comments and we look forward to continued involvement with the Corps on this project. If you have any questions regarding this information, please contact Howard Hall of my staff at (919) 856-4520 (Ext. 27) or at the above address.

Sincerely,



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## United States Department of the Interior

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

January 9, 2007

Mr. W. Coleman Long  
Chief, Planning and Environment Branch  
Wilmington District, U. S. Army corps of Engineers  
P. O. Box 1890  
Wilmington, North Carolina 28402-1890

Dear Mr. Long:

This letter responds to your letter of December 14, 2006, regarding section 7 consultation for the West Onslow Beach and New River Inlet (Topsail) Shore Protection Project located in Pender County, North Carolina. This project was described in a Draft Integrated General Reevaluation Report and Environmental Impact Statement (Draft GRR/EIS) released by the Wilmington Corps District (Corps) in June 2006. Appendix 1 of the Draft GRR/EIS was the Biological Assessment (BA) of project impacts on federally listed species. The cover letter of the Draft GRR/EIS, dated June 23, 2006, stated that the Corps had determined that the proposed project "may affect" federal listed species and requested a Biological Opinion (BO) through formal consultation under section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This letter is provided in accordance with the aforementioned section of the ESA.

The work proposed by the Corps consists of constructing a 26,200-foot long (5.0 miles) dune (12 feet high) and berm (50 feet wide) system. Sand for the beachfill would be delivered from offshore borrow areas by dredge. The plan has a main fill length of 23,200 feet (4.4 miles) with tapering transitional sections at both the north and south ends. The landward construction line for the project would be placed to: (1) minimize impacts on existing structures; (2) parallel the existing shoreline; (3) allow the Perpetual Beach Storm Damage Reduction Easement to extend about 20 feet landward of the dune toe; and, (4) tie the fill into a minimum elevation of 7 feet above the NGVD.

Initial construction will require approximately 3,223,000 cubic yards (cy) of sand. Initial berm and dune construction is planned for federal FY2011 (November 2010 - April 2011), subject to availability of funds. The material would be pumped to the beach by pipeline dredge and shaped on the beach by earth moving equipment. Initial construction would occur between November 16 and April 30.

Plans include 12 beach reconstruction events at four-year interval between 2014 and 2058. Each event would require approximately 866,000 cy of sand. Material for beach reconstruction would be removed from the borrow areas by hopper dredge. The BA states that due to the potential for hopper dredges to cause death or injury to sea turtles in the water, these dredges would only be

used from December 1 to March 31 when water temperatures are cooler. This period is outside the nesting and incubation period of sea turtles. Over the 50-year life of the project 13,615,000 cy of sand would be required.

The BA provides (Table I-1) an accurate list of the federally listed species that could occur in the project area. Some species are under the jurisdiction of the National Marine Fisheries Service (NMFS). The species under the jurisdiction of the USFWS are the West Indian manatee (*Trichechus manatus*), piping plover (*Charadrius melodus*), seabeach amaranth (*Amaranthus pumilus*), and the five species of sea turtles which are known to occur in the ocean and estuarine waters of North Carolina. These sea turtles are the loggerhead (*Caretta caretta*), green (*Chelonia mydas*), leatherback (*Dermochelys coriacea*), hawksbill (*Eretmochelys imbricata*), and Kemp's ridley (*Lepidochelys kempii*). Both loggerhead and green sea turtles have been documented to nest on the beaches of the project area. However, all five species of sea turtles have the potential to become stranded on project area beaches and must be considered in section 7 planning.

The BA provides accurate information on occurrence of each listed species in the project area, potential project impacts, design features and construction techniques to minimize adverse impacts, and an overall assessment of the proposed work on each species. The BA contains (pp. I-21/22) a list of commitments to reduce impacts to listed species. The Draft GRR/EIS also contains (p. 70) a list of environmental commitments and plans for biological monitoring.

The BA concluded that the proposed work "may affect" the five species of sea turtles, piping plover, and seabeach amaranth. However, the BA did not discuss whether the affects would be adverse or could be considered as not likely to adversely affect. Since the plan includes Service guidelines, entitled "Precautions for General Construction in Areas Which May Be Used by the West Indian Manatee in North Carolina," the BA concluded that the work is not likely to adversely affect the manatee. Based on the proposed work schedule and the implementation of our manatee guidelines, the Service concurs with the Corps' determination for this species.

The New Topsail Inlet spit directly south of the project area is part of a designated unit (Unit NC-11) of critical overwintering habitat for piping plovers. The proposed period of initial sediment placement, November 16 through April 30, would include the early part of the species' reproductive period (April 1 through July 31). The BA states that the work would result in short-term impacts on breeding, foraging, sheltering, and roosting habitat. There is the potential for impacts on nesting habitat.

The BA concluded that the work would not directly impact critical habitat Unit NC-11. Actual sediment disposal would stop at the boundary to the unit. The Service concurs with this determination, but we believe that secondary adverse impacts associated with large sediments placements in proximity to the critical habitat could occur. Sediment pushed from the constructed beach by alongshore currents into the unit may impact beach invertebrates which serve as a food source for overwintering plovers. However, such impacts would not rise to the level of an adverse modification.

While formal consultation is usually associated with projects which may affect and are likely to adversely affect federally listed species, the Service agreed to initiate formal consultation. In the course of our review of the Draft GRR/EIS, we determined that only a few protective measures needed to be incorporated into the plan to reduce the impacts to all federally listed species to the point consistent with a determination of “may affect, but is not likely to adversely affect.” These were: (1) a program to detect and rescue stranded sea turtles; and (2) planning each construction event to move from south to north. The latter is important so that early work would be near New Topsail Inlet and move north. In this way construction would be as far away from the inlet as possible during late winter or early spring when piping plover breeding activities begin.

During the fall of 2006, the Service discussed these measures with your planning staff and we were informed that both measures could be incorporated into the plan. In fact, efforts to rescue stranded sea turtles are becoming standard provisions of beach construction projects. The Service recommended that section 7 requirements could be handled informally since the reasonable and prudent measures and well as the terms and conditions which would be contained in a BO would be consistent with the proposed plan.

Your letter states that the Corps is committed to work within the sea turtle and bird nesting windows. However, it is unclear whether the two protective measures will be incorporated into the plan. At this time we believe that the inclusion of these two protective measures can be discussed informally. In a November 29, 2006, conversation with Mr. Piatkowski of your staff and Dr. Matthew Godfrey, the North Carolina Wildlife Resources Commission Sea Turtle Coordinator, the Service was informed that procedures are in place for detecting and reporting stranded sea turtles. Mr. Piatkowski indicated that he was aware of these procedures. We hope that project plan can specify that each construction event would start at the southern end of the project area and move northward.

The Service believes that informal consultation is appropriate for resolving any remaining section 7 issues for this project. Informal consultation should include details on several measures to ensure sea turtle nesting. The BA states (p. I-14) that the Corps plan includes measures to protect sea turtle nesting that “are now common practices or commonly listed conditions on permits . . . such as contingency plans, sediment quality monitoring, compaction tests, tilling, leveling scarps, and monitoring for nests.” The Service strongly supports these measures.

The Final EIS should provide additional information of the measures to help stranded sea turtles and minimize harm to sea turtle nesting. The procedures to detect and report stranded sea turtles should be discussed.

Regarding escarpments, visual surveys for escarpments should be made along the project immediately after completion of the sediment placement and prior to May 1. Additional surveys should be made for three years following initial construction. Considering that reconstruction is scheduled for every four years between 2010 and 2058, escarpment survey should be made each year of the project. Survey results should be submitted to the Service prior to any action being taken. After discussion with the Service, escarpments that interfere with sea turtle nesting or exceed 18 inches in height for a distance of 100 feet should be leveled to the natural beach

contour by May 1. The Service should be contacted immediately if new escarpments that interfere with sea turtle nesting or exceed 18 inches in height for a distance of 100 feet from during the nesting and hatching season to determine the appropriate action to be taken. If it is determined that escarpment leveling is required during the nesting or hatching season, the Service will provide a brief written authorization that describes methods to be used to reduce the likelihood of impacting existing nests. An annual summary of escarpment surveys and actions should to be submitted to the Service.

Regarding sediment compacts, monitoring should not begin until the material has been graded and dressed to the final slope. A period of time should be allowed for finer particles to be washed away and final settling of the material to occur prior to compaction monitoring. Normally compaction data should be collected prior to April 1 in order to allow any required remedial action to be completed prior to May 1, the start of the sea turtle nesting season. This schedule can be used for all the periodic reconstruction events which are scheduled to end by March 31. For initial construction, which will extent to April 30, it will be necessary to conduct compaction monitoring in stages. The overall beach can be divided into sections and monitored separately. If the earlier sections require remedial action, it is likely that the later sections will also require the same measures.

The Service position is that compaction monitoring should occur after each construction event and for three subsequent years. With the four-year reconstruction cycle, this cycle would require compaction monitoring during each year of the project. However, compaction monitoring would not be required if the sediment used to construct the beach is completely washed away.

Beach tilling should only be performed as a result of an identified compaction problem and not performed routinely in place of compaction monitoring. An annual summary of compaction surveys and the actions taken should be submitted to the Service. This summary will be evaluated to determine whether any corrective actions, such as a more compatible sand source, are needed to maintain sea turtle nesting habitat.

Both escarpment formation and sediment compaction occur, in part, as a result of placing incompatible material on the shoreline. The Draft GRR/EIS indicates that the Corps seeks to use compatible material and will monitor the beach fill during construction. Such quality control measures should help to reduce the need for corrective actions for escarpment and compact sediment.

If the measures discussed in this letter are included in the Final EIS along with the environmental commitments contained in the Draft GRR/EIS, it is likely that the Service would concur with a determination by the District Engineer that the project is not likely to adversely affect any federally threatened or endangered species, or designated critical habitat for such species. The Corps' requirements of section 7 of the ESA would be fulfilled. However, the Corps must reconsider its obligations under section 7 if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner which was not considered in this review; or, (3) a new species is listed or critical habitat determined that may be affected by the identified action.

With regard to the second condition, project modification, you state that occasional, unforeseen circumstances may arise that result in the need for a short-term extension of the project construction window. The Service understands that circumstances, such as bad weather and equipment failures, may alter the construction schedules given in the Draft GRR/EIS. As we noted in our comments of September 13, 2006, there is a possibility that rising sea level may require the current four-year reconstruction interval to be shortened. Such project modifications would require new consultation which, as you noted, could be conducted informally on a case-by-case basis.

At this time, the Service recommends that the Corps incorporate all the protective measures for federally-listed species into a revised BA. As appropriate, the effect determination for each species may be revised to state that the project may affect, but is not likely to adversely affect the species.

The Service appreciates the efforts of the Planning and Environmental Branch to work with the Service in protecting all federally-listed species within the area of this project. If you have any questions or concerns about this consultation or the consultation process in general, please feel free to contact me or Howard Hall at 919-856-4520, ext. 27 or by e-mail at <howard\_hall@fws.gov >.

Sincerely,

  
Pete Benjamin  
Field Supervisor

cc:

Ron Sechler, NOAA Fisheries, Beaufort, NC  
David Allen, NCWRC, Trenton, NC  
Matthew Godfrey, NCWRC, Beaufort, NC

**Owens, Jennifer L SAW**

---

**From:** Drucker, Barry [Barry.Drucker@mms.gov]  
**Sent:** Tuesday, October 03, 2006 11:48 AM  
**To:** Owens, Jennifer L SAW  
**Cc:** Orr, Renee  
**Subject:** RE: West Onslow Beach and New River Inlet (Topsail Beach) Shore Protection DEIS

Sorry bout the delay. The sand group is down to 2 folks..myself and Roger Amato.

Anyway, we found the DEIS to be very complete and we are glad to see that some our study reports were used. The only comments we have are as follows:

Page 12, Section 2.01 .2, Inlet, second sentence: which direction is the Inlet migrating?

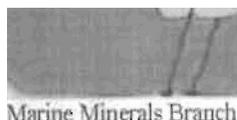
Page 19, Section 2.01.10, Hard Bottoms: Make title all one word, since that is how it is used in the paragraph.

Page 37, Section 2.07 .1, Air, Noise, and Water Pollution: There should be estimates of the amount of air pollutants released from the project, NOx, CO, etc.

Appendix A: the maps showing the Borrow Areas should have the 3 nautical mile line to show where Federal jurisdiction begins and any of the nearby artificial reefs should be shown on the borrow area maps as well.

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Barry S. Drucker  
Physical Oceanographer/Environmental Coordinator  
Minerals Management Service  
Leasing Division  
Marine Minerals Branch  
MS 4010  
381 Elden Street  
Herndon, Virginia 20170  
Phone: 703-787-1296  
Fax: 703-787-1165  
Email: [barry.drucker@mms.gov](mailto:barry.drucker@mms.gov)



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**From:** Owens, Jennifer L SAW [mailto:Jennifer.L.Owens@saw02.usace.army.mil]  
**Sent:** Friday, September 29, 2006 11:10 AM  
**To:** Drucker, Barry; Waskes, Will  
**Cc:** Blount, Thomas A SAW  
**Subject:** West Onslow Beach and New River Inlet (Topsail Beach) Shore Protection DEIS

Barry and Will-

Hello. Hope you guys are doing okay. We're in the process of resolving comments received on the Topsail Beach DEIS in the hopes of finalizing the EIS by January 2007. Comments were due by August 17, 2006 and to date, we have received comments from everyone except IVIMS. I know you all are very busy, but your comments are critical to our project and we'd like to begin addressing them as soon as possible. Could you please give me an idea of when we could expect comments from MMS?

We look forward to working with you to resolve the comments. Please call or email if you have questions.

Thanks-  
Jenny Owens  
Environmental Resources Section  
U. S. Army Corps of Engineers  
Wilmington, NC  
phone: 910-251-4757  
fax: 910-251-4653



North Carolina  
Department of Administration

Michael F. Easley, Governor

Britt Cobb, Secretary

June 28, 2006

Ms. Jenny Owens  
Dept. of the Army Corps of Engineers  
Wilmington District  
P.O. Box 1890  
Wilmington NC 28402-1890

Dear Ms. Owens:

Subject: Draft Environmental Impact Statement - Proposal to Determine Necessary Actions  
Relative to Shore Protection Activities for Surf City and North Topsail Beach in Pender  
and Onslow Counties

The N. C. State Clearinghouse has received the above project for intergovernmental review. This project has been assigned State Application Number 06-E-0000-0378. Please use this number with all inquiries or correspondence with this office.

Review of this project should be completed on or before 08/11/2006. Should you have any questions, please call (919)807-2425.

Sincerely,

A handwritten signature in cursive script that reads "Chrys Baggett".

Ms. Chrys Baggett  
Environmental Policy Act Coordinator

**RECEIVED**

**JUL 5 - 2006**

*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: Chrys.Baggett@ncmail.net

*Location Address:*  
116 West Jones Street  
Raleigh, North Carolina



# North Carolina Department of Administration

Michael F. Easley, Governor

Britt Cobb, Secretary

September 12, 2006

Ms. Jenny Owens  
Dept. of the Army Corps of Engineers  
Wilmington District  
P.O. Box 1890  
Wilmington, NC 28402-1890

Dear Ms. Owens:

Re: SCH File # 06-E-0000-0378; DEIS; Proposal to Determine Necessary Actions Relative to Shore Protection Activities for Surf City and North Topsail Beach in Pender and Onslow Counties

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 cursive script that reads "Chrys Baggett/S26".

Ms. Chrys Baggett  
Environmental Policy Act Coordinator

Attachments

cc: Region O  
Region P

**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 [Chrys.Baggett@ncmail.net](mailto:Chrys.Baggett@ncmail.net)

**Location Address:**  
116 West Jones Street  
Raleigh, North Carolina



# ☒ North Carolina Wildlife Resources Commission ☒

Richard B. Hamilton, Executive Director

## MEMORANDUM

To: Melba McGee  
Office of Legislative and Intergovernmental Affairs

From: Steven H. Everhart, PhD  
Southeastern Permit Coordinator  
Habitat Conservation Program



Date: August 2, 2006

RE: Topsail Beach/USACE – Shore Protection Plan General Reevaluation Report and Draft Environmental Impact Statement (DEIS), Project Number 06-0378, Pender County (Due Date: 08/07/2006).

Biologists with the North Carolina Wildlife Resources Commission (NCWRC) have reviewed the project for impacts to wildlife and fishery resources. Our comments are provided in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et. seq.), and Sections 401 and 404 of the Clean Water Act (as amended).

The project location includes 5.0 miles of Topsail Beach, from about 1,500 ft. south of Godwin Avenue (~2,500 ft. North of New Topsail Inlet) to the Topsail Beach/Surf City town limit (extending about 2,000 ft. into the Southern end of Surf City), and roadway rights-of-way utilized as corridors for dredge pipelines. The recommended plan is a beachfill consisting of a 25-foot top width dune at elevation 13 feet NGVD, fronted by a 35-foot wide storm berm at elevation 9 feet NGVD and a 40-foot wide beach berm at elevation 7 feet NGVD. The total project length is 19,200 feet, including 10,250 feet of the main fill, 7,150 feet of the northern transition fill, and 1,800 feet of the southern transition fill. The southern limit of the project is outside (north of) the designated critical habitat for piping plovers. Six offshore borrow areas were identified for further evaluation as potential borrow sources for Topsail Beach. The use of Banks Channel has been eliminated as a potential sand source due to federal project restrictions associated with the Coastal Barrier Resources Act (CBRA) and piping plover habitat.

We have the following concerns/comments:

- Page 20, Line 1 – the term “aerial” should be “areal.”

- With the increasing number of leatherback sea turtle nests in NC, it should be considered a potential nesting species on Topsail Island. We recommend that it be added to the list of potential sea turtles nesting on Topsail Island.
- Section 7.03.6 Environmental Monitoring and Commitments and Section 7.04.1.3 Dredging Window do not include the moratoria for beach deposition during the nesting seasons for shorebirds (April 1 – August 31) and sea turtles (May 1 – November 15). We recommend they be included here. We also recommend pre- and post-nourishment monitoring of shorebird foraging and nesting.
- Section 8.02.3 Birds discusses the shorebird moratorium mentioned above but dismisses its implementation.

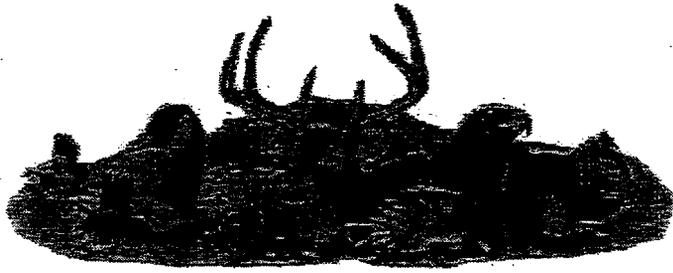
“Though initial nourishment activities will extend into the 1 April bird nesting timeframe, to the maximum extent practicable the Corps will work with the NCWRC to plan construction around designated nesting areas. Under normal conditions, no construction should occur after 1 May, which is the established sea turtle nesting window. Based on the following considerations, the proposed construction activities will not significantly impact breeding and nesting shorebirds or colonial waterbirds within the project area: 1.) timing of the initial construction activities should only extend into the first month of the nesting timeframe, 2.) for the period of time when construction will extend into the nesting timeframe, the Corps will coordinate with the NCWRC to plan construction activities around potential nesting areas, and 3.) beach nourishment and construction activities would avoid the designated Piping Plover Critical Habitat at the south end of Topsail Island. This area is most likely to support potential nesting shorebirds.”

We recommend that extensions into the shorebird and/or the sea turtle moratoria not be allowed after the initial project (that is, beginning with the second deposition period) except as emergency modifications and then only through proper modification request. Thus, the dredging/deposition window after the initial nourishment becomes November 16 – March 31 without modification.

- Overwash is the single most important factor in the creation and maintenance of shorebird nesting habitat. Beach nourishment eliminates overwash and, thus, impacts habitat availability in a natural system. The DEIS should reflect the fact that even nourishment of the developed section of shoreline leads to impacts on nesting habitat.

We do not object to the project provided our recommendations are included as modifications. However, we reserve the right to further comment based on a more thorough reading of the 2076 page document. Thank you for the opportunity to review and comment on this DEIS. If you have any questions or require additional information regarding these comments, please call me at (910) 796-7217.

cc: Sue Cameron, NCWRC  
Matthew Godfrey, NCWRC  
Howard Hall, USFWS



☒ North Carolina Wildlife Resources Commission ☒

Richard B. Hamilton, Executive Director

MEMORANDUM

To: Melba McGee  
Office of Legislative and Intergovernmental Affairs

From: Steven H. Everhart, PhD *Steve Everhart*  
Southeastern Permit Coordinator  
Habitat Conservation Program

Date: October 23, 2006

RE: Topsail Beach/USACE – Shore Protection Plan General Reevaluation Report and Draft  
Environmental Impact Statement (DEIS), Project Number 06-0378, Pender County (Due Date:  
08/07/2006). Additional Comments Resulting from Further Review.

Biologists with the North Carolina Wildlife Resources Commission (NCWRC) have reviewed the project for impacts to wildlife and fishery resources. Our comments are provided in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et. seq.), and Sections 401 and 404 of the Clean Water Act (as amended).

The project location includes 5.0 miles of Topsail Beach, from about 1,500 ft. south of Godwin Avenue (~2,500 ft. North of New Topsail Inlet) to the Topsail Beach/Surf City town limit (extending about 2,000 ft. into the Southern end of Surf City), and roadway rights-of-way utilized as corridors for dredge pipelines. The recommended plan is a beachfill consisting of a 25-foot top width dune at elevation 13 feet NGVD, fronted by a 35-foot wide storm berm at elevation 9 feet NGVD and a 40-foot wide beach berm at elevation 7 feet NGVD. The total project length is 19,200 feet, including 10,250 feet of the main fill, 7,150 feet of the northern transition fill, and 1,800 feet of the southern transition fill. The southern limit of the project is outside (north of) the designated critical habitat for piping plovers. Six offshore borrow areas were identified for further evaluation as potential borrow sources for Topsail Beach. The use of Banks Channel has been eliminated as a potential sand source due to federal project restrictions associated with the Coastal Barrier Resources Act (CBRA) and piping plover habitat.

Initially, our waterbird biologist, Susan Cameron, was unable to download the huge document because of a slow internet connection and her review could not be incorporated into the original comments. After her review of a copy on CD we offer the following additional comments:

---

Mailing Address: Division of Inland Fisheries • 1721 Mail Service Center • Raleigh, NC 27699-1721  
Telephone: (919) 707-0220 • Fax: (919) 707-0028

Overall, the DEIS does a good job describing the project and affected environments. We have a few specific comments on the text regarding waterbirds and macroinvertebrates, as well as additional questions about the project.

- Syllabus (second page, first paragraph) – The DEIS incorrectly states piping plovers are most common as a winter resident of the state. We actually see more birds during migration. NC is unique in that we can see piping plovers every month of the year.
- p. 29 – Black skimmers, least terns and common terns are present during the breeding season and during migration.
- The DEIS needs to stress the importance of the south end of Topsail Island to breeding birds including terns, skimmers, piping plovers, Wilson's plovers and American oystercatchers. The DEIS only stresses the importance of estuarine sites to these species when in fact, most birds in this region nest on the barrier island beaches (South Topsail/Lea and Hutaff). While the estuarine islands get some use, most of the dredge islands in this region are diked and used by only small numbers of nesting waterbirds.
- p. 30 (2<sup>nd</sup> paragraph) – The state listed gull-billed tern, Wilson's plover, and American oystercatchers should also be included.
- The planning goal (p. 49) of reducing environmental effects of hurricanes and other storms should be revised. Plants and animals are adapted to the dynamic nature of barrier islands and many rely on storms to create the habitat they need to survive.
- p. 102 – references Brunswick Co. study – It should be noted that the study did not look at foraging efficiency of birds and lacked statistical power to draw conclusions about impacts of nourishment so some impacts could have gone undetected (CZR 2003).
- Potential indirect impacts to Lea/Hutaff Island should be addressed. Lea/Hutaff Island is one of the most important sites in the state for breeding and non-breeding waterbirds. Adjacent islands have been impacted in other projects (e.g. Masonboro Island is experiencing increased erosion from nourishment on Wrightsville Beach). If Lea/Hutaff and/or the south end of Topsail Beach are negatively impacted by the project, mitigation should be required as part of the permit agreement.
- The operational procedure if incompatible material is encountered is not described. It should be a permit condition that dredging will be quickly halted if this happens.
- I-20 – It should be noted that project beaches are also very important during migration. Also, the document states that beach erosion is a factor limiting availability of habitat and successful nesting. This is not the case. It's actually the development that limits habitat and success. If islands were permitted to migrate naturally, the beach would simply be moving landward, but instead the beach gets squeezed between a rising ocean and permanent structures.

- I-21 (third paragraph) It should be noted that delaying nesting of piping plovers and other waterbirds can impact the outcome of the breeding season (i.e. birds may decide not to nest or nest late and late nests are typically less successful).
- Under "vicinity impacts", the BA states a large percentage of beaches in the vicinity are impacted at this time (potentially 64%). This is significant and should not be discounted.
- The cumulative impacts assessment does not fully address coastal projects that are occurring on our beaches. The state wide impacts assessment should include all activities that have the potential to impact natural resources. For example, beach scraping and inlet stabilization projects appear to be excluded from state wide analysis. Additionally, protected beaches and nourishment restricted beaches appear to be discounted in analysis, yet activities also occur in these areas that can greatly impact natural resources. For example, approximately 56 miles of continuous dune line is maintained to protect State Highway 12, which runs through Pea Island National Wildlife Refuge and Cape Hatteras National Seashore (USFWS 1996). As a result, piping plovers nest only on the roadless spits at Cape Hatteras National Seashore. CBRA zones are also experiencing development and have proposed projects. Furthermore, indirect impacts to undeveloped beach adjacent to project areas should also be considered (e.g. Masonboro is impacted by project on Wrightsville beach, Onslow Beach may be impacted by New River Inlet channel relocation project). Finally, other activities such as artificial creation of dunes and vegetation planting also limit habitat availability. A more comprehensive list of all activities would be useful.

While many of our concerns have been addressed by the avoidance of the inlet area, we still worry about impacts of such a large (50 yr.) project on the ocean facing beaches. These concerns relate to the possible extension of pumping into the bird nesting window and the start of the season for invertebrate recruitment (i.e. after April 1<sup>st</sup>), impacts to macroinvertebrate populations and the prevention of island overwash as a result of the project. The following general comments pertain to these concerns.

- The DEIS needs to discuss the April 1<sup>st</sup> - Aug. 31<sup>st</sup> bird nesting moratorium. While we realize it won't be possible to adhere to the window during initial construction, we expect the dredge/fill activities to take place outside of the nesting season during future events. Since less material will be needed for subsequent nourishment events, completion of dredging should be possible by the end of March. Completing construction prior to April will also aide in faster recovery of beach invertebrates.
- The DEIS notes that invertebrate populations are expected to recover relatively quickly following nourishment events. While high quality beach fill material and timing of placement will minimize impacts to beach invertebrates, we still have concerns over short term, long term and cumulative impacts of this project. First, it is unclear when peak recruitment time for macroinvertebrates occurs on Topsail Beach. A study on Pea Island found peak recruitment of coquina clams was in March and concluded that nourishment

in March or April would depress the population in the region of nourishment for at least a full year (Donoghue 1999). Even if invertebrate populations fully recover within one year of the project, this is still a significant amount of time with depressed food resources available to foraging shorebirds over a large area. Lastly, it is not clear what impacts the project will have over the long term on wave energy climate and beach slope. These are two key factors important to macroinvertebrates (McLachlan 1990 and McArdle and McLachlan 1992). Peterson et al. (2000) also raises this concerns writing "...longer-term impacts are possible arising from persistent modifications of the physical environment."

- While quite a bit of work has been done examining the impacts of beach nourishment on invertebrate populations, we still do not fully understand effects on the natural resources. For example, we do not know what the cumulative impacts of multiple nourishment events are on invertebrate populations. There is simply not enough information to say there will be no long term impacts on invertebrate populations from a 50-year project. Also, few studies associated with beach nourishment have looked at body size of invertebrates in addition to abundance on renourished beaches (Peterson and Bishop 2005). It is possible that most repopulation occurs from larval recruitment thus decreasing the size of prey items available to shorebirds. Finally much work is needed to fully understand fundamental processes in the natural beach system (Peterson and Bishop 2005).
- The DEIS fails to fully recognize the importance of barrier island migration to natural resources and the health of barrier island habitats and the role beach stabilization plays in preventing this important process. Nourishment and dune construction prevents overwash and contributes to a loss of habitat for breeding and non-breeding waterbirds, including piping plovers. For example, tidal flats and ponds are important feeding areas to piping plovers at the start of the nesting season and at other times of the year (Fraser 2005). These areas are created during storm-caused overwash and other erosional processes (Leatherman 1982), and beach stabilization efforts reduce the number and extent of these overwash events (Dean 1999). If other alternatives were considered (e.g. non-structural plan), the beach would overwash as it migrated landward during natural processes and habitat would be created. Furthermore, the prevention of island overwash can also lead to sediment starvation on the sound side. The DEIS does not consider loss of marsh on the back side of the island as a result of preventing island overwash. Finally, large scale nourishment projects can lead to increased development based on a false sense of security. This further contributes to habitat loss and can actually increase storm damage as more and larger buildings are constructed. It is therefore reasonable to conclude that large nourishment projects such as this have unavoidable impacts on waterbirds, especially given the extent to which beach altering projects are occurring along our coast.

To minimize potential impacts and offset unavoidable impacts to waterbird and invertebrate resources, we recommend consideration of some of the following environmental commitments.

- Protect important bird nesting and foraging habitat elsewhere. For example, funding could be provided for purchase, management (e.g. increase in protection of birds on south

end by strictly enforcing the leash law) and/or monitoring of South Topsail or other locations.

- Change dredging practices in New Topsail Inlet to benefit waterbird habitat on Lea Island. Currently, the channel is dredged every year following the deepest water. This activity does not allow the channel to migrate naturally and restricts the range of its movement, which contributes to accelerated erosion on Lea Island. Recently, a channel has been trying to break through to the north of its current location within the inlet. We recommend that ACOE follow a channel that attempts to break through to the north thus allowing for more natural conditions within the inlet.
- The recommended nourishment cycle is four years. From a natural resources standpoint, we would recommend a seven year cycle. Part of the concern is that there will inevitably be emergency work and sporadic dredging activities in some areas in between nourishment events, which will shorten the cycle of events. Another way to offset impacts would be to stagger when different sections of shoreline are nourished to enhance recovery of invertebrate populations by providing source populations to reseed impacted areas.
- Participate in research projects to get at some unanswered questions about impacts to invertebrate populations.

In regard to sea turtles, we offer the following comments:

- Hopper dredging should be confined between months of January through March; due to known takes of turtles by hopper dredges in NC waters during December (ACOE unpublished data).
- We would like to monitor sand and nest temperatures to assess the impact of nourishment on the thermal habitat of sea turtle nests. Although current criteria for sediment stress that fill material be "compatible", at the current time the criteria allow for darker material to be placed on NC beaches during nourishment. Darker sand is known to increase sand/nest temperatures and thus potentially affect sex ratios of produced hatchlings (e.g. Hays et al. 2001). We request funds to purchase dataloggers and also to compensate some of the salary of the NC WRC sea turtle biologist who will spend time collecting and analyzing data.
- Page 38: Topsail Sea Turtle Hospital is not the only sea turtle rehabilitation in the state. There is a second rehabilitation center located in Manteo and run jointly by NEST and the NC Aquarium in Manteo. The other two NC Aquariums (Pine Knoll Shores and Fort Fisher) also occasionally contribute time and space to rehabilitating cold-stunned turtles and the NCSU-College of Veterinary Medicine contributes space and expertise in the rehabilitation of some injured sea turtles.

- Page 8 Appendix I: There was another nest laid by a Kemp's Ridley on Cape Lookout in 2003.

**Literature Cited:**

- CZR Incorporated. 2003. Waterbird and shorebird use of beaches in Brunswick County, North Carolina. Unpublished report to the US Army Corps of Engineers, 71 pp and appendices.
- Dean, C. 1999. Against the tide. Columbia University Press, New York, USA.
- Donoghue, C.R. 1999. The influence of swash processes on *Donax variabilis* and *Emerita talpoida*. Ph.D. Dissertation. University of Virginia, Richmond, VA. 197 pp.
- Fraser, J.D., S.E. Keane, and P.A. Buckley. 2005. Journal of Wildlife Management 69(4): 1731-1736.
- Hays, G. C., J. S. Ashworth, M. J. Barnsley, A. C. Broderick, D. R. Emery, B. J. Godley, A. Henwood, and E. L. Jones. 2001. The importance of sand albedo for the thermal conditions on sea turtle nesting beaches. Oikos 93:87-94.
- Leatherman, S.P. 1982. Barrier island handbook. University of Maryland Press, College Park, USA.
- McArdle, S.B. and A. McLachlan. 1992. Sand beach ecology: Swash features relevant to the macrofauna. Journal of Coastal Research 8(2): 398-407.
- McLachlan, A. 1990. Dissipative beaches and macrofauna communities on exposed intertidal sands. Journal of Coastal Research 6: 57-71.
- Peterson, C.H., D.H.M. Hickerson, and G.G. Johnson. 2000. Journal of Coastal Research 16(2): 368-378.
- Peterson, C.H. and M.J. Bishop. 2005. Assessing the Environmental Impacts of Beach Nourishment. BioScience 55(10): 887-896.
- U.S. fish and Wildlife Service. 1996. Piping Plover (*Charadrius melodus*), Atlantic Coast Population, Revised Recovery Plan. Hadley, Massachusetts. 258 pp.

Thank you for the opportunity to review and comment on this DEIS. If you have any questions or require additional information regarding these comments, please contact me at (910) 796-7217 or [steve.everhart@ncwildlife.org](mailto:steve.everhart@ncwildlife.org).

cc: Sue Cameron, NCWRC  
Howard Hall, USFWS  
Jenny Owens, USACE  
Doug Piatkowski, USACE

Comment [n1]: I would add ccs to DCM, DWQ and USEWS



MEMORANDUM

TO: Melba McGee  
FROM: Fritz Rohde  
RE: Shore Protection/Surf City & Topsail Beach  
DATE: August 22, 2006

The Division of Marine Fisheries is working very closely with the Corps of Engineers regarding this project.

NORTH CAROLINA STATE CLEARINGHOUSE  
DEPARTMENT OF ADMINISTRATION  
INTERGOVERNMENTAL REVIEW

STATE NUMBER: 06-E-0000-0378

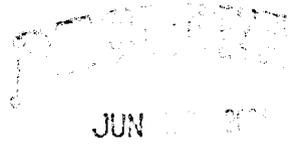
H05

DATE RECEIVED: 06/28/2006

AGENCY RESPONSE: 08/07/2006

REVIEW CLOSED: 08/11/2006

MS RENEE GLEDHILL-EARLEY  
CLEARINGHOUSE COORD  
DEPT OF CUL RESOURCES  
ARCHIVES-HISTORY BLDG - MSC 4617  
RALEIGH NC



REVIEW DISTRIBUTION  
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DENR LEGISLATIVE AFFAIRS  
DEPT OF AGRICULTURE  
DEPT OF CUL RESOURCES  
DEPT OF TRANSPORTATION  
EASTERN CAROLINA COUNCIL



HISTORY OF REVISIONS

Ref # ER 01-0497  
A. (NE) MCH/eff  
7-24-06

S - NC 8/11/06

7/27/06

PROJECT INFORMATION

APPLICANT: Dept. of the Army Corps of Engineers

TYPE: National Environmental Policy Act

ERD: Draft Environmental Impact Statement

DESC: Proposal to Determine Necessary Actions Relative to Shore Protection Activities  
for Surf City and North Topsail Beach in Pender and Onslow Counties

CROSS-REFERENCE NUMBER: 01-E-0000-0497

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: 7.27.06

RECEIVED

JUL 27 2006

JUL 07 2006



### INTERGOVERNMENTAL REVIEW - PROJECT COMMENTS

After review of this project it has been determined that the DENR permit(s) and/or approvals indicated may need to be obtained in order for this project to comply with North Carolina Law. Questions regarding these permits should be addressed to the Regional Office indicated on the reverse of this application. All applications, information and guidelines relative to these plans and permits are available from the same Regional Office.

	PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process (Statutory Time)
<input type="checkbox"/>	Permit to construct & operate wastewater treatment facilities, sewer system extensions & sewer systems not discharging into state surface waters.	Application 90 days before begin construction or award of construction contracts. On-site inspection. Post-application technical conference usual.	30 days (90 days)
<input type="checkbox"/>	NPDES-permit to discharge into surface water and/or permit to operate and construct wastewater facilities discharging into state surface waters.	Application 180 days before begin activity. On-site inspection preapplication conference usual. Additionally, obtain permit to construct wastewater treatment facility-granted after NPDES. Reply time, 30 days after receipt of plans or issue of NPDES permit-whichever is later.	90 - 120 day (N/A)
<input type="checkbox"/>	Water Use Permit	Preapplication technical conference usually necessary	30 days (N/A)
<input type="checkbox"/>	Well Construction Permit	Complete application must be received and permit issued prior to the installation of a well.	7 days (15 days)
<input type="checkbox"/>	Dredge and Fill Permit	Application copy must be served on each adjacent riparian property owner. On-site inspection. Preapplication conference usual. Filling may require Easement to Fill from N.C. Department of Administration and Federal Dredge and Fill Permit.	55 days (90 days)
<input type="checkbox"/>	Permit to construct & operate Air Pollution Abatement facilities and/or Emission Sources as per 15 A NCAC (2Q.0100, 2Q.0300, 2H.0600)	N/A	60 days
<input type="checkbox"/>	Any open burning associated with subject proposal must be in compliance with 15 A NCAC 2D.1900	N/A	60 days (90 days)
<input type="checkbox"/>	Demolition or renovations of structures containing asbestos material must be in compliance with 15 A NCAC 2D.1110 (a) (1) which requires notification and removal prior to demolition. Contact Asbestos Control Group 919-733-0820.		
<input type="checkbox"/>	Complex Source Permit required under 15 A NCAC 2D.0800		
<input checked="" type="checkbox"/>	The Sedimentation Pollution Control Act of 1973 must be properly addressed for any land disturbing activity. An erosion & sedimentation control plan will be required if one or more acres to be disturbed. Plan filed with proper Regional Office (Land Quality Section) at least 30 days before beginning activity. A fee of \$50 for the first acre or any part of an acre.		20 days (30 days)
<input type="checkbox"/>	The Sedimentation Pollution Control Act of 1973 must be addressed with respect to the referenced Local Ordinance.		30 days
<input type="checkbox"/>	Sedimentation and erosion control must be addressed in accordance with NCDOT's approved program. Particular attention should be given to design and installation of appropriate perimeter sediment trapping devices as well as stable stormwater conveyances and outlets.		
<input type="checkbox"/>	Mining Permit	On-site inspection usual. Surety bond filed with DENR. Bond amount varies with type mine and number of acres of affected land. Any are mined greater than one acre must be permitted. The appropriate bond must be received before the permit can be issued.	30 days (60 days)
<input type="checkbox"/>	North Carolina Burning permit	On-site inspection by N.C. Division of Forest Resources if permit exceeds 4 days	1 day (N/A)
<input type="checkbox"/>	Special Ground Clearance Burning Permit-22 counties in coastal N.C. with organic soils.	On-site inspection by N.C. Division of Forest Resources required "if more than five acres of ground clearing activities are involved. Inspections should be requested at least ten days before actual burn is planned."	1 day (N/A)
<input type="checkbox"/>	Oil Refining Facilities	N/A	90 - 120 days (N/A)

PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process Time (Statutory Time Limit)
<input type="checkbox"/> Dam Safety Permit	If permit required, application 60 days before begin construction. Applicant must hire N.C. qualified engineer to: prepare plans, inspect construction, certify construction is according to DENR approved plans. May also require permit under mosquito control program, and a 404 permit from Corps of Engineers. An inspection of site is necessary to verify Hazard Classification. A minimum fee of \$200.00 must accompany the application. An additional processing fee based on a percentage of the total project cost will be required upon completion.	30 days (60 days)
<input type="checkbox"/> Permit to drill exploratory oil or gas well	File surety bond of \$5,000 with DENR running to State of N.C. conditional that any well opened by drill operator shall, upon abandonment, be plugged according to DENR rules and regulations.	10 days (N/A)
<input type="checkbox"/> Geophysical Exploration Permit	Application filed with DENR at least 10 days prior to issue of permit. Application by letter. No standard application form.	10 days (N/A)
<input type="checkbox"/> State Lakes Construction Permit	Application fees based on structure size is charged. Must include descriptions & drawings of structure & proof of ownership of riparian property.	15 - 20 days (N/A)
<input checked="" type="checkbox"/> 401 Water Quality Certification	N/A	55 days (130 days)
<input type="checkbox"/> CAMA Permit for MAJOR development	\$250.00 fee must accompany application	60 days (130 days)
<input type="checkbox"/> CAMA Permit for MINOR development	\$50.00 fee must accompany application	22 days (25 days)
<input type="checkbox"/>	Several geodetic monuments are located in or near the project area. If any monument needs to be moved or destroyed, please notify: N.C. Geodetic Survey, Box 27687 Raleigh, N.C. 27611	
<input type="checkbox"/>	Abandonment of any wells, if required must be in accordance with Title 15A. Subchapter 2C.0100.	
<input type="checkbox"/>	Notification of the proper regional office is requested if "orphan" underground storage tanks (USTS) are discovered during any excavation operation.	
<input type="checkbox"/>	Compliance with 15A NCAC 2H 1000 (Coastal Stormwater Rules) is required.	45 days (N/A)
* <input type="checkbox"/>	Other comments (attach additional pages as necessary, being certain to cite comment authority)	



### REGIONAL OFFICES

Questions regarding these permits should be addressed to the Regional Office marked below.

**Asheville Regional Office**  
59 Woodfin Place  
Asheville, N.C. 28801  
(828) 251-6208

**Mooreville Regional Office**  
919 North Main Street  
Mooreville, N.C. 28115  
(704) 663-1699

**Wilmington Regional Office**  
127 Cardinal Drive Extension  
Wilmington, N.C. 28405  
(910) 395-3900

**Fayetteville Regional Office**  
225 Green Street, Suite 714  
Fayetteville, N.C. 28301  
(910) 486-1541

**Raleigh Regional Office**  
3800 Barrett Drive, P.O. Box 27687  
Raleigh, N.C. 27611  
(919) 571-4700

**Winston-Salem Regional Office**  
585 Woughtown Street  
Winston-Salem, N.C. 27107  
(336) 771-4600

**Washington Regional Office**  
943 Washington Square Mall  
Washington, N.C. 27889  
(252) 946-6481



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

Michael F. Easley, Governor

**Charles S. Jones, Director**

William G. Ross Jr., Secretary

July 12, 2006

John E. Pulliam, Jr.  
Colonel, US Army  
District Commander  
Wilmington District, US Army Corps of Engineers  
P.O. Box 1890  
Wilmington, North Carolina 28402-1890

**Routed: 14 July 2006 kj**  
**Action: TSD**  
**Susp Date: 28 July 2006**  
**CF: Cdr, DP, DX, PM, REG**

**SUBJECT:** Incomplete Notice on the Consistency Submission on the Integrated General Reevaluation Report and Environmental Impact Statement Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach) (DCM#20060059, ACOE#CESAW-TS-PE-06-71-0001)

Dear Col. Pulliam:

The Division of Coastal Management (DCM) received (June 28, 2006) a consistency submission from the US Army Corps of Engineers (Corps) requesting that DCM find that the proposed action described in the "*Integrated General Reevaluation Report and Environmental Impact Statement Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach)*" (DEIS) is consistent with the State's coastal management program. DCM staff has reviewed the consistency submission and determined that the submission is incomplete since it does not meet the information requirements of 15 CFR 930.39.

The consistency analysis is primarily contained within in Section 10.12 of the DEIS. Based on the requirements of 15 CFR 930.39 the consistency analysis must be based on an evaluation of the relevant enforceable policies of the State's coastal management program. Additionally the consistency determination must include a detailed description of the activity, its associated facilities, and their expected coastal effects<sup>1</sup>. Below, by DEIS section, is a breakdown of why the submission is incomplete. Please note that some of the comments below are recommendations that the Corps may wish to consider for future consistency submissions.

<sup>1</sup> Coastal effects are defined in 15 CFR 930.11

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EXECUTIVE OFFICE

### **Section 10.02.1 (Section 401 of the Clean Water Act):**

- While there is no requirement that this discussion be relocated, the Corps (in the future) may want to consider placing the 401 water quality certification and the erosion and sedimentation control discussions under Section 10.12.2 which discusses “*Other State Policies*” that are germane to the coastal program consistency analysis.
- In terms of sequencing the permitting and concurrence process, DCM normally does not issue a concurrence until all required State approvals (such as the 401 water quality certification and erosion and sedimentation control plan approval) have been obtained.

### **Section 10.12.1 (Areas of Environmental Concern (AEC)):**

- This section focuses the standard of review on Subchapter 7H. For projects located in an AEC the relevant enforceable policies of **both** Subchapters 7H and 7M apply. Some of the applicable policies of Subchapter 7M are inappropriately cited under “*Other State Policies*”<sup>2</sup>. Additional relevant enforceable policies of Subchapter 7M that should be evaluated in Section 10.12.1 of the DEIS are: 15A NCAC 07M .0200, 15A NCAC 07M .0300, 15A NCAC 07M .0700, 15A NCAC 07M .0800, 15A NCAC 07M .1100, and 15A NCAC 07M .1200
- This section lists many allowable uses and many uses that are not allowable; however this section only contains conclusory sentences stating that the proposed action is consistent. For example the Public Trust<sup>3</sup> paragraph simply states that: “*The select plan is an acceptable use within public trust areas. The plan will not be detrimental to the biological and physical functions of public trust waters.*” Additionally, the Coastal Shoreline<sup>4</sup> paragraph concludes that: “*The proposed project would not be expected to negatively impact coastal shorelines.*” While these conclusions may be correct, analysis documenting how the conclusions were reached must be provided. For this section to conform to the requirements of 15 CFR 930.39 an analysis must be provided on how the project conforms to the relevant enforceable policies of Subchapters 7H and 7M.

For example 15A NCAC 07H .0208 lists various use standards. Will the proposed project affect any of the following: primary nursery areas<sup>5</sup>, Outstanding Resource Waters (ORW), and/or submerged vegetation (SAV)? If so how has the project been designed to avoid adverse effects to those resources? If adverse impacts cannot be avoided, how has the project been designed to minimize and mitigate the unavoidable adverse impacts?

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<sup>2</sup> Page 132 of the DEIS

<sup>3</sup> Page 121 of the DEIS.

<sup>4</sup> Page 121 of the DEIS.

<sup>5</sup> A discussion of the impact of the proposed project to Primary Nursery Areas was found in Section 8.01.8.7 (page 99) of the DEIS. DCM staff would have expected that Section 10.12.1 would have explained that the proposed project would affect Primary Nursery Areas, that these effects are discussed in Section 8.01.8.7, and that based on the analysis provided in Section 8.01.8.7 that the proposed project would be consistent with the enforceable policies of the State’s coastal management program.

Other important considerations include shellfish, sea turtles, impacts to existing sand dunes, and nesting seabirds<sup>6</sup>.

A cursory review of the “*Table of Contents*” did not disclose the presence of any tables and/or figures that would show the relationship of the proposed project to the resources discussed in Subchapters 7H and 7M; such as (but not limited to) ORW waters<sup>7</sup>, submerged vegetation, and the first line of stable natural vegetation. Considering the size of this document, the information may be contained within the document<sup>8</sup>. Should that be the case, references to where this information can be read should be provided.

Section 15A NCAC 07M .0202(d) requires that “*The entire restored portion of the beach shall be in permanent public ownership;*”. Is conformance with this requirement of 15A NCAC 07M .0202 (including the other requirements of 15A NCAC 07M .0202) discussed within the DEIS? If not, such an analysis should be provided.

In summary, Section 10.12.1 of the DEIS must demonstrate through analysis specifically citing the relevant enforceable policies how the proposed action is compatible with the AEC management objectives that mandate the protection of public rights for navigation and recreation, and to conserve and manage the public trust areas so as to safeguard and perpetuate their biological, economic, and aesthetic value.

### **Section 10.12.2 (Other State Policies):**

- This section references North Carolina Mining Law<sup>9</sup>. Though this reference has some applicability the consistency submission should be primarily focused on referencing the State’s coastal management program, which has its own definition of mining in Section 15A NCAC 07H .0106 of Chapter 7 of Title 15A of North Carolina’s Administrative

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<sup>6</sup> Section 10.12.1 of the DEIS does not need to contain and/or duplicate information that is available elsewhere in the document. Nevertheless (to make it clear how the proposed action could be considered consistent with an enforceable policy) Section 10.12.1 must identify where this analysis occurs in the DEIS.

<sup>7</sup> References to water quality classification were found in Section 2.06.2 (page 36) and Section 8.07.2 (page 107) of the DEIS. However, it appears that no graphic of the study area was provided depicting water quality. Furthermore, Section 8.07.2 (though it notes that the project would have temporary adverse effects) does not analyze the effect of water quality impacts on shellfish. 15A NCAC 07H .208(b)(2)(H) requires that dredged material and effluent derived from areas closed to shell fishing can not be deposited in areas open for shell fishing. Section 10.12.1 of the DEIS would have been expected to note this issue and referred the reader to Section 8.07.2 for the analysis evaluating how this is would or would not be a concern. This information (shellfish) may be located in other parts of the DEIS.

<sup>8</sup> For example, page 20 of the DEIS cites a graphic showing hard bottoms as being Figure A-1 in Appendix A. Table 2-6 (page 27 of the DEIS) lists the waterbirds that occur with the Topsail Beach project area.

<sup>9</sup> The North Carolina Mining Act is incorrectly cited as “*15A North Carolina Administrative Code Subchapter 05A .0200*”. One definition of mining is under the North Carolina Mining Act, which is located within North Carolina General Statutes G.S. §74-49(7). An attempt to locate the definition of mining under the mining program under North Carolina’s Administrative Code was unsuccessful. A correct citation under North Carolina’s Administrative Code would be in the form of Section 15A NCAC 07H .0106 of Chapter 7 of Title 15A of North Carolina’s Administrative Code. Section 15A NCAC 07H .0106 contains a definition of mining under the State’s coastal program. Additionally see 15A NCAC 07H .0208(b)(12) which discusses development standards for ocean mining.

Code. Additionally Sections 15A NCAC 07H .0208(b)(12) and 15A NCAC 07M .1200 contain the policies related to Ocean Mining. The consistency submission should therefore contain an analysis that evaluates how the proposed burrowing and deposition activities would be consistent with the use standards of Subchapter 7H and with Subchapter 7M.

- North Carolina Dredge and Fill Law is not cited, see G.S. § 113-229. An analysis of how the proposed action would be consistent with this law should be provided.
- DCM recommends, in the future, that Section 10.12.2 evaluate other State agency policies that are not specifically part of the State's certified coastal management program. DCM recommends, in the future, that the relevant enforceable policies of the State's coastal program be contained in Section 10.12.1 and that Section 10.12.1 be renamed to reflect this change in emphasis.

### **Section 10.12.3 (Local Land Use Plans):**

- This section simply states that the proposed project is consistent with the local land use plans for Topsail Beach and Pender County. For this section to conform to the analysis requirements of 15 CFR 930.39 the analysis must be analytical evaluating how the proposed project conforms with the policies of these land use documents, land uses allowed, and zoning. Since the document is over 2,000 pages in length, I acknowledge that some of this information may be located in other parts of the document. A cursory review of the "*Table of Contents*" did not disclose the presence of any references to land use plans, tables, and/or figures.
- A review of Sections 2.04 and 8.04 of the DEIS did not disclose any discussion of the local land use plans, the policies contained within those plans, land use classifications, and/or zoning.

### **Section 10.15 (Sedimentation and Erosion Control Plan):**

- Consistency concurrences are normally issued by DCM after all required State approvals/permits are obtained. This applies to both Section 401 water quality certifications and erosion and sedimentation control plans. The Corps will need to provide documentation that the NC Division of Land Quality has approved an erosion and sedimentation control plan as part of the consistency concurrence process.
- While there is no requirement that this discussion be relocated, the Corps (in the future) may want to consider moving the erosion and sedimentation control discussion to Section 10.12.2 which discusses "*Other State Policies*" that are germane to the coastal program consistency analysis.

Pursuant to 15 CFR 930.41 DCM review of the consistency submission will not be initiated until DCM receives from the Corps all the information and analysis required by 15 CFR 930.39.

For future reference, consistency submissions are to be made directly to the Division of Coastal Management at the address shown on the first page. Documents for NEPA review are still to be sent to Ms. Baggett of the NC State Clearinghouse. Please note; the Corps will be making two simultaneous but discrete submissions to the State, one for consistency review and the other for NEPA review.

Attached to this letter is our handout on making a consistency submission under Subpart C of 15 CFR 930 plus a copy of a consistency submission that can be used as a model. Please pay special attention to the cover letter of the sample consistency submission. Furthermore the responses to our requests for additional information concerning consistency can be made through a supplementary document, that the DEIS itself does not have to be modified. Should you have any additional questions, please give me a call at 252-808-2808. Thank you for your consideration of the North Carolina Coastal Management Program.

Sincerely,



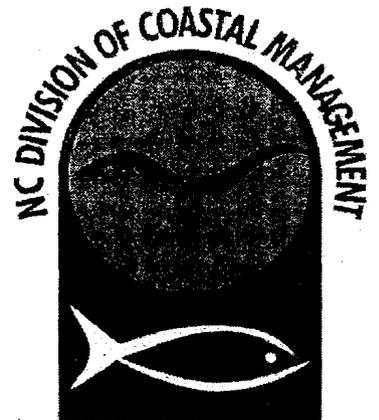
Stephen Rynas, AICP  
Federal Consistency Coordinator

Cc: Charles S. Jones, Division of Coastal Management  
Doug Huggett, Division of Coastal Management  
Jim Gregson, Division of Coastal Management  
Tere Barrett, Division of Coastal Management  
Chrys Baggett, North Carolina State Clearinghouse  
Jennifer Owens, US Army Corps of Engineers

## NORTH CAROLINA FEDERAL CONSISTENCY DETERMINATION SUBMISSION GUIDANCE (SUBPART "C" 15 CFR 930)

This brochure provides guidance to Federal agencies on how to submit a consistency determination to the State of North Carolina under the Coastal Zone Management Act (CZMA). The suggested format for submitting a consistency determination under Subpart "C" of 15 CFR 930 is presented on the second page.

The Coastal Zone Management Act requires that a Federal agency (when it proposes any activity inside or outside of the coastal zone that will have any reasonably foreseeable effect on any coastal uses or natural resources within the coastal zone) provide the State of North Carolina with a Consistency Determination. Through the Consistency Determination the Federal agency has the opportunity to demonstrate how the proposed activity complies, to the maximum extent practicable, with the enforceable policies of the State's approved coastal management program. North Carolina's coastal zone management program consists of, but is not limited to, the Coastal Area Management Act, the State's Dredge and Fill Law, and the land use plan of the County and/or local municipality in which the proposed project is located.



The information and data that must be supplied in a Consistency Determination is specified in 15 CFR 930.39. The text of 15 CFR 930.39 is attached to this brochure for reference. Consistency determinations are submitted to the N.C. Division of Coastal Management (DCM), which administers North Carolina's coastal management program. Please submit the consistency determinations to the Federal Consistency Coordinator, at DCM's Morehead City office at the address under "Contact Information".

Federal agencies are required to provide consistency determinations at least ninety (90) days before final approval of the proposed activity. State review of the proposed activity will commence upon the receipt of the Consistency Determination. The State has a maximum of sixty (60) days to either concur or object to the agency's consistency determination. The Federal agency may not initiate its activity until the State has either concurred or the procedures of 15 CFR 930.43 and 15 CFR 930.44 have been followed. Unless the time limit has been mutually extended, should the State fail to act within the sixty-day review period, concurrence can then be presumed. Federal agency staff are encouraged to contact the Federal Consistency Coordinator at the address below for more information.

### FURTHER INFORMATION

- N.C. Division of Coastal Management (DCM): [www.nccoastalmanagement.net/rules/rules.htm](http://www.nccoastalmanagement.net/rules/rules.htm)
- Office of Coastal Resource Management: [http://coastalmanagement.noaa.gov/pcd/federal\\_consistency.html](http://coastalmanagement.noaa.gov/pcd/federal_consistency.html)
- Government Printing Office (15 CFR 930): [www.gpoaccess.gov/cfr/index.html](http://www.gpoaccess.gov/cfr/index.html)

### CONTACT INFORMATION

Stephen Rynas  
Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421  
252-808-2808  
[stephen.rynas@ncmail.net](mailto:stephen.rynas@ncmail.net)



## SAMPLE SUBMISSION FORMAT

The N.C. Division of Coastal Management (DCM) recommends a two-part submission consisting of a cover letter and a supporting document that contains the information required by 15 CFR 930.39. The text of 15 CFR 930.39 is attached for reference. To minimize paperwork logistics related to soliciting public comments, DCM requests that Federal Agencies post their consistency determinations on their websites and/or submit twenty (20) CDs that contain the consistency determination as a PDF file or files.

**Cover Letter:** The cover letter should state the purpose of the letter (a request for concurrence from DCM of the Federal agencies consistency determination) and then briefly describe the proposed project, and its location, a statement that the Federal agency has reviewed the State's coastal program (citing specific policies as appropriate), a statement that the proposed activity is consistent, to the maximum extent practicable, with the enforceable policies of the State's coastal management program and a statement referring to the supporting document for more detail.

In the event the Federal agency is using a consultant as a point of contact, the cover letter should designate the consultant as an authorized representative.

**Supporting Document:** The supporting document should present the information required by 15 CFR 930.39 and should provide DCM with the data and analysis needed to document that the proposed project is consistent, to the maximum extent practicable, with the enforceable policies of the State's coastal management program. DCM recommends that the State's coastal program be reviewed and that the project's compliance with specific policies be evaluated. For example, 15A NCAC 07M .0800 relates to the protection of water quality. The Federal agency must explain, as applicable, how the proposed project has been sited and designed to avoid and/or minimize any adverse impacts to water quality. The Federal agency should also describe how any unavoidable adverse impacts would be ameliorated. To the maximum extent practical, adverse impacts to coastal resources and coastal uses must be avoided. Impacts that cannot be avoided must be minimized and mitigated.

**Areas of Environmental Concern:** Section 113A-113 of the Coastal Area Management Act (CAMA) defines "Areas of Environmental Concern" (AECs). The proposed project's relationship to an AEC is important for determining DCM's standard of review. DCM will review proposed project that is **outside** of an AEC under Subchapter 7M of Chapter 7 of Title 15A of North Carolina's Administrative Code. Should portions of the proposed project occur **within** an AEC, then Subchapter 7H of Chapter 7 of Title 15A of North Carolina's Administrative Code would also apply. The supporting document must evaluate whether any of the proposed development would occur within an AEC to establish the appropriate standards of review.

**Other State Permits:** The supporting document should discuss other State permits that the proposed development may require, including the status of the permit applications. DCM suggests that any required State permits be obtained, if possible, prior to initiating the consistency review process and that any issued permits be included as part of the supporting document. Addressing other State permits at the consistency stage minimizes the potential for "late hits" in the review process and aides the Federal agency in demonstrating implied conformance with the State's coastal management program.

**Environmental Documents:** If the proposed project requires the preparation of an environmental document, it can be used as the "Supporting Document" provided that it contains all the information required by 15 CFR 930.39. When environmental documents are used to substantiate the consistency determination, DCM recommends that the consistency determination submittal be made directly to DCM. For purposes of NEPA review, the Federal agency still submits the environmental documents to the State Clearinghouse. The NEPA and Consistency review processes are independent procedures requiring separate courses of review and action.

**Relevant Sections of Subpart "C" of 15 CFR 930**  
**Version of January 2004**

*(These citations have been reformatted, portions have been omitted;  
therefore these citations are unofficial.*

*Go to <http://www.gpoaccess.gov/cfr/index.html> for the official version.)*

**§ 930.39 Content of a consistency determination.**

- (a) The consistency determination shall include a brief statement indicating whether the proposed activity will be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of the management program. The statement must be based upon an evaluation of the relevant enforceable policies of the management program. A description of this evaluation shall be included in the consistency determination, or provided to the State agency simultaneously with the consistency determination if the evaluation is contained in another document. Where a Federal agency is aware, prior to its submission of its consistency determination, that its activity is not fully consistent with a management program's enforceable policies, the Federal agency shall describe in its consistency determination the legal authority that prohibits full consistency as required by § 930.32(a)(2). Where the Federal agency is not aware of any inconsistency until after submission of its consistency determination, the Federal agency shall submit its description of the legal authority that prohibits full consistency to the State agency as soon as possible, or before the end of the 90-day period described in § 930.36(b)(1). The consistency determination shall also include a detailed description of the activity, its associated facilities, and their coastal effects, and comprehensive data and information sufficient to support the Federal agency's consistency statement. The amount of detail in the evaluation of the enforceable policies, activity description and supporting information shall be commensurate with the expected coastal effects of the activity. The Federal agency may submit the necessary information in any manner it chooses so long as the requirements of this subpart are satisfied.
- (b) Federal agencies shall be guided by the following in making their consistency determinations. The activity its effects on any coastal use or resource, associated facilities (*e.g.*, proposed siting and construction of access road, connecting pipeline, support buildings, and the effects of the associated facilities (*e.g.*, erosion, wetlands, beach access impacts), must all be consistent to the maximum extent practicable with the enforceable policies of the management program.
- (c) In making their consistency determinations, Federal agencies shall ensure that their activities are consistent to the maximum extent practicable with the enforceable, policies of the management program. However, Federal agencies should give consideration to management program provisions which are in the nature of recommendations.
- (d) When Federal agency standards are more restrictive than standards or requirements contained in the management program, the Federal agency may continue to apply its stricter standards. In such cases the Federal agency shall inform the State agency in the consistency determination of the statutory, regulatory or other basis for the application of the stricter standards.
- (d) *State permit requirements.* Federal law, other than the CZMA, may require a Federal agency to obtain a State permit. Even when Federal agencies are not required to obtain State permits, Federal agencies shall still be consistent to the maximum extent practicable with the enforceable policies that are contained in such State permit programs that are part of a management program.

**§ 930.41 State agency response.**

- (a) A State agency shall inform the Federal agency of its concurrence with or objection to the Federal agency's consistency determination at the earliest practicable time, after providing for public participation in the State agency's review of the consistency determination. The Federal agency may presume State agency concurrence if the State agency's response is not received within 60 days from receipt of the Federal agency's consistency determination and supporting information. The 60-day review period begins when the State agency receives the consistency determination and supporting information required by § 930.39(a). If the information required by § 930.39(a) is not included with the determination, the State agency shall immediately notify the Federal agency that the 60-day review period has not begun, what information required by § 930.39(a) is missing,

and that the 60-day review period will begin when the missing information is received by the State agency. If a Federal agency has submitted a consistency determination and information required by § 930.39(a), then the State agency shall not assert that the 60-day review period has not begun for failure to submit information that is in addition to that required by § 930.39(a).

- (b) State agency concurrence shall not be presumed in cases where the State agency, within the 60-day period, requests an extension of time to review the matter. Federal agencies shall approve one request for an extension period of 15 days or less. In considering whether a longer or additional extension period is appropriate, the Federal agency should consider the magnitude and complexity of the information contained in the consistency determination.
- (c) Final Federal agency action shall not be taken sooner than 90 days from the receipt by the State agency of the consistency determination unless the State concurs or concurrence is presumed, pursuant to paragraphs (a) and (b), with the activity, or unless both the Federal agency and the State agency agree to an alternative period.

#### **§ 930.43 State agency objection.**

- (a) In the event the State agency objects to the Federal agency's consistency determination, the State agency shall accompany its response to the Federal agency with its reasons for the objection and supporting information. The State agency response shall describe:
  - (1) How the proposed activity will be inconsistent with specific enforceable policies of the management program; and
  - (2) The specific enforceable policies (including citations).
  - (3) The State agency should also describe alternative measures (if they exist) which, if adopted by the Federal agency, would allow the activity to proceed in a manner consistent to the maximum extent practicable with the enforceable policies of the management program. Failure to describe alternatives does not affect the validity of the State agency's objection.
- (b) If the State agency's objection is based upon a finding that the Federal agency has failed to supply sufficient information, the State agency's response must describe the nature of the information requested and the necessity of having such information to determine the consistency of the Federal agency activity with the enforceable policies of the management program.
- (c) State agencies shall send to the Director a copy of objections to Federal agency consistency determinations.
- (d) In the event of an objection, Federal and State agencies should use the remaining portion of the 90-day notice period (*see* § 930.36(b)) to attempt to resolve their differences. If resolution has not been reached at the end of the 90-day period, Federal agencies should consider using the dispute resolution mechanisms of this part and postponing final federal action until the problems have been resolved. At the end of the 90-day period the Federal agency shall not proceed with the activity over a State agency's objection unless:
  - (1) the Federal agency has concluded that under the "consistent to the maximum extent practicable" standard described in section 930.32 consistency with the enforceable policies of the management program is prohibited by existing law applicable to the Federal agency and the Federal agency has clearly described, in writing, to the State agency the legal impediments to full consistency (See §§ 930.32(a) and 930.39(a)), or
  - (2) the Federal agency has concluded that its proposed action is fully consistent with the enforceable policies of the management program, though the State agency objects.
- (e) If a Federal agency decides to proceed with a Federal agency activity that is objected to by a State agency, or to follow an alternative suggested by the State agency, the Federal agency shall notify the State agency of its decision to proceed before the project commences.

#### **§ 930.44 Availability of mediation for disputes concerning proposed activities.**

In the event of a serious disagreement between a Federal agency and a State agency regarding the consistency of a proposed federal activity affecting any coastal use or resource, either party may request the Secretarial mediation or OCRM mediation services provided for in subpart G.



REPLY TO  
ATTENTION OF:

DEPARTMENT OF THE ARMY  
WILMINGTON DISTRICT, CORPS OF ENGINEERS  
P.O. BOX 1890  
WILMINGTON, NORTH CAROLINA 28402-1890

July 7, 2006

Environmental Resources Section

RECEIVED

JUL 10 2006

Morehead City

Mr. Stephen Rynas  
North Carolina Department of Environment  
and Natural Resources  
Division of Coastal Management  
400 Commerce Avenue  
Morehead City, North Carolina 28557

Dear Mr. Rynas:

The Wilmington District, US Army Corps of Engineers (Corps) proposes maintenance dredging Wainwright Slough and discharging the dredged material on Wainwright Island, located northeast of Cedar Island Point and southwest of Portsmouth Island, in Core Sound, Carteret County, North Carolina.

Wainwright Slough was initially dredged by the Corps in 1935. The project (including dredging and toe-of-bank disposal) was addressed in the Final EIS, "Maintenance of the Waterway Connecting Pamlico Sound and Beaufort Harbor, North Carolina", dated August 1976. The control-of-effluent disposal method was addressed in the Environmental Assessment/Finding of No Significant Impact (EA/FONSI) June and August 1995. The project has been determined to be consistent with the North Carolina Coastal Management Program by letters dated August 18, 1980, and Aug 22, 1995. The 1995 consistency required the discharge of dredged material above mean high water (MHW). Since 1997, Federal funding shortfalls have resulted in no maintenance dredging, with subsequent lack of material placement on the island. As a result, Wainwright Island has gradually eroded. Hurricane Isabel caused extensive erosion in 2003 and in 2005 Hurricane Ophelia caused additional erosion. Presently there is very little of the island exposed to MHW.

The Corps proposes reestablishing Wainwright Island to a size of approximately 16-19 acres, (approximately 9 feet high with 1:20 slopes) in the fall of 2006, using the control-of-effluent method of discharge. This project will involve the direct discharge of dredged material below the plane of MHW until enough of a high ground island is created, thereby allowing the resumption of discharge as addressed in the 1995 EA/FONSI.

Resource agency coordination was conducted during the spring of 2006, culminating in an onsite inspection on June 7, 2006. Agency comments and positions are addressed in the attached consistency determination.

In accordance with Section 307 (c)(1) of the Federal Coastal Zone Management Act of 1972, as amended, the Corps has determined that the reestablishment of Wainwright Island using the control-of-effluent method of dredged material disposal is consistent, to the maximum extent practicable, with North Carolina's coastal management program. The proposed activity complies with the enforceable policies of North Carolina's approved coastal management program and will be conducted to the maximum extent practicable in a manner consistent with the program and any received authorizations.

This determination is based on the review of the proposed project against the enforceable policies of the State's coastal management program, which are principally found in Chapter 7 of Title 15A of North Carolina's Administrative Code. Enclosed are the details of the consistency determination, which contains project plans and a supportive narrative. The Corps requests that the North Carolina Division of Coastal Management concur with this Consistency Determination.

Should you have any questions or require additional information, please contact Mr. Jeff Richter of my staff at telephone (910) 251-4636.

Sincerely,

A handwritten signature in black ink, appearing to read "William F. Adams". The signature is fluid and cursive, with a long horizontal stroke at the end.

William F. Adams, Chief  
Environmental Resources Section

Enclosure

CONSISTENCY DETERMINATION FOR  
WILMINGTON DISTRICT  
US ARMY CORPS OF ENGINEERS

Proposed Reestablishment of Wainwright Island Using Control-of-Effluent Method of Dredged  
Material Disposal

I. Background

Wainwright Island is located directly west of the federally authorized and maintained Wainwright Slough, which is a component of the Waterway Channel Connecting Pamlico Sound and Beaufort Harbor. The island presently is located over ¼ mile from any mainland area. There are prehistoric cultural resources present on the island, in addition to varying types of bird nesting habitat. Bird species nesting on the island at any given time are the result of the type of habitat available. The distance of the island from the mainland severely limits mammalian predation of the bird nests, increasing its value as suitable nesting habitat.

Wainwright Slough was initially dredged by the U.S. Army Corps of Engineers (Corps) in 1935. It is unclear where the dredged material was disposed. In August of 1976 the Final EIS, "Maintenance of the Waterway Connecting Pamlico Sound and Beaufort Harbor, North Carolina," addressed the discharge of dredged material along the toe of the bank of Wainwright Island. Because the federally maintained Wainwright Slough channel is near the Island, sand placed on the toe of the bank would often quickly return to the channel. The disposal method was modified by an Environmental Assessment (EA) in June 1995 and Findings of No Significant Interest (FONSI) in August 1995. The modification addressed the Corps' proposed use of the control-of-effluent method of dredged material disposal, which involves pumping sandy dredged material on an undiked island. The discharge is controlled by sand berms, which are leveled at completion of the project. The controlled flow creates unvegetated sandy habitat suitable for colonial waterbird nesting, an increasingly rare habitat in coastal North Carolina. Past control-of-effluent discharges created large expanses of nesting habitat in addition to covering and protecting cultural resources.

Control-of-effluent discharge of dredged material on Wainwright Island above mean high water (MHW) is authorized by the North Carolina Division of Water Quality's General Water Quality Certification No. 3368.

Submerged aquatic vegetation (SAV) has been documented in waters to the west of the island, possibly due to the island's reduction of wind and waves, which can limit the ability of SAV to populate shallow waters.

Since 1997, Federal funding shortfalls have resulted in no maintenance dredging, with the subsequent lack of material placement on the island. As a result, Wainwright Island has steadily eroded. Hurricane Isabel caused extensive erosion in 2003 and in 2005 Hurricane Ophelia caused additional erosion.

## II. Existing Conditions

Presently there is very little of the island exposed above MHW, due to the steady erosion and Hurricanes Isabel and Ophelia. Subsequently, there is no colonial waterbird nesting habitat, and the remaining cultural resources are exposed to daily erosional forces. The portion of the island that is above the elevation of MHW is less than 2 acres in size and is heavily vegetated with shrubs and sapling species. There is some coastal marsh on the northwest side of the island.

Wainwright Island and Slough are located in Outstanding Resource Waters as defined by the NC Division of Water Quality.

The sand eroded from the island has impacted much of the area previously populated by SAV. There are some SAV scattered about the vicinity of the proposed project footprint.

Dredging is needed as navigation through Wainwright Slough is difficult, especially at lower tides.

## III. Alternatives Analysis

Feasible alternatives to the proposed project (reestablishing Wainwright Island by discharging dredged material within the footprint of the pre-existing island using the control-of-effluent method) are limited. To maintain the navigational integrity of Wainwright Slough, maintenance dredging must be performed.

The No-Action Alternative: would result in the eventual complete loss of the island, in addition to increasing navigational hazards for mariners attempting to travel between Pamlico Sound and Beaufort Harbor.

Alternatives Considered and Dismissed: There are no other disposal sites, diked or undiked, near Wainwright Slough. Alternate methods of dredged material disposal in the vicinity of Wainwright Island would be as a discharge into a relatively undisturbed adjacent open water location or within a dike that would have to be constructed within the footprint of Wainwright Island or some other nearby open water location. Both alternatives would be anticipated to have greater environmental impacts than the proposed project. The diked area alternative would not reestablish quality colonial waterbird nesting habitat. For a new control-of-effluent disposal area to create quality colonial waterbird nesting habitat, a shallow water location would have to be selected to ensure that there is enough effluent to create a suitable island above MHW. Disposal in a location other than the Wainwright Island footprint would not protect the cultural resources that remain on the island remnants.

Other alternatives include long pumping or hauling distances of the dredged material. The costs associated with preparing a disposal area and with long distant transportation quickly make such alternatives infeasible when compared to dredged material disposal alternatives in the vicinity of Wainwright Island.

Preferred Alternative: The proposed project involves reestablishing Wainwright Island within its previous footprint using control-of-effluent techniques. Wainwright Slough is shoaled with approximately 145,000 cubic yards of sandy material. There are sandbags present on the east side of the island. At the beginning of the project, dredged material would be discharged directly into open water in a westerly direction, within the footprint of the previously existing island and the sandbags until it extends above MHW. When sufficient high ground exists, the methodology would be slightly modified to discharge material onto the high ground, allowing it to continue flowing in a westerly direction, expanding the island until it eventually reaches a size of approximately 16-19 acres. The maximum height attained would be approximately 9 feet and slopes would be 20H:1V). Dredging would be performed by a 12"-16" hydraulic pipeline dredge and would begin in the fall of 2006.

#### IV. Resource Agency Coordination

Due to funding shortfalls, Wainwright Slough has not been dredged since 1997. North Carolina Wildlife Resources Commission and Audubon Society personnel have advised the Corps of the continual erosion of Wainwright Island over the years. Both organizations support the proposed project, provided environmental impacts are minimized, as it will reestablish important colonial waterbird nesting habitat.

North Carolina Division of Water Quality (NCDWQ) has advised that a new water quality certification must be received as the existing General Certification (#3368) does not authorize the proposed discharge below MHW. A Pre-Construction Notification requesting this new certification has been completed and submitted to NCDWQ.

National Marine Fisheries Service (NMFS) has surveyed the proposed project area. SAV habitat has been identified west of the Island, and individual plants were collected during the June 7 onsite inspection. By email dated June 16, 2006, NMFS has indicated that they are willing to go along with the project in its relocated position. NMFS hopes to interpret recent aerial photography to verify reports of SAV observed in the vicinity of the project. If SAV is in the footprint of the island options to mitigate that loss should be addressed, be available for implementation, or already implemented. The Corps has begun investigating habitat enhancement opportunities at the site. NMFS welcomes the opportunity to work with the Corps on this issue and believes that it is an important component of acceptable projects. Habitat enhancement could address any lingering question about habitat trade offs and SAV habitat impacted at the site.

NMFS identified the possible need to prepare an assessment of potential impacts to Essential Fish Habitat (EFH). The Corps is reviewing EFH guidance to determine the appropriate level for such an assessment and will coordinate the results with NMFS.

NMFS has stated that no seasonal restriction is necessary as work is proposed in the winter. While construction may actually begin in the fall, timing will be coordinated with NMFS, and proposed timing is within previously identified environmental windows.

NMFS has also indicated that they are satisfied with the concept/location/scope of impact. Satisfactory completion and coordination of the above identified issues will resolve remaining concerns.

North Carolina Division of Marine Fisheries (NCDMF), including the Shellfish Sanitation Section, has identified two pound net locations near the proposed project site. Coordinates for these pound nets have been located on project plans and these plans have been forwarded to both agencies to ensure that the proposed project will not result in adverse impacts.

NCDMF will be included in all coordination with NMFS regarding SAV and EFH assessment issues.

A representative of the North Carolina Division of Cultural Resources (NCDRC), Underwater Archaeology Office, and an archaeologist from the Corps participated in the June 7 onsite investigation. They confirmed that previously buried cultural resources are now exposed to wind and waves. Completion of the project will afford renewed protection for the remaining resources.

#### V. Mitigation

Wainwright Island protected adjacent waters to the west from wind and waves, creating habitat conducive to SAV colonization and growth. Recent erosion has covered most of this habitat. There are scattered remnants of SAV in the area. The proposed project is not anticipated to result in more than minimal adverse impacts to the remaining SAV population. Reestablishment of the island will recreate the protective features which fostered past SAV growth. During and following the completion of construction, the Corps will coordinate with NMFS and NCDMF and collectively agree upon measures that can be employed to avoid, minimize, or otherwise offset adverse impacts of the project, in addition to collectively developing efforts to measure and evaluate the effects of a protective island on SAV colonization and population growth.

The proposed project will be constructed during the period of minimal biological activity, thereby minimizing impacts to the project area's habitats and their functions.

The proposed project's use of the control-of-effluent method of discharge will recreate nesting habitat for colonial waterbirds.

The discharge of sandy material within the project area will cover cultural resources and protect them from exposure to winds and waves.

The proposed project will be confined to the footprint of a previously existing island used as a disposal area. The discharge will be directed away from the existing Wainwright Slough navigation channel, and will avoid an existing pound net location, licensed by the NCDMF.

The Corps will comply with all conditions of the Water Quality Certification to be issued by the NCDWQ.

## VI. Areas of Environmental Concern

The project site is located entirely within Core Sound, an area of environmental concern (AEC) as defined by Section 113A-113 of the North Carolina Coastal Area Management Act (CAMA). Specifically, the proposed project will be occurring in the Estuarine and Ocean System AEC.

Wainwright Island and Slough are located in Outstanding Resource Waters, as determined by NCDWQ.

Wainwright Island is not located in a primary nursery area (15A NCAC 07H .0208(a)(4)).

Wainwright Island has sporadic patches of submerged aquatic vegetation (15A NCAC 07H .0208(a)(6)).

There are no shellfish beds in the project area (15A NCAC .0208(a)(2)).

Though the project site is not designated as a "Natural and Cultural Resources Area" (15A NCAC 07H .0501) the project site possesses the remains of cultural resources that are currently exposed to erosion. Completion of the project will afford protection to these resources.

## VII. Project Conformance with Carteret County Land Use Plan

The North Carolina Coastal Area Management Act of 1974 was passed in accordance with the Federal Coastal Zone Management Act. It requires each of the 20 coastal counties to have a local land-use plan in accordance with guidelines established by the Coastal Resources Commission (CRC).

Each land-use plan includes local policies that address growth issues such as the protection of productive resources (i.e., farmland, forest resources, fisheries), desired types of economic development, natural resource protection and the reduction of storm hazards.

According to the Carteret County Planning Department website (<http://www.co.carteret.nc.us/departments/planning/cama/section1d.pdf>), the County is working under their 1996 Carteret County Land Use Plan. The Land Use Plan notes that public trust areas, such as the project location: "... are significant because the public has rights in these areas, including navigation and recreation. The public trust areas also support valuable commercial and sports fisheries, have aesthetic value, and are important resources for economic development."

The Core Sound (Wainwright) Nesting Islands are specifically identified in the 1996 Plan. The North Carolina Natural Heritage Program has attached a significance category of "B" to these nesting islands. This category is defined as:

Statewide significant sites contain similar ecological resources that are among the highest quality occurrences in North Carolina. There may be better quality representations or larger populations elsewhere in the nation, including possibly a few within the state.

As stated above, Wainwright Slough and Island are also located in Outstanding Resource Waters.

Page IV-3 Section C. Carteret County will meet or exceed the resource protection policies of 15A NCAC 7H

Page IV-7 Cultural Resources. Carteret County will protect its historic and archeological resources.

Page IV-11 Resource Production and Management Policies. Carteret County will meet or exceed the resource protection policies of 15A NCAC 7H

Page IV-14 Marine Resource Areas. Carteret County supports the use standards for estuarine, public trust, and ORW waters as specified in 15A NCAC 7H .0207 with some exceptions, (new navigational channels through coastal marsh, new drainage ditches discharging into primary nursery areas). Carteret County will rely on 15A NCAC 7H standards and the CAMA permitting process to implement these policies.

Page IV-20 Carteret County is generally receptive to state and federal programs, particularly those which provide improvements to the county. The county will continue to fully support such programs, including dredging and channel maintenance by the U.S. Army Corps of Engineers, and federal and state projects which provide efficient and safe boat access for sport fishing;

Page IV-21 Assistance in Channel maintenance: Proper maintenance is important to navigation, sport fishing, etc. Carteret County will provide assistance to the Corps during maintenance projects.

The proposed project is consistent with all aspects of the Carteret County Land Use Plan. Compliance with all conditions of the NCDWQ Water Quality Certification and any recommendations from the NCDCM Consistency Concurrence will further ensure compliance with the Plan.

#### VIII. Analysis of the Project in Relation to North Carolina's Coastal Management Program

15A NCAC 07H .0206 establishes management objectives for estuarine waters in order to conserve and manage the important features of estuarine waters in a manner that safeguards and perpetuates their ecological and economical values and to coordinate and establish a management system capable of conserving and using estuarine waters that maximize their benefits to man and the estuarine and marine systems. The location, use, and design of this project is in accordance with the general and specific use standards for coastal wetlands, estuarine waters, and public use areas per 15A NCAC 07H .0208 Use Standards. 15A NCAC 07H .0208 (b) (2) addresses the case-by-case review of publicly funded hydraulic dredging projects with respect to dredging methods and spoil disposal. The general use standards are listed below. Following each standard is a brief description explaining how the proposed project meets each standard.

(a.) The location, design, and need for development, as well as the construction activities involved shall be consistent with the stated management objective. The proposed project involves maintenance dredging of a federally authorized waterway, with disposal of dredged material within the footprint of a previously existing disposal island. Completion of the project will reestablish safe navigation through the waterway and will provide important nesting habitat for colonial waterbirds.

(b.) Before receiving approval for location of a use or development within these AECs, the permit-letting authority shall find that no suitable alternative site or location outside of the AEC exists for the use or development and that the applicant has selected a combination of sites and design that will have a minimum adverse impact upon the productivity and biologic integrity of coastal marshland, shellfish beds, beds of submerged aquatic vegetation, spawning and nursery areas, important nesting and wintering sites for waterfowl and wildlife, and important natural erosion barriers (cypress fringes, marshes, clay soils). The proposed project involves maintenance dredging and disposal of dredged material within the footprint of a previously existing disposal area. The timing and methodology of the project will ensure minimal adverse impacts to the productivity and biologic integrity of the area.

(c.) Development shall not violate water and air quality standards. No work will begin until a water quality certification is received from NCDWQ. The project will be designed to comply with all conditions of the certification. The project will be designed to comply with all North Carolina air quality standards; therefore, no authorization is required.

(d.) Development shall not cause major or irreversible damage to valuable documented archaeological or historic resources. Completion of the proposed project will cover and protect cultural resources that are presently exposed to wind and waves. Construction of the proposed project has been coordinated with the NCDCCR and the Corps' archaeologist, and will not adversely impact these resources.

(e.) Development shall not measurably increase siltation. The proposed project will entail the control-of-effluent method of dredged material disposal. This method is used only with sandy material, which is heavy enough such that discharge water is clear by the time it reaches adjacent receiving waters. Control-of-effluent discharge does not measurably increase siltation.

(f.) Development shall not create stagnant water bodies. There will be no stagnant water bodies created as a result of the proposed project.

(g.) Development shall be timed to have minimum adverse significant affect on life cycles of estuarine and ocean resources. The proposed project will be constructed during late fall or winter, a time of minimal biological activity.

(h.) Development shall not impede navigation or create undue interference with access to, or use of, public trust areas or estuarine waters. Completion of the proposed project will reestablish safe navigation through Wainwright Slough.

15A NCAC 07H .0207 establishes management objectives for the protection of public rights for navigation and recreation and to conserve and manage the public trust areas so as to safeguard and perpetuate their biological, economic and aesthetic value. The project will not result in the loss of coastal uses. Construction of this project will not impact coastal resources or prohibit access to coastal resources by the public. Completion of the project will reestablish safe navigation through Wainwright Slough and provide an area for future deposition of dredged material.

NC Dredge and Fill law (Section 113-229) addresses dredging and filling in or about estuarine waters and State-owned lakes. Specifically, sections (h1), (h2), and (i) apply to the proposed project.

(h1) Except as provided in subsection (h2) of this section, all construction and maintenance dredgings of beach-quality sand may be placed on the affected downdrift ocean beaches or, if placed elsewhere, an equivalent quality and quantity of sand from another location shall be placed on the downdrift ocean beaches.

(h2) Clean, beach quality material dredged from navigational channels within the active nearshore, beach or inlet shoal systems shall not be removed permanently from the active nearshore, beach or inlet shoal system. This dredged material shall be disposed of on the ocean beach or shallow active nearshore area where it is environmentally acceptable and compatible with other uses of the beach.

(i) Subject to subsections (h1) and (h2) of this section, all materials excavated pursuant to such permit, regardless of where placed, shall be encased or entrapped in such a manner as to minimize their moving back into the affected water.

Technically, the project area is not an active nearshore, beach, or inlet shoal system. However, the area is located in Core Sound, classified as an Outstanding Resource Water and in close proximity to other environmentally important coastal waters. The proposed project will dredge sand from the Wainwright Slough navigation channel and discharge it on adjacent Wainwright Island. Initially, the discharge will occur below the plane of MHW until the island has been rebuilt to the point that the discharge can occur on high ground, landward of MHW. The sand will not be removed from the system, but will be impeded from returning to the channel by an existing line of sandbags.

15A NCAC 07H .0208(b)(1) requires that impacts to various resources, such as primary nursery areas, outstanding resource waters, shellfish, and submerged vegetation be avoid or at least minimized. The proposed project will be constructed during late fall or winter, a time of minimal biological activity. In addition, the proposed project will entail the control-of-effluent method of dredged material disposal and involves reestablishment of a previously existing disposal island. This method is used only with sandy material, which is heavy enough such that discharge water is clear by the time it reaches adjacent receiving waters. There are some sandbags around the island footprint, remaining from previous disposal events, which will assist

in confining sand moving off the island. No additional sandbags are proposed to be placed as part of this project.

15A NCAC 07H .0208 (b)(2), sections A-H addresses requirements for dredging methodology. Dredging will be performed by a hydraulic pipeline dredge. Dredged material will be disposed of within the footprint of a previously existing disposal island, using the control-of-effluent method of discharge. This method involves the gradual build-up of an island using berms that direct effluent in such a manner that the sandy dredged material "drops" out, building up the island, while the effluent water that does leave the island is virtually free of dredged material. Upon completion of the project, the berms are knocked down, leaving a naturally sloped island well-suited to use by colonial nesting waterbird species. Sandbags are used to minimize return of washed sand into the dredged channel, but are not routinely found or replaced on the non-channel side, thereby allowing minimal sand buildup, which could impede chicks from accessing the water. The project area is located within an Outstanding Resource Water, therefore issues related to closed shellfish areas do not pertain to the proposed construction.

15A NCAC 07M .0800 establishes that the quality of coastal waters is to be protected. The project will begin until a water quality certification from NCDWQ is received. The work will comply with all conditions of this certification.

15A NCAC 07M .0700 requires that there is no reasonable or prudent alternative alternate design or location for the project that would avoid the losses to be mitigated. The proposed project involves maintenance dredging of federally authorized navigation channels and the reestablishment of Wainwright Island, which will recreate nesting habitat for colonial waterbirds and reestablish protection for cultural resource presently exposed to wind and wave damage. The proposed work would be carried out during the period of minimal biological productivity and would not have adverse effects on water quality, shell fish, submerged aquatic plants, and/or primary fishery nursery areas.

The project has been designed to minimize/avoid adverse environmental impacts, as addressed above. Upon completion, the project will reestablish important nesting habitat for colonial waterbirds, provide protection for cultural resources, and maintain safe navigation within the Waterway between Pamlico Sound and Beaufort Harbor.

#### IX. Other Required Approvals

A new 401 Water Quality Certification has been requested from the NCDWQ. No other permits, authorizations, or approvals are necessary.

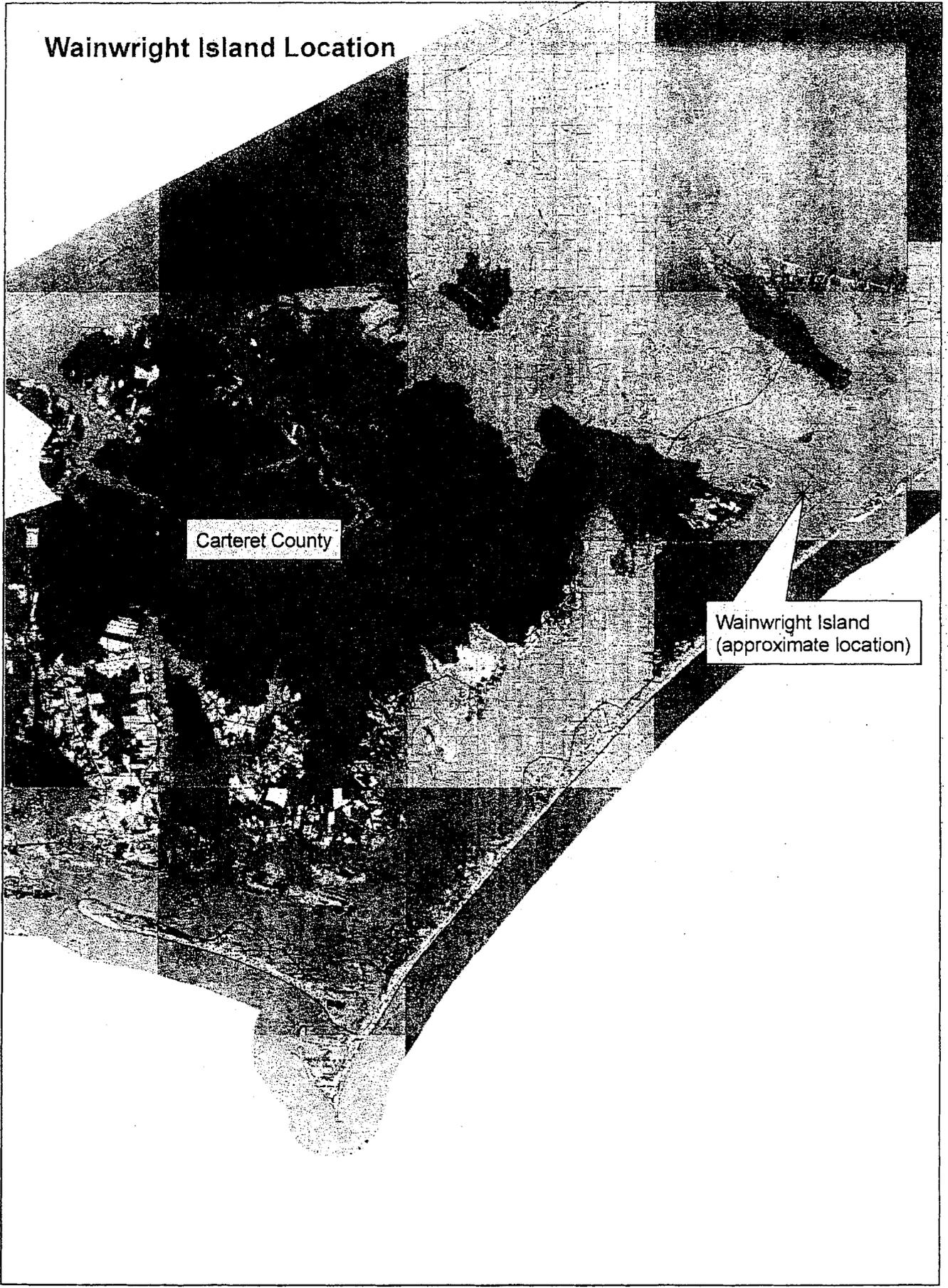
#### X. Conclusions

The proposed project conforms to the management objectives of 15A NCAC 07H .0206 and 15A NCAC 07H .0207 since it will enhance navigation and restore the function of Wainwright Island for colonial nesting birds.

The proposed project will not affect any wildlife recognized by the State as species of concern, will not adversely impact water quality, and will result in minimal, temporary and short-lived impacts to fisheries and the aquatic habitat. The proposed project will be undertaken during the period of minimal biological activity so that there will be minimal disruption of habitat function.

Construction of the project will entail the reestablishment of a previously existing island which served as a disposal area for sandy material dredged from the nearby federally authorized Wainwright Slough. Upon completion of the project, the island will once again function as nesting habitat for colonial waterbirds, and will assist in the preservation of cultural resources. Dependent upon future funding, Wainwright Slough will be periodically maintenance dredged, and material placed on Wainwright Island by the control-of-effluent disposal method will maintain nesting-habitat and protection of cultural resources.

# Wainwright Island Location



Carteret County

Wainwright Island  
(approximate location)





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

Michael F. Easley, Governor

Charles S. Jones, Director

William G. Ross Jr., Secretary

August 4, 2006

Melba McGee  
Environmental Coordinator  
Office of Legislative & Intergovernmental Affairs  
Department of Environment and Natural Resources  
1601 Mail Service Center  
Raleigh, NC 27699-0001



**SUBJECT:** Comments Regarding the Draft Integrated General Reevaluation Report and Environmental Impact Statement; Shore Protection; West Onslow Beach and New River Inlet (Topsail Beach), Onslow and Pender Counties, North Carolina (SCH#06-0378, DCM#20060057, DCM#20060059, & DCM#20060060)

Dear Ms. McGee:

Thank you for the opportunity to review and provide comments on the Draft Integrated General Reevaluation Report and Environmental Impact Statement; Shore Protection; West Onslow Beach and New River Inlet (Topsail Beach) (DEIS) in Onslow and Pender Counties, North Carolina. The proposed project, as described in the review request is the reauthorization and revaluation of shoreline protection along an approximate five-mile section of the oceanfront from New Topsail Inlet to Surf City. The purpose of this project is to reduce the potential for damage associated with hurricanes, other types of storm events, and beach erosion. The purpose of this review is to comment on the adequacy of the environmental analysis of the DEIS.

- The DEIS correctly notes that the proposed project will require Federal Consistency review under the Coastal Zone Management Act (CZMA). The North Carolina Division of Coastal Management (DCM) sent a separate letter (July 12, 2006) to the Corps advising the Corps on how to complete the consistency submission to DCM.
- The "*Affected Environment*" section (from the perspective of evaluating the proposed project with the State's local coastal management program) lacks graphics displaying

400 Commerce Avenue, Morehead City, North Carolina 28557-3421  
Phone: 252-808-2808 \ FAX: 252-247-3330 \ Internet: [www.nccoastalmanagement.net](http://www.nccoastalmanagement.net)

resources in the study area such as (but not limited to), Primary Nursery Areas (PNA), Outstanding Resource Waters (ORW), and beds of submerged aquatic vegetation (SAV) in relationship to the proposed project.

Additional issues that the Corps may want to review in the “Affected Environment” section and evaluated in the “*Environmental Effects*” section would include the effect of the proposed project on shellfishing, frontal dunes, and the first line of stable natural vegetation. Dredging operations, for example, could result in the closure of waters that are currently open to shellfishing that would constitute an adverse environmental effect.

DCM recommends that the FEIS, since it is to be used as part of the Corps’ consistency determination to DCM, contain analysis and graphics depicting the location of resources that are of State interest in relationship to the proposed project and the effect of the proposed project on those resources.<sup>1</sup>

- Section 5.01 of the DEIS discuss formulation and evaluation criteria. One sentence states that the “*Plan must comply with applicable State and local laws and regulations, to the maximum extent practicable,” (emphasis added). The phrase “*to the maximum extent practicable*” is commonly misunderstood. Pursuant to 15 CFR 930.32 this phrase means that a proposed project must be fully consistent with the enforceable policies of the State’s coastal management program unless full consistency is prohibited by existing law applicable to the Federal agency. DCM recommends that this definition be included to minimize the potential for misinterpretation.*

DCM recommends that the environmental criteria entry be modified. This entry currently reads, “*Plan may not result in unacceptable adverse impacts on the environment*”. DCM recommends, based on North Carolina’s Environmental Policy Act of 1971 (GS §113A-1), that the concepts of avoidance and mitigation be added. As an example of alternative wording: “*Adverse impacts to the environment will be avoided. In cases where adverse impacts cannot be avoided, mitigation shall be provided to minimize impacts to at least a level of insignificance.*” Additionally, DCM recommends that 40 CFR 1508.20 be consulted for additionally mitigation concepts.

- The DEIS does not contain a specific section devoted to summarizing mitigation commitments. Additionally in certain instances it is unclear whether the mitigation

---

<sup>1</sup> 40 CFR 1500.2(c): “*Integrate the requirements of NEPA with other planning and environmental review procedures required by law or by agency practice so that all such procedures run concurrently rather than consecutively.*” Additionally, 40 CFR 1500.4(k): “*Integrating NEPA requirements with other environmental review and consultation requirements (Sec. 1502.25)*”. 40 CFR 1502.16(c): “*Possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned. (See Sec. 1506.2(d).)*”. 40 CFR 1506.2(d): “*To better integrate environmental impact statements into State or local planning processes, statements shall discuss any inconsistency of a proposed action with any approved State or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law.*”

identified would actually be implemented or not. For example, on page two of the "Syllabus" the statement is made that "*Periodic nourishment activities will be timed, to the extent practicable, to avoid the sea turtle nesting season ...*" (emphasis added). Additionally, mitigation measures are dispersed throughout the DEIS which makes a full understanding, by the reader, of how the proposed project will resolve adverse environmental effects challenging. Some mitigation measures are included in Section 7.03 of the DEIS which discusses "*Design and Construction Considerations*". Additional mitigation measures are covered in Section 8 of the DEIS which covers "*Environmental Effects*". For example, Section 8.02.3 notes that beach nourishment and construction activities would avoid Piping Plover Critical Habitat. Finally, Section 10, which discusses "*Compliance with Environmental Requirements*", contains references to suggested coordination, other legal mandates, and adherence to moratorium periods.

DCM acknowledges, that under the NEPA regulations such a discrete mitigation section is not required. Nevertheless, to assist readers in understanding the full scope of the proposed mitigation measures to be implemented by the Corps, DCM would encourage the inclusion of a clearly identified summary mitigation section and/or table.

- Comments on Section 10.12 of the DEIS concerning the State's coastal management program were made through a separate letter, dated July 12, 2006 to the Corps. A copy of this letter has been attached as part of our comments on the DEIS.

Thank you for your consideration of the North Carolina Coastal Management Program

Sincerely,



Stephen Rynas, AICP  
Federal Consistency Coordinator

cc: Charles S. Jones, Division of Coastal Management  
Doug Huggett, Division of Coastal Management  
Jim Gregson, Division of Coastal Management  
Jan Brodmerkel, US Army Corps of Engineers



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

Michael F. Easley, Governor

**Charles S. Jones, Director**

William G. Ross Jr. Secretary

September 22, 2006

Jenny Owens  
Environmental Resources Section  
Wilmington District Office  
US Army Corps of Engineers  
P.O. Box 1890  
Wilmington, NC 28402-1890

**SUBJECT:** Status of Consistency Determination Submission for the Proposed Shore Protection Project at Topsail Beach, Onslow and Pender Counties, North Carolina (DCM#20060059)

Dear Ms Owens:

We received your consistency determination on June 28, 2006 for the proposed shore protection project at West Onslow Beach and New River Inlet (Topsail Beach), Onslow and Pender Counties, North Carolina, North Carolina. This submission was determined to be incomplete on July 12, 2006. The submission was filed complete, upon the receipt of additional information, on September 13, 2006.

On September 15, 2006 we initiated the public review period. The project has been distributed to State agencies that would have a regulatory interest in the proposed activity for review and comment. Additionally, a public notice has been printed in the Wilmington Star-News on September 20, 2006. The public review period will close on October 20, 2006. We intend to make a decision regarding whether the proposed activity would be consistent with the State's coastal program soon after.

Pursuant to 15 CFR 930.41 the State of North Carolina has sixty (60) days from the receipt of the consistency determination to either concur or object to your consistency determination unless an extension is requested. The sixtieth day is November 12, 2006.

The State is entitled to an extension of up to fifteen (15) days if additional review time is necessary. Furthermore, final Federal agency action cannot be taken sooner than ninety (90) days from the State's receipt of the consistency determination unless State concurrence is obtained. Please feel free to contact me at 252-808-2808 if you have any questions. Thank you for your consideration of the North Carolina Coastal Management Program.

Sincerely,

Stephen Rynas, AICP  
Federal Consistency Coordinator

Cc: Doug Huggett, Division of Coastal Management  
Jim Gregson, Division of Coastal Management

400 Commerce Avenue, Morehead City, North Carolina 28557-3421  
Phone: 252-808-2808 \ FAX: 252-247-3330 \ Internet: [www.nccoastalmanagement.net](http://www.nccoastalmanagement.net)



North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary

MEMORANDUM



TO: Chrys Baggett  
State Clearinghouse

FROM: Melba McGee *MM*  
Project Review Coordinator

RE: 06-0378 Shore Protection, West Onslow Beach and New  
River Inlet Onslow and Pender Counties

DATE: August 22, 2006

The Department of Environment and Natural Resources has reviewed the proposed project. Careful consideration should be given to the concerns identified by our resource agencies. The department encourages the applicant to continue coordinating with the N.C. Wildlife Resources Commission, the Division of Coastal Management and the Division of Marine Fisheries prior to finalizing project plans. This will help avoid unnecessary delays during the permitting process.

Thank you for the opportunity to respond.

Attachments



RECEIVED  
OCT 2 9 2006

North Carolina Department of Environment and Natural Resources  
Division of Coastal Management  
Charles S. Jones, Director  
Morehead City DCM  
William G. Ross Jr., Secretary

Michael F. Easley, Governor

**MEMORANDUM**

September 22, 2006

RECEIVED  
SEP 25 2006  
DIV. OF COASTAL MANAGEMENT  
RALEIGH

TO: Melissa Carle  
Coastal Wetlands  
DCM - Raleigh Office  
1638 Mail Service Center  
Raleigh, NC 27699-1638

FROM: Stephen Rynas, AICP; Federal Consistency Coordinator

SUBJECT: Consistency Determination Submission for a Modification to the Existing Authorized Shore Protection Project for West Onslow Beach and New River Inlet (Topsail Beach) (DCM#20060059)

LOCATION: Topsail Island, Onslow and Pender Counties, North Carolina

Please comment on the above document by **October 20, 2006**. Also attached is a CD titled "Draft Integrated GRR and EIS Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach)". Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or e-mail me at: "stephen.rynas@ncmail.net".

REPLY

- No Comment.
- This office supports the project as proposed.
- Comments to this project are attached.
- This office objects to the project as proposed.

Signed: Melissa M Carle

Date: 10/18/06

CORRECTIONS

Please identify any corrections, additions, or deletions that should be made in terms of contact information.

RETURN COMPLETED FORM

to  
Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421



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

Michael F. Easley, Governor

Charles S. Jones, Director

William G. Ross Jr., Secretary

**MEMORANDUM**

September 22, 2006

**RECEIVED**  
SEP 29 2006

**Morehead City DCM**

**TO:** Brian Strong  
NCDENR - Division of Parks and Recreation  
512 North Salisbury, Seventh Floor  
Raleigh, NC 27604-1170

**FROM:** Stephen Rynas, AICP; Federal Consistency Coordinator

**SUBJECT:** Consistency Determination Submission for a Modification to the Existing Authorized Shore Protection Project for West Onslow Beach and New River Inlet (Topsail Beach) (DCM#20060059)

**LOCATION:** Topsail Island, Onslow and Pender Counties, North Carolina

Please comment on the above document by **October 20, 2006**. Also attached is a CD titled "*Draft Integrated GRR and EIS Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach)*". Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or e-mail me at: "stephen.rynas@ncmail.net".

**REPLY**

- No Comment.
- This office supports the project as proposed.
- Comments to this project are attached.
- This office objects to the project as proposed.

Signed: *Stephen Rynas*

Date: 9/28/06

**CORRECTIONS**

Please identify any corrections, additions, or deletions that should be made in terms of contact information.

**RETURN COMPLETED FORM**

to  
Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421



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

Michael F. Easley, Governor

Charles S. Jones, Director

William G. Ross Jr., Secretary

**MEMORANDUM**

September 22, 2006

**RECEIVED**

OCT - 4 2006

**Morehead City DCM**

TO:

Town of Topsail Beach  
P.O. Box 3089  
Topsail Beach, NC 28445-9831

FROM:

Stephen Rynas, AICP; Federal Consistency Coordinator

SUBJECT:

Consistency Determination Submission for a Modification to the Existing Authorized Shore Protection Project for West Onslow Beach and New River Inlet (Topsail Beach) (DCM#20060059)

LOCATION:

Topsail Island, Onslow and Pender Counties, North Carolina

Please comment on the above document by **October 20, 2006**. Also attached is a CD titled "*Draft Integrated GRR and EIS Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach)*". Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or e-mail me at: "stephen.rynas@ncmail.net".

REPLY

- No Comment.
- This office supports the project as proposed.
- Comments to this project are attached.
- This office objects to the project as proposed.

Signed: James E. Carter  
Town Manager

Date: 9-26-06

CORRECTIONS

Please identify any corrections, additions, or deletions that should be made in terms of contact information.

RETURN COMPLETED FORM

to  
Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421



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

Michael F. Easley, Governor

Charles S. Jones, Director

RECEIVED  
OCT - 4 2006

Morehead City, DCM  
William G. Ross, Secretary

MEMORANDUM

September 22, 2006

TO: Bonnie Bendell  
DCM - Coastal Engineer  
DCM - Raleigh Office  
1638 Mail Service Center  
Raleigh, NC 27699-1638

FROM: Stephen Rynas, AICP; Federal Consistency Coordinator

SUBJECT: Consistency Determination Submission for a Modification to the Existing Authority  
Shore Protection Project for West Onslow Beach and New River Inlet (Topsail Beach)  
(DCM#20060059)

RECEIVED  
SEP 25 2006  
DIV. OF COASTAL MANAGEMENT  
RALEIGH

LOCATION: Topsail Island, Onslow and Pender Counties, North Carolina

Please comment on the above document by **October 20, 2006**. Also attached is a CD titled "Draft Integrated GRR and EIS Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach)". Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or e-mail me at: "stephen.rynas@ncmail.net".

REPLY

- No Comment.
- This office supports the project as proposed.
- Comments to this project are attached.
- This office objects to the project as proposed.

Signed: Bonnie M. Bendell

Date: 10/3/06

CORRECTIONS

Please identify any corrections, additions, or deletions that should be made in terms of contact information.

RETURN COMPLETED FORM

to  
Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421



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

Michael F. Easley, Governor

Charles S. Jones, Director

William G. Ross Jr., Secretary

**MEMORANDUM**

September 22, 2006



TO: Steve Everhart  
 Division of Inland Fisheries, Habitat Conservation Program  
 NC Wildlife Resources Commission  
 127 Cardinal Drive Extension  
 Wilmington, NC 28405-5406

FROM: Stephen Rynas, AICP; Federal Consistency Coordinator

SUBJECT: Consistency Determination Submission for a Modification to the Existing Authorized Shore Protection Project for West Onslow Beach and New River Inlet (Topsail Beach) (DCM#20060059)

LOCATION: Topsail Island, Onslow and Pender Counties, North Carolina

Please comment on the above document by **October 20, 2006**. Also attached is a CD titled "Draft Integrated GRR and EIS Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach)". Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or e-mail me at: "stephen.rynas@ncmail.net".

REPLY

- No Comment.
- This office supports the project as proposed.
- Comments to this project are attached.
- This office objects to the project as proposed.

Signed: *Steve Everhart* Date: 10/6/06

CORRECTIONS

Please identify any corrections, additions, or deletions that should be made in terms of contact information.

RETURN COMPLETED FORM

to  
 Stephen Rynas, Federal Consistency Coordinator  
 NC Division of Coastal Management  
 400 Commerce Avenue  
 Morehead City, NC 28557-3421



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

Michael F. Easley, Governor

Charles S. Jones, Director

William G. Ross Jr., Secretary

MEMORANDUM

September 22, 2006

RECEIVED

OCT 11 2006

TO:

County of Onslow  
604 College Street  
Jacksonville, NC 28540-5309

Morehead City DCM

FROM:

Stephen Rynas, AICP; Federal Consistency Coordinator

SUBJECT:

Consistency Determination Submission for a Modification to the Existing Authorized Shore Protection Project for West Onslow Beach and New River Inlet (Topsail Beach) (DCM#20060059)

LOCATION:

Topsail Island, Onslow and Pender Counties, North Carolina

Please comment on the above document by **October 20, 2006**. Also attached is a CD titled "*Draft Integrated GRR and EIS Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach)*". Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or e-mail me at: "stephen.rynas@ncmail.net".

REPLY

X

No Comment.

\_\_\_\_\_

This office supports the project as proposed.

\_\_\_\_\_

Comments to this project are attached.

\_\_\_\_\_

This office objects to the project as proposed.

Signed:

Angela S. Manning

Date:

10/6/06

CORRECTIONS

Please identify any corrections, additions, or deletions that should be made in terms of contact information.

RETURN COMPLETED FORM

to

Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421



NC 10100

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

Michael F. Easley, Governor

Charles S. Jones, Director

William G. Ross Jr., Secretary

MEMORANDUM

September 22, 2006

RECEIVED  
OCT 11 2006  
Morehead City DCM

RECEIVED  
SEP 25 2006  
SHELLFISH SANITATION

TO: Mike Street  
NCDENR - Division of Marine Fisheries  
P.O. Box 769  
Morehead City, NC 28557-0769

FROM: Stephen Rynas, AICP; Federal Consistency Coordinator

SUBJECT: Consistency Determination Submission for a Modification to the Existing Authorized Shore Protection Project for West Onslow Beach and New River Inlet (Topsail Beach) (DCM#20060059)

LOCATION: Topsail Island, Onslow and Pender Counties, North Carolina

Please comment on the above document by **October 20, 2006**. Also attached is a CD titled "Draft Integrated GRR and EIS Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach)". Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or e-mail me at: "stephen.rynas@ncmail.net".

REPLY

- No Comment.
- This office supports the project as proposed.
- Comments to this project are attached.
- This office objects to the project as proposed.

Signed: *For Patti Fowler*  
*Edward J. Foster*

Date: 10-6-06

CORRECTIONS

Please identify any corrections, additions, or deletions that should be made in terms of contact information.

RETURN COMPLETED FORM

to  
Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421

RECEIVED  
OCT - 9 2006  
SHELLFISH SANITATION

✓

JJ NC 10/06 50014



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

Michael F. Easley, Governor

Charles S. Jones, Director

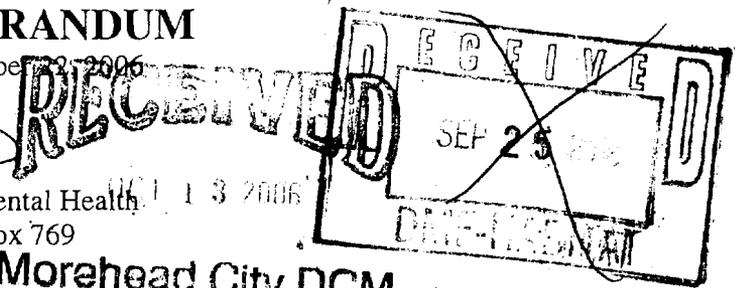
William G. Ross Jr., Secretary

MEMORANDUM

September 22, 2006

TO:

Patty Fowler  
Shellfish Sanitation District  
NCDENR - Division of Environmental Health  
Marine Fisheries Building, P.O. Box 769  
Morehead City, NC 28557-0769  
**Morehead City DCM**



FROM:

Stephen Rynas, AICP; Federal Consistency Coordinator

SUBJECT:

Consistency Determination Submission for a Modification to the Existing Authorized Shore Protection Project for West Onslow Beach and New River Inlet (Topsail Beach) (DCM#20060059)

LOCATION:

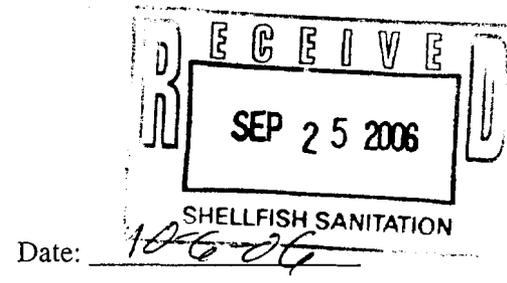
Topsail Island, Onslow and Pender Counties, North Carolina

Please comment on the above document by **October 20, 2006**. Also attached is a CD titled "Draft Integrated GRR and EIS Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach)". Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or e-mail me at: "stephen.rynas@ncmail.net".

REPLY

- No Comment.
- This office supports the project as proposed.
- Comments to this project are attached.
- This office objects to the project as proposed.

Signed: For Patti Fowler  
Edward J. Fisher

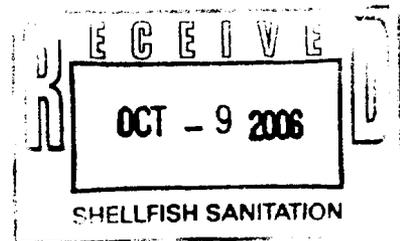


CORRECTIONS

Please identify any corrections, additions, or deletions that should be made in terms of contact information.

RETURN COMPLETED FORM

to  
Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421





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

Michael F. Easley, Governor

Charles S. Jones, Director

William G. Ross Jr., Secretary

**MEMORANDUM**

September 22, 2006

TO: JohnFear  
NC National Estuarine Research Reserve  
400 Commerce Avenue  
Morehead City, NC 28557-3421

FROM: Stephen Rynas, AICP; Federal Consistency Coordinator

SUBJECT: Consistency Determination Submission for a Modification to the Existing Authorized Shore Protection Project for West Onslow Beach and New River Inlet (Topsail Beach) (DCM#20060059)

LOCATION: Topsail Island, Onslow and Pender Counties, North Carolina

Please comment on the above document by **October 20, 2006**. Also attached is a CD titled "*Draft Integrated GRR and EIS Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach)*". Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or e-mail me at: "stephen.rynas@ncmail.net".

---

**REPLY**

No Comment.  
 This office supports the project as proposed.  
 Comments to this project are attached.  
 This office objects to the project as proposed.

Signed: \_\_\_\_\_

*John Fear*

Date: \_\_\_\_\_

*10-17-06*

---

**CORRECTIONS**

Please identify any corrections, additions, or deletions that should be made in terms of contact information.

---

**RETURN COMPLETED FORM**

to

Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421



RECEIVED  
SEP 23 2006

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

Michael F. Easley, Governor

Charles S. Jones, Director

William G. Ross Jr., Secretary

MEMORANDUM

September 23, 2006

RECEIVED

ER06-2513  
A (NO) NCH/A  
10-17-06

TO: ReneeGledhill-Early  
State Historic Preservation Office  
4617 Mail Service Center  
Raleigh, NC 27699-4617

Morehead City DCM

FROM: Stephen Rynas, AICP; Federal Consistency Coordinator

10/11/06

SUBJECT: Consistency Determination Submission for a Modification to the Existing Authorized Shore Protection Project for West Onslow Beach and New River Inlet (Topsail Beach) (DCM#20060059)

LOCATION: Topsail Island, Onslow and Pender Counties, North Carolina

Please comment on the above document by **October 20, 2006**. Also attached is a CD titled "Draft Integrated GRR and EIS Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach)". Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or e-mail me at: "stephen.rynas@ncmail.net".

REPLY

X

No Comment.

\_\_\_\_\_

This office supports the project as proposed.

\_\_\_\_\_

Comments to this project are attached.

\_\_\_\_\_

This office objects to the project as proposed.

Signed: Renee Gledhill-Early

Date: 10.20.06

CORRECTIONS

Please identify any corrections, additions, or deletions that should be made in terms of contact information.

RETURN COMPLETED FORM

to

Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421

SEP 27 2006



North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor  
William G. Ross Jr., Secretary

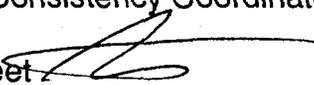
Division of Marine Fisheries

Preston P. Pate Jr., Director

**MEMORANDUM**

**RECEIVED**  
OCT 23 2006

**TO:** Stephen Rynas  
Federal Consistency Coordinator **Morehead City DCM**

**FROM:** Mike Street 

**DATE:** October 20, 2006

**SUBJECT:** Shore Protection Project for West Onslow Beach and New River Inlet  
Modifications – DCM # 20060059

Attached is the Divisions' reply for the above referenced project. If you have any questions, please do not hesitate to contact me.

MS/sw

3441 Arendell Street, P.O. Box 769, Morehead City, North Carolina 28557  
Phone: 252 726-7021 \ FAX: 252 727-5127 \ Internet: www.ncdmf.net

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

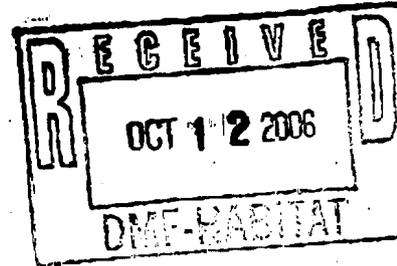
Michael F. Easley, Governor

Charles S. Jones, Director

William G. Ross Jr., Secretary

MEMORANDUM

October 12, 2006



TO: Mike Street  
NCDENR - Division of Marine Fisheries  
P.O. Box 769  
Morehead City, NC 28557-0769

FROM: Stephen Rynas, AICP; Federal Consistency Coordinator

SUBJECT: Consistency Determination Submission for Modification to the Existing Authorized Shore Protection Project for West Onslow Beach and New River Inlet (Topsail Beach) (DCM#20060059)

LOCATION: Topsail Island, Onslow and Pender Counties, North Carolina

Please comment on the above document by **October 20, 2006**. Also attached is a CD titled "Draft Integrated GRR and EIS Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach)". Your responses will assist us in determining whether the proposed project would be consistent with the State's Coastal Management Program. If the proposed project does not conform to your requirements, please identify the measures that would be necessary to bring the proposed project into conformance. If you have any additional questions regarding the proposed project you may contact me at 252-808-2808 or e-mail me at: "stephen.rynas@ncmail.net".

REPLY

- No Comment.
- This office supports the project as proposed.
- Comments to this project are attached.
- This office objects to the project as proposed.

Signed: [Signature]

Date: 10/19/06

CORRECTIONS

Please identify any corrections, additions, or deletions that should be made in terms of contact information.

RETURN COMPLETED FORM

to  
Stephen Rynas, Federal Consistency Coordinator  
NC Division of Coastal Management  
400 Commerce Avenue  
Morehead City, NC 28557-3421





North Carolina Department of Environment and Natural Resources

**Division of Coastal Management**

Michael F. Easley, Governor

**Charles S. Jones, Director**

William G. Ross Jr., Secretary

November 7, 2006

**RECEIVED**

NOV - 9 2006

**REGULATORY**  
WILM. FLD. OFC.

Jenny Owens

Environmental Resources Section  
Wilmington District Office  
US Army Corps of Engineers  
P.O. Box 1890  
Wilmington, NC 28402-1890

**SUBJECT: CD06-054 - Consistency Concurrence for Proposed Shore Protection Project at Topsail Beach, Onslow and Pender Counties, North Carolina (DCM#20060059)**

Dear Ms. Owens:

The Division of Coastal Management (DCM) received (June 28, 2006) a consistency determination from the US Army Corps of Engineers (Corps) finding that the proposed establishment of a sand dune fronted by a beach berm at West Onslow Beach and New River Inlet (Topsail Beach) in Onslow and Pender Counties would be consistent with the State's coastal management program. The purpose of the project is to add sand along approximately 26,200 linear feet of beach to provide added protection from storm events such as hurricanes. The project was filed incomplete on July 12, 2006 and was subsequently filed complete on September 13, 2006 upon the receipt of additional information.

North Carolina's coastal zone management program consists of, but is not limited to, the Coastal Area Management Act, the State's Dredge and Fill Law, Chapter 7 of Title 15A of North Carolina's Administrative Code, and the land use plan of the County and/or local municipality in which the proposed project is located. It is the objective of the Division of Coastal Management (DCM) to manage the State's coastal resources to ensure that proposed Federal activities would be compatible with safeguarding and perpetuating the biological, social, economic, and aesthetic values of the State's coastal waters.

To solicit public comments, DCM circulated a description of the proposed project to State agencies that would have a regulatory interest. A public notice was published in the "*Wilmington Star News*" on September 20, 2006. No comments asserting that the proposed activity would be inconsistent with the State's coastal management program were received. A copy of the responses received has been attached for reference.

DCM has reviewed the submitted information pursuant to the management objectives and enforceable policies of Subchapters 15A NCAC 07H and 15A NCAC 07M of Chapter 7 of Title 15A of North Carolina's Administrative Code which are a part of the State's certified coastal management program and concurs, as conditioned below, that the proposed Federal activity is consistent, to the maximum extent practicable, with the enforceable policies of North Carolina's coastal management program.

400 Commerce Avenue, Morehead City, North Carolina 28557-3421  
Phone: 252-808-2808 \ FAX: 252-247-3330 \ Internet: [www.nccoastalmanagement.net](http://www.nccoastalmanagement.net)

- In order to be found consistent with North Carolina's coastal management program, prior to initiating any beach disposal activities inland of the first line of stable vegetation; the Corps shall, if required, obtain an approval of an erosion and sediment control plan for the proposed project from the North Carolina Division of Land Resources.
- In order to be found consistent with North Carolina's coastal management program, prior to initiating any beach disposal activities Corps shall, if required, obtain a Section 401 Water Quality Certification from the North Carolina Division of Water Quality.
- In order to be found consistent with North Carolina's coastal management program, the following mitigations measures shall apply:
  - The Corps shall adhere to the April 1<sup>st</sup> through August 31<sup>st</sup> bird nesting moratorium. Should the Corps believe that it would be necessary to conduct work during the moratorium period, the Corps shall consult with and obtain the approval of the North Carolina Wildlife Resources Commission prior to initiating any work within this period.
  - The Corps shall consult with and obtain the approval of the North Carolina Wildlife Resources Commission prior to any beach deposition during the months of March and April to minimize adverse impacts to macro invertebrates located on the beach.
  - Should hopper dredges be used, the use of hopper dredges shall be limited to the months of January through March to minimize adverse impacts to sea turtles. Additionally, qualified sea turtle observers shall monitor and direct dredging operations to minimize adverse impacts to sea turtles. In the event that the Corps proposes to use hopper dredges outside this period, the Corps must first coordinate this with the Wildlife Resources Commission and DCM.
  - Sea turtles activity shall be monitored from May 1<sup>st</sup> to September 15<sup>th</sup> to assure that dredging operations will be conducted in such a manner that sea turtle nesting would not be adversely impacted by beach deposition.
  - Prior to the initiation of beach disposal, the Corps shall contact North Carolina Shellfish Sanitation to establish if a swimming advisory should be posted.
  - Prior to the initiation of any beach nourishment activity, the existing normal high water line must be surveyed, and a copy provided to the Division of Coastal Management. If nourishment activity is not initiated within sixty days (60) and/or there is a major shoreline change prior to the commencement of beach nourishment, a new survey must be conducted.
  - Prior to the initiation of any beach nourishment activity above the normal high water contour (NHW), easements from all property owners must be obtained.
  - In accordance with 15A NCAC 7H .0305(f), should the proposed project be considered "large scale" (ie. the project places more than a total volume of 200,000 cubic yards of sand at an average ratio of more than 50 cubic yards of sand per linear foot of shoreline; or the project is a Hurricane Protection project constructed by the U.S. Army Corps of Engineers), the Corps will first need to establish the first line of stable natural vegetation that exists within the project boundary immediately before project initiation. The establishment of this vegetation line, which must be coordinated with the Division of Coastal Management, must be conducted no more than 60 days prior to project initiation.
  - Only beach quality sand shall be used for beach nourishment purposes. Should the dredging operations encounter sand deemed non-compatible with native grain size or sorting characteristics of the native beach, the dredge operator shall immediately cease operation and contact the NCDCM. Dredge operations will resume only after resolution of the issue of sand compatibility.
  - The Corps should be advised that the Coastal Resources Commission (CRC) is currently developing new sediment compatibility standards. Once these new standards are passed by the CRC, and assuming these standards are approved by OCRM as a federally approved component of the State's coastal management program, these new standards

will apply to future beach nourishment projects from that point forward. The Corps is strongly encouraged to closely follow the development of these new standards. The Corps should also incorporate any such standards into the planning process for the proposed project.

- Land-based equipment necessary for beach nourishment work shall be brought to the site through existing accesses. Should the work result in any damage to existing accesses, the accesses must be restored to pre-project conditions immediately upon project completion in that specific area.
- Dune disturbance shall be kept to a minimum. Any alteration of existing dunes shall be coordinated with the Division of Coastal Management as well as the pertinent property owner. All disturbed areas must be restored to original contours and configuration with reference to the surveyed normal high water line and shall be revegetated immediately following project completion in that specific area.
- The Corps shall implement and comply with all the mitigation measures (unless superseded by the mitigation measures stated above) contained in the Draft Integrated General Reevaluation Report and Environmental Impact Statement, Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach) dated June 2006. This adherence includes all associated attachments, such as Appendix I.

Should the proposed action be modified, a revised consistency determination could be necessary. This might take the form of either a supplemental consistency determination pursuant to 15 CFR 930.46, or a new consistency determination pursuant to 15 CFR 930.36. Likewise, if further project assessments reveal environmental effects not previously considered by the proposed development, a supplemental consistency certification may be required. If you have any questions, please contact Stephen Rynas at 252-808-2808. Thank you for your consideration of the North Carolina Coastal Management Program.

Sincerely,



Doug Huggett  
Manager, Major Permits and Consistency Unit

Cc: Jim Gregson, Division of Coastal Management  
Noelle Lutheran, NC Department of Cultural Resources  
Steve Everhart, NC Wildlife Resources Commission  
Mike Street, NC Division of Marine Fisheries

No. 2999 P. 2

August 28, 2006

Ms. Jan Brodmerkel  
Wilmington District  
Corps of Engineers  
P.O. Box 1890  
Wilmington, NC 28402-1890

RE: West Onslow Beach and New River Inlet (Topsail Beach) – Draft Integrated General Reevaluation Report and Environmental Impact Statement, Shore Protection

Dear Ms. Brodmerkel,

Please accept the following brief comments regarding the aforementioned shore protection project and Draft Environmental Impact Statement (DEIS). Environmental Defense is a national, 501(c)(3) conservation organization dedicated to finding workable solutions to environmental issues.

In general, Environmental Defense is not offering support nor requesting denial of the Topsail Beach project at this time, due to the draft nature of the document and outstanding information (e.g., completion of the hardbottom survey, and benthic characterization of borrow sites) that is needed to offer such a directed assessment. We do have several specific suggestions regarding various topics as detailed below.

#### Hard bottom

The North Topsail Beach PDT is currently reviewing the hard bottom resources in the vicinity of this project, which are extensive. These hard bottom outcrops are close enough to shore and to the projected depth of closure that an alternative profile has been discussed in order to avoid likely impacts from placement of fill material. Although we understand that preliminary information indicates that some of the hard bottom areas in the project vicinity are ephemeral in nature and beyond the depth of closure, we strongly suggest that the Corps staff on both projects maintain a dialogue on this topic once the nearshore hard bottom survey is completed, as new data might dictate the use of a different profile.

Another issue to be considered as both the above hard bottom survey and the proposed benthic characterization of borrow sites are completed is the vicinity of hard bottom patches to the proposed borrow areas. The range of the borrow areas – from 1 mile to 5.5 miles offshore – subjects those

Aug. 28. 2006 5:26PM

P. 3

residing in state waters to the use standards rules of the Coastal Resources Commission regarding use standards for mining activities. Specifically, 15A NCAC 07H .0208 (b)(12)(A)(iv) states:

"Mining activities shall not be conducted on or within 500m of significant biological communities, such as high relief hardbottom areas. High relief for this standard is defined as relief greater than or equal to one-half meter per five meters of horizontal distance."

As you may or may not be aware, the engineering firm contracted by the Town of N. Topsail Beach has proposed a 400ft (versus a 500m) buffer for the existing hard bottom adjacent to the proposed borrow sites for this project. As more data are collected regarding the Topsail Beach project, we strongly suggest that the Corps examine those data with this rule in mind.

#### Mitigation and Monitoring

There does not appear to be a section regarding mitigation for damages to natural resources in the DEIS as a result of the project. We trust that this is an oversight which will be corrected in the final EIS.

Environmental Defense agrees with the US Fish and Wildlife Service regarding funding for directed mitigation and monitoring efforts that would provide a better understanding of life history characteristics of living marine resources that stand to be impacted by beach engineering projects. In particular, it appears that information is lacking on ghost crab (*Ocyropsis* spp.) reproductive behavior, and given that shore protection projects generally include dune construction which impacts that habitat, such studies would certainly contribute to effective management and mitigation measures. We strongly suggest inclusion of studies which would examine the cumulative, non-lethal effects of sand placement on intertidal invertebrates -- impacts to foraging success, reproductive behavior, etc. -- which could ideally be conducted in a laboratory mesocosm setting.

#### Cumulative Impacts

We disagree (and have disagreed in the past) with the method used in Appendix J (Tables J-1 through J-3) to determine borrow site impacts. While this may be a conservative method by the Corps' standards, it is not a precautionary method and does not take into account other proposed activities (such as the construction of an undersea warfare training range by the US Navy in Onslow Bay) or differences in habitat quality. We strongly recommend that funding be directed toward the development of a programmatic EIS for the Wilmington district's beach nourishment projects, as well as beach disposal projects. We recognize the difficulty in projecting reasonably foreseeable actions, and feel that a programmatic EIS which could be updated on a regular basis as "unforeseen" projects are manifested would be a vast improvement over the current project-by-project approach. Also, a finite amount of compatible material exists for such projects, which should also be considered.

#### Sediment Compatibility

As the Corps is well aware, the Coastal Resources Commission is in the process of finalizing proposed sediment compatibility standards for beach fill projects. This project would be subject to those rules, should it move forward and we assume that the standards for fine material, coarse material and carbonate content are being kept in mind as further characterization of borrow areas occurs. Finally, we are supportive of the Corps' effort to develop a borrow area contingency plan, and look forward to

No. 2999

Aug. 28. 2006 5:26PM

evaluating this in the final EIS. Presumably this would include mitigation in the event of unexpectedly encountering incompatible material.

As always, Environmental Defense very much appreciates the opportunity to comment on activities affecting public trust resources, and your consideration of these comments.

Sincerely,

Michelle A. Duval, Ph.D.  
Scientist



Sincerely,

No. 2999 P. 4

Aug. 28. 2006 5:27PM

---

**From:** Ron Sechler [mailto:[ron.sechler@noaa.gov](mailto:ron.sechler@noaa.gov)]  
**Sent:** Tuesday, June 12, 2007 3:55 PM  
**To:** Owens, Jennifer L SAW  
**Subject:** Re: Topsail Beach Draft EIS

Jennifer,

The National Marine Fisheries Service (NMFS) is coordinating closely with the US Army Corps of Engineers (COE), Wilmington District, regarding our ongoing review of the Draft Topsail Beach (West Onslow) EIS. NMFS has indicated the need for an EFH assessment for this project and has coordinated with the COE regarding identification and clarification of potential hard/live bottom habitat offshore of Topsail Beach. We will continue to cooperate with the COE to develop a project that meets the applicants needs while protecting our trust resources.

Best Regards,

Ron Sechler  
National Marine Fisheries Service  
Habitat Conservation Division  
101 Pivers Island Road  
Beaufort, North Carolina 28516  
Phone: 252-728-5090  
Fax: 252-728-8728  
Email: [ron.sechler@noaa.gov](mailto:ron.sechler@noaa.gov)

Owens, Jennifer L SAW wrote:

Ron-

I don't believe that we ever received any written comments from you on our Draft Topsail Beach (West Onslow) EIS. I know coordination with you has been ongoing regarding nearshore hardbottoms and I believe that based on my last conversation with Doug Piatkowski that you are satisfied with the way we intend on addressing the nearshore survey results in our Final EIS. We received the benthic report last week and will be incorporating that data in the Final report as well. Basically, the report indicates that our proposed offshore borrow sites exhibit less diversity and abundance than offshore areas to the north and south (Dare County and Kure Beach). Our Draft EIS assumed that the Topsail offshore areas would be very similar to those areas offshore of Dare County and Kure Beach, so we'll be slightly modifying the text to better represent the findings - but our impacts will be essentially the same. The Final EIS will include the findings and a brief discussion of this most recent benthic sampling and the benthic report will be included as an appendix to the EIS.

The Final EIS will include all comments received from the agencies on the Draft EIS and although I know you were waiting for the results of the nearshore and benthic surveys before providing any significant comments, I would like to

include documentation in the Final EIS that indicates that we have been coordinating with your office. So would it be possible for you to provide a brief statement indicating that we have been coordinating with you throughout the process? An email will work just fine. As an example, Fritz Rohde just wrote "The Division of Marine Fisheries is working very closely with the Corps of Engineers regarding this project."

Let me know if you have any questions. We're working to get the Final EIS out soon and will start our internal review of the report next week.

Thanks-  
Jenny Owens  
Environmental Resources Section  
U. S. Army Corps of Engineers  
Wilmington, NC  
phone: 910-251-4757  
fax: 910-251-4653



IN REPLY REFER TO

DEPARTMENT OF THE ARMY  
WILMINGTON DISTRICT, CORPS OF ENGINEERS  
P. O. BOX 1890  
WILMINGTON, NORTH CAROLINA 28402-1890

September 6, 2006

Environmental Resources Section

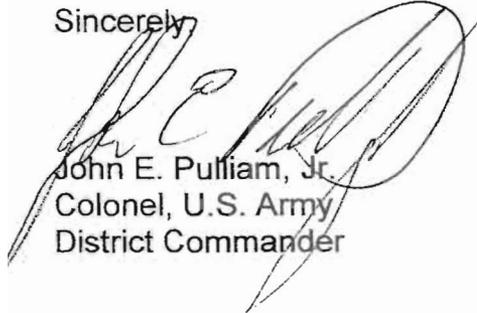
Mr. Stephen Rynas  
North Carolina Department of Environment  
and Natural Resources  
Division of Coastal Management  
400 Commerce Avenue  
Morehead City, North Carolina 28557

Dear Mr. Rynas:

This is in reference to your letter of July 12, 2006, which indicated that the U. S. Army Corps of Engineers provided the Division of Coastal Management (DCM) with an incomplete consistency submission for the proposed shore protection project at Topsail Beach, as described in the Integrated General Reevaluation Report and Environmental Impact Statement, Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach) (DEIS). As you suggested, we have modified Section 10.12 of the DEIS and it is enclosed for your reference. Although, we believe that the majority of your comments may be resolved with the revised Section 10.12, the request for graphics to depict resources discussed in Subchapters 7H and 7M have not been completed and will be included in the final EIS. For your immediate reference, we refer you to the graphics included in the Topsail Beach Land Use Plan Update, dated 2005, which may be viewed at: [http://www.topsailbeach.org/index.asp?Type=B\\_BASIC&SEC={OEB10315-1719-4CF2-B081-90B11AA74CEF}](http://www.topsailbeach.org/index.asp?Type=B_BASIC&SEC={OEB10315-1719-4CF2-B081-90B11AA74CEF}).

In regard to sequencing the permitting and concurrence process, we fully understand that the DCM does not issue consistency concurrence until all required State approvals have been obtained. Although we do not expect to receive consistency concurrence until State approvals have been received, we believe that the proposed shore protection project at Topsail Beach is consistent with the approved North Carolina Coastal Management Program and would like to initiate Consistency Review of the project with this submission. Please let us know if the previously submitted DEIS and the enclosed revised Section 10.12 of the DEIS meet the information requirements of 15 CFR 930.39.

We request that comments be provided within 30 days or by October 11, 2006. If you have questions, please contact Jenny Owens, Environmental Resources Section, at 910-251-4757.

Sincerely,  
  
John E. Pulliam, Jr.  
Colonel, U.S. Army  
District Commander

Enclosure

Copy Furnished:

Mr. Charles Jones  
North Carolina Department of Environment  
and Natural Resources  
Division of Coastal Management  
400 Commerce Avenue  
Morehead City, North Carolina 28557

**Revised Section 10.12 from Draft Integrated General Reevaluation Report and Environmental Impact Statement Shore Protection, West Onslow Beach and New River Inlet (Topsail Beach), North Carolina, dated June 2006 -**

**Note: Requirements of the Coastal Management Program are shown below in italic font and addressed in normal font.**

**10.12 North Carolina Coastal Management Program**

The proposed action will be conducted in the designated coastal zone of the State of North Carolina. Pursuant to the Federal Coastal Zone Management Act (CZMA) of 1972, as amended (PL 92-583), *Federal activities are required to be consistent, to the maximum extent practicable, with the Federally approved coastal management program of the state in which their activities will occur.* The components of the proposed action have been evaluated and determined to be consistent with the NC Coastal Management Program and local land use plans. Concurrence with this determination is being requested from the N.C. Division of Coastal Management.

**10.12.1 Areas of Environmental Concern (ISA NCAC *01M .0204*)**

The selected plan would take place in areas under the North Carolina Coastal Management Program designated as AEC (15A NCAC 07H). Specifically, the activities may affect the following *ABCS*: Coastal Wetlands, Estuarine Waters, Public Trust Areas, Coastal Shorelines, and Ocean Hazard Areas. The following determination has been made regarding the consistency of the proposed project with the State's management objective for each AEC affected:

Coastal Wetlands. *Coastal wetlands are defined as any salt marsh or other marsh subject to regular or occasional flooding by tides, including wind tides (whether or not the tide waters reach the marshland areas through natural or artificial watercourses), provided this shall not include hurricane or tropical storm tides. The highest priority of use shall be allocated to the conservation of existing coastal wetlands. Second priority of coastal wetland use shall be given to those types of development activities that require water access and cannot function elsewhere. Unacceptable land uses may include, but would not be limited to, the following examples: restaurants and businesses, residences, apartments, motels, hotels, and trailer parks; parking lots and private roads and highways; and factories. Examples of acceptable land uses may include utility easements, fishing piers, docks, and agricultural uses, such as farming and forestry drainage, as permitted under North Carolina's Dredge and Fill Act or other applicable laws. The management objective is to conserve and manage coastal wetlands so as to safeguard and perpetuate their biological, social, economic and esthetic values; to coordinate and establish a management system capable of conserving and utilizing coastal wetlands as a natural resource essential to the functioning of the entire estuarine system. Although dredge pipelines may cross coastal wetlands during renourishment events, impacts would be minor and temporary and therefore, consistent with the management objective for this ABC.*

Estuarine Waters. *Estuarine waters are defined in G.S. 113A-113(b)(2) to include all the*

waters of the Atlantic Ocean within the boundary of North Carolina and all the waters of the bays, sounds, rivers and tributaries thereto seaward of the dividing line between coastal fishing waters and inland fishing waters. The highest priority of use shall be allocated to the conservation of estuarine waters and their vital components. Second priority of estuarine waters use shall be given to those types of development activities that require water access and use which cannot function elsewhere such as simple access channels; structures to prevent erosion; navigation channels; boat docks, marinas, piers, wharfs, and mooring pilings. The management objective is to conserve and manage the important features of estuarine waters so as to safeguard and perpetuate their biological, social, esthetic, and economic values; to coordinate and establish a management system capable of conserving and utilizing estuarine waters so as to maximize their benefits to man and the estuarine and ocean system. The selected plan would not involve estuarine waters and therefore will not be detrimental to estuarine waters.

Public Trust Areas. These areas include (1) waters of the Atlantic Ocean and the lands thereunder from the mean high water mark to the 3-mile limit of state jurisdiction, (2) all natural bodies of water subject to measurable lunar tides, and all lands thereunder, to the mean high water mark, and (3) all navigable natural bodies of water, and all lands thereunder, except privately owned lakes to which the public has no right of access. Acceptable uses include those that are consistent with protection of the public rights for navigation and recreation, as well as conservation and management to safeguard and perpetuate the biological, economic, and esthetic value of these areas. The management objective is to protect public rights for navigation and recreation and to conserve and manage the public trust areas so as to safeguard and perpetuate their biological, economic and esthetic value. Placement of beach compatible material on Topsail Beach will result in a wider, more stable beach, thus enhancing recreational opportunities, biological habitat and economic and aesthetic values. For a more thorough discussion of project impacts, please see Section 8 Environmental Effects, of the DEIS, specifically Sections 8.05 Recreational and Esthetic Resources, 8.04 Socio-Economic Resources, 8.01 Marine Environment, and 8.02 Terrestrial Environment. The selected plan is an acceptable use within public trust areas and will not be detrimental to the biological and physical functions of Public Trust Areas.

Coastal Shorelines. The Coastal Shorelines category includes estuarine shore lines and public trust shorelines. Estuarine shorelines AEC are those non-ocean shorelines extending from the normal high water level or normal water level along the estuarine waters, estuaries, sounds, bays, fresh and brackish waters, and public trust areas. Acceptable uses shall be limited to those types of development activities that will not be detrimental to the public trust rights and the biological and physical functions of the estuarine and ocean system. The management objective is to ensure that shoreline development is compatible with both the dynamic nature of coastal shorelines as well as the values and the management objectives of the estuarine and ocean system. Other objectives are to conserve and manage the important natural features of the estuarine and ocean system so as to safeguard and perpetuate their biological, social, esthetic, and economic values; to coordinate and establish a management system capable of conserving and utilizing these shorelines so as to maximize their benefits to the estuarine

*and ocean system and the people of North Carolina.* The selected plan would not involve estuarine shorelines and therefore will not be detrimental to these areas. Please see the paragraph above regarding Public Trust Areas and the references to pertinent sections of the DEIS for information regarding public trust shorelines. Additionally, as discussed in Appendix J (Cumulative Effects) of the DEIS, on a regional basis, renourishment projects add material to the longshore transport system, thus providing positive impacts. Although a regional sediment budget analysis has not been completed, it is expected that the proposed action and the combined effects of all other existing and proposed beach projects will have a minimal effect on shoreline and sand transport. Therefore, the proposed project would not be expected to negatively impact coastal shorelines.

*Ocean Hazard Areas. These areas are considered natural hazard areas along the Atlantic Ocean shoreline where, because of their special vulnerability to erosion or other adverse effects of sand, winds, and water, uncontrolled or incompatible development could unreasonably endanger life or property. Ocean hazard areas include beaches, frontal dunes, inlet lands, and other areas in which geologic, vegetative and soil conditions indicate a substantial possibility of excessive erosion or flood damage. The specific Ocean Hazard Areas and potential project impacts are described below.*

*Ocean Erodible Area. This is the area in which there exists a substantial possibility of excessive erosion and significant shoreline fluctuation. The seaward boundary of this area is the mean low water line. The landward extent of this area is determined as follows:*

*(a) a distance landward from the first line of stable natural vegetation to the recession line that would be established by multiplying the long-term annual erosion rate times 60, provided that, where there has been no long-term erosion or the rate is less than two feet per year, this distance shall be set at 120 feet landward from the first line of stable natural vegetation. For the purposes of this Rule, the erosion rates shall be the long-term average based on available historical data. The current long-term average erosion rate data for each segment of the North Carolina coast is depicted on maps entitled "Long Term Annual Shoreline Change Rates updated through 1998 and approved by the Coastal Resources Commission on January 29th, 2004 (except as such rates may be varied in individual contested cases, declaratory or interpretive rulings). Erosion rates are variable along Topsail Beach. See Appendix D (Figure D-5) for a comparison of the shoreline rate change, referenced above, to recently computed erosion rates at Topsail Beach, (b) a distance landward from the recession line established in Sub-Item (1)(a), above, to the recession line that would be generated by a storm having a one percent chance of being equaled or exceeded in any given year.*

Construction of the proposed beach template, which consists of a 12-foot elevation dune (NGVD) and 50-foot wide berm, will result in a wider, more stable beach, thus providing significant benefits to the ocean erodible area. Beach-related work, including the discharge of dredged material, the associated temporary operation of heavy equipment, and placement of dredge pipeline, would not cause any significant adverse effects to the ocean erodible area.

*High Hazard Flood Area. This is the area subject to high velocity waters (including, but*

*not limited to, hurricane wave wash) in a storm having a one percent chance of being equaled or exceeded in any given year, as identified as zone VI-30 on the flood insurance rate maps of the Federal Insurance Administration, U.S. Department of Housing and Urban Development. Placement of beach compatible material on the beach would provide short term protection benefits for high hazard flood areas.*

*Inlet Hazard Area. The inlet hazard areas are natural-hazard areas that are especially vulnerable to erosion, flooding and other adverse effects of sand, wind, and water because of their proximity to dynamic ocean inlets. This area shall extend landward from the mean low water line a distance sufficient to encompass that area within which the inlet will, based on statistical analysis, migrate, and shall consider such factors as previous inlet territory, structurally weak areas near the inlet (such as an unusually narrow barrier island, an unusually long channel feeding the inlet, or an overwash area), and external influences such as jetties and channelization. In all cases, this area shall be an extension of the adjacent ocean erodible area and in no case shall the width of the inlet hazard area be less than the width of the adjacent ocean erodible area. While components of the proposed action may involve the movement of equipment across these areas, no construction or periodic nourishment activities are proposed for these areas, and no adverse impacts are anticipated.*

#### **10.12.2 Use Standards (ISA NCAC 07H .0208)**

Primary Nursery Areas (PNA). With the exception of navigation channels, these include most estuarine waters of the project vicinity, including those bounded by New River (north), Mason Inlet (south), AIWW (west), and the landward side of Topsail Island. Protection of juvenile fish is provided in these areas through prohibition of many commercial fishing activities, including the use of trawls, seines, dredges, or any mechanical methods of harvesting clams or oysters (<http://www.ncfisheries.net/rules.htm>; 15 NC Administrative Code 3B .1405). Primary nursery Areas will not be directly impacted by this project. However, PNA's located adjacent to the New Topsail Inlet vicinity may experience indirect and short-term elevated turbidity levels from the nourishment operation on the shoreface. These turbidity effects are dependent on the location of the outflow pipe and the direction of longshore and tidal currents. Considering these elevated turbidity levels will be short-term and within the range of elevated turbidity from natural storm events, the impacts to state-designated PNA's are insignificant (DEIS Section 8.01.8.7). Additionally, the project area is completely within open shellfish waters, so the potential for having effluent from closed shellfish areas returning to open shellfish waters, does not exist.

Outstanding Resource Waters (ORW). Waters of the AIWW from Daybeacon # 17 (between Chadwick Bay and Alligator Bay) to Morris Landing (south of Spicer Bay) and waters of Topsail Sound southward from approximately New Topsail Inlet to Middle Sound are classified as "SA ORW." As stated above, waters in the vicinity of New Topsail Inlet may experience temporary elevated turbidities over existing conditions during initial construction and renourishment. Monitoring studies done on the impacts of offshore dredging indicate that sediments suspended during offshore are generally

localized and rapidly dissipate when dredging ceases (Naqvi and Pullen, 1982; Bowen and Marsh, 1988, and Van Dolah et al., 1992). Overall water quality impacts of the proposed action are expected to be short-term and minor. Living marine resources dependent upon good water quality should not experience significant adverse impacts due to water quality changes. Therefore, no impacts to ORW in the vicinity of the project, with the exception of minor, short-term impacts in the vicinity of New Topsail Inlet, - would be expected. See Section 8.07.2 of the DEIS for more information on water quality.

Submerged Aquatic Vegetation (SAV). As depicted in the DEIS, **Table 8.1 Categories of Essential Fish Habitat and Habitat Areas of Particular Concern in the Project Vicinity and Potential Impacts**, SAV does not occur in or near the project vicinity and would not be directly or indirectly impacted by the proposed project.

Please see section 10.12.8 for compliance with 15A NCAC 07H. 0208(b)(12) Submerged Lands Mining.

### **10.12.3 Shoreline Erosion Policies eISA NCAC 07M .0202)**

*Pursuant to Section 5, Article 14 of the North Carolina Constitution, proposals for shoreline erosion response projects shall avoid losses to North Carolina's natural heritage. All means should be taken to identify and develop response measures that will not adversely affect estuarine and marine productivity.* As discussed in detail in Section 8.01 Marine Environment and Appendix J Cumulative Effects of the DEIS, the project is not expected to result in adverse impacts to estuarine and marine productivity.

*The public right to use and enjoy the ocean beaches must be protected The protected uses include traditional recreational uses (such as walking, swimming, surf-fishing, and sunbathing) as well as commercial fishing and emergency access for beach rescue services.* The Army Corps of Engineers has several requirements that must be met in order to fully cost share in a shore protection project (see ER 1105-2-100 and ER 1165-2-130). One of these requirements is that the beaches must be available for public use. As described in ER 1165-2-130 (Federal Participation in Shore Protection, paragraph 6.h.) public use implies reasonable access and parking. The Corps' Wilmington District, additionally, has developed more specific public access and parking requirements for participation in shore protection projects within the District's boundaries of North Carolina and Virginia. Public Access and Parking is discussed in detail in Appendix F of the DEIS.

*Erosion response measures designed to minimize the loss of private and public resources to erosion should be economically, socially, and environmentally justified.* The DEIS demonstrates that the proposed shore protection project at Top sail Beach is economically, socially and environmentally justified. Pertinent sections of the DEIS include: Section 7.08 Economics of the Selected Plan, Section 8.00 Environmental Effects, Appendix B Economic Analyses, Appendix I Biological Assessment, and Appendix J Cumulative Effects.

*The following are required with state involvement (funding or sponsorship) in beach restoration and sand renourishment projects: The entire restored portion of the beach shall be in permanent public ownership and it shall be a local government's responsibility to provide adequate parking, public access, and services for public recreational use of the restored beach. Public ownership of the shore in the town of Topsail Beach includes dedicated roads and lands below mean high water (MHW) owned by the State of North Carolina. Other parcels are owned by the Town of Topsail Beach, including the following: Coastal Area Management Act (CAMA) public access points, ends of all roads, and six beachfront parcels maintained for public use. The primary ownership of the 363 oceanfront parcels is private, including one fishing pier. The entire restored portion of the beach is in public ownership. Other information related to ownership of the shoreline is contained in Appendix M - Real Estate. Parking, public access and services for the public recreational use of the restored beach are addressed in preceding paragraphs, above. Additionally, details are available in Appendix F of the DEIS.*

#### **10.12.4 Shorefront Access Policies (ISA NCAC 07M .0300)**

*Pursuant to 15A NCAC 07M .0300, the public has traditionally and customarily had access to enjoy and freely use the ocean beaches and estuarine and public trust waters of the coastal region for recreational purposes and the State has a responsibility to provide continuous access to these resources. It is the policy of the State to foster, improve, enhance and ensure optimum access to the public beaches and waters of the 20 county coastal region. Access shall be consistent with rights of private property owners and the concurrent need to protect important coastal natural resources such as sand dunes and coastal marsh vegetation. At Topsail Beach, public access from public roads and streets to the beach are provided at 22 designated access points. There are a total of 374 parking spaces available to the general public near these access points. In addition, the town has indicated in a more recent count during the summer of 2004, there may be at least 300 additional parking spaces unaccounted for on the rights of way (ROW) along town streets. (Appendix F). As previously stated, the Army Corps of Engineers has several requirements that must be met in order to fully cost share in a shore protection project (see ER 1105-2-100 and ER 1165-2-130). ER 1165-2-130 stipulates that in order to qualify for Federal cost sharing of Hurricane and Storm Damage Reduction projects, the local community must, at a minimum, provide public access every one half mile and parking with a one quarter mile radius of those access points. Parking must satisfy the lesser of beach capacity or peak hour demand for that beach community. The peak demand hour had been previously identified as noon on the 4th of July holiday by USACE. The Wilmington District has further established a ten-space minimum for parking lots within one-quarter mile of each required public access point (Appendix F of the DEIS).*

#### **10.12.5 Mitigation Policy (ISA NCAC 07M .0701)**

*It is the policy of the State of North Carolina to require that adverse impacts to coastal lands and waters be mitigated or minimized through proper planning, site selection, compliance with standards for development, and creation or restoration of coastal resources. Coastal ecosystems shall be protected and maintained as complete and*

*functional systems by mitigating the adverse impacts of development as much as feasible by enhancing, creating, or restoring areas with the goal of improving or maintaining ecosystem function and areal proportion.* Section 7.03.6 Environmental Monitoring and Commitments of the DEIS, provides a brief summary of environmental commitments to protect listed species related to the construction and maintenance of the proposed project. Further information on the development and details of these commitments is contained in Appendix I, Biological Assessment. Additionally, recently, as a mitigation condition of the 401 water quality certificate for the Morehead City 933 project, the Corps participated in funding a study performed by Philip S. Kemp Jr., of the Carteret Community College, to investigate the feasibility of harvesting, holding, and culturing *Donax* spp. for resource enhancement aquaculture. The Corps will consider providing funds to continue this type of data collection in order to develop management guidelines and effective measures to mitigate identified impacts to these resources. Such a funding action would be fully coordinated with all concerned agencies. Lastly, hardbottoms may be present in the nearshore zone of Topsail Beach. To accurately assess potential impacts to hardbottom resources, a nearshore hardbottom survey, utilizing side-scan sonar and multi-beam sonar, will be completed prior to finalization of the EIS. Also a benthic characterization study of the proposed borrow sites will be completed prior to finalization of the EIS. The existing commitments with agencies, mitigation measures, and construction practices may be modified following results of the nearshore hardbottom survey, the benthic work, public review of the EIS, and resolution of comments received.

#### **10.12.6 Coastal Water Quality Policies (ISA - TCAC 07M .0800)**

*Pursuant to 15A NCAC 07M.0800, no land or water use shall cause the degradation of water quality so as to impair traditional uses of the coastal waters. Protection of water quality and the management of development within the coastal area is the responsibility of many agencies. The general welfare and public interest require that all state, federal and local agencies coordinate their activities to ensure optimal water quality.* Overall water quality impacts of the proposed action are expected to be short-term and minor. Living marine and estuarine resources dependent upon good water quality are not expected to experience significant adverse impacts due to water quality changes. A Section 401 Water Quality Certificate under the Clean Water Act of 1977 (PL 95-217), as amended, is required for the proposed project and will be requested from the North Carolina Division of Water Quality at the appropriate time. Project construction will not begin until a Water Quality Certification has been received. For a full discussion of water resources and potential project impacts, please see Sections 2.06 and Section 8.07 Water Resources, of the DEIS, which address hydrology, water quality and groundwater. Pursuant to Section 404 of the Clean Water Act, the impacts associated with the discharge of fill material into waters of the United States are discussed in the Section 404(b)(1) (PL. 95-217) Guidelines Analysis in Appendix G. Discharges associated with dredging in the offshore borrow areas are considered incidental to the dredging operation, and therefore, are not being considered as being a discharge addressed under the Section 404 (b)(1) Guidelines Analysis. Pursuant to the Sedimentation Pollution Control Act of 1973, a State approved soil erosion and sedimentation control plan would be implemented during construction to minimize soil loss and erosion.

**10.12.7 Policies On Beneficial Use And Availability Of Materials Resulting From The Excavation Or Maintenance Of Navigational Channels (ISA NCAC 07M .1100)**

*It is the policy of the State of North Carolina that material resulting from the excavation or maintenance of navigation channels be used in a beneficial way wherever practicable. Policy statement .1102 (a) indicates that "clean, beach quality material dredged from navigation channels within the active nearshore, beach, or inlet shoal systems must not be removed permanently from the active nearshore, beach, or inlet shoal system unless no practicable alternative exists. Preferably, this dredged material will be disposed of on the ocean beach or shallow active nearshore area where environmentally acceptable and compatible with other uses of the beach."* Several navigation channels are within the Topsail Beach project vicinity. They are the Atlantic Intracoastal Waterway (AIWW), New Topsail Inlet and Connecting Channels and New River Inlet. When practicable, beach compatible, maintenance dredged material from these navigation channels will be placed on the nourished beach. However, dredged material from navigation channels would be purely supplemental material that would help maintain the project profile.

**10.12.8 Policies On Ocean Mining (ISA NCAC 07M .1200) and ISA . CAC 07H. 0208(b)(12) Submerged Lands Mining**

*Mining activities impacting the federal jurisdiction ocean and its resources can, and probably would, also impact the state jurisdictional ocean and estuarine systems and vice-versa. Therefore, it is state policy that every avenue and opportunity to protect the physical ocean environment and its resources as an integrated and interrelated system will be utilized.* Cultural resources and hardbottom surveys of the offshore borrow areas have been completed. No single, isolated magnetic anomalies or acoustic targets were identified during the survey of the eight borrow areas and no further cultural resources studies are anticipated for the project. By letter of November 2, 2004, the North Carolina State Historic Preservation Officer concurred with the reported findings. Based on side scan sonar, no hardbottom was identified in the proposed borrow areas, and only 2 of the six borrow areas are within the vicinity of offshore hardbottom with the nearest distance to hardbottom being approximately 2,000 ft. Dredging impacts to the benthic populations of the marine ecosystem from turbidity are local and temporary but not permanent. Similarly, recent studies show that benthic impacts may be limited to the immediate vicinity of dredging operations. Also, to minimize impacts work will be performed between November 15 and April 30 of any given year, during times of low biological activity. A benthic characterization study is forthcoming and results of that survey will be discussed in the [mal EIS. Considering that: (1) no cultural resources sites are present in the area, (2) no hardbottoms were identified in or near the proposed offshore disposal sites, and (3) the effects of turbidity and sedimentation plumes on offshore hardbottom will be insignificant, the project is not expected to adversely impact the state jurisdictional ocean and estuarine systems. Please refer to the following sections of the DEIS for more detailed information: Section 2.01 Marine Environment, 2.05 Cultural Resources, 7.04.1 Borrow Area Use Plan, 8.01 Marine Environment, 8.06 Culmral Resources, Appendix I Biological Assessement, and Appendix J Cumulative Effects.

The proposed shore protection project at Topsail Beach conforms to the relevant enforceable policies of Subchapters 7H and 7M of Title 15A of North Carolina's Administrative Code.

### **10.12.9 Other State Policies**

The proposed project has been determined to be consistent with other state policies. These include:

North Carolina Mining Act. The removal of material from the offshore borrow areas that are within three miles of shore have been reviewed by the North Carolina Division of Land Resources and a determination has been made that removal of sand from the sea floor within the three miles territorial limits is not an activity that would be classified as mining under the North Carolina Mining Act (G. S. 74-7)

North Carolina Dredge and Fill Law (G.S. 113-229). *Pursuant to the North Carolina Dredge and Fill Law clean, beach quality material dredged from navigational channels within the active nearshore, beach or inlet shoal systems shall not be removed permanently from the active nearshore, beach or inlet shoal system. This dredged material shall be disposed of on the ocean beach or shallow active nearshore area where it is environmentally acceptable and compatible with other uses of the beach.* As previously discussed, when practicable, clean, beach quality material from maintenance dredging of navigation channels will be placed on the nourished beach at Topsail Beach. Any dredged material from navigation channels would be purely supplemental material that would help maintain the project profile.

### **10.12.10 Local Land Use Plans**

The shoreline at Topsail Beach is zoned "Residential." According to the *Town of Topsail Beach Core Land Use Plan, dated 2005*, "Topsail Beach is proud of its wide, sandy beaches that have benefited from an ongoing beach renourishment program. All areas of our beach can be accessed and used, even at the highest tides. A dune protection program has resulted in high dunes, anchored by a thick cover of vegetation that protects our town and our beach. The Town is actively pursuing, and will continue to pursue a Corps of Engineers project that involves both beach renourishment and construction of a groin."

Although, a groin is no longer proposed, the Topsail Beach Land Use Plan fully supports beach renourishment, and specifically a project with the Corps of Engineers, therefore, the currently proposed shore protection project is consistent with the Topsail Beach Land Use Plan.

Based on information contained in the 1991 *Pender County Land Use Plan Update*, ocean beaches and shorelines are valuable for public and private recreation and are located within natural hazard areas. Pender County's overall policy and management objective for the estuarine system is to "give the highest priority to their protection to perpetuate their biological, social, economic, and esthetic values to ensure that development occurring within these AEC's is compatible with natural characteristics so as to minimize the likelihood of significant loss of private property and public resources." (15 NCAC 07H .0203). Also, stated in the Pender County Land Use Plan, is "Beach nourishment projects shall be the responsibility of Surf City and Topsail Beach."

The proposed shore protection project at Topsail Beach is sponsored by the Town of Topsail Beach in conjunction with the Corps.

The project will result in a wider, more stable beach, thus enhancing the recreational opportunities, biological habitat, and economic and aesthetic values of the beach as specifically mentioned in their Land Use Plan Update. Therefore, the proposed project is consistent with the Pender County Land Use Plan.

Based on the information presented within the draft GRR and DEIS, the proposed project is consistent with the North Carolina Coastal Management Program. This determination is being provided to the State for its review and concurrence.

#### References:

Bowen, P.R. & G.A. Marsh. October 1988. Benthic Faunal Colonization of An Offshore Borrow Pit in Southeastern Florida. U.S. Army Corps of Engineers, Dredging Operations Technical Support program. Misc. Rept. D-88-5.

Naqvi, S.M. & C.R. Pullen. 1982. Effects of beach nourishment and borrowing on marine organisms. U.S. Army Corps of Engineers, Coastal Engineering Research Center, Misc. Rept. 82-14,

Pender County, North Carolina. 1991 Pender County Land Use Plan Update. 123 pp + maps.

Town of Topsail Beach Core Land Use Plan 2005. 119 pp + maps.

Van Dolah, R.F., P.R. Wendt, R.M. Martore, M.V. Levisen, and W.A. Rournillat. 1992. A Physical and Biological Monitoring Study of the Hilton Head Beach Nourishment Project. Marine Resources Division, South Carolina Wildlife and Marine Resources Department, Charleston, South Carolina. March 1992.



DEPARTMENT OF THE ARMY  
WILMINGTON DISTRICT, CORPS OF ENGINEERS

P. O. BOX 1890  
WILMINGTON, NORTH CAROLINA 28402-1890

IN REPLY REFER TO

December 14, 2006

Environmental Resources Section

Mr. Pete Benjamin, Field Supervisor  
Raleigh Field Office  
U.S. Fish and Wildlife Service  
Post Office Box 33726  
Raleigh, North Carolina 27636-3726

Dear Mr. Benjamin:

On 30 November 2006, section 7 consultation requirements for the "West Onslow Beach and New River Inlet (Topsail Beach) Shore Protection Project" were discussed in a phone conversation between Mr. Doug Piatkowski of my staff and Mr. Howard Hall of your office. According to Mr. Hall, after review of the U.S. Army Corps of Engineers (Corps) "Draft General Re-evaluation Report (GRR) and Environmental Impact Statement (EIS)" and Biological Assessment (BA), it is the Fish and Wildlife Service's (FWS) position that formal consultation and subsequent preparation of a Biological Opinion is not necessary. Informal consultation would satisfy FWS section 7 consultation requirements, assuming the implementation of measures proposed in the Corps' BA as well as the incorporation of the following provisions during both initial construction and each periodic nourishment interval: (1) the Corps will survey for stranded sea turtles and report any observations to the appropriate agencies and (2) the Corps will commence project construction at the southern terminus of the project area and work north in order to avoid the designated piping plover critical habitat during the nesting season.

The Corps is committed to work within the sea turtle and bird nesting windows as indicated in the BA. However as Mr. Piatkowski and Mr. Hall discussed, occasional, unforeseen circumstances may arise that result in the need for a short-term extension of the project construction window. Mr. Hall indicated that even if such extensions are needed, informal consultation is still appropriate. If an extension is required the FWS will provide a letter documenting the consultation process for that issue.

Given these circumstances, the Corps agrees that informal consultation is the best way to satisfy section 7 requirements for the proposed Topsail Beach Shore Protection Project. Please respond to this letter verifying that informal consultation is appropriate for this project considering the potential need for an occasional short-term extension of the project construction schedule.

Thank you for your office's efforts thus far and we look forward to continue working with you on this project. Please contact Mr. Doug Piatkowski, Environmental Resources Section, at (910) 251-4908 or Ms. Jenny Owens, Environmental Resources Section, at (910) 251-4757 with any questions or concerns.

Sincerely,

A handwritten signature in black ink, appearing to read "W. Coleman Long". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

W. Coleman Long  
Chief, Planning and  
Environmental Branch



## United States Department of the Interior

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

January 9, 2007

Mr. W. Coleman Long  
Chief, Planning and Environment Branch  
Wilmington District, U. S. Army corps of Engineers  
P. O. Box 1890  
Wilmington, North Carolina 28402-1890

Dear Mr. Long:

This letter responds to your letter of December 14, 2006, regarding section 7 consultation for the West Onslow Beach and New River Inlet (Topsail) Shore Protection Project located in Pender County, North Carolina. This project was described in a Draft Integrated General Reevaluation Report and Environmental Impact Statement (Draft GRR/EIS) released by the Wilmington Corps District (Corps) in June 2006. Appendix I of the Draft GRR/EIS was the Biological Assessment (BA) of project impacts on federally listed species. The cover letter of the Draft GRR/EIS, dated June 23, 2006, stated that the Corps had determined that the proposed project "may affect" federal listed species and requested a Biological Opinion (BO) through formal consultation under section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This letter is provided in accordance with the aforementioned section of the ESA.

The work proposed by the Corps consists of constructing a 26,200-foot long (5.0 miles) dune (12 feet high) and berm (50 feet wide) system. Sand for the beachfill would be delivered from offshore borrow areas by dredge. The plan has a main fill length of 23,200 feet (4.4 miles) with tapering transitional sections at both the north and south ends. The landward construction line for the project would be placed to: (1) minimize impacts on existing structures; (2) parallel the existing shoreline; (3) allow the Perpetual Beach Storm Damage Reduction Easement to extend about 20 feet landward of the dune toe; and, (4) tie the fill into a minimum elevation of 7 feet above the NGVD.

Initial construction will require approximately 3,223,000 cubic yards (cy) of sand. Initial berm and dune construction is planned for federal FY2011 (November 2010 - April 2011), subject to availability of funds. The material would be pumped to the beach by pipeline dredge and shaped on the beach by earth moving equipment. Initial construction would occur between November 16 and April 30.

Plans include 12 beach reconstruction events at four-year interval between 2014 and 2058. Each event would require approximately 866,000 cy of sand. Material for beach reconstruction would be removed from the borrow areas by hopper dredge. The BA states that due to the potential for hopper dredges to cause death or injury to sea turtles in the water, these dredges would only be

used from December 1 to March 31 when water temperatures are cooler. This period is outside the nesting and incubation period of sea turtles. Over the 50-year life of the project 13,615,000 cy of sand would be required.

The BA provides (Table I-1) an accurate list of the federally listed species that could occur in the project area. Some species are under the jurisdiction of the National Marine Fisheries Service (NMFS). The species under the jurisdiction of the USFWS are the West Indian manatee (*Trichechus manatus*), piping plover (*Charadrius melodus*), seabeach amaranth (*Amaranthus pumilus*), and the five species of sea turtles which are known to occur in the ocean and estuarine waters of North Carolina. These sea turtles are the loggerhead (*Caretta caretta*), green (*Chelonia mydas*), leatherback (*Dermochelys coriacea*), hawksbill (*Eretmochelys imbricata*), and Kemp's ridley (*Lepidochelys kempii*). Both loggerhead and green sea turtles have been documented to nest on the beaches of the project area. However, all five species of sea turtles have the potential to become stranded on project area beaches and must be considered in section 7 planning.

The BA provides accurate information on occurrence of each listed species in the project area, potential project impacts, design features and construction techniques to minimize adverse impacts, and an overall assessment of the proposed work on each species. The BA contains (pp. I-21/22) a list of commitments to reduce impacts to listed species. The Draft GRR/EIS also contains (p. 70) a list of environmental commitments and plans for biological monitoring.

The BA concluded that the proposed work "may affect" the five species of sea turtles, piping plover, and seabeach amaranth. However, the BA did not discuss whether the affects would be adverse or could be considered as not likely to adversely affect. Since the plan includes Service guidelines, entitled "Precautions for General Construction in Areas Which May Be Used by the West Indian Manatee in North Carolina," the BA concluded that the work is not likely to adversely affect the manatee. Based on the proposed work schedule and the implementation of our manatee guidelines, the Service concurs with the Corps' determination for this species.

The New Topsail Inlet spit directly south of the project area is part of a designated unit (Unit NC-11) of critical overwintering habitat for piping plovers. The proposed period of initial sediment placement, November 16 through April 30, would include the early part of the species' reproductive period (April 1 through July 31). The BA states that the work would result in short-term impacts on breeding, foraging, sheltering, and roosting habitat. There is the potential for impacts on nesting habitat.

The BA concluded that the work would not directly impact critical habitat Unit NC-11. Actual sediment disposal would stop at the boundary to the unit. The Service concurs with this determination, but we believe that secondary adverse impacts associated with large sediments placements in proximity to the critical habitat could occur. Sediment pushed from the constructed beach by alongshore currents into the unit may impact beach invertebrates which serve as a food source for overwintering plovers. However, such impacts would not rise to the level of an adverse modification.

While formal consultation is usually associated with projects which may affect and are likely to adversely affect federally listed species, the Service agreed to initiate formal consultation. In the course of our review of the Draft GRR/EIS, we determined that only a few protective measures needed to be incorporated into the plan to reduce the impacts to all federally listed species to the point consistent with a determination of “may affect, but is not likely to adversely affect.” These were: (1) a program to detect and rescue stranded sea turtles; and (2) planning each construction event to move from south to north. The latter is important so that early work would be near New Topsail Inlet and move north. In this way construction would be as far away from the inlet as possible during late winter or early spring when piping plover breeding activities begin.

During the fall of 2006, the Service discussed these measures with your planning staff and we were informed that both measures could be incorporated into the plan. In fact, efforts to rescue stranded sea turtles are becoming standard provisions of beach construction projects. The Service recommended that section 7 requirements could be handled informally since the reasonable and prudent measures and well as the terms and conditions which would be contained in a BO would be consistent with the proposed plan.

Your letter states that the Corps is committed to work within the sea turtle and bird nesting windows. However, it is unclear whether the two protective measures will be incorporated into the plan. At this time we believe that the inclusion of these two protective measures can be discussed informally. In a November 29, 2006, conversation with Mr. Piatkowski of your staff and Dr. Matthew Godfrey, the North Carolina Wildlife Resources Commission Sea Turtle Coordinator, the Service was informed that procedures are in place for detecting and reporting stranded sea turtles. Mr. Piatkowski indicated that he was aware of these procedures. We hope that project plan can specify that each construction event would start at the southern end of the project area and move northward.

The Service believes that informal consultation is appropriate for resolving any remaining section 7 issues for this project. Informal consultation should include details on several measures to ensure sea turtle nesting. The BA states (p. I-14) that the Corps plan includes measures to protect sea turtle nesting that “are now common practices or commonly listed conditions on permits . . . such as contingency plans, sediment quality monitoring, compaction tests, tilling, leveling scarps, and monitoring for nests.” The Service strongly supports these measures.

The Final EIS should provide additional information of the measures to help stranded sea turtles and minimize harm to sea turtle nesting. The procedures to detect and report stranded sea turtles should be discussed.

Regarding escarpments, visual surveys for escarpments should be made along the project immediately after completion of the sediment placement and prior to May 1. Additional surveys should be made for three years following initial construction. Considering that reconstruction is scheduled for every four years between 2010 and 2058, escarpment survey should be made each year of the project. Survey results should be submitted to the Service prior to any action being taken. After discussion with the Service, escarpments that interfere with sea turtle nesting or exceed 18 inches in height for a distance of 100 feet should be leveled to the natural beach

contour by May 1. The Service should be contacted immediately if new escarpments that interfere with sea turtle nesting or exceed 18 inches in height for a distance of 100 feet form during the nesting and hatching season to determine the appropriate action to be taken. If it is determined that escarpment leveling is required during the nesting or hatching season, the Service will provide a brief written authorization that describes methods to be used to reduce the likelihood of impacting existing nests. An annual summary of escarpment surveys and actions should be submitted to the Service.

Regarding sediment compacts, monitoring should not begin until the material has been graded and dressed to the final slope. A period of time should be allowed for finer particles to be washed away and final settling of the material to occur prior to compaction monitoring. Normally compaction data should be collected prior to April 1 in order to allow any required remedial action to be completed prior to May 1, the start of the sea turtle nesting season. This schedule can be used for all the periodic reconstruction events which are scheduled to end by March 31. For initial construction, which will extent to April 30, it will be necessary to conduct compaction monitoring in stages. The overall beach can be divided into sections and monitored separately. If the earlier sections require remedial action, it is likely that the later sections will also require the same measures.

The Service position is that compaction monitoring should occur after each construction event and for three subsequent years. With the four-year reconstruction cycle, this cycle would require compaction monitoring during each year of the project. However, compaction monitoring would not be required if the sediment used to construct the beach is completely washed away.

Beach tilling should only be performed as a result of an identified compaction problem and not performed routinely in place of compaction monitoring. An annual summary of compaction surveys and the actions taken should be submitted to the Service. This summary will be evaluated to determine whether any corrective actions, such as a more compatible sand source, are needed to maintain sea turtle nesting habitat.

Both escarpment formation and sediment compaction occur, in part, as a result of placing incompatible material on the shoreline. The Draft GRR/EIS indicates that the Corps seeks to use compatible material and will monitor the beach fill during construction. Such quality control measures should help to reduce the need for corrective actions for escarpment and compact sediment.

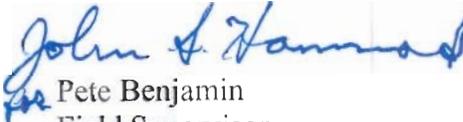
If the measures discussed in this letter are included in the Final EIS along with the environmental commitments contained in the Draft GRR/EIS, it is likely that the Service would concur with a determination by the District Engineer that the project is not likely to adversely affect any federally threatened or endangered species, or designated critical habitat for such species. The Corps' requirements of section 7 of the ESA would be fulfilled. However, the Corps must reconsider its obligations under section 7 if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner which was not considered in this review; or, (3) a new species is listed or critical habitat determined that may be affected by the identified action.

With regard to the second condition, project modification, you state that occasional, unforeseen circumstances may arise that result in the need for a short-term extension of the project construction window. The Service understands that circumstances, such as bad weather and equipment failures, may alter the construction schedules given in the Draft GRR/EIS. As we noted in our comments of September 13, 2006, there is a possibility that rising sea level may require the current four-year reconstruction interval to be shortened. Such project modifications would require new consultation which, as you noted, could be conducted informally on a case-by-case basis.

At this time, the Service recommends that the Corps incorporate all the protective measures for federally-listed species into a revised BA. As appropriate, the effect determination for each species may be revised to state that the project may affect, but is not likely to adversely affect the species.

The Service appreciates the efforts of the Planning and Environmental Branch to work with the Service in protecting all federally-listed species within the area of this project. If you have any questions or concerns about this consultation or the consultation process in general, please feel free to contact me or Howard Hall at 919-856-4520, ext. 27 or by e-mail at <howard\_hall@fws.gov >.

Sincerely,

  
Pete Benjamin  
Field Supervisor

cc:

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