United States Department of the Interior

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March 12, 2015

Mr. Tyler Crumbley, Project Manager
Wilmington Regulatory Division
U. S. Army Corps of Engineers
69 Darlington Ave.
Wilmington, NC 28403-1343

Subject: Town of Ocean Isle Beach: Terminal Groin
Action ID. No. SAW-2011-01241

Dear Mr. Crumbley:

This is in response to the January 23, 2015 public notice for the Town of Ocean Isle Beach's application for construction of a 750 linear foot (lf) terminal groin, with a 300 lf shore anchorage system and associated beach nourishment on Ocean Isle Beach. The U.S. Fish and Wildlife Service (Service) has reviewed the public notice and the January 2015 draft Environmental Impact Statement (DEIS), and other information concerning the project. This letter is provided in accordance with the National Environmental Policy Act (NEPA), section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*), and the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

Project Description

The project is on the oceanfront of the eastern end of Ocean Isle Beach, adjacent to Shallotte Inlet and the Atlantic Ocean, in Brunswick County, North Carolina. According to the DEIS, the purpose of the proposed project is to mitigate chronic erosion on the eastern portion of the Town's oceanfront shoreline so as to preserve the integrity of its infrastructure, provide protection to existing development, and ensure the continued use of the oceanfront beach along this area.

The applicant's preferred alternative includes construction of a 750 lf terminal groin with a 300 lf anchorage system. The applicant also proposes to dredge portions of Shallotte Inlet every five years and place 264,000 cubic yards (cy) of beach fill along approximately 3,214 lf of shoreline west of the terminal groin. Beach fill, groin construction, and sand fillet maintenance activities are proposed to be conducted between November 16 and April 30. The preferred alternative also

includes the continuation of the Corps of Engineers Coastal Storm Damage Reduction (CSDR) project on Ocean Isle Beach.

Federally-listed species

The following Federally- listed species are found within the project area: West Indian manatee (*Trichechus manatus*), piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), seabeach amaranth (*Amaranthus pumilus*), and the Kemp's ridley (*Lepidochelys kempi*), hawksbill (*Eretmochelys imbricata*), leatherback (*Dermochelys coriacea*), loggerhead (*Caretta caretta*), and green (*Chelonia mydas*) sea turtles. Whales, shortnose sturgeon (*Acipenser brevisrostrum*), Atlantic sturgeon (*Acipenser oxyrinchus*), and sea turtles in the water are under the jurisdiction of NOAA Fisheries' Protected Species Division.

Of the five sea turtle species, the leatherback, loggerhead, Kemp's ridley, and green sea turtle may nest in the project area. On July 10, 2014, the Service designated Critical Habitat for the Northwest Atlantic Ocean distinct population segment of the loggerhead sea turtle. Critical Habitat Unit LOGG-T-NC-08 is just east of the project area on Holden Beach.

Piping plover critical habitat unit NC-17 is located in Shallotte Inlet and on Holden Beach, east of the proposed project. The entire unit is privately owned. This unit begins just west of Skimmer Court on the western end of Holden Beach. It includes land south of SR 1116, to where densely vegetated habitat, not used by the piping plover, begins and where the constituent elements no longer occur to the MLLW along the Atlantic Ocean. It includes the contiguous shoreline from MLLW to where densely vegetated habitat, not used by the piping plover, begins and where the constituent elements no longer occur along the Atlantic Ocean, Shallotte Inlet, and Intracoastal Waterway stopping north of Skimmer Court Road. The unnamed island and emergent sandbars to MLLW within Shallotte Inlet are also included.

On December 11, 2014, the Service listed the rufa red knot (or red knot) as threatened throughout its range. The rule became effective on January 12, 2015. Please refer to 79 FR 73706 for more information on the listing of the red knot.

The Corps has determined that the proposed project may affect federally listed endangered or threatened species, and has requested initiation of formal consultation. Potential affects to the piping plover, red knot, West Indian manatee, seabeach amaranth, and sea turtles are being addressed through formal consultation. Therefore, this letter primarily addresses comments concerning the project itself and the DEIS.

Service Comments

1. The Service recommends that the proposed project not be authorized. The proposed project has the potential to adversely affect nesting female sea turtles, nests, and hatchlings on the beach, piping plovers, red knots, and seabeach amaranth within the proposed project area.

Potential effects to sea turtles include disorientation of hatchling turtles on beaches adjacent to the construction area as they emerge from the nest and crawl to the water as a result of lighting or presence of the groin, and behavior modification of nesting females during the nesting season resulting in false crawls or situations where they choose marginal or unsuitable nesting areas to deposit eggs due to escarpment formation or presence of the groin within the action area. The presence of the groin could affect the movement of sand by altering the natural coastal processes and could affect the ability of female turtles to nest, the suitability of the nest incubation environment, and the ability of hatchlings to emerge from the nest and crawl to the ocean. The presence of the groin may create a physical obstacle to nesting sea turtles, and the proposed groin is anticipated to result in decreased nesting and loss of nests that do get laid within the project area for all subsequent nesting seasons following the completion of the proposed project.

Potential effects to piping plover and red knots include degradation and loss of habitat, particularly down-drift of the structure. Groins can act as barriers to longshore sand transport and cause downdrift erosion (Hayes and Michel 2008), which prevents optimal habitat creation by limiting sediment deposition and accretion. The proposed action has the potential to adversely affect wintering and migrating red knots, wintering and migrating piping plovers and their habitat from all breeding populations, and breeding piping plovers from the Atlantic Coast breeding population that may use the project area. Potential effects to piping plover and red knot include direct loss of foraging and roosting habitat in the Action Area and in the updrift and downdrift portions of the project area, degradation of foraging habitat and destruction of the prey base from sand disposal, and attraction of predators due to food waste from the construction crew. Plovers and red knots face predation by avian and mammalian predators that are present year-round on the wintering and nesting grounds. Although the piping plover is not currently known to nest in the Action Area, the stabilization of the shoreline may also result in less suitable nesting habitat for all shorebirds, including the piping plover.

Structural development along the shoreline and manipulation of natural inlets upset the naturally dynamic coastal processes and result in loss or degradation of beach habitat (Melvin et al. 1991). As beaches narrow, the reduced habitat can directly lower the diversity and abundance of biota, especially in the upper intertidal zone. Shorebirds may be impacted both by reduced habitat area for roosting and foraging, and by declining intertidal prey resources (Defeo et al. 2009; Dugan and Hubbard 2006). Shorebird habitat has been, and may continue to be, lost where hard structures have been built (Clark in Farrell and Martin 1997). In addition to directly eliminating red knot habitat, hard structures interfere with the creation of new shorebird habitats by

interrupting the natural processes of overwash and inlet formation. Where hard stabilization is installed, the eventual loss of the beach and its associated habitats is virtually assured (Rice 2009), absent beach nourishment, which may also impact piping plover and red knots. Where they are maintained, hard structures are likely to significantly increase the amount of piping plover and red knot habitat lost as sea levels continue to rise.

Potential impacts to seabeach amaranth include burying, trampling, or injuring plants as a result of construction operations and/or sediment disposal activities; burying seeds to a depth that would prevent future germination as a result of construction operations and/or sediment disposal activities; and, destruction of plants by trampling or breaking as a result of increased recreational activities. The Applicant proposes to place sand between November 15 and March 31 of any given year. However, given favorable weather, seabeach amaranth plants may persist until January. Therefore, there is still the potential for sand placement to adversely impact plants in the Action Area. Indirect impacts to seabeach amaranth include degradation of habitat from stabilization of the shoreline.

2. The Service has significant concerns for the estimation of costs of the five alternatives. In Chapters 2 (Purpose and Need), 3 (Alternatives), 5, and 6, and Appendix A, the DEIS discusses 45 dwellings and 238 total parcels which are threatened by erosion for the next 30 years. The predicted loss or protection of these 238 parcels factors heavily in the estimated costs of each alternative. For example, on pages 27 and 28, in the discussion of the 30-year cost of Alternative 1 (No Additional Action) and Alternative 2 (Abandon/Retreat), the loss of the 238 parcels is estimated to cost $21.39 million. Conversely, the discussion of Alternative 5 (Terminal Groin with Beach Fill), the applicant's preferred alternative, makes no mention of the number of parcels that may be lost or protected by the proposed groin, and does not factor in the costs of parcel losses.

However, there is no figure showing 238 parcels and very little description in the text. Page 25 states that there are "238 parcels east of station 15+00 (located just west of Shallotte Boulevard); 45 of which have homes. All of the parcels and homes are vulnerable to erosion damage over the next 30 years, should the past erosion trends continue." A quick count of the number of parcels shown in the DEIS as affected by erosion up to year 2045 (in Figure 3.1) indicates that there are approximately 88 parcels total (this estimate is high, as some are already below high tide, and some are west of station 15+00). The DEIS does not indicate where the other 150 or so parcels are. A review of the Town's zoning map (accessed at http://www.oibgov.com/userfiles/File/Zoning_Map_Current.pdf on March 4, 2015) and information from the Brunswick County Register of Deeds (accessed March 4, 2015) indicates that most, if not all of the other 150 parcels are likely waterward of the existing shoreline, within the footprint of the proposed project, or east (downdrift) of the proposed terminal groin location. Many of these parcels are already below the high tide line and are currently unbuildable. If this is the case, then the terminal groin will not protect the majority of these parcels from erosion, as

some are already lost to erosion, and the parcels to the east of the groin will receive no protection at all. East of the proposed groin, underwater parcels will remain underwater, and any buildable parcels will be threatened (and perhaps lost) due to increased erosion from the presence of the groin.

The DEIS should be revised to accurately reflect the situation of all of the parcels in the project area and the estimated losses for each alternative. Parcels that are mostly waterward of the current shoreline, within the footprint of the proposed groin, or east of the proposed groin should be considered a loss, and the costs of those losses should be added to the annual and 30-year costs of Alternative 5. The predicted loss of parcels due to Alternatives 3 and 4 should also be calculated and included in the estimated costs, as it is unlikely that many of the parcels east of station 0+00 will be protected or recovered from either of these alternatives. We note that including these costs will significantly increase the overall costs of the three build alternatives.

On Page 4, the Table in Appendix D should be revised to provide a consistent comparison of costs between the five alternatives. Currently, the costs for Alternative 5 are shown as annual and 5-year costs, while the cost of other alternatives is shown for a 30-year period.

3. Table 3.10 on Page 44 lists Long-Term Erosion Damages and Response Costs for Alternatives 1 and 2, but shows these costs as $0 for Alternatives 3 and 5. However, the Service does not believe that there will be no erosion damages or response costs over 30 years in the project area, regardless of alternative chosen. Large winter storms, hurricanes and other named storms all have the potential to cause significant erosion and response costs. Page 116 in Chapter 5 states that the future impacts on development on the east end of Ocean Isle Beach were evaluated based on the continuation of erosion trends determined from surveys obtained between 1997 and 2010. There is no rationale provided for using this timespan as a baseline. Although there were several named storms that passed in the vicinity of Ocean Isle Beach during this time, only one passed over the island (with sustained winds of 35 mph), none of them had winds over 70 mph, and at least half of them had winds of less than 40 mph (http://coast.noaa.gov/hurricanes/, accessed March 6, 2016). If a 30-year timespan had been used (from 1984 to 2014), erosion from a category 4 hurricane (Hurricane Hugo) could have been included in the analysis.

The 13-year baseline also does not provide the same potential level of impacts from sea level rise. The North Carolina Coastal Resources Commission (CRC) Science Panel predicted in December 2014 that the relative sea level rise by 2045 in Southport, North Carolina would be at least 1.9 inches, and as high as 8.5 inches (Draft CRC Science Panel Sea Level Report, December 31, 2014). Considering the historic rates of sea level rise presented on page 132 (8.16 inches per century in Wilmington, and 1.03 feet per century in Charleston), sea level may rise at a minimum of 2.45 inches to 3.71 inches over the next 30 years. The DEIS states that there will be no direct or indirect impacts in the project area from such an increase. However, regardless of

the alternative, it is likely that dwellings, particularly those on the oceanfront will be impacted by increases in sea level rise over the next 30 years. Because sea level rise is not consistent through time and space, the impacts are often most first noticed when a storm-surge or spring tides occur. Over the 30-year proposed project life, it is more likely that named storms would cause erosion despite the precautions taken, and that costs would be incurred for beach bulldozing, additional emergency nourishment, or other response activities. Further, if the presence of the groin encourages development of currently undeveloped parcels that are on the oceanfront or waterward of current dwellings, erosion and response costs (beach bulldozing, emergency sand placement, infrastructure repair, demolition and solid waste costs) could be expected over the life of the project for Alternative 5 that would not be expected for the other 4 alternatives. The DEIS is silent on this issue.

Also in Table 3.10 on Page 44, the Service recommends that the $21.39 million included for loss of parcels be revised to remove costs for parcels which are currently under water or within the footprint or east of the proposed terminal groin. Since most of these parcels are already unbuildable, and the terminal groin will not provide significant improvement in condition, the loss of them should not be counted for Alternatives 1 and 2 if they are not counted in the other alternatives.

4. On page 63 in Chapter 4, the reference to Figure 4.12 is in error. Please revise.

5. On pages 74-76 in Chapter 4, please update the sea turtle nesting data for all species to include 2013 and 2014 data. A green sea turtle nested in Holden Beach in 2013.

6. On Page 97, Figure 4.14, the Service recommends that the written description of the piping plover critical habitat be used, rather than the old shape file.

7. Please update Chapter 4 to include red knot records.

8. The DEIS does not adequately address accelerated erosion downdrift of the groin or the potential impacts from downdrift erosion and regular dredging (every five years to maintain the groin, every three years for the Corps CSDR project). Chapter 5 (page 175) and Appendix C change the topic from potential impacts of this groin on sand transport and intertidal habitats in Shallotte Inlet to a discussion of the impact of the Oregon Inlet jetties on Pea Island. Oregon Inlet and Shallotte Inlet are very different systems, and the DEIS does not explain how they are comparable. We note that there is no habitat above MLLW (including no intertidal habitat) downdrift of the Oregon Inlet jetty, and the stabilization of the shoreline within the sand fillet of the jetty has resulted in degradation or loss of intertidal habitats. The DEIS (page 176) states that the model shows the loss of approximately 1-2 acres of intertidal habitats in Shallotte Inlet due to the project, but that habitat is expected to persist and recover within 2 years of dredging based on the rate of infill that currently occurs. However, the rate of infill that is referenced is not the rate

that will occur after the groin is constructed, since the model shows that the rate of sediment transport will be reduced. There is no discussion in Chapter 5 or Appendix A of the expected passage rates of sand across the groin, or the expected infill rate after construction, and based on the information provided, it is not possible to determine impacts of the groin on the persistence or formation of intertidal shoals and flats in Shallotte Inlet.

9. On Page 177, please change "nesting habitat for seabeach amaranth..." to "habitat for seabeach amaranth...."

10. On Page 178, the DEIS should address the indirect impacts of stabilization of a dynamic system. The DEIS states that the "increase in stable dry beach as a result of the implementation of Alternative 5 is considered more advantageous to resident and migratory fauna." However, the resident and migratory fauna, particularly the shorebirds such as piping plover and red knot, rely on the dynamic coastal processes such as overwash, to provide optimal foraging, roosting, and nesting habitat. The presence of the groin and other hard structures prevents such processes. In addition, groins accelerate erosion on the downdrift side, thereby causing direct and indirect impacts to the dry beach and intertidal habitats.

11. In Chapter 5 and Appendix A of the DEIS, the accretion and erosion patterns indicated by the Delft3D model are shown only for three years post-project. Given that this is a 30-year project, and the groin is proposed to be on a 5-year maintenance schedule, the DEIS should clarify why only three years of modeling is shown. In addition, no modeling runs are included to show the expected accretion or erosion patterns for Alternative 4. Information for Alternative 4 should be added to the DEIS.

12. On Page 62 of Appendix A, the DEIS states that the model results for Alternative 1 underestimated the sediment retention rate of the borrow area, and that the modeled rate was approximately 80% of the measured rate. According to page 62 of the DEIS, the modelers assume that all of the other model runs also underestimated the sediment retention rate in the borrow area by the same amount, and adjusted the modeled rates for the terminal groin alternative without further justification. Alternatives 2, 3, and 4 were not considered in this exercise on page 2 or in Table 4.15, and only Alternatives 1 and 5 are used to compare model volume changes in the Shallotte Inlet complex. The Service recommends that information for Alternatives 2-4 be included in Table 4.15 of Appendix A.

Service Recommendations

As stated above, the Service recommends that the project, as currently proposed not be authorized, due to potential impacts to piping plovers, red knot, seabeach amaranth, and sea turtles. We recommend that the Final EIS incorporate our comments listed above. Thank you for the opportunity to comment on this project. If you have any questions concerning these comments, please contact Kathy Matthews at (919) 856-4520, Ext. 27, or by e-mail at <kathryn_matthews@fws.gov>.

Sincerely,

Pete Benjamin
Field Supervisor

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Audubon NORTH CAROLINA

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March 13, 2015

Mr. Tyler Crumbley
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Re: Draft Environmental Impact Statement for Ocean Isle Beach Shoreline Management Project, file number SAW-2011-01241.

Dear Mr. Crumbley,

Thank you for this opportunity to comment on the document, "Draft Environmental Impact Statement for Ocean Isle Beach Shoreline Management Project." These comments on the draft environmental impact statement (DEIS) are submitted by Audubon North Carolina, North Carolina state office of the National Audubon Society.

The DEIS evaluates 5 alternatives and identifies Alternative 5 as the preferred alternative. Alternative 5 includes the construction of a 750-foot terminal groin at the eastern end of Ocean Isle Beach at an estimated 30-year cost of $46 million in an attempt to protect real estate valued at $7.4 million (Table 2.2 in the DEIS). The DEIS further identifies 238 total parcels that may be vulnerable to natural shoreline movement over the next 30 years, 45 of which have homes.

Our concerns:

1. The downdrift shoreline impacts of terminal groins are not appropriately addressed in assessing the impacts of the preferred alternative, Alternative 5.

Sand transport along barrier islands and inlet systems generally occurs in the direction of longshore currents. These currents run predominantly east to west in the area of Holden Beach, Shallotte Inlet, and Ocean Isle Beach. The pattern of erosion or accretion at the east tip of Ocean Isle Beach and west tip of Holden Beach is predominantly determined by the orientation of the inlet channel (Cleary and Marden 1999).

The DEIS states "[...]the added shoreline stability provided by the 750-foot structure combined with the possibility of future reductions in Federal funding for the Ocean Isle Beach storm damage reduction project prompted the Town of Ocean Isle Beach to select the 750-foot terminal groin as its preferred alternative."

It is well documented that terminal groins cause erosion of the shoreline down-drift of the structure (McDougal et al. 1987, Kraus et al. 1994, Bruun 1995, Cleary and Pilkey 1996, Komar 1998, Brown and McLachlan 2002, Basco and Pope 2004, Speybroeck et al. 2006, Defeo et al. 2009, Rice 2009, Riggs et al. 2009, Riggs and Ames 2011, Ells and Murray 2012, Knapp 2012, Pietrafesa 2012, Berry et al. 2013). An open letter on the subject signed by 43 coastal geologists states:

> *The negative impact of groins and jetties on downdrift shorelines is well understood. When they work as intended, sand moving along the beach in the so-called downdrift direction is trapped on the updrift side, causing a sand deficit and increasing erosion rates on the downdrift side. This well-documented and unquestioned impact is widely cited in the engineering and geologic literature.*

The DEIS instead forecasts a lesser need for beach renourishment with the construction of a terminal groin, and does not address the real likelihood that the beach will simply narrow farther to the west and require additional and likely more frequent beach renourishment over the years. These costs are not addressed or included in Table 3.11 which identifies Alternative 5 as the least costly alternative by $27,000. Were these costs addressed, it is highly likely that Alternative 5 would no longer be the least expensive alternative.

At Fort Macon, NC, for example, three years after the completion of the terminal groin a beach renourishment project occurred because the groin itself was exacerbating erosion, and from 1973-2007, seven renourishment projects have occurred at Fort Macon at the cost of nearly $45 million (Pietrafesa 2012).

The DEIS also cites Oregon Inlet, NC as an example of a terminal groin that was a successful project that did not "cause adverse impact on the shoreline." Recent and relevant literature is available, and the conclusions are different than cited in the DEIS. Over $20 million has been spent renourishing Pea Island at Oregon Inlet from 1990-2004 (Pietrafesa 2012). To minimize impacts of the Oregon Inlet terminal groin on the down-drift shoreline of Pea Island, sediment from routine Oregon Inlet channel dredging has been placed either directly on the Pea Island beach or in shallow nearshore disposal area near northern Pea Island (Riggs and Ames 2011). The DEIS acknowledges that the decrease in erosion can be partially due to sediment placement projects, but it is clear that the construction of a terminal groin on the northern end of Pea Island and all associated efforts such as dredging, beach nourishment, and maintenance of highway 12 on Pea Island has not stopped erosion on the down-drift shoreline. Human efforts have temporarily slowed the process of shoreline recession in a small portion of northern Pea Island by the regular addition of dredged sand at a very high cost, but each new beach nourishment project has quickly eroded away (Riggs and Ames 2009, Riggs et al. 2009). Based on several studies, the data strongly suggests that the terminal groin is contributing to the shoreline recession problems on Pea Island (Riggs and Ames 2003, 2007, 2009; Riggs et al. 2008, 2009; Mallinson et al. 2005, 2008, 2009; Culver et al. 2006, 2007; Smith et al. 2008).

Finally, the DEIS makes claims as to how the terminal groin will work over the next 30 years, while at the same time stated that after installation of sandbags the shoreline moved in a "surprising" direction. Such predictions, even with the most sophisticated models, are

challenging. In the end, the terminal groin is likely to relocate the problem to the down-drift shoreline as it has been shown repeatedly at inlets with terminal groins.

2. The economic assessment of the alternatives should be reconsidered.

The DEIS underestimates the cost of compensating for the erosion associated with a terminal groin by omitting to mention this well-known effect of terminal groins. It also inflates the cost of other alternatives by conflating value with cost. For example, the DEIS states that damages to roads and utilities would amount to $2.09 million over 30 years for Alternatives 1 and 2 (no action and abandon/retreat). The DEIS states the value of these damages were based on replacement costs, even though replacement is not an option in Alternatives 1 and 2, and therefore no actual expenditure is entailed. If replacement is not an option, the cost of replacement should not be listed in the 30-year cost for Alternative 1 or 2; this would make those options far less expensive than the other alternatives.

In Table 3.10, the DEIS states that there will be a $0 cost for Long-Term Erosion Damages & Response Cost for Alternatives 3, 4, and 5. As discussed, it is well established that hard structures cause erosion of the down-drift shoreline. A zero dollar amount in the Long-Term Erosion Damages & Response Cost and the discounting of renourishment costs for the 750-ft terminal groin alternative is misleading.

The cost of constructing and maintaining one terminal groin in North Carolina over 30 years, estimated by the North Carolina Coastal Resources Commission, is $54,900,993. A tax revenue-based accounting of the fiscal implications of the construction of terminal groins found that the costs of constructing and maintaining a terminal groin exceeds potential fiscal benefits at every developed North Carolina inlet (Coburn 2011). Because the justification given for selecting Alternative 5 is primarily financial, it is difficult to understand how the DEIS came to its conclusions.

3. The literature cited in the DEIS is often outdated or not the most relevant available literature.

There are at least 100 published studies that address the impacts of terminal groins on inlets, beaches, and natural resources. The majority (78%) of peer-reviewed literature regarding the impacts of hard structures at inlets concluded that terminal groins do not function in the manner presented in the DEIS and cause more harm than good.

The DEIS often cites outdated literature (i.e. Overton et al. 1992), not the most relevant literature, and makes errors and omissions in its citations. At least six additional citations (Nelson 1985, Van Dolah et. al 1994, Levison and Van Dolah 1996, NCDENR 2010, Overton 2011, and Overton pers. comm.) are not listed in the literature cited section.

The wealth of literature on the impacts of terminal groins is not discussed nor cited in the DEIS. A more complete review of the relevant literature would be helpful if fully evaluating all alternatives presented in the DEIS.

4. Impacts on protected species.

Inlets are naturally dynamic ecosystems that attract greater numbers of shorebird species such as the Piping Plover (*Charadrius melodus*) and the Red Knot (*Calidris canutus rufa*) than other coastal habitats (Harrington 2008). Both of these species are federally listed as "Threatened" under the Endangered Species Act. Though neither nests in the area of Shallotte Inlet, they are present during spring and fall migration, and Piping Plovers overwinter in the project area. Under Alternative 5, the DEIS predicts the loss of intertidal flats and shoals. These habitats are the primary foraging habitat for Piping Plovers while they are migrating and wintering through North Carolina. The intertidal flats and shoals as well as the ocean intertidal zone are the primary foraging habitat for Red Knots. The DEIS identifies these shoals as the borrow area for beach fill material and the placement of sand in the ocean intertidal zone will have a significant negative impact on the habitat available for these species.

The preferred alternative will impact shorebirds' primary food source (benthic invertebrates) and high tide rest and roost habitat. The DEIS states that "[...] recruitment of infaunal organisms is rapid and direct impacts should be temporary and infauna may be adapted to high-energy environments." The known recovery time for macroinvertebrate and shorebird communities on nourished beaches is variable, largely due to the short duration of most monitoring studies; most studies ended before recovery to pre-project levels was established. In North Carolina, *Emerita talpoida* abundance recovered within months, but *Donax* spp. and amphipods did not recover within the time frame of the study (Peterson et al. 2006). Peterson et al. (2014) monitored the recovery of a sandy beach community for 3-4 years following nourishment and documented haustoriid amphipods and *Donax* spp. had reduced densities for 3-4 years following nourishment, *E. talpoida* had lower density for 1-2 years following nourishment, ghost crabs had lower abundances for 4 years and foraging shorebirds were less abundant for 2-4 years following nourishment. Additionally, infaunal organisms may be adapted to high-energy environments, but these organisms are not adapted to burial and/or the use of incompatible fill material. Repeated beach renourishment activities, combined with the recovery periods for these invertebrates will depress this food source for birds. *Donax* spp. and *E. talpoida* are important prey items for Red Knots as well as other migratory shorebird species. The only action mentioned in addressing harmful impacts is monitoring, which does not serve to avoid, minimize or mitigate for adverse impacts; it merely—if done properly—documents them.

The DEIS attempts to make the case that widening the beach as proposed in Alternative 5 will provide additional habitat not only for the Red Knot and Piping Plover, but nesting species as well, such as the Black Skimmer (*Rynchops niger*), Least Tern (*Stenula antillarum*), American Oystercatcher (*Haematopus palliatus*), and Wilson's Plover (*Charadrius wilsonia*), all of which are state-listed as "Species of Special Concern." However, these species prefer to nest on overwash fans and unvegetated spits, and shorebirds forage in productive intertidal areas with abundant food resources. Stabilization of inlet areas that result following the construction of a terminal groin is not conducive to the creation of these types of habitats. In fact it results in a direct loss of habitats that the above mentioned species require. Sites stabilized with a terminal groin vegetate within 3-5 years, leaving them unsuitable for these nesting species; disposal of dredged sand on beaches and removal of sand from tidal flats and shoals eliminates essential foraging habitat.

Lastly, the DEIS does not discuss the adverse impacts of terminal groins as presented in the preferred alternative. Based on the literature and case studies from North Carolina, it is apparent that the preferred alternative is likely to have significant adverse impacts. We encourage a more complete assessment of the preferred alternative and consideration of other alternatives.

Thank you for the opportunity to comment on this project. If we can be of any further assistance or to clarify anything contained within these comments, please do not hesitate to contact us at the address below.

Sincerely,

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Literature Cited

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From: Crumbley, Tyler SAW
To: Crumbley, Tyler SAW; Rosov, Brad
Subject: Comment Received: Ocean Isle Terminal Groin 17Feb15
Date: Tuesday, February 17, 2015 2:46:13 PM

Brad,

I received a phone comment today (17FEB15) from [redacted]. [redacted] does not have email access and did not want to write a letter; therefore he telephoned in his comments for the proposed OIB Terminal Groin project. [redacted] has stated that he is very supportive of the project and would like to see it approved. Please allow this email to serve as official documentation of the conversation.

Thank you.

-Tyler

Tyler Crumbley
Project Manager
U.S Army Corps of Engineers-Wilmington District
Wilmington Regulatory Field Office
69 Darlington Avenue
Wilmington, NC 28403

Phone: 910-251-4170
Fax: 910-251-4025
email: tyler.crumbley@usace.army.mil

16 March 2015

Letter to: Mr. Tyler Crumbley
U.S. Army Corps of Engineers
Wilmington Regulatory Division
69 Darlington Avenue
Wilmington NC 28403
<Tyler.Crumbley@usace.army.mil>

From: [redacted]

[redacted]

Subject: Proposed Ocean Isle Beach Groin
Project SAW-2011-01241
Draft EIS

Dear Mr. Crumbley:

The discussion over the proposed Terminal Groin on the east end of Ocean Isle Beach (OIB) has been framed in two ways: first, by the advocates as being necessary to save houses and to save the beaches; secondly by those who oppose the Groin on the grounds the structure will actually not save but rather will destroy downstream beaches. Just whom does each group represent and what are the facts and possible alternatives?

The existing situation is such that from ½ mile west of the Shallotte Inlet, the OIB and Sunset Beach (SSB) beaches are generally quite stable. So why is erosion occurring at the eastern end of OIB? It is because of the well-documented mining of sediments from the tidal delta to attempt to protect houses built at the very eastern tip of OIB especially during the passages of winter storms. The lesson is, do not allow structures to be built on the tips of barrier islands, at either end, and do not destabilize nature's redistribution of sediments by mining tidal deltas. These are scientific realities that have been known for decades, but which real estate developers and lobbied legislators have chosen to ignore. Why? Because real estate at the tips of barrier islands generally commands the highest values with views of the inlets.

Whom are the advocates for the Groin at OIB? They are real estate developers and owners and their town council representatives; especially the mayor. When the question was posed to the mayor

about how many homes were presently at risk, on the 3/11/15 Coastline interview on WHQR, she replied "I do not have that number off the top of my head". What! How could she not have that number when due diligence demands a number? Perhaps the number and names of the property owners might be an embarrassment to the mayor. Whose interests is she really protecting?

The opposers to the groin are environmentalists, the entire coastal scientific community of North Carolina and downstream OIB homeowners, along with those on Sunset Beach (SSB). OIB residents west of ½ mile from the eastern end of OIB should be very afraid. The implications of one Groin is that following the damage due to the proposed Groin, there could be two more groins in the offing in the future; one at the Pier and one at Tubbs inlet. Moreover the recruitment of marsh and inshore nursery dependent finfish could be greatly altered and reduced by the imposition of a Groin in the pathway of major ingress of the fish larvae and juveniles. This would not only affect the local fishing activities but also reduce bird food supplies and breeding habitats. All this potential destruction to spare what properties?

A UNC economist found that the 30 houses at risk at the east end of OIB have a Total Appraised Value of $9,050,230 (2009), so the Average Appraised Value/Property is $301,674. The County Tax Revenue/Year (@ .305/100) is $27,603 and the Total OIB Tax Revenue/Year (@ .09/100) is $8,145. Arguably this is a pittance to the tax base of OIB.

But what if these 30 houses were moved to open land to the northwest of the east end of OIB? At $150,000/property, this would cost nominally $4,500,000. And at relocation costs, the total cost would be less than a total of $5,000,000, spread over say 10 years. Compare this cost to the cost of Groin installation, and the ensuing downstream beach maintenance costs which have been shown to occur by Groin induced beach destruction of at least $ 1,600,000/year, as has occurred at Pea Island and Fort Macon and other FL, SC, GA, MD, VA and NJ locales for a total of $26,000,000 over the next 10 years; roughly 6 X's the cost of house relocation. These costs should not be borne by OIB or SSB homeowners to pay for the property of a few well-placed wealthy families who also undoubtedly own the property to which the houses at risk could be moved. Why should public trust funds be used to subsidize the folly of a few? Why shouldn't the tips of barrier islands be set aside for public access?

Why not seek an alternative solution to erosion at the east end of OIB? Why not build an experimental, artificial oyster or alternative critter reef on the east end of OIB and create a new local industry? What is the feasibility of that possibility? If the houses were moved and an Oyster Bed Reef was created, was sustainable and was profitable, then a new source of tax revenues would be generated; one that is environmentally viable, beneficial and sustainable.

I am a coastal physical scientist including Oceanic and Atmospheric, and not a life scientist, but I believe that critter based artificial reefs may be a viable alternative. For example, oysters thrive in higher salinity waters, and waters at the mouth of the Shallotte Inlet and River may be able to support a sustainable oyster population. Presently, oysters naturally settle and thrive on bulkheads in Old Sound Creek and in the Intra-Coastal Waterway between Shallotte and Tubbs Inlets. So they might well thrive in an artificial reef setting at the eastern end of OIB. These experiments have been

successfully conducted along the Louisiana coast; and have been shown to reduce erosion as they break up wave energy during storm passages as well. This reef alternative to a groin could be designed by the ACE. If the reef idea works, great, but in any case the houses at risk should be moved.

The beaches and properties west of ½ mile of Shallotte Inlet on OIB and all of SSB should be spared the consequences of destruction by the proposed OIB Groin. I have published a paper in the peer reviewed literature about this very subject. It has been heavily cited nationally and internationally: <www.cerf.jcr.org>. DOI: 10.2112/JCOASTRES-D-12A-00004.1. "On the Continued Costs of upkeep Related to Groins and Jetties", L.J. Pietrafesa, September 2012, ii-ix.

From: Crumbley, Tyler SAW
To: Crumbley, Tyler SAW
Subject: FW: [EXTERNAL] Groins on Ocean Isle Beach
Date: Tuesday, March 10, 2015 7:55:08 AM

-----Original Message-----
From: Crumbley, Tyler SAW
Sent: Tuesday, March 10, 2015 7:55 AM
To: [redacted]
Subject: RE: [EXTERNAL] Groins on Ocean Isle Beach

Mr. [redacted]

We are currently accepting public comments regarding the proposed Ocean Isle shoreline management project. The US Army Corps of Engineers is neither a proponent for, or against the project and is merely soliciting the comments in order to make a complete record regarding the permit decision. We have made no comments regarding the changes in sea level and are not in a position to do so. If you wish to comment on the proposed project, please feel free to do so.

Thank you.

-Tyler

Tyler Crumbley
Project Manager
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"The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the Customer Satisfaction Survey located at: http://regulatory.usacesurvey.com/"

-----Original Message-----
From: [redacted]
Sent: Monday, March 09, 2015 6:44 PM
To: Crumbley, Tyler SAW
Subject: [EXTERNAL] Groins on Ocean Isle Beach

You have made comments re the rise of sea levels as it may affect the beach front of OIB and SB. Please share your thinking on the effects and estimates of sea level increase.

[redacted]
Ocean Isle Beach

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

March 6, 2015

Scott McClendon
Chief Regulatory Division
US Army Corps of Engineers
Wilmington District
Regulatory Field Office
69 Darlington Avenue
Wilmington, NC 28403

Subject: **EPA NEPA Comments on Draft Environmental Impact Statement (DEIS) for the Ocean Isle Beach Shoreline Protection Project, N.C.; CEQ Number: 20150019**

Dear Mr. McClendon:

Pursuant to Section 309 of the Clean Air Act and Section 102(2)(C) of the National Environmental Policy Act (NEPA), the U.S. Environmental Protection Agency (EPA) Region 4 office has reviewed the Draft Environmental Impact Statement (DEIS) for the Ocean Isle Beach (OIB) Shoreline Protection Project. This DEIS provides an evaluation of the environmental consequences of several alternative plans that would address chronic erosion at the eastern end of OIB with a goal of protecting public infrastructure, roads, homes, vacant parcels and beaches.

The DEIS identified past Federal and locally-sponsored beach renourishment and sand bag revetments projects along OIB beginning in 2001. Detailed technical comments on the DEIS are included as an attachment to this letter (See Attachment A).

Based upon our review of the DEIS and the detailed comments provided in the attachment, a NEPA rating of EC- 2 has been assigned to this DEIS, meaning we have environmental concerns and have requested that the FEIS include updated information (where available) on a number of areas and issues outlined in the attachment. EPA has environmental concerns relating to water quality, fisheries resources, endangered species, and potential indirect and cumulative impacts. If we can be of further assistance, please contact me at (404) 562-9611 or Dan Holliman at (404) 562-9531 or by e-mail at holliman.daniel@epa.gov.

Sincerely,

Heinz J. Mueller
Chief, NEPA Program Office
Resource Conservation and Restoration Division

Attachment A: EPA Detailed Technical Comments
Town of Ocean Isle Beach Shoreline Protection Project
Brunswick County, North Carolina
Draft Environmental Impact Statement
CEQ No.: 20150019

Executive Summary

Page *i*: The DEIS provides estimates of future damage to structures and vacant lots. Out of 1,456 vacant lots on OIB, the DEIS indicates that 193 will be lost to erosion in the design year of 2045. This represents 13.2% of the total lots on OIB. Regarding structures, the DEIS estimates that 45 out of 3,247 will be lost to erosion in the design year or approximately 1.4%. Currently, there 238 parcels and 45 homes east of station 15+00 that are reported to be vulnerable to erosion damages and more than 1,800 feet of roads and associated utilities that could be damaged by 2045.

Project Area and Problem Description

Page 4: EPA requests that the PRT members be updated to reflect the current EPA representative Mr. Dan Holliman.

Page 7: It is unclear from the discussion in the DEIS on how the preferred project compares to the other alternative projects for economic benefit. EPA recommends providing additional detail in the FEIS relating to the economic benefits of each alternative.

Page 8: It appears that the orientation and position of the Shallotte Inlet is a significant source of the erosion issues at the East end of OIB. It is not clear how the current proposed project will fully address this issue. EPA recommends that the FEIS provide clarification on how the preferred alternative will address this issue.

Page 16: A table is provided that lists Category 3 and 4 Hurricanes Affecting the North Carolina Coast from 1933 to 1996. There is no reference in the text that describes the relevance of this information to 'typical' erosion rates along OIB or what effect, if any, these storms had on the OIB shoreline and the proposed project. Were erosion rates accelerated during these events and why is there adequate sand along the western portion of OIB and not the eastern end?

Pages 17-19: The DEIS does not discuss the history of shoreline erosion on OIB prior to March of 2001. There is no analytical discussion in the DEIS pertaining to why erosion rates have impacted the eastern end of the island and not the western end over the last several decades.

Page 18: The DEIS states: "*The material removed from the AIWW has eroded quickly and has been generally ineffective in slowing the rate of erosion in the area east of Shallotte Boulevard*". The DEIS does not provide a rationale or causes as to why this Federal project was ineffective in slowing the rates of erosion along this section of OIB. The DEIS indicates that numerous beach

nourishment efforts by the USACE and the Town have failed to protect against the chronic erosion and the damage caused by coastal storms. The DEIS does not identify what type of damages occurred from coastal storms and why it was expected that Federal and local beach nourishment projects would prevent possible coastal storm damages. The DEIS identifies the issue of installing sandbag revetments beginning in 2005 to protect homes along approximately 1,400 feet of shoreline west and east of Shallotte Boulevard. The DEIS indicates that sandbags have been repaired/replaced but continue to fail under the continued landward retreat of the shoreline. The DEIS does not identify the specific 'hydro-geological' reasons for the landward retreat. EPA recommends the FEIS provide the reader with a clear understanding of the causes of the landward retreat on the east end of OIB.

Page 19: The Town has reported that it has spent $3.7 million responding to erosion on the east end of the island since 2005 and the State costs are approximately $1 million. The DEIS does not identify the past Federal costs from the 5 past beach nourishment projects conducted in 2001, 2006, 2006, 2010 and 2014 as identified in Table 2.1 of the DEIS. EPA recommends the total costs for all past shoreline protection projects (Federal, State, and local) be included in the FEIS.

Project Alternatives

Page 22: EPA notes that the Deft3D Model was the primary modeling package identified in the DEIS for evaluating the project. EPA appreciates the Corps providing the methodology, supporting data, and calibration of the model in Appendix C of the DEIS.

Page 22: The DEIS identifies 5 alternatives including the No Action, Abandon/Retreat, Beach Fill Only, Shallotte Inlet Bar Channel Realignment with Beach Fill, and Terminal Groin with Beach Fill (Preferred Alternative). The tools used to evaluate alternatives in meeting the purpose and need were identified as LiDAR Surveys, USACE Beach Profile Surveys, Delft3D Model, and Maximum Periodic Nourishment Volume Per Operation. EPA recommends that any specific model or tool used to evaluate the alternatives in the context of Sea Level Rise (SLR) scenarios be included in this section of the FEIS.

Pages 23-24: Under the Alternative 1 description several historical beach nourishments/stabilization projects are discussed yet erosion continues. There is no rationale provided that explains why these projects failed on the East end of the island and why erosion continues. The DEIS does not indicate why the western 6,000 feet of the Federal Project area continues to perform very well and has not required periodic renourishment since 2001 and the eastern portion of the island is eroding at a much increased rate. The DEIS does not indicate the coastal processes at work (since 2001) that has caused this significant difference from one end of the island to the other.

Page 25: It is stated in the DEIS that "*238 parcels east of station 15+00 (location just west of Shallotte Boulevard); 45 of which have homes. All of the parcels and homes are vulnerable to erosion damage over the next 30 years should the past erosion trends continue.*" Figure 3.1 shows that the future predicted scarp line in 2045 will impact approximately 45 structures, but it is unclear on how the 238 parcels estimate was generated. These parcels account for a significant amount of the financial losses predicted in the future scenarios. EPA recommends the

FEIS clearly define where these parcels are located and how they will be impacted under future erosion scenarios.

Page 31-32: It is unclear if Alternative 4 is a reasonable alternative since it involves the modification of an authorized USACE dredge project at Shallotte Inlet. The likelihood of Alternative 4 should be clearly described in the FEIS. It is also unclear if Alternative 4 would provide the same level of protection as the preferred Alternative 5 therefore we recommend this being more clearly discussed in the FEIS. Does the average annual cost of Alternative 5 take into account the potential need to reconstruct the terminal groin structure if damaged by a storm event? If not, why was this not considered in the analysis?

Pages 23-44: The DEIS describes each alternative and the associated costs with each alternative and the general likelihood of meeting the purpose and need. However, Alternative 5 is actually an analysis of three different terminal groin lengths, including a 250-foot, 500-foot or 750-foot terminal groin structure as well as associated beach fill quantities for each (Table 3.4). Beach fill intervals are provided for the 3 terminal groin lengths in a separate table on Page 40 of the DEIS. The analysis provided states that the USACE prefers the 750-foot length terminal groin based upon the equivalent annual cost. Because of the significant cost differences and estimated effects from the 3 different terminal groin lengths EPA is unclear on why the 3 options were not considered as separate alternatives in the DEIS evaluation. The FEIS should clarify the reasoning for including them as one alternative. EPA notes that the USACE has provided summaries of the average annual economic impact of the alternatives (Table 3.10) and the 30-year implementation costs of the alternatives (Table 3.11). The USACE has selected the least costly alternative (Alternative 5/750-foot groin/5-year nourishment alternative/Preferred) using a 4.125% discount rate over the 30 year design life.

Environmental Impacts

Figure 4.5: This figure is unclear. EPA recommends providing a closer view of the project area for this figure to better identify hard bottom areas in relation to the project.

Figure 4.7-4.9: These figures indicated that previous turtle nesting areas may fall in the project area. EPA suggests adding a project area boundary or active construction zone to these figures.

Page 109: EPA recommends providing a map in the FEIS of the RWQ sample stations near the project area.

Page 111: EPA notes that there is a potential to impact historical ship wrecks in the Shallotte Inlet area. EPA is unclear on why surveys were not conducted and results not provided in the DEIS. This is an area of potential impact that should be disclosed therefore EPA recommends including survey results and an assessment of potential impact in the FEIS.

Chapter 5: This Chapter provides all of the alternatives and the potential impact on environmental resources. There are potentially substantial areas with threatened and endangered species and other sensitive species within the proposed project area. There are shellfishing, Essential Fish Habitat (EFH) and other high quality water uses within the project area that may

be impacted by the preferred Alternative 5. The FEIS should disclose consultation efforts and any conservation or mitigation project commitments required by natural resources agencies.

Page 114 (and others): The primary impacts identified in the DEIS include alterations to habitat types and 'temporary' water quality impacts such as turbidity from dredging. However, EPA notes that the temporary turbidity impacts are not described in context of cumulative effects with other (current and future) projects in the area. EPA recommends the FEIS provide information on the potential for cumulative impacts to water quality taking into account other project activities in the area.

Page 117. Reference to Table 5.2 – 3rd paragraph: most likely an editorial mistake, but it appears to EPA that the DEIS should be referencing Figure 5.2 and not the table.

Figures 5.1-5.3: The figures provided show erosion and accretion areas and cover a three-year period. It is not clear why these analyses cannot were not provided beyond 3 years. EPA recommends the FEIS provide reasoning for providing only three years of the Delft3D model simulation runs.

Pages 122-124: There are no figures provided in the DEIS that show model runs for Alternative 4 for project erosion/accretion patterns. EPA recommends either providing the figures or an explanation on why they are not included in the FEIS.

Page 125: The text on this page indicates that after a three year period accretion will occur in the segment -20+00 and -30+00 but Figure 5.5 appears to contradict this statement. The FEIS should clarify this information. Furthermore, the discussion in the FEIS should address how the accretion prediction west of station OI_020 compares between Alternatives 5 and 1.

Page 126: The cumulative impacts of other projects in the area are not described in detail in the DEIS and should be disclosed in the FEIS. The DEIS does list others projects in the vicinity of OIB that may cumulatively affect the proposed project. However, the DEIS does not provide details regarding how, the potential timing, or what severity of effects which might take place with respect to these other projects (Maintenance of Wilmington Shipping Channel; Maintenance of AIWW; Proposed Holden Beach Terminal Groin and Beach Nourishment; and Lockwoods Folly Inlet Maintenance with Oak Island Beach Nourishment).

Page 127: The DEIS does not indicate if monitoring for turbidity will be conducted during construction to ensure compliance with SWQS. The description of monitoring locations and the frequency should be provided in the FEIS. Detailed construction information provided in Chapter 5 (example Figure 5.7) appears to be more appropriate for Chapter 3 – description of the alternatives.

Page 129 (and others): It is unclear from this section if material deposited on the beach will be re-evaluated to ensure compliance with 15A NCAC 07H.0312. The discussion in this section focuses on historical sampling from borrow areas. There is a high probability that material in these areas may change over time, therefore, this material may not be compatible now. EPA recommends clarification in the FEIS.

Pages 132-133: Sea Level Rise (SLR) is generally discussed in this section. The DEIS states that "*impacts of historic rates of SLR are implicitly included in the historic shoreline change data used for OIB*". However, the DEIS does not provide for historic shoreline effects to OIB prior to 2001 when the first Federal nourishment project was performed. Prior to 2001, there did not appear to be excessive shoreline erosion problems identified in the DEIS. The DEIS states that some projections include a doubling of SLR rise within the next 50 to 100 years. The DEIS proposes that an approximate 1 foot per century rise in SLR within the project study area. The USACE maintains that only a portion of the observed shoreline change rates are associated with SLR and that doubling the rate of SLR would not double the historic rate of shoreline change. There is no further explanation for this supposition. The DEIS fails to describe the dynamic nature of sand movement on barrier islands along the NC coastline. The DEIS fails to provide the reasons that shoreline changes were substantially changed around the year 2001. The DEIS fails to explain why the western portion of OIB is relatively stable with respect to prior beach renourishment efforts and the eastern end is eroding at an accelerated rate. If SLR is not the primary cause of observed shoreline erosion changes, the FEIS should clearly identify what is causing the erosion changes in the recent decade.

Editorial notes: The SLR section of the DEIS changes the units of measures back and forth between S.I. units (e.g., meters) and U.S. units (e.g., feet), without consistently providing the conversions. This should be corrected in the FEIS.

It's not clear from the DEIS if the USACE followed internal regulations/guidance for predicting SLR and addressing coastal risk reduction/resilience. Please see the references:

- *ETL 1100-2-1*
  Procedures to Evaluate Sea Level Change: Impacts, Responses, and Adaption (2014)
  http://www.publications.usace.army.mil/Portals/76/Publications/EngineerTechnicalLetters/ETL_1100-2-1.pdf

- *Coastal Risk Reduction and Resilience: Using the Full Array of Measures (2013)*
  http://www.corpsclimate.us/docs/USACE_Coastal_Risk_Reduction_final_CWTS_2013-3.pdf

EPA recommends that these references be evaluated in the FEIS in the context of how SLR and options for coastal risk reduction were considered when selecting the preferred alternative.

Avoidance and Minimization Measures (and Mitigation)

Pages 184-186: Public beach areas impacted by the proposed project and potential safety issues associated with the landward anchored section of the groin and the seaward section's impact on boater traffic should be more clearly discussed in the FEIS. Mitigation measures should be clearly outlined when discussing these potential impacts.

Page 188 (and others): The primary minimization measures include a construction schedule for dredging which avoids migratory and breeding seasons, a terminal groin structure with a low

profile made of rubble material, a hydraulic cutterhead dredge, a dredge positioning software program to avoid certain protected areas, sediment compatibility criteria, and pipeline observations for Piping plover.

Pages 191-196. It is stated on P. 191: "*In order to avoid impacts associated with the transport of fill material to the disposal sites, the Town of Ocean Isle Beach will negotiate with the dredging contractor to monitor and assess the pipeline during construction.*" This statement is very unclear and provides no real details on what type of monitoring will be required during construction. EPA recommends clarification in the FEIS.

The DEIS describes other monitoring activities: construction observations (material color, escarpments and water quality); bird monitoring; Seabeach amaranth monitoring; Sea turtle monitoring; West Indian manatee monitoring; and habitat mapping. The responsibility for turbidity monitoring during construction is with the contractor who in turn will notify the Town's construction engineer in the event that turbidity levels exceed the SWQS. The construction engineer will report these exceedances to the NCDCM and USACE. The USEPA requests that any reported exceedances to water quality standards should also be reported to the NCDENR Water Quality Section and the USEPA and shown as a project commitment in the FEIS, Record of Decision and USACE Chief's Report.

Pages 203-207: EPA notes that a summary of the Shoreline and Inlet Management Plan is provided in the DEIS which outlines 7 main activities. EPA is unclear on how long beach monitoring will occur post project construction. A "confirmation period" of 2 years is referenced in the document, but it remains unclear if this is the extent of the beach profile monitoring post construction. If so, EPA believes that the monitoring period is not long enough to determine the long-term impacts of the proposed project. EPA recommends clarification in the FEIS.

It also appears unlikely that the USACE can definitively determine if the terminal groin will impact beaches in the vicinity of the project, mainly because these systems are so dynamic. Can it be assumed that all significant changes to beach profiles in the vicinity of the project will be attributed to the project (with exception to storms)? EPA recommends clarification in the FEIS.

North Carolina
Coastal Federation
Working Together for a Healthy Coast

March 16, 2015

Tyler Crumbley
Regulatory Division
Wilmington District
U.S. Army Corps of Engineers
69 Darlington Ave.
Wilmington, NC 28403
tyler.crumbley@usace.army.mil

Re: Comments on Draft Environmental Impact Statement (DEIS) for the Installation of a Terminal Groin Structure at the Eastern End of Ocean Isle Beach, Extending Into the Atlantic Ocean, West of Shallotte Inlet (Brunswick County, NC) (SAW2011-01241)

Mr. Crumbley:

Please accept the following comments on the proposed terminal groin project on Ocean Isle Beach Shorelines Management Project on behalf of the N.C. Coastal Federation. For the past 33 years the federation has been taking an active role in the protection of North Carolina's coastal water quality, habitat and public beach access.

The Draft Environmental Impact Statement (DEIS) for Ocean Isle Beach Shorelines Management Project is incompliant with the National Environmental Policy Act (NEPA) and the Council of Environmental Quality's requirements for writing an Environmental Impact Statement. The way it is written, including its omission is also misleading. The DEIS does not provide the public and decision-makers with the thorough and comparable analysis of reasonable alternatives, thus confining the public information to narrow, selective and targeted information that supports only the preferred alternative. Further, the flawed document denies the residents of Ocean Isle Beach an unbiased analysis of the project so that they can make an informed decision about whether to fund this project with local funds.

The DEIS Fails to Rigorously Explore and Objectively Evaluate all Reasonable Alternatives

40 CFR 1502.14 requires the DEIS to provide clear basis for choice among options: (a) *"rigorously explore and objectively evaluate all reasonable alternatives…";* and (b) *"devote substantial treatment to each alternative examined in detail including the proposed action so that reviewers may evaluate their comparative merits."* DEIS fails on both of these accounts.

First, though the official purpose of the DEIS is stated at the beginning of the document, the information that follows is too narrow in scope, and essentially becomes an editorial simply supporting the terminal groin option. This is made very clear by the stated purpose of the engineering report and the numerical study that is attached to the DEIS. It states it has been done to, "*refine the terminal groin's design* and develop a recommended plan which includes groin construction and strategic placement of beach fill."[1] Thus, this report that is used as the technical basis for the selection of the preferred alternative simply analyzes one alternative in detail and fails to rigorously explore other alternatives.

The document is biased toward the preferred alternative, and this bias is observed in DEIS's treatment of alternatives analysis, affected environment and consequences. Thus the DEIS fails to rigorously explore and objectively evaluate all reasonable alternatives.

Second, the DEIS does not treat all alternatives in the same fashion. It is biased in favor of a terminal groin. The DEIS is relying on the modeling tool Delft3D to analyze the alternatives. However, modeling was only done for Alternative 1 and 5. Modeling results for Alternative 3 are omitted and modeling of Alternative 4 has not even been done. This prevents the reviewer from comparing the results across all alternatives.

The presentation that Coastal Planning and Engineering (CPE) gave to the Ocean Isle Beach Town Board at a meeting in Ocean Isle Beach on March 20, 2014 (Appendix 1) further shows the bias toward the terminal groin. During that meeting the town board voted to select the preferred alternative. However, the CPE presented cost estimates only for alternatives 1, 2 and 5, as it can be observed in the presentation. It also showed only one modeling slide for both alternatives 3 and 4 regardless that the two alternatives refer to two very different actions. Thus, the town board voted for the preferred terminal groin alternative without seeing how alternatives 3 and 4 responded to the town's needs. This demonstrates that analyses of alternatives 3 and 4 were only later added to the DEIS. This is transparent in the obvious unequal treatment the DEIS gives to these two alternatives compared to alternatives 1,2 and especially 5.

Further, the DEIS compares all alternatives to modeled Alternative 1, also called "the current conditions." However, given the inaccuracy of the modeling tool as well as its

[1] Appendix C, p.2, emphasis added

inability to model existing and observed conditions, discussed further below, assuming Alternative 1 as a basis of comparison is inherently wrong and provides fundamentally flawed conclusions.

Thus, the DEIS failed to devote substantial treatment to each alternative and to allow for comparable analysis among alternatives.

DEIS relies on flawed Delft3D model and its inaccurate results as basis for its chosen preferred alternative

The chosen Delft3D modeling tool as used for indicating shoreline changes in Shallotte Inlet produced inaccurate results. Potential reason for this could be that this tool is "not really designed to be shoreline change models or to model the impacts of engineering activities 'on the beach.' They focus on water movement, not sand movement."[2]

However, the DEIS reveals many additional details that make the model and its results an inadequate basis for the selection of the most practicable alternative.

The modeling tool failed to accurately indicate the observed erosion rates for Holden Beach. For example, the final calibration of the model predicted that the beach would erode between stations HB300 and HB340; the actual observation in reality was that the beach accreted at every station.[3] The model also predicted no change or slight erosion from HB340 to HB360; in reality the beach accreted at each station.[4] The model only correctly predicted that erosion would occur at six monitoring locations and at three of those sites the predicted erosion was less than half of the observed erosion. [5] The model was so inaccurate on Holden Beach that it predicted a loss of approximately 70 cy/ft at HB400 when in reality the beach accreted approximately 80 cy/ft.

Finally, the model failed to predict erosion on Ocean Isle Beach accurately. Appendix C states that "the model is able to reproduce the general erosion patterns along Ocean Isle Beach - high erosion rates from Shallotte inlet to Profile OI_65 (Chadbourn Street) with stable beaches further to the west (see Figure 40)."[6] What it does not say is that the erosion rate estimates approximated observed erosion rates. In the areas most critical to the EIS - between OI_15 and OI_45 - modeled erosion rates were significantly different than observed rates.[7]

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[2] Pilkey etal. 2013.
[3] Appendix C, p. 55
[4] Id.
[5] Id.
[6] Id. p. 58
[7] Id. p. 53

Further, the model failed to indicate the observed direction of longshore sediment transportation. The DEIS states that "most sources have estimated the net sediment transport direction to be from east to west along the majority of Ocean Isle Beach"[8] However, the model used in DEIS indicated the opposite "the net longshore transport based on the model results was from west to east, even along the midpoint of Ocean Isle Beach."[9] Though the model was adjusted, the final calibration predicted that sand would still move in the wrong direction for more than a mile.[10]

All the reasons shown above demonstrate that the model failed in its essential function. Thus, the Corps should not use the model for making the decision about the preferred alternative.

The Economic Analysis in the DEIS is Flawed and Misleading

The DEIS is biased in overestimating negative economic effects of erosion and costs for non-groin alternatives and in underestimating costs related to groin alternative. Further, the economic analysis of alternatives is fundamentally flawed because it attributes to the town the costs borne by entities other than the applicant.

a. DEIS compares incongruent timelines

First, the shoreline was modeled only for 3 years whereas economic effects of erosion are estimated for 30 years. This incongruence renders the 30-year economic impacts as stated in the DEIS questionable. The DEIS defends this by saying that "the model results are by no means intended to represent predictions of what changes to expect in the future with certainty, as this would require an ability to predict future weather and oceanic conditions." However, as shown above the model cannot indicate known erosion rates and known direction of longshore sediment transport under the known weather conditions.

b. DEIS overestimates economic impact of erosion

The DEIS claims that that 238 parcels, 45 of which have homes situated "east of station 15+00 (located just west of the Shallotte Boulevard)"[11] are vulnerable to erosion in the next 30 years. However, the DEIS does not provide clear identification of mentioned parcels. Consulting county GIS map (Figure 1) reveals that there are no 238 parcels on dry land in the mentioned location, unless the DEIS is counting the submerged properties. By performing visual inspection of the map it stands that approximately 54 parcels are on dry

[8] Appendix C. p. 58
[9] Id.
[10] Id. p. 59
[11] DEIS, p. 25

land and about 184 are submerged. This is misleading because the submerged properties have already been under water for a number of years and thus are now a public trust resource.

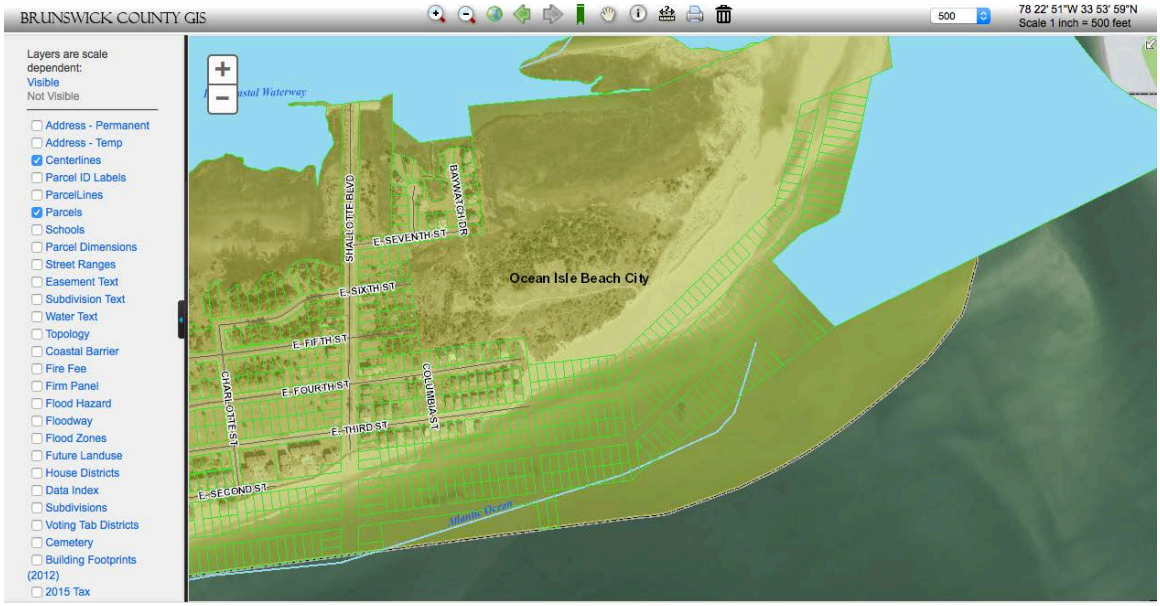


Figure 1: Aerial map of properties east of Shallotte Boulevard in Ocean Isle Beach. Source: Brunswick County GIS[12]

c. The economic analysis of the alternatives is flawed.

First, the economic impact under the Alternatives 1 is overestimated. The engineering report claims the total economic impact of Alternative 1 over 30 years to be $35,148,000.[13] However, about 69 percent of this amount pertains to the value of lost parcels and lost structures. The applicant's reliance on the value of lost parcels and structures is misleading because the town's financial loss but the parcel and structure owners'.

Rather, the town is only at loss of the property tax income that these parcels and structures are providing. The majority of the parcels claimed to be affected are currently submerged and contribute only a $100 per parcel tax value to the town. Thus, the economic impact of the lost structures and parcels, as it pertains to the town as the applicant is grossly overstated.

Further, the total economic cost for Alternative 1 over the 30-year period of $101.49 million[14] as stated in the DEIS is unsubstantiated because it includes the $66.44 million of the cost borne by the federal government as part of the federal storm reduction project.

[12] http://gis.brunsco.net/gisweb/gis.aspx/
[13] Appendix B, p. 28
[14] Id., p.29

Second, the costs for Alternative 4 are grossly exaggerated. The DEIS estimates that the timeline for the positive effects of Alternative 4 on the island would be 20 years, thus bringing the initial periodic nourishment requirement to a biannual basis.[15] The choice of a 20-year timeline for positive effects is blatantly unsupported. The DEIS mentions this is based on documentation of aerial photography, but these are not shown or discussed in the document.[16] Further the DEIS states that this timeframe "was based on historic behavior of the inlet at the time that elapsed between the stable condition and the mid 1960's to the eroded condition that began to manifest in the early 1980's (Figure 4.9 in the Appendix B)"[17]. The reference to the historic behavior is not applicable because it refers to the opposite – the time it took for the end of the island to erode. In the case of Alternative 4 the island would experience accretion and not erosion. The mentioned figure 4.9 does not depict this historic behavior but rather a 2001 post-construction survey of Shallotte Inlet. Finally, the DEIS recognizes that other inlet channel realignment projects such as the Bogue Banks project have had positive effects on the near shoreline in only six years.[18]

The chosen timeline and the stated need for frequent nourishment grossly inflate costs of Alternative 4 hence making it undesirable compared to the preferred alternative.

For these reasons, the assessment of economic impacts of Alternative 1 is overestimated and misleading. The DEIS needs to provide a map that clearly delineates affected properties and shows the property tax that these contribute to the applicant.

DEIS fails to comply with federal Laws

a. The DEIS fails to comply with the NEPA

The NEPA assures public participation in federal projects that may have a significant effect on the environment. The Environmental Protection Agency states that: "the public has an important role in the NEPA process, particularly during scoping, in providing input on what issues should be addressed in an EIS and in commenting on the findings in an agency's NEPA documents."[19] Further, NEPA puts important emphasis on the transparency of the process and public involvement from the early stages and during all its facets, beginning with scoping.

43 CFR § 46.235 describes scoping as, "a process that continues *throughout* the planning and early stages of preparation of an environmental impact statement." During the 3-year process of the DEIS development in the case of Ocean Isle Beach only one (1) scoping

[15] DEIS, table 3.3, p.33
[16] Id, p.33
[17] Id. p. 123
[18] Appendix B, p. 48
[19] http://www.epa.gov/compliance/basics/nepa.html

meeting was held. The meeting was attended by a Project Review Team (PRT) composed of federal and state agencies, non-governmental organizations, local municipality staff and other interested parties to fulfill the public involvement requirements. During this stakeholder meeting, held in the early stages of the process, in March 2013, the applicant's consultant provided a general overview of the project. Since that time the project has proceeded without further stakeholder participation. The Corps failed to involve the public in further development of the document. It also failed to inform the public about the status of the DEIS development until the DEIS was submitted for public comment on January 23, 2014.

This single meeting was insufficient to inform the public and collect relevant public input. During the meeting no information about the project alternatives, which are the heart of NEPA, was presented or discussed. Thus, these meetings failed to comply with the basic tenant of NEPA which is transparency though public involvement.

40 CFR §1502.8 requires the DEIS to be written in plain language and use appropriate and easily understandable graphics. However, the DEIS is purposefully confusing. First, it lacks a clear, mapped delineation of the project area. Instead, it interchangeably refers to the project area with station numbers, street names, distances, among others, making it difficult to understand what area it is referring to. Second, the DEIS requires the reader to continuously shift back and forth between the main document and the appendices making it complicated to follow the analyses. The overall document is convoluted and fails to comply with the CEQ's requirement of being easily understandable to the general public.

b. DEIS fails to comply with the Endangered Species Act

16 U.S.C. §1536(a)(2) requires the Federal agency to be in consultation with the Secretary to ensure that its activities do not result in destruction or adverse modification of critical habitat. This is achieved specifically by the Section 7 consultation prescribed by the ESA. This provision of the ESA mandates the federal agency to commence a consultation process with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service to show that the proposed project is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of the habitat of such species. As a result of such consultation the USFWS issues a biological opinion on the effects of the project, unless it determines that the proposed project will not likely affect any listed species or critical habitat.

40 CFR §1502.25 requires the lead agency to draft the EIS *concurrently* with analyses required under other laws such as Fish and Wildlife Coordination Act and the Endangered Species Act, among others. Further, 40 CFR 1501.6(1) states that the lead agency shall, "Request the participation of each cooperating agency in the NEPA process at *the earliest possible time*."

The Corps has failed to comply with these requirements and to request the Section 7 consultation with the required federal agencies. The DEIS provides neither information about whether the Section 7 process has occurred nor any findings pertaining to the Section 7 requirement.

Nevertheless, the USFWS has previously stated its opinion on the matter. In his email (Attachment B) to Corps regarding the terminal groin at Shallotte Inlet the Service's official stated:

> *"The issues are clear. A project of this nature will destroy the ecological functioning of this inlet and the surrounding areas. The science is unequivocal. I see no unique issues or areas of significant uncertainty. We oppose this project. There is nothing more to discuss."*[20]

The email further continues by stating that parts of the inlet are a designated critical habitat for wintering populations of piping plover. The USFWS designated critical habitat for the wintering populations of piping plovers on July 10, 2001. Areas containing primary constituent elements that constitute critical habitat were designated in eight states, including 18 units on the North Carolina coast, which includes Shallotte Inlet Complex and the project area.

In designating critical habitat the USFWS identified the following factors that may affect piping plover survival or use of the area which include:

- Recreational activities (motorized and pedestrian),
- Inlet and shoreline stabilization
- Dredging of inlets that can affect spit (a small point of land, especially sand, running into water) formation
- Beach maintenance and nourishment
- Pollution (e.g., oil spills)

Without the information pertaining to Section 7, the information in Chapter 6 of the DEIS, "Avoidance and Minimization", is incomplete. Therefore, the Corps' preferred alternative decision is premature and favors a terminal groin without support, which may not be the least environmentally-damaging, practicable alternative. Further, the monitoring and mitigation plan cannot be developed for this project until an official consultation process with USFWS is initiated and its biological opinion issued.

The DEIS fails to comply with fundamental federal laws that were put in place to make the federal projects a transparent, participatory process and to protect the public trust of natural resources.

[20] Email from W. Laney, FWS, to C. Weaver, NCDENR, (Dec. 19, 2011).

DEIS's analysis of the effects on the environment is inaccurate and incomplete

The DEIS fails to properly evaluate direct, indirect and cumulative impacts to the environment. For its analysis of these impacts the DEIS relies on dubious Delft3D modeling results. This renders the analysis unreliable. The analysis is limited to only one year following the construction. The analysis of cumulative impacts fails to account for a number of already managed and hardened inlets along the coast of North Carolina, some of which are adjacent (i.e. Masonboro Inlet) to Shallotte Inlet.

Under the Clean Water Act, the Corps is only able to permit the least environmentally-damaging, practicable alternative (LEDPA). The proposed alternatives can be categorized into non-structural and structural. The effects of these vary in that those of structural alternatives have permanent effects, while those of non-structural vary. Among the non-structural alternatives, Alternative 4 is the one that has the least negative effect on wet beach habitat, adjacent dry beach habitat and back beach habitat, as well as on aquatic communities.

Further, Alternative 4 and the other non-structural alternatives would maintain habitat for piping plover on Ocean Isle Beach and allow critical habitat for piping plover to remain in Shallotte Inlet and on Holden Beach.

Conversely, the proposed terminal groin structures would have significant, permanent impacts to these areas. They would permanently damage substrate, eliminate wet beach habitats and the associated benthic organisms, significantly modify dry beach habitats, and result in dense vegetation of sparsely vegetated back beach habitats. The groin would also eliminate habitat for all shorebirds that rely on relatively unvegetated back beach, wet beach and intertidal habitats. The groin would therefore have the greatest adverse environmental impacts of any of the alternatives.

Conclusion

The Delft3D model that the DEIS is heavily relying on to chose the LEDPA is a meaningless tool for this purpose. It failed to predict known erosion rates and known longshore sediment transport under the known weather conditions. Hence it is illogical that its results be used as a sole basis to decide the best approach in Ocean Isle Beach's shoreline management project. The failure of the model renders the entire DEIS and its analyses invalid.

In fact, the only alternative not modeled, Alternative 4, is the LEDPA and the Corps must accept it as the preferred alternative. In its analysis of Alternative 4, the DEIS concludes that if it were implemented, "*the inlet should respond to the new 'permanent' channel*

position and alignment with a wholesale shift in the ebb tide delta to the west resulting in the accumulation of the sediment on the west side of the ebb and tide delta. As a result of the reconfiguration of the ebb and tide delta, the shoreline on the west end of Ocean Isle Beach should respond in much the same manner as it was observed between 1954 and 1965 during which time the east end of the island accreted."[21]

For the reasons described above, the DEIS has failed to comply with the requirements established by NEPA and with other federal laws. Therefore, we respectfully request that the Corps issue a revised DEIS addressing the issues raised in these comments.

Thank you for considering these comments. Please contact me at (252) 393-8185 or anaz@nccoast.org if you have any questions regarding their content.

Sincerely,

Ana Zivanovic-Nenadovic
Program and Policy Analyst

Cc:
Todd Miller, North Carolina Coastal Federation
Braxton Davis, N.C. Division of Costal Management
Derb Carter, Southern Environmental Law Center
Geoff Gisler, Southern Environmental Law Center

[21] DEIS p. 32

Appendix 1

Town of Ocean Isle Beach
East End Erosion Mitigation Project

Coastal Planning & Engineering of North Carolina

March 20, 2014

Ken Willson - (kenneth.willson@cbi.com)

Tom Jarrett – (james.jarrett@cbi.com)

Environmental Impact Statement (EIS)

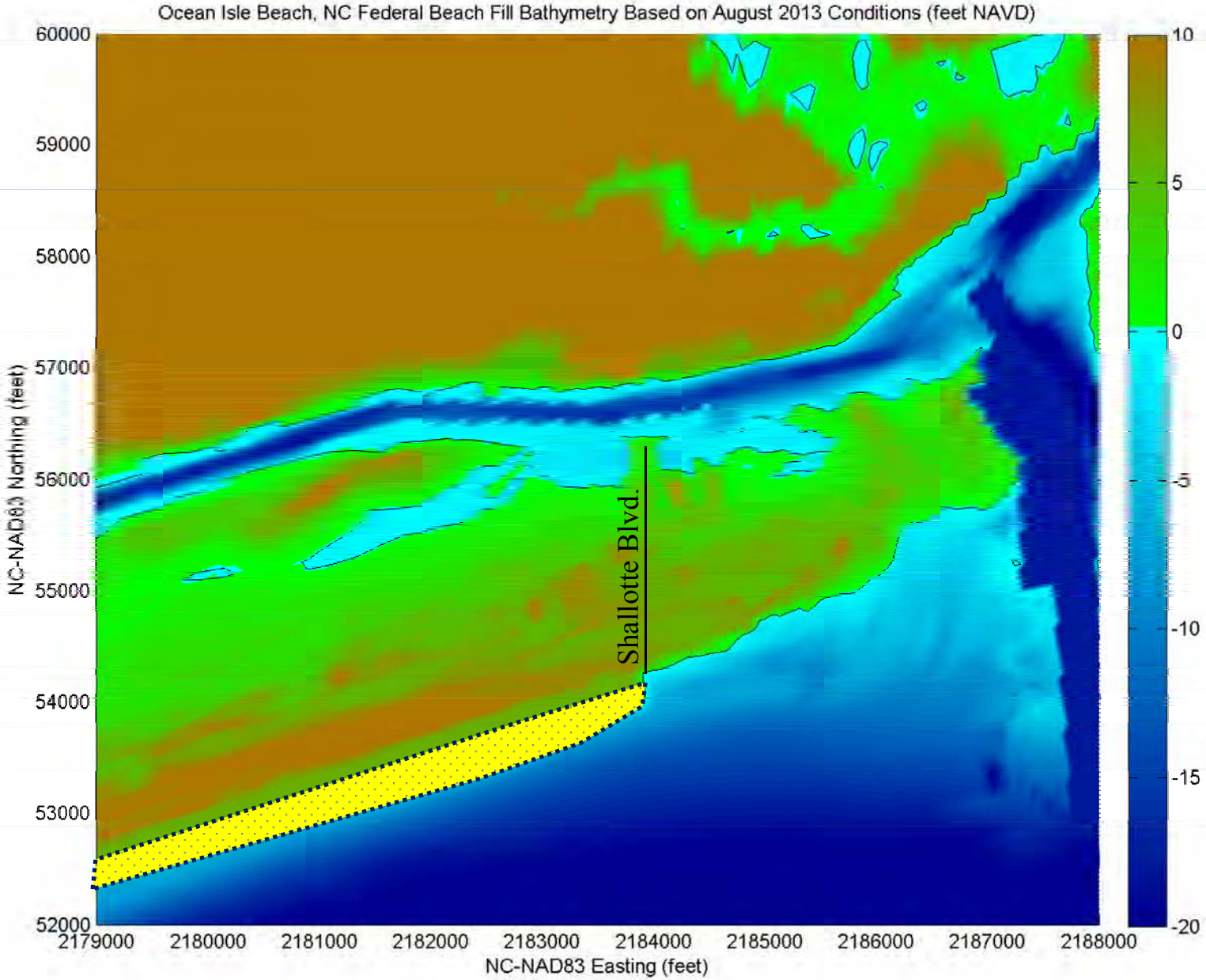
- Applicant has a purpose and need for a project
- Applicant has a proposed plan of action
- For Some Actions National Environmental Policy Act (NEPA) requires the development of an Environmental Impact Statement (EIS)
- EIS requires an Alternative Analysis: Least Environmentally Damaging Practical Alternative (LEDPA)

Alternatives Considered for EIS:

1. No New Action
2. Abandon and Retreat
3. Beach Fill Only
4. Channel Relocation
5. Terminal Groin
   - 250 Ft.
   - 500 Ft.
   - 750 Ft.

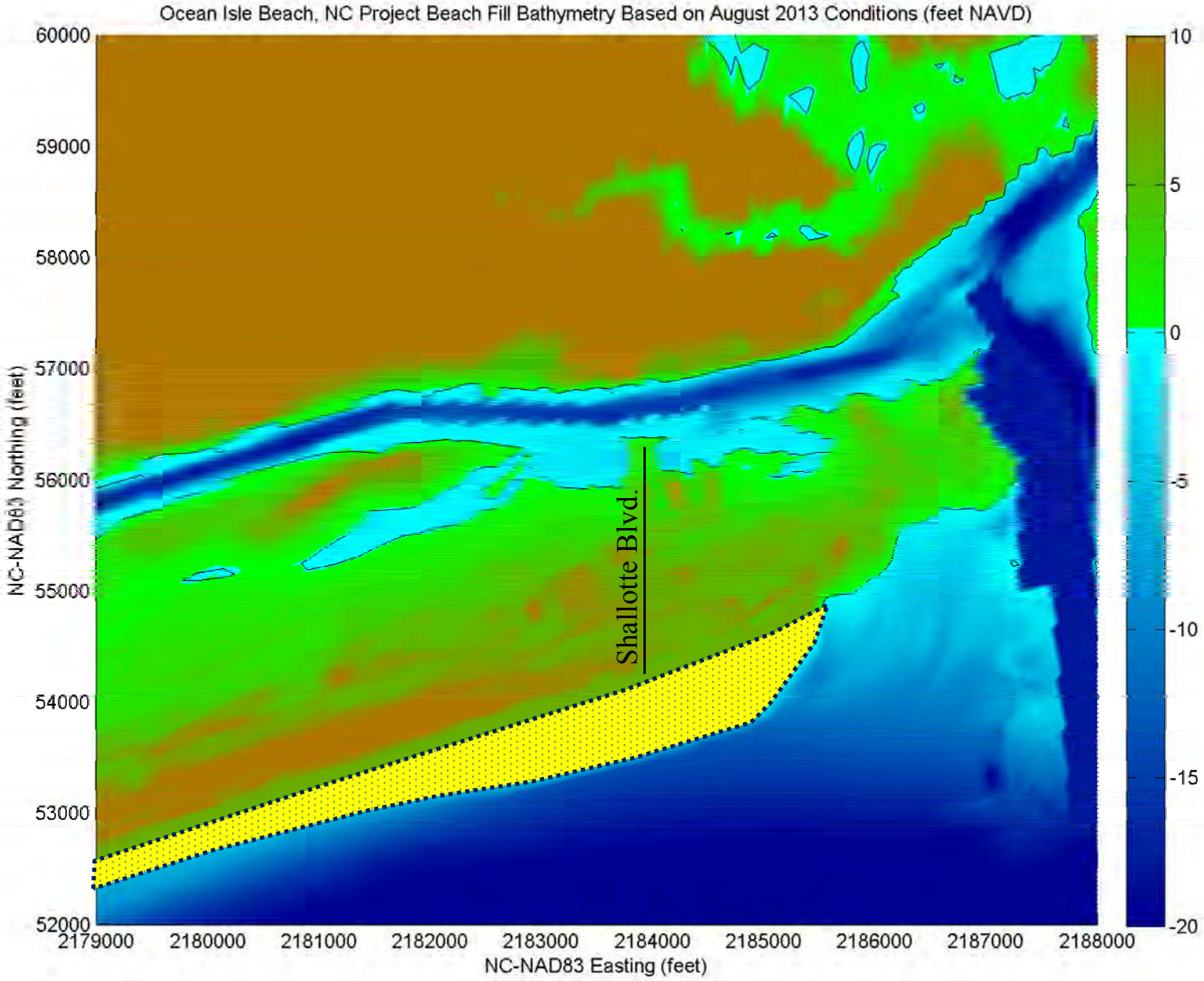
Length = Length from Mean High Water Line Seaward

Alternatives 1 & 2 (No Action & Abandon/Retreat)



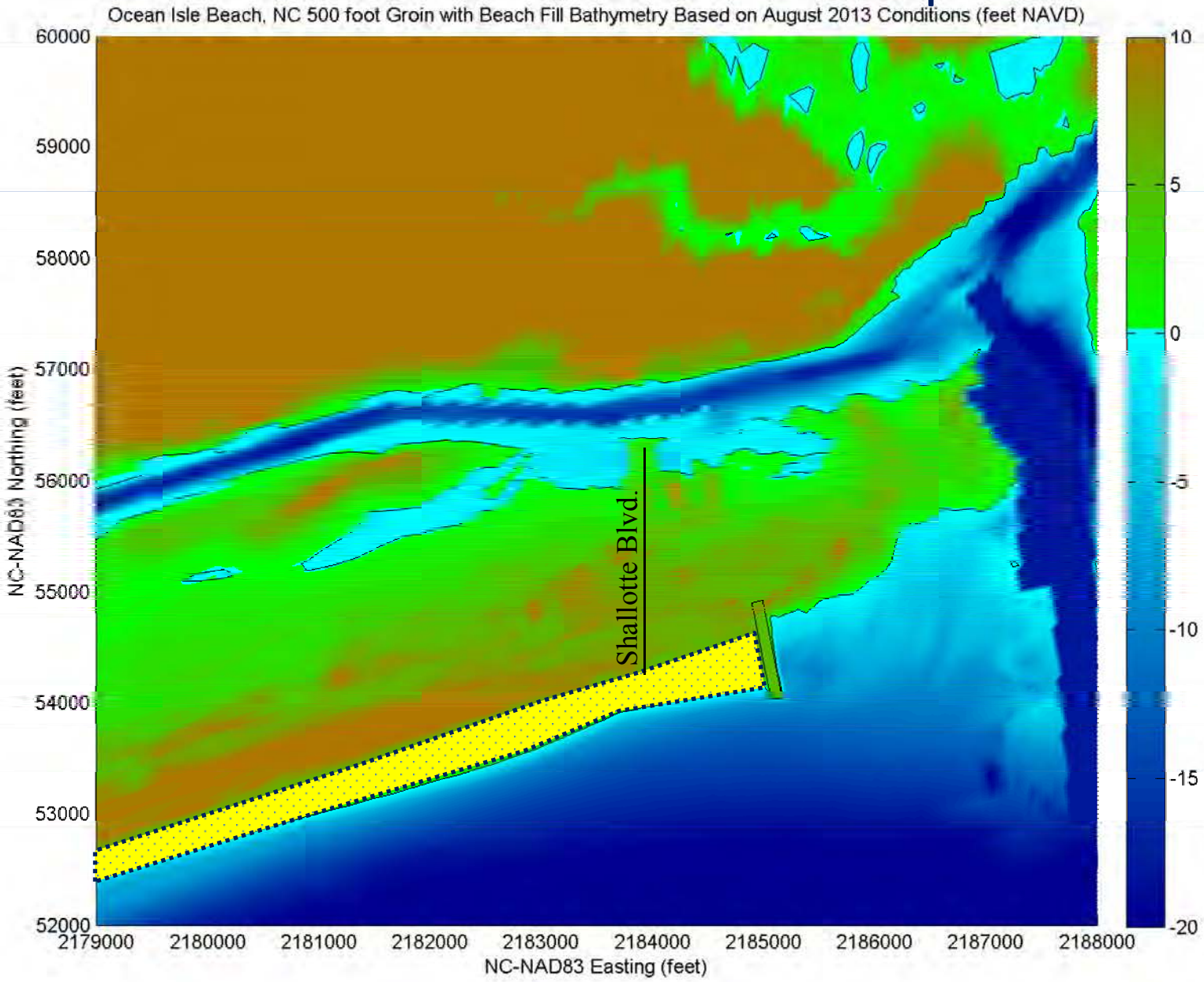
Tracking No. 00.00.2011

Alternative 3 and 4 – Beach Fill Only/Channel Realignment



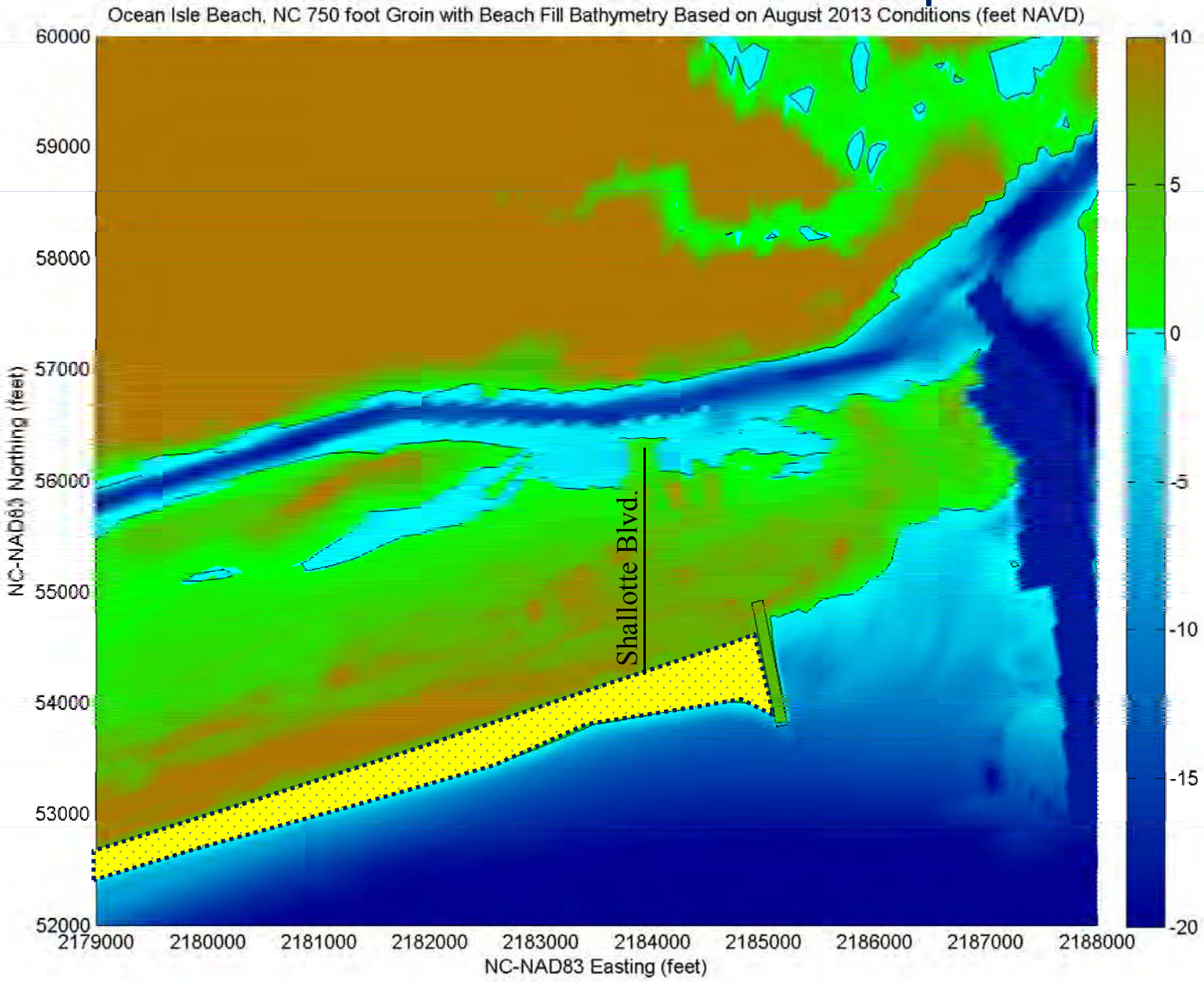
Tracking No. 00.00.2011

Alternative 5 - 500-foot Terminal Groin Option



Tracking No. 00.00.2011

Alternative 5 – 750-foot Terminal Groin Option



Tracking No. 00.00.2011

Initial Beach Fills for Terminal Groin Options

Terminal Groin Option	Fill Length (ft.)[1]	Fill Volume (cy)[2]
250-ft	1,693	87,000
500-ft	2,194	185,000
750-ft	3,214	264,000

Average Three-Year Nourishment Requirements under Existing Conditions

Beach Segment (baseline stations)	Three-year Nourishment Volume (CY)
10+00 to 30+00	175,000
30+00 to 60+00	177,000
60+00 to 90+00	42,000
90+00 to 120+00	14,000
Total	**408,000**

Periodic Nourishment Volumes for Terminal Groin Options

Terminal Groin Option	Three-year nourishment requirement between stations:				Total 3-yr nourishment
	Groin to 30+00	30+00 to 60+00	60+00 to 90+00	90+00 to 120+00	
250-foot	123,000	177,000	42,000	14,000	**357,000**
500-foot	45,000	177,000	42,000	14,000	**279,000**
750-foot	6,000	177,000	42,000	14,000	**240,000**

Tracking No. 00.00.2011


Shallotte Sound
Shallotte Blvd
E 7th St
E 5th St
E 4th St
E 3rd St
Charlotte St
E 2nd St
E 1st St
Terminal Groin
Sta. 30+00

Terminal Groin Option	Nourishment Interval (Years)	Nourishment Volume (cubic yards)
250-foot	3	357,000
500-foot	4	372,000
750-foot	5	400,000

Cost Estimates – Terminal Groin Options

Terminal Groin Option	Feature	Units	Quantity	Costs Including 15% Contingency
250-foot	**Initial Construction**			
	Fillet Beach Fill	CY	87,000	$751,000
	Terminal Groin	linear feet	585	$1,143,000
	Engr & Design	job	Lump Sum	$200,000
	Construction Oversight	job	Lump Sum	$234,000
	Total Initial Construction			$2,328,000
	Periodic Nourishment Every Three Years			
	Nourishment	CY	357,000	$6,205,000
	Terminal Groin Maintenance (Average Annual)			
	Maintenance Cost	NA	NA	$7,000
500-foot	**Initial Construction**			
	Fillet Beach Fill	CY	185,000	$1,596,000
	Terminal Groin	linear feet	839	$1,834,000
	Engr & Design	job	Lump Sum	$200,000
	Construction Oversight	job	Lump Sum	$336,000
	Total Initial Construction			$3,966,000
	Periodic Nourishment Every Four Years			
	Nourishment	CY	372,000	$6,334,000
	Terminal Groin Maintenance (Average Annual)			
	Maintenance Cost	NA	NA	$13,000
750-foot	**Initial Construction**			
	Fillet Beach Fill	CY	264,000	$2,277,000
	Terminal Groin	linear feet	1100	$2,783,000
	Engr & Design	job	Lump Sum	$200,000
	Construction Oversight	job	Lump Sum	$440,000
	Total Initial Construction			$5,700,000
	Periodic Nourishment Every Five Years			
	Nourishment	CY	400,000	$6,575,000
	Terminal Groin Maintenance (Average Annual)			
	Maintenance Cost	NA	NA	$21,000

Initial Construction

$2,328,000

$3,966,000

$5,700,000

Periodic Nourishment

$6,205,000 (3-Years)

$6,334,000 (4-Years)

$6,575,000 (5-Years)

Tracking No. 00.00.2011

Terminal Groin Recommendation

30-Year Project Cost (EIS)

30-Year Cost			
Alternative	Total 30-Year Cost	Federal Share	Non-Federal Share
Alternative 1 & 2	$66,440,000	$43,190,000	$23,250,000
250-foot terminal groin	$68,465,000	$41,484,000	$26,981,000
500-foot terminal groin	$51,062,000	$28,354,000	$22,708,000
750-foot terminal groin	$46,655,000	$23,432,000	$23,223,000

Terminal Groin Recommendation

30-Year Project Cost (6-Year Maintenance)

30-Year Cost			
Alternative	**Total 30-Year Cost**	**Federal Share**	**Non-Federal Share**
Alternatives 1 & 2	$66,440,000[(1)]	$43,190,000	$23,250,000
250-foot terminal groin	$48,953,000	$28,870,000	$20,083,000
500-foot terminal groin	$44,046,000	$23,783,000	$20,263,000
750-foot terminal groin	$42,655,000	$20,974,000	$21,681,000

[(1)]Nourishment of federal storm damage reduction project only, does not include demolition, relocation, or sandbags.

Questions?

Appendix 2

Weaver, Cameron

From: Weaver, Cameron
Sent: Monday, December 19, 2011 12:11 PM
To: Wilson_Laney@fws.gov
Cc: Wilson, Debra; Snider, Holley; Huggett, Doug
Subject: RE: Ocean Isle Beach Terminal Groin Scoping
Attachments: Ocean Isle Beach Terminal Groin.pdf

Mr. Laney:

Thank you, sir, for your input. With this reply, I have forwarded your comments to the DCM District Manager, the DCM Field Representative and to Doug Huggett so that they are aware of your concurrence with USFWS' position on this issue. And I have added you to the distribution list for information on this project should I receive/distribute anything further. If you did not receive the entire email string and attachment that I originally sent to John Ellis, they are attached here.

Let me know if I may be of assistance.

Cameron

Cameron Weaver
Cameron.Weaver@ncdenr.gov
Environmental Assistance Coordinator
NCDENR / Division of Environmental Assistance and Outreach (DEAO)
127 Cardinal Drive
Wilmington, NC 28405
910-796-7303 (F) 910-350-2004
http://ncenvironmentalassistance.org/

From: Wilson_Laney@fws.gov [mailto:Wilson_Laney@fws.gov]
Sent: Monday, December 19, 2011 1:43 PM
To: Weaver, Cameron
Cc: Pete_Benjamin@fws.gov; John_Ellis@fws.gov; Tom_Augspurger@fws.gov
Subject: Ocean Isle Beach Terminal Groin Scoping

Cameron:

Reference Pete Benjamin's e-mail message to you dated/time-stamped December 16, 2011, 10:49 am [text pasted below in bold for your information].

I see Fish and Wildlife Service participation in this discussion as a very low priority. The issues are clear. A project of this nature will destroy the ecological functioning of this inlet and the surrounding areas. The science is unequivocal. I see no unique issues or areas of significant uncertainty in need of further evaluation. We oppose this project. There is nothing more to discuss. FYI, the Holden Beach side of the inlet (including the unnamed sandbars and islands in the inlet) is piping plover critical habitat. The project would destroy critical habitat and as such would require formal consultation. It would also adversely affect sea turtles under our jurisdiction and sea beach amaranth, so we will need to consult regarding them as well when and if the time comes. I know the regulatory agencies are fully familiar with

the Section 7 process and the information that will be needed to initiate consultation. I also understand that as regulatory agencies NCDENR and the Corps must go through the steps of reviewing this request and preparing the necessary assessments to document the effects of the proposed action. I have full confidence in your ability to do so. Feel free to keep us apprised via email as you move through the review process, and feel free to contact me or John Ellis if you have any specific questions, but we are operating on a very limited budget and are short staffed, so we must focus our limited resources where there are substantial natural resource issues to be resolved. The implications of this project on the area's natural resources are clear. As such, at this time our resources are needed elsewhere.

I concur with Pete's assessment of the impacts of the proposed Ocean Isle Beach Terminal Groin. I serve to provide technical support to him and his staff, with regard to fisheries-related issues which fall under the jurisdiction of the Atlantic States Marine Fisheries Commission, and the South Atlantic Fishery Management Council. I serve as the FWS Regional Director's (for ASMFC) or Assistant Regional Director-Fisheries (for the SAMFC) representative on these two institutions.

Construction of the proposed groin would likely have a significant impact on the transport of larval fish, shrimp, crabs and other estuarine-dependent species which are under the jurisdiction of either the Atlantic States Marine Fisheries Commission, and/or the South Atlantic Fishery Management Council. One or both of these management institutions may wish to comment on the proposed project, therefore I am requesting that you add me to your distribution list for the proposed project.

Should you have questions regarding the jurisdiction of either of these institutions with regard to fishery resources which would be impacted by the proposed project, please feel free to contact me.

/s/ Wilson
R. Wilson Laney, Ph.D., Coordinator
South Atlantic Fish and Wildlife Conservation Office
U.S. Fish and Wildlife Service
P.O. Box 33683
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---- Forwarded by John Ellis/R4/FWS/DOI on 12/13/2011 09:40 AM ----

"Weaver, Cameron"
<cameron.weaver@ncdenr.gov>

12/08/2011 02:34 PM

To "Baker, Jessi E" <jessi.baker@ncdenr.gov>, Ron Sechler <ron.sechler@noaa.gov>, "Snider, Holley" <holley.snider@ncdenr.gov>, "Wilson, Debra" <debra.wilson@ncdenr.gov>, "Simpson, Shaun" <shaun.simpson@ncdenr.gov>, "Huggett, Doug" <doug.huggett@ncdenr.gov>, "Timpy, David L SAW" <David.L.Timpy@usace.army.mil>, "Ellwood, Molly M." <molly.ellwood@ncwildlife.org>, "Hall, Rhonda" <rhonda.hall@ncdenr.gov>, "Humphrey, Jeremy" <jeremy.humphrey@ncdenr.gov>, "Coburn, Chad" <chad.coburn@ncdenr.gov>

cc Daisy Ivey <daisy@oibgov.com>, "james.Jarrett@shawgrp.com" <james.Jarrett@shawgrp.com>, "john_ellis@fws.gov" <john_ellis@fws.gov>, "Willis, Linda" <linda.willis@ncdenr.gov>, Brigit Flora <bflora@brunsco.net>

Subject Ocean Isle Beach Terminal Groin Scoping meeting

North Carolina Wildlife Resources Commission

Gordon Myers, Executive Director

MEMORANDUM

TO: Tyler Crumbley
Wilmington District
US Army Corps of Engineers

FROM: Maria T. Dunn, Coastal Region Coordinator
Habitat Conservation Program

DATE: March 16, 2015

SUBJECT: Draft Environmental Impact Statement Ocean Isle Beach Shoreline Management Project, Brunswick County, North Carolina.

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

The Town of Ocean Isle Beach has submitted a DEIS with a preferred alternative to construct a 750' terminal groin with a 300' shore anchorage system on the Atlantic Ocean shoreline to address erosion and provide beach restoration for Ocean Isle Beach. In addition to the terminal groin, beach nourishment for 3,214' of shoreline west of the groin is proposed at five year intervals. The amount of nourishment is approximately 264,000 CY of material and is proposed to be conducted between November 16 and April 30 of each nourishment interval. This alternative also includes the continuation of the Coastal Storm Damage Reduction project currently conducted by the US Army Corps of Engineers. The total permit area is 4,413 acres and includes both sides of the inlet, the AIWW, Saucepan Creek, and saltmarsh complexes of these systems. This area encompasses primary nursery areas (PNAs) and critical habitat for piping plover.

The NCWRC has reviewed the preferred alternative and would like to state concern with several aspects of the project. In general our agency believes projects that affect oceanfront beaches and natural inlet processes such as beach nourishment, inlet dredging, inlet relocation and the construction of hardened structures on or along beaches may adversely affect sea turtle nesting areas, shorebird foraging and nesting areas, and ingress and egress within the inlet of fishery resources. Federal and state listed turtles that utilize the area include leatherback (*Dermochelys coriacea*), loggerhead (*Caretta caretta*), hawksbill (*Eretmochelys imbricate*), Kemp's ridley (*Lepidochelys kempi*), and green (*Chelonia mydas*) sea turtles as well as the Carolina diamondback terrapin (*Malaclemys terrapin centrata*). Shorebirds of equal

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significance include piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), Wilson's plover (*Charadrius wilsonia*), American oystercatcher (*Haematopus palliatus*), common tern (*Sterna hirundo*), gull-billed tern (*Sterna nilotica*), and black skimmer (*Rynchops niger*). Protected fishery resources include shortnose sturgeon (*Acipenser brevirostrum*) and Atlantic sturgeon (*Acipenser oxyrinchus*). Each of these species utilize different aspects of the inlet complex and impacts to the system, especially cumulative impacts from long term management, may reduce habitat availability.

The DEIS includes projections of shoreline response from modeling. However it is difficult to incorporate outside factors, such as shoreline management activities on Holden Beach and other river / inlet channel manipulations, in these projections. These factors further complicate the ability to manage the dynamic barrier island system and thereby lead to concerns of impacts to wildlife and wildlife habitats. Impacts would not be limited to Ocean Isle Beach, but also affect shoreline profiles on Holden Beach, shoal and sand spit formations within the inlet, and potential impacts to saltmarsh complexes associated with designated PNAs.

Shallotte Inlet is a shallow water inlet system with portions of the inlet complex and project area designated as critical habitat for piping plover. The construction of a terminal groin on either side of the inlet will significantly change sediment transport and likely have a direct and indirect impact to these habitat areas. Changes of sediment transport may remove nesting and foraging habitat for several shorebird species as well as reduce forage opportunities by impacting benthic invertebrate populations through continued nourishment activities and insufficient recovery periods. This is exasperated by allowing construction and nourishment activities during the month of April when shorebirds arrive to these areas.

In addition to impacts to shorebirds, the change in sediment transport will likely affect nesting opportunities for sea turtles. This would occur on Holden Beach as well as Ocean Isle Beach. Continued monitoring throughout the duration of the project should be done to determine if increases in false crawls occur or if overall nesting decreases. If significant changes occur, measures should be made to mitigate the loss. Any hatchlings that emerge from nests could be disoriented from lighting associated with the groin. Therefore if the structure is constructed, lighting should be done to minimize this impact, especially after hatchlings begin to emerge.

The DEIS states the project will be monitored for success and if necessary mitigation for negative impacts would be implemented. Although the DEIS addresses mitigation for some impacts, it is unclear how impacts will be measured and mitigation implemented for numerous impacts to biological resources. It should be further noted that if nourishment activities increase as a direct relationship to groin construction, for either Ocean Isle Beach or Holden Beach, impacts to wildlife resources are increased. Mitigation should be considered for these impacts with creation or protection of similar habitat types. Avoidance and minimization of these impacts should include a moratorium of April 1 – November 15 for groin construction and subsequent nourishment activities. The importance of the month of April should be recognized by this project, particularly since critical habitat for piping plover is designated within the permit area.

Impacts to wildlife resources are considerate in this area due to the number of species that utilize Shallotte Inlet. Careful consideration should be given with regard to the project's benefit to infrastructure, built-upon area, and buildable lots; the project's long-term costs and feasibility; and the overall impact to wildlife resources during and after project implementation.

Thank you for the opportunity to review and comment on this DEIS. Please feel free to contact me at (252) 948-3916 or at maria.dunn@ncwildlife.org if there are any questions or comments pertaining to this project.

North Carolina Wildlife Resources Commission

Gordon Myers, Executive Director

MEMORANDUM

TO: Tyler Crumbley
Wilmington District
US Army Corps of Engineers
And
Lyn Hardison
Office of Legislative and Intergovernmental Affairs
North Carolina Department of Environment and Natural Resources

FROM: Maria T. Dunn, Coastal Region Coordinator
Habitat Conservation Program

DATE: February 23, 2015

SUBJECT: Public Notice for Town of Ocean Isle Beach, Brunswick County, North Carolina.
SAW-2011-01241
OLIA No. 15-0393

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

The Town of Ocean Isle Beach has submitted notice to construct a 750' terminal groin with a 300' shore anchorage system on the Atlantic Ocean shoreline to address erosion and provide beach restoration. In addition to the terminal groin, beach nourishment for 3,214' of shoreline west of the groin is proposed at five year intervals. This project is designed as allowed in the North Carolina General Assembly's 2011 Senate Bill 110 and 2013 Senate Bill 15.

Projects that affect oceanfront beaches and natural inlet processes such as beach nourishment, inlet dredging, inlet relocation and the construction of hardened structures on or along beaches may adversely affect nesting sea turtles and shorebird foraging and nesting areas. Our agency is currently reviewing the Draft Environmental Impact Statement (DEIS) and will provide specific comments on that

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document related to wildlife resources that utilize this shore. At this time, however, we have the following general comments:

- Shallotte Inlet is a shallow water inlet system with either side of the inlet designated as critical habitat for Piping plover (*Charadrius melodus*). The construction of a hardened structure, such as a terminal groin, on either side of the inlet will significantly change sediment transport and likely have a direct and indirect impact to these habitat areas. If constructed, biological and physical post-project monitoring should be conducted for a long enough period of time to determine the effect a terminal groin structure has on the immediate and surrounding areas. Due to the dynamic nature of barrier islands, ocean facing beaches, and inlets, this period of time should be long enough to capture a "normal" period of time. Monitoring reports should be provided to the appropriate parties and consultation should be done with regulatory and resources agencies prior to ceasing any monitoring activity. If it is determined during this period of time the project has had a significant adverse impact or is not performing as intended, mitigation may have to be implemented.

- Preconstruction monitoring should be conducted for overwintering birds to better establish the use of the inlet area by these species. This information is beneficial in evaluating any impacts to the use by these bird species post construction during seasons that may not have been previously monitored by the applicant outside of the breeding season.

- The NCWRC is concerned that building a structure that is dependent upon regular nourishment events could potentially impact benthic invertebrate populations found in intertidal habitats. Benthic invertebrates are an important food source for foraging birds, both resident and migratory, during both the breeding and nonbreeding seasons. Regular beach nourishment events, such as every five years, can reduce benthic populations when populations are not given appropriate time for recovery.

- The NCWRC is concerned that the construction of a terminal groin may lead to a possible increase in requests to conduct emergency beach nourishment during ecologically sensitive times of the year, i.e. the nesting shorebird and nesting sea turtle moratoriums, due to potential increases in erosion rates around the groin structure.

- The NCWRC is concerned about permanent, cumulative habitat loss and changes to the inlet complex. "Coastal engineering projects can potentially create, enhance, degrade, or destroy foraging and nesting habitat at important coastal bird breeding, stopover, or wintering sites" (Harrington 2008). Senate Bill 110 (e)(5)(c) states the plan must provide for mitigation measures to be implemented if adverse impacts reach the thresholds defined in the plan. Mitigation would need to create or protect a similar habitat type that would offset the loss of this inlet area. Please provide a discussion on the potential mitigation options that may be available to offset any unintended direct and indirect impacts from the proposed terminal groin.

- The NCWRC has an established sea turtle nesting moratorium that reduces the potential for unintended impacts to nesting sea turtle species that frequent the coast of North Carolina. If the terminal groin and / or beach nourishment project should be implemented, all work on the oceanfront shoreline, including mobilization and demobilization for all beach nourishment events and the construction of the terminal groin structure, should be conducted outside of the sea turtle nesting season which runs from May 1 – November 15, or until the last known sea turtle nest has hatched.

– Inlet areas provide suitable nesting, foraging and roosting areas for multiple shorebird species. Nesting birds are sensitive to increased human activity and other disturbances around their nesting areas. If the terminal groin and / or beach nourishment projects should be implemented, all work on the oceanfront shoreline, including mobilization and demobilization for all beach nourishment events and the construction of the terminal groin structure, should be conducted outside of April 1 – August 31. Details provided in the public notice included the month of April within the construction schedule. This should be adjusted to comply with the moratorium.

Thank you for the opportunity to review and comment on the public notice for this project. Please feel free to contact me at (252) 948-3916 or at maria.dunn@ncwildlife.org if there are any questions or comments pertaining to this project.

Works Cited

Harrington, B. R. 2008. *Coastal inlets as strategic habitat for shorebirds in the southeastern United States*. DOER Technical Notes Collection. ERDC TN-DOER-E25. Vicksburg, MS: U.S. Army Engineer Research and Development Center. http://el.erdc.usace.army.mil/dots/doer/.

From: Crumbley, Tyler SAW
To: [redacted]
Cc: Rosov, Brad; Crumbley, Tyler SAW
Subject: OIB Draft EIS Documents for Comment
Date: Wednesday, February 18, 2015 2:51:06 PM

Mr. [redacted]

Thank you for speaking with me today regarding the documents for commenting on the Ocean Isle Beach (OIB). Please find the link below to hopefully satisfy your request:

http://www.saw.usace.army.mil/Missions/RegulatoryPermitProgram/PublicNotices/tabid/10057/Article/562125/saw-2011-01241.aspx

-Tyler

Tyler Crumbley
Project Manager
U.S Army Corps of Engineers-Wilmington District
Wilmington Regulatory Field Office
69 Darlington Avenue
Wilmington, NC 28403

Phone: 910-251-4170
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"The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the Customer Satisfaction Survey located at: http://regulatory.usacesurvey.com/"

North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Donald R. van der Vaart
Secretary

MEMORANDUM:

TO: Tyler Crumbley, United States Army Corps of Engineers

FROM: Shane Staples, DCM Fisheries Resource Specialist

SUBJECT: Ocean Isle Beach Terminal Groin Public Notice

DATE: 2/23/15

A North Carolina Division of Coastal Management (DCM) Fisheries Resource Specialist has reviewed the subject public notice project for proposed actions that impact fish and fish habitats. The Town of Ocean Isle Beach has proposed a preferred alternative to construct a 750ft terminal groin constructed on the east end of Ocean Isle Beach near Shallotte Inlet along with 3,214ft of beach fill to the west of the proposed groin using material Dredged from Shallotte Inlet. The proposed terminal groin would be constructed of armor stone to an average height of 4.9ft NAVD (North American Vertical Datum). Other alternatives presented were to take no action, abandon and retreat, continued beach fill only, and Shallotte Inlet bar channel realignment with beach fill.

The construction of a terminal groin near Shallotte Inlet could have negative effects on fish, shellfish, and their habitats. Hardened structures like the proposed groin can block and/or divert longshore larval transport which is especially important near inlets. Despite the majority of the inlet remaining open, successful transport of larvae through the inlet occurs within a narrow zone parallel to the shoreline and is highly dependent on along-shore transport (Blanton et al. 1999; Churchill et al. 1999; Hare et al. 1999).

Other concerns include the possible degradation of the habitat in the area of the groin and the construction timeline. Hardened structures can change the littoral flow of sediments, modify sediment grain size, narrow and steepen adjacent beaches, resulting in a reduction of intertidal habitat. Were the project to go forward, the fisheries moratorium for dredging is April 1 – September 30 in order to protect fish during a season critical to spawning success and larval/juvenile recruitment

More specific fisheries comments will be contained in the Division of Coastal Management's responses to the DEIS (Draft Environmental Impact Statement) currently being circulated.

Contact Shane Staples at (252) 948-3950 or shane.staples@ncdenr.gov with further questions or concerns.

Literature Cited

Blanton, J. O., F.E. Werner, A. Kapolnai, B.O. Blanton, D. Knott, and E.L. Wenner. 1999. Wind-generated transport of fictitious passive larvae into shallow tidal estuaries. Fisheries Oceanography 8(2): 210-223

Churchill, J.H., R.B. Forward, R.A. Leuttich, J.J. Hench, W.F. Hettler, L.B. Crowder, and J.O. Blanton. 1999. Circulation and larval fish transport within the tidally dominant estuary. Fisheries Oceanography 8 (Suppl. 2): 173-189

Hare, J.O., J.A. Quinlan, F.E. Werner, B.O. Blanton, J.J. Govoni, R.B. Forward, L.R. Settle, and D.E. Hoss. 1999. Larval transport during winter in the SABRE study area: results of a coupled vertical larval behavior three-dimensional circulation model. Fisheries Oceanography 8(2): 57-76

North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Donald R. van der Vaart
Secretary

March 26, 2015

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

Dear Sirs:

The Division of Coastal Management (DCM) has completed our review of the Draft Environmental Impact Statement (DEIS) for the proposed Ocean Isle Beach terminal groin project located in Brunswick County, North Carolina. As you are aware, in 2011 the General Assembly of North Carolina enacted Senate Bill 110 (SB 110), which amended the Coastal Area Management Act (CAMA) to allow for the permitting of up to four terminal groins in North Carolina. SB 110 was further amended by Senate Bill 151 (SB 151) in 2013. For communities pursuing a terminal groin project, the amended SB 151 set out several specific requirements that must be met before a CAMA permit can be issued. DCM staff have therefore reviewed the DEIS in light of these requirements, as well as the laws of the CAMA and Dredge and Fill Act, and rules of the Coastal Resources Commission, and we provide the following comments for your consideration.

EXECUTIVE SUMMARY

- No Comment

CHAPTER 1 – INTRODUCTION

- Page 8 EIS – when the ocean bar channel of Shallotte Inlet is oriented toward the west end of Holden Beach, the west side of the ebb tide delta of the inlet also migrates toward the west exposing the east end of Ocean Isle to direct wave attack. With the main bar channel situated closer to Holden Beach, the flood channels tend to form close to shore along the east end of Ocean Isle. The presence of the flood channels combined with wave driven currents transport sediment off the east end of the island and into Shallotte Inlet at a faster rate than the supply of wave driven sand being transported toward the east off the main portion of the island. Please address in the document how construction of a

terminal groin, coupled with current beach management practices, would change those factors currently affecting chronic erosion east of Shallotte Boulevard at Ocean Isle?

CHAPTER 2 – PURPOSE AND NEED

- Page 17: Please provide additional information on the overlapping of currently approved projects that authorize the placement of sand east and west of Shallotte Boulevard, specifically the placement of sand authorized by the US Army Corps of Engineers (USACE) navigation maintenance project, the USACE placement template, CAMA Major Permit #91-05 issued to the Town of Ocean Isle Beach, and the USACE Coastal Storm Damage Reduction project, including the volumes of materials associated with each specific project.

- Pg. 17: Please provide additional information on the frequency at which sand has been placed on the beach, including the 2014 activities, and the volume of materials associated with each specific project.

CHAPTER 3 – PROJECT ALTERNATIVES

As a general comment on this chapter, it appears that not all alternatives were analyzed with the same or similar levels of detail. It is suggested that the DEIS be re-examined to ensure that similar information is provided for each alternative.

Alternative 1- No Action (Continue Current Management Practices)

- Page 23: The document indicates that periodic nourishment was to occur approximately every three years following the initial storm damage reduction project in 2001, which would have triggered the nourishment event in 2004; however, it was decided that the "*project performed so well*" that nourishment would not be necessary until 6 years after the initial project (*Ocean Isle Beach, NC Static Line Exception Progress Report, 2014*). This information from the 2014 Static Line Exception Report is not mentioned in this section of the DEIS, which only notes the chronic erosion and that beach nourishment alone will not fix the problem. Additionally, the DEIS indicated that a portion of the project area did not receive sand in 2010, because of the "poor performance of the fill palced east of Station 10+00 in January 2007". Please address why this portion of the project performed well after the 2001 event, and then very poorly after the 2007 project?

- Page 27: The DEIS states the total economic cost for Alternative 1, over a 30 year period, to be $101.49 million. Of this $101.48 million, it is stated the Federal government share of the Federal nourishment project is $43.19 million. Would this not make the total economic cost to the Town of Ocean Isle Beach $58.29 million?

- Page 24-25: Please specify whether the $1.6 million loss in estimated appraised value since 2005 includes only the five (5) homes, or the homes plus a number of the 20-25 buildable parcels.

- Page 25: Table 3.1: Please verify that the cost/loss for each item is counted only once; for example, “sandbags” and “public/beach accesses” are mentioned multiple times.

- Page 27: The statement that 45 houses and 238 parcels would be lost within the next 30 years assumes that sandbag revetments would fail completely and permanently after five years; that storm damage reduction projects would be ineffective for mitigating erosion; and that all of the houses and parcels would be completely and permanently lost or need to be relocated. What is the basis for stating none of these above mitigation measures will protect these parcels and homes? Additionally, a cursory review of available GIS data appears to show that a significant portion of the 238 parcels may in fact be currently either fully or partially submerged. The document should be revised to clearly separate highground parcels from submerged parcels that may now lie within public ownership. The various economic analysis’s contained in the document should also be changed to reflect any changes in this information.

- Page 27: Based on the one-third relocation assumption the average value of each of the fifteen (15) relocated homes would be $86,667. Please verify that this is an appropriate valuation.

<u>Alternative 2- Abandon/Retreat</u>

- Page 27: The total economic cost for Alternative 2 includes the Federal portions of the project cost and should only include the total economic cost to the Town of Ocean Isle Beach.

- Page 28: The statement that the same homes and infrastructure damaged under Alternative 1 within 30 years would also be damaged under Alternative 2 repeats the assumption that sandbag revetments will be entirely ineffective over this period. What is the basis for this assertion?

<u>Alternative 3- Beach Fill Only (Including Federal Project)</u>

- Page 29: According to the Delft3D model assessment of beach nourishment performance on the east end of Ocean Isle Beach, the volumetric losses from a beach fill project (east of station 30+00) would be expected to erode a rate of 140,000 cubic yards/year. On pages 38-39, reference is made that there is very little difference between Alternative 1 and Alternative 5 in terms of impacting volume changes above -6’ NAVD depth contour along the western end of Holden Beach, indicating that the results were within the accuracy of the model, thus suggesting no difference in the response on the west end of

Holden Beach. Given that forces influencing sediment transport will remain in place, with or without a terminal groin structure, please explain how volume changes along the western end of Holden Beach remain relatively the same before and after construction of the project? Would it not be the case that the accretional side (west) of the structure would benefit, but the downdrift side (east) would lose material gained from littoral transport?

Alternative 5- Terminal Groin with Beach Fill (Including Federal Project)/Applicant's Preferred Alternative

- Pages 34-37: In reference to the three terminal groin schematics generated by the Delft3D model used to assess the impacts of the proposed options (250, 500, and 750 ft.), the only visible difference is there is more material in the area of the terminal groin fillet (west side of structure, or updrift side), and the model does not predict any negative effects (erosion) east of the structure (downdrift side). On page 37 it is stated that "*differences in the response of the model relative to Alternative 1 could be attributed to the structures and their accompanying beach fill.*" The model output images illustrate this, but how likely is it that there would not be a negative impact in some location?

- Page 34: What is meant by, "The resulting position and alignment of the shoreline within the accretion fillet would mimic that of the shoreline immediately to the west"?

- Page 34: The statement "Since wave induced sediment transport (i.e., littoral sand transport) would still be in play, erosion will continue to be a management issue for the shorelines lying outside the direct influence of the terminal groin." implies that shorelines lying within the direct influence of the terminal groin will not be subject to erosion. Please clarify whether this is the intended claim.

- Page 39: Although it is stated in the preceding narrative, for ease of comparison it would be helpful to include nourishment requirements for Alternative 1 in Table 3.5.

- Page 39: In paragraph 3, when comparing the modeling for the different size terminal groins and the results indicating a relatively stable beach, please use the same measurement increments for comparison. In one instance the modeling results are expressed in feet, in the other, the modeling results are referenced against survey stations.

- Page 39-40: While the total volume of sediment required under the 500-foot and 750-foot terminal groin options are claimed to allow a less frequent nourishment interval, the stated volumes are cumulative over the entire beach strand from the terminal groin to station 120+00. It is also stated that nourishment requirements are only reduced from the terminal groin to station 30+00. No claims are made as to the potential impacts or feasibility of increasing the nourishment interval specifically between stations 30+00 and

120+00 which would see no reduced nourishment requirements from any of the terminal groin alternatives. Is it anticipated that there could be potential impacts or a feasibility of an increases nourishment interval between stations 30+00 and 120+00?

- Page 40: The impacts of losing the ability to combine contracts with Wrightsville Beach, Masonboro Inlet, Carolina Beach and Kure Beach are not adequately addressed. The claim that "the potential cost savings for extending the nourishment interval would offset most of if not all of the cost impacts" is not substantiated. These impacts should be quantified with assumptions clearly stated. Potential nourishment schedules, showing the years in which combined contracts are possible, would be helpful.

- Page 41: The source of the maintenance cost estimates should be stated.

- Page 41: Please specify whether the stated periodic nourishment costs are based on combined contracts with other municipalities, and if not, provide the differential cost estimates.

- No claim is made as to how a terminal groin would perform relative to the 45 houses and 238 parcels that are would be lost within the next 30 years under the other alternatives.

- No claim is made as to whether sandbag revetments would be required or anticipated in the project area following completion of the terminal groin.

- Please provide information on existing sandbags within the project area.

Alternative Analysis Additional Information

- Page 44: Table 3.10 and 3.11 should be updated to remove any cost to be paid by the Federal government.

CHAPTER 4 – AFFECTED ENVIRONMENT

- The DEIS states that the large armor stone will have spaces large enough to facilitate along-shore transport of both sediment and larval fish. It is requested that additional information be provided which explores potential impacts to larval fish movement through Shallotte Inlet.

- Information is requested as to what will keep open spaces from filling with sediment which would no longer allow passage of sediment and/or fish larvae through the structure.

- Page 188: The DEIS refers to the environmental dredge window as November 15 – April 30. Please be aware that additional limitations necessary to protect fisheries resources may apply to dredging activities after March 31.

CHAPTER 5 – ENVIRONMENTAL CONSEQUENCES

- No Comment

CHAPTER 6 – AVOIDANCE AND MINIMIZATION

- Senate Bill 151 (Session Law 2013-384) requires that the applicant for a terminal groin project address certain financial obligations for the project, including long-term maintenance. In order to ensure that the required financial information is provided in an acceptable fashion, the financial costs associated with the requirements of Senate Bill 151 (Session Law 2013-384) should be included in the DEIS in as detailed a manner as is possible at this stage in the project development process. The Division would therefore request more detailed cost information in the Final EIS. Items of specific interest include:
  - Costs associated with any additional monitoring initiatives (See Items to be Resolved, DEIS Page iii);
  - Costs associated with each monitoring event currently implemented by the Corps of Engineers. This information will be necessary for a full disclosure of potential costs committed to by the Town should the Town be required to carry out a portion of the monitoring if Federal funding for the monitoring falls short in any year (See DEIS Page 204). Additionally, similar information should be provided regarding potential costs to the Town to implement mitigation efforts if Federal funding for beach nourishment falls short (See DEIS Page 205).
  - Cost estimates for the full removal of the terminal groin structure should be stated if it is determined that the structure is not functioning as intended, and groin modifications are deemed ineffective in minimizing or eliminating these negative impacts.
  - The inclusion of the above-listed financial information into the cost analysis of the terminal groin portions of the alternatives section of the DEIS.

- With regards to verification of the final financial assurance package, 113A-115.1(e)(6) requires that a financial assurance plan be verified either by the Secretary of the Department of Environment and Natural Resources (DENR) or by the Coastal Resources Commission (CRC). DCM and the Department have taken the position that the choice of verification pathway (DENR Secretary or CRC) should fall to the discretion of the applicant. Therefore, as the financial assurance package becomes more detailed and refined, and the project moves closer to the permit application stage, the Division suggests a meeting between the Town and the Division to determine which of the two verification pathways are preferred by the Town.

- Page 191: The Wildlife Resources Commission should be included in the list of agencies for which pipeline placement coordination should take place.

- Page 192: In the paragraph labeled “escarpments”, the second sentence should state, “18 inches or greater for 100 ft”.

- Page 198-204: Senate Bill 151 states the permittee shall, “Define the baseline for assessing any adverse impacts and the thresholds for when adverse impacts must be mitigated.” The DEIS states that no thresholds were established for the inlet due to the variable nature of the shoreline changes. DCM believes the Senate Bill 151 is explicit in stating a baseline and corresponding thresholds must be established. Please provide the baseline and thresholds to determine adverse impacts from the construction of the terminal groin at Stations 375-400 on Holden Beach and from the inlet to Station 5 on Ocean Isle Beach.

The Division of Coastal Management appreciates the opportunity to comment on this project, and we look forward to further discussions on the issues raised in this letter. Please note that internal consistency throughout the document should be verified following any revisions made subject to the above comments. If you have any questions concerning any of these comments, please feel free to contact me at (252) 808-2808 ext. 211.

Sincerely,

Jonathan Howell

Cc: Braxton Davis, DCM
Doug Huggett, DCM
Debbie Wilson, DCM
Holley Snider, DCM
Lynn Hardison, DENR

North Carolina
Department of Administration

Pat McCrory, Governor

Bill Daughtridge, Jr., Secretary

March 3, 2015

Mr. Tyler Crumbley
Department of the Army
U.S. Army Corps of Engineers
Wilmington District
69 Darlington Avenue
Wilmington, North Carolina 28403

Re: SCH File # 15-E-0000-0393; DEIS; Proposed project is for the construction of a terminal groin and supplemental beach nourishment project at the eastern end of Ocean Isle Beach.

Dear Mr. Crumbley:

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,

Crystal Best

Crystal Best
State Environmental Review Clearinghouse

Attachments

cc: Region O

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

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

Location Address:
116 West Jones Street
Raleigh, North Carolina

North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Donald R. van der Vaart
Secretary

MEMORANDUM

TO: Crystal Best
State Clearinghouse

FROM: Lyn Hardison
Division of Environmental Assistance and Customer Service
Permit Assistance & Project Review Coordinator

RE: 15-0393
Draft Environmental Impact Statement
Proposed project is for the construction of a terminal groin and supplemental beach nourishment project at the eastern end of Ocean Isle Beach
Brunswick County

Date: March 2, 2015

The Department of Environment and Natural Resources has reviewed the proposal for the referenced project. The comments are attached for the applicant's consideration.

The Department appreciates the cooperative efforts and open communication the applicant has with our agencies and we encourage these efforts to continue as they move forward with the project.

Thank you for the opportunity to respond.

Attachment

North Carolina Department of Environment and Natural Resources
Office of Land and Water Stewardship

Pat McCrory
Governor

Bryan Gossage
Director

Donald R. van der Vaart
Secretary

February 24, 2015

TO: Lyn Hardison, NCDENR State Clearinghouse Coordinator

FROM: Allison (Schwarz) Weakley, North Carolina Natural Heritage Program Allison Weakley

SUBJECT: Draft Environmental Impact Statement (DEIS) – Proposed Construction of a Terminal Groin and Supplemental Beach Nourishment at the Eastern End of Ocean Isle Beach, Brunswick County, North Carolina

REFERENCE: Project No. 15-0393

Thank you for the opportunity to provide information from the North Carolina Natural Heritage Program (NCNHP) database for the proposed project referenced above. The NCNHP database shows several records for rare species and a conservation/managed area within the project area as shown in Figure 1.2 of the DEIS (including the project limits and the borrow area at Shallotte Inlet).

Attached are tables generated from the new North Carolina Natural Heritage Data Explorer (NHDE) that identify natural heritage resources within the vicinity of the proposed project area; these results are based on the estimated project area drawn from maps contained within the DEIS and intersected with the NCNHP database. The attached map (and tables) shows natural heritage resources within the estimated project area and within a one-mile radius of the project area. The locations of natural areas and conservation/managed areas within and near the proposed project area may be viewed by accessing the NHDE online map viewer, or by downloading and using Geographic Information System (GIS) data; both options are available from the NCNHP Data Services webpage (www.ncnhp.org).

Please note that occurrences of rare species documented within one mile of the proposed project area increase the likelihood that these species may be present within the project area if suitable habitat exists. The use of Natural Heritage Program data should not be substituted for actual field surveys if needed, particularly if the project area contains suitable habitat for rare species. If rare species are found during field surveys, the NCNHP would appreciate receiving this information so that we may update our database.

If more specific information is needed about natural heritage resources documented within and within close proximity of the proposed project area, please feel free to contact me directly at Allison.Weakley@ncdenr.gov or 919-707-8629.

Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Intersecting the Project Area
Ocean Isle Beach - Terminal Groin and Beach Nourishment Project
Project No. 15-0393
February 24, 2015
NCNHDE-71

Element Occurrences Documented Within Project Area

Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Status	Accuracy	Federal Status	State Status	Global Rank	State Rank
Bird	11355	Charadrius melodus	Piping Plover	1998-06	Historical	3 - Medium	Threatened	Threatened	G3	S1B,S1N
Bird	17351	Charadrius melodus	Piping Plover	2007	Historical	3 - Medium	Threatened	Threatened	G3	S1B,S1N
Bird	27219	Haematopus palliatus	American Oystercatcher	2007	Current	3 - Medium	---	Special Concern	G5	S2S3B, S3N
Bird	27271	Haematopus palliatus	American Oystercatcher	2007	Current	3 - Medium	---	Special Concern	G5	S2S3B, S3N
Bird	25212	Passerina ciris ciris	Eastern Painted Bunting	2007-07-06	Current	2 - High	Species of Concern	Special Concern	G5T3T4	S3B
Reptile	7051	Caretta caretta	Loggerhead Seaturtle	2012	Current	2 - High	Threatened	Threatened	G3	S3B,S3N
Reptile	6385	Caretta caretta	Loggerhead Seaturtle	2012	Current	2 - High	Threatened	Threatened	G3	S3B,S3N
Reptile	16855	Chelonia mydas	Green Seaturtle	1981	Historical	3 - Medium	Threatened	Threatened	G3	S1B,SUN
Reptile	10225	Chelonia mydas	Green Seaturtle	2007	Current	3 - Medium	Threatened	Threatened	G3	S1B,SUN
Vascular Plant	15559	Amaranthus pumilus	Seabeach Amaranth	2013-07-25	Current	3 - Medium	Threatened	Threatened	G2	S2
Vascular Plant	2352	Amaranthus pumilus	Seabeach Amaranth	2013-07-25	Current	3 - Medium	Threatened	Threatened	G2	S2

No Documented Natural Areas For This Site

Definitions and an explanation of status designations and codes can be found at www.ncnhp.org. Data query generated on February 24, 2015; source: NCNHP, Q4 October 2014. Please resubmit your information request if more than one year elapses before project initiation as new information is continually added to the NCNHP database.

Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Within a One-mile Radius of the Project Area
Ocean Isle Beach - Terminal Groin and Beach Nourishment Project
Project No. 15-0393
February 24, 2015
NCNHDE-71

Element Occurrences Documented Within a One-mile Radius of the Project Area

Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Status	Accuracy	Federal Status	State Status	Global Rank	State Rank
Animal Assemblage	9091	Gull-Tern-Skimmer Colony	---	1983	Historical	2 - High	---	---	G5	S3
Animal Assemblage	7701	Gull-Tern-Skimmer Colony	---	1977	Historical	3 - Medium	---	---	G5	S3
Animal Assemblage	759	Gull-Tern-Skimmer Colony	---	1977	Historical	3 - Medium	---	---	G5	S3
Animal Assemblage	23978	Gull-Tern-Skimmer Colony	---	2004	Current	3 - Medium	---	---	G5	S3
Bird	11355	Charadrius melodus	Piping Plover	1998-06	Historical	3 - Medium	Threatened	Threatened	G3	S1B,S1N
Bird	17351	Charadrius melodus	Piping Plover	2007	Historical	3 - Medium	Threatened	Threatened	G3	S1B,S1N
Bird	27194	Charadrius wilsonia	Wilson's Plover	2007	Current	5 - Very Low	---	Special Concern	G5	S2B
Bird	2061	Charadrius wilsonia	Wilson's Plover	2007	Current	5 - Very Low	---	Special Concern	G5	S2B
Bird	27211	Charadrius wilsonia	Wilson's Plover	2007	Current	5 - Very Low	---	Special Concern	G5	S2B
Bird	27219	Haematopus palliatus	American Oystercatcher	2007	Current	3 - Medium	---	Special Concern	G5	S2S3B, S3N
Bird	27271	Haematopus palliatus	American Oystercatcher	2007	Current	3 - Medium	---	Special Concern	G5	S2S3B, S3N
Bird	25212	Passerina ciris ciris	Eastern Painted Bunting	2007-07-06	Current	2 - High	Species of Concern	Special Concern	G5T3T4	S3B
Bird	23979	Sternula antillarum	Least Tern	2004	Current	3 - Medium	---	Special Concern	G4	S3B
Butterfly	29637	Satyrium favonius favonius	Southern Oak Hairstreak	2011-05-21	Current	2 - High	---	Significantly Rare	G4T4	S1
Dragonfly or Damselfly	33738	Somatochlora georgiana	Coppery Emerald	2004-PRE	Historical	5 - Very Low	---	Significantly Rare	G3G4	S2?

Element Occurrences Documented Within a One-mile Radius of the Project Area

Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Status	Accuracy	Federal Status	State Status	Global Rank	State Rank
Freshwater Fish	32417	Acipenser oxyrinchus	Atlantic Sturgeon	2012-04-04	Current	4 - Low	Endangered	Special Concern	G3	S3
Mammal	17664	Trichechus manatus	West Indian Manatee	2012-08-18	Current	5 - Very Low	Endangered	Endangered	G2	S1M
Natural Community	1360	Coastal Fringe Evergreen Forest (Typic Subtype)	---	2010	Current	3 - Medium	---	---	G2	S2
Reptile	7407	Alligator mississippiensis	American Alligator	1988-07-08	Current	4 - Low	Threatened Similar Appearance	Threatened	G5	S3
Reptile	7051	Caretta caretta	Loggerhead Seaturtle	2012	Current	2 - High	Threatened	Threatened	G3	S3B,S3N
Reptile	6385	Caretta caretta	Loggerhead Seaturtle	2012	Current	2 - High	Threatened	Threatened	G3	S3B,S3N
Reptile	16855	Chelonia mydas	Green Seaturtle	1981	Historical	3 - Medium	Threatened	Threatened	G3	S1B,SUN
Reptile	10225	Chelonia mydas	Green Seaturtle	2007	Current	3 - Medium	Threatened	Threatened	G3	S1B,SUN
Reptile	31879	Dermochelys coriacea	Leatherback Seaturtle	2010	Current	4 - Low	Endangered	Endangered	G2	S1B,SUN
Vascular Plant	15559	Amaranthus pumilus	Seabeach Amaranth	2013-07-25	Current	3 - Medium	Threatened	Threatened	G2	S2
Vascular Plant	2352	Amaranthus pumilus	Seabeach Amaranth	2013-07-25	Current	3 - Medium	Threatened	Threatened	G2	S2
Vascular Plant	4334	Dionaea muscipula	Venus Flytrap	1974-05	Historical	4 - Low	Species of Concern	Special Concern Vulnerable	G3	S2
Vascular Plant	8222	Erythrina herbacea	Coralbean	1957-05-11	Historical	4 - Low	---	Endangered	G5	S2
Vascular Plant	2764	Sporobolus virginicus	Saltmarsh Dropseed	1930-08	Historical	4 - Low	---	Threatened	G5	S1
Vascular Plant	4827	Sporobolus virginicus	Saltmarsh Dropseed	1998-09-07	Current	3 - Medium	---	Threatened	G5	S1
Vascular Plant	16151	Yucca gloriosa	Moundlily Yucca	1994-03-10	Current	3 - Medium	---	Significantly Rare Peripheral	G4?	S2?
Vascular Plant	2987	Zephyranthes simpsonii	Rain Lily	2001-04-21	Current	3 - Medium	Species of Concern	Endangered	G2G3	S1
Vascular Plant	17905	Zephyranthes simpsonii	Rain Lily	1994-04-26	Historical	2 - High	Species of Concern	Endangered	G2G3	S1

Natural Areas Documented Within a One-mile Radius of the Project Area

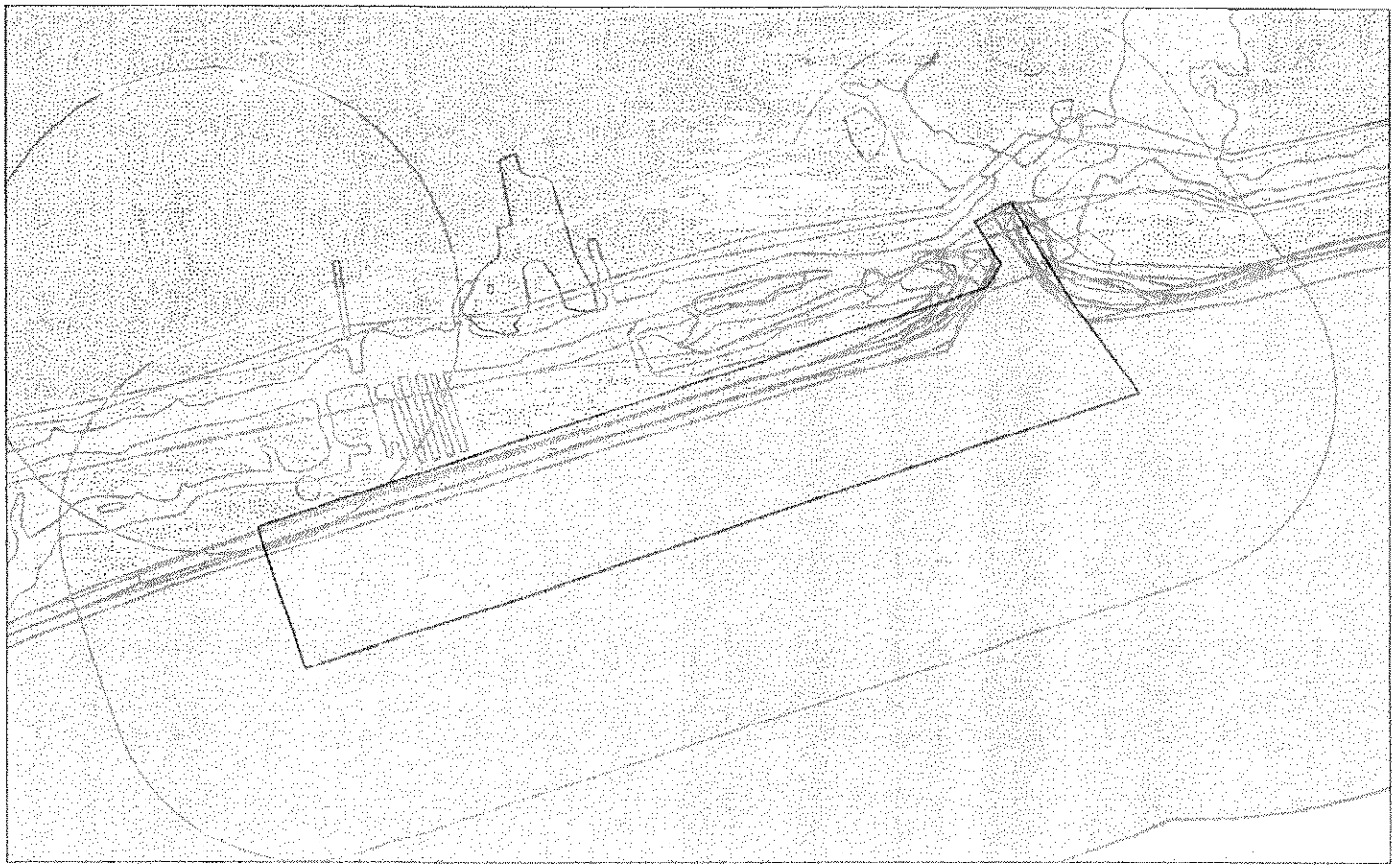
Site Name	Representational Rating	Collective Rating
Brantley Island	R1 (Exceptional)	C4 (Moderate)

Managed Areas Documented Within a One-mile Radius of the Project Area

Managed Area Name	Owner	Owner Type
North American Agricultural Foundation Preserve	North American Agricultural Foundation	Private

Definitions and an explanation of status designations and codes can be found at www.ncnhp.org. Data query generated on February 24, 2015; source: NCNHP, Q4 October 2014. Please resubmit your information request if more than one year elapses before project initiation as new information is continually added to the NCNHP database.

NCNHDE-71: Ocean Isle Beach - Terminal Groin and Beach Nourishment Project



February 24, 2015

- Project Boundary
- Buffered Project Boundary
- Natural Heritage Element Occurrence (NHEO)
- NHP Natural Area (NHNA)
- Managed Area (MAREA)

1:44,473

0 0.375 0.75 1.5 mi

0 0.5 1 2 km

Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL

North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

Donald R. van der Vaart
Secretary

February 12, 2015

MEMORANDOM

TO: Lyn Hardison
Environmental Assistance and SEPA Coordinator

From: Shannon Jenkins,
Environmental Program Supervisor

Through: Patti Fowler,
Section Chief
Shellfish Sanitation and Recreational Water Quality

SUBJECT: Draft EIS- Ocean Isle Terminal Groin and Beach Nourishment
US Army Corps #15-0393

The proposed project includes beach nourishment during periods of the year when tourism and recreation in general is low during a window of November 16 – April 30. The April 1 – April 30 time period is during the swimming season. The placement of dredged materials along a swimming beach has the potential to cause a localized increase in bacteria concentrations within the waters surrounding the project. Potential issues can be avoided by scheduling these types of projects between November 1st and March 31st of a given year, which fails outside of the swimming season.

State of North Carolina
Department of Environment and Natural Resources
INTERGOVERNMENTAL REVIEW - PROJECT COMMENTS

Reviewing Office: WIRO

Project Number15-0393Due Date: 2/23/2015
CountyBrunswick

After review of this project it has been determined that the ENR 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 the form. 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 Time (statutory time limit)
☐	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)
☐	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. Pre-application 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 days (N/A)
☐	Water Use Permit	Pre-application technical conference usually necessary	30 days (N/A)
☐	Well Construction Permit	Complete application must be received and permit issued prior to the installation of a well.	7 days (15 days)
☐	Dredge and Fill Permit	Application copy must be served on each adjacent riparian property owner. On-site inspection. Pre-application conference usual. Filling may require Easement to Fill from N.C. Department of Administration and Federal Dredge and Fill Permit.	55 days (90 days)
☐	Permit to construct & operate Air Pollution Abatement facilities and/or Emission Sources as per 15 A NCAC (2Q.0100 thru 2Q.0300)	Application must be submitted and permit received prior to construction and operation of the source. If a permit is required in an area without local zoning, then there are additional requirements and timelines (2Q.0113).	90 days
☐	Permit to construct & operate Transportation Facility as per 15 A NCAC (2D.0800, 2Q.0601)	Application must be submitted at least 90 days prior to construction or modification of the source.	90 days
☐	Any open burning associated with subject proposal must be in compliance with 15 A NCAC 2D.1900	N/A	60 days (90 days)
☐	Demolition or renovations of structures containing asbestos material must be in compliance with 15 A NCAC 20.1110 (a) (1) which requires notification and removal prior to demolition. Contact Asbestos Control Group 919-707-5950.		
☐	Complex Source Permit required under 15 A NCAC 2D.0800		
☐	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 **$65** for the first acre or any part of an acre. An express review option isavailable with additional fees.		20 days (30 days)
☐	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.		(30 days)
☐	Mining Permit	On-site inspection usual. Surety bond filed with ENR 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)
☐	North Carolina Burning permit	On-site inspection by N.C. Division Forest Resources if permit exceeds 4 days	1 day (N/A)
☐	Special Ground Clearance Burning Permit - 22 counties in coastal N.C. with organic soils	On-site inspection by N.C. Division 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)
☐	Oil Refining Facilities	N/A	90-120 days (N/A)
☐	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 ENR 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 or the total project cost will be required upon completion.	30 days (60 days)

Project Number: 15-0393 Due Date: 2/23/2015			Normal Process Time (statutory time limit)
	PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	
☐	Permit to drill exploratory oil or gas well	File surety bond of $5,000 with ENR running to State of NC conditional that any well opened by drill operator shall, upon abandonment, be plugged according to ENR rules and regulations.	10 days N/A
☐	Geophysical Exploration Permit	Application filed with ENR at least 10 days prior to issue of permit. Application by letter. No standard application form.	10 days N/A
☐	State Lakes Construction Permit	Application fee based on structure size is charged. Must include descriptions & drawings of structure & proof of ownership of riparianproperty.	15-20 days N/A
☐	401 Water Quality Certification	N/A	60 days (130 days)
☐	CAMA Permit for MAJOR development	$250.00 fee must accompany application	55 days (150 days)
☐	CAMA Permit for MINOR development	$50.00 fee must accompany application	22 days (25 days)
☐	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, NC 27611		
☐	Abandonment of any wells, if required must be in accordance with Title 15A. Subchapter 2C.0100.		
☐	Notification of the proper regional office is requested if "orphan" underground storage tanks (USTS) are discovered during any excavation operation.		
☐	Compliance with 15A NCAC 2H 1000 (Coastal Stormwater Rules) is required.		45 days (N/A)
☐	Tar Pamlico or Neuse Riparian Buffer Rules required.		
☒	Plans and specifications for the construction, expansion, or alteration of a public water system must be approved by the Division of Water Resources/Public Water Supply Section prior to the award of a contract or the initiation of construction as per 15A NCAC 18C .0300 et. seq. Plans and specifications should be submitted to 1634 Mail Service Center, Raleigh, North Carolina 27699-1634. All public water supply systems must comply with state and federal drinking water monitoring requirements. For more information, contact the Public Water Supply Section, (919) 707-9100.		30 days
☒	If existing water lines will be relocated during the construction, plans for the water line relocation must be submitted to the Division of Water Resources/Public Water Supply Section at 1634 Mail Service Center, Raleigh, North Carolina 27699-1634. For more information, contact the Public Water Supply Section, (919) 707-9100.		30 days

Other comments (attach additional pages as necessary, being certain to cite comment authority)

Division	Initials	No comment	Comments	Date Review
DAQ	DAC	☒	All Good; no comments.	2/27/15
DWR-WQROS (Aquifer & Surface)	CC	☒		2/26/15
DWR-PWS	DJW	☐	See marked comments above	2/17/15
DEMLR (LQ & SW)	des	☐	LQS has jurisdiction over any land disturbance on acreage landward of the coastal vegetation line. Areas in water are not jurisdictional	2/25/15
DWM - UST	n/a	☐		/ /

REGIONAL OFFICES

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

☐ **Asheville Regional Office**
2090 US Highway 70
Swannanoa, NC 28778
(828) 296-4500

☐ **Mooresville Regional Office**
610 East Center Avenue, Suite 301
Mooresville, NC 28115
(704) 663-1699

☒ **Wilmington Regional Office**
127 Cardinal Drive Extension
Wilmington, NC 28405
(910) 796-7215

☐ **Fayetteville Regional Office**
225 North Green Street, Suite 714
Fayetteville, NC 28301-5043
(910) 433-3300

☐ **Raleigh Regional Office**
3800 Barrett Drive, Suite 101
Raleigh, NC 27609
(919) 791-4200

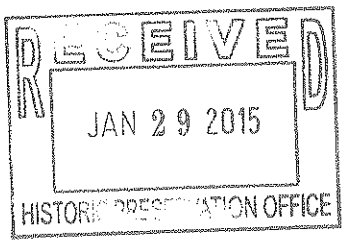
☐ **Winston-Salem Regional Office**
585 Waughtown Street
Winston-Salem, NC 27107
(336) 771-5000

☐ **Washington Regional Office**
943 Washington Square Mall
Washington, NC 27889
(252) 946-6481

NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

COUNTY: BRUNSWICK

H12: OTHER



STATE NUMBER: 15-E-0000-0393
DATE RECEIVED: 01/26/2015
AGENCY RESPONSE: 02/23/2015
REVIEW CLOSED: 02/26/2015

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

ER 15-0169

A — NO
JCS/eff
2-12-15

REVIEW DISTRIBUTION

CAPE FEAR COG
CC&PS - DIV OF EMERGENCY MANAGEMENT
DENR - COASTAL MGT
DENR LEGISLATIVE AFFAIRS
DEPT OF CULTURAL RESOURCES
DEPT OF TRANSPORTATION

Due 2/9/15

PROJECT INFORMATION

APPLICANT: Department of the Army
TYPE: National Environmental Policy Act
Draft Environmental Impact Statement

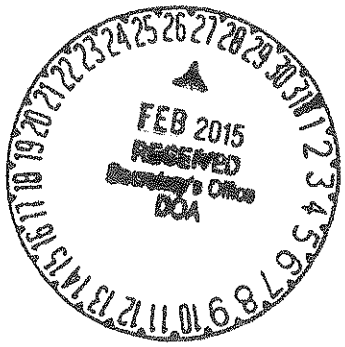
DESC: Proposed project is for the construction of a terminal groin and supplemental beach nourishment project at the eastern end of Ocean Isle Beach. - View documents at:
http://www.saw.usace.army.mil/Missions/RegulatoryPermitProgram/MajorProjects

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: [X] NO COMMENT [ ] COMMENTS ATTACHED

SIGNED BY: Renee Gledhill-Earley DATE: 2.23.15



JAN 30 2015

NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

Natasha Earle

COUNTY: BRUNSWICK

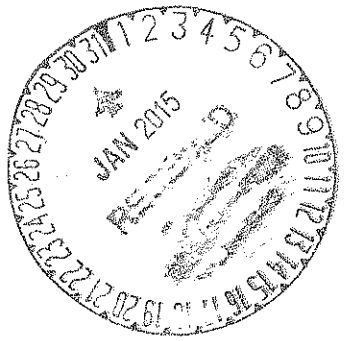
H12: OTHER

STATE NUMBER: 15-E-0000-0393
DATE RECEIVED: 01/26/2015
AGENCY RESPONSE: 02/23/2015
REVIEW CLOSED: 02/26/2015

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

REVIEW DISTRIBUTION

CAPE FEAR COG
CC&PS - DIV OF EMERGENCY MANAGEMENT
DENR - COASTAL MGT
DENR LEGISLATIVE AFFAIRS
DEPT OF CULTURAL RESOURCES
DEPT OF TRANSPORTATION



PROJECT INFORMATION

APPLICANT: Department of the Army
TYPE: National Environmental Policy Act
Draft Environmental Impact Statement

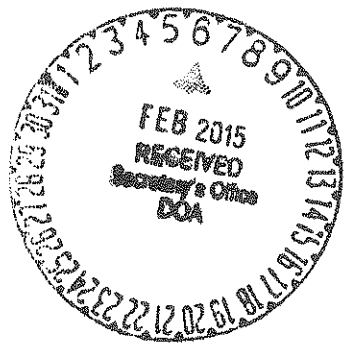
DESC: Proposed project is for the construction of a terminal groin and supplemental beach nourishment project at the eastern end of Ocean Isle Beach. - View documents at:
http://www.saw.usace.army.mil/Missions/RegulatoryPermitProgram/MajorProjects

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: Natasha Earle DATE: 2/4/2015



NORTH CAROLINA STATE CLEARINGHOUSE
DEPARTMENT OF ADMINISTRATION
INTERGOVERNMENTAL REVIEW

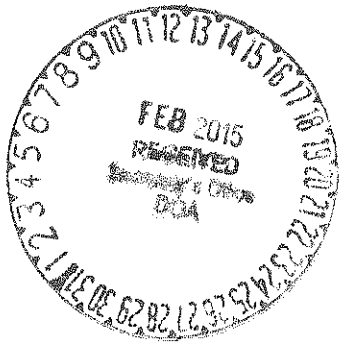
COUNTY: BRUNSWICK

H12: OTHER

STATE NUMBER: 15-E-0000-0393
DATE RECEIVED: 01/26/2015
AGENCY RESPONSE: 02/23/2015
REVIEW CLOSED: 02/26/2015

MS CAROLYN PENNY
CLEARINGHOUSE COORDINATOR
CC&PS - DIV OF EMERGENCY MANAGEMENT
FLOODPLAIN MANAGEMENT PROGRAM
MSC # 4719
RALEIGH NC

JAN 30 2015



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DEPT OF CULTURAL RESOURCES
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AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED: ☐ NO COMMENT ☒ COMMENTS ATTACHED

SIGNED BY: Jennifer W. Haber DATE: 2/10/15

North Carolina Department of Public Safety
Emergency Management

Pat McCrory, Governor
Frank L. Perry, Secretary

Michael A. Sprayberry, Director

February 10, 2015

State Clearinghouse
N.C. Department of Administration
1301 Mail Service Center
Raleigh, North Carolina 27699-1301

Subject: Intergovernmental Review State Number: 15-E-0000-0393
Ocean Isle Beach Terminal Groin and Supplemental Beach Nourishment

As requested by the North Carolina State Clearinghouse, the North Carolina Department of Public Safety Division of Emergency Management Risk Management reviewed the proposed project listed above and offers the following comment:

44 CFR 60.3.e prohibits man-made alteration of sand dunes and mangrove stands within Zones V1-30, VE, and V on the community's FIRM which would increase potential flood damage. Grading activity within one of these zones shall be accompanied by a hydraulic study to assure there will be no increase in flood damage potential.

Thank you for your cooperation and consideration. If you have any questions concerning the above comments, please contact Dan Brubaker, P.E., CFM, the NC NFIP Engineer at (919) 825-2300, by email at dan.brubaker@ncdps.gov or at the address shown on the footer of this document.

Sincerely,

Kenneth W. Ashe, P.E., CFM
Assistant Director
Risk Management

cc: John Gerber, NFIP State Coordinator
Dan Brubaker, NFIP Engineer
Justin Whiteside, Planning & Inspections Direector, Ocean Isle Beach
File

MAILING ADDRESS:
4218 Mail Service Center
Raleigh NC 27699-4218
www.ncem.org

GTM OFFICE LOCATION:
4105 Reedy Creek Road
Raleigh, NC 27607
Telephone: (919) 825-2341
Fax: (919) 825-0408

From: [redacted]
To: Crumbley, Tyler SAW
Subject: RE: [EXTERNAL] Public Comments by David Eastburn for Project: SAW-2011-01241 (Draft E.I.S.)
Date: Monday, March 16, 2015 3:01:31 PM

Tyler,

Thanks for the acknowledgement. Please let me know if you have any questions or would like to discuss my comments.

Also, please let me know what the schedule is for next steps. I noted that there is a public meeting at Ocean Isle Beach on April 4. Is the Corp involved?

Thanks,

[redacted]

-----Original Message-----
From: Crumbley, Tyler SAW [mailto:Tyler.Crumbley@usace.army.mil]
Sent: Monday, March 16, 2015 1:29 PM
To: [redacted]
Subject: RE: [EXTERNAL] Public Comments by [redacted] for Project: SAW-2011-01241 (Draft E.I.S.)

Mr. [redacted],

Your comments have been received. Thank you.

-Tyler

Tyler Crumbley
Project Manager
U.S Army Corps of Engineers-Wilmington District
Wilmington Regulatory Field Office
69 Darlington Avenue
Wilmington, NC 28403

Phone: 910-251-4170
Fax: 910-251-4025
email: tyler.crumbley@usace.army.mil

"The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the Customer Satisfaction Survey located at: http://regulatory.usacesurvey.com/"

-----Original Message-----
From: [redacted]
Sent: Friday, March 13, 2015 1:18 PM

To: Crumbley, Tyler SAW
Subject: [EXTERNAL] Public Comments by David Eastburn for Project: SAW-2011-01241 (Draft E.I.S.)

Dear Mr. Crumbley,

Attached is a letter containing my comments about the Draft Environmental Impact Statement for Project SAW-2011-01241. Thank you for the opportunity to comment on this controversial project. If you have any questions about my comments or wish to discuss them in more detail, please contact me via email at [redacted] or by phone at [redacted]

Sincerely,

[redacted]
Concerned Citizen
Sunset Beach, NC

From: Crumbley, Tyler SAW
To: [redacted]
Cc: Crumbley, Tyler SAW; Rosov, Brad
Subject: RE: [EXTERNAL] Reference Material
Date: Monday, February 23, 2015 10:59:22 AM

Mr. [redacted],

Please find the link below to hopefully satisfy your request:

http://www.saw.usace.army.mil/Missions/RegulatoryPermitProgram/PublicNotices/tabid/10057/Article/562125/saw-2011-01241.aspx

Thank you.

-Tyler

Tyler Crumbley
Project Manager
U.S Army Corps of Engineers-Wilmington District
Wilmington Regulatory Field Office
69 Darlington Avenue
Wilmington, NC 28403

Phone: 910-251-4170
Fax: 910-251-4025
email: tyler.crumbley@usace.army.mil

"The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the Customer Satisfaction Survey located at: http://regulatory.usacesurvey.com/"

-----Original Message-----
From: [redacted]
Sent: Saturday, February 21, 2015 10:47 AM
To: Crumbley, Tyler SAW
Subject: [EXTERNAL] Reference Material

Hi Mr. Crumbley,
Can you please direct me to pertinent background material regarding the Ocean Isle terminal groin project? I am planning to attend the public hearing on March 3 and would like to be knowledgable of the process.
Thank you,

[redacted]

[redacted]

January 30, 2015

Mr. Tyler Crumbley
Wilmington Regulatory Field Office
69 Darlington Avenue
Wilmington, North Carolina 28403

Re: Corps Action ID Number: SAW-2011-01241

Dear Mr. Crumbley,

We are the owners of a home located at [redacted]
We are submitting written public comments in support of the construction of a terminal groin and beach nourishment.

When we purchased our home ten years ago, we were prepared to deal with erosion that accompanies beachfront property. Over the past ten years, we have spent close to $50,000 on sandbags to help protect our home from the erosion. The financial impact required us to take loans from our 401(k) Plan to pay for the sandbags as this was the only option for saving our home.

They say *"a picture is worth a thousand words"* so we share the attached photos with the Corps of Engineers. My husband and I have spent countless dollars and hours trying to protect our home. There have been many nights when the water surge would be so forceful that the ocean would rush under our house with such force that the house would shake.

The East end of the island regularly resembles a "war zone" – with Third Street constantly flooding with the high surges. Because our homes are not protected from the ocean, homeowners on Third Street cannot do some of the normal home improvements other homeowners enjoy. Things such as outdoor showers, landscaping and decking are not viable options for us since the erosion has left our properties vulnerable.

As parents of two grown children it was our dream to have our home be passed through the generations. Our beach home has been a place where memories have been created and we want that tradition to continue. However, if the terminal groin and beach nourishment does not happen (soon), we fear the memories will come to a very sudden and sad ending.

In closing, it is respectfully requested the Corps of Engineers approved the permit for this proposal in an expedited manner.

Sincerely,

[redacted]

Attachment

United States Department of the Interior

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

March 12, 2015

Mr. Tyler Crumbley, Project Manager
Wilmington Regulatory Division
U. S. Army Corps of Engineers
69 Darlington Ave.
Wilmington, NC 28403-1343

Subject: Town of Ocean Isle Beach: Terminal Groin
Action ID. No. SAW-2011-01241

Dear Mr. Crumbley:

This is in response to the January 23, 2015 public notice for the Town of Ocean Isle Beach's application for construction of a 750 linear foot (lf) terminal groin, with a 300 lf shore anchorage system and associated beach nourishment on Ocean Isle Beach. The U.S. Fish and Wildlife Service (Service) has reviewed the public notice and the January 2015 draft Environmental Impact Statement (DEIS), and other information concerning the project. This letter is provided in accordance with the National Environmental Policy Act (NEPA), section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*), and the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

Project Description

The project is on the oceanfront of the eastern end of Ocean Isle Beach, adjacent to Shallotte Inlet and the Atlantic Ocean, in Brunswick County, North Carolina. According to the DEIS, the purpose of the proposed project is to mitigate chronic erosion on the eastern portion of the Town's oceanfront shoreline so as to preserve the integrity of its infrastructure, provide protection to existing development, and ensure the continued use of the oceanfront beach along this area.

The applicant's preferred alternative includes construction of a 750 lf terminal groin with a 300 lf anchorage system. The applicant also proposes to dredge portions of Shallotte Inlet every five years and place 264,000 cubic yards (cy) of beach fill along approximately 3,214 lf of shoreline west of the terminal groin. Beach fill, groin construction, and sand fillet maintenance activities are proposed to be conducted between November 16 and April 30. The preferred alternative also

includes the continuation of the Corps of Engineers Coastal Storm Damage Reduction (CSDR) project on Ocean Isle Beach.

Federally-listed species

The following Federally- listed species are found within the project area: West Indian manatee (*Trichechus manatus*), piping plover (*Charadrius melodus*), red knot (*Calidris canutus rufa*), seabeach amaranth (*Amaranthus pumilus*), and the Kemp's ridley (*Lepidochelys kempi*), hawksbill (*Eretmochelys imbricata*), leatherback (*Dermochelys coriacea*), loggerhead (*Caretta caretta*), and green (*Chelonia mydas*) sea turtles. Whales, shortnose sturgeon (*Acipenser brevisrostrum*), Atlantic sturgeon (*Acipenser oxyrinchus*), and sea turtles in the water are under the jurisdiction of NOAA Fisheries' Protected Species Division.

Of the five sea turtle species, the leatherback, loggerhead, Kemp's ridley, and green sea turtle may nest in the project area. On July 10, 2014, the Service designated Critical Habitat for the Northwest Atlantic Ocean distinct population segment of the loggerhead sea turtle. Critical Habitat Unit LOGG-T-NC-08 is just east of the project area on Holden Beach.

Piping plover critical habitat unit NC-17 is located in Shallotte Inlet and on Holden Beach, east of the proposed project. The entire unit is privately owned. This unit begins just west of Skimmer Court on the western end of Holden Beach. It includes land south of SR 1116, to where densely vegetated habitat, not used by the piping plover, begins and where the constituent elements no longer occur to the MLLW along the Atlantic Ocean. It includes the contiguous shoreline from MLLW to where densely vegetated habitat, not used by the piping plover, begins and where the constituent elements no longer occur along the Atlantic Ocean, Shallotte Inlet, and Intracoastal Waterway stopping north of Skimmer Court Road. The unnamed island and emergent sandbars to MLLW within Shallotte Inlet are also included.

On December 11, 2014, the Service listed the rufa red knot (or red knot) as threatened throughout its range. The rule became effective on January 12, 2015. Please refer to 79 FR 73706 for more information on the listing of the red knot.

The Corps has determined that the proposed project may affect federally listed endangered or threatened species, and has requested initiation of formal consultation. Potential affects to the piping plover, red knot, West Indian manatee, seabeach amaranth, and sea turtles are being addressed through formal consultation. Therefore, this letter primarily addresses comments concerning the project itself and the DEIS.

Service Comments

1. The Service recommends that the proposed project not be authorized. The proposed project has the potential to adversely affect nesting female sea turtles, nests, and hatchlings on the beach, piping plovers, red knots, and seabeach amaranth within the proposed project area.

Potential effects to sea turtles include disorientation of hatchling turtles on beaches adjacent to the construction area as they emerge from the nest and crawl to the water as a result of lighting or presence of the groin, and behavior modification of nesting females during the nesting season resulting in false crawls or situations where they choose marginal or unsuitable nesting areas to deposit eggs due to escarpment formation or presence of the groin within the action area. The presence of the groin could affect the movement of sand by altering the natural coastal processes and could affect the ability of female turtles to nest, the suitability of the nest incubation environment, and the ability of hatchlings to emerge from the nest and crawl to the ocean. The presence of the groin may create a physical obstacle to nesting sea turtles, and the proposed groin is anticipated to result in decreased nesting and loss of nests that do get laid within the project area for all subsequent nesting seasons following the completion of the proposed project.

Potential effects to piping plover and red knots include degradation and loss of habitat, particularly down-drift of the structure. Groins can act as barriers to longshore sand transport and cause downdrift erosion (Hayes and Michel 2008), which prevents optimal habitat creation by limiting sediment deposition and accretion. The proposed action has the potential to adversely affect wintering and migrating red knots, wintering and migrating piping plovers and their habitat from all breeding populations, and breeding piping plovers from the Atlantic Coast breeding population that may use the project area. Potential effects to piping plover and red knot include direct loss of foraging and roosting habitat in the Action Area and in the updrift and downdrift portions of the project area, degradation of foraging habitat and destruction of the prey base from sand disposal, and attraction of predators due to food waste from the construction crew. Plovers and red knots face predation by avian and mammalian predators that are present year-round on the wintering and nesting grounds. Although the piping plover is not currently known to nest in the Action Area, the stabilization of the shoreline may also result in less suitable nesting habitat for all shorebirds, including the piping plover.

Structural development along the shoreline and manipulation of natural inlets upset the naturally dynamic coastal processes and result in loss or degradation of beach habitat (Melvin et al. 1991). As beaches narrow, the reduced habitat can directly lower the diversity and abundance of biota, especially in the upper intertidal zone. Shorebirds may be impacted both by reduced habitat area for roosting and foraging, and by declining intertidal prey resources (Defeo et al. 2009; Dugan and Hubbard 2006). Shorebird habitat has been, and may continue to be, lost where hard structures have been built (Clark in Farrell and Martin 1997). In addition to directly eliminating red knot habitat, hard structures interfere with the creation of new shorebird habitats by

interrupting the natural processes of overwash and inlet formation. Where hard stabilization is installed, the eventual loss of the beach and its associated habitats is virtually assured (Rice 2009), absent beach nourishment, which may also impact piping plover and red knots. Where they are maintained, hard structures are likely to significantly increase the amount of piping plover and red knot habitat lost as sea levels continue to rise.

Potential impacts to seabeach amaranth include burying, trampling, or injuring plants as a result of construction operations and/or sediment disposal activities; burying seeds to a depth that would prevent future germination as a result of construction operations and/or sediment disposal activities; and, destruction of plants by trampling or breaking as a result of increased recreational activities. The Applicant proposes to place sand between November 15 and March 31 of any given year. However, given favorable weather, seabeach amaranth plants may persist until January. Therefore, there is still the potential for sand placement to adversely impact plants in the Action Area. Indirect impacts to seabeach amaranth include degradation of habitat from stabilization of the shoreline.

2. The Service has significant concerns for the estimation of costs of the five alternatives. In Chapters 2 (Purpose and Need), 3 (Alternatives), 5, and 6, and Appendix A, the DEIS discusses 45 dwellings and 238 total parcels which are threatened by erosion for the next 30 years. The predicted loss or protection of these 238 parcels factors heavily in the estimated costs of each alternative. For example, on pages 27 and 28, in the discussion of the 30-year cost of Alternative 1 (No Additional Action) and Alternative 2 (Abandon/Retreat), the loss of the 238 parcels is estimated to cost $21.39 million. Conversely, the discussion of Alternative 5 (Terminal Groin with Beach Fill), the applicant's preferred alternative, makes no mention of the number of parcels that may be lost or protected by the proposed groin, and does not factor in the costs of parcel losses.

However, there is no figure showing 238 parcels and very little description in the text. Page 25 states that there are "238 parcels east of station 15+00 (located just west of Shallotte Boulevard); 45 of which have homes. All of the parcels and homes are vulnerable to erosion damage over the next 30 years, should the past erosion trends continue." A quick count of the number of parcels shown in the DEIS as affected by erosion up to year 2045 (in Figure 3.1) indicates that there are approximately 88 parcels total (this estimate is high, as some are already below high tide, and some are west of station 15+00). The DEIS does not indicate where the other 150 or so parcels are. A review of the Town's zoning map (accessed at http://www.oibgov.com/userfiles/File/Zoning_Map_Current.pdf on March 4, 2015) and information from the Brunswick County Register of Deeds (accessed March 4, 2015) indicates that most, if not all of the other 150 parcels are likely waterward of the existing shoreline, within the footprint of the proposed project, or east (downdrift) of the proposed terminal groin location. Many of these parcels are already below the high tide line and are currently unbuildable. If this is the case, then the terminal groin will not protect the majority of these parcels from erosion, as

some are already lost to erosion, and the parcels to the east of the groin will receive no protection at all. East of the proposed groin, underwater parcels will remain underwater, and any buildable parcels will be threatened (and perhaps lost) due to increased erosion from the presence of the groin.

The DEIS should be revised to accurately reflect the situation of all of the parcels in the project area and the estimated losses for each alternative. Parcels that are mostly waterward of the current shoreline, within the footprint of the proposed groin, or east of the proposed groin should be considered a loss, and the costs of those losses should be added to the annual and 30-year costs of Alternative 5. The predicted loss of parcels due to Alternatives 3 and 4 should also be calculated and included in the estimated costs, as it is unlikely that many of the parcels east of station 0+00 will be protected or recovered from either of these alternatives. We note that including these costs will significantly increase the overall costs of the three build alternatives.

On Page 4, the Table in Appendix D should be revised to provide a consistent comparison of costs between the five alternatives. Currently, the costs for Alternative 5 are shown as annual and 5-year costs, while the cost of other alternatives is shown for a 30-year period.

3. Table 3.10 on Page 44 lists Long-Term Erosion Damages and Response Costs for Alternatives 1 and 2, but shows these costs as $0 for Alternatives 3 and 5. However, the Service does not believe that there will be no erosion damages or response costs over 30 years in the project area, regardless of alternative chosen. Large winter storms, hurricanes and other named storms all have the potential to cause significant erosion and response costs. Page 116 in Chapter 5 states that the future impacts on development on the east end of Ocean Isle Beach were evaluated based on the continuation of erosion trends determined from surveys obtained between 1997 and 2010. There is no rationale provided for using this timespan as a baseline. Although there were several named storms that passed in the vicinity of Ocean Isle Beach during this time, only one passed over the island (with sustained winds of 35 mph), none of them had winds over 70 mph, and at least half of them had winds of less than 40 mph (http://coast.noaa.gov/hurricanes/, accessed March 6, 2016). If a 30-year timespan had been used (from 1984 to 2014), erosion from a category 4 hurricane (Hurricane Hugo) could have been included in the analysis.

The 13-year baseline also does not provide the same potential level of impacts from sea level rise. The North Carolina Coastal Resources Commission (CRC) Science Panel predicted in December 2014 that the relative sea level rise by 2045 in Southport, North Carolina would be at least 1.9 inches, and as high as 8.5 inches (Draft CRC Science Panel Sea Level Report, December 31, 2014). Considering the historic rates of sea level rise presented on page 132 (8.16 inches per century in Wilmington, and 1.03 feet per century in Charleston), sea level may rise at a minimum of 2.45 inches to 3.71 inches over the next 30 years. The DEIS states that there will be no direct or indirect impacts in the project area from such an increase. However, regardless of

the alternative, it is likely that dwellings, particularly those on the oceanfront will be impacted by increases in sea level rise over the next 30 years. Because sea level rise is not consistent through time and space, the impacts are often most first noticed when a storm-surge or spring tides occur. Over the 30-year proposed project life, it is more likely that named storms would cause erosion despite the precautions taken, and that costs would be incurred for beach bulldozing, additional emergency nourishment, or other response activities. Further, if the presence of the groin encourages development of currently undeveloped parcels that are on the oceanfront or waterward of current dwellings, erosion and response costs (beach bulldozing, emergency sand placement, infrastructure repair, demolition and solid waste costs) could be expected over the life of the project for Alternative 5 that would not be expected for the other 4 alternatives. The DEIS is silent on this issue.

Also in Table 3.10 on Page 44, the Service recommends that the $21.39 million included for loss of parcels be revised to remove costs for parcels which are currently under water or within the footprint or east of the proposed terminal groin. Since most of these parcels are already unbuildable, and the terminal groin will not provide significant improvement in condition, the loss of them should not be counted for Alternatives 1 and 2 if they are not counted in the other alternatives.

4. On page 63 in Chapter 4, the reference to Figure 4.12 is in error. Please revise.

5. On pages 74-76 in Chapter 4, please update the sea turtle nesting data for all species to include 2013 and 2014 data. A green sea turtle nested in Holden Beach in 2013.

6. On Page 97, Figure 4.14, the Service recommends that the written description of the piping plover critical habitat be used, rather than the old shape file.

7. Please update Chapter 4 to include red knot records.

8. The DEIS does not adequately address accelerated erosion downdrift of the groin or the potential impacts from downdrift erosion and regular dredging (every five years to maintain the groin, every three years for the Corps CSDR project). Chapter 5 (page 175) and Appendix C change the topic from potential impacts of this groin on sand transport and intertidal habitats in Shallotte Inlet to a discussion of the impact of the Oregon Inlet jetties on Pea Island. Oregon Inlet and Shallotte Inlet are very different systems, and the DEIS does not explain how they are comparable. We note that there is no habitat above MLLW (including no intertidal habitat) downdrift of the Oregon Inlet jetty, and the stabilization of the shoreline within the sand fillet of the jetty has resulted in degradation or loss of intertidal habitats. The DEIS (page 176) states that the model shows the loss of approximately 1-2 acres of intertidal habitats in Shallotte Inlet due to the project, but that habitat is expected to persist and recover within 2 years of dredging based on the rate of infill that currently occurs. However, the rate of infill that is referenced is not the rate

that will occur after the groin is constructed, since the model shows that the rate of sediment transport will be reduced. There is no discussion in Chapter 5 or Appendix A of the expected passage rates of sand across the groin, or the expected infill rate after construction, and based on the information provided, it is not possible to determine impacts of the groin on the persistence or formation of intertidal shoals and flats in Shallotte Inlet.

9. On Page 177, please change "nesting habitat for seabeach amaranth..." to "habitat for seabeach amaranth...."

10. On Page 178, the DEIS should address the indirect impacts of stabilization of a dynamic system. The DEIS states that the "increase in stable dry beach as a result of the implementation of Alternative 5 is considered more advantageous to resident and migratory fauna." However, the resident and migratory fauna, particularly the shorebirds such as piping plover and red knot, rely on the dynamic coastal processes such as overwash, to provide optimal foraging, roosting, and nesting habitat. The presence of the groin and other hard structures prevents such processes. In addition, groins accelerate erosion on the downdrift side, thereby causing direct and indirect impacts to the dry beach and intertidal habitats.

11. In Chapter 5 and Appendix A of the DEIS, the accretion and erosion patterns indicated by the Delft3D model are shown only for three years post-project. Given that this is a 30-year project, and the groin is proposed to be on a 5-year maintenance schedule, the DEIS should clarify why only three years of modeling is shown. In addition, no modeling runs are included to show the expected accretion or erosion patterns for Alternative 4. Information for Alternative 4 should be added to the DEIS.

12. On Page 62 of Appendix A, the DEIS states that the model results for Alternative 1 underestimated the sediment retention rate of the borrow area, and that the modeled rate was approximately 80% of the measured rate. According to page 62 of the DEIS, the modelers assume that all of the other model runs also underestimated the sediment retention rate in the borrow area by the same amount, and adjusted the modeled rates for the terminal groin alternative without further justification. Alternatives 2, 3, and 4 were not considered in this exercise on page 2 or in Table 4.15, and only Alternatives 1 and 5 are used to compare model volume changes in the Shallotte Inlet complex. The Service recommends that information for Alternatives 2-4 be included in Table 4.15 of Appendix A.

Service Recommendations

As stated above, the Service recommends that the project, as currently proposed not be authorized, due to potential impacts to piping plovers, red knot, seabeach amaranth, and sea turtles. We recommend that the Final EIS incorporate our comments listed above. Thank you for the opportunity to comment on this project. If you have any questions concerning these comments, please contact Kathy Matthews at (919) 856-4520, Ext. 27, or by e-mail at <kathryn_matthews@fws.gov>.

Sincerely,

Pete Benjamin
Field Supervisor

cc:
Fritz Rohde, NOAA Fisheries
Daniel Holliman, USEPA
Maria Dunn, NCWRC, Washington, NC
Doug Huggett, NCDCM, Morehead City, NC
Debra Wilson, NCDCM, Wilmington, NC
Jessi Baker, NCDMF, Morehead City, NC
Karen Higgins, NCDWR, Raleigh, NC

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March 16, 2015

Via Electronic Mail and First Class Mail

Mr. Tyler Crumbley
U.S. Army Corps of Engineers – Wilmington District
ATTN: File Number SAW-2011-01241
69 Darlington Avenue
Wilmington, NC 28403

Re: Town of Holden Beach Comments Regarding Town of Ocean Isle Terminal Groin Project – Draft Environmental Impact Statement

Dear Mr. Crumbly:

The Town of Holden Beach (the "Holden Beach") appreciates the opportunity to provide comments on the draft Environmental Impact Statement ("DEIS") Town of Ocean Isle ("Ocean Isle") Terminal Groin Project. As discussed below, Holden Beach supports Ocean Isle's preferred alternative of constructing a terminal groin with beach replenishment. Holden Beach, however, has some concerns regarding the numerical modeling and also proposes revisions to the inlet management plan to adequately monitor the potential impacts of the terminal groin and borrow area and mitigate any adverse impacts identified during monitoring.

1. **Holden Beach supports the Ocean Isle's preferred alternative of constructing a terminal groin with beach replenishment.**

Holden Beach believes that it is appropriate to construct a terminal structure at the eastern end of Ocean Isle with beach replenishment to address the long-term, chronic erosion in this area and protect island residences, public infrastructure, roads, and beaches and dunes, including their associated functions (*e.g.*, recreation) and values (*e.g.*, storm protection). We understand that the terminal groin is intended to partially capture the longshore transport of sand resulting in reduced erosion in this area and is not a structure that "armors" the shoreline. In addition, the proposed groin will likely also reduce shoaling into the channel therefore providing benefits to navigation.

2. **Although the DEIS indicates that the preferred alternative will have no shoreline impacts to the west end of Holden Beach, the numerical modeling results indicate that net longshore transport is from west to east and this area of Holden Beach will erode, contrary to past studies and monitoring data.**

Delft3D was used to model and evaluate potential impacts of the various alternatives of this project. The model simulates flows, sediment transport, and bathymetric changes by using advanced sediment transport formulations that respond to forcing functions that include waves, tides, winds, and density gradients. The model takes into account the movement of sediment along the bottom (bedload transport) as well as sediment transported in the water column (suspended transport).

The evaluation of the model results for the various alternatives focused on changes in volumetric erosion rates on the east end of Ocean Isle Beach, the potential changes along the sand spit lying east of the terminal groin, and volumetric erosion rates on the west end of Holden Beach. The modeling results indicate that there would be essentially no shoreline impact to the west end of Holden Beach.

Specifically, with respect to the west end of Holden Beach, the modeling results indicate volume changes above the -6-foot NAVD depth contour along the western 4,000 feet of the island were similar for Alternative 1 and the 750-foot terminal groin option. For example, the model indicates volume change above the -6-foot NAVD depth contour along the western 4,000 feet of Holden Beach would be a loss of 11,000 cubic yards/year for Alternative 1. For the 750-foot terminal groin option, the model volume changes over this same area above the -6-foot NAVD depth contour would be -12,000 cubic yards/year. Similarly, the modeling results indicate volume changes out to the -18-foot NAVD depth contour in this same area of Holden Beach would be similar for Alternative 1 and the 750-foot terminal groin option. For Alternative 1, the model volume change out to the -18-foot NAVD depth contour would be -46,000 cubic yards/year, while the model indicates volume change for the 750-foot terminal groin would be -62,000 cubic yards/year.

Despite the modeling results, the west end of Holden Beach has historically been stable to accretional as reflected in the U.S. Army Corps of Engineers' (the "Corps") and Holden Beach monitoring data. Figure 40 of Appendix C also shows that Holden Beach profiles 300 to 360 are accretional over the three-year modeling period. Moreover, despite most sources finding that the net sediment transport direction is from east to west along the majority of Holden Beach and Ocean Isle Beach, the modeling results for this study indicate that net longshore transport is from west to east, even along the midpoint of Ocean Isle Beach. Although certain modeling coefficients and factors were adjusted to increase the amount of sediment transport from east to west, the modeling results are still not consistent with recent and past studies.

3. To address these concerns and adequately monitor the potential impacts of the proposed terminal groin and borrow area, Holden Beach recommends the following revisions to the inlet management plan.

For purposes of assessing pre- and post-construction shoreline conditions on the western end of Holden Beach, we agree that survey data acquired by the Corps should be utilized. Holden Beach, however, believes that the monitoring profiles should be extended beyond inlet radial profile 421 to include the Monk Island estuarine shoreline, the Shallotte River, and the

AIWW, where modeling indicates that some significant changes may occur. Holden Beach recognizes that similar changes to the Shallotte River, AIWW, and Monk Island estuarine shoreline are modeled under No-Action conditions as well. The inlet monitoring plan should also include annual hydrographic surveys of the borrow area and should specify the duration of monitoring. To allow sufficient time for trends to emerge, six (6) to nine (9) years of monitoring is a reasonable time period.

The inlet management plan adopts the shoreline change threshold computed by the Corps (*i.e.*, subtracting one-half of the 95% confidence interval from the average shoreline change rate at each profile). Although the area on the west end of Holden Beach between profiles 375 and 400 is accretional, the Corps (and Ocean Isle) adopted a shoreline change rate of 0 feet/year for profiles in this area due to the unpredictable influence of the Shallote Inlet bar channel on the shoreline. Rather than arbitrarily assigning a shoreline change rate threshold of 0 feet/year for profiles in this area, Holden Beach believes that the shoreline change rate threshold should be calculated based on the actual average shoreline change rate and the 95% confidence interval for each profile. Moreover, Holden Beach believes that shoreline change rate thresholds should be calculated for all profiles, including inlet radial profiles and estuarine profiles. Holden Beach, however, recognizes that inlet radial profiles vary dramatically and any potential thresholds or determinations whether mitigation is required need to take this into account.

Holden Beach also believes that the trigger to investigate whether any mitigation is required should not be based on shoreline change alone; volume changes should also be considered. Each profile should be evaluated from 7 feet NGVD to -17 feet NGVD to calculate profile-specific volume change thresholds.

The inlet management plan also provides that it will not consider mitigation measures unless the shoreline change rate exceeds the threshold over a two-year confirmation period. Moreover, according to the inlet management plan, the two-year confirmation period would be reset if the shoreline change rate decreases below the threshold rate during the confirmation period.

Rather than applying a two-year confirmation period, Holden Beach requests that a Technical Advisory Committee (the "TAC") be formed if the shoreline or volume change threshold is exceeded at one or more designated survey locations. The TAC should be comprised of one North Carolina licensed coastal engineer from each of Ocean Isle, Holden Beach and the Corps (or similar agreed upon independent coastal engineer). If the shoreline or volume change threshold is exceeded at one or more profiles, the TAC would determine the potential cause(s) of the threshold exceedance and whether mitigation is appropriate. Holden Beach agrees that if mitigation is warranted at the west end of Holden Beach, direct placement of sand obtained from the Shallotte Inlet borrow area to offset the impacts of the terminal groin and/or borrow area is appropriate. Ocean Isle would be responsible for implementing and paying for such mitigation, either as a local project or in connection with the existing Federal storm damage reduction project.

In closing, subject to the concerns raised above, we support Ocean Isle's preferred alternative of constructing a terminal groin with beach replenishment and appreciate the opportunity to comment on the Ocean Isle's proposed terminal groin project.

Sincerely,

KILPATRICK TOWNSEND & STOCKTON LLP

Todd S. Roessler

cc: David Hewett
Fran Way
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United States Department of the Interior

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March 16, 2015

Mr. Tyler Crumbley,
Project Manager
Wilmington Regulatory Division
U. S. Army Corps of Engineers
69 Darlington Ave.
Wilmington, NC 28403 -1343

Re: Comments and Recommendations on the Draft Environmental Impact Statement for the Town of Ocean Isle Beach Management Project, North Carolina

Dear Mr. Crumblev:

The U.S. Department of the Interior (Department) has reviewed the Draft Environmental Impact Statement (DEIS) for the Town of Ocean Isle Beach Shoreline Management Project. We offer the following comments in accordance with the National Environmental Policy Act (NEPA), Section 7(a)(2) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. l53l et seq.), and the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

Project Description

The project is on the oceanfront of the eastern end of Ocean Isle Beach, adjacent to Shallotte Inlet and the Atlantic Ocean, in Brunswick County, North Carolina. According to the DEIS, the purpose of the proposed project is to mitigate chronic erosion on the eastern portion of the Town's oceanfront shoreline so as to preserve the integrity of its infrastructure, provide protection to existing development, and ensure the continued use of the oceanfront beach along this area.

The applicant's preferred alternative includes construction of a 750 lf terminal groin with a 300 lf anchorage system. The applicant also proposes to dredge portions of Shallotte Inlet every five years and place 264,000 cubic yards (cy) of beach fill along approximately 3,214 lf of shoreline west of the terminal groin. Beach fill, groin construction, and sand fillet maintenance activities are proposed to be conducted between November 16 and April 30. The preferred alternative also

includes the continuation of the Corps of Engineers Coastal Storm Damage Reduction (CSDR) project on Ocean Isle Beach.

Federally-listed species

The following Federally- listed species are found within the project area: West Indian manatee (Trichechus manatus), piping plover (Charadrius melodus), red knot (Calidris canutus rufa), seabeach amaranth (Amaranthus pumilus), and the Kemp's ridley (Lepidochelys kempi), hawksbill (Eretmochelys imbricata), leatherback (Dermochelys coriacea), loggerhead (Caretta caretta), and green (Chelonia mydas) sea turtles. Whales, shortnose sturgeon (Acipenser brevisrostrum), Atlarftic sturgeon (Acipenser oxyrinchus), and sea turtles in the water are under the jurisdiction of NOAA Fisheries' Protected Species Division.

Of the five sea turtle species, the leatherback, loggerhead, Kemp's ridley, and green sea turtle may nest in the project area. On July 10, 2014, the Department designated Critical Habitat for the Northwest Atlantic Ocean distinct population segment of the loggerhead sea turtle. Critical Habitat Unit LOGG-T-NC-08 is just east of the project area on Holden Beach.

Piping plover critical habitat unit NC-17 is located in Shallotte Inlet and on Holden Beach, east of the proposed project. The entire unit is privately owned. This unit begins just west of Skimmer Court on the western end of Holden Beach. It includes land south of SR 1116, to where densely vegetated habitat, not used by the piping plover, begins and where the constituent elements no longer occur to the MLLW along the Atlantic Ocean. It includes the contiguous shoreline from MLLW to where densely vegetated habitat, not used by the piping plover, begins and where the constituent elements no longer occur along the Atlantic Ocean, Shallotte Inlet, and Intracoastal Waterway stopping north of Skimmer Court Road. The unnamed island and emergent sandbars to MLLW within Shallotte Inlet are also included.

On December 11, 20l4, the Department listed the rufa red knot (or red knot) as threatened throughout its range. The rule became effective on January 12, 2015. Please refer to 79 FR 73706 for more information on the listing of the red knot.

The Corps has determined that the proposed project may affect federally listed endangered or threatened species, and has requested initiation of formal consultation. Potential affects to the piping plover, red knot, West Indian manatee, seabeach amaranth, and sea turtles are being addressed through formal consultation. Therefore, this letter primarily addresses comments concerning the project itself and the DEIS.

We recommend that the proposed project not be authorized. The proposed project has the potential to adversely affect nesting female sea turtles, nests, and hatchlings on the beach, piping plovers, red knots, and seabeach amaranth within the proposed project area.

Potential effects to sea turtles include disorientation of hatchling turtles on beaches adjacent to the construction area as they emerge from the nest and crawl to the water as a result of lighting or presence of the groin, and behavior modification of nesting females during the nesting season resulting in false crawls or situations where they choose marginal or unsuitable nesting areas to

deposit eggs due to escarpment formation or presence of the groin within the action area. The presence of the groin could affect the movement of sand by altering the natural coastal processes and could affect the ability of female turtles to nest, the suitability of the nest incubation environment, and the ability of hatchlings to emerge from the nest and crawl to the ocean. The presence of the groin may create a physical obstacle to nesting sea turtles, and the proposed groin is anticipated to result in decreased nesting and loss of nests that do get laid within the project area for all subsequent nesting seasons following the completion of the proposed project.

Potential effects to piping plover and red knots include degradation and loss of habitat, particularly down-drift of the structure. Groins can act as barriers to longshore sand transport and cause downdrift erosion (Hayes and Michel 2008), which prevents optimal habitat creation by limiting sediment deposition and accretion. The proposed action has the potential to adversely affect wintering and migrating red knots, wintering and migrating piping plovers and their habitat from all breeding populations, and breeding piping plovers from the Atlantic Coast breeding population that may use the project area. Potential effects to piping plover and red knot include direct loss of foraging and roosting habitat in the Action Area and in the updrift and downdrift portions of the project area, degradation of foraging habitat and destruction of the prey base from sand disposal, and attraction of predators due to food waste from the construction crew. Plovers and red knots face predation by avian and mammalian predators that are present year-round on the wintering and nesting grounds. Although the piping plover is not currently known to nest in the Action Area, the stabilization of the shoreline may also result in less suitable nesting habitat for all shorebirds, including the piping plover.

Structural development along the shoreline and manipulation of natural inlets upset the naturally dynamic coastal processes and result in loss or degradation of beach habitat (Melvin et al. 1991). As beaches narrow, the reduced habitat can directly lower the diversity and abundance of biota, especially in the upper intertidal zone. Shorebirds may be impacted both by reduced habitat area for roosting and foraging, and by declining intertidal prey resources (Defeo et al 2009; Dugan and Hubbard 2006). Shorebird habitat has been, and may continue to be, lost where hard structures have been built (Clark in Farrell and Martin 1997). In addition to directly eliminating red knot habitat, hard structures interfere with the creation of new shorebird habitats by interrupting the natural processes of overwash and inlet formation. Where hard stabilization is installed, the eventual loss of the beach and its associated habitats is virtually assured (Rice 2009), absent beach nourishment, which may also impact piping plover and red knots. Where they are maintained, hard structures are likely to significantly increase the amount of piping plover and red knot habitat lost as sea levels continue to rise.

Potential impacts to seabeach amaranth include burying, trampling, or injuring plants as a result of construction operations and/or sediment disposal activities; burying seeds to a depth that would prevent future germination as a result of construction operations and/or sediment disposal activities; and, destruction of plants by trampling or breaking as a result of increased recreational activities. The Applicant proposes to place sand between November 15 and March 31 of any given year. However, given favorable weather, seabeach amaranth plants may persist until January. Therefore, there is still the potential for sand placement to adversely impact plants in the Action Area. Indirect impacts to seabeach amaranth include degradation of habitat from stabilization of the shoreline.

The Department has significant concerns for the estimation of costs of the five alternatives. In Chapters 2 (Purpose and Need), 3 (Alternatives), 5, and 6, and Appendix A, the DEIS discusses 45 dwellings and 238 total parcels which are threatened by erosion for the next 30 years. The predicted loss or protection of these 238 parcels factors heavily in the estimated costs of each alternative. For example, on pages 27 and 28 in the discussion of the 30-year cost of Alternative 1 (No Additional Action) and Alternative 2 (Abandon/Retreat), the loss of the 238 parcels is estimated to cost $21.39 million. Conversely, the discussion of Alternative 5 (Terminal Groin with Beach Fill), the applicant's preferred alternative, makes no mention of the number of parcels that may be lost or protected by the proposed groin, and does not factor in the costs of parcel losses.

However, there is no figure showing 238 parcels and very little description in the text. Page25 states that there are “"238 parcels east of station 15+00 (located just west of Shallotte Boulevard); 45 of which have homes. All of the parcels and homes are vulnerable to erosion damage over the next 30 years, should the past erosion trends continue." A quick count of the number of parcels shown in the DEIS as affected by erosion up to year 2045 (in Figure 3.1) indicates that there are approximately 88 parcels total (this estimate is high, as some are already below high tide, and some are west of station 15+00). The DEIS does not indicate where the other 150 or so parcels are. A review of the Town's zoning map (accessed at http://www.oibgov.com/userfiles/File/Zoning_Map_Current.pdf on March 4, 2015) and information from the Brunswick County Register of Deeds (accessed March 4, 2015) indicates that most, if not all of the other 150 parcels are likely waterward of the existing shoreline, within the footprint of the proposed project, or east (downdrift) of the proposed terminal groin location. Many of these parcels are already below the high tide line and are currently unbuildable. If this is the case, then the terminal groin will not protect the majority of these parcels from erosion, as some are already lost to erosion, and the parcels to the east of the groin will receive no protection at all. East of the proposed groin, underwater parcels will remain underwater, and any buildable parcels will be threatened (and perhaps lost) due to increased erosion from the presence of the groin.

The DEIS should be revised to accurately reflect the situation of all of the parcels in the project area and the estimated losses for each alternative. Parcels that are mostly waterward of the current shoreline, within the footprint of the proposed groin, or east of the proposed groin should be considered a loss, and the costs of those losses should be added to the annual and 30-year costs of Alternative 5. The predicted loss of parcels due to Alternatives 3 and 4 should also be calculated and included in the estimated costs, as it is unlikely that many of the parcels east of station 0+00 will be protected or recovered from either of these alternatives. We note that including these costs will significantly increase the overall costs of the three build alternatives.

On Page 4, the Table in Appendix D should be revised to provide a consistent comparison of costs between the five alternatives. Currently, the costs for Alternative 5 are shown as annual and 5-year costs, while the cost of other alternatives is shown for a 30-year period.

Table 3.10 on Page 44 lists Long-Term Erosion Damages and Response Costs for Alternatives 1 and 2, but shows these costs as $0 for Alternatives 3 and 5. However, the Department does not believe that there will be no erosion damages or response costs over 30 years in the project area,

regardless of alternative chosen. Large winter storms, hurricanes and other named storms all have the potential to cause significant erosion and response costs. Page 116 in Chapter 5 states that the future impacts on development on the east end of Ocean Isle Beach was evaluated based on the continuation of erosion trends determined from surveys obtained between 1997 and 2010. There is no rationale provided for using this timespan as a baseline. Although there were several named storms that passed in the vicinity of Ocean Isle Beach during this time, only one passed over the island (with sustained winds of 35 mph), none of them had winds over 70 mph, and at least half of them had winds of less than 40 mph (http://coast.noaa.gov/hurricanes/ accessed March 6, 2015). If a 30-year timespan had been used (from 1984 to 2014), erosion from a category 4 hurricane (Hurricane Hugo) could have been included in the analysis.

The 13-year baseline also does not provide the same potential level of impacts from sea level rise. The North Carolina Coastal Resources Commission (CRC) Science Panel predicted in December 2014 that the relative sea level rise by 2045 in Southport, North Carolina would be at least 1.9 inches, and as high as 8.5 inches (Draft CRC Science Panel Sea Level Report, December 31, 2014). Considering the historic rates of sea level rise presented on page 132 (8.16 inches per century in Wilmington, and 1.03 feet per century in Charleston), sea level may rise at a minimum of 2.45 inches to 3.71inches over the next 30 years. The DEIS states that there will be no direct or indirect impacts in the project area from such an increase. However, regardless of the alternative, it is likely that dwellings, particularly those on the oceanfront will be impacted by increases in sea level rise over the next 30 years. Because sea level rise is not consistent through time and space, the impacts are often most first noticed when a storm-surge or spring tides occur. Over the 30-year proposed project life, it is more likely that named storms would cause erosion despite the precautions taken, and that costs would be incurred for beach bulldozing, additional emergency nourishment, or other response activities. Further, if the presence of the groin encourages development of currently undeveloped parcels that are on the oceanfront or waterward of current dwellings, erosion and response costs (beach bulldozing, emergency sand placement, infrastructure repair, demolition and solid waste costs) could be expected over the life of the project for Alternative 5 that would not be expected for the other 4 alternatives. The DEIS is silent on this issue.

Also in Table 3.10 on Page 44, the Department recommends that the $21.39 million included for loss of parcels be revised to remove costs for parcels which are currently under water or within the footprint or east of the proposed terminal groin. Since most of these parcels are already unbuildable, and the terminal groin will not provide significant improvement in condition, the loss of them should not be counted for Alternatives 1 and 2 if they are not counted in the other alternatives.

On page 63 in Chapter 4, the reference to Figure 4.12 is in error. Please revise.

On pages 74-76 in Chapter 4, please update the sea turtle nesting data for all species to include 2013 and 2014 data. A green sea turtle nested in Holden Beach in 2013.

On Page 97, Figure 4.14, the Department recommends that the written description of the piping plover critical habitat be used, rather than the old shape file.

Please update Chapter 4 to include red knot records.

The DEIS does not adequately address accelerated erosion downdrift of the groin or the potential impacts from downdrift erosion and regular dredging (every five years to maintain the groin, every three years for the Corps CSDR project). Chapter 5 (page 175) and Appendix C change the topic from potential impacts of this groin on sand transport and intertidal habitats in Shallotte Inlet to a discussion of the impact of the Oregon Inlet jetties on Pea Island. Oregon Inlet and Shallotte Inlet are very different systems, and the DEIS does not explain how they are comparable. We note that there is no habitat above MLLW (including no intertidal habitat) downdrift of the Oregon Inlet jetty, and the stabilization of the shoreline within the sand fillet of the jetty has resulted in degradation or loss of intertidal habitats. The DEIS (page 176) states that the model shows the loss of approximately I-2 acres of intertidal habitats in Shallotte Inlet due to the project, but that habitat is expected to persist and recover within 2 years of dredging based on the rate of infill that currently occurs. However" the rate of infill that is referenced is not the rate that will occur after the groin is constructed, since the model shows that the rate of sediment transport will be reduced. There is no discussion in Chapter 5 or Appendix A of the expected passage rates of sand across the groin, or the expected infill rate after construction, and based on the information provided, it is not possible to determine impacts of the groin on the persistence or formation of intertidal shoals and flats in Shallotte Inlet.

On Page 177, please change "nesting habitat for seabeach amaranth..." to "habitat for seabeach amatanth. . . ."

On Page 178, the DEIS should address the indirect impacts of stabilization of a dynamic system. The DEIS states that the "increase in stable dry beach as a result of the implementation of Alternative 5 is considered more advantageous to resident and migratory fauna." However, the resident and migratory fauna, particularly the shorebirds such as piping plover and red knot, rely on the dynamic coastal processes such as overwash, to provide optimal foraging, roosting, and nesting habitat. The presence of the groin and other hard structures prevents such processes. In addition, groins accelerate erosion on the downdrift side, thereby causing direct and indirect impacts to the dry beach and intertidal habitats.

In Chapter 5 and Appendix A of the DEIS, the accretion and erosion patterns indicated by the Delft3D model are shown only for three years post-project. Given that this is a 30-year project, and the groin is proposed to be on a 5-year maintenance schedule, the DEIS should clarify why only three years of modeling is shown. In addition, no modeling runs are included to show the expected accretion or erosion patterns for Alternative 4. Information for Alternative 4 should be added to the DEIS.

On Page 62 of Appendix A, the DEIS states that the model results for Alternative 1 underestimated the sediment retention rate of the borrow area, and that the modeled rate was approximately 80% of the measured rate. According to page 62 of the DEIS, the modelers assume that all of the other model runs also underestimated the sediment retention rate in the borrow area by the same amount, and adjusted the modeled rates for the terminal groin alternative without further justification. Alternatives 2, 3, and 4 were not considered in this exercise on page 2 or in Table 4.15, and only Alternatives 1 and 5 are used to compare model

volume changes in the Shallotte Inlet complex. The Department recommends that information for Alternatives 2-4 be included in Table 4.15 of Appendix A.

As stated above, the Department recommends that the project, as currently proposed not be authorized, due to potential impacts to piping plovers, red knot, seabeach amaranth, and sea turtles. We recommend that the Final EIS incorporate our comments listed above. Thank you for the opportunity to comment on this project. If you have questions concerning these comments, please contact Kathy Matthews on (919) 856-4520, Ext. 27 or via e-mail at Kathryn_matthews@fws.gov. I can be reached via email at joyce_stanley@ios.doi.gov or on (404) 331-4524.

Sincerely,

Joyce Stanley, MPA
Regional Environmental Assistant

cc:
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Gary Lecain – USGS
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