United States Department of the Interior

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

November 20, 2009

Colonel Jefferson M. Ryscavage
District Commander/District Engineer
Wilmington District, U. S. Army Corps of Engineers
69 Darlington Avenue
Wilmington, North Carolina 28403

Subject: Reconnaissance Study for the North Carolina International Terminal, Brunswick County, North Carolina, Attention: Frank Yelverton

Dear Colonel Ryscavage:

The Wilmington District, U. S. Army Corps of Engineers (Corps), informed the U. S. Fish and Wildlife Service (Service) that a Reconnaissance Analysis (RA), referred to as a 905(b) report, is currently being conducted on the proposed North Carolina International Terminal (NCIT) which would be located on the lower Cape Fear River in Brunswick County, North Carolina. The Service has reviewed project information on the Corps’ web site along with other available information such as the Pro Forma Business Plan prepared for the North Carolina State Ports Authority (CH2M Hill 2008). The Service provides the following comments under authority of Section 2(b) of the Fish and Wildlife Coordination Act (FWCA) of 1958 (48 Stat. 401, as amended; 16 U.S.C. 661-667d) which establishes fish and wildlife conservation as a coequal purpose or objective of federally funded or permitted water resources development projects.

Proposed Project

The proposed facility would be located on a 600-acre site owned by the North Carolina State Ports Authority (NCSPA) south of Progress Energy’s Brunswick Nuclear Plant. An early proposal for the terminal suggests a capacity of 1.5 million 20-foot truck equivalent units (TEU). The NCIT site is located near River Mile 7.0 on the Cape Fear River. The NCSPA originally envisioned a terminal and approach channel designed to accommodate ships larger than the current Panamax standard, anticipating the future expansion of the Panama Canal. The existing navigation channel from the Atlantic Ocean to the current port at Wilmington may require deepening and realignment.

The proposed project, in addition to a deeper channel and access to the new port area, would require road and rail access inland from the actual terminal site. Roads in the project area are already experiencing heavy traffic from current growth in the region (CH2M Hill 2008, p. B-4). With the addition of almost 900,000 trucks annually (CH2M Hill 2008, p. B-4), the proposed terminal would impact growth and roadway infrastructure in a broad area surrounding the actual 600-acre terminal site. The business plan suggests the use of three existing routes from the
terminal site of US Highway 17: NC 133, NC 87, and NC 211 (CH2M Hill, Appendix C). There is a proposal for new route (Route 4) that would be aligned between NC 87 and NC 211 and have an eastern terminus at US 17.

**Major Information Sources on Natural Communities and Fish and Wildlife Resources**

The proposed terminal would require a deep, wide navigation channel from the Atlantic Ocean to the terminal site as well as inland infrastructure over a broad geographic area of southeastern North Carolina. These aspects of the project require the consideration of adverse impacts over a wide range of marine, estuarine, beach, freshwater, and inland terrestrial communities. Several sources of information are available to aid the Corps in considering the functions and values of these many communities and the significant fish and wildlife resources that they support.

The North Carolina Division of Marine Fisheries (NCDMF) produced a Coastal Habitat Protection Plan (CHPP) (Street et al. 2005) that presents a comprehensive review of the marine and estuarine habitats required by coastal fishes and other important natural resources. The CHPP discusses the geographical distribution of major habitat types and provides detailed lists of the species that utilize these habitats.

The database of the North Carolina Natural Heritage Program (NCNHP) can provide lists of the elements of natural diversity such as rare plants and animals, rare and exemplary natural communities, and special animal habitats. Lists of element occurrences can be generated by county or U. S. Geologic Survey 7.5-minute quadrangles (quad). The information on which these lists is based on a variety of sources, including field surveys, museums, herbaria, scientific literature, and personal communications. These lists are dynamic, with new records continually being added and old records being revised as new information is received. As a result, a list cannot be considered a definitive record of the elements of natural diversity present in a given county or quad and should not be used as a substitute for field surveys.

The NCNHP has developed a Conservation Planning Tool (CPT) (available at <http://www.onencnaturally.org/pages/ConservationPlanningTool.html>) that is discussed in a Detailed Report (available at <http://www.onencnaturally.org/pages/CPT_Detailed_Report.html>). Chapter Four of the Detailed Report discusses the biodiversity and wildlife habitat assessment aspects of the tool. The CPT focuses on the identification of existing significant habitats, based on the needs of both wildlife and humans, as well as focusing on lands that can be identified as serving multiple benefits for compatible land uses. The NCNHP uses a variety of measures to rank areas within the State. Areas may be defined as having national, state, regional, or county significance. Areas with the highest values (national or state significance) are designated as Significant Natural Heritage Areas (SNHAs). These SNHAs represent locations known to contain rare species as well as occurrences of rare/high quality natural communities. Appendix B-6 of the Detailed Report provides data sources for marine and estuarine resources.

Maps developed by the NCNHP delineate several SNHAs that could be impacted by the NCIT. The Lower Cape Fear River Aquatic Habitat is ranked as State Significant. Other areas are found landward between the terminal site and US 17 and beyond where extensive infrastructure is likely to be required for the NCIT. Areas of National Significance include the Boiling Spring
Lakes Wetland Complex, Orton Pond, Military Ocean Terminal, Sunny Point (MOTSU) Governors Creek, Bald Head Island, and Town Creek Marsh and Swamp. Areas of State Significance include MOTSU Northwest Natural Area, Pleasant Oaks/Goose Landing Plantations, White Spring Pond Complex, and Boiling Spring Lakes Limestone Complex.

The Cape Fear Arch Conservation Collaborative (CFACC) released a Conservation Plan for Southeastern North Carolina and Northeastern South Carolina, an area that stretches across the lower Coastal Plain (Cape Fear Arch Conservation Collaborative [hereafter CFACC] 2009). The Cape Fear Arch is a region distinguished by unusual geology and the greatest biological diversity along the Atlantic Coast north of Florida (CFACC 2009, p. 5). The plan is an effort to define habitat priorities and strategies for defining, reducing, and mitigating conflicts as well as reducing impacts on the critical networks of natural areas. The CFACC established 26 priority areas (PA) that are defined as subset areas within the overall Cape Fear Arch Conservation boundary where the CFACC will focus its conservation efforts. The natural communities and important species within the PAs that could be impacted by the NCIT will be discussed below.

The Atlantic States Marine Fisheries Commission (ASMFC) Habitat Program has produced several documents which address coastal habitats which are likely to be affected by the proposed NCIT. The Interjurisdictional Species Fisheries Management Program of the ASMFC has produced Fishery Management Plans for a number of the fish species which inhabit the Cape Fear River and estuary. Documents of the Habitat Management Series of ASMFC, as well as the individual Fishery Management Plans, are located online (<www.asmfc.org>). Specific documents which the Service believes would be particularly useful in determining the impacts of the NCIT are cited in the following text.

Information on all federally protected endangered and threatened species in North Carolina is now available on our website (<http://www.fws.gov/nc-es/es/countyfr.html>). Our web page contains a complete and frequently updated list of all endangered and threatened species protected by the provisions of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)(Act) and a list of federal species of concern (FSC) that are known to occur in each county in North Carolina. The term “federal species of concern” refers to those species which the Service believes might be in need of concentrated conservation actions. Federal species of concern receive no legal protection and their designation does not necessarily imply that the species will eventually be proposed for listing as a federally endangered or threatened species. However, all practicable measures should be taken to avoid or minimize adverse impacts to federal species of concern in order to reduce the necessity for formal listing.

**Ocean and Estuarine Habitats to be Evaluated in Planning the NCIT**

Most ocean and estuarine fish species are regulated by the North Carolina Wildlife Resources Commission (NCWRC)-Division of Inland Fisheries and the North Carolina Department of Environment and Natural Resources, NCDMF, under the auspices of the ASMFC, the South Atlantic Fishery Management Council (SAFMC), the Mid-Atlantic Fishery Management Council (MAFMC), joint plans between ASMFC and council(s), or under state management plans. Both the Service and the National Marine Fisheries Service (NOAA-Fisheries) are co-managers in both the ASMFC and SAFMC.
The nearshore Atlantic Ocean adjacent to the ship channel, the Cape Fear River, and its estuary constitute important nursery and migration habitat for a significant suite of anadromous and interjurisdictional fish and shellfish species (Schwartz et al. 1982). Anadromous fish species have long been an important resource along the Atlantic coast of the United States. These fish depend on coastal freshwater systems to provide spawning and nursery habitat for their unique life history strategy. The success of these species depends on their ability to reach suitable spawning habitat that is often hundreds of kilometers upriver from the sea.

In the ocean and estuarine habitats of the project area the Service seeks to not only conserve existing fish and wildlife resources, but to restore these significant resources to more sustainable levels. For interjurisdictional fish, the focal species of the Service include the anadromous American eel (Anguilla rostrata), a FSC; both the Atlantic sturgeon (A. oxyrhynchos) and federally endangered shortnose sturgeon (Acipenser brevirostrum); the marine and estuarine red drum (Sciaenops ocellatus), and other anadromous species such as the striped bass (Morone saxatilis), blueback herring (Alosa aestivalis), alewife (A. pseudoharengus), American shad (A. sapidissima), and sea lamprey (Petromyzon marinus).

Additional interjurisdictional species present which are regulated under ASMFC management plans or joint plans with SAFMC or the MAFMC include: Atlantic croaker (Micropogonias undulatus), Atlantic menhaden (Brevoortia tyrannus), black sea bass (Centropristis striata), bluefish (Pomatomus saltatrix), horseshoe crab (Limulus polyphemus), Spanish mackerel (Scomberomorus maculatus), spiny dogfish (Squalus acantias), spot (Leistomus xanthurus), spotted seatrout (Cynoscion nebulosus), summer flounder (Paralichthys dentatus), tautog (Tautoga onitis) and weakfish (Cynoscion regalis). Habitat use for other species, including those for which Essential Fish Habitat (EFH) has been designated, may be found in the respective management plan for that species.

The Cape Fear River historically supported large runs of anadromous species but population levels have declined substantially over the last two centuries (Rulifson 1994; Winslow 1994 as cited in Smith and Hightower 2009). In terms of commercial and recreational fishing, the most important species historically were sturgeon, American shad, and striped bass. Currently, the Cape Fear River striped bass population is among the lowest of North Carolina’s coastal rivers (McDonald 1887; Patrick and Moser 2001; Ashley and Rachels 2007). In 2008, the NCDMF and NCWRC implemented a harvest moratorium on striped bass in the Cape Fear River system for both the recreational and commercial sectors in an attempt to promote recovery of the fishery (North Carolina Division of Marine Fisheries 2008; North Carolina Wildlife Resources Commission 2008).

Declines in anadromous species landings in the Cape Fear River have been attributed to the same variety of anthropogenic effects (overfishing, pollution, habitat degradation, dam construction) that have impacted many other Atlantic coastal rivers (Winslow et al. 1983; Winslow 1994). However, the most obvious of these effects in the Cape Fear River is the presence of three lowhead lock and dam structures, approximately four meters (13.1 feet) tall, constructed between 1915 and 1934 by the Corps for the purpose of commercial navigation. Lock and Dam 1 (LD-1) was constructed at river kilometer (rmk) 97 in 1915, Lock and Dam 2 (LD-2) at rkm 149 in 1917, and Lock and Dam 3 (LD-3) at rkm 186 in 1934 (Nichols and Louder 1970).
Creating the new and deeper navigation channel from the Atlantic Ocean to the terminal site may adversely impact a wide variety of marine and estuarine habitats. Furthermore, the long-term maintenance of the channel may result in secondary adverse impacts such as altered water chemistry, saltwater intrusion into estuarine areas, saltwater contamination of underground aquifers, and coastal erosion. All of these potential adverse impacts should be carefully considered in determining whether there is a federal interest in creating the NCIT. A brief outline of the major components of the marine and estuarine areas is given below and the references provided should be used to determine the environmental impacts that could be produced by the construction and operation of the proposed NCIT.

**Water column** - The quality of our coastal waters affects not only fish species diversity, production, and distribution but also living fish habitats, such as submerged aquatic vegetation and oyster beds (shell bottom) (Street et al. 2005, p. 33). The quality of the water column is a key factor that links fish, habitat, and people. That linkage is affected by growing development pressures along our coast as well as far inland, making the protection and enhancement of water quality for fisheries resources a challenging task. Unlike other fish habitats, the water column will persist regardless of environmental conditions (Street et al. 2005, p. 41). However, the quality of the water column may not be suitable to support certain fish species or ecological functions. Fish and invertebrate species occur where physical and chemical characteristics (e.g., temperature, dissolved oxygen, salinity, and clarity) suit their physiological requirements. The CHPP discusses the description and distribution of aquatic systems, their ecological role and functions, their status, and threats and management needs (Street et al. 2005, Chapter 2). The CHPP also provides information on the fish species that may occur in North Carolina waters. Large-scale dredging to create a navigation channel to the NCIT may create harmful turbidity. Elevated turbidity during and after dredging can affect juvenile fish by clogging gills, which can result in mortality or reduced feeding or movement (Street et al. 2005 and references therein, p. 80). The CHPP states (Street et al. 2005 and references therein, p. 80) that while turbidity from dredging may protect small or young fish from visual predators, it may also expose them to heavy metals and other pollutants stored in the sediment. Dredged channels act as sediment traps, accumulating fine silt and pollutants. The fine material can easily be resuspended by boat wakes, wind, or periodic channel maintenance.

The creation of a large international shipping terminal creates the risk of major spills. While improvements in navigation have reduced the potential for collisions and groundings, such events cannot be ruled out over many years of port operation. Spills of toxic substances would have serious consequences for riverine and estuary habitats in the Lower Cape Fear River. Major spills can have impacts extending over many years. Such adverse environmental events, even at a very low probability of occurrence, should be thoroughly considered in the RA. The material in the CHPP related to fish species and the habitat values of the water column should be fully considered in determining the environmental impacts of the NCIT and whether a federal interest is justified.

**Shell Bottoms** – The CHPP defines shell bottoms as “estuarine intertidal or subtidal bottom composed of surface shell concentrations of living or dead oysters (Crassostrea virginica), hard clams (Mercenaria mercenaria), and other shellfish” (Street et al. 2005, p. 201). This definition is limited to estuarine waters and habitats because North Carolina’s economically significant
shellfish resources and their fisheries are entirely estuarine, although many species of molluscan shellfish live in freshwater and nearshore ocean waters. The CHPP discusses the description and distribution of shell bottoms, their ecological role and functions, their status, and threats and management needs (Street et al. 2005, Chapter 3). The direct and indirect ecosystem services of oyster reefs, such as filtering capacity, transfer of production between bottom and water column, nutrient dynamics and sediment stabilization, have been largely ignored or underestimated (Street et al. 2005 and references therein, p. 204). Shell bottoms provide food, refuge, and nursery grounds for coastal fisheries. Shell bottoms also indirectly benefit the fisheries by providing water filtration. An additional reference regarding the importance of habitat created by shellfish, entitled “The Importance of Habitat Created by Molluscan Shellfish to Managed Species along the Atlantic Coast of the United States” (Coen and Grizzle 2007), may be accessed on the ASMFC web site at <http://www.asmfc.org/publications/habitat/hms8ShellfishDocument.pdf>.

Dredging of channels for navigational purposes can remove, damage, or degrade existing shell bottoms. Dredging creates turbidity that can clog oyster gills or cover the oysters completely (Street et al. 2005, p. 221). Even low levels of siltation affect growth of oyster beds by reducing larval attachment. The CHPP states that although no major new channels were being constructed in North Carolina as the plan was developed, maintenance dredging, construction of new marinas/docking facilities, and new dredging for deep water access continue to be potential problems (Street et al. 2005, p. 221). The material in the CHPP related to shell bottoms and their direct and indirect economic benefits should be fully considered in the environmental impacts of the proposed NCIT and whether a federal interest is justified.

Submerged Aquatic Vegetation - Submerged aquatic vegetation (SAV) is a fish habitat dominated by one or more species of underwater vascular plants (Street et al. 2005, p. 253; Stephan and Bigford 1997). Areas of SAV may also be vegetated with freshwater species such as native wild celery (Vallisneria americana) and sago pondweed (Potamogeton pectinatus). Areas of SAV are included as Critical Habitat Areas under North Carolina Marine Fisheries Commission (NCFMC) rules [MFC rule 15ANCAC 031.0100 (b)(20)]. The SAFMC classifies SAV as essential Fish Habitat for peneaied shrimp, red drum, and snapper/grouper species. Although the NCFMC and the North Carolina Coastal Resources Commission (NCCRC) definitions may include areas with only SAV roots or propagules, SAV habitat could also occur on bottom temporarily lacking any SAV, structures between patchy SAV beds, or areas where conditions are currently unfavorable for growth, but have historically supported SAV. Therefore, for purposes of the CHPP, SAV habitat is defined as “bottom recurrently vegetated by living structures of submerged, rooted vascular plants, (i.e., roots, rhizomes, leaves, stems, propagules), as well as temporarily unvegetated areas between vegetated patches” (Street et al. 2005, p. 253). The CHPP discusses the description and distribution of SAV areas, their ecological role and functions, their status, and threats and management needs (Street et al. 2005, Chapter 4).

The CHPP states (Street et al. 2005 and reference therein, p. 275) that dredging and filling activities were at one time considered to have the greatest detrimental impact on SAV. Dredging for creation or maintenance of navigational channels and inlets resulted in removal or destruction of existing grass beds. The change in bottom depth, bottom sediment characteristics, and water
clarity that accompanies dredged channels prevents or discourages future growth or establishment of SAV. Habitat for SAV can be destroyed if dredged material is placed directly on existing SAV. Potential SAV habitat can also be eliminated if unvegeted soft bottoms are filled and converted to an upland spoil island, or dredged to an excessive water depth. The increased water depth in dredged channels reduces light penetration to the bottom, limiting the ability of SAV to colonize the area. In addition, dredged channels tend to refill with finer sediments that are easily resuspended by currents or boat wakes. The resulting chronic elevated turbidity and sedimentation can reduce light penetration to levels that reduce or eliminate productivity of adjacent grass beds and make colonization of unvegeted areas difficult. The material in the CHPP, as well as that in Stephan and Bigford (1997) regarding the value of SAV to coastal fish stocks, should be fully considered in determining the environmental impacts of the proposed NCIT and whether a federal interest is justified.

**Coastal Wetlands** - The NCCRC refers to coastal wetlands as “marshlands,” defined as “any salt marsh or other marsh subject to regular or occasional flooding by tides, including wind tides (whether or not the tide waters reach the marshland areas through natural or artificial watercourses), provided this shall not include hurricane or tropical storm tides” [G.S. 113-229(n)(3)] (Street et al. 2005, p. 311). The CHPP focuses primarily on wetlands that are connected to coastal water bodies by surface water of sufficient depth to allow fish utilization. These “connected” wetlands are hereby termed “riparian wetlands” because they border streams and other water bodies. The CHPP discusses the diverse types of wetlands that support both fish and wildlife resources (Street et al. 2005, pp. 311-313). The CHPP discusses the description and distribution of wetlands, their ecological role and functions, their status, and threats and management needs (Street et al. 2005, Chapter 5). Dredging access channels for upland boat basins can destroy wetlands, while bulkheading can increase erosion along adjacent wetland shorelines (Street et al. 2005, p. 340). The increase of impervious surface in coastal North Carolina causes loss and degradation of both riparian and non-riparian wetlands. Impervious surfaces, such as work areas within the proposed NCIT, affect wetlands indirectly by preventing infiltration into the soil and shallow groundwater tables, thus reducing discharge to certain groundwater-dependent wetlands (Street et al. 2005, p. 349). The material in the CHPP related to wetlands, such as Snow’s Marsh near the site of the proposed NCIT site and estuarine salt marsh along the lower Cape Fear River and its tributaries should be fully considered in determining the environmental impacts of the proposed NCIT and whether a federal interest is justified.

**Soft Bottoms** – Soft bottom habitat is unconsolidated, unvegetated sediment that occurs in freshwater, estuarine, and marine systems. The SAFMC defines one type of soft bottom, tidal flats, as “dynamic features of coastal landscapes whose distribution and character may change with shifting patterns of sediment erosion and deposition.” This definition could in fact apply to all soft bottoms. However, the CHPP definition of soft bottoms includes deeper subtidal bottoms as well as shallow bottom areas. The CHPP discusses the description and distribution of the various soft bottom areas, their ecological role and functions, their status, and threats and management needs (Street et al. 2005, Chapter 6). The CHPP states that dredging activities do affect physical and biological features of soft bottom communities (Street et al. 2005, p. 388). New dredging for navigational channels or marina construction can alter topographic and hydrologic features that attract fish for feeding, refuge, or spawning, and modify sediment grain
characteristics. Dredging removes all benthic infauna from the affected areas immediately, reducing food availability temporarily to bottom feeding fish and invertebrates. Disturbance associated with inlet dredging can also deter or alter summer spawning activity of some fish species. Data on the spawning season for coastal fish and invertebrates in North Carolina that broadcast planktonic or semi-demersal eggs (Street et al 2005, p. 54) indicate that spawning activity around the inlets occurs from May through October, depending on the species (Street et al. 2005, p. 388).

The ecological functions of shallow, unvegetated estuarine habitats and the potential dredging impacts have been discussed by Ray (2005) with emphasis on the Chesapeake Bay. The ecological functions of tidal flats and shallow-water habitats include high primary production by benthic microalgae (e.g., diatoms), nutrient regeneration, decomposition of organic matter, secondary production by infauna (benthic invertebrates), feeding habitat and predation refuges for post-larval fishes and invertebrates, and feeding habitat for shore birds and wading birds (Ray 2005 and references therein). Ray (2005) cites sources indicating that the most common effects associated with dredging projects are the removal of habitat, burial, turbidity, altered current patterns, salinity intrusion, and decreased flushing in relatively deep areas.

Unvegetated intertidal areas are known as mud flats or sand flats depending on their sediment size. A detailed discussion of the ecology of such flats in North Carolina has been produced by the Service (Peterson and Peterson 1979). These areas may contain intertidal oysters that are exposed at low tide. Microscopic algae thrive on flats. Invertebrates inhabiting intertidal shoals are an important food source for shorebirds and fishes. The diverse benthic invertebrates found on intertidal flats in North Carolina have been described (Peterson and Peterson 1979, pp. 19-29). Many foragers, such as blue crab (Callinectes sapidus), small fish, and shrimp come in with the tide to feed on surface detritus or to prey on intertidal burrowers. However, these species leave the flats on the receding tide and are more properly at home in the shallow, estuarine waters.

Many avian species utilize North Carolina's intertidal flats (Peterson and Peterson 1979, pp. 49-63). Major groups of birds include: (1) waders; (2) shallow-probing and surface searching shorebirds such as sandpipers, plovers, knots and oystercatchers; (3) deep-probing shorebirds, such as godwits, willets, and curlews; (4) aerial searching birds such as terns, gulls, skimmers, pelicans and kingfishers; (5) floating and diving birds such as ducks, grebes, loons, cormorants and swans; and (6) birds-of-prey such as osprey, hawks, eagles and owls.

Both subtidal and intertidal soft bottoms clearly provide important habitat for fish and wildlife resources. Due to their unique position in the landscape, the loss or degradation of such areas is difficult to mitigate. The Corps should carefully consider the references above, determine as accurately as possible the potential loss of such areas, and the potential for complete mitigation in determining the environmental impacts of the proposed NCIT and whether a federal interest is justified.

**Hard Bottoms** - Hard bottom habitat is defined as "exposed areas of rock or consolidated sediments, distinguished from surrounding unconsolidated sediments, which may or may not be characterized by a thin veneer of live or dead biota, generally located in the ocean rather than in
the estuarine system” (Street et al. 2005, p. 449). Both nearshore and offshore hardbottoms attract concentrations of red drum (Greene 2002, p. 146), a priority species of the Service.

Current plans suggest the NCIT would be designed to accommodate vessels requiring an operating depth of 52.5 ft at mean lower low water (CH2M Hill 2008, p. B-1). In open water, the dredge depth would be increased to accommodate wind and wave effects on the vessels. Creating such an approach channel from the ocean to the mouth of the Cape Fear River would require large scale dredging that could directly or indirectly impact hard bottom habitats. The CHPP discusses the description and distribution of hard bottom areas, their ecological role and functions, their status, and threats and management needs (Street et al. 2005, Chapter 7). In evaluating habitat condition for the snapper-grouper fishery, the South Atlantic Fishery Management Council (SAFMC) concluded that dredging near or on hard bottoms is potentially the most damaging physical human activity to this habitat (South Atlantic Fishery Management Council [hereafter SAFMC] 1998 as cited in Street et al. 2005, p. 464). Dredging can be associated with creation or modification to navigational channels, or removal of sediment for beach nourishment projects. The SAMFC (1998 as cited in Street et al. 2005, p. 464) states that dredging impacts to hard bottom habitat include: (1) dislocation of corals or colonized rock (live rock) and cuts through live tissue that lead to infection or mortality; (2) sedimentation that stresses corals and other sessile invertebrates, causing mortality if the deposited sediment cannot be displaced, which in turn may also displace reef fishes; (3) elevated turbidity for extended periods may continue to stress hard bottom organisms and potentially decreasing survival of stationary organisms over time; and, (4) movement of fill material from beaches by waves and currents can result in increased turbidity at, and sedimentation on, near shore hard bottom sites. The material in the CHPP related to hardbottoms should be fully considered in determining the environmental impacts of the proposed NCIT and whether a federal interest is justified.

**Beach Habitats to be Evaluated in Planning the NCIT**

The sandy beaches of the projects area, extending in both directions from the mouth of the Cape Fear River, should be evaluated for potential long-term, secondary impacts associated with creating the required navigation channel. The beaches on Bald Head Island (BHI) and Oak Island depend on the interchange of sediment from both the shoreface and continental shelf on their seaward side and the dunes on their landward side.

Ocean beaches and sparsely vegetated, sandy areas landward of the actual beach are priority habitats of the Service. These areas provides important habitat for Service priority shorebirds, including the red knot (*Calidris canutus*), American oystercatcher (*Haematopus palliatus*), Wilson’s plover (*Charadrius wilsonia*), and the federally threatened piping plover (*C. melodus*).

Both the loggerhead sea turtle (*Caretta caretta*) and the green sea turtle (*Chelonia mydas*) may nest on Bald Head Island (Land Management Group [hereafter LMG] 2009, Appendix H, pp. 11-16) and the Oak Island beaches. Both species are federally threatened. The Service FWCA report on the Wilmington Harbor, North Carolina, 96 Act Project (U. S. Fish and Wildlife Service [hereafter USFWS] 2000a, p. 8) stated that the new channel alignment may accelerate erosion on nearby beaches by disrupting the existing longshore sediment transport system at the mouth of the Cape Fear River and result in the loss of sea turtle nesting habitat.
Large volumes of sand are moved along the shoreline as incoming waves are refracted to produce a current that generally moves parallel to the shoreline, the alongshore current or longshore drift (Pilkey et al. 1998, pp. 57-58). Sand may accumulate in offshore shoals and, over time, be transported across the mouth of the Cape Fear River to maintain the adjacent beaches. A deep navigation channel can interrupt the natural flow of sand that is transported by the alongshore current. Therefore, dredging and maintenance of the deeper channel for the proposed NCIT may contribute to erosion of the beaches on Bald Head and Oak Islands. Residents of BHI have stated that maintenance of the existing navigation channel has exacerbated beach erosion which, in turn, has negatively impacted important habitat for beach fauna such as sea turtles and shorebirds.

Regardless of whether shoreline recession is due to rising global sea level or disruption of the alongshore sand transport system, threats to beach front development will lead to demands for more extensive and more frequent beach construction. The Service provided extensive comments on the fish and wildlife resources associated with the federal Brunswick County Beaches Project; the adverse environmental impacts of long-term beach construction; and conservation measures that should be used in rectifying shoreline recession (USFWS 2000b, 2008).

The RA should carefully consider the long-term, indirect impacts of the proposed NCIT on the beaches of both Bald Head and Oak Islands. Bald Head Island contains one of the largest concentrations of loggerhead sea turtle nests in North Carolina, and is one of the very few recurring green sea turtle nesting sites in the state. Surveys by the Corps have shown that the federally threatened seabeach amaranth (Amaranthus pumilus) occurs on BHI (LMG 2009, Appendix H, p. 18). The federally threatened piping plover may overwinter in the project area. The deep navigation channel necessary for the NCIT is likely to serve as a sand trap that disrupts sand movement along the shoreline. Therefore, planning should consider the impacts of the deeper channel on alongshore sand transport. If the project would increase shoreline erosion, the feasibility and costs of protecting existing coastal development must be factored into the decision of whether there is a federal interest in the proposed NCIT.

**Freshwater Aquatic, Wetlands, and Upland Habitats to be Evaluated in Planning the NCIT**

The Corps’ RA should not be limited to the environmental impacts of creating the navigation channel. The Corps should fully evaluate the extensive secondary and cumulative impacts to inland natural communities that would be required to develop the NCIT site and move cargo to and from the terminal. Warehouses and distribution centers would be developed in areas surrounding the terminal. In order to move cargo to and from the terminal site, existing roads are likely to be widened and new roads constructed. New railroad lines are likely to be required. Additional commercial and residential development would be induced by the establishment of the NCIT in order to support new workers at both the actual terminal and the distribution facilities. New manufacturing facilities may be developed. While the exact locations of such commercial development, residential development, and infrastructure may not be identified at this early planning stage, the Corps should acknowledge that extensive inland construction and stresses on ecosystem services would occur as direct, indirect, and cumulative results of the navigation channel and thoroughly consider the impacts of such activities.
The Service has designated certain species as focal species for conservation. The focal species are a subset of the list of the Birds of Management Concern which have the potential to demonstrate the breadth of management challenges faced by the Service and our partners. By improving the status of these focal species, all migratory birds and other wildlife will benefit. Among birds, there are several categories of focal species. Migratory focal species include the painted bunting (Passerina ciris), king rail (Rallus elegans), and the migrating shorebirds mentioned earlier. Interior forest breeding birds include the swallow-tailed kite (Elanoides forficatus), rusty blackbird (Euphagus carolinus), Swainson's warbler (Limnothlypis swainsonii), and prothonotary warbler (Protonotaria citrea). Atlantic Coast marsh birds include the sharp-tailed sparrow (Ammospiza caudacuta) and the rails. Open pine forest focal species include Bachman's [pine wood] sparrow (Aimophila aestivalis), brown-headed nuthatch (Sitta pusilla), and the federally endangered red-cockaded woodpecker (RCW) (Picoides borealis). The impacts of the overall NCIT project should consider impacts to these focal species and their habitats.

Most of the Service's focal fish species are not strictly limited to freshwater and have been discussed earlier. The Carolina pygmy sunfish (Ellassoma boehlkeii) is a FSC, State threatened, and occurs in tannin-stained, acidic waters of roadside ditches, sloughs, small ponds and portions of creeks. The broaddtail madtom (Noturus sp. cf. leptacanthus) is known to occur in Brunswick County, is a FSC, and a Special Concern species of the State. The impacts of the overall NCIT project should also consider impacts to these focal species and their habitats.

The RA should thoroughly consider the large number of exemplary natural communities in Brunswick County as well as the unique plants and animals that these communities support. The county has the greatest diversity of natural communities in the State and contains not only some of the most significant areas in North Carolina, but along the entire U.S. Atlantic Coast (LeBlond 1995, p. 43 as cited in Frankenberg 1997, pp. 196-197). The county-wide list of element occurrences in the database of the NCNHP for Brunswick County includes 42 natural communities. The communities that are considered to be critically imperiled in North Carolina include coastal fringe sandhill, coastal plain marl outcrop, maritime evergreen forest, calcareous coastal fringe forest, and coastal fringe evergreen forest. Some of the county’s pine savannas have among the highest species richness of any similar sized area in temperate North America (LeBlond 1995, p. 43 as cited in Frankenberg 1997, pp. 196-197). The concentration of coastal plains ponds is the largest along the Atlantic Coast between Massachusetts and Florida (LeBlond 1995, p. 43 as cited in Frankenberg 1997, pp. 196-197).

The NCNHP database also provides information on the special status plants and animals. Within Brunswick County, 153 vascular plants have a special state and/or federal designation. Roughleaf loosestrife (Lysimachia asperulifolia) and Cooley’s meadow rue (Thalictrum cooleyi) are federally endangered. As noted, seabeach amaranth is federally threatened. Twenty-seven vascular plants in Brunswick County are FSCs, including the unique Venus flytrap (Dionaea muscipula).

As noted, the Service has reviewed material from both the NCNHP and the CFCCC on the significant natural areas surrounding the terminal site. Inland areas, whether a Priority Area of the CFACC or a Significant Natural Heritage Area of the NCNHP, may contain a mosaic of
several important communities over a relative small geographic area. The material below provides a brief introduction to the important inland communities that should be considered in the RA.

The MOTSU, north of the proposed terminal site, contains important natural habitats and is a Priority Area for conservation (CFACC 2009, p. 15). A considerable amount of MOTSU land is subject to a regular prescribed burning program that has resulted in high quality longleaf pine (Pinus palustris) savanna. Other natural communities represented on MOTSU include small depression ponds, wet pine flatwoods, and coastal fringe sandhills. Four rare animals have been documented from MOTSU including American alligator (Alligator mississippiensis), RCW, Carolina gopher frog (Rana capito capito), and Cape Fear threetooth (Triodopsis soelneri). Portions of MOTSU have been designated as SHNAs of national and state significance. Existing RCW colonies in MOTSU and the Town of Boiling Spring Lakes are designated "significant support populations" (USFWS 2003, p. 170) since they provide protection against demographic, environmental, and catastrophic events, contain important genetic resources, and facilitate natural dispersal among populations necessary to recover the species.

The lower Cape Fear River south and east of U. S. Highway 17 in Brunswick County along with Town Creek and its tributaries are conservation Priority Areas (CFACC 2009, p. 16). There were almost 30 former plantations along the Cape Fear and Town Creek including Orton, Clarendon, and Pleasant Oaks, some of which are SNHAs. Longleaf pine forest remnants along with numerous other natural communities including limesink ponds contribute to this region’s biological richness. Priority wildlife species of the CFACC in this region include eastern fox squirrel (Sciurus niger), northern bobwhite quail (Colinus virginianus), and eastern tiger salamander (Ambystoma tigrinum). Town Creek, a major tributary of the lower Cape Fear, is believed to be one of the most pristine and unusual of all the lower Cape Fear River tributaries. Unlike the more common acidic coastal plain blackwater streams, Town Creek has a near neutral pH and high water hardness (high mineral content) which supports a diversity of freshwater snail and mollusk species, including the Greenfield ramshorn snail (Helisoma eucosimum) found nowhere else in the world. The North Carolina Coastal Land Trust has protected over 10,000 acres in this area through fee title preserves and conservation easements.

The RA should give full consideration to the potential adverse impacts on the bird nesting/roosting islands of the lower Cape Fear River. These islands were created by the disposal of dredged sand and have been maintained for more than two decades by periodic placements of sand dredged from the adjacent river channel. Seabirds, such as terns, pelicans and gulls, utilize open bare sand and sparsely-vegetated habitats on these disposal islands for breeding. In the recent past, the disposal islands commonly referred to as "Ferry Slip Island" and "South Pelican Island" have provided habitat for brown pelicans (Pelecanus occidentalis), royal terns (Sterna maximus), sandhill terns (S. sandvicensis), gull-billed terns (Gelochelidon nilotica), and laughing gulls (Larus atricilla). These islands have been recognized by the American Bird Conservancy and the National Audubon Society as "globally important" for royal and sandhill terns and "continentally important" for brown pelicans. These islands are essential to maintaining populations of seabirds at their present levels. The Service is concerned that these disposal islands, along with Battery and Striking Islands, could experience significant erosion damage if the larger navigation channel or sand removal from offshore shoals increases tidal
flows in the lower Cape Fear River and/or the larger vessels using the NCIT create more powerful wakes.

It is likely that the existing Wilmington Ship Channel would be realigned to accommodate larger container vessels. The bends of the Southport, Battery Island, and Lower Swash Channels may be eliminated and replaced with a direct channel from the mouth of the river to the Snow's Marsh Channel near the terminal site. Such realignment should be evaluated for potential adverse impacts on all bird nesting areas near the new channel. Such impacts should include the potential for sloughing of the sandy uplands into the deeper channel and erosion due to an increase in the size and number of vessel wakes. Overall, the project should not reduce existing shorebird nesting habitat or eliminate opportunities to increase or maintain such habitat.

The Boiling Spring Lakes (BSL) Priority Area in and around the City of Boiling Spring Lakes hosts a diverse wetland complex containing a mosaic of ridges and swales remnant of an ancient dune system with a large concentration of Carolina bays and small depression ponds or limesink ponds (CFACC 2009, p. 17). This region contains the largest concentration of limesink ponds in North Carolina. Small depression ponds on the coastal plain generally have little or no watershed and are probably fed by rainfall and groundwater (Schafer and Weakley 1990, p. 236). There are a host of rare plant species in this region with over 20 species documented including Venus fly trap, the federally endangered rough-leaved loosestrife, loose watermilfoil (Myriophyllum laxum), and Carolina goldenrod (Solidago pulchra). Longleaf pine forest is also prevalent in the region with priority wildlife species including the RCW and Carolina gopher frog. Existing RCW colonies in and around Boiling Spring Lakes are also designated as "significant support populations" (USFWS 2003, p. 170).

The State of North Carolina owns and manages a 6,000+ acre preserve in Boiling Spring Lakes with significant support from The Nature Conservancy. The North Carolina Ecosystem Enhancement Program (NCEEP), along with the North Carolina Department of Agriculture Plant Conservation Program, has acquired 517 acres of former pine plantation in Boiling Spring Lakes. The NCEEP is also implementing a large-scale restoration project on this tract to include a combination of headwater stream and wetland restoration, enhancement, and preservation along with the establishment of a longleaf pine savanna. The goals of this project are to restore ecological function of the system, improve water quality, and enhance native wildlife habitat. Transportation corridors to and from the port are likely to pass through the BSL area. The Corps should consider whether the needed infrastructure can be created without severely impacting existing natural communities and ongoing restoration efforts.

Town Creek begins at the eastern edge of the Green Swamp and empties into the Lower Cape Fear River. The upper reaches of Town Creek, west of U.S. Highway 17, are a Priority Area (CFACC 2009, p. 16) and flow toward the nationally important Town Creek Marsh and Swamp area generally east of US 17 and a nationally Significant Natural Heritage Area. The North Carolina Coastal Land Trust has conserved over 10,000 acres of land along Town Creek most of which occurs between U.S. 17 and the confluence with the Cape Fear River. A Town Creek Riparian Conservation Plan has been developed.
The headwaters area of Town Creek is a mosaic of longleaf pine savannas, loblolly pine (*Pinus taeda*) plantations, limesink ponds, and floodplain forests. Wetlands in these headwater areas are extremely valuable for maintaining downstream water quality as they can retain sediments and transform nutrients before they are carried into larger bodies of water. While the Town Creek headwaters are acidic as they drain the Green Swamp, they become circumneutral (pH around 7) as they move east due to water arising through limestone in the Town Creek watershed. These conditions may result from a direct connection to subsurface aquifers. The headwaters are important in retaining floodwaters and moderating stormwater flows. The landscape that includes the Town Creek headwaters is also valuable since it connects the lower Town Creek region to the Green Swamp. Priority wildlife species include worm-eating warbler (*Helmitheros erythrocephalus*), common nighthawk (*Chordeiles minor*) and Seminole bat (*Lasiurus seminolus*). The black bear (*Ursus americanus*) is an important game species in this relatively undeveloped region. While much of the land was formerly held by large timber corporations, much of it is now owned by development and investment companies.

Areas dependent on groundwater for their unique water chemistry would be threatened if creation of the NCIT resulted in salt water intrusion into subsurface aquifers. Planning for the previous Wilmington Harbor Deepening Project stated (U. S. Army Corps of Engineers [hereafter USACE] 1996, p. EIS-32) that “rock dredging or blasting has the potential to affect groundwater of the area. The Castle Hayne Limestone formation at the channel bottom is already exposed to salt water. Groundwater in the area moves generally east and southeast along a gradient of about 8 feet per mile. The potential for saltwater intrusion into groundwater does not exist unless a reversal of hydrologic gradient occurs due to excessive groundwater pumping. If blasting or rock dredging occurs, the upper areas of rock will be fragmented and/or removed and some permeability increase may occur. Modeling efforts related to potential groundwater impacts are being developed.” Additional impacts to the upper rock layer of the aquifer for the deeper channel along with greater freshwater withdrawal to support new development create a risk of salt water contamination of inland water supplies that would ultimately affect fish and wildlife resources.

The Lockwood Folly River and associated floodplain and uplands are parts of a conservation Priority Area (CFACC 2009, p. 18) that may be impacted by transportation corridors west of the proposed terminal site. This river is believed to be unique because it contains all of the North Carolina tidal vegetation communities as they transition from the Atlantic Intracoastal Waterway (AIWW) upstream basically changing as the salt water influence changes. Starting with salt marsh closest to the AIWW, brackish marsh can be found with tidal freshwater marsh farther upstream. The ecology of tidal freshwater marshes has been summarized in a community profile drafted by the Service (Odum et al. 1984). These extensive tidal marshes are considered important Shellfish Growing Areas for the American oyster (*Crassostrea virginica*). The North Carolina Coastal Federation is actively working with state and local governments and private entities to conserve land and enhance water quality in this watershed. The NCEEP has completed a local watershed plan on the Lockwood Folly River watershed and targets this area for restoration.

While the potential adverse impacts to the beaches of BHI have been discussed, other parts of the island represent a Priority Area (CFACC 2009, pp. 18-19) that may be affected by increased
vessel traffic causing more powerful wakes and declines in water quality. The BHI/Smith Island complex contains excellent examples of coastal communities including the maritime evergreen forest which contains live oak (*Quercus virginiana*), sand laurel oak (*Q. hemisphaerica*), and loblolly pine and is most often found in sheltered areas of barrier islands. The maritime evergreen forest on BHI is the finest example of this community in the State (Frankenberg 1997, p. 207). Bellis (1995) provides a detailed account of the ecology and fauna of maritime forests of the southern Atlantic Coast. The Bald Head Island Conservancy and Smith Island Land Trust have protected significant areas on the islands.

The Green Swamp contains large areas of pocosin intermingled with some of the country’s finest examples of longleaf pine savannas. Pine savannas are among the most diverse forest communities in the southeastern United States (Frankenberg 1997, p. 79) and contain one of the highest per acre plant species richness of any area in temperate North America. The Green Swamp is perched relative to the surrounding landscape. Therefore, the area serves as the headwaters for multiple streams flowing to the Waccamaw River, Cape Fear River and Lockwoods Folly River. The Green Swamp contains at least 14 different species of carnivorous plants, 26 rare plants, and 16 rare animals. Priority wildlife species include the RCW, pine barrens tree frog (*Hyla andersonii*) and ornate chorus frog (*Pseudacris ornata*). Rough-leaved loosestrife, hooded pitcher plant (*Sarracenia minor*), and wiregrass (*Aristida stricta*) are some of the rare, unusual and/or key plant species. The Nature Conservancy owns 15,907 acres known as the Green Swamp Preserve. The original extent of the Green Swamp is believed to have been 200,000 acres, but most has been ditched and converted to pine plantations over time. Juniper Creek with its extensive, mostly uninterrupted floodplain, connects the Green Swamp to the Waccamaw River. The Carolina pygmy sunfish, a FSC, along with several other rare fish and mussels are found in Juniper Creek. The NCWRC manages owns over 18,000 acres along Juniper Creek as public game lands.

The RA should determine whether the Green Swamp Preserve could be impacted by the NCIT if new transportation corridors were developed from US 17 to US 74/76 and the future Interstate 74. The Corps should specifically consider a wide range of impacts associated with Interstate 74 (I-74) which is currently planned to overlap US 74/76 to Bolton in Columbus County, then move southward along parts of NC 211 before joining US 17 west of the Town of Supply (see <http://www.ncdot.gov/templates/download/external.html?pdf=http%3A//www.ncdot.org/projects/I74feasibility/download/I74_study_area_map.pdf>). While the currently proposed alignment of I-74 runs west of the actual preserve, heavy traffic associated with the terminal could lead to consideration of moving this alignment east to join a proposed road (Route 4) that currently ends on US 17 between NC 87 and NC 211 (CH2M Hill 2008, Appendix C, DWG B). Such an eastward shift in the I-74 corridor would likely carry the new interstate through the Green Swamp Preserve. The alignment of Route 4 appears to have limited utility without some link to the north and west of US 17.

In considering potential project impacts on these freshwater aquatic, wetland, and upland habitats, the Corps must look beyond direct losses and carefully evaluate the landscape matrix in which the large diversity of communities exist. The natural resources of the region are not only dependent of each separate community, but also the many interconnections between communities. Therefore, the unique resources of the regional cannot be preserved by merely
avoiding impacts to a few areas of highest ecological value while secondary development associated with the NCIP severs the connections between these areas. Conserving the integrity of the landscape matrix (e.g., the connectivity between different habitats) is vital to the sustainability of the region’s unique and diverse resources. In determining whether creating the NCIT can be accomplished without unacceptable environmental harm, the Corps must establish conclusively that: (1) important natural communities that are currently undisturbed will not be directly or indirectly impacted by the short- or long-term development of the NCIT; (2) vital links between these important natural communities, such as the flow of water, plant dispersal, or movement of animals, will not be severed or diminished; and, (3) opportunities for future restoration of regional natural resources will not be impeded.

Summary

The Service seeks to not only maintain the existing habitats in southeastern North Carolina, but work cooperatively with all parties to restore sensitive areas and links between these areas. Therefore, the Corps should take a landscape-level approach in assessing the federal interest in a project that creates environmental risks in a region with the greatest biological diversity along the Atlantic Coast north of Florida (CFACC 2009, p. 5).

The Corps' environmental analysis should carefully consider the long-term, landscape-level impacts of all aspects of the NCIT project which would include: (1) creation and long-term maintenance of a deep navigation channel to the terminal site; (2) the extensive development that would occur within and surrounding the terminal site; and, (3) the extensive transportation infrastructure that would be required to move cargo to and from the terminal. Direct, indirect, and cumulative impacts must be thoroughly considered. While direct adverse environmental impact would be substantial, the most significant environmental damage would result from long-term, secondary impacts. Examples of such secondary impacts include increased disposal of dredged material on nearby beaches; the housing and commercial needs of employees and support businesses of the terminal; the creation of new manufacturing facilities based on import/export markets; and changes to the hydrology of the Cape Fear River and local groundwater resources. Furthermore, infrastructure impacts will not end at US 17 in Brunswick County and are likely to extend throughout Brunswick County and beyond. The project, when considered in its entirety, is very likely to result in substantial permanent loss of environmental value and would convert the area from residential use with commerce based on recreation and tourism to an industrial center and transportation hub.

A major part of the current assessment should be establishing data needs, or data gaps, that exist. Extensive studies are likely to be required before the full extent of terminal creation and its associated infrastructure are known within an acceptable level of certainty. Field surveys would be required to determine the precise areal extent of important biological communities and the actual species which they support. Surveys for rare plants and animals would be required along new transportation corridors and existing corridors that would be upgraded. Field surveys may be required to determine the location of nesting and foraging habitats for the RCW in the project area. Additional data would be needed on impacts to anadromous fish use of the Cape Fear River, including the federally endangered shortnose sturgeon. Field studies would be needed to develop computer models of hydrologic changes to flows along tidal creeks and small
depressional wetlands such as limesink pond complexes. New data would be required to assess long-term impacts associated with surface salt water intrusion in the Cape Fear River and tidal creeks as well as new models to assess threats to groundwater resources. Additional analyses are needed to determine the amount, configuration, and condition of habitat needed to sustain populations of priority species in the area affected by the proposed project and to effectively evaluate the full range of effects of the proposed project relative to the ability to conserve that habitat. Delineation of the full range of needed analyses is beyond the scope of this letter; however, we note that the information needs associated with a project of this magnitude are substantial, and we strongly recommend that the Corps not proceed with scoping for the needed environmental evaluations without first fully engaging the State and federal natural resource agencies. We also advise that the level of coordination with this office will be well beyond that of the typical Corps Civil works project, and this should be factored into the timeline and budget for any future feasibility study.

With regard to the environmental commitments on the part of the Corps that would be a necessary component of such a project, were it to move forward, we have two major concerns. First, adverse impacts to some habitats, such as salt marsh, limesink ponds, and riparian forested wetlands may be unmitigable due to their unique landscape position with regard to soils, water chemistry, topography, and hydrology. Some major, long-term impacts at the landscape level such as salt water intrusion into both surface water and groundwater and loss of habitat connectivity could not be effectively rectified over a wide area. The measures needed to mitigate impacts such as increased shoreline erosion along the beach of Bald Head and Oak Islands would require new and costly construction projects, such as beach construction, groins, and seawalls, which would create additional adverse environmental impacts. Therefore, the RA should acknowledge that the NCIT, when considered in its entirety, would result in a permanent loss of environmental resources and ecosystem services from the region. These losses would be felt by the local economy since fishery resources and tourism are multi-billion dollar industries in North Carolina.

The second concern is that even in situations where mitigation can be provided; such mitigation would not be funded and accomplished in a timely manner. The Service continues to be concerned that important compensatory mitigation for on-going adverse impacts to anadromous fish promised for the previous Wilmington Harbor Deepening Project has not been accomplished after almost a decade. That project required blasting, dredging, and wetland losses, impacts identical to those which would be necessary for the NCIT. The National Marine Fisheries Service (NMFS) issued a Biological Opinion (BO) for impacts to federally endangered shortnose sturgeon and the Service issued a FWCA 2(b) report for impacts to fish and wildlife resources, specifically anadromous fish. The terms and conditions in the Incidental Take Statement that accompanied the NMFS BO and the 2(b) report contained recommendations to off-set impacts to shortnose sturgeon and anadromous fish. Chief among these was the construction of fish passage at Lock and Dam No. 1 on the Cape Fear River. As noted by Smith and Hightower (2009, p. 6) this low-head lock and dam structure has been an obvious factor in the declines in anadromous species landings in the Cape Fear River. To date, the Corps has not implemented this mitigation measure. This is not the first instance in which the Wilmington District has failed to implement conservation/mitigation components of civil works projects. For example, no compensation has been provided for 42 acres of salt marsh lost in the construction of the
Wanchese Seafood Park in Dare County in the late 1970s. The Service and other stakeholders are becoming increasingly concerned regarding the Corps’ ability to meet these and potential future commitments. Our concerns on this issue would be reduced if prompt action is taken to satisfy the backlog of mitigation requirements for former projects. However, at this time the Service will recommend, through the coordination mandated by the FWCA, that where mitigation is appropriate and feasible, such compensation is completed and fully functional prior to the beginning of any construction.

At the conclusion of the RA, the Corps should determine whether the NCIT, all the secondary development, and the necessary supporting infrastructure can be constructed and operated over the long term without degrading the important natural resources that contribute to sustainable economic development and quality of life in southeastern North Carolina. The totality of both direct and indirect environmental impacts should be carefully considered in determining whether the project can be undertaken in an environmentally acceptable manner, a prerequisite for finding a federal interest in the proposal. Furthermore, the environmental analysis must consider whether important biological and physical links between natural communities would be degraded, lost, or opportunities to reestablish and expand connections between existing undisturbed communities would be permanently lost. The decision regarding the federal interest in the NCIP should not be based on simply avoiding, minimizing, and compensating environmental impacts. Rather, the Corps’ decision should rest on scientifically sound assurances that trust resources throughout the landscape can be restored and sustained. If the Priority Areas of CFACC or the SNHA of the NCNHP cannot be sustained and opportunities for restoration are lost, then the Corps should decide that there is no federal interest in the project due to unacceptable environmental impacts. The Service believes there is no federal interest in projects that would result in permanent environmental loss of such magnitude. The functions and values provided by natural communities and natural processes should be maintained and even improved into the future for the benefit of the nation as a whole and especially for the residents of southeastern North Carolina.

The Service appreciates the opportunity to provide these comments early in the planning process. The Service is committed to working with the Corps and local interests to ensure responsible economic development that is consistent with the environmental quality that is important to all citizens of southeastern North Carolina. If you have any questions or comments, please contact Howard Hall at 919-856-4520, ext. 27 or by e-mail at howard_hall@fws.gov.

Sincerely,

Pete Benjamin
Field supervisor

cc:

Ron Sechler, NOAA Fisheries, Beaufort, NC
Rebecca Fox, US EPA, Whittier, NC
Stephan Rynes, NC Division of Coastal Management, Morehead City, NC
Steve Everhart, NC Division of Coastal Management, Wilmington, NC
Molly Ellwood, NC Wildlife Resources Commission, Wilmington, NC
David Cox, NC Wildlife Resources Commission, Creedmore, NC
Anne Deaton, NC Division of Marine Fisheries, Morehead City, NC
Linda Pearsall, NC Natural Heritage Program, Raleigh, NC
Kristen Howell, Cape Fear Arch Conservation Collaborative, c/o North Carolina Coastal Land
Trust, Wilmington, NC
Todd Miller, North Carolina Coastal Federation, Newport, NC

Literature cited

Ashley, K. W., and R. T. Rachels. 2007. Cape Fear River striped bass spawning stock survey,
2007. Final Report, Coastal Fisheries Investigations, Federal Aid in Fish Restoration
Project F-22, Raleigh.

Report 30. 95 pp.


CH2M Hill. 2008 (March). North Carolina Pro Forma Business Plan. Available at Wilmington

Coen, L.D. and R.E. Grizzle. 2007. The importance of habitat created by molluscan shellfish to
managed species along the Atlantic Coast of the United States. Atlantic States Marine

Frankenberg, D. 1997. The Nature of North Carolina’s Southern Coast: Barrier Islands, Coastal

Greene, K. 2002 [November]. Beach Nourishment: A Review of the Biological and Physical
Impacts. ASMFC Habitat Management Series #7. Atlantic States Marine Fisheries
Series.

Land Management Group. 2009 (March). Environmental Assessment, Bald Head Island Beach
Restoration Project. Land Management Group, Inc. Wilmington, NC. 65 pp. + Figures
and Appendices.
LeBlond, R.J. 1995. Inventory of the natural areas and rare species of Brunswick County, North Carolina. Report to the North Carolina Natural Heritage Program, Division of Parks and Recreation; Raleigh, NC; 162 p.


