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DATE OF AERIAL PHOTOGRAPH: 1998

LEGEND:

 NON-CBRA AREA

 CBRA AREA

REF: CBRA MAP FROM FEMA GOV
(FLOOD MAPPING PROGRAM),
LAST UPDATED 1/17/03

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TITLE:			
CBRA DESIGNATION			
DATE: 6/4/03	BY: JRC	COMM NO.: 4500.03	FIGURE NO. 17.2

- Use of a qualified biologist during construction activities to monitor the vicinity of piping plover, shorebirds, colonial waterbirds, and marine mammals to assure minimal disruptions; as; and/or
- Implementation of a conservation area for piping plover habitat.

17.7 ROSEATE TERN

17.7.1 Status and Natural History of Species in Project Area

Roseate terns (*Sterna dougallii*) have been observed along the coast of Carteret County for more than 20 years. They have been found to breed primarily on small offshore islands, rocks, cays, and islets. Nesting generally occurs near vegetation or jagged rock formations, on open sandy beaches, close to the waterline on narrow ledges of emerging rocks, or among coral rubble (USFWS, 2003). This species has been found south of Cape Hatteras, particularly at Cape Point within the Cape Hatteras National Seashore, during the months of July and August.

17.7.2 Effect Determination

The roseate tern has not been documented in the vicinity of the project. Considering that the tern has been observed primarily during the summer months, the proposed winter construction schedule is not likely to adversely affect roseate terns.

17.8 SEABEACH AMARANTH

17.8.1 Status and Natural History of Species in Project Area

Seabeach amaranth (*Amaranthus pumilus*) is an annual herb that can be found on barrier island beaches, lower foredunes and overwash flats. Flowering begins when plants have reached the appropriate size, and can begin as early as June, but more typically commences in July. The flowering period usually ends in late fall and seed production begins in July or August, reaching its peak in September and continuing until the plant dies back in the winter (USFWS, 2003).

17.8.2 Effect Determination

Since the plant will be in its seed stage during construction activities (November 16, 2004 through March 31, 2005), adverse affects to this species are expected to be minimal. The proposed channel relocation will occur below the water line where seabeach amaranth does not grow. However, deposition of the material along the west end of Emerald Isle may adversely affect this species. As a protective measure for seabeach amaranth and other dune floral species, sand placement along the Emerald Isle shoreline will be restricted to those areas where no vegetation is present.

This plant has been identified as a prolific seed producer, capable of producing thousands of seeds during its growing season (David Nash, personal communication, 2002). Other North Carolina beach nourishment project monitoring has shown that newly deposited clean sand allows for the recruitment of seabeach amarauth from adjacent habitats to the nourished area.

Sand is expected to accrete along the eastern end of Bear Island and western ocean shoreline of Emerald Isle as a result of the development of the new channel. A majority of this accretion will occur naturally, especially along Bear Island, and deposition is expected below the dune elevation, expanding the available plant habitat. The North Carolina Department of Parks and Recreation has been conducting seabeach amaranth surveys along the east end of Bear Island since 1991. The 2002 survey included a complete survey of Bear Island from Bogue Inlet to Bear Inlet. This survey identified fifty plants located on the eastern end of Bear Island. The project is not expected to adversely affect seabeach amaranth along the ocean shoreline of Bear Island or Emerald Isle since habitat needs are above the high tide line and extend to the dune toe.

The COE has instituted a long-term seabeach amaranth monitoring program at every beach in North Carolina that routinely receives dredged material from federally funded projects. Cooperation with the COE regarding specific protection measures for seabeach amaranth may be required during construction activities.

- 18. EFFORTS TO ELIMINATE POTENTIAL IMPACTS TO LISTED SPECIES:** The proposed project will occur during the winter months, November 16, 2004 through March 31, 2005, which will minimize potential impacts to listed species because the work will occur outside or prior to sea turtle nesting season; the critical life stages of bird and fish species; the migratory season of marine mammals; the spring larval recruitment period for macroinvertebrates and infaunal species; and will avoid the vegetated cycle of the seabeach amaranth. Work during this time period will also avoid any impacts to manatees and other migratory marine mammals that may be found during the months of November to February.

Several mitigation measures may be implemented to minimize and avoid adverse impacts to both Federal and State protected species and their habitat during and after project construction. These measures or expected benefits from project implementation include:

1. Establishing access restrictions around piping plover nesting areas along the west end of Emerald Isle during breeding season using the approved barriers;
2. Signage in the vicinity of Critical Habitat for wintering piping plover to educate the public on the bird's behavior, identification and need to protect the habitat;
3. Implementation of a habitat management plan that limits public access and usage to nesting piping plover habitat especially during nesting season;
4. Creation a sand dike along the existing main ebb channel to assist in the closure and infilling of the abandoned waterway. This mitigation measure will immediately replace a portion of the habitat lost during channel relocation and quicken the reestablishment of sufficient intertidal habitat for infaunal recruitment and beach and dune communities for turtles and bird species;
5. Installation of the sand dike will assist in the rapid growth and development of a sand spit along the western shoulder of Bogue Banks and shoaling along the ocean side of the existing channel, providing habitat for listed species and their critical habitats;
6. Shoreline accretion along 7500 feet of oceanfront shoreline of Bear Island resulting in the preservation of beach and dune systems for seabeach amaranth and sea turtle nesting;

7. Anticipated development of the complex spit that currently extends into the eastern channel. This area may be considered as conservation land and mitigation for potential temporary shorebird and salt marsh habitat losses resulting from project construction;
8. Sand placement and dredge operations outside of primary invertebrate production and recruitment periods (spring and fall) thereby limiting impacts to amphipods, polychaetes, crabs and clams. Natural recruitment and repopulation of disturbed areas are expected to result in minimal impacts from the sand relocation efforts;
9. Use of a qualified biologist during construction activities to monitor the vicinity of piping plover, shorebirds, colonial waterbirds, and marine mammals to assure minimal disruption; and
10. An ocean certified cutter suction hydraulic dredge will be used to minimize the potential for impacts to sea turtles and marine mammals;
11. Biological monitoring of infaunal species, birds and saltmarsh will be conducted for one-year prior to construction and for three years after construction completion. This extensive monitoring plan will be used to evaluate project affects and develop mitigation requirements if necessary;
12. Digital aerial photography, surveying and habitat ground-truthing conducted during the summer of 2002 will provide updated habitat and physical information of the project study area.
13. Approximately 80% or more of the well-sorted sand material removed from the dredged channel will be used for beach renourishment along Emerald Isle. The proposed nourishment material is similar to the existing beach material in both color and grain size and is considered to be well suited for beach nourishment. This material will greatly contribute to the re-establishment of sea turtle nesting habitat along Phase 3 of Bogue Banks;
14. Sand compaction may be monitored within the Phase 3 project area. If required, the Phase 3 project area will be tilled prior to April 1st for up to three years following project construction to address compaction issues;
15. Visual surveys of escarpments along the project area will be made immediately after completion of sediment placement; and
16. If work occurs during turtle nesting season, beach monitoring and nest relocation of at risk sea turtle nests will be performed. This program will be conducted in a consistent manner with USFWS and North Carolina Fish and Wildlife Commission regulations.

- 19. SUMMARY EFFECT DETERMINATION:** This assessment has attempted to examine the potential impacts of the proposed project on federally listed plant and animal species likely to be found in the project area. Both direct and indirect affects from the proposed work have been considered in this analysis.

The minimization and mitigation measures presented in this assessment indicate that the proposed work may negatively effect the following species: loggerhead sea turtle, Kemp's Ridley sea turtle, green sea turtle, and the Critical Habitat for Wintering Piping Plover. However the proposed work is not expected to jeopardize the continued existence of any of these species.

20. CULTURAL RESOURCES INVESTIGATION AND MAGNETOMETER SURVEY:

The area was originally home to nomadic Native Americans of, the Algonquin Indian tribe, from 500 A.D. to about the Colonial times. Later, the area was occupied by whalers and fishermen who settled in the vicinity of Bogue Inlet.

Around 1730, the first permanent settlement was established on the site of a former Algonquin Indian Village at the mouth of the White Oak River. The settlement was named Swansborough after Samuel Swan, former Speaker of North Carolina's House of Commons. It became a thriving port with shipbuilding as its major industry. Around 1950, Henry K. Fort bought a largely unsettled area on Emerald Isle and attempted to establish a resort. When the resort failed, a ferry system transported motorists and pedestrians to the Bogue Inlet Pier. Bogue Inlet Pier became the first recreational site on at the island's west end. Bogue Inlet and the surrounding areas remained largely unsettled until the 1950's.

20.1. Shipwrecks

The Cape Lookout area, which includes ocean waters stretching from Drum Inlet around the Cape to Bogue Inlet, contains at least 184 historically documented shipwrecks. Throughout the 1700's, the area was known as pirate territory. The famous pirate Blackbeard, supposedly used the inlets along the North Carolina coast and the shallow waterways behind the barrier island as a safe haven. It is thought that Bear Island was used by Blackbeard while he terrorized traders. It has also been suggested that the shipwrecks off the coasts of North Carolina are largely due to Blackbeard and his pirates. In fact, it is believed that one shipwreck, directly off the coast from Beaufort Inlet, could be Blackbeard's pirate ship, *Queen Anne's Revenge*, which sunk around 1718.

During times of war, the Inlet has played various important roles. During the Revolutionary War, a number of Patriot Privateers operated through Bogue Inlet preying on English merchant ships. Bear Island played a role in the protection of the mainland during the Civil War as a station for Confederate soldiers that prevented Union landings. During World War II, the Coast Guard used Bear Island to secure the coast and monitor German U-boat activity.

During the 1920's, the depression brought the development of commercial industry to Bogue Inlet. The long maritime history of the area indicates the possibility that shipwrecks or other valuable submerged historic resources may exist in areas seaward of Bogue Inlet. The National Historic Preservation Act of 1966 and Archeological and Historic Act of 1979 establish criteria for identification, documentation and assessment of submerged cultural resources. Compliance with submerged cultural resource legislation is administered by the North Carolina Division of Archives and History and the U.S. Department of the Interior. These archives and governmental agencies do not mention the presence of any shipwrecks in or near Bogue Inlet.

20.2 Department of Cultural Resources (NCDCCR)

The NCDCCR will be contacted to review the project for recommendations and/or known historic sites in the project area. The NCDCCR will be contacted immediately upon the discovery of a historic artifact, and work will cease in the area until cleared by the NC DCR.

20.3 Magnetometer Testing

In the fall of 2002 Tidewater Atlantic Research (TAR) of Washington, North Carolina conducted a cultural resources remote sensing survey using a magnetometer for the ebb shoal and ebb channel of Bogue Inlet. Due to the combination of high wind and sea conditions, TAR was unable to survey the shallow areas of the tidal shoal system. Completion of the survey of this area is scheduled for June 2003.

One magnetic anomaly was identified in the vicinity of the proposed channel dike. Further investigations of this area will include a side scan of the channel bottom to determine if the target is buried or exposed; and a contour of the target to identify its shape and size.

To date, no magnetic anomalies have been identified in the vicinity of the proposed channel location.

The submerged cultural resources desktop study of the historical background has been completed. A final report of findings will be submitted to the COE after remaining field investigations and analysis have been completed.

Coordination will be maintained with State and Federal Departments of Historical Resources.