

FINAL

**Environmental Assessment
And
Finding of No Significant Impact**

for

**Operation & Maintenance Dredging
of the Murrell's Inlet Entrance and Auxiliary Channels
and New Information Relating to Placement of Material on
Garden City Beach and Huntington Beach State Park**

Georgetown County, South Carolina

May 2001

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APPENDIX A - Public Notice 2001-1R-001

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APPENDIX D – Biological Assessment

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1. INTRODUCTION

1.1 Description of this Document. This purpose of this Final Environmental Assessment (FEA) is to determine whether it is necessary to supplement the Final Environmental Impact Statement for the Murrell's Inlet Navigation Project (EIS). Specifically, it will determine whether the proposed action is a substantial change to the Murrell's Inlet Navigation Project ("Project") relevant to environmental concerns, and whether there are significant new circumstances or information relevant to environmental concerns. The Project authorized the construction of jetties, channels, sand dikes, and a deposition basin at Murrell's Inlet, South Carolina. It also authorized regular operation & maintenance (O&M) dredging, and the placement of dredged sand on Huntington Beach State Park (HBSP) and Garden City Beach (GCB). The only change in the Project is the proposed O&M dredging of a portion of the Entrance Channel, and of the Auxiliary Channel, and the placement of material in the intertidal zone of HBSP. The new circumstances or information primarily relate to the presence of endangered species within the project area, and newer laws such as requirements pertaining to Essential Fish Habitat (EFH). Otherwise, the impact of O&M dredging and placement of suitable material on adjacent beaches was examined as part of the Project EIS.

1.2 Project Authorization. The Project was authorized by the House Committee on Public Works on 10 November 1971 and the Senate Committee on Public Works on 18 November 1971, under authority of Section 201, P.L. 89-298, 1965 Flood Control Act. Section 67 of the Water Resources Act of 1974 authorized interim maintenance to permit free and safe movement of vessels until the authorized project was completed. The Project was initiated in September 1977 and completed in August 1981 (see Figure 1). Authorization for the placement of beach quality sand obtained through maintenance dredging of Federal navigation channels is also provided by 33 U.S.C. 426j.

1.3 Background and Description. The project provides for an Entrance Channel that is 300 feet wide, with an authorized depth of 10 feet and extending from the -12-foot ocean contour to a point within the jetties, a length of approximately 3,000 feet (see Figure 1). Depths are referenced to mean low water (MLW). As authorized, Inner Channel A is 200 feet wide, 10 feet deep and extends from the entrance channel to the mouth of Main Creek, approximately 2000 feet. Inner Channel B, as authorized, is 90 feet wide, 8 feet deep and extends approximately 13,800 feet up Main Creek to an old Army crash boat dock where it terminates with a turning basin 300 feet long and 150 feet wide. The Auxiliary Channel is authorized at 200 feet wide, 10 feet deep and is approximately 1000 feet long. The areas planned for maintenance dredging at this time are limited to the Entrance Channel, Inner Channel A, the Auxiliary Channel and approximately 800 feet of Inner Channel B. The Project allows for over depth dredging of 2 feet below project depth.

The Entrance Channel is stabilized by ocean jetties extending seaward 3,445 feet and 3,319 feet on the north and south sides of the inlet, respectively. The north jetty was constructed with an approximately 1300-foot long weir section at the north end to allow for passage of littoral drift traveling essentially between the shoreline and the –4-foot contour. The Deposition Basin, which is dredged to a depth of –18 feet (with 2 feet of over depth) and has a capacity of 600,000 cubic yards, is located between the north jetty and the entrance channel to trap littoral material moving southward over the weir.

The Project anticipated that the Entrance Channel would have sufficient tidal currents to be self-maintained, and that the Auxiliary Channel would not require annual maintenance. The Project further anticipated O&M dredging of greater than 600,000 cubic yards every 3 years in the inner channels. However, due to funding constraints, the last O&M dredging of the Project occurred in 1988. Since then, the deposition basin has filled to the point where it is no longer effective. As expected, sand deposition and accretion is occurring at the southern tip of Garden City Beach, through the area of the Deposition Basin and into the Federal Channel. Vessels are now attempting to follow deeper water outside of the Federal Channel in an effort to obtain safe passage in and out of Murrell's Inlet.

The proposed change to the Project involves O&M dredging of the Auxiliary Channel and the inner 1,400 feet of the Entrance Channel, in addition to placement of material in the intertidal zone of HBSP. As provided for in the Project, material that is deemed beach compatible through physical and chemical analysis of the sediments will be placed at GCB and HBSP. Dredging of finer-grained material within the Inner Channel and berthing areas will not be performed. Estimated quantities to be placed at each location, based on a total of 680,000 CY are as follows (actual quantities placed may be somewhat less depending on how much of the over depth dredging is completed; areas listed below were computed using the average width of the new berm from the dune line to the new high tide line):

Garden City Beach – 330,000 CY and 30 acres (see Figure 3).

Huntington Beach South Jetty – 93,300 CY and 11 acres (see Figure 4).

Huntington (front) Beach – 122,000 CY to 257,000 CY and 23 acres (see Figure 4).

2.0 PURPOSE AND NEED FOR THE ACTION

2.1 General. The purpose of this Project is to provide safe navigation for existing and prospective vessel traffic by establishing and maintaining a safe navigation channel from the 12-foot contour in the open ocean to the village of Murrell's Inlet. Shoals have accumulated in areas within the channel and are impacting navigation. Vessels are now navigating outside the Federal channel to access deeper areas. The Auxiliary Channel and a portion of the Entrance Channel require maintenance dredging along with a portion of the Inner Channel and Deposition Basin to provide safer access to and from Murrell's Inlet.

2.2 Incorporation by Reference. The Final Environmental Impact Statement for Murrell's Inlet Navigation Project dated November 1976 is hereby incorporated by reference into this Environmental Assessment and Finding of No Significant Impact (EA/FONSI).

3.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

3.1 Proposed Action. This O&M dredging cycle will involve dredging as much as 260,000 cubic yards of material from the Federal Channel (including from the Auxiliary Channel and the portion of the Entrance Channel to be dredged) and 420,000 cubic yards from the deposition basin. Sediment testing has been completed to determine which material is suitable for placement at GCB and HBSP. Locations for placement of the material can be found on Figures 2-4. Material placed on GCB will ultimately be used in conjunction with groin repair activities being conducted by Georgetown County as a separate non-Federal project under

PN# 2000-1W-494-P (Revised), dated 4 May 2001, see Appendix C. Material will be placed at HBSP in two different locations. One site is at the landward end of the south jetty. Approximately 93,300 cubic yards of material would be placed in this L-shaped area. Approximately 122,000 to 257,000 cubic yards of material will be placed on the beach from the south jetty approximately 1200 linear feet to the wash over area where seabeach amaranth was located. At the wash over area, material will be placed in the intertidal zone for approximately 300-350 feet to protect the seabeach amaranth resource. Past the wash over, material will be placed again on the beach for the remainder of the project.

3.2 No Action Alternative. Under the no-action alternative, passage into and out of Murrell's Inlet will further deteriorate as sand deposition continues to migrate, obstructing the inlet throat creating an unstable channel and impeding vessel traffic.

4.0 AFFECTED ENVIRONMENT

4.1 Geology and Soils. Referenced in 1976 EIS.

4.2 Climate. Referenced in 1976 EIS.

4.3 Tides. Referenced in 1976 EIS.

4.4 Biological Resources. Since the Inner Channel and Deposition Basin O&M dredging, and the placement of suitable dredged materials on HBSP and GCB was addressed in the EIS, for the purposes of this EA, the biological resources considered will be those associated with the O&M dredging of a portion of the Entrance Channel and the Auxiliary Channel and the placement of material in the intertidal zone of HBSP. In addition, particular attention will be paid to the presence of rare, threatened, and endangered species within the overall Project area, and to estuarine and marine resources that may be considered part of EFH.

4.4.1 Beach. The areas of placement at Garden City Beach and Huntington (front) Beach are considered beach communities. The beach community is comprised of a dry berm zone located beyond the high tide line, an intertidal zone that is alternately covered and exposed by tidal action, and a sub tidal zone that occurs below the low tide line and extends seaward, merging with the ocean surf. Beaches, in general, are gently sloping communities that serve as transitional areas between open water and upland terrestrial communities. These communities experience almost continuous changes as they are exposed to erosion and deposition by winds, waves and currents. Sediments are unstable and vegetation is absent. Wave action, alongshore currents, shifting sands, tidal rise and fall, heavy predation, and extreme temperature and salinity fluctuations combine to create a rigorous environment for macro invertebrates. Macro invertebrates are the predominant faunal organisms inhabiting the beach region and most live beneath the sand surface where salinities and temperatures are most constant. Relatively few species inhabit sandy beaches, but those present frequently occur in large numbers. Consequently, high-energy beaches are far from being biological deserts, and together with the associated fauna they act as extensive food-filtering systems. Typical beach inhabitants are beach fleas (*Orchestia sp.*) and ghost crabs (*Ocypode quadrata*) in the beach berm. Coquinas (*Donax variabilis*), mole crabs (*Emerita talpoida*) and various burrowing worms inhabit the beach intertidal zone and blue crabs (*Callinectes sapidus*), horseshoe crabs (*Limulus polyphemus*), sand dollars (*Echinarachnius parma*) and numerous clams and gastropod mollusks inhabit the beach sub tidal areas. In addition, several species of fish are commonly observed in the surf zone along the beach, many of which are of importance to the sport and commercial fisheries of the state. Important fishes in inshore waters include spot (*Leiostomus xanthurus*), Atlantic croaker (*Micropogon undulatus*), flounder (*Paralichthys sp.*), spotted seatrout (*Cynoscion nebulosus*), sheepshead (*Archosargus probatocephalus*), bluefish (*Pomatomus saltatrix*), kingfish (*Menticirrhus sp.*), black drum

(*Pogonias cromis*), and red drum (*Sciaenops ocellatus*), the Atlantic silverside (*Menidia menidia*), bay anchovy (*Anchoa mitchilli*), Florida pompano (*Trachinotus carolinus*), striped mullet (*Mugil cephalus*), rough silverside (*Membras martinica*), striped killifish (*Fundulus majalis*), striped anchovy (*Anchoa hepsetus*), permit (*Trachinotus goodei*), and planehead filefish (*Monacanthus hispidus*). The beach zone is also utilized by many species of shorebirds for nesting and feeding. Species commonly observed are the American oystercatcher (*Haematopus palliatus*), plovers (*Charadrius sp.*), willet (*Catoptrophorus semipalmatus*), sandpipers (*Scolopacidae*), lesser/greater yellow-legs (*Tringa flavipes/T. melanoleuca*), and gulls/terns (*Laridae*). Atlantic loggerhead sea turtles also utilize South Carolina beaches for nesting purposes during the summer months.

4.4.2 Dune. Referenced in 1976 EIS.

4.4.3 Estuarine Communities.

4.4.3.1 Open Water. The open water community, as defined here, includes all marine and estuarine waters together with all underlying bottoms below the intertidal zone. The open water biota includes the plankton and nekton inhabiting the water column and the benthos living on or in the substrata.

4.4.3.1.1 Plankton. The plankton community is mainly composed of unicellular algae, larval stages of many fish and invertebrates and the adult stages of several microscopic invertebrates. Adult stages of several macro invertebrates such as jellyfish (*Chrysaora*, *Cyanea*, *Stomolophus*, and *Rhophilema*) and comb jellies (*Mnemiopsis*) that are carried by current and tides are also an important part of the plankton community.

4.4.3.1.2 Nekton. Fish are the principal nektonic species although some crustaceans such as portunid crabs, penaeid shrimp and some mollusks, such as the squid spend at least a portion of their life as nekton. A number of fish species are considered to be estuarine dependent and utilize the coastal estuaries for at least a portion of their life cycle. Fish species commonly observed in the project area include spotted seatrout (*Cynoscion nebulosus*), weakfish (*Cynoscion regalis*), bluefish (*Pomatomus saltatrix*), red drum (*Sciaenops ocellata*), black drum (*Pogonias cromis*), spot (*Leiostomus xanthurus*), croaker (*Micropogonius undulatus*), sheepshead (*Archosargus probatocephalus*), menhaden (*Brevoortia tyrannus*), gizzard shad (*Dorosoma cepedianum*), mullet (*Mugil cephalus*), flounder (*Paralichthys sp.*), silversides (*Atherinidae*), and sea catfish (*Ariidae*).

4.4.3.1.3 Benthos. The benthic environment includes a number of communities correlated largely with substratum type. Multicellular green, red, and brown algae, and unicellular algae (especially diatoms), are the primary producers within the photic zone of the benthic environment. The benthic fauna is divided into two groups: epifauna, living on the substratum; and infauna, living within the substratum. Infaunal communities are dominated by a great diversity of burrowing and tube dwelling crustaceans (e.g., amphipods), polychaete worms, and by burrowing bivalve mollusks. Some infaunal invertebrates, especially among the crustaceans, are capable of a high degree of lateral mobility, but the majority is essentially sedentary. The infauna is, with rare exception, comprised of filter and detritus feeding invertebrates. The epifauna and flora of sandy bottoms such as those in the project area tend to be much lower in diversity, and most inhabitants are microscopic. These surfaces are unsuitable for attachment by sessile invertebrates. In addition, sand bottoms such as those found in the estuary are depositional and the continual rain of sediment quickly buries attached animals. Thus, these substrata support diatoms, other unicellular algae, protists, and attached multicellular algae. Invertebrates primarily include motile deposit feeders, such as polychaete worms, sea cucumbers, and sand dollars. Some fish and crabs also graze on the bottom. Attached organisms are restricted largely to the occasional bit of shell or small rock lying at the surface. The

development of oyster reefs on muddy intertidal bottoms, for example, is dependent on the presence of bits of shell or rock for initial larval attachment.

The only portion of the Federal channel to be dredged that is within an area designated by the South Carolina Department of Natural Resources as a shellfish culture permit area is the inside portion of Inner Channel B. Since the Federal channel has not been dredged since 1988, there is the potential that this portion of the Inner Channel may have naturalized and may contain harvestable populations of oysters and clams. There are no plans to dredge this area of Inner Channel B during this dredging cycle (see Figure 2).

4.4.3.1.4 Other Animals. The open water community is also utilized by waterfowl and shorebirds particularly during the winter months. Many waterfowl are surface feeders and dabblers, and are commonly found along the shallow water zones where they feed on submerged or emergent vegetation.

4.4.3.2 Tidal Marsh. The western side of HBSP and GCB are bordered by tidal marsh, sand and/or mud flats, and meandering tidal streams which separate these areas from the mainland. Marsh communities have been well documented in terms of productivity, animal diversity, and importance to the marine system (and to people). The basis of the importance of these marsh communities involves the basic high productivity of the marsh itself and its function of trapping nutrients. The dense plant growth in the marsh provides excellent cover for many species of birds, aquatic and semi-aquatic mammals, reptiles and amphibians. Substrates in these communities are inhabited by a myriad of foraminiferans, nematodes, annelids, arthropods, mollusks such as the salt marsh snail (*Melampus bidentatus*), marsh periwinkle (*Littorina littorea*), ribbed muscle (*Modiolus demissus*), and eastern oyster (*Crassostrea virginica*), and crustaceans such as the penaeid shrimps (*Penaeidae*), sand fiddler (*Uca pugilator*), mud fiddler (*U. pugnax*) and blue crabs. The marsh community provides a nursery ground for the principal commercial marine organisms of the state; white (*Penaeus setiferus*) and brown shrimp (*P. aztecus*) and blue crabs. Marsh creeks also serve as spawning and nursery grounds for many of our commercial and sport fishes and shellfishes, in addition to being valuable shellfish growing areas. Throughout these marsh communities numerous shorebirds, waterfowl, gulls, herons, and egrets will be found. Birds such as the clapper rail (*Rallus longirostris*), plovers, dowitchers (*Limnodromus sp.*) and sandpipers thrive on the benthic invertebrate population around the shoreline and on open flats. In the open water bordering these communities, waterfowl will be found feeding on vegetation or small marine fishes and free-swimming invertebrates. The herons and egrets feed on fish, invertebrates, reptiles, amphibians, and small mammals in the marsh. They also are found nesting and roosting during the summer months. Many gulls will be found the year around utilizing these communities for resting and scavenging. Other birds such as the red-winged blackbird (*Agelaius phoeniceus*), common and boat-tailed grackles (*Quiscalus sp.*), sparrows, and warblers will be found nesting and feeding on insects and grains. Birds of prey such as the osprey (*Pandion haliaetus*) and marsh hawk (*Circus cyaneus*) will also be found utilizing these communities to some degree. Mammals of the marshes typically include the raccoon (*Procyon lotor*), otter (*Lutra canadensis*), marsh rice rat (*Oryzomys palustris*), opossum (*Didelphis virginiana*) and marsh rabbit (*Sylvilagus palustris*).

4.4.3.3 Sand and/or Mud Flats. Sand and/or mud flats are found in the project area. In most areas they lie below the mean high water line and are alternately covered and exposed by wind-driven or lunar tides and are typically devoid of vascular plants but are frequently inhabited by numerous species of diatoms, bacteria, oysters, and infaunal invertebrates. These flats are usually fringed with stands of vigorously growing and highly productive smooth cordgrass and open water or beach and open water. Tidal action provides a constant influx of particulate organic matter to these habitats creating a rich nutrient supply for filter feeding benthic invertebrates. When the tidal flats are covered by water, these animals and

nutrients constitute an important food source for a variety of fish species. When the flats are exposed, numerous wading birds and shorebirds feed upon the benthic animals.

4.5 Water Quality. Murrell’s Inlet is designated as Class SFH waters by the South Carolina Department of Health and Environmental Control: tidal saltwaters protected for shellfish harvesting. These waters are also suitable for primary and secondary contact recreation, crabbing, and fishing. Further, these waters are suitable for the survival and propagation of a balanced indigenous aquatic community of marine fauna and flora.

4.5.1 Clean Water Act. Section 404 of the CWA governs the discharge of dredged or fill material into waters of the U.S. Although the Corps does not process and issue permits for its own activities, the Corps authorizes its own discharges of dredged or fill material by applying all applicable substantive legal requirements, including public notice, opportunity for public hearing, NEPA, and application of the section 404(b)(1) guidelines.

4.5.2 Sediment Analysis. Four sediment samples were collected in 1997. Three of the four sediment samples collected from the inner channel were composed predominantly of sand. The fourth site had nearly equal amounts of sand and clay. TABLE 1 summarizes the classification of sediments and grain size percentages in 1997. A scope of work for additional sediment testing was submitted to State and Federal resource and regulatory agencies for comment in December 2000. Sediment sampling at seven (7) locations in Murrell’s Inlet was completed on February 28, 2001. Analyses of the sediments have been conducted and the results are being submitted to State and Federal resource and regulatory agencies. A summary of the grain size analysis is found below in TABLE 2.

TABLE 1
1997-Grain Size Analysis

Sample Location	Classification	%Gravel	%Sand	%Silt	%Clay
M-1	SP-SC	4.6	87.3	0.0	8.1
M-2	CL	4.4	45.7	3.4	46.5
M-3	SC	2.7	82.1	0.7	14.5
M-4	SP-SC	0.0	93.6	0.1	6.3

Physical and chemical analyses of sediments from seven sites were tested in 2001 for this project. The physical analysis indicates that all samples are predominantly sand. The chemical analysis provides documentation that all parameters tested for were either non-detectable at the required detection limit or present in very low concentrations which is what would be expected with sediments with low organic content and larger grain size.

TABLE 2
2001-Grain Size Analysis

Sample Location	Classification	% Sand	% Fines
MI-1	SP	97.2	2.8
MI-2	SP	98.6	1.4
MI-3	SP	98.3	1.7
MI-4	SP	98.2	1.8
MI-5	SP	97.0	3.0
MI-6	SP-SM	92.6	7.4
MI-7	SP-SM	93.0	7.0

4.6 Commercial and Recreational Fishing.

4.6.1 Commercial Fishing. Development of a commercial fishing industry at Murrells Inlet has been limited as a result of difficulties navigating Murrells Inlet. The principal commercial fishery resources of the project area include shrimp (*Penaeus sp.*), blue crab (*Callinectes sapidus*), marine and estuarine finfish such as spot (*Leiostomus xanthurus*), croaker (*Micropogonius undulatus*), whiting (*Menticirrhus americanus*), and flounder (*Paralichthys sp.*), and anadromous fish such as striped bass (*Morone saxatilis*), American shad (*Alosa sapidissima*), and blueback herring (*A. aestivalis*). Other species commercially harvested species include shark (*Carcharhinus sp.*), alewives (*A. pseudoharengus*), American eels (*Anguilla rostrata*), black sea bass (*Centropristis ocyurus*), mullet (*Mugil cephalus*), oysters (*Crassostrea virginica*), and hard clams (*Mercenaria mercenaria*).

4.6.2 Recreational Fishing. The waters in and around the project area offer recreational anglers excellent opportunities to catch an assortment of marine species using a variety of methods. Recreational fishing excursions leave daily from several docks in Murrell's Inlet to fish the inshore waters for red drum, speckled trout, flounder, black sea bass, and offshore waters for red drum. During moderate conditions, waters within the project area may be safely navigated by small to medium sized boats, allowing fishermen access to the rock jetties extending seaward from the inlet. Many species of game fish are attracted to the increased food and shelter provided by the hard structure habitat forming these jetties. Sheepshead (*Archosargus probatocephalus*) are usually the first fish to show up at the jetties in the spring and the last to leave in the fall, and can be caught on light tackle using fiddler crabs or live shrimp. Spotted seatrout are taken on artificial lures and live bait from the last of July through February. Red drum begin showing up around the end of March and stay through November. The larger red drum (35 inches and above) peak in June and September, and the 20-30 inch red drum peak in October. Flounder show up around the middle of May and stay until the cold water runs them to the warmer waters offshore in November. Some flounder are caught on artificial lures, but most are taken using live bait. Typically, the larger flounder are caught in the fall. Spanish mackerel (*Scomberomorus maculatus*) are caught on artificial lures from the last of May until November. Most of the Spanish mackerel are caught along the north jetty, because the water is clearer there than around the south jetty. King mackerel (*Scomberomorus cavalla*) in the 10-25 pound range begin to show up around the jetties and nearshore areas as water temperatures rise into the seventies (F°). In early spring, when live bait are not as prevalent, many king mackerels are hooked by trolling dead ballyhoo or artificial lures. As water temperatures continue to rise, most king mackerel are taken on live menhaden while slow trolling around the outside of the jetties and along the tide lines. Cobia (*Rachycentron canadum*) arrive in June and are caught around the channel buoys and the tide lines on live bait and artificial lures. Bluefish are plentiful most of the year and typically range in size up to two pounds. Spots, croakers, whiting, black sea bass, spadefish (*Chaetodipterus faber*), and black drum (*Pogonias cromis*) are favorite bottom fish caught around the jetties on cut baits such as shrimp and squid. Various species of shark, such as bonnethead (*Sphyrna tiburo*), blacktip (*Carcharhinus limbatus*), sandbar (*Carcharhinus plumbeus*) and smooth dogfish (*Mustelus canis*) also frequent the waters around the jetties, inlet, and bay.

Recreational crabbing can be productive in the Inlet area. In addition, the creeks and sand flats in the vicinity of Murrell's Inlet produce two species of shrimp that can be caught with a cast net. Brown shrimp (*P. aztecus*) are the first to reach maturity and are most plentiful in the creeks flowing into Winyah Bay from the end of May through June. White shrimp (*P. setiferus*) constitute the bulk of the crop and can be caught in the creeks and bay from July through November. Baiting is a technique devised by recreational shrimpers to harvest large white

shrimp in the late summer and fall. By using shrimp bait balls composed of fish meal with clay or mud, it is possible to draw great numbers of large white shrimp into the shallow water where they can be harvested with a cast net. Shrimp baiting season typically begins in mid-September and lasts for 60 days.

The Saltwater Game Fish Record web site for South Carolina provided the following information regarding record catches of game fish where the fishing excursion originated from Murrell's Inlet:

Common Name	Weight	Year
Margate Grunt	18-8	1971
Hound fish	9-4	1974
Spotted Seatrout	11-13	1976
Warsaw Grouper	310-0	1976
Snowy Grouper	30-0	1981
Blueline Tilefish	14-6	1982
Summer Flounder	3-8	1982
Red Pogy**	10-8	1985
Hogfish	20-8	1988
Gray Triggerfish*	13-9	1989
Bluefin Tuna	332-6	1996
Wahoo	130-5	1998
Queen Triggerfish	6-5	2000

* Indicates a current world's record

** Currently not eligible for state record consideration due to state or federal restrictions.

4.7 Threatened and Endangered Species.

Of the species noted below, there are a few that are of particular concern within this project reach. These species are discussed below.

State and Federal records indicate that sea turtles nest on Garden City Beach and Huntington Beach State Park. During the year 2000 nesting season, Atlantic loggerheads (*Caretta caretta*) and green sea turtle (*Chelonia mydas*) nests were laid at the southern end of Garden City Beach. In addition, Atlantic loggerheads and one leatherback sea turtle (*Dermochelys coriacea*) laid nests on Huntington Beach State Park. Sea turtles generally dig their nests and lay their eggs between the area of high tide and the sand dunes. As a result, few nests are laid where seawalls without a dune system exist, as is the case on the area of Garden City Beach where dredged material is proposed for placement.

Seabeach amaranth (*Amaranthus pumilus*) is present in a natural state at the southern end of Garden City Beach where the island is accreting. This is actually the largest known wild seed source in South Carolina. In addition, there are research plots of seabeach that have been propagated elsewhere and planted on Huntington Beach State Park by the South Carolina Department of Natural Resources.

Murrell's Inlet is proposed critical habitat for the piping plover (*Charadrius melodus*). The plovers utilize the area as wintering habitat for feeding and loafing. The West Indian Manatee has been documented in previous years in Murrell's Inlet.

4.7.1 U.S. Department of the Interior. The following species have been listed by the U.S. Department of Interior as occurring or possibly occurring in Georgetown County (from list dated November 16, 2000):

- E: Federally endangered
T: Federally threatened
P: Proposed in the Federal Register
CH: Critical Habitat
C: The U.S. Fish and Wildlife Service or the National Marine Fisheries Service has on file sufficient information on biological vulnerability and threat(s) to support proposals to list these species.
S/A: Federally protected due to similarity of appearance to a listed species.
SC: Federal Species of Concern. These species are rare or limited in distribution but are not currently legally protected under the Endangered species Act.
* Contact the National Marine Fisheries for more information on this species.

Common Name	Scientific Name	Status	Occurrence
West Indian manatee	<i>Trichechus manatus</i>	E	Known
Finback whale	<i>Balaenoptera physalus</i> *	E	Known
Humpback whale	<i>Megaptera novaeangliae</i> *	E	Known
Northern right whale	<i>Eubaleana glacialis</i> *	E	Known
Sei whale	<i>Balaenoptera borealis</i> *	E	Known
Sperm whale	<i>Physeter catodon</i> *	E	Known
Bald eagle	<i>Haliaeetus leucocephalus</i>	T	Known
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	Known
Wood stork	<i>Mycteria americana</i>	E	Known
Piping plover	<i>Charadrius melodus</i>	T/PCH	Known
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i> *	E	Known
Leatherback sea turtle	<i>Dermochelys coriacea</i> *	E	Known
Loggerhead sea turtle	<i>Caretta caretta</i>	T	Known
Green sea turtle	<i>Chelonia mydas</i> *	T	Known
Shortnose sturgeon	<i>Acipenser brevirostrum</i> *	E	Known
Sea-beach amaranth	<i>Amaranthus pumilus</i>	T	Known
Pondberry	<i>Lindera melissifolia</i>	E	Possible
Canby's dropwort	<i>Oxypolis canbyi</i>	E	Possible
Chaffseed	<i>Schwalbea americana</i>	E	Possible
Dusky shark	<i>Carcharinus signatus</i> *	C	Possible
Sand tiger shark	<i>Odontaspis Taurus</i> *	C	Possible
Night shark	<i>Carcharinus signatus</i> *	C	Possible
Speckled hind	<i>Epinephelus drummondhayi</i> *	C	Possible
Jewfish	<i>E. itijara</i> *	C	Possible
Warsaw grouper	<i>E. nigrurus</i> *	C	Possible
Nassau grouper	<i>E. striatus</i> *	C	Possible
Awnead meadowbeauty	<i>Rhexia aristosa</i>	SC	Known
Bachman's sparrow	<i>Aimophia aestivalis</i>	SC	Known
Carolina pygmy sunfish	<i>Elassoma boehlkei</i>	SC	Known
Carolina grass-of-parnassus	<i>Parnassia caroliniana</i>	SC	Known
Dune bluecurls	<i>Trichostema sp.</i>	SC	Known
One-flower balduina	<i>Balduina uniflora</i>	SC	Known
Pineland plantain	<i>Plantago sparsiflora</i>	SC	Known
Pondspice	<i>Litsea aestivalis</i>	SC	Known
Reclined meadow-rue	<i>Thalictrum subrotundum</i>	SC	Known
Wire-leaved dropseed	<i>Sporobolus teretifolius</i>	SC	Known
Venus' fly-trap	<i>Dionaea muscipula</i>	SC	Known

4.7.2 The National Marine Fisheries Service. The National Marine Fisheries Service provided a list on February 12, 2001, indicating the following threatened (T) and endangered (E) species and critical habitat as that are listed under that agencies jurisdiction for South Carolina:

Common Name	Scientific Name	Status	Date Listed
Marine Mammals			
blue whale	<i>Balaenoptera musculus</i>	E	12/02/70
finback whale	<i>Balaenoptera physalus</i>	E	12/02/70
humpback whale	<i>Megaptera novaeangliae</i>	E	12/02/70
right whale	<i>Eubalaena glacialis</i>	E	12/02/70
sei whale	<i>Balaenoptera borealis</i>	E	12/02/70
sperm whale	<i>Physeter macrocephalus</i>	E	12/02/70
Turtles			
green sea turtle	<i>Chelonia mydas</i>	T*	07/28/78
hawksbill sea turtle	<i>Eretmochelys imbricata</i>	E	06/02/70
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	E	12/02/70
leatherback sea turtle	<i>Dermochelys coriacea</i>	E	06/01/70
loggerhead sea turtle	<i>Caretta caretta</i>	T	07/28/78
Fish			
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	E	03/11/67

Species Proposed for Listing: None

Designated Critical Habitat: None

Proposed Critical Habitat: None

Candidate Species:**

Fish

dusky shark	<i>Carcharhinus obscurus</i>
sand tiger shark	<i>Odontaspis taurus</i>
night shark	<i>Carcharhinus signatus</i>
Atlantic sturgeon	<i>Acipenser oxyrhynchus oxyrhynchus</i>
Speckled hind	<i>Epinephelus drummondhayi</i>
Warsaw grouper	<i>Epinephelus nigritus</i>

* Green turtles are listed as threatened, except for breeding populations of green turtles in Florida and on the Pacific Coast of Mexico, which are listed as endangered.

** Candidate species are not protected under the Endangered Species Act, but concerns about their status indicate that they may warrant listing in the future. Federal agencies and the public are encouraged to consider these species during project planning so that future listings may be avoided.

4.7.3 The South Carolina Rare, Threatened & Endangered Species

Inventory. The species listed below were extracted from the South Carolina Heritage Trust web page (updated June 26, 2000). Only the species indicated as occurring or possibly occurring within the Brookgreen Quadrangle in Murrells Inlet, Georgetown County are listed. The Murrells Inlet project area is located entirely within the Brookgreen Quadrangle.

Common Name	Scientific Name	Global Rank	State Rank	Legal Status
Seabeach amaranth	<i>Amaranthus pumilus</i>	G2	S1	FT/ST
Least tern	<i>Sterna antillarum</i>	G4	S3	
Colonial water bird		G?	S?	SC
Loggerhead sea turtle	<i>Caretta caretta</i>	G3	S3	FT/ST
Wilson's Plover	<i>Charadrius wilsonia</i>	G5	S3?	ST
Bald eagle	<i>Haliaeetus leucocephalus</i>	G4	S2	FT/SE

Symbol Key:

- G2 = Imperiled globally because of rarity of factor(s) making it vulnerable.
G3 = Either very rare throughout its range or found locally in a restricted range, or having factors making it vulnerable.
G4 = Apparently secure globally, though it may be rare in parts of its range.
G5 = Demonstrably secure globally, though it may be rare in parts of its range.
G? = Status unknown
S1 = Critically imperiled state-wide because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation.
S2 = Imperiled statewide because of rarity or factor(s) making it vulnerable.
S3 = Rare or uncommon in state.
S? = Status unknown.
FT = Federal Threatened
SC = Of Concern, State
SE = State Endangered (official state list – animals only)
ST = State Threatened (official state list – animals only)

4.8 Cultural Resources. The National Register of Historic Places lists only one property in the vicinity of the Project. Atalaya (NRIS # 1984-09-07), the studio of sculptor Anna Hyatt Huntington, is located in Murrell's Inlet in Huntington Beach State Park. No other sites of historic or archeological interest are known to exist in the immediate area of the Project.

4.9 Socio-Economic and Environmental Justice. The 1990 U.S. Census Data reports that the population of Murrell's Inlet was 3,334, where the majority of the population is between the ages of 25 and 44. The ratio of male to female was approximately 49% male to 51% female with 87% of the population reported as white, 12.5% black, <1% American Indian and <1% Asian Indian. There were 1448 households with a median household income of \$25,422. Of the occupied housing units, 80% were owner occupied and 20% renter occupied. Approximately 10-15% of the people in Murrell's Inlet were below the poverty level. Executive Order 12898 requires Federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects on minority or low-income populations, to the extent consistent with and permitted by existing law. It does not create any substantive or procedural right enforceable against Federal agencies. Low income and minority populations are located inland of the Project area.

4.10 Land Use. Garden City Beach is a coastal resort community bounded by the Atlantic Ocean on the southeast and tidal creeks/salt marsh on the northwest. Huntington Beach State Park offers a diverse natural environment including coastal beach on the southeast and freshwater lagoon, salt marsh and nature trails to the northwest. The park provides overnight accommodations, day-use facilities and a multitude of coastal exploration programs for its visitors.

4.11 Hazardous, Toxic and Radiological Waste. The area proposed for O&M dredging was originally dredged in 1981. Historical knowledge of the site, and sand accretion that is occurring at the southern tip of Garden City, indicates that the material is predominantly sand. Additionally, recent on-site collection of sediments indicates that the material is sand. No hazardous, toxic or radiological waste is expected to be encountered during this project.

4.12 Aesthetics. The area to be dredged in Murrell's Inlet consists of the entrance channel and approximately 600 feet of the inner channel. As a resort community, Garden City Beach is influenced by human activities and noise resulting from vehicular traffic. Huntington Beach State Park provides a more natural environment where those interested in viewing wildlife in a natural coastal setting is possible.

4.13 Air Quality. Air quality varies with industrial development, the volume of automobile and marine traffic, and local air circulation patterns. The proximity of the ocean has an effect on air quality for the project area. Air quality in South Carolina is measured and regulated by the South Carolina Department of Health and Environmental Control. At the present time, the State of South Carolina including Murrell's Inlet, Garden City Beach and Huntington Beach State Park is in attainment with National Ambient Air Quality Standards.

4.14 Noise. Environmental noise is a conglomeration of distant and nearby noise sources. Distant noise sources observed within the project area include various marine vessels navigating in the area, aircraft over flights and vehicular noise. These noise sources are common in certain areas within the project boundary (see part 4.1.3 Aesthetics above). Types of nearby noise sources observed within the project area include naturally occurring noises (wind on the beach, wave action in the surf zone, buzzing of insects, bird calls) and those from man-made sources (marine vessel engines, etc.).

4.15 Essential Fish Habitat (EFH) Assessment (Identification of affected EFH). The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), 16 USC 1801 et seq. Public Law 104-208 reflects the Secretary of Commerce and Fishery Management Council authority and responsibilities for the protection of essential fishery habitat. The Act specifies that each Federal agency shall consult with the Secretary with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken by such agency that may adversely affect any EFH identified under this act. EFH is defined in the Act as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity."

The project area encompasses approximately 104 acres, including intertidal and sub tidal nearshore coastal marine bottoms and water column. Managed species associated with estuarine and coastal marine bottoms and water column at the project site include post-larval, juvenile, and adult red drum (*Sciaenops ocellata*), white shrimp (*Litopenaeus setiferus*), and brown shrimp (*Farfantepenaeus aztecus*); species of the snapper-grouper complex such as post larval and juvenile gray snapper (*Lutjanus griseus*); and coastal migratory pelagics such as juvenile Spanish mackerel (*Scomberomorus maculatus*), and cobia (*Rachycentron canadum*). Species under jurisdiction of the Mid Atlantic Management Council also occur in the project area. These species and their associated EFH include juvenile and adult summer flounder (*Paralichthys dentatus*) that occur on submerged estuarine bottom and in the water column, and juvenile and adult bluefish (*Pomatomus saltatrix*) which occur in the water column. The project area also provides nursery and forage habitat for other species including black drum (*Pogonias cromis*), Atlantic menhaden (*Brevoortia tyrannus*), striped mullet (*Mugil cephalus*), spot (*Seiostomus xanthurus*), southern kingfish (*Menticirrhus saxatilis*), and blue crab (*Callinectes sapidus*) that serve as prey for other species (e.g., mackerels, snappers, and groupers) managed by the Council, and for highly migratory species (e.g., billfishes and sharks) that are managed by the NMFS.

Detailed information on red drum, shrimp, and other federally managed fisheries and their EFH is provided in the 1998 amendment of the Fishery Management Plans for the South Atlantic Region prepared by the South Atlantic Fishery Management Council (SAFMC). The 1998 generic amendment was prepared as required by the MSFCMA.

4.16 Coastal Barrier Resources System (CBRS). The Coastal Barrier Resources Act (CBRA) provides for a Coastal Barrier Resources System of undeveloped coastal barriers along the Atlantic and Gulf Coasts, including islands, spits, tombolos, and bay barriers that are subject to wind, waves, and tides such as estuaries and nearshore waters. Resources in the System are to be protected by restricting Federal expenditures that have the effect of encouraging development of coastal barriers. The vast majority of the dredging for this project is located within Huntington Beach Unit SC-03, along with the disposal locations at Huntington South Jetty and Huntington (front) Beach. Disposal at Garden City Beach appears to be outside of the Unit SC-03. However, disposal of dredged material on Garden City Beach was part of the original project in 1981.

4.17 South Carolina Coastal Zone Consistency. Section 307 of the Coastal Zone Management Act (CZMA) requires that activities subject to the CZMA which a Federal agency conducts or supports be consistent with the Federally approved state management program to the maximum extent practicable. By copy of Public Notice (P/N) 2000-1R-001 dated January 12, 2001 (see Appendix B), the Charleston District requested concurrence from the South Carolina Department of Health and Environmental Control (SCDHEC), Office of Ocean and Coastal Resource Management (OCRM) that the proposed activity is consistent with the state's Coastal Zone Management Program (CZMP). OCRM has verbally requested a copy of the final EA prior to providing concurrence or non-concurrence that the project is consistent with the S.C CZMP.

5.0 ENVIRONMENTAL CONSEQUENCES

5.1 Geology and Soils. Referenced in the 1976 EIS.

5.2. Climate. Referenced in the 1976 EIS.

5.3 Tide. Referenced in the 1976 EIS.

5.4 Biological Resources.

5.4.1 Beach. Approximately 350,000 CY of sand will be placed on the beach at Garden City. It will be shaped into a berm below the existing seawall at elevation 11.0 mean low water (MLW). Approximately 122,000 to 260,000 CY of sand will be placed on Huntington Beach State Park. The material on the beach will be placed against the existing dune escarpment at elevation 11.0 (MLW) except for that section of the beach at the seabeach amaranth wash over where the material will be placed in the intertidal zone.

Organisms inhabiting this beach fill zone will be covered as material is pumped onto the beach and into the intertidal zone. Because animals from high-energy beaches are motile and adapted to shifting sediments, rapid recovery of the fauna on these beach areas following the deposition of dredged materials is likely. The long-term impact on invertebrates in the beach community is expected to be insignificant.

5.4.2 Dune. Referenced in the 1976 EIS.

5.4.3 Estuarine Communities.

5.4.3.1 Open Water.

5.4.3.1.1 Plankton. Some of the planktonic organisms entrained by the dredging operations will suffer injury or mortality. Turbidity resulting from the dredging activity may reduce primary productivity by phytoplankton as light penetration into the water column is reduced. Both of these potential effects on plankton are expected to be minor and temporary as they would coincide in significance with the short duration of dredging and the extremely small percentage of fine-grained material in the dredged sediments.

5.4.3.1.2 Nekton. Nekton, because of their mobility, are less likely to be adversely affected by the dredging and beach work than benthic invertebrates. Dredging can be beneficial to certain species of fish, especially those that prey on larger benthic organisms. During the dredging operation, benthic organisms buried in the sediments are dislodged and become susceptible to predation. Similarly, organisms dislodged from sandy sediments during beach disposal, become prey by fishes inhabiting the surf zone.

Due to the sandy nature of the sediments proposed for dredging, turbidity plumes will be minimal and restricted primarily to the dredging and disposal areas. Fish species that would have the highest probability of being affected are the filter feeders (primarily menhaden, herring, and shad) and juvenile forms. Some larval fishes may be destroyed by the mechanical action of the cutterhead. However, information from similar dredging projects in other areas indicates that impacts would be short-term, localized in nature, and would not significantly affect the fish stocks in the Murrell's Inlet estuarine system of the Atlantic Ocean.

5.4.3.1.3 Benthos. As discussed above in 5.1.1 Beach, placement of material at both Garden City Beach and Huntington Beach State Park will smother benthic organisms that are present at the placement sites. However, benthic organisms will recolonize the areas within a few months and benthic activity should resume normal levels following construction.

Previous studies indicate that most of the organisms in the entrance channel and deposition basin are adapted to sandy substrate which is continually shifting due to natural processes. Although some of these organisms may be destroyed during the dredging of the entrance channel and deposition basin, the long-term productivity of the area should not be affected to any significant degree. Repopulation of channel areas will commence shortly after construction is completed and species composition should be similar to that which existed prior to construction. Due to the continual movement of sand into the deposition basin after construction is completed, this area will likely provide little habitat for benthic organisms.

5.4.3.1.4 Other Animals. The dredging and placement of sand at Garden City Beach and Huntington Beach State Park may have a temporary effect on waterfowl, shorebirds or other animals that feed or nest in the construction area., but no long term unacceptable impacts are expected to occur since these animals are mobile and capable of relocating until construction is complete.

5.4.3.2 Tidal Marsh. The dredging and placement of sand at Garden City Beach and Huntington (front) Beach will not affect any of the area's valuable tidal marshes. The tidal marsh areas that lie behind Huntington (front) Beach and south of the Huntington Beach South Jetty will be protected by the temporary construction of a small protective berm during construction. After construction is completed, the temporary berm will be removed.

5.4.3.3 Sand and/or Mud Flats. The placement of sand on to the beach areas will not affect any of the area's valuable sand and/or mud flats. As stated previously, some of the beach quality sand placed at the beaches will be allowed to naturally enhance the dry berm, intertidal, and subtidal zones. The sand/mud flat just north of the Huntington Beach South Jetty will be covered as that area is rebuilt. However, as the newly built area reaches natural state,

similar sand/mud flats will reappear and will be re-colonized. Further, this will provide protection for the tidal marsh located south of the south jetty.

5.5 Water Quality. Implementation of the proposed project would result in temporary, minor water quality degradation at the dredging and beach restoration sites. Although dredging activities typically contribute to localized turbidity increases in the vicinity of the operating dredge and adjacent to the beach restoration sites, the sandy sediments which will be utilized for this project tend to settle rapidly, so turbidity increase should be minor and of short duration. Chemical analysis of sediments from the navigation channel has revealed no significant concentration of toxic or harmful substances that could adversely affect water quality of the area. The very low concentrations of organic matter in the sandy sediments should result in very little, if any, dissolved oxygen depression. Hence, water quality impacts from project construction should be insignificant. Verbal coordination with the South Carolina Department of Health and Environmental Control indicate that unacceptable impacts to water quality resulting from this project are not expected, and Section 401 Water Quality Certification should be issued following completion of that agency's review.

5.5.1 Clean Water Act. The previous and recent physical and chemical analysis of the sediments as discussed above provide documentation that no violations of the Clean Water Act are expected to occur as a result of this dredging project.

5.5.2 Sediment Analysis. Seven sediment samples were collected in the navigation channel in February 2001. As noted above, the results of the sediment analysis document that the material is predominantly sand and very low in any contaminant concentrations, as would be expected. As a result, this project should not result in any unacceptable transfer of contaminants in the project area.

5.6 Commercial and Recreational Fishing. While the proposed maintenance dredging and placement at GCB and HBSP may be an inconvenience to recreational and commercial fishers during construction, it is not expected to have any long-term adverse affect on fishing activities in the area.

Concerns regarding impacts to blue crabs during their reproductive season were discussed with personnel of SCDNR. Dredging for this project will be conducted with a pipeline (not a hopper) dredge, which is stationary while working in a specific area. When the area within reach of the cutterhead has been dredged, the dredge swings forward slowly on its spuds to the next area. As result, the dredge and cutterhead are slow moving, allowing adequate time for mobile organisms to relocate out of the way. SCDNR personnel concurred verbally with our assessment.

Deepening the navigation channel will provide fishing vessels better access to and from Murrell's Inlet, which may actually improve commercial fishing. The presence of the dredge and associated equipment could create temporary inconveniences for boats (recreational and commercial) navigating in the vicinity. However, since the dredge is either stationary or slow moving, it does not provide a swiftly moving target that must be avoided. Navigational impacts are considered similar to any other channel area where pipeline dredging is being conducted.

5.7 Threatened and Endangered Species. The proposed work has been reviewed for compliance with the Endangered Species Act of 1973, as amended. Further, this project has been extensively coordinated with the Federal and State resource and regulatory agencies. For purposes of this section, the four main species of concern, Seabeach amaranth, sea turtles, piping plovers and manatees, will be discussed separately.

Seabeach amaranth. This project was initially scheduled to begin in June 2001. However, concerns provided by the South Carolina Department of Natural Resources (DNR) regarding impacts to Seabeach amaranth indicated the plant is flowering and producing seed at

this time. In an effort to minimize impact as much as possible, the project was rescheduled to begin in July/August 2001 and a survey for seabeach amaranth locations will be performed in the project area prior to construction. Placement of material will begin on GCB where the amaranth is not present. Placement of sand on the front beach at Garden City is not expected to have any appreciable negative impact to the amaranth since this plant is not generally found in areas that are regularly inundated by the tide, which regularly occurs on Garden City (front) Beach.

The southern tip of GCB has accreted over the years to a point where part of the navigation channel is now above mean low water. When the channel and the deposition basin are dredged, it is estimated that approximately 70 feet adjacent to the channel will slough to reach natural equilibrium. The southern tip of GCB is reported by SCDNR to contain the largest natural seed source for Seabeach amaranth in South Carolina. A portion of this area will slough when channel and deposition basin are dredged. In an effort to minimize loss of this seed source, and providing all real estate issues can be resolved, the top 8-12 inches of sand in this area will be scraped and stockpiled on-site prior to dredging for use at a later time. Since Seabeach amaranth is a fugitive species which prefers the harsh environment of unstable beach habitat, and since this area had a large population of Seabeach amaranth in prior years, it is theorized that the dredging and subsequent sloughing may actually result in a reoccurrence of a viable population of the amaranth at the southern tip of GCB.

The south jetty site is the second disposal location and disposal of sand here is expected to begin in mid- to late August. Placement at this location is not expected to have any appreciable impact on Seabeach amaranth since area does not provide the habitat required by the amaranth.

Huntington (front) Beach will be the final disposal location. The quantity of material disposed here will vary depending on the quantity of overdepth dredged by the contractor. The project has been revised for this location in an effort to minimize impacts to the Seabeach amaranth that had been planted on this beach by SCDNR as well as any existing wild/natural populations. Initially, material was to be placed in the intertidal zone. However, storm events and high tides during the spring 2001 inundated the existing seabeach amaranth plants on the beach and impacted the existing dune system also. As a result, the plan for placement on HBSP was revised in coordination with the resource agencies and HBSP personnel. As discussed previously, material will be placed predominantly on the beach with the exception of the seabeach amaranth wash over area. Material will be placed in the intertidal zone at this location to minimize impacts to the seed source that is assumed to be present.

Overall, the Charleston District has reached a determination that this project is likely to adversely affect the seabeach amaranth. However, by applying conservation measures discussed above, the O&M dredging will not have a significant adverse impact or jeopardize the species. Additional information regarding this species may be found in the Biological Assessment for this project (see Appendix D).

Sea turtles. Previous Biological Opinions prepared by the USFWS in accordance with Section 7 of the Endangered Species Act have stated that construction during sea turtle nesting season can cause harassment and disturbance to nesting sea turtles. Nesting activity on GCB and HBSP is not high; however, dredging during the summer months has the potential to impact the few nests which may occur. In order to minimize impacts to the sea turtle nests, the COE has contracted for an individual(s) to patrol GCB each morning before 8:00 a.m. to monitor for new turtle nests or false crawls. If a nest is located, the nest monitor will call trained/permitted personnel to move the nest. The patrol began on May 1, 2001 on GCB. HBSP personnel monitor the beach during the nesting season as part of the Park's Management Plan and any nests laid in the proposed disposal area will be relocated farther south on the park property. Further, dredging contract personnel will be required by contract to monitor the beach at night in the vicinity of construction in order to avoid impacts to nesting turtles.

Beach compaction will be measured with a cone penetrometer to determine whether or not tilling will be required to reduce compaction for nesting sea turtles. If required, the tilling will be performed to a depth of 24 inches and sand escarpments leveled, etc. to facilitate sea turtle nesting. Nighttime lighting on the dredge and other construction equipment will be minimized as

necessary. During formal consultation with the U.S. Fish and Wildlife Service (USFWS), a variety of possible construction scenarios that will benefit sea turtles and their nesting habitat have been discussed.

Overall, the Charleston District has reached a determination that this project is likely to adversely affect threatened and/or endangered sea turtles. However, by applying conservation measures discussed above, the O&M dredging will not have a significant adverse impact or jeopardize the species. Additional information regarding these species may be found in the Biological Assessment for this project (see Appendix D).

Piping plover. The Murrell's Inlet area is proposed critical habitat for wintering Piping plovers. The dredging project will change the topography of the area near the southern end of GCB, as discussed previously and at each disposal area. However, as these areas naturalize and reach equilibrium, sand and mud flats should resurface which will continue to provide feeding and loafing habitat for the plovers. Since the birds will not be present during the dredging project, they will not be physically impacted. Subsequently, it is not anticipated that this project will have any appreciable adverse impact on the Piping plover or critical habitat.

Placement of material at the south jetty has been designed at the request of HBSP for the specific purpose of providing nesting habitat for shorebirds. Park personnel manage the area for nesting, and placement of material at this location should prove beneficial for various species that utilize the area.

The Charleston District has reached a determination that this project is not likely to adversely modify the critical habitat for the Piping plover. Additional information regarding this species may be found in the Biological Assessment for this project (see Appendix D).

Concerns related to contact with manatees are addressed in the plans and specs for the project. The plans require: all contract personnel are to be made aware of the potential presence of manatees and the need to avoid collisions with manatees. If manatees are identified within 100 yards of the dredging area, precautions are implemented to insure protection of the manatee. If the manatee is within 50 feet of any moving equipment, the contractor must stop, alter course, or maneuver as necessary to avoid operating moving equipment any closer than 50 feet of the manatee. Operation of equipment closer than 50 feet to the manatee requires immediate shut down of that equipment. Details regarding this species may be found in the Biological Assessment in Appendix D of this document. No negative impacts to this species are anticipated.

5.7.1 U.S. Department of Interior. The Federally threatened/endangered species which may be affected by this project are the loggerhead sea turtle (*Caretta caretta*) – T, the Kemp's ridley sea turtle (*Lepidochelys kempii*) – E, the green sea turtle (*Chelonia mydas*) – T, the leatherback sea turtle (*Dermochelys coriacea*) – E, the piping plover (*Charadrius melodus*) – T/proposed critical habitat, seabeach amaranth (*Amaranthus pumilus*) – T, and the West Indian manatee (*Trichechus manatus*). As noted above, turtle nest monitoring will begin in May 2001 prior to dredging, and established precautions will be followed during construction to avoid any negative impacts to sea turtles and manatees through visual and scheduling (to the greatest extent possible) measures. In regard to the seabeach amaranth, all possible measures, as described above, are being undertaken to minimize negative impacts to the existing populations. Finally, as referenced above, no negative impacts are expected to occur to the piping plover or to the plover habitat. Formal consultation with the USFWS was begun with the initiation of this study. Subsequently, this project has been coordinated thoroughly with the USFWS and other resource and regulatory agencies. A biological opinion from the USFWS is expected soon.

5.7.2 The National Marine Fisheries Service (NMFS). The Federally threatened/endangered species which may be affected by this project are the threatened loggerhead sea turtle and the endangered Kemp's ridley sea turtle. Established precautions will be followed during construction to avoid any negative impacts to sea turtles through visual and scheduling (to the greatest extent possible) measures. In May 3, 2001 correspondence, NMFS

provided concurrence that the proposed action will not have significant individual or cumulative adverse effect on EFH or living marine resources under jurisdiction of that agency.

5.7.3 The South Carolina Rare, Threatened & Endangered Species

Inventory. The state threatened/endangered species that may be affected by this project are the threatened sea-beach amaranth, the threatened loggerhead sea turtle, and least terns. In regard to the seabeach amaranth, all possible measures, as described above, are being undertaken to minimize negative impacts to the existing populations. Established precautions will be followed during construction to avoid any negative impacts to sea turtles through visual and scheduling (to the greatest extent possible) measures. Placement of material at the south jetty is designed specifically to provide nesting habitat for shorebirds on HBSP. Vegetation is presently encroaching on the inland part of the site. Severe erosion is also occurring at the site along the inlet. Placing sand on the site will ensure continued suitable nesting habitat for this species. This site is fenced to prevent predators from disturbing nest sites of the least tern. Correspondence from SCDNR dated April 19, 2001 provided concurrence with the Finding of No Significant Impact and offered no objections to the proposed project.

5.8 Cultural Resources. The National Register of Historic Places listed only one property located near the Project area, but outside the area of potential effect of the O&M dredging and placement of dredged material. Further coordination with the State Historic Preservation Office (SHPO) has been conducted to ensure the no cultural resource will be affected by this project. It should be noted that significant historic or archeological resources have not been found since the inception of this project, and there is very little possibility that anything might be present in areas undergoing dredging or placement of the material. However, if historic or archeological resources are found, a plan of salvage would be prepared and properly coordinated with the SHPO and conducted in accordance with the coordinated plan of salvage. Correspondence from the SHPO dated May 11, 2001 concurred that no properties listed on the National Register of Historic Places or determined eligible for inclusion in the National Register will be affected by this project.

5.9 Socio-Economics and Environmental Justice. Maintenance of the navigation channel would have a favorable economic impact on the area. Recreational and commercial vessels serving the area will help and possibly even expand the industrial and commercial base that currently exists in Murrell's Inlet. This will directly and indirectly have a beneficial affect on the local, state, and national economy. Indirect benefits may accrue in the area through increases in business activity, employment, property values, and tax revenues. Other benefits for the commercial fishing and tourism industry would also be expected to occur. In addition, it is not anticipated that there will be any disproportionately high human health or environmental impact on low income or minority populations.

5.10 Land Use. There are no known conflicts with any existing or proposed Federal, state, or local land use plans.

5.11 Hazardous, Toxic, and Radiological Waste. The last maintenance dredging of the navigation channel occurred in 1988. Because of the type of material (sand) and the historical knowledge of this site, it is not expected that any hazardous, toxic or radiological waste will be encountered. Material that is predominately sand generally does not require any contaminant testing since contaminants adhere to organic particles, which are present in very low concentrations in this material.

5.12 Aesthetics. The presence of assorted dredging and construction equipment will create a minor, temporary impact to the natural beauty of the project area. This temporary change would be observed by anyone navigating the project area by commercial or recreational vessels during project operations. However, these impacts are temporary and will not affect the

preservation of this coastal setting. Existing conditions will return to the area following completion of the project.

5.13 Air Quality. There will be a minor change in air quality as a result of exhaust from the dredge and any associated equipment, vessels, and vehicles. The change will be minor and temporary in nature. Air quality will return to normal following completion of the project.

5.14 Noise. Ambient noise levels will increase as a result of the operations of the dredge and any associated equipment, vessels, and vehicles during project construction. The increase will be minor and temporary in nature. Noise levels will return to normal following completion of the project.

5.15 Essential Fish Habitat (EFH) Assessment. The Draft Environmental Assessment and a previously published public notice (P/N 2001-1R-001, dated January 12, 2001) for this project initiated the Essential Fish Habitat (EFH) consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. NMFS responded with correspondence dated February 7, 2001 stating concerns related to potential effects of dredging including sediment physical and chemical analysis, seasonal dredging concerns, and measures to avoid/offset adverse impacts. In addition, the letter expressed concern regarding inner channel dredging into an area designated by SCDNR as a shellfish culture permit area.

These concerns were addressed through coordination with the regulatory and resource agencies over a period of approximately 4 months. Sediment chemistry data was submitted to all interested agencies (the results have been discussed previously in this document), the dredging has been postponed from starting in June to starting in late July/August, and the inner channel areas of concern are not being dredged during this dredging project.

Sections 1.3, 4.4, 4.6 and 4.15 above provide information related to the identification of the affected EFH, and sections 5.5, 5.6, and 5.7 above provide detailed assessment of the effected EFH.

Correspondence from NMFS dated May 3, 2001 concurred with the Corps' preliminary determination that the proposed action will not have significant individual or cumulative adverse effects on EFH or living marine resources under jurisdiction of the NMFS.

5.16 Coastal Barrier Resources System (CBRS). The Coastal Barrier Resources Act (CBRA) exempts the maintenance or construction of improvements of existing Federal navigation channels and related structures (such as jetties), including the disposal of dredge materials related to maintenance or construction. O&M dredging of the existing Murrells Inlet project and disposal of beach quality sand on adjacent beaches falls squarely within this exemption. Correspondence from the USFWS dated May 7, 2001 concurred with the Corps' determination that the project is exempted under Section 6 of the Coastal Barrier Resources Act since it consists of continuing maintenance of an existing channel and related structures.

5.17 South Carolina Coastal Zone Consistency. This project is consistent to the maximum extent practicable with the South Carolina Coastal Zone Management Program (CZMP). By copy of the previously published public notice (P/N 2001-1R-001 dated January 12, 2001), the Charleston District requests concurrence from the South Carolina Department of Health and Environmental Control (DHEC), Office of Ocean and Coastal Resource Management (OCRM) that the proposed activity is consistent with the State's CZMP. Concurrence is conclusively presumed if no state action is received within 45 days of their receipt of the above referenced notice. OCRM has requested a copy of the final DEA prior to issuing concurrence or non-concurrence for the project; however, OCRM personnel have attended virtually all of the on-

site and office meetings regarding this project and have not expressed concerns regarding the inconsistency of the project. A consistency determination is expected to be received shortly.

6.0 UNAVOIDABLE ADVERSE ENVIRONMENTAL CONSEQUENCES.

Periodic and short-term impacts of the maintenance dredging of the Auxiliary Channel and the portion of the Entrance Channel to be dredged involve the removal of sandy sediments with a dredge. Minimal adverse effects may be expected to result from this action, and this action would not contribute to any long-term or large-scale adverse impacts or detrimental effects on the water quality of the Murrell's Inlet estuarine system. As is characteristic of any dredging operation, water turbidity in the vicinity of the dredge would increase as a result of the mechanical action of the dredge. However, since materials that are being dredged are of a sandy nature (See Appendix A) with a rapid settling rate, any increases in turbidity are expected to be insignificant and of short-term duration.

Benthic invertebrate communities in the Entrance and Auxiliary Channels, because of their general lack of mobility would likely be adversely affected to the greatest degree. As is the case in most maintenance dredging of this type, some of the benthic invertebrates in the path of the dredge may be destroyed. This gross effect has been well documented and can be expected to occur to some extent during each maintenance cycle.

As discussed in Section 5.4.3.1.3 Benthos, benthic assemblages likely to occur in the dredging areas would probably be low in diversity and adapted to a constantly changing shifting sand environment. As a result, it is expected that the disruption or destruction of benthic invertebrates would be a short-term impact as recolonization by organisms disturbed by the dredge and recruitment from adjacent areas would begin almost immediately after dredging is completed. The suitability of newly dredged areas for recolonization would of course, be dependent on the interaction of factors such as bottom topography, bottom substrates and habitats, water velocity and current patterns, and future sediment distribution patterns. However, since the composition of bottom sediments is not expected to change appreciably as a result of the maintenance activities, it is expected that the populations that eventually become established would be similar to those presently found in the area.

Nekton, because of their mobility, is less likely to be adversely affected by the dredging and beach work than benthic invertebrates. In some areas, dredging could be considered to be beneficial to certain species of fish, especially those that prey on the larger benthic organisms. As a dredge works its way along a channel, benthic animals that would normally be buried in the sediments are dislodged and become susceptible to predation. This sudden availability of food quite often results in higher than normal concentrations of fishes near the dredge. A similar situation would occur in beach disposal areas. As organisms are dislodged from sandy sediments being deposited on the beach, they become subject to predation by fishes inhabiting the surf zone.

Due to the sandy nature of the substrate in areas to be dredged, turbidity plumes created by the dredge would primarily be restricted to the immediate dredging areas. Fish species which would have the highest probability of being affected are the filter feeders primarily menhaden, herring, and shad). Estimates of the relative abundance of these species in the area at any given time varies so that it is not practical to attempt a quantitative determination of the impact on these species. In addition, at certain times of the year some larval fishes may be destroyed as a result of the action of the dredge. It is felt that any impact resulting from the maintenance dredging would be of a short-term, localized nature and would not significantly affect the fish stocks in the Murrell's Inlet estuarine system. This is based on research that has been accomplished in other areas and available information on the effects of current dredging practices in other areas.

The effects of the beach placement on population levels of the coquina clam, mole crabs, and other invertebrate species inhabiting the beach intertidal zone will result in temporary adverse impacts to these organisms. These animals are important members of the food chain because they are preyed upon by a variety of commercially and recreationally important fish species and shore birds. Since animals of high-energy beaches are continually subjected to the effects of erosion

and accretion and major physical changes resulting from storms and hurricanes, beach placement of sandy material will not unduly stress beach and intertidal fauna beyond their adaptive capabilities. Published accounts (Myrtle Beach EIS) of the effects of beach nourishment (restoration) with sandy materials support the conclusion that adverse effects are generally short-term in nature, and the Corps believes the results of the monitoring program that was conducted for the Myrtle Beach project support this conclusion.

The loss of (littoral) zone area will mean a direct reduction in habitat for benthic invertebrates. This loss is negligible in view of the amount of existing nearshore area available. The loss of benthic marine invertebrates which currently inhabit the nearshore will be a short-term impact, since the new sand bottom will begin to re-colonize shortly after construction ceases and recolonization should be complete within three-to-six months following beach restoration (Myrtle Beach EIS). Tidal zone species will have an area of habitat equivalent to that at present. Dredged materials will be clean sand having a grain size similar to that of the existing beach and should rapidly re-colonize following completion of the project. Since animals associated with high energy beaches are continually subjected to effects of erosion and accretion and major physical changes resulting from storms and hurricanes, initial construction will not unduly stress beach and intertidal animals beyond their adaptive capabilities.

Unavoidable impacts to threatened or endangered species include the loss of seabeach amaranth habitat at the southern tip of Garden City Beach, the potential need to move any sea turtle nests that may occur within the project area before and during construction, the potential of false crawls during construction, and the potential for migratory shorebird movement to other areas during construction activity. Each of these impacts has been addressed above in this document.

Unavoidable impacts to essential fish habitat include the creation of supratidal beach habitat where marine intertidal beach presently exist. This has been addressed above in this document.

7.0 COORDINATION WITH OTHERS

The maintenance dredging of the Murrell's Inlet Navigation Project has been coordinated and addressed in previous documents, including the Final Environmental Impact Statement for Murrell's Inlet Navigation Project. The previously published public notice (P/N 2001-1R-001 dated January 12, 2001 and numerous onsite and in-house meetings were the primary method of advising all interested parties of this cycle of O&M dredging for the Project and of soliciting comments and information necessary to evaluate the probable impact. (See Appendix A).

The DEA was sent out for comments for a period of thirty (30) days to the various State and Federal resource and regulatory agencies and other concerned individuals, citizens, corporations and companies listed on our official mailing list.

During the course of the coordination efforts, numerous meetings were held on-site at HBSP, GCB, and at the Charleston District Office with State and Federal agencies. These meetings resulted in an appropriate project that appears to be acceptable to all parties.

Appendix B includes appropriate correspondence and memorandums to verify that endangered species, CBRS, cultural resources and other pertinent issues have been properly addressed and concurred with in regards to the proposed O&M dredging. Correspondence regarding water quality certification and coastal zone consistency will be added when received.

The U.S. Fish and Wildlife Service provided this office with South Carolina's county distribution records of endangered, threatened, and candidate species as of November 16, 2000.

The National Marine Fisheries Service provided this office a list on February 12, 2001, indicating threatened and endangered species and critical habitats that are listed under that agencies jurisdiction for South Carolina.

The South Carolina Rare, Threatened & Endangered Species Inventory for species found in Georgetown County (updated June 26, 2000) was extracted from the South Carolina Heritage Trust web page. We only listed the species they indicated as occurring or possibly occurring within the Brookgreen quadrangle in Murrell's Inlet, Georgetown County. The Murrell's Inlet project area is located entirely within the Brookgreen quadrangle.

8.0 FINDING OF NO SIGNIFICANT IMPACT (FONSI)

Based upon the attached Environmental Assessment and in consideration of other pertinent documents, I conclude that the environmental effects of the change to the Murrell's Inlet Navigation Project are not substantial, and that there are not significant new circumstances or information relevant to environmental concerns that warrant the preparation of a Supplemental Environmental Impact Statement. Specific factors considered in making this Finding of No Significant Impact include the following:

1. Water quality would not be significantly affected.
2. Wetlands would not be significantly affected.
3. No cultural resource would be affected.
4. No significant adverse impact to threatened or endangered species will occur.
5. No significant land use changes would occur.
6. Air and noise quality would not be significantly affected.
7. Fish and wildlife would not be significantly affected.
8. Benthic invertebrate communities would not be significantly affected.

Date _____

MARK S. HELD
Lieutenant Colonel, EN
Commander, US Army Engineer District,
Charleston

9.0 CONCLUSIONS

The proposed action is not a substantial change to the Murrell's Inlet Navigation Project relevant to environmental concerns, and there are not significant new circumstances or information relevant to environmental concerns. Therefore, the preparation of an Supplemental Environmental Impact Statement (EIS) pursuant to CEQ Regulation 1502.9(c) is not required.

10.0 REFERENCES

USACE, Charleston District, October 1975. Environmental Impact Statement (EIS), Murrell's Inlet Navigation Project, Georgetown County, South Carolina.

USACE, Charleston District January 1993. Environmental Impact Statement (EIS), Myrtle Beach and Vicinity, Shore Protection Project, Horry and Georgetown Counties, South Carolina.

USACE, Charleston District, April 2001. Biological Assessment, Murrell's Inlet, South Carolina

APPENDIX A

APPENDIX B

SUMMARY OF CORRESPONDENCE RECEIVED & RESPONSES

The Charleston District received two (2) letters from the U.S. Fish and Wildlife Service and the S.C. Department of Natural Resources as a result of the issuance of public notice 2001-1R-001. Five (5) letters were received from resource and regulatory agencies and three (3) letters from private organizations and concerned citizens in response to the Murrell's Inlet Draft Environmental Assessment (DEA). The agencies who submitted a response to the DEA included the U.S. Fish and Wildlife Service, the South Carolina Archives and History Center, the South Carolina Department of Natural Resources, the National Marine Fisheries Service, and the U.S. Environmental Protection Agency. Private organization and citizen responses included the South Carolina Coastal Conservation League, Mr. Chip Smith, and Mr. Hobart Kraner. Concerns from each of these have been addressed in the FEA and will be summarized briefly here.

1. The U.S. Fish and Wildlife Service provided comments on the public notice (PN) with correspondence dated February 1, 2001. The letter expressed interest in compatibility of the proposed dredged material with the beaches proposed for disposal. Additional information was requested on Disposal Location #2 and a recommendation was made to initiate formal Section 7 consultation so that the requirements of the Endangered Species Act could be satisfied. Response: Grain size information has been provided to all resource and regulatory agencies. It was discussed in the DEA and is included in this document as well. The grain size has been deemed suitable for beach placement. Additional information on Disposal Location #2 was provided in the DEA and during on-site meetings at HBSP, and is included in this document. Formal consultation was initiated and will be completed with the issuance of the Biological Opinion from the USF&WS.
2. The S.C. Department of Natural Resources provided comments on the PN in correspondence dated February 6, 2001. The letter expressed concerns regarding shellfish resources in the inner channel areas, impacts to state and federally threatened species, the timing of the project, the compatibility of the material, and compaction of the sand following the project. Response: The inner channel areas where shellfish resources were a concern have been excluded from the project. Coordination with state and Federal agencies regarding threatened and endangered species has been conducted extensively. See number 5 below. The project initiation has been delayed as much as possible from June 2001 to late July/early August 2001. Material has been tested and is compatible (see number 1 above). Tilling requirements have been included in the plans and specs for this project.
3. The U.S. Fish and Wildlife Service provided concurrence that the project is exempted under Section 6 of the Coastal Barrier Resources Act because the project consists of continuing maintenance of an existing channel (letter dated May 7, 2001). After extensive coordination with the USFWS regarding threatened and endangered species, the Charleston District submitted a biological assessment to the USFWS and expects to receive the biological opinion soon.
4. The South Carolina Archives and History Center provided concurrence that no properties listed on the National Register of Historic Places or determined eligible for inclusion in the National Register will be affected by this project (letter dated May 11, 2001).
5. The South Carolina Department of Natural Resources concurred with the Finding of No Significant Impact for the proposed project (letter dated April 19, 2001).
6. The National Marine Fisheries Service concurred with the preliminary determination made by the Charleston District that the proposed action will not have significant individual or cumulative adverse effects on EFH or living marine resources under jurisdiction of the NMFS (letter dated

May 3, 2001). NMFS also provided specific recommendations for EFH sections in the Final EA (FEA).

Response: These recommendations have been addressed in the FEA.

7. The U.S. Environmental Protection Agency provided no objections to the project (letter dated May 2, 2001).

8. The South Carolina Conservation League expressed concern regarding dredging in the summer months (letter dated May 4, 2001).

Response: As discussed in the FEA, the funding for this project does not carry over from fiscal year to fiscal year. Funding not utilized by September 30, 2001 cannot be used in FY2002 which begins on October 1, 2001. The project has been postponed as much as possible (from June to late July/early August) in order to minimize/prevent impacts to sea turtles and seabeach amaranth which are threatened and endangered species, as well as ensure that all other environmental and real estate issues are thoroughly addressed. Significant coordination with resource agencies was conducted and while each agency expressed concern initially regarding the dredging time frame, each agency was satisfied by the end of the coordination that all efforts were being made to minimize unacceptable impacts.

9. Mr. Chip Smith expressed concern regarding the dredging time frame due to navigational safety concerns, impacts to blue crabs which reproduce at this time of year, and impacts to sea turtle nesting. As a result, Mr. Smith requested that the dredging be postponed to November/December time frame.

Response: A pipeline/mechanical dredge with a cutterhead will be used for this dredging project. A pipeline dredge is stationary as it dredges the area within reach of the cutterhead, then it swings slowly forward on its spuds to the next area. It will be a presence in the channel that other vessels will have to navigate around; however, it is not a swiftly moving target. Use of a pipeline dredge at this project is no different than pipeline dredging at any other navigation channel that the Corps dredges. There does not appear to be any more serious navigational concerns here than in any other channel. Charleston District personnel called SCDNR to discuss concerns regarding the blue crab impacts. Because the dredging will be conducted by a pipeline/mechanical dredge with a cutterhead, SCDNR personnel did not anticipate unacceptable adverse impacts to the blue crabs. The cutterhead is slow moving which allows organisms to relocate out of the way of the dredging activity. Lastly, because the dredging has been postponed to late July/early August, turtle nesting activity will be slowing down. Further, GCB and HBSP are being monitored each day by park personnel or contract personnel to document the location of sea turtle nests, which are then relocated. Significant coordination with SCDNR and USFWS on the sea turtle issues has been conducted and both agencies have expressed satisfaction with the project as described in this FEA.

10. Mr. Hobart Kraner expressed concerns regarding the timing of the project due to funding constraints, the need for the dredging, the lack of a study to determine the compatibility of the dredged material with the disposal areas (beaches), the apparent environmental irresponsibility reflected by this project, and the need for review of this project by a competent panel.

Response: The timing issue is discussed in number 8 above. Murrell's Inlet is a Federal Project that has not received any funding in a number of years. As a result, it has not been maintained as designed. Subsequently, the deposition basin has reached an elevation where it no longer functions as designed, which is why the southern tip of Garden City Beach is accreting. Because the deposition basin is not functioning, the navigation channel has reached an elevation requiring boaters to use deeper water outside the channel. The need for the dredging is clear. Further, acknowledging that it has been years since funding was provided for this project, it is also unknown when funding will be provided in the future. As a result, it is reasonable to dredge this channel and basin to project depth to achieve maximum benefits for the amount of funding

provided during this FY. The proposed dredged material was tested for suitability and all results were submitted to resource and regulatory agencies for review. The material is suitable for placement on the beaches. The Charleston District has gone to great lengths to coordinate this project and all the associated environmental impacts with resource and regulatory agencies. Numerous meetings have been held at the project site and in our office. Numerous telephone calls, e-mails, and faxes have been sent to the agencies to keep them aware of all alternatives and proposed changes to the project. The Murrell's Inlet Project is not a new project requiring a study or review. It is maintenance dredging of an existing Federal navigation project. In light of this, a review of the project by a "competent panel" is not necessary. However, in consideration of the significant coordination efforts made by the Charleston District, it could be recognized that this project was reviewed by a "competent panel" of environmental experts within the resource/regulatory community. To date, all the agencies have either verbally or through correspondence expressed satisfaction with the project.

APPENDIX C

APPENDIX D