
MAY 2000

MAINTENANCE DREDGING

**FERNANDINA HARBOR
NASSAU COUNTY, FLORIDA**

ENVIRONMENTAL ASSESSMENT



**U.S. Army Corps
of Engineers**
Jacksonville District
South Atlantic Division



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P. O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019
MAY 25 2000

MAINTENANCE DREDGING
FERNANDINA HARBOR
NASSAU COUNTY, FLORIDA

FINDING OF NO SIGNIFICANT IMPACT

I have reviewed the Environmental Assessment (EA) of the proposed action. This Finding incorporates by reference all discussions and conclusions contained in the EA enclosed hereto. Based on information analyzed in the EA, reflecting pertinent information obtained from other agencies and special interest groups having jurisdiction by law and/or special expertise, I conclude that the proposed action will have no significant impact on the quality of the human environment. Reasons for this conclusion are, in summary:

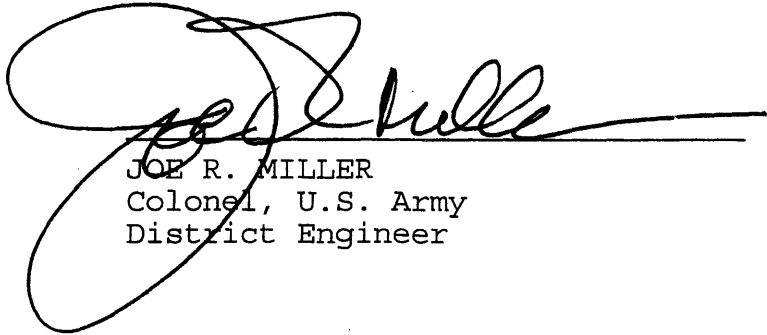
1. The work will be conducted in accordance with the Biological Opinion issued by the U.S. Fish and Wildlife Service for impacts to manatees and sea turtles, and the Regional Biological Opinion issued by the National Marine Fisheries Service. The proposed action will not jeopardize the continued existence of any threatened or endangered species or adversely impact any designated "critical habitat."
2. In coordination with the Florida State Historic Preservation Officer, it was determined that the proposed dredging and beach disposal will not impact any sites of cultural or historical significance.
3. The Florida Department of Environmental Protection has issued a Water Quality Certification (WQC) for this project. The conditions contained within the WQC will be addressed in the Plans and Specifications. Therefore, the state water quality standards will be met.
4. The proposed work has been determined to be consistent with the Florida Coastal Zone Management Program (CZMP).
5. Measures to eliminate, reduce, or avoid potential impacts to fish and wildlife resources will be implemented during project construction.
6. Benefits to the public will be maintenance of the navigation channel, continued local economic stimulus, increased recreational benefits and erosion protection from replacing lost beach area, and increased nesting habitat for sea turtles.

CESAJ-PD-ER

SUBJECT: Finding of No Significant Impact

In consideration of the information summarized, I find that the proposed action will not significantly affect the human environment and does not require an Environmental Impact Statement.

May 24, 2000
Date



JOE R. MILLER
Colonel, U.S. Army
District Engineer

**ENVIRONMENTAL ASSESSMENT
ON
MAINTENANCE DREDGING
FERNANDINA HARBOR
NASSAU COUNTY, FLORIDA**

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ENVIRONMENTAL ASSESSMENT ON MAINTENANCE DREDGING FERNANDINA HARBOR NASSAU COUNTY, FLORIDA

1 PROJECT PURPOSE AND NEED

1.1 INTRODUCTION

The U.S. Army Corps of Engineers (Corps), Jacksonville District, proposes to continue conducting routine maintenance dredging of Fernandina Harbor, Nassau County, Florida (see Figure 1, Plan View and Location Map). Approximately 300,000 cubic yards of sediment, resulting from shoaling, will be removed from the harbor's entrance channel on an annual basis. The harbor's inner channel and turning basin will also require dredging every 5 to 10 years. An estimated 300,000 cubic yards of additional material will be removed from these locations during each dredge event. Various types of dredging equipment, possibly including a hopper dredge, will be used to accomplish the above tasks. Excavated material consisting of suitable sand may be placed at several different beach locations on Amelia Island. Any dredged material not suitable for beach placement will be taken to the Fernandina Ocean Dredged Material and Disposal Site (ODMDS) or the Nearshore Disposal Area. Periodic removal of accumulated sediments from the entrance channel, inner channel, and turning basin allows commercial vessels and recreational boats access to the port of Fernandina. Dredging the entrance channel also serves the navigational needs of the Navy's Trident submarines stationed at King's Bay, Georgia.

1.2 PROJECT AUTHORITY

Maintenance dredging of Fernandina Harbor is authorized under Section 107 of the River and Harbor Act of 1960, as amended. Under the terms of a Memorandum of Understanding between the U.S. Department of the Navy and the state of Florida, dredged material from the Fernandina entrance channel will be placed (by the Corps) at designated beach disposal sites, the ODMDS, or the Nearshore Disposal Area. Disposal of dredged material within the ODMDS is authorized under the Marine Protection, Research, and Sanctuaries Act, the Water Resources Development Act of 1992, and a Memorandum of Agreement between the U.S. Environmental Protection Agency and the Corps.

1.3 DECISION TO BE MADE

This Environmental Assessment will evaluate whether to conduct the maintenance dredging and, if so, where the dredged material should be placed.

1.4 RELEVANT ISSUES

The following issues were identified as relevant to the proposed action and appropriate for detailed evaluation: (1) water quality degradation, especially in regards to turbidity and sediment contaminants; (2) impacts to endangered and threatened species occurring within the project area (i.e. manatees, sea turtles, whales, and shortnose sturgeon); (3) alteration of other wildlife resources; (4) potential damage to Essential Fish Habitat which may cause a reduction in standing stocks of certain managed species; (5) deleterious effects to benthos; (6) impacts to cultural resources; (7) beneficial or adverse effects to recreation; (8) impacts to navigation; (9) socio-economic effects to individuals, families, and businesses harmed by or benefiting by the project, especially in regards to commercial and recreational navigation; and (10) impacts to aesthetics.

1.5 NEPA DOCUMENTATION

Pursuant to the National Environmental Policy Act (NEPA), this Environmental Assessment was prepared by the Corps in order to address all of the current Fernandina Harbor dredging and disposal alternatives. Dredging of the entrance channel, inner channel, turning basin, and potential disposal areas were previously covered under six different NEPA documents. In 1991, the Corps completed a Detailed Project Report and Environmental Assessment for modifications to the Fernandina Harbor inner channel and turning basin. These modifications, completed in 1994, included the construction of a new turning basin and realignment of the inner channel. Additionally, an Environmental Impact Statement was prepared in conjunction with the Corps' Feasibility Report for Beach Erosion Control for Nassau County, Florida, in 1985.

1.6 PERMITS REQUIRED

In accordance with Section 401 of the Clean Water Act of 1977, as amended, a Water Quality Certification will be required from the Florida Department of Environmental Protection for the proposed dredging activity (see Appendix C).

1.7 METHODOLOGY

An interdisciplinary team used a systematic approach to analyze the affected area, to estimate the probable environmental effects, and to prepare the Environmental Assessment. This included a literature search, coordination with agencies having expertise in certain areas, and on-site field investigations.

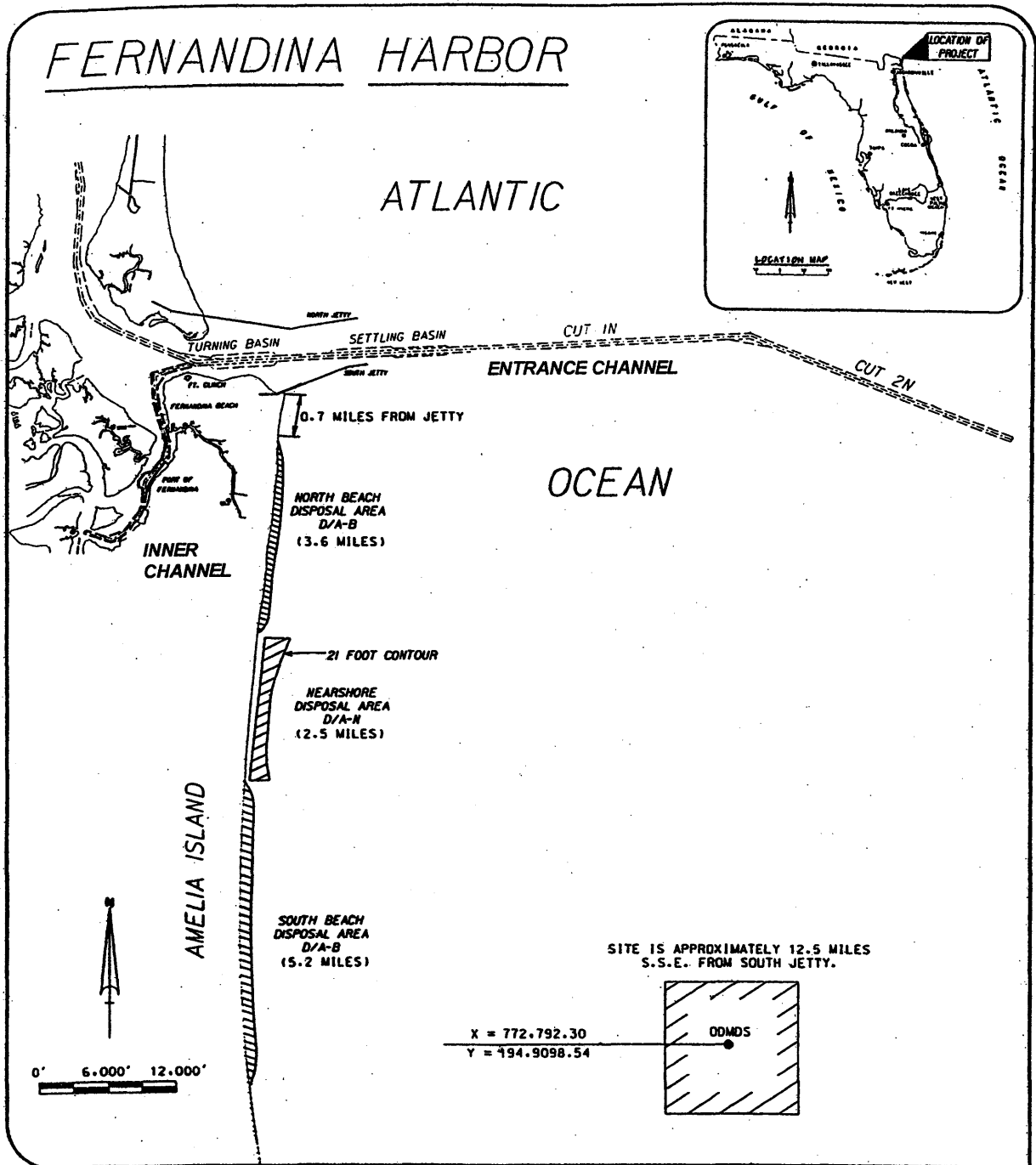


Figure 1. Plan View and Location Map. Entrance and Inner Channels of Fernandina Harbor, Nassau County, Florida.

2 ALTERNATIVES

2.1 INTRODUCTION

The Alternatives Section is perhaps the most important component of this Environmental Assessment. It describes the no-action alternative, the proposed dredging alternative, as well as the dredged material disposal options. The beneficial and adverse environmental effects of the alternatives are presented in comparative form, providing a clear basis for choice to the decisionmaker and the public. A preferred alternative was selected based on the information and analysis presented in the sections on the Affected Environment and Probable Impacts.

2.2 DESCRIPTION OF ALTERNATIVES

2.2.1 NO-ACTION ALTERNATIVE

Fernandina Harbor would no longer be dredged. Sediment would continue to accumulate making the project channel eventually too shallow to be safely navigated.

2.2.2 DREDGING ALTERNATIVE

Fernandina Harbor would continue to be maintenance dredged. As previously stated, dredging of the harbor's entrance channel serves the navigational needs of commercial and recreational vessels wanting access to Fernandina Harbor as well as the Navy's Trident submarines stationed at King's Bay. The Corps, under contract with the Navy, dredges the entrance channel on an annual basis in order to maintain a depth of 49-feet plus 2-feet allowable overdepth (total of 51-feet). Approximately 300,000 cubic yards of sediment will be removed each time it's dredged. The length of the civil works portion of the entrance channel, from the junction with the inner channel to station 270, is 27,000 feet. Fernandina Harbor's inner channel, cuts 1-6, and turning basin will also require dredging in order to provide commercial and recreational vessels access to the port's facilities. The inner channel will be dredged to a depth of 36-feet and the turning basin to a depth of 35-feet, both areas have a 1-foot allowable overdepth condition. An estimated 300,000 cubic yards of sediment will be removed from these areas every 5 to 10 years. The length of the inner channel, from cut 1 up to and including part of cut 6, is 15,337 feet. Material removed during each dredge event will be taken to one of the following disposal sites.

2.2.2.1 OCEAN DISPOSAL

Dredged material not suitable for beach placement would be transported by barge to the Fernandina Ocean Dredged Material Disposal Site (ODMDS) and released.

2.2.2.2 NEARSHORE DISPOSAL

Dredged material that contains less than 20% fines could be placed in the Nearshore Disposal Area. An inspector with training in the determination of sediment characteristics will evaluate the composition of the material during

dredging operations. All dredged material with greater than 20% fines would still be taken to the ODMDS.

2.2.2.3 BEACH PLACEMENT

Dredged material that contains 10% or less fines could be placed in several different locations on Amelia Island. Sites under consideration include the North and South Beach Disposal Areas as well as the Fort Clinch groin field. Suitable sand would be removed by a dredge and piped onto the beach. Bulldozers and front-end loaders would be used to spread the material. The beaches, as stated above, may benefit from additional sand. All dredged material with greater than 10% fines would be taken to the ODMDS or the Nearshore Disposal Area.

2.3 PREFERRED ALTERNATIVE

The preferred alternative is to dredge the Fernandina Harbor in order to maintain safe navigation conditions. All of the disposal areas are considered environmentally acceptable. According to survey data, however, it appears that the substrate within the inner channel and turning basin is comprised primarily of silt and clay and is not suitable for beach nourishment. Therefore, this material will need to be placed in the ODMDS with some of it, depending on composition, going into the Nearshore Disposal Area. In recent years, sandy material from the entrance channel has been placed at the North Beach Disposal Area with silty material being transported to the ODMDS.

2.4 ALTERNATIVES ELIMINATED FROM DETAILED ANALYSIS

In the past, upland disposal of dredged material from Fernandina Harbor was evaluated. This option was not regarded as feasible due to the high cost and general unavailability of suitable nearby uplands.

2.5 COMPARISON OF ALTERNATIVES

Table 1 lists alternatives considered and summarizes the major features and consequences of the proposed action and alternatives. See Section 4.0, Environmental Effects, for a more detailed discussion of impacts of alternatives.

Table 1: Summary of Direct and Indirect Impacts

ALTERNATIVE ENVIRONMENTAL FACTOR	NO-ACTION ALTERNATIVE	DREDGING WITH OCEAN DISPOSAL	DREDGING WITH NEARSHORE DISPOSAL	DREDGING WITH BEACH PLACEMENT
WATER QUALITY	No impact.	Short-term localized increase in turbidity at the dredge site and the ODMDS.	Short-term localized increase in turbidity at the dredge site and the Nearshore Disposal Site.	Short-term localized increase in turbidity at the dredge site and the surf zone along the beach placement area.
MANATEES	No impact.	No impact with implementation of standard protection conditions.	No impact with implementation of standard protection conditions.	No impact with implementation of standard protection conditions.
SEA TURTLES	Minor reduction in the overall available nesting habitat in the area.	Incidental take may occur if a hopper dredge is used.	Incidental take may occur if a hopper dredge is used.	Incidental take may occur if a hopper dredge is used. Minor short-term adverse impact on turtle nesting from placing the sand on the beach may occur. Minor increase in the overall available nesting habitat in the area.
WHALES	No impact.	No adverse effects are anticipated. Precautions will be taken to insure vessels do not collide with whales.	No adverse effects are anticipated. Precautions will be taken to insure vessels do not collide with whales.	No adverse effects are anticipated.
SHORTNOSE STURGEON	No impact.	No adverse effects are anticipated.	No adverse effects are anticipated.	No adverse effects are anticipated.
WILDLIFE RESOURCES (OTHER THAN T&E SPECIES)	No impact.	Minor short-term disturbance.	Minor short-term disturbance.	Minor short-term disturbance.

ALTERNATIVE ENVIRONMENTAL FACTOR	NO-ACTION ALTERNATIVE	DREDGING WITH OCEAN DISPOSAL	DREDGING WITH NEARSHORE DISPOSAL	DREDGING WITH BEACH PLACEMENT
ESSENTIAL FISH HABITAT	No impact.	Minor short-term disturbance.	Minor short-term disturbance.	Minor short-term disturbance.
BENTHOS	No impact	Minor short-term disturbance.	Minor short-term disturbance.	Minor short-term disturbance.
CULTURAL RESOURCES	No impact.	No adverse impacts are anticipated with avoidance of historic property.	No adverse impacts are anticipated with avoidance of historic property.	No adverse impacts are anticipated with avoidance of historic property.
RECREATION	Moderate long-term impact to recreational boating from loss of navigable capacity of channel. Minor reduction in available beach for recreational purposes.	Moderate long-term benefit to recreational boating from maintaining the channel. Short-term impact to recreational boat traffic from construction vessel congestion.	Moderate long-term benefit to recreational boating from maintaining the channel. Short-term impact to recreational boat traffic from construction vessel congestion. Minor increase in available beach for recreation.	Moderate long-term benefit to recreational boating from maintaining the channel. Short-term impact to recreational boat traffic from construction vessel congestion. Minor increase in available beach for recreation.
NAVIGATION (COMMERCIAL AND MILITARY)	Major long-term reduction in navigable capacity of channel.	Major long-term benefit from maintaining the channel. Short-term impact caused by construction vessel congestion.	Major long-term benefit from maintaining the channel. Short-term impact caused by construction vessel congestion.	Major long-term benefit from maintaining the channel. Short-term impact caused by construction vessel congestion.
ECONOMICS	Major long-term impact from loss of commercial port facilities and reduced recreational boating.	Major long-term benefit from maintaining commercial port facilities and recreational boating opportunities.	Major long-term benefit from maintaining commercial port facilities and recreational boating opportunities.	Major long-term benefit from maintaining commercial port facilities and recreational boating opportunities.
AESTHETICS	Minor long-term impacts from loss of beach.	No adverse impacts are anticipated.	No adverse impacts are anticipated.	Major short-term impact due to work on beach.

3 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

The Affected Environment Section succinctly describes the existing environmental resources of the areas that would be affected if any of the alternatives were implemented. This section describes only those environmental resources that would affect or that would be affected by the alternatives if they were implemented, not the entire existing environment. This section and the description of the "no-action" alternative provides the basic information for determining the environmental impacts of the proposed action and reasonable alternatives.

3.2 GENERAL ENVIRONMENTAL SETTING

3.2.1 AREAS TO BE DREDGED

Fernandina Harbor is located on the Atlantic coast in the extreme northeastern corner of Florida. The entrance channel to the harbor passes through Cumberland Sound, which is sometimes also referred to as the mouth of the St. Mary's River. Additionally, the middle of the entrance channel delimits the Florida-Georgia state boundaries. Cumberland Island, just north of the sound, supports a large maritime forest, an extensive salt marsh, and many miles of relatively untrammelled beach. This barrier island was acquired by the National Park Service in 1972 and is managed as a National Seashore. Diverging southwards from the entrance channel and into the Amelia River, the Fernandina Harbor inner channel and turning basin provides commercial vessels final access to the port's facilities. This tidally influenced system is bordered on the west by Little Tiger Island as well as by a fairly large salt marsh. Little Tiger Island remains undeveloped and, along with the marsh, supports a diverse biological community. Amelia Island forms the eastern boundary of the project channel. In addition to the city of Fernandina and Amelia Island Plantation, a resort community, this island still contains large relatively undisturbed wooded areas. Fort Clinch State Park occupies 1,121 acres on the north end of Amelia Island. The Fort Clinch State Park Aquatic Reserve, at 9,000 acres, includes portions of Cumberland Sound on the north, the Amelia River on the west, and the Atlantic Ocean on the east.

3.2.2 OCEAN DREDGED MATERIAL DISPOSAL SITE (ODMDS)

Material dredged from the project channel which is unsuitable for beach placement will be taken to the Fernandina Ocean Dredged Material Disposal Site for release. The U.S. Environmental Protection Agency (EPA) designated this area for the disposal of dredged material in 1987. It has been used on multiple occasions. This open-ocean site is located approximately 7 miles east of Amelia Island's southern terminus. Depths within this 4-square nautical mile area range from 40.5 to 67.7 feet below m.l.l.w. The bottom is composed of soft sediments (U.S. EPA 1998).

3.2.3 NEARSHORE DISPOSAL SITE

The Nearshore Disposal Area is approximately 10,000 feet offshore from the eastern shoreline of Amelia Island and centered some 5.5 miles south of the entrance channel. It is approximately 3,500 acres in total size and has a sandy bottom. This site has been used on multiple occasions.

3.2.4 BEACH DISPOSAL SITES

The North Beach Disposal Area begins 0.7 miles south of the entrance channel on the eastern shoreline of Amelia Island and continues southwards for 3.6 miles. As stated previously, beach quality sand from the entrance channel has been placed here on multiple occasions in the past. The South Beach Disposal Area is located near the town of American Beach and is approximately 5.2 miles in length. Even though this site has also been designated for beach disposal, it has not been typically used in the past because the erosion problems here are not as significant as those found further north. Both of these disposal sites can be described as recreational beaches with physically altered dune systems. In addition to the above disposal areas, the Florida Department of Environmental Protection has requested that beach quality sand from the entrance channel be placed within the groin field adjacent to Fort Clinch. The purpose of the groin field is to reduce on-going erosion of the shoreline.

3.3 WATER QUALITY

3.3.1 WATER USE CLASSIFICATION

Waters within the proposed dredging area have been designated by the state of Florida as Class III Waters, suitable for recreation as well as propagation and maintenance of a healthy and well-balanced population of fish and wildlife. In addition to this classification, the waters within the Fort Clinch Aquatic Preserve have also been designated by the state as Outstanding Florida Waters. Cuts 1 through 3 of the inner channel and part of the entrance channel are located within the preserve. According to the Florida Department of Environmental Protection, "the intent of an Outstanding Florida Water designation is to maintain ambient water quality, even if these designations are more protective than those required for the classification of the individual water body."

3.3.2 WATER COLUMN ANALYSIS

Past sampling of the water column within the Fernandina Harbor inner channel indicated that the quality was fairly good. Trace amounts of chromium, zinc, and nickel were detected but not at levels above the state of Florida's water quality standards. Mercury has been detected at a level of 0.18 ug/l, which is above the state's class III water quality standard of 0.1 ug/l. No other contaminants were found. Tidal flow through the project channel appears to be sufficient enough to

keep dissolved oxygen levels above state water quality standards even in the hot summer months (USACOE 1991).

3.3.3 SEDIMENT ANALYSIS

Sediment analysis indicated detectable levels of certain contaminants, such as heavy metals, but not at concentrations which would preclude ocean disposal (USACOE 1991). Examination of the sediments from the inner channel indicates that the composition is comprised primarily of silt and clay and, therefore would need to be transported to the ODMDS. Physical analysis of sediments from the entrance channel indicates the presence of beach quality sand from the inner channel junction to station 220. In the past, this material has been placed within the North Beach Disposal Area. Beyond station 220, the sediments contain a significant percentage of silt and have been historically transported to the Fernandina ODMDS for release.

3.4 THREATENED AND ENDANGERED SPECIES

3.4.1 MANATEES

The West Indian manatee (*Trichechus manatus*), a federally endangered species, is commonly observed in the Amelia River. According to aerial survey work and radio-tracking studies, the manatees frequent the American Container Corporation's warmwater discharge area during the months of November through March. The discharge pipes are located just to the north of the port of Fernandina. During warmer months, the manatees disperse throughout the watershed and are generally found in depths greater than four feet (USFWS 1989). Fort Clinch State Park personnel have reported four to five manatee sightings a year in the vicinity of the fort. Manatees may also infrequently occur in transit along the nearshore of Amelia Island.

3.4.2 SEA TURTLES

The loggerhead (*Caretta caretta*), green (*Chelonia mydas*), and Atlantic Ridley (*Lepidochelys kempii*) sea turtles can occur within the proposed dredging area. It would also be possible to encounter the leatherback (*Dermochelys coriacea*) and hawksbill (*Eretmochelys imbricata*) sea turtles during project related ocean disposal activities. All of these species are federally endangered except the loggerhead, which is classified as threatened. The loggerhead is also the only sea turtle that is known to regularly nest within the project area (USFWS 1989). According to Amelia Island Sea Turtle Watch, Inc., a total of 42 loggerhead nests were recorded within the North Beach Disposal Area and pipeline route during the 1999 season.

3.4.3 WHALES

Right whales (*Eubalaena glacialis*) are known to occur in the vicinity of the Fernandina ODMDS during the months of December through March. The site lies

within the federally designated critical habitat for this highly endangered species. The humpback whale (*Megaptera novaeaeangliae*) may also be encountered near the ODMDS during the winter months (National Marine Fisheries Service 1995).

3.4.4 SHORTNOSE STURGEON

Small numbers of shortnose sturgeon (*Acipenser brevirostrum*), classified as endangered, apparently still occur in the St. Johns River, Florida. While highly unlikely, it is possible that this species may occasionally be found within the project area (Gilbert 1992).

3.5 WILDLIFE RESOURCES OTHER THAN THREATENED AND ENDANGERED SPECIES

The nearshore area and beach disposal sites provide certain groups of birds a place to rest and feed. Commonly observed species along the edge of the surf include shorebirds such as sanderlings (*Calidris alba*) and willets (*Catoptrophorus semipalmatus*). Occasionally, large mixed flocks of laughing gulls (*Larus atricilla*), royal terns (*Sterna maxima*), black skimmers (*Rhynchops niger*), and other species are present at the North and South Beach Disposal Areas. During the winter months, many additional bird species including gannets, loons, cormorants, and scoters may be seen in the nearshore area. Nesting by shorebirds or seabirds is not known to occur, or is extremely limited, within the beach disposal areas. Various species of crabs can also be observed on these beaches. Free-swimming and burrowing organisms inhabit the surf zone and nearshore areas.

3.6 ESSENTIAL FISH HABITAT

The Cumberland Sound and Amelia River inlets are considered habitat areas of particular concern. They provide access to nursery or staging zones in salt marsh, another habitat area of particular concern, located adjacent to the project channel. Managed species such as juvenile penaeid shrimp (*Penaeus sp.*) and red drum (*Sciaenops ocellatus*) are dependent on these habitat types in order to complete their life cycles (South Atlantic Fishery Management Council 1998).

3.7 BENTHOS

Past surveys of bottom dwelling organisms, or benthos, indicate that the Amelia River channel is well scoured and is composed mostly of shell material with numerous small crabs. Deepwater areas adjacent to the channel show a dominance of spionid polychaete annelids (mudworms) as well as numerous other taxa, including mollusks, arthropods, nemertean worms, sponges and polyps. Additional benthic surveys conducted in similar habitats of the Cumberland Sound-Kings Bay area indicate a seasonal abundance of macroinvertebrates. Samples taken in August indicate a higher density and diversity of organisms, including the commercially valuable brown shrimp (*Penaeus aztecus*), compared to samples taken in February (USFWS 1989).

3.8 CULTURAL RESOURCES

In accordance with the recommendations of the State Historic Preservation Officer, the proposed dredging area was surveyed for historical structures using a magnetometer. Survey results revealed the presence of four different shipwrecks outside, but close to the project channel. Other historical landmarks in the area include Fort Clinch and the Fernandina Beach Historic District. In 1935, the state of Florida acquired the abandoned fort with 256 surrounding acres and designated the area a state park. The Fernandina Beach Historic District is located just east of the port.

3.9 RECREATION

Recreational boaters use the Fernandina Harbor inner channel primarily for accessing Cumberland Sound and the entrance channel for accessing the ocean. Fishing and sailing these waters remains extremely popular. In addition to the commercial port facilities, the harbor also has a large marina. All of the beaches in the area support a wide variety of recreational activities such as surf fishing, swimming, and sun bathing.

3.10 NAVIGATION (COMMERCIAL AND MILITARY)

Fernandina Harbor, while being a small port, is attractive to some shipping companies because of its relatively short access channel. In the past, it was also particularly appealing to regional paper companies who were interested in exporting wood products. In 1997, a total of 836 trips were made by commercial vessels in and out of the port. They transported 533,000 short tons of freight that included coal, petroleum products, chemicals, crude materials, and manufactured goods (Waterborne Commerce of the United States 1997). The Navy's Trident submarines and other ships use the entrance channel to access the Kings Bay Naval Base in Georgia.

3.11 ECONOMICS

Dredging of Fernandina Harbor is necessary to allow deep-draft vessels access to the port. The port, in turn, provides employment and also produces income for the local community through the purchase of goods and materials. Channel dredging maintains safe navigation conditions for commercial fishermen and recreational boating enthusiasts as well. Boating opportunities and maintained beaches offer the local tourism industry attractions for generating revenue.

3.12 AESTHETICS

Amelia Island is enjoyed by thousands of visitors every year. The area's appeal may be attributed in part to the many picturesque waterways and beaches found around the island. Access to some of the natural and scenic nearby locations, such as Cumberland Island National Seashore, is by boat only.

4 ENVIRONMENTAL EFFECTS

4.1 INTRODUCTION

This section describes how the implementation of each alternative would affect the environmental resources listed in Section 1.4. A summary of these impacts can be found in Table 1 of Section 2.0. The following anticipated changes to the existing environment include direct, indirect, and cumulative effects.

4.2 WATER QUALITY

4.2.1 NO-ACTION ALTERNATIVE

There will be no impact to water quality if Fernandina Harbor is no longer dredged.

4.2.2 DREDGING ALTERNATIVE

The only anticipated change in water quality at the proposed dredge sites will be a temporary increase in turbidity. According to the state of Florida's water quality standards, turbidity levels during dredging are not to exceed 29 nephelometric turbidity units (NTUs) above background levels within a 150 meter mixing zone. In order to comply with this standard, turbidity will be monitored according to state protocols during the proposed dredge work. If at any time the turbidity standard is exceeded, those activities causing the violation will cease. According to past sampling data, dredging the Fernandina Harbor has never exceeded the state's turbidity standard. The Corps has also requested a variance from the state to allow a temporary elevation of turbidity, not exceeding 29 NTUs above background conditions at the edge of a 150 meter mixing area, within the Fort Clinch Aquatic Preserve. As stated previously, the preserve has been classified as Outstanding Florida Waters and is regulated more restrictively.

4.2.2.1 Disposal Sites

Based on past sampling data, all chemical constituents identified within the sediments from the proposed dredge areas were at levels considered low enough for ODMDS and nearshore disposal or beach placement. A temporary increase in turbidity will occur at all of these sites during disposal activities. Turbidity levels will be monitored at the Nearshore and Beach Disposal Areas according to state protocols. Placement of dredged material within the ODMDS will be done according to the Site Management and Monitoring Plan for this area. Impacts to the ODMDS caused by disposal are also addressed in the Section 103 Evaluation Report (see Appendix D).

4.3 THREATENED AND ENDANGERED SPECIES

4.3.1 NO-ACTION ALTERNATIVE

There could be a minor loss of loggerhead sea turtle nesting habitat if suitable sand is no longer placed at the beach disposal sites. Otherwise, there will be no impact to threatened and endangered species if Fernandina Harbor is no longer dredged.

4.3.2 DREDGING ALTERNATIVE

Coordination with the U.S. Fish and Wildlife Service (USFWS) was conducted regarding possible impacts to the manatee and sea turtles caused by the proposed project (see Appendix C). The USFWS stated that the project is not likely to adversely affect the manatee if the precautions listed below are implemented, whereas the project may affect the loggerhead sea turtle. Precautions regarding nesting sea turtles, as listed in the biological opinion of the USFWS, will be implemented. Coordination with the National Marine Fisheries Service (NMFS) was conducted via the public notice. All standard precautions for hopper dredge use, as stated in the regional biological opinion of the NMFS, will be incorporated in the project plans and specifications should one be utilized.

4.3.2.1 Manatees

Protective measures will be taken during dredging and disposal activities to ensure the safety of manatees. To make the contractor and his personnel aware of the potential presence of this species in the project area, their endangered status, and the need for precautionary measures, the contract specifications will include the following standard manatee protection clauses. The contractor will instruct all personnel associated with construction activities about the potential presence of manatees in the area and the need to avoid collisions with them. If a manatee(s) is sighted within 100 yards of the project area, all appropriate precautions shall be implemented by the Contractor to ensure protection of the manatee. These precautions shall include the operation of all moving equipment no closer than 50 feet of a manatee. If a manatee is closer than 50 feet to moving equipment or the project area, the equipment will be shut down and all construction activities will cease to ensure protection of the manatee. Construction activities will not resume until the manatee has departed the project area. During clamshell dredging operations a dedicated observer will monitor for the presence of manatees. If manatees are present, the observer will document all activities with the use of a video camera with the capabilities of video taping at night. The video tape will have date/time signature and record all manatee movements in the construction area and note any reactions to turbidity, sound and light. Copies of the videos will be forwarded to the Corps as stated in the plans and specifications. All vessels associated with the project shall operate at 'no wake' speeds at all times while in shallow waters or channels where the draft of the boat provides less than three feet clearance from the bottom. Mooring bumpers shall be placed on all large

vessels wherever and whenever there is a potential for manatees to be crushed between two moored vessels. The bumpers shall provide a minimum stand-off distance of four feet. Boats used to transport personnel will be shallow draft vessels, preferably of the light-displacement category, where navigational safety permits. Vessels transporting personnel between the landing and any work boat shall follow routes of deep water to the greatest possible extent. Shore crews or personnel assigned to the disposal site for the workshift shall use upland road access if available. All personnel will be advised that there are civil and criminal penalties for harming, harassing, or killing manatees, which are protected under the Endangered Species Act and the Marine Mammal Protection Act. The contractor shall be held responsible for any manatee harmed, harassed, or killed as a result of the construction of the project.

4.3.2.2 Sea turtles

The NMFS has issued a Regional Biological Opinion on sea turtles for hopper dredging within the southeastern United States. All special conditions pertaining to the use of a hopper dredge will be implemented should one be used. Protective measures will also be taken to minimize impacts to sea turtle nesting if dredged material is placed on the beach. Turtle nest surveys and relocation will be initiated 65 days prior to construction or by March 1, whichever is the later date, and continue until construction is complete, or November 15, whichever is earliest. The beach will be tilled to a depth of 36" immediately following completion of disposal activities if measured sand compaction is greater than 500 cone penetrometer units.

4.3.2.3 Whales

In the event that ocean disposal takes place during the period December through March, an observer approved by the NMFS will be aboard transport vessels to monitor for the presence of whales. During transit to and from the Fernandina ODMDS, the observer shall monitor from the bridge during daylight hours for the presence of all whales, especially the right whale. If a whale is seen, the vessel speed will be reduced (8 knots is suggested) and the vessel operator must stay at least 500 yards from the animal. During evening hours or when there is limited visibility due to fog or sea states of greater than Beaufort 3, the vessel must slow down to 5 knots or less when traversing between areas if whales have been spotted within 15 nautical miles of the vessel's path within the previous 24 hours. All other standard protection measures for whales will be incorporated into the project plans when appropriate.

4.3.2.4 Shortnose sturgeon

Even though the shortnose sturgeon may be present in project waters, no adverse effects to this species are anticipated.

4.4 WILDLIFE RESOURCES OTHER THAN THREATENED AND ENDANGERED SPECIES

4.4.1 NO-ACTION ALTERNATIVE

There will be no impact to wildlife resources other than threatened and endangered species if Fernandina Harbor is not dredged.

4.4.2 DREDGING ALTERNATIVE

Disposal of dredged sand at the designated beach disposal sites will have a temporary impact on aquatic and shore life. Species of birds which use these beaches for resting or feeding will be temporarily displaced but should quickly return once the work is terminated. Nearshore free-swimming organisms will also avoid the construction zone and should eventually recolonize the area. Turbidity levels along the disposal site will temporarily increase, but will return to normal after beach equilibrium is achieved. Because the beach disposal areas occur within a surf zone, naturally occurring turbidity levels are high. Organisms inhabiting this zone will be impacted by run-off from the disposal area but are adapted for survival in such conditions. Thus, impacts will be minor. Any losses due to the project should be replaced within a short time.

4.5 ESSENTIAL FISH HABITAT

4.5.1 NO-ACTION ALTERNATIVE

There will be no impact to Essential Fish Habitat if Fernandina Harbor is not dredged.

4.5.2 DREDGING ALTERNATIVE

All coastal inlets, such as the Fernandina Harbor entrance channel, are considered by the South Atlantic Fishery Management Council to be habitat areas of particular concern for some commercially important species. Because it has a soft bottom and is naturally dynamic, impacts to the inlet caused by the proposed dredging should be short-term and minor in nature. Effects to salt marsh, another habitat area of particular concern, are not anticipated. Therefore, the Corps has determined that Essential Fish Habitat will not be adversely affected by the proposed maintenance dredging of Fernandina Harbor. The NMFS concurs with this finding (see Section 6.2).

4.6 BENTHOS

4.6.1 NO-ACTION ALTERNATIVE

There will be no impact to benthos if Fernandina Harbor is not dredged.

4.6.2 DREDGING ALTERNATIVE

Dredging the project channel will result in minor impacts to benthos. The Fernandina Harbor inner channel and turning basin should be quickly recolonized with benthic organisms from adjacent similar habitats. Due to the frequency of dredging the entrance channel, recolonization will not be as successful as the inner channel.

4.6.2.1 Disposal Sites

The proposed beach fill may cause a temporary short-term impact to invertebrates by burying these organisms. However, these organisms are highly adapted to periodic burial by sand in the intertidal zone. These organisms are highly fecund and are expected to return to pre-construction levels within six months to one year after construction.

4.7 CULTURAL RESOURCES

4.7.1 NO-ACTION ALTERNATIVE

There will be no impact to cultural resources if Fernandina Harbor is not dredged.

4.7.2 DREDGING ALTERNATIVE

Efforts will be taken to avoid the four shipwrecks identified near the project channel. An appropriate buffer zone around these structures is being considered. Placement of beach quality sand within the groin field adjacent to Fort Clinch will be done in such a way as to not damage the structure. In fact, the purpose of placing sand at this location is to help prevent the fort from being undermined by erosion.

4.8 RECREATION

4.8.1 NO-ACTION ALTERNATIVE

Recreational boating would be impacted if Fernandina Harbor were no longer dredged because of increased shoaling and decreased navigable capacity of the project channel. In addition, recreational beach activities would be affected due to continued loss of beach area.

4.8.2 DREDGING ALTERNATIVE

Recreational boat traffic would experience temporary delays due to construction traffic and congestion. Minor temporary impacts would also occur to recreational beach activities because of sand placement construction activities. However, recreational boat traffic would benefit from the increased navigable capacity of the channel. Recreational beach activities would benefit from the increased beach area resulting from the dredging and beach placement.

4.9 NAVIGATION (COMMERCIAL AND MILITARY)

4.9.1 NO-ACTION ALTERNATIVE

Deep-draft vessels, commercial and Naval ships, would eventually not be able to navigate the project channel because of increased shoaling.

4.9.2 DREDGING ALTERNATIVE

Dredging will maintain the navigable capacity of the project channel for deep-draft vessels.

4.10 ECONOMICS

4.10.1 NO-ACTION ALTERNATIVE

The port of Fernandina would not be able to operate if the project channel became unnavigable. Loss of the port would impact the local economy. The cessation of placing dredged sand on Amelia Island beaches could limit recreational beach activities and impact the local tourist industry.

4.10.2 DREDGING ALTERNATIVE

Maintenance dredging of the project channel will allow full access to the port of Fernandina. Transportation of commodities through the port creates a stimulus for attracting new business to the area. Recreational boaters as well as commercial fishing enterprises also rely on the navigable capacity of the project channel for access purposes. Additionally, the port provides jobs and generates revenue for the surrounding community through the purchase of goods and materials. Maintained beaches provide attractions that generate revenue for the local tourist industry.

4.11 AESTHETICS

4.11.1 NO-ACTION ALTERNATIVE

There will be no impact to aesthetics if Fernandina Harbor is no longer dredged.

4.11.2 DREDGING ALTERNATIVE

Construction activities within the project channel and at the disposal sites would temporarily impact the aesthetic appeal of the area. Permanent impacts to the aesthetics of the area caused by the construction are not anticipated.

4.12 CUMULATIVE IMPACTS

Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions (40 CFR 1508.7). The regional economy as well as recreational opportunities would be negatively impacted if maintenance dredging projects, such as the one proposed for Fernandina Harbor, are not performed.

4.13 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

4.13.1 IRREVERSIBLE

An irreversible commitment of resources is one in which the ability to use and/or enjoy the resource is lost forever. The only irreversible commitment of resources associated with the proposed project would be the expenditure of federal funds to complete the work.

4.13.2 IRRETRIEVABLE

An irretrievable commitment of resources is one in which, due to decisions to manage the resource for another purpose, opportunities to use or enjoy the resource as they presently exist are lost for a period of time. Placement of dredged sand at the beach disposal sites would temporarily disrupt the normal use of these areas.

4.14 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

There may be short-term degradation of water quality due to turbidity caused by dredging and dredged material disposal operations. The potential exists for the incidental taking of sea turtles during dredging operations. However, the implementation of standard protective measures should minimize and mitigate for this potential.

4.15 ENVIRONMENTAL COMMITMENTS

The U.S. Army Corps of Engineers and contractors commit to avoiding, minimizing or mitigating for adverse effects during construction activities by taking the following actions:

1. The contractor shall comply with all terms and conditions set out in the Water Quality Certification issued by the Florida Department of Environmental Protection as well as the Biological Opinion of the U.S. Fish and Wildlife Service and the National Marine Fisheries Service for those federally endangered or threatened species identified in this Environmental Assessment. These terms and conditions are stipulated within the plans and specifications for the project. In addition to following the Biological Opinion issued by the U.S. Fish and Wildlife Service for sea turtles, the Corps will make every effort to avoid beach placement of sand during the sea turtle nesting season.
2. The contractor shall establish and maintain quality control for environmental protection of all items set forth in the project plans and specifications. The contractor shall record on daily quality control reports or attachments thereto, any problems in complying with laws, regulations and ordinances, and corrective action taken.

3. The contracting officer will notify the contractor in writing of any observed noncompliance with federal, state, or local laws or regulations, permits and other elements of the contractor's Environmental Protection Plan. The contractor shall, after receipt of such notice, inform the contracting officer of proposed corrective action and take such action as may be approved. If the contractor fails to comply promptly, the contracting officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or costs or damages allowed to the contractor for any such suspension.

4. The contractor shall train his personnel in all phases of environmental protection. The training shall include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory and contractual, and installation and care of facilities to insure adequate and continuous environmental pollution control. Quality control and supervisory personnel shall be thoroughly trained in the proper use of monitoring devices and abatement equipment, and shall be thoroughly knowledgeable of federal, state, and local laws, regulations, and permits as listed in the Environmental Protection Plan submitted by the contractor.

5. The environmental resources within the project boundaries and those affected outside the limits of permanent work under this contract shall be protected during the entire period of this contract. The contractor shall confine his activities to areas defined by the drawings and specifications.

6. As stated in the contract specifications, the disposal of hazardous or solid wastes will be in compliance with federal, state, and local laws. A spill prevention plan will also be required.

Additional actions will be taken in order to comply with the following environmental requirements.

4.16 COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS

4.16.1 NATIONAL ENVIRONMENTAL POLICY ACT OF 1969

Environmental information on the project has been compiled and this Environmental Assessment has been prepared. It is available to any interested parties. The project is in compliance with the National Environmental Policy Act.

4.16.2 ENDANGERED SPECIES ACT OF 1973

Consultation was initiated with the US Fish and Wildlife Service on 20 December 1999, and completed on May 3, 2000 (see Appendix C). Dredging operations and dredged material disposal has also been coordinated with the National Marine

Fisheries Service (NMFS) during the public notice period. The NMFS has issued a Regional Biological Opinion for hopper dredging within the southeastern United States. All special conditions pertaining to the use of a hopper dredge will be implemented should one be used. This project was fully coordinated under the Endangered Species Act and is therefore, in full compliance with the Act.

4.16.3 FISH AND WILDLIFE COORDINATION ACT OF 1958

This project has been coordinated with the U.S. Fish and Wildlife Service (USFWS). A Coordination Act Report was not required for this project. This project is in full compliance with the Act.

4.16.4 NATIONAL HISTORIC PRESERVATION ACT OF 1966 (INTER ALIA)

(PL 89-665, the Archeology and Historic Preservation Act (PL 93-291), and executive order 11593) Archival research, channel surveys, and consultation with the Florida State Historic Preservation Officer (SHPO), have been conducted in accordance with the National Historic Preservation Act, as amended; the Archeological and Historic Preservation Act, as amended and Executive Order 11593. The project is in full compliance with the Act.

4.16.5 CLEAN WATER ACT OF 1972

A Section 401 water quality certification will be required from the Florida Department of Environmental Protection. All state water quality standards would be met. A Section 404(b) evaluation is included in this report as Appendix A. A public notice was issued in a manner which satisfies the requirements of Section 404 of the Clean Water Act.

4.16.6 CLEAN AIR ACT OF 1972

No air quality permits would be required for this project.

4.16.7 COASTAL ZONE MANAGEMENT ACT OF 1972

A federal consistency determination in accordance with 15 CFR 930 Subpart C is included in this report as Appendix B. The Corps has determined that the project would have no unacceptable impacts and would be consistent with the Florida Coastal Management Plan. In accordance with the Memorandum of Understanding (1979) and the Addendum to the Memorandum (1983) concerning acquisition of Water Quality Certifications and other state authorizations, the preliminary Environmental Assessment and Section 404 (b)(1) Evaluation have been submitted to the state in lieu of a summary of environmental impacts to show consistency

with the Florida Coastal Zone Management Plan. Final state concurrence will be received with the issuance of the Water Quality Certification.

4.16.8 FARMLAND PROTECTION POLICY ACT OF 1981

No prime or unique farmland would be impacted by implementation of this project. This Act is not applicable.

4.16.9 WILD AND SCENIC RIVER ACT OF 1968

No designated Wild and Scenic River reaches would be affected by project related activities. This Act is not applicable.

4.16.10 MARINE MAMMAL PROTECTION ACT OF 1972

Incorporation of the safe guards used to protect threatened or endangered species during dredging and disposal operations would also protect any marine mammals in the area, therefore, this project is in compliance with the Act.

4.16.11 ESTUARY PROTECTION ACT OF 1968

No designated estuary would be affected by project activities. This Act is not applicable.

4.16.12 FEDERAL WATER PROJECT RECREATION ACT

There is no recreational development proposed for maintenance dredging or disposal. Therefore, this Act does not apply.

4.16.13 FISHERY CONSERVATION AND MANAGEMENT ACT OF 1976

The project has been coordinated with the National Marine Fisheries Service (NMFS) and is in compliance with the Act.

4.16.14 SUBMERGED LANDS ACT OF 1953

The project would occur on submerged lands of the state of Florida. The project has been coordinated with the state and is in compliance with the Act.

4.16.15 COASTAL BARRIER RESOURCES ACT AND COASTAL BARRIER IMPROVEMENT ACT OF 1990

There are no designated coastal barrier resources in the project area that would be affected by this project. These Acts are not applicable.

4.16.16 RIVERS AND HARBORS ACT OF 1899

The proposed work would not obstruct navigable waters of the United States. The proposed action has been subject to the public notice, public hearing, and other evaluations normally conducted for activities subject to the act. The project is in full compliance.

4.16.17 ANADROMOUS FISH CONSERVATION ACT

Anadromous fish species would not be affected. The project has been coordinated with the National Marine Fisheries Service and is in compliance with the Act.

4.16.18 MIGRATORY BIRD TREATY ACT AND MIGRATORY BIRD CONSERVATION ACT

No migratory birds would be affected by project activities. The project is in compliance with these Acts.

4.16.19 MARINE PROTECTION, RESEARCH AND SANCTUARIES ACT

Disposal of dredged material into the Fernandina ODMS will be performed pursuant to Section 102(c) of this Act. A Section 103 report can be found in Appendix D. The term "dumping" as defined in the Act (33 U.S.C. 1402)(f) does not apply to the disposal of material for beach nourishment or to the placement of material for a purpose other than disposal (e.g. placement of rock material as an artificial reef or the construction of artificial reefs as mitigation). The disposal activities addressed in this Environmental Assessment have also been evaluated under Section 404 of the Clean Water Act.

4.16.20 MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

The proposed dredging and disposal activities have been previously coordinated with the National Marine Fisheries Service (NMFS) during the public notice period. According to a letter of agreement between the NMFS and the Corps, further coordination regarding Essential Fish Habitat within maintenance areas is not normally required for each event.

4.16.21 E.O. 11990, PROTECTION OF WETLANDS

No wetlands would be affected by project activities. This project is in compliance with the goals of this Executive Order.

4.16.22 E.O. 11988, FLOOD PLAIN MANAGEMENT

No activities associated with this project will take place within a floodplain, therefore this project is in compliance with the goals of this Executive Order.

4.16.23 E.O. 12898, ENVIRONMENTAL JUSTICE

The proposed action would not result in adverse health or environmental effects. Any impacts of this action would not be disproportionate toward any minority. The activity does not (a) exclude persons from participation in, (b) deny persons the benefits of, or (c) subject persons to discrimination because of their race, color, or national origin. The activity would not impact "subsistence consumption of fish and wildlife."

4.16.24 E.O. 13089, CORAL REEF PROTECTION

No coral reef or coral reef organism would be impacted by this project.

5 LIST OF PREPARERS

5.1 PREPARERS

Preparer	Discipline	Role
Paul Stodola	Biologist	Principal Author
Brian Brodehl	Engineer	Engineering
Thomas Birchett	Archaeologist	Historic Properties

5.2 REVIEWERS

This Environmental Assessment was reviewed by Kenneth Dugger, Team Leader, Environmental Branch-Coastal Projects Section.

6 PUBLIC INVOLVEMENT

6.1 SCOPING

A public notice (PN-CO-FEH-238) dated August 4, 1999, was issued for the project (Appendix C). Notices were mailed to appropriate local, state, and federal agencies as well as environmental groups.

6.2 COMMENTS RECEIVED AND RESPONSE

The only comment received as a result of the public notice was from the National Marine Fisheries Service (NMFS). The NMFS reviewed the project plans advertised in the notice and stated "we anticipate that any adverse effect that might occur on marine and anadromous fishery resources would be minimal and, therefore, do not object to issuance of the permit(s)."

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APPENDIX A - SECTION 404(B) EVALUATION

SECTION 404(b) EVALUATION

MAINTENANCE DREDGING FERNANDINA HARBOR NASSAU COUNTY, FLORIDA

I. Project Description

a. Location. The proposed work will be performed at Fernandina Harbor, Nassau County, Florida.

b. General Description. The proposed plan calls for the maintenance dredging of the Fernandina Harbor entrance channel, inner channel, and turning basin. Depending on composition, dredged material will be taken either to the Fernandina ODMDS, the Nearshore Disposal Area, the North or South Beach Disposal Areas.

c. Authority and Purpose. Maintenance dredging of Fernandina Harbor is authorized under Section 107 of the River and Harbor Act of 1960, as amended. Under the terms of a Memorandum of Understanding between the U.S. Department of the Navy and the state of Florida, dredged material from the Fernandina entrance channel will be placed (by the Corps) at designated beach disposal sites, the ODMDS, or the Nearshore Disposal Area. Disposal of dredged material within the Fernandina ODMDS is authorized under the Marine Protection, Research, and Sanctuaries Act, the Water Resources Development Act of 1992, and a Memorandum of Agreement between the U.S. Environmental Protection Agency and the Corps. The purpose of the project is to maintain safe navigation conditions.

d. General Description of Dredged or Fill Material.

(1) General Characteristics of Material. The physical structure of the sediments from the inner channel indicates that the composition is primarily silt and clay. Physical analysis of sediments from the entrance channel indicates the presence of beach quality sand, less than 10% fines, from the inner channel junction to station 220. Beyond station 220, the sediments contain a significant percentage of silt.

(2) Quantity of Material. Approximately 300,000 cubic yards of sand and silt will be removed from the harbor's entrance channel on an annual basis. An

estimated 300,000 cubic yards of additional material will be removed from the inner channel and turning basin about every 5 years.

(3) Source of Material. The entrance channel will be dredged to a depth of 49-feet plus 2-feet allowable overdepth (total of 51-feet). It's length, from the junction with the Inner channel to station 270, is 27,000 feet. The inner channel, will be dredged to a depth of 36-feet and the turning basin to a depth of 35-feet, both areas have a 1-foot allowable overdepth condition. Their combined length, from cut 1 up to and including part of cut 6, is 15,337 feet.

e. Description of the proposed Discharge Site.

(1) Location. The Fernandina ODMDS is located approximately 7 miles east of Amelia Island's southern terminus (center coordinates $x = 772,792.30$, $y = 194,9038.54$). The Nearshore Disposal Area is 10,000 feet offshore from the eastern shoreline of Amelia Island and centered some 5.5 miles south of the entrance channel. The North Beach Disposal Area begins 0.7 miles south of the entrance channel on the eastern shoreline of Amelia Island. The South Beach Disposal Area is located near the community of American Beach, also on the eastern shoreline of Amelia Island. The Fort Clinch groin field is located on the northern terminus of Amelia Island.

(2) Size. The Fernandina ODMDS is 4-square nautical miles. The Nearshore Disposal Area is approximately 3,500 acres in total size. The North and South Beach Disposal Areas are 3.6 miles and 5.2 miles in length, respectively. The Fort Clinch groin field occupies that part of the beach immediately adjacent to the fort.

(3) Type of Site. The Fernandina ODMDS and Nearshore Disposal Area are located in the open ocean and have soft, primarily sandy, bottoms. The two beach disposal areas are open, sandy beaches. The Fort Clinch groin field is a sandy shoreline on the southern side of Cumberland Sound.

(4) Type of Habitat. As stated above, see Section 2 of the Environmental Assessment for more detail.

(5) Timing and Duration of Discharge. The schedule for dredging is variable. Currently, the inner channel and turning basin are scheduled for dredging during the summer of 2000. Recently, a portion of the entrance channel has been dredged during the winter and the remainder during the summer.

f. Description of Disposal Method. Disposal could be either from a pipeline or hopper dredge. A clamshell dredge may also be used in conjunction with a

transport barge. Sand placed on the beach will be graded out with front-end loaders and bulldozers.

II. Factual Determinations

a. Physical Substrate Determinations.

(1) Substrate Elevation and Slope. Gentle sloped beach and littoral zone. Discharge within the ODMDS will be according to the management plan.

(2) Sediment Type. The sediment from the project channel ranges from fine to coarse sand with varying amounts of silt, clay, and shell.

(3) Dredge/Fill Material Movement. Material placed at the North Beach Disposal Area accretes and erodes, then moves generally to the south.

(4) Physical Effects on Benthos. Some benthic organisms will be buried under the disposed dredged material. Most of these organisms should be able to burrow through this material. Recolonization should occur fairly rapidly, within a year.

b. Water Circulation, Fluctuation and Salinity Determination.

(1) Water Column Effects. Placement of fill material at any of the disposal sites will cause a temporary increase in turbidity. Because the immediate nearshore area is subject to naturally occurring elevated turbidity levels caused by the surf, increases due to the project will not be significant.

(2) Current Patterns and Circulation. Currents in the project area are both tidal and longshore. Net movement of water due to the longshore current is from the north to the south. Dredging and disposal operations will not affect the currents.

(3) Normal Water Level Fluctuations and Salinity Gradients. Tides in the project area are semi-diurnal. The mean tidal range along Amelia Island is 5.7 feet. The mean tide level is 0.3 feet NGVD. Salinity is that of the ocean. Dredging and disposal operations will not affect normal tide fluctuations or salinity.

c. Suspended Particulate/Turbidity Determinations.

(1) Expected Changes in Suspended Particulates and Turbidity Levels in the Vicinity of the Disposal Site. There will be a temporary increase in turbidity

levels in the project area during discharge. Turbidity will be short-term and localized and no significant adverse impacts are expected. State standards for turbidity should not be exceeded.

(2) Effects on the Chemical and Physical Properties of the Water Column.

(a) Light Penetration. Light penetration will decrease during dredging and disposal operations due to increased levels of turbidity. This effect will be temporary and will have no adverse impact on the environment.

(b) Dissolved Oxygen. Dissolved oxygen levels will not be altered by this project.

(c) Toxic Metals, Organics, and Pathogens. No toxic metals, organics, or pathogens will be disturbed or released at levels that exceed state standards.

(d) Aesthetics. Aesthetic quality will be reduced during construction activities due to turbidity.

(3) Effects on Biota.

(a) Primary Productivity and Photosynthesis. Impacts to primary productivity during dredging and disposal operations will be short-term and insignificant.

(b) Suspension/Filter Feeders. There will be no long-term adverse impact to suspension/filter feeders.

(c) Sight Feeders. There will be no long-term adverse impact to sight feeders.

d. Contaminant Determinations.

e. Aquatic Ecosystem and Organism Determinations.

(1) Effects on Plankton. Levels of contaminants within the dredged material should not adversely impact these organisms.

(2) Effects on Benthos. Levels of contaminants within the dredged material should not adversely impact these organisms.

(3) Effects on Nekton. Levels of contaminants within the dredged material should not adversely impact these organisms.

(4) Effects on the Aquatic Food Web. No negative effects are anticipated.

(5) Effects on Special Aquatic Sites.

(a) Hardground and Coral Reef Communities. Hardground and coral reef communities do not exist offshore of Amelia Island.

(b) Sanctuaries and Refuges. Dredging impacts to the Fort Clinch Aquatic Preserve should be minor and short-term.

(c) Wetlands. No wetlands will be impacted by this project.

(d) Mud Flats. No mud flats will be impacted by this project.

(e) Vegetated Shallows. No vegetated shallows will be impacted by this project.

(f) Riffle and Pool Complexes. No riffle and pool complexes will be impacted by this project.

(6) Endangered and Threatened Species. The project may impact the manatee and sea turtles. Therefore, standard protective measures will be implemented. See Sections 3 and 4 of the Environmental Assessment.

(7) Other Wildlife. Impacts to other species of wildlife should be minor and short term.

(8) Actions to Minimize Impacts. See Section 4 of the Environmental Assessment.

f. Proposed Disposal Site Determinations.

(1) Mixing Zone Determination. During the disposal operations, there will be temporary elevated levels of turbidity in the surrounding waters.

(2) Determination of Compliance with Applicable Water Quality Standards. The work will be conducted in accordance with the state of Florida Water Quality Certification issued for this project.

(3) Potential Effects on Human Use Characteristics.

(a) Municipal and Private Water Supplies. No effects are anticipated.

(b) Recreational and Commercial Fisheries. Impacts caused by dredging and disposal activities will be minor and short-term.

(c) Water Related Recreation. Construction activities will temporarily disrupt recreational opportunities. Dredging will maintain the navigational capacity of the project channel for recreational boaters. Placement of dredged material on the beach will preserve and enhance recreational beach activities.

(d) Aesthetics. Construction will temporarily adversely impact the aesthetics of the area. Placement of dredged sand on the beach will compensate for losses caused by erosion and improve the aesthetics of the beach environment.

(e) Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves. Construction activities will temporarily impact the Fort Clinch Aquatic Preserve. These impacts are anticipated to be minor.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. Cumulative effects that will adversely impact the aquatic ecosystem as a result of dredging and disposal activities are not anticipated.

h. Determination of Secondary Effects on the Aquatic Ecosystem. Secondary effects that will adversely impact the aquatic ecosystem as a result of dredging and disposal activities are not anticipated.

III. Findings of Compliance or Non-compliance with the Restrictions on Discharge.

a. No significant adaptations of the guidelines were made relative to this evaluation.

b. No practicable alternative exists which meets the study objectives that does not involve discharge of fill into waters of the United States.

c. After consideration of disposal site dilution and dispersion, the discharge of fill materials will not cause or contribute to, violations of any

applicable state water quality standards for Class III waters. The discharge operation will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

d. The maintenance dredging of Fernandina Harbor will not jeopardize the continued existence of any species listed as threatened or endangered or result in the likelihood of destruction or adverse modification of any critical habitat as specified by the Endangered Species Act of 1973, as amended.

e. The placement of fill material will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic species and other wildlife will not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values will not occur.

f. On the basis of the guidelines, the proposed disposal site for the discharge of dredged material is specified as complying with the requirements of these guidelines.

APPENDIX B - COASTAL ZONE MANAGEMENT CONSISTENCY

**FLORIDA COASTAL ZONE MANAGEMENT PROGRAM
FEDERAL CONSISTENCY EVALUATION PROCEDURES**

**MAINTENANCE DREDGING
FERNANDINA HARBOR
NASSAU COUNTY, FLORIDA**

1. Chapter 161, Beach and Shore Preservation. The intent of the coastal construction permit program established by this chapter is to regulate construction projects located seaward of the line of mean high water and which might have an effect on natural shoreline processes.

Response: The proposed plans and information will be submitted to the state in compliance with this chapter.

2. Chapters 163(part II), 186, and 187, County, Municipal, State and Regional Planning. These chapters establish the Local Comprehensive Plans, the Strategic Regional Policy Plans, and the State Comprehensive Plan (SCP). The SCP sets goals that articulate a strategic vision of the state's future. It's purpose is to define in a broad sense, goals, and policies that provide decision-makers directions for the future and provide long-range guidance for an orderly social, economic and physical growth.

Response: The proposed project has been coordinated with various federal, state and local agencies during the planning process. The project meets the primary goal of the State Comprehensive Plan through preservation and protection of the shorefront development and infrastructure.

3. Chapter 252, Disaster Preparation, Response and Mitigation. This chapter creates a state emergency management agency, with the authority to provide for the common defense; to protect the public peace, health and safety; and to preserve the lives and property of the people of Florida.

Response: The proposed project involves the dredging Fernandina Harbor in order to maintain safe navigation conditions. It also involves the placing of beach compatible material onto an eroding beach as a protective means for residents, development and infrastructure located along the Atlantic shoreline within Nassau County. Therefore, this project would be consistent with the efforts of Division of Emergency Management.

4. Chapter 253, State Lands. This chapter governs the management of submerged state lands and resources within state lands. This includes archeological and historical resources; water resources; fish and wildlife resources;

beaches and dunes; submerged grass beds and other benthic communities; swamps, marshes and other wetlands; mineral resources; unique natural features; submerged lands; spoil islands; and artificial reefs.

Response: Maintenance dredging of Fernandina Harbor has been performed on multiple occasions in the past. Project activities have complied with state regulations pertaining to the above resources. The proposed project would comply with the intent of this chapter.

5. Chapters 253, 259, 260, and 375, Land Acquisition. This chapter authorizes the state to acquire land to protect environmentally sensitive areas.

Response: Since the affected property already is in public ownership, this chapter does not apply.

6. Chapter 258, State Parks and Aquatic Preserves. This chapter authorizes the state to manage state parks and preserves. Consistency with this statute would include consideration of projects that would directly or indirectly adversely impact park property, natural resources, park programs, management or operations.

Response: The proposed project will affect the Fort Clinch Aquatic Preserve. Project related activities have been fully coordinated with the state. The project is consistent with this chapter.

7. Chapter 267, Historic Preservation. This chapter establishes the procedures for implementing the Florida Historic Resources Act responsibilities.

Response: This project has been coordinated with the State Historic Preservation Officer (SHPO). Survey results indicated the presence of four historical properties near, but outside, the project channel. An appropriate buffer zone around these objects is being considered. The project will be consistent with the goals of this chapter.

8. Chapter 288, Economic Development and Tourism. This chapter directs the State to provide guidance and promotion of beneficial development through encouraging economic diversification and promoting tourism.

Response: The maintenance dredging of the Fernandina Harbor encourages economic growth of the area. Also, the proposed beach nourishment would provide more space for recreation and the protection of recreational facilities along the receiving beach. This would be compatible with tourism for this area and therefore, is consistent with the goals of this chapter.

9. Chapters 334 and 339, Transportation. This chapter authorizes the planning and development of a safe balanced and efficient transportation system.

Response: The maintenance dredging of Fernandina Harbor promotes navigation within the harbor and the Intracoastal Waterway.

10. Chapter 370, Saltwater Living Resources. This chapter directs the state to preserve, manage and protect the marine, crustacean, shell and anadromous fishery resources in state waters; to protect and enhance the marine and estuarine environment; to regulate fishermen and vessels of the state engaged in the taking of such resources within or without state waters; to issue licenses for the taking and processing products of fisheries; to secure and maintain statistical records of the catch of each such species; and, to conduct scientific, economic, and other studies and research.

Response: Dredging activities should not adversely impact saltwater living resources. The placement of sand on the beach will create a larger more suitable area for nesting sea turtles. The proposed beach fill may represent a temporary short-term impact to invertebrates by burying these organisms. However, these organisms are highly adapted to the periodic burial by sand in the intertidal zone. These organisms are highly fecund and are expected to return to pre-construction levels within 6 months to one year after construction. Based on the overall impacts of the project, the project is consistent with the goals of this chapter.

11. Chapter 372, Living Land and Freshwater Resources. This chapter establishes the Game and Freshwater Fish Commission and directs it to manage freshwater aquatic life and wild animal life and their habitat to perpetuate a diversity of species with densities and distributions which provide sustained ecological, recreational, scientific, educational, aesthetic, and economic benefits.

Response: The project will have no effect on freshwater aquatic life or wild animal life. Therefore, the work would comply with the goals of this chapter.

12. Chapter 373, Water Resources. This chapter provides the authority to regulate the withdrawal, diversion, storage, and consumption of water.

Response: This project does not involve water resources as described by this chapter.

13. Chapter 376, Pollutant Spill Prevention and Control. This chapter regulates the transfer, storage, and transportation of pollutants and the cleanup of pollutant discharges.

Response: The contract specifications will prohibit the contractor from dumping oil, fuel, or hazardous wastes in the work area and will require that the contractor adopt safe and sanitary measures for the disposal of solid wastes. A spill prevention plan will be required.

14. Chapter 377, Oil and Gas Exploration and Production. This chapter authorizes the regulation of all phases of exploration, drilling, and production of oil, gas, and other petroleum products.

Response: This project does not involve the exploration, drilling or production of gas, oil or petroleum product and therefore, this chapter does not apply.

15. Chapter 380, Environmental Land and Water Management. This chapter establishes criteria and procedures to assure that local land development decisions consider the regional impact nature of proposed large-scale development. This chapter also deals with the Area of Critical State Concern program and the Coastal Infrastructure Policy.

Response: The proposed dredging of Fernandina Harbor has been coordinated with the local regional planning commission. Therefore, the project is consistent with the goals of this chapter.

16. Chapters 381 (selected subsections on on-site sewage treatment and disposal systems) and 388 (Mosquito/Arthropod Control). Chapter 388 provides for a comprehensive approach for abatement or suppression of mosquitoes and other pest arthropods within the State.

Response: The project will not increase the potential propagation of mosquitoes or other pest arthropods.

17. Chapter 403, Environmental Control. This chapter authorizes the regulation of pollution of the air and waters of the state by the Florida Department of Environmental Regulation (now a part of the Florida Department of Environmental Protection).

Response: Environmental protection measures will be implemented to ensure that no lasting adverse effects on water quality, air quality, or other environmental resources will occur. Water Quality Certification will be sought from the state prior to construction. The project complies with the intent of this chapter.

18. Chapter 582, Soil and Water Conservation. This chapter establishes policy for the conservation of the state soil and water through the Department of Agriculture. Land use policies will be evaluated in terms of their tendency to cause or contribute

to soil erosion or to conserve, develop, and utilize soil and water resources both onsite or in adjoining properties affected by the project. Particular attention will be given to projects on or near agricultural lands.

Response: The proposed project is not located near or on agricultural lands; therefore, this chapter does not apply.

APPENDIX C - PERTINENT CORRESPONDENCE



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P. O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019



REPLY TO
ATTENTION OF
Construction-Operations Division
Public Notice NO. PN-CO-FEH-238

August 4, 1999

PUBLIC NOTICE

TO WHOM IT MAY CONCERN: The District Engineer, Jacksonville District, U.S. Army Corps of Engineers, has proposed maintenance dredging of Fernandina Harbor. This Federal project is being evaluated and coordinated pursuant to 33 CFR 335 through 338.

Comments regarding the project should be submitted in writing to the District Engineer at the above address within 30 days from the date of this notice. Any person who has an interest, which may be affected by the construction of this project may request a public hearing. The request must be submitted in writing to the District Engineer within 30 days of the date of this notice and must clearly set forth the interest, which may be affected and the manner in which the interest may be affected by this activity.

If you have any questions concerning this application, you may contact Mr. Brian Brodehl of this office, telephone 904-232-3600.

WATERWAY & LOCATION: Fernandina Harbor, Nassau County, Florida

WORK & PURPOSE: The proposed work consists of maintenance dredging of the Fernandina Harbor Inner Channel and Turning Basin. Maintenance dredging will be conducted periodically to restore the Federal project to its authorized project depths. It is anticipated that approximately 350,000 cubic yards of silts and clays will be removed each dredging event. The material will be placed into the Fernandina Harbor Ocean Dredged Material Disposal Site (ODMDS). In the event that pockets of sand are found in the channel, the State of Florida will be consulted about other material placement options. The purpose of the work is to maintain safe navigation conditions for vessels using Fernandina Harbor.

PROJECT AUTHORIZATION: House Document 284, 77th Congress, 1st Session, River and Harbor Act of 1960, Public Law 86-645, 33 U.S.C. 577, 2 March 1907.

EVALUATION: A new Environmental Assessment is being prepared for this project. Evaluation of the available information indicates that the proposed project will have no significant impact on the quality of the human environment and an Environmental Impact Statement pursuant to the National Environmental Policy Act (NEPA) will not be required.

ENDANGERED SPECIES: Consultation with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act is being conducted. Consultation to date has revealed that the following species could be located in the project area:

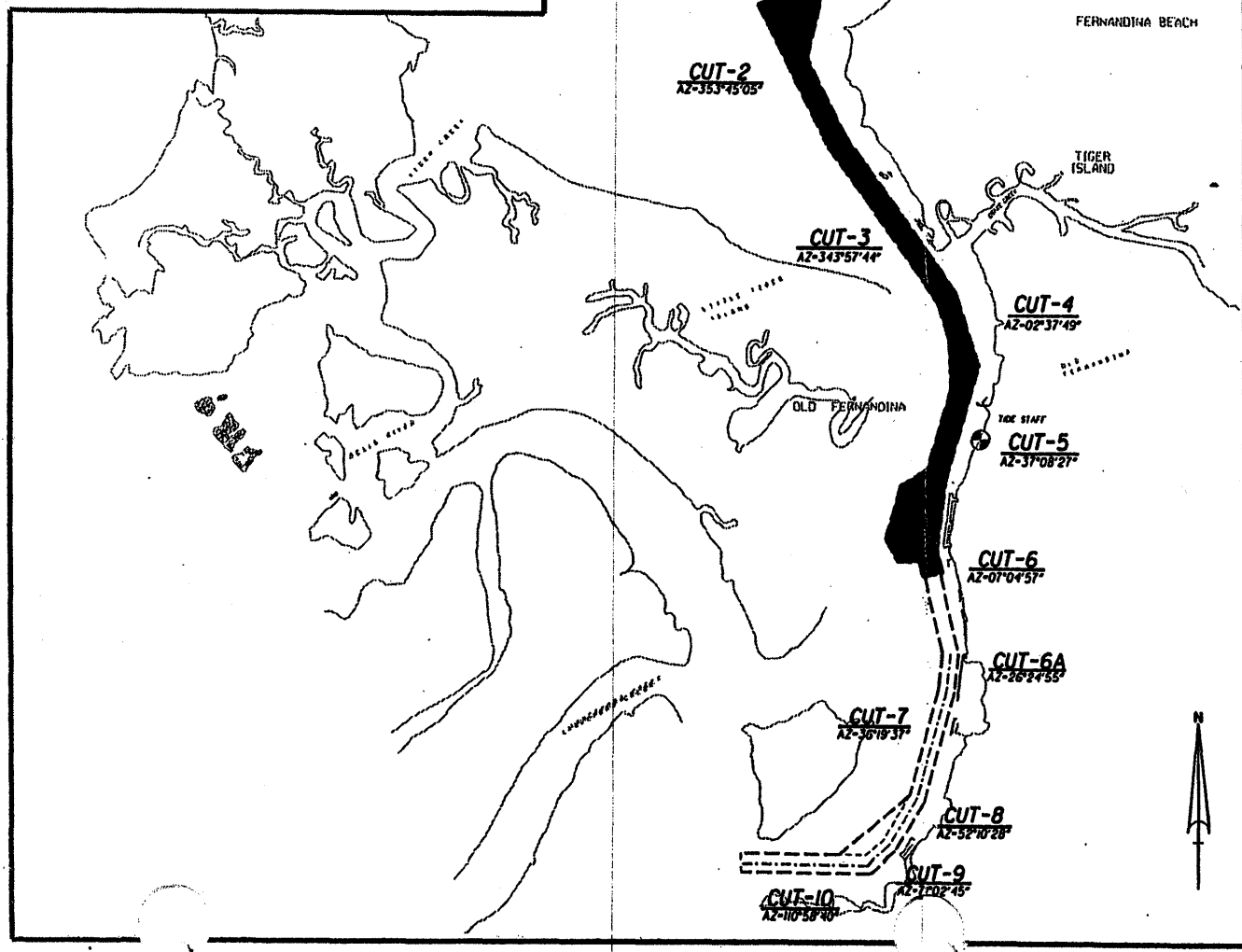
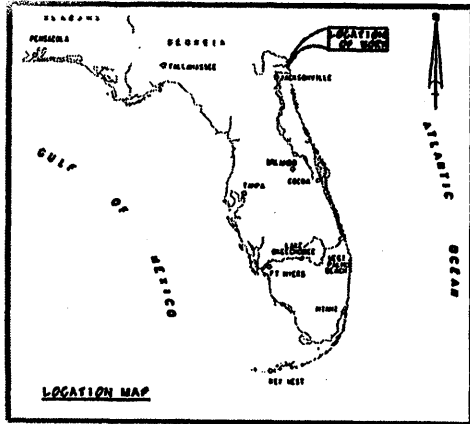
green sea turtle	<i>Chelonia mydas</i>
Kemp's Ridley sea turtle	<i>Lepidochelys kempii</i>
Loggerhead sea turtle	<i>Caretta caretta</i>
West Indian manatee	<i>Trichechus manatus</i>
Northern Right Whale	<i>Eubalaena glacialis</i>
wood stork	<i>Mycteria americana</i>

All standard conditions and protection practices for the whales, sea turtles, and all other local threatened or endangered species will be adhered to during the dredging and disposal operations.

EVALUATION FACTORS: All factors which may be relevant to the proposal will be considered including the cumulative effects thereof. Among these are conservation, economics, aesthetics, general environmental concerns, wetlands, historic resources, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shoreline erosion and accretion, recreation, seagrasses, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, consideration of property ownership and, in general, the needs and welfare are of the people.

HISTORICAL RESOURCES: Prior coordination with The National Register of Historic Resources revealed that no recorded historic resources exist in the project area. However, if such resources are found within the project area during maintenance, all precautions will be taken to preserve those resources in their pre-discovery condition. Any unusual items as observed by Corps personnel or by the Contractor to have historical or archeological value shall be reported as soon as practicable.

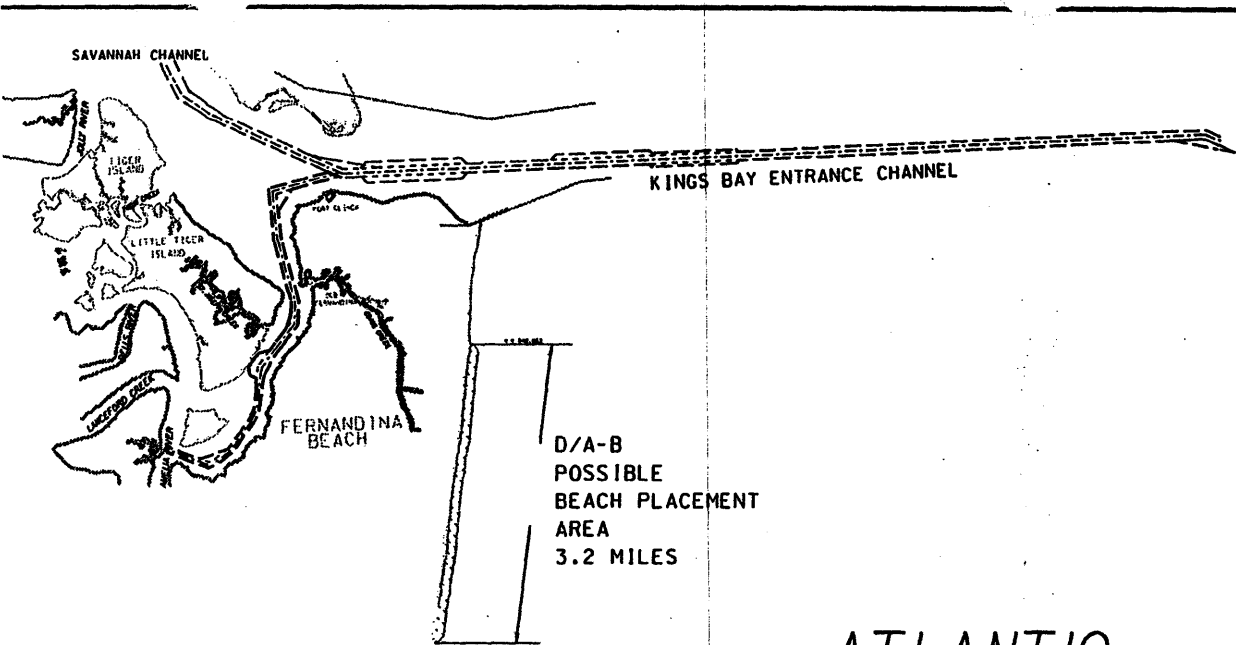
FERNANDINA HARBOR



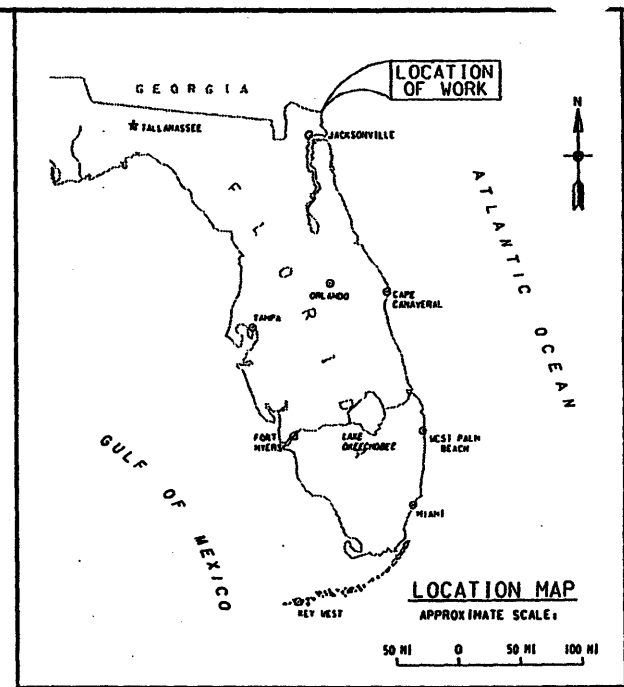
U.S. ARMY CORPS OF ENGINEERS
JACKSONVILLE DISTRICT

PUBLIC NOTICE
MAINTENANCE DREDGING
FERNANDINA HARBOR
INNER CHANNEL AND
TURNING BASIN

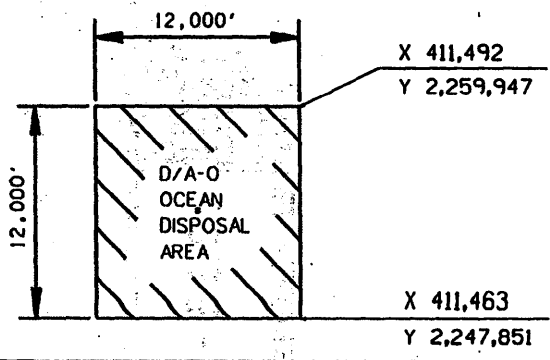
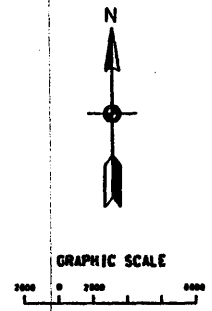
DATE: JULY 99 DRAWING NUMBER: 1



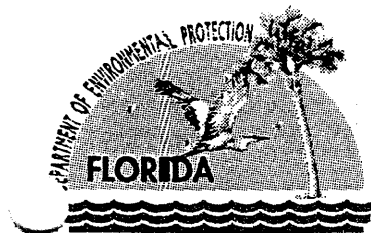
ATLANTIC OCEAN



VICINITY MAP



U.S. ARMY CORPS OF ENGINEERS JACKSONVILLE DISTRICT	
PUBLIC NOTICE	
MAINTENANCE DREDGING FERNANDINA HARBOR INNER CHANNEL AND TURNING BASIN	
DATE: JULY 99	DRAWING NUMBER 2



Jeb Bush
Governor

Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

David B. Struhs
Secretary

CONSOLIDATED JOINT COASTAL PERMIT AND SOVEREIGN SUBMERGED LANDS AUTHORIZATION

Permitee:

Mr. Richard Bonner, P.E.
U. S. Army Corps of Engineers
Jacksonville District
Post Office Box 4970
Jacksonville, Florida 32232-0019

Permit Number: 0129228-001-JC

Date of Issuance: March 13, 2000

Expiration Date: March 13, 2010

County: Nassau

Project: Fernandina Harbor Inner Channel
and Turning Basin Maintenance Dredging

This permit is issued under the authority of Chapter 161 and Part IV of Chapter 373, Florida Statutes (F.S.), and Title 62, Florida Administrative Code (F.A.C.). This permit constitutes a finding of consistency with Florida's Coastal Zone Management Program, as required by Section 307 of the Coastal Management Act. This permit also constitutes certification of compliance with water quality standards under Section 404 of the Clean Water Act, 33 U.S.C. 1344.

This activity also requires a proprietary authorization, as the activity is located on sovereign submerged lands owned by the Board of Trustees of the Internal Improvement Trust Fund, pursuant to Article X, Section 11 of the Florida Constitution, and Sections 253.002 and 253.77, F.S. In addition to the above, this proprietary authorization has been reviewed in accordance with Chapter 253, F.S., Chapter 18-21, and Section 62-343.075, F.A.C., and the policies of the Board of Trustees. As staff to the Board of Trustees, the Department has reviewed the activity described below, and has determined that the activity qualifies for a consent to use sovereign, submerged lands, as long as the work performed is located within the boundaries as described herein and is consistent with the terms and conditions herein. Therefore, consent is hereby granted, pursuant to Chapter 253.77, Florida Statutes to perform the activity on the specified sovereign submerged lands.

The U. S. Army Corps of Engineers (Corps) is hereby authorized to construct the work in accordance with the permit project description and conditions, including the water quality monitoring requirements, and other documents attached hereto or on file with the Department and specifically made a part hereof.

The Department will enter into a contractual agreement with the City of Fernandina Beach, under which the City will be responsible for conducting monitoring and beach maintenance activities for the protection of nesting marine turtles, their hatchlings and their habitat. The agreement is enforceable against the City independent of this permit.

"Protect, Conserve and Manage Florida's Environment and Natural Resources"

Printed on recycled paper.

PROJECT DESCRIPTION:

The project is to maintenance dredge the Fernandina Harbor Inner Channel and Turning Basin in accordance with final plans and specifications and the Specific Conditions of this permit. Up to 350,000 cubic yards are expected to be removed during each dredge event to restore the channel and basin depths. Channel Cut 1 through Cut 5 will be maintained to a depth of -37 ft. (MLLW), the Turning Basin to a depth of -36 ft., and Channel Cut 6 through Cut 10 to a depth of -29 ft. The dredged material consists of fine grained sand with percent fines ranging from less than 1% to less than 50% passing through the #200 sieve.

Beach quality material may be placed between 0.7 and 12.0 miles south of the St. Mary's Entrance Channel south jetty on Amelia Island within the North Beach Disposal Area, the Nearshore Disposal Area, the South Beach Disposal Area, or at the groin field on the Inlet shoreline of Ft. Clinch, in accordance with Specific Condition 2 of this permit. Non-beach quality material will be placed offshore in the Nearshore Disposal Area or in the Fernandina Ocean Dredged Material Disposal Site (ODMDS) located approximately 12.5 miles south-southeast from the south jetty.

The dredged material will be handled such that only material containing less than 20 percent fines will be placed in the Nearshore Disposal Area. Material containing greater than 20% fines will be placed in the Fernandina ODMDS. During construction an on-site inspector with training in the determination of sediment characteristics will evaluate the suitability of dredged material with less than 20% fines for nearshore disposal vs. ocean disposal.

The applicant has also requested a variance (File Number VE-45-728) from Rule 62-4.242(2)(a)2.b. F.A.C. to allow a temporary elevation of turbidity, not exceeding 29 nephelometric turbidity units (NTUs) above background conditions, within the Fort Clinch Aquatic Preserve, at the edge of a 150 meter mixing zone.

LOCATION:

Located in the Amelia River, from the St. Mary's River to the Port of Fernandina, Nassau County, Section 7, Township 3 North, Range 28 East, partially within the Ft. Clinch State Park Aquatic Preserve (Outstanding Florida Waters), Class III Waters.

GENERAL CONDITIONS:

1. All activities approved shall be implemented as set forth in the drawings incorporated by reference and in compliance with the conditions and requirements of this document. The Corps shall notify the Department in writing of any anticipated significant deviation from this authorization prior to implementation so that the Department can determine whether a modification is required. If the Department determines that a deviation is significant, then the Corps or the local sponsor, as appropriate, shall apply for and obtain the modification prior to its implementation.

2. If, for any reason, the Corps does not comply with any condition or limitation specified herein, the Corps shall immediately provide the Department with a written report containing the following information: a description of and cause of noncompliance; and the period of noncompliance, including dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance. Compliance with the provisions of this condition shall not preclude the Department from taking any enforcement action allowed under state law to the extent that federal sovereign immunity has been waived under 33 U.S.C. 1323 and 1344(t).
3. The Corps shall obtain any applicable licenses or permits which may be required by federal, state, local or special district laws and regulations. Nothing herein constitutes a waiver or approval of other Department permits or authorizations that may be required for other aspects of the total project. Projects shall not proceed until any other required permits or authorizations have been issued by the responsible agency.
4. Nothing herein conveys title to land or water, constitutes State recognition or acknowledgment of title, or constitutes authority for the use of sovereign land of Florida seaward of the mean high-water line, or, if established, the erosion control line, unless herein provided, and the necessary title, lease, easement, or other form of consent authorizing the proposed use has been obtained from the State.
5. Any delineation of the extent of a wetland or other surface water submitted as part of the application, including plans or other supporting documentation, shall not be considered specifically approved unless a specific condition of this authorization or a formal determination under section 373.421(2), F.S., provides otherwise.
6. Nothing herein conveys to the Corps or creates in the Corps any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the Corps or local sponsor, or convey any vested rights or any exclusive privileges.
7. This document or a copy thereof, complete with all conditions, attachments, modifications, and time extensions shall be kept at the work site on the authorized activity. The Corps shall require the contractor to review this document prior to commencement of the authorized activity.
8. The Corps specifically agrees to allow Department personnel with proper identification, at reasonable times and in compliance with Corps specified safety standards access to the premises where the authorized activity is located or conducted for the purpose of ascertaining compliance with the terms of this document and with the rules of the Department and to have access to and copy any records that must be kept; to inspect the facility, equipment, practices, or

operations regulated or required; and to sample or monitor any substances or parameters at any location reasonably necessary to assure compliance. Reasonable time may depend on the nature of the concern being investigated.

9. At least forty-eight (48) hours prior to the commencement of authorized activity, the Corps shall submit to the Department a written notice of commencement of activities indicating the anticipated start date and the anticipated completion date.

10. If historic or archaeological artifacts are discovered at any time on the project site, the Corps shall immediately notify the State Historic Preservation Officer, and if a significant deviation is necessary, shall also notify the Department.

11. Within a reasonable time after completion of project construction or a periodic maintenance dredging event, the Corps shall submit to the Department a written statement of completion. This statement shall notify the Department that the work has been completed as authorized and shall include a description of the actual work completed. The Department shall be provided, if requested, a copy of any as-built drawings required of the contractor or survey performed by the Corps.

SPECIFIC CONDITIONS:

1. Prior to each dredging event, the Corps will provide two copies of final construction plans and specifications for all authorized activities, which include the project specifications listed in the Department's Consolidated Notice of Intent to Issue a Joint Coastal Permit and Authorization to Use Sovereign Submerged Lands.

2. The permittee and the Department, within their respective authorities and funding, shall ensure that beach compatible dredged material is disposed on Florida's beaches to the extent economically feasible consistent with Florida's beach management plan adopted pursuant to Chapter 161, F.S. and other beneficial uses criteria as may be specified by the Department and applicable federal standards. To further the parties goals for sediment management, prior to each dredging event the Corps shall provide the Department with existing geotechnical information characterizing the sediments to be dredged and alternative disposal options with projected costs to allow the Department to participate in funding alternative disposal options over the least costly method.

3. All fill material placed shall be sand that is similar to that already existing at the beach site in both coloration and grain size distribution. All such fill material shall be free of construction debris, rocks, or other foreign matter and shall not contain, on average, greater than 10 percent fines (i.e., silt and clay) (passing the #200 sieve) and shall not contain, on average, greater than 5 percent coarse gravel or cobbles, 20% whole shell (retained by the #4 sieve). All such material shall be removed and disposed by the Contractor as approved by the Contracting

Officer (U.S. Army Corps of Engineers) (Plans and Specifications, Section 2391 paragraph 13.1).

4. In the event a hopper dredge is utilized for sand excavation, all conditions in the NMFS Biological Opinion for hopper dredging along the S.E. U.S. Atlantic Coast (dated August 25, 1995) and Interim Biological Opinion dated April 9, 1997, as amended in the Regional biological Opinion dated September 25, 1997, must be forward. The Corps will forward to the Bureau of Protected Species Management in Tallahassee copies of the reports specified in Condition 6 of this opinion.

5. In the event that the City of Fernandina Beach does not conduct all necessary marine turtle protection and monitoring requirements, the Corps is still responsible for these marine turtle protection conditions, those specified in the applicable U.S. Fish and Wildlife Service Biological Opinion, and the plans and specifications for this project.

6. At least 30 days prior to the commencement of each maintenance dredging event to be conducted during the term of this permit, the permittee shall submit to the DEP Bureau of Beaches and Coastal Systems, 3900 Commonwealth Boulevard, Mail Station 300, Tallahassee, Florida 32399-3000 and to the DEP Northeast District Office, Submerged Lands and Environmental Resources Program, 7825 Baymeadows Way, Suite 200B, Jacksonville, Florida 32256-7577, a proposed schedule of dredging for the maintenance dredging event.

Water Quality Monitoring Required:

Parameter: Turbidity - Nephelometric Turbidity Units (NTUs)

Dredging Location:

Frequency: Every 4 four hours during all daylight dredging operations.

Background: 500 meters from the suction head in the opposite direction of the prevailing current flow, clearly outside the influence of any turbid plume. Samples shall be collected from the surface, mid-depth, and 1 meter above the bottom.

Compliance: No more than 150 meters downcurrent from the dredge site, in the densest portion of any visible turbidity plume. Samples shall be collected from the surface, mid-depth, and 1 meter above the bottom.

Beach and Nearshore Disposal Sites:

Frequency: Every 4 four hours during all daylight dredging operations.

Background: At a point approximately 150 meters offshore and 1,000 meters up-current from the point where discharge water is re-entering waters of the State (discharge point), clearly outside of the influence of any turbid plume. Samples shall be

collected at the surface and one meter above the bottom.

Compliance: At a point approximately 150 meters offshore and no more than 150 meters downcurrent from the discharge point within the densest portion of any visible turbidity plume. Samples shall be collected from the surface and 1 meter above the bottom.

The compliance locations given above shall be considered the limits of the temporary mixing zone for turbidity allowed during construction. During all maintenance dredging and disposal operations, turbidity levels shall not exceed these standards and mixing zone limits. If monitoring reveals turbidity levels at the compliance sites greater than 29 NTUs above the associated background turbidity levels, construction activities shall cease immediately and not resume until corrective measures have been taken and turbidity has returned to acceptable levels.

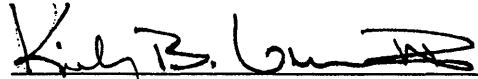
The following measures shall be taken by the permittee whenever turbidity levels at the limit of the mixing zone exceed the standards described in the Monitoring Required section, pursuant to Rule 62-302, F.A.C.:

- a. Immediately cease all work contributing to the water quality violation.
- b. Modify the work procedures that were responsible for the violation.
- c. Notify the Bureau of Beaches and Coastal Systems at (850) 487-4471 and the DEP Northeast District Office at (904) 448-4340 within 24 hrs. of the time the violation is first detected.

Copies of all reports (Turbidity Monitoring Test Report, Section 01131, Appendix No. A, Plans and Specifications) shall be submitted to the Bureau of Beaches and Coastal Systems in Tallahassee on a weekly basis within seven days of collection. The data shall be submitted under a cover letter containing the following information: (1) permit number; (2) a statement describing the methods used in collection, handling, storage and analysis of the samples; (3) a map indicating the sampling locations; and (4) a statement by the individual responsible for implementation of the sampling program concerning the authenticity, precision, limits of detection and accuracy of the data.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION



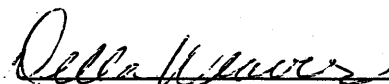
Kirby B. Green, III, Deputy Secretary

Copies furnished to:

Don Fore, USACOE, Jacksonville
Pricilla Arnold, USACOE, Jacksonville
City of Fernandina Beach
Eric Olsen, Olsen and Associates
Don Gerteisen, DEP, Division of Recreation and Parks, M.S. 585
Mark Latch, DEP, Division of Recreation and Parks, M.S. 530
Jeremy Tyler, DEP, Northeast District
Clifton Maxwell, DEP, Fort Clinch State Park
District Biologist, DEP, Division of Recreation and Parks, District 2 Office, Gainesville
Leslie McFetridge, DEP, Fort Clinch Aquatic Preserve
Robbin Trindell, FWC, BPSM
Office of General Counsel, DEP
Russell Snyder, OBCS
Permit Information Center, OBCS
File

FILING AND ACKNOWLEDGMENT

FILED, on this date, pursuant to Section 120.52, Florida Statutes, with the designated
Department Clerk, receipt of which is hereby acknowledged.

 3/13/00
Deputy Clerk Date



Jeb Bush
Governor

Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

David B. Struhs
Secretary

State of Florida Department of Environmental Protection and City of Fernandina Beach

In re: File No. 0129228-001-JC
Fernandina Harbor Inner Channel and Turning Basin Maintenance Dredging

AGREEMENT

I. WHEREAS, the U.S. Army Corps of Engineers has submitted an application for, and the Department has issued, Joint Coastal Permit No. 0129228-001-JC authorizing maintenance dredging of the Fernandina Harbor Inner Channel and Turning Basin.

II. WHEREAS, the dredging activity includes beach and nearshore disposal of beach quality sand along approximately 11.3 miles of shoreline on Amelia Island south of the St. Mary's Entrance Channel.

III. WHEREAS, issuance of a joint coastal permit under chapter 161 and part IV of chapter 373 of the Florida Statutes constitutes certification of compliance with state water quality standards pursuant to section 401 of the Clean Water Act, 33 U.S.C. 1341; and where applicable constitutes a finding of consistency with Florida's Coastal Zone Management Program, as required by section 307 of the Coastal Zone Management Act, 16 U.S.C. Section 1456, 15 C.F.R. Part 930, and section 380.23 of the Florida Statutes;

IV. WHEREAS, the U.S. Army Corps of Engineers and the Department have agreed to exclude non-water quality specific conditions from the final permit\water quality certificate and include them in the U.S. Army Corps of Engineers final construction plans and specifications for the contract.

V. WHEREAS, the City of Fernandina Beach, has agreed to conduct a marine turtle protection program as the local government which will benefit from the placement of beach compatible dredge material on the beaches within the limits of Fernandina Beach and to contract the local marine turtle permit holder to ensure this marine turtle protection plan is implemented.

VI. WHEREAS, this agreement is entered into in consideration of the issuance by the Department of Permit No. 0129228-001-JC.


"Protect, Conserve and Manage Florida's Environment and Natural Resources"

City of Fernandina Beach and the State of Florida, Department of Environmental Protection ("Department") agree as follows:

1. The City hereby agrees to perform the activities set forth in the Marine Turtle Protection Plan attached hereto as Exhibit 1 and incorporated herein by reference.
2. The aforementioned Plan will incorporate the Department's standard marine turtle monitoring conditions and will be in accordance with the Bureau of Protected Species Management Guidelines for such activities.
3. This agreement constitutes Final Agency Action under Chapter 120, Florida Statutes. The City of Fernandina Beach hereby recognizes and agrees that compliance with the terms herein will be enforceable by the Department against the City utilizing all appropriate remedies available, including, but not limited to, the provisions of Chapters 161.054; 373; 403.121, 403.141, 403.161; and 120, Florida Statutes.
4. Within thirty (30) days from the execution of this agreement, City of Fernandina Beach shall cause this agreement to be recorded in the public records of Nassau County, Florida. A copy of the recorded agreement shall be sent to the Department within 5 days of recording.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

CITY OF FERNANDINA BEACH



Kirby B. Green, III
Deputy Secretary

13 March 2000

DATE

DATE



United States Department of the Interior

FISH AND WILDLIFE SERVICE
6620 Southpoint Drive South
Suite 310
Jacksonville, Florida 32216-0958

IN REPLY REFER TO:
FWS/R4/ES-JAFL

May 3, 2000

Mr. James C. Duck, Chief
Planning Division
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019
(Attn: Paul Stodola)

Re: Biological Opinion on the Proposed Maintenance Dredging of Fernandina Harbor, and a Portion of Cut-1N of the Entrance Channel to Fernandina Harbor and Kings Bay, Georgia, Nassau County, Florida (FWS Log. No. 00-392)

Dear Mr. Duck:

Enclosed is our biological opinion based on our review of the above proposed work and its effects on nesting sea turtles. In your December 17, 1999, letter requesting initiation of formal consultation for the project, which we received December 20, you indicated that the proposed dredging and potential beach disposal may affect two species under our jurisdiction: the Florida manatee (*Trichechus manatus latirostris*) and the loggerhead sea turtle (*Caretta caretta*).

Regarding the manatee, your letter stated that the Corps intends to include the standard construction conditions in the project plans and specifications. We concur with these special conditions. Although originally scheduled for October and November, the proposed project may begin as early as August (P. Stodola, pers. comm.) and require three months to complete. In either instance, some part of the scheduled work apparently will coincide with the annual fall migration of manatees from the Carolinas, Georgia, and North Florida to warmer waters in central and south Florida. Their migration route includes the Amelia River, a portion of which is within the proposed project footprint. Since this migration will bring more manatees than at other times into potential contact with the dredging operations, we believe additional special conditions are necessary in order to make it unlikely for the proposed project to have any adverse effects on the manatee. We therefore recommend that the Corps add the following special conditions to the plans and specifications.

- The Corps shall provide a dedicated, experienced manatee observer during daylight hours when dredging during the months of September and October. The observer shall be equipped with polarized sunglasses and be in a position to observe all waters within 300 feet of the dredge barge. The manatee observer will advise the appropriate operations personnel when a manatee is within 300 feet of the operations. Appropriate personnel shall then follow the standard construction conditions. The manatee observer will give an all clear signal when the manatee(s) has departed the project area of its own volition.

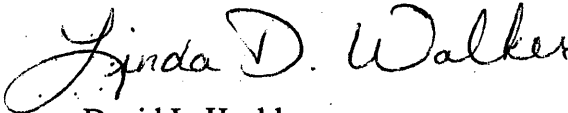
- The Corps shall provide mooring bumpers on all barges, tugs, and similar large vessels wherever and whenever there is a potential for manatees to be crushed between two moored vessels. The bumpers shall provide a minimum stand-off distance of four feet.

Based on our review of this project and the precautions that will be taken to protect manatees, including the two additional precautions referenced above, the Service believes this project is not likely to adversely affect the manatee. Therefore, formal consultation is not required for this species.

However, we concur with your "may effect" determination concerning the loggerhead sea turtle. Besides this species, other listed sea turtles which may nest within the proposed beach spoil disposal site are the green (*Chelonia mydas*) and leatherback (*Dermochelys coriacea*) sea turtles. All three species are addressed in the biological opinion in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

The enclosed biological opinion is based on information provided in your December 17 letter, the Public Notice date August 4, 1999, plans and specifications dated December, 1999, and other sources of information. A complete administrative record of this consultation is on file in the Service's Jacksonville Field Office. Should you have any questions regarding this matter, please contact John Milio of my staff at (904) 232-2580, extension 112.

Sincerely,


for David L. Hankla
Field Supervisor

Enclosure

S:nassfhbo\JM\acm

**Biological Opinion on the Proposed Maintenance Dredging of Fernandina Harbor,
and a Portion of Cut-1N of the Entrance Channel to Fernandina Harbor and Kings Bay,
Georgia, Nassau County, Florida**

CONSULTATION HISTORY

On August 4, 1999, the Corps released a Public Notice (No. PN-CO-FEH-238) concerning the proposed maintenance dredging of Fernandina Harbor. The public notice included a list of federally listed species that could occur within the project area. The list includes three sea turtles, the manatee, the wood stork (*Mycteria americana*) and Northern right whale (*Eubalaena glacialis*). The whale and all sea turtle species within open waters are under the jurisdiction of the National Marine Fisheries Service. On December 20, 1999, we received the Corps' December 17, 1999, letter requesting initiation of formal consultation with our agency for the Florida manatee and loggerhead sea turtle. Prior to our letter of acknowledgment dated January 12, 2000, the Corps verbally informed us of its desire to initiate formal consultation for the same species on the maintenance dredging of Cut-1N of the entrance channel to Fernandina Harbor and Kings Bay Georgia. Because of their similar actions and impacts, we agreed in our January letter to combine our response for both projects in one opinion.

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTIONS

The proposed actions involve the following sites: the 2.3-mile long entrance channel settling basin located east and west of the waterward end of the jettys at the mouth of the St. Marys River; a 2.3-square mile Offshore Dredged Material Disposal Site (ODMDS) located about 12.5 miles south-southeast of the south jetty in the Atlantic Ocean; cuts 1 through 5 of the Fernandina Harbor inner channel, which extend south of its confluence with the entrance channel for about 2.8 miles within the Amelia River; a pipeline easement extending 0.7 mile south from the toe end of the south jetty between mean high water and the dune vegetation line; two separate beach disposal areas: a 3.6- mile long north area beginning about 0.7 mile from the south jetty, and a 5.2- mile south area beginning approximately 2.5 south of the north area; and a 2.5- mile long nearshore spoil disposal area between the two beach disposal areas. The boundaries of the action area for the two projects extends from the southern end of Cut 5 in the Amelia River north to the confluence of the shipping channel with the entrance channel, then east to the eastern end of Cut 1N in the Atlantic Ocean, south to southern edge of the ODMDS, then west to the southern end of the south beach disposal site.

For the entrance channel project, the Corps proposes to restore the authorized 49-foot depth, plus a 2-foot allowable overdepth, using a hydraulic cutterhead suction dredge to remove about 300,000 cubic yards of beach quality material between stations 100+00 and 220+00. The dredge site is within the Fort Clinch State Park Aquatic Preserve. An 18-inch, metal or plastic pipe will convey the spoil material from the dredge site to the north beach disposal area. The pipe will emerge from the water at the toe end of the south jetty and be positioned between mean high water and the dune vegetation line. The pipeline easement is within Ft. Clinch State Park. The north beach disposal area is contiguous with the aquatic preserve. Front-end loaders and bulldozers are expected to move and grade, respectively, the deposited spoil.

For the inner channel project, the Corp proposes to restore the 36-foot authorized depth, plus a 1-foot allowable overdepth, using a clamshell dredge to remove between 300,000 and 350,000 cubic yards of primarily silts and clays between cuts 1 and 5 and the ship turning basin. Tugs will transport the material, loaded onto special spoil barges, to the ODMDS for disposal. In the event that pockets of sand are encountered, the Corps will consult with the Florida Department of Environmental Protection regarding other disposal options. The south beach and nearshore disposal areas represent two of those options.

In addition to the dredge barge, spoil barges, service tugs, loaders, and tracked vehicles, the projects are expected to use, at a minimum, the following additional watercraft, vehicles, and equipment: an equipment barge, a fuel barge, a crew boat, 4-wheel drive vehicles, a pipe transportation vehicle, a land-based booster pump, and wide-area lighting for nighttime work.

STATUS OF THE SPECIES

The reproductive strategy of sea turtles involves producing large numbers of offspring to compensate for the high natural mortality through their first several years of life. However, for at least two decades, several human-caused mortality factors have contributed to the decline of sea turtle populations along the Atlantic coast and in the Gulf of Mexico (National Research Council 1990a). These factors include commercial overutilization of eggs and turtles, incidental catches in commercial fishing operations, degradation of nesting habitat by coastal development, and marine pollution and debris. Therefore, human activities that affect the behavior and/or survivability of turtles on their remaining nesting beaches, particularly the few remaining high density nesting beaches, could seriously reduce our ability to conserve sea turtles.

Loggerhead Sea Turtle

The loggerhead sea turtle (*Caretta caretta*), listed as a threatened species on July 28, 1978 (43 FR 32800), inhabits the continental shelves and estuarine environments along the margins of the Atlantic, Pacific, and Indian Oceans. Loggerhead sea turtles nest within the continental U.S. from Louisiana to Virginia. Major nesting concentrations in the U.S. are found on the coastal islands of North Carolina, South Carolina, and Georgia, and on the Atlantic and Gulf coasts of Florida (Hopkins and Richardson 1984). Total estimated nesting in the Southeast is approximately 50,000 to 70,000 nests per year (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1991b).

From a global perspective, the southeastern U.S. nesting aggregation is of paramount importance to the survival of the species and is second in size only to that which nests on islands in the Arabian Sea off Oman (Ross 1982, Ehrhart 1989, National Marine Fisheries Service and U.S. Fish and Wildlife Service 1991b). The status of the Oman colony has not been evaluated recently, but its location in a part of the world that is vulnerable to disruptive events (e.g., political upheavals, wars, catastrophic oil spills) is cause for considerable concern (Meylan *et al.* 1995). The loggerhead nesting aggregations in Oman, the southeastern U.S., and Australia account for about 88 percent of nesting worldwide (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1991b). About 80 percent of loggerhead nesting in the southeastern U.S. occurs in six Florida counties (Brevard, Indian River, St. Lucie, Martin, Palm Beach, and

Broward Counties) (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1991b).

Recent genetic analyses using restriction fragment analysis and direct sequencing of mitochondrial DNA (mtDNA) have been employed to resolve management units among loggerhead nesting cohorts of the southeastern U.S. (Bowen *et al.* 1993; B.W. Bowen, University of Florida, Gainesville, in litt., November 17, 1994, and October 26, 1995; Encalada *et al.* 1998). Assays of nest samples from North Carolina to the Florida Panhandle have identified three genetically distinct nesting populations: (1) Northern nesting population - Hatteras, North Carolina, to Cape Canaveral, Florida; (2) South Florida nesting population - Cape Canaveral to Naples, Florida; and (3) Florida Panhandle nesting population - Eglin Air Force Base and the beaches around Panama City, Florida. These data indicate that gene flow between the three regions is very low. If nesting females are extirpated from one of these regions, regional dispersal will not be sufficient to replenish the depleted nesting population (Bowen *et al.* 1993, B.W. Bowen, University of Florida, Gainesville, in litt., October 26, 1995). Therefore, impacts on loggerheads in the northern nesting population, in particular, become more significant because of the smaller total population, as well as observed population declines in Georgia and South Carolina (Frazer 1983, 1986; J. Richardson, pers. comm. cited in Dodd and Byles 1991; National Marine Fisheries Service and U.S. Fish and Wildlife Service 1991b).

Green Sea Turtle

The green sea turtle (*Chelonia mydas*) was listed under the ESA on July 28, 1978 (43 FR 32800). Breeding populations of the green turtle in Florida and along the Pacific Coast of Mexico are listed as endangered; all other populations are listed as threatened. The green turtle has a worldwide distribution in tropical and subtropical waters. Major green turtle nesting colonies in the Atlantic occur on Ascension Island, Aves Island, Costa Rica, and Surinam.

Within the U.S., green turtles nest in small numbers in the U.S. Virgin Islands and Puerto Rico, and in larger numbers along the east coast of Florida, particularly in Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward Counties (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1991a). Nesting also has been documented along the Gulf coast of Florida on Santa Rosa Island (Okaloosa and Escambia Counties) and from Pinellas County through Collier County (Florida Department of Environmental Protection, unpubl. data). Green turtles have been known to nest in Georgia, but only on rare occasions (Georgia Department of Natural Resources, unpubl. data). The green turtle also nests sporadically in North Carolina (North Carolina Wildlife Resources Commission, unpubl. data). The first documentation of green turtle nests in South Carolina were reported in 1996 (S. Murphy, South Carolina Department of Natural Resources, pers. comm., 1996). Unconfirmed nesting of green turtles in Alabama has also been reported (R. Dailey, Bon Secour National Wildlife Refuge, pers. comm., 1995).

Leatherback Sea Turtle

The leatherback sea turtle (*Dermochelys coriacea*), listed as an endangered species on June 2, 1970 (35 FR 8491), nests on shores of the Atlantic, Pacific and Indian Oceans. Non-breeding animals have been recorded as far north as the British Isles and the Maritime Provinces of Canada

and as far south as Argentina and the Cape of Good Hope (Pritchard 1992). Nesting grounds are distributed circumglobally, with the Pacific Coast of Mexico supporting the world's largest known concentration of nesting leatherbacks. The largest nesting colony in the wider Caribbean region is found in French Guiana, but nesting occurs frequently, although in lesser numbers, from Costa Rica to Columbia and in Guyana, Surinam, and Trinidad (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1992, National Research Council 1990a).

The leatherback regularly nests in the U.S. in Puerto Rico, the U.S. Virgin Islands, and along the Atlantic coast of Florida as far north as Georgia (National Marine Fisheries Service and U.S. Fish and Wildlife Service 1992). Leatherback turtles have been known to nest in Georgia, South Carolina, and North Carolina, but only on rare occasions (B. Winn, Georgia Department of Natural Resources, pers. comm., 1996; S. Murphy, South Carolina Department of Natural Resources, pers. comm., 1996; R. Boettcher, North Carolina Wildlife Resources Commission, pers. comm., 1998). Leatherback nesting also has been reported on the northwest coast of Florida (LeBuff 1990; Florida Department of Environmental Protection, unpubl. data); a false crawl (non-nesting emergence) has been observed on Sanibel Island (LeBuff 1990).

ENVIRONMENTAL BASELINE

Status of the Species Within the Action Area

Loggerhead Sea Turtle

The loggerhead sea turtle nesting and hatching season for Northern Florida Atlantic beaches, which includes Nassau County, extends from April 15 through November 30. Incubation ranges from about 45 to 95 days.

Index nesting beach data recorded over the last 11 years for approximately 15 miles of Nassau County beaches revealed an average nesting density of about 4.6 nests per linear mile of beach on Amelia Island south of Ft. Clinch State Park (FCSP). Within FCSP, the density averages 5.3 nests per linear mile. The combined density (4.7) is the second lowest by county for the northern nesting population in Florida. The potential beach spoil disposal areas for both projects cover approximately 8.8 miles. Potential impacts from the pipeline cover an additional 0.7 mile.

Green Sea Turtle

The green sea turtle nesting and hatching season for Northern Florida Atlantic beaches, which includes Nassau County, extends from May 15 through November 15. Incubation ranges from about 45 to 75 days.

The index nesting beach surveys between 1989-1999 located a total of 10 nests within Nassau County. These low numbers are consistent with nest numbers in Duval, St. Johns, and Flagler counties to the south. Volusia County is the northernmost county on Florida's Atlantic Coast supporting significant numbers of nesting green turtles.

Leatherback Sea Turtle

The leatherback sea turtle nesting and hatching season for Northern Florida Atlantic beaches, which includes Nassau County, extends from April 15 through September 30. Incubation ranges from about 55 to 75 days.

The index beach nesting surveys recorded a single nesting event in Nassau County since 1989. The large majority of leatherback sea turtles that nest on Florida's Atlantic Coast do so south of Indian River County.

Factors Affecting Species Environment Within the Action Area

Much of the coastal beach within Nassau County, especially the northern area, has experienced severe erosion. Previous efforts to control and compensate for this erosion include the placement of hardened tubular revetments in some of the worst locations, and replacement of lost sand in others through beach renourishment from dredging projects. Placement of the tubular revetments has been as far landward as the remaining beach allowed. These revetments typically are covered in sand and graded so as to minimize potential impacts to nesting sea turtles. The renourishment projects are ongoing. Other factors adversely affecting nesting sea turtles include beach driving, coastal lighting, and predation. Vehicles on a beach can cause direct mortality to sea turtles by running over adults, hatchlings, and nests. Some indirect adverse effects are increased number of non-nesting attempts and false crawls due to vehicle presence, lighting, and sand compaction, increased hatchling mortality due to sand compaction and disorientation/entrapment from vehicle lights/tire ruts, and greater exposure to nocturnal and diurnal predators. Both feral (raccoons) and free-ranging domestic animals (cats) can prey on sea turtle eggs and hatchlings. The type, intensity, and direction of coastal lighting can have adverse impacts on adult and hatchling sea turtles. Bright lights illuminating the beach or the sky landward of the beach can repel/misorient swimming and nesting adults, and disorient and misorient emerging hatchlings.

Nassau County does not permit beach driving, but has no special ordinances that address the impacts from coastal lighting or nest or hatchling predation by feral and free-ranging domestic animals.

EFFECTS OF THE ACTION

Beneficial Effects

Placement of sand on a severely eroded beach can increase sea turtle nesting habitat in an area as long as protective measures are incorporated into the project. Also, a properly engineered and constructed beach may be more stable than the eroding one it replaces, thereby benefitting sea turtles.

Direct Effects

Placement of sand on an eroded section of beach or an existing beach in and of itself may not provide suitable nesting habitat for sea turtles. Although beach nourishment may increase the

potential nesting area, significant negative impacts to sea turtles may result if protective measures are not incorporated during construction. Nourishment during the nesting season, particularly on or near high density nesting beaches, can cause increased loss of offspring from human-caused mortality and, along with other mortality sources, may significantly impact the long-term survival of the species. For instance, projects conducted during the nesting and hatching season could result in the loss of sea turtles through disruption of adult nesting activity and by burial or crushing of nests or hatchlings. While a nest monitoring and egg relocation program would reduce these impacts, nests may be inadvertently missed or misidentified as false crawls during daily patrols. In addition, nests may be destroyed by operations at night prior to beach patrols being performed. Even under the best of conditions, about 7 percent of the nests can be misidentified as false crawls by experienced sea turtle nest surveyors (Schroeder 1994).

Nest relocation

Besides the potential for missing nests during a nest relocation program, there is a potential for eggs to be damaged by their movement or for unknown biological mechanisms to be affected. Nest relocation can have adverse impacts on incubation temperature (and hence sex ratios), gas exchange parameters, hydric environment of nests, hatching success, and hatchling emergence (Limpus *et al.* 1979, Ackerman 1980, Parmenter 1980, Spotila *et al.* 1983, McGehee 1990). Relocating nests into sands deficient in oxygen or moisture can result in mortality, morbidity, and reduced behavioral competence of hatchlings. Water availability is known to influence the incubation environment of the embryos and hatchlings of turtles with flexible-shelled eggs, which has been shown to affect nitrogen excretion (Packard *et al.* 1984), mobilization of calcium (Packard and Packard 1986), mobilization of yolk nutrients (Packard *et al.* 1985), hatchling size (Packard *et al.* 1981, McGehee 1990), energy reserves in the yolk at hatching (Packard *et al.* 1988), and locomotory ability of hatchlings (Miller *et al.* 1987).

Comparisons of hatching success between relocated and *in situ* nests have noted significant variation ranging from a 21 percent decrease to a 9 percent increase for relocated nests (Florida Department of Environmental Protection, unpubl. data). Comparisons of emergence success between relocated and *in situ* nests have also noted significant variation ranging from a 23 percent decrease to a 5 percent increase for relocated nests (Florida Department of Environmental Protection, unpubl. data). A 1994 Florida Department of Environmental Protection study of hatching and emergence success of *in situ* and relocated nests at seven sites in Florida found that hatching success was lower for relocated nests in five of seven cases with an average decrease for all seven sites of 5.01 percent (range = 7.19 percent increase to 16.31 percent decrease). Emergence success was lower for relocated nests in all seven cases by an average of 11.67 percent (range = 3.6 to 23.36 percent) (A. Meylan, Florida Department of Environmental Protection, in litt., April 5, 1995).

A final concern about nest relocation is that it may concentrate eggs in an area resulting in a greater susceptibility to catastrophic events. Hatchlings released from concentrated areas also may be subject to greater predation rates from both land and marine predators, because the predators learn where to concentrate their efforts.

Equipment

The placement of pipelines and the use of heavy machinery on the beach during a construction project may also have adverse effects on sea turtles. They can create barriers to nesting females emerging from the surf and crawling up the beach, causing a higher incidence of false crawls and unnecessary energy expenditure.

Artificial lighting

Another impact to sea turtles is disorientation (loss of bearings) and misorientation (incorrect orientation) of hatchlings from artificial lighting. Visual cues are the primary sea-finding mechanism for hatchlings (Mrosovsky and Carr 1967, Mrosovsky and Shettleworth 1968, Dickerson and Nelson 1989, Witherington and Bjorndal 1991). Artificial beachfront lighting is a well documented cause of hatchling disorientation and misorientation on nesting beaches (Philbosian 1976; Mann 1977; Florida Department of Environmental Protection, unpubl. data). In addition, research has also documented significant reduction in sea turtle nesting activity on beaches illuminated with artificial lights (Witherington 1992). Therefore, construction lights along a project beach and on the dredging vessel may deter females from coming ashore to nest, disorient females trying to return to the surf after a nesting event, and disorient and misorient emergent hatchlings from adjacent non-project beaches. Any source of bright lighting can profoundly affect the orientation of hatchlings, both during the crawl from the beach to the ocean and once they begin swimming offshore. Hatchlings attracted to light sources on dredging barges may not only suffer from interference in migration, but may also experience higher probabilities of predation to predatory fishes that are also attracted to the barge lights. This impact could be reduced by using the minimum amount of light necessary (may require shielding) or low pressure sodium lighting during project construction.

Indirect Effects

Changes in the physical environment

Beach nourishment may result in changes in sand density (compaction), beach shear resistance (hardness), beach moisture content, beach slope, sand color, sand grain size, sand grain shape, and sand grain mineral content if the placed sand is dissimilar from the original beach sand (Nelson and Dickerson 1988a). These changes could result in adverse impacts on nest site selection, digging behavior, clutch viability, and emergence by hatchlings (Nelson and Dickerson 1987, Nelson 1988).

Beach compaction and unnatural beach profiles that may result from beach nourishment activities could negatively impact sea turtles regardless of the timing of projects. Very fine sand and/or the use of heavy machinery can cause sand compaction on nourished beaches (Nelson *et al.* 1987, Nelson and Dickerson 1988a). Significant reductions in nesting success (i.e., false crawls occurred more frequently) have been documented on severely compacted nourished beaches (Fletemeyer 1980, Raymond 1984, Nelson and Dickerson 1987, Nelson *et al.* 1987), and increased false crawls may result in increased physiological stress to nesting females. Sand compaction may increase the length of time required for female sea turtles to excavate nests and

also cause increased physiological stress to the animals (Nelson and Dickerson 1988c). Nelson and Dickerson (1988b) concluded that, in general, beaches nourished from offshore borrow sites are harder than natural beaches, and while some may soften over time through erosion and accretion of sand, others may remain hard for 10 years or more.

These impacts can be minimized by using suitable sand and by tilling the beach after nourishment if the sand becomes compacted. The level of compaction of a beach can be assessed by measuring sand compaction using a cone penetrometer (Nelson 1987). Tilling of a nourished beach may reduce the sand compaction to levels comparable to unnourished beaches. However, a pilot study by Nelson and Dickerson (1988c) showed that a tilled nourished beach will remain uncompacted for up to 1 year. Therefore, the Service requires multi-year beach compaction monitoring and, if necessary, tilling to ensure that project impacts on sea turtles are minimized. A root rake with tines at least 42 inches long and less than 36 inches apart pulled through the sand is recommended for compacted beaches. Service policy calls for beaches to be tilled if compaction levels exceed 500 psi.

A change in sediment color on a beach could change the natural incubation temperatures of nests in an area, which, in turn, could alter natural sex ratios. To provide the most suitable sediment for nesting sea turtles, the color of the nourished sediments must resemble the natural beach sand in the area. Natural reworking of sediments and bleaching from exposure to the sun would help to lighten dark nourishment sediments; however, the timeframe for sediment mixing and bleaching to occur could be critical to a successful sea turtle nesting season.

Escarpments

On nourished beaches, steep escarpments may develop along their water line interface as they adjust from an unnatural construction profile to a more natural beach profile (Coastal Engineering Research Center 1984, Nelson *et al.* 1987). These escarpments can hamper or prevent access to nesting sites. Researchers have shown that female turtles coming ashore to nest can be discouraged by the formation of an escarpment, leading to situations where they choose marginal or unsuitable nesting areas to deposit eggs (e.g., in front of the escarpments, which often results in failure of nests due to prolonged tidal inundation). This impact can be minimized by leveling any escarpments prior to the nesting season.

Cumulative Effects

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act. The Service is not aware of any cumulative effects in the project area.

CONCLUSION

After reviewing the current status of the loggerhead, green, and leatherback sea turtles, the environmental baseline for the action area, the effects of the proposed beach nourishment, and the

cumulative effects, it is the Service's biological opinion that the beach nourishment project, as proposed, is not likely to jeopardize the continued existence of the loggerhead, green, and leatherback sea turtles. No critical habitat has been designated for the loggerhead sea turtle; therefore, none will be affected. Critical habitat for the green sea turtle has been designated for the waters surrounding Culebra Island, Puerto Rico, and its outlying keys; while critical habitat for the leatherback sea turtle has been listed for Sandy Point on St. Croix, U.S. Virgin Islands. Because this action does not affect the above critical habitats for the green or leatherback sea turtles, no destruction or adverse modification of that critical habitat is anticipated.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered or threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited under the Act provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are non-discretionary, and must be implemented by the Corp so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, for the exemption in section 7(o)(2) to apply. The Corp has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps (1) fails to assume and implement the terms and conditions or (2) fails to require the applicant to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. In order to monitor the impact of incidental take, the Corps must report the progress of the action and its impacts on the species to the Service as specified in the incidental take statement [50 CFR §402.14(i)(3)].

AMOUNT OR EXTENT OF INCIDENTAL TAKE

The Service has reviewed the biological information and other information relevant to this action. Based on this review, incidental take is anticipated for (1) all sea turtle nests that may be constructed and eggs that may be deposited and missed by a nest survey and egg relocation program within the boundaries of the proposed project; (2) all sea turtle nests deposited during the period when a nest survey and egg relocation program is not required to be in place within the boundaries of the proposed project; (3) harassment in the form of disturbing or interfering with female turtles attempting to nest within the construction area or on adjacent beaches as a result of construction activities; (4) disorientation of hatchling turtles on beaches adjacent to the construction area as they emerge from the nest and crawl to the water as a result of project

lighting; (5) behavior modification of nesting females due to escarpment formation within the project area during a nesting season, resulting in false crawls or situations where they choose marginal or unsuitable nesting areas to deposit eggs; and (6) all nests destroyed as a result of escarpment leveling within a nesting season when such leveling has been approved by the Fish and Wildlife Service.

EFFECT OF THE TAKE

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

REASONABLE AND PRUDENT MEASURES

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize take of loggerhead, green, and leatherback sea turtles.

1. Only beach quality sand suitable for sea turtle nesting, successful incubation, and hatchling emergence shall be used on the project site.
2. If the beach nourishment project will be conducted during the sea turtle nesting season, surveys for nesting sea turtles shall be conducted. If nests are constructed in the area of beach nourishment, the eggs shall be relocated.
3. Immediately after completion of the beach nourishment project and prior to the next three nesting seasons, beach compaction shall be monitored and tilling shall be conducted as required to reduce the likelihood of impacting sea turtle nesting and hatching activities.
4. Immediately after completion of the beach nourishment project and prior to the next three nesting seasons, monitoring shall be conducted to determine if escarpments are present and escarpments shall be leveled as required to reduce the likelihood of impacting sea turtle nesting and hatching activities.
5. The applicant shall ensure that contractors doing the beach nourishment work fully understand the sea turtle protection measures detailed in this incidental take statement.
6. During the sea turtle nesting season, construction equipment and pipes shall be stored in a manner that will minimize impacts to sea turtles to the maximum extent practicable.
7. During the sea turtle nesting season, lighting associated with the project shall be minimized to reduce the possibility of disrupting and disorienting nesting and/or hatchling sea turtles.

TERMS AND CONDITIONS

In order to be exempt from the prohibitions of section 9 of the ESA, the Corp must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. All fill material placed shall be sand that is similar to that already existing at the beach site in both coloration and grain size distribution. All such fill material shall be free of construction debris, rocks, or other foreign matter and shall generally not contain, on average, greater than 10 percent fines (i.e., silt and clay) (passing the #200 sieve) and shall not contain, on average, greater than 5 percent coarse gravel or cobbles, exclusive of shell material (retained by the #4 sieve).

2. Daily early morning sea turtle nesting surveys shall be required if any portion of the beach nourishment project occurs during the period from April 15 through November 30. Nesting surveys shall be initiated 65 days prior to nourishment activities or by April 15, whichever is later. Nesting surveys shall continue through the end of the project or through September 30, whichever is earlier. If nests are constructed in areas where they may be affected by construction activities, eggs shall be relocated per the following requirements.

2a. Nesting surveys and egg relocations shall only be conducted by personnel with prior experience and training in nest survey and egg relocation procedures. Surveyors shall have a valid Florida Fish and Wildlife Conservation Commission permit. Nest surveys shall be conducted daily between sunrise and 9 a.m. Surveys shall be performed in such a manner so as to ensure that construction activity does not occur in any location prior to completion of the necessary sea turtle protection measures.

2b. Only those nests that may be affected by construction activities shall be relocated. Nests requiring relocation shall be moved no later than 9 a.m. the morning following deposition to a nearby self-release beach site in a secure setting where artificial lighting will not interfere with hatchling orientation. Nest relocations in association with construction activities shall cease when construction activities no longer threaten nests. Nests deposited within areas where construction activities have ceased or will not occur for 65 days shall be marked and left in place unless other factors threaten the success of the nest. Any nests left in the active construction zone shall be clearly marked, and all mechanical equipment shall avoid nests by at least 10 feet.

3. Immediately after completion of the beach nourishment project and prior to April 15 for 3 subsequent years, sand compaction shall be monitored in the area of restoration in accordance with a protocol agreed to by the Service, the State regulatory agency, and the applicant. At a minimum, the protocol provided under 3a and 3b below shall be followed. If required, the area shall be tilled to a depth of 36 inches. All tilling activity must be completed prior to April 15. If the project is completed during the nesting season, tilling

shall not be performed in areas where nests have been left in place or relocated. A report on the results of compaction monitoring shall be submitted to the Service prior to any tilling actions being taken. An annual summary of compaction surveys and the actions taken shall be submitted to the Service. This condition shall be evaluated annually and may be modified if necessary to address sand compaction problems identified during the previous year.

3a. Compaction sampling stations shall be located at 500-foot intervals along the project area. One station shall be at the seaward edge of the dune/bulkhead line (when material is placed in this area); one station shall be midway between the dune line and the high water line (normal wrack line); and one station shall be located just landward of the high water line.

At each station, the cone penetrometer shall be pushed to a depth of 6, 12, and 18 inches three times (three replicates). Material may be removed from the hole if necessary to ensure accurate readings of successive levels of sediment. The penetrometer may need to be reset between pushes, especially if sediment layering exists. Layers of highly compact material may lay over less compact layers. Replicates shall be located as close to each other as possible, without interacting with the previous hole and/or disturbed sediments. The three replicate compaction values for each depth shall be averaged to produce final values for each depth at each station. Reports shall include all 27 values for each transect line, and the final 9 averaged compaction values.

3b. If the average value for any depth exceeds 500 psi for any two or more adjacent stations, then that area shall be tilled immediately prior to April 15. If values exceeding 500 psi are distributed throughout the project area but in no case do those values exist at two adjacent stations at the same depth, then consultation with the Fish and Wildlife Service shall be required to determine if tilling is required. If a few values exceeding 500 psi are present randomly within the project area, tilling shall not be required.

4. Visual surveys for escarpments along the project area shall be made immediately after completion of the beach nourishment project and prior to April 15 for 3 subsequent years. Results of the surveys shall be submitted to the Service prior to any action being taken. Escarpments that interfere with sea turtle nesting or that exceed 18 inches in height for a distance of 100 feet shall be leveled to the natural beach contour by April 15. If the project is completed during the sea turtle nesting and hatching season, escarpments may be required to be leveled immediately, while protecting nests that have been relocated or left in place. The Service shall be contacted immediately if subsequent reformation of escarpments that interfere with sea turtle nesting or that exceed 18 inches in height for a distance of 100 feet occurs during the nesting and hatching season to determine the appropriate action to be taken. If it is determined that escarpment leveling is required during the nesting or hatching season, the Service will provide a brief written authorization that describes methods to be used to reduce the likelihood of impacting

existing nests. An annual summary of escarpment surveys and actions taken shall be submitted to the Service.

5. The applicant shall arrange a meeting between representatives of the contractor, the Service, the Florida Fish and Wildlife Conservation Commission, and the permitted person responsible for egg relocation at least 30 days prior to the commencement of work on this project. At least 10 days advance notice shall be provided prior to conducting this meeting. This will provide an opportunity for explanation and/or clarification of the sea turtle protection measures.

6. From April 15 through November 30, staging areas for construction equipment shall be located off the beach to the maximum extent practicable. Nighttime storage of construction equipment not in use shall be off the beach to minimize disturbance to sea turtle nesting and hatching activities. In addition, all construction pipes that are placed on the beach shall be located as far landward as possible without compromising the integrity of the existing or reconstructed dune system. Temporary storage of pipes shall be off the beach to the maximum extent possible. Temporary storage of pipes on the beach shall be in such a manner so as to impact the least amount of nesting habitat and shall likewise not compromise the integrity of the dune systems (placement of pipes perpendicular to the shoreline is recommended as the method of storage).

7. From April 15 through November 30, all on-beach lighting associated with the project shall be limited to the immediate area of active construction only and shall be the minimal lighting necessary to comply with safety requirements. Shielded low pressure sodium vapor lights are recommended to minimize illumination of the nesting beach and nearshore waters. Lighting on offshore equipment shall be minimized through reduction, shielding, lowering, and appropriate placement of lights to avoid excessive illumination of the water, while meeting all U.S. Coast Guard and OSHA requirements. Shielded low pressure sodium vapor lights are highly recommended for lights on offshore equipment that cannot be eliminated.

8. A report describing the actions taken to implement the terms and conditions of this incidental take statement shall be submitted to the Jacksonville Field Office within 60 days of completion of the proposed work for each year when the activity has occurred. This report will include the dates of actual construction activities, names and qualifications of personnel involved in nest surveys and relocation activities, descriptions and locations of self-release beach sites, nest survey and relocation results, and hatching success of nests.

9. In the event a sea turtle nest is excavated during construction activities, the permitted person responsible for egg relocation for the project should be notified so the eggs can be moved to a suitable relocation site.

10. Upon locating a dead, injured, or sick endangered or threatened sea turtle specimen, initial notification must be made to the Florida Marine Patrol at 1-800-DIALFMP (*FMP on a cellular phone). Care should be taken in handling sick or injured specimens to ensure

effective treatment and care and in handling dead specimens to preserve biological materials in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered or threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

The Service believes that no more than the following types of incidental take will result from the proposed action: (1) all sea turtle nests that may be constructed and eggs that may be deposited and missed by a nest survey and egg relocation program within the boundaries of the proposed project; (2) all sea turtle nests deposited during the period when a nest survey and egg relocation program is not required to be in place within the boundaries of the proposed project; (3) harassment in the form of disturbing or interfering with female turtles attempting to nest within the construction area or on adjacent beaches as a result of construction activities; (4) disorientation of hatchling turtles on beaches adjacent to the construction area as they emerge from the nest and crawl to the water as a result of project lighting; (5) behavior modification of nesting females due to escarpment formation within the project area during a nesting season, resulting in false crawls or situations where they choose marginal or unsuitable nesting areas to deposit eggs; and (6) all nests destroyed as a result of escarpment leveling within a nesting season when such leveling has been approved by the Fish and Wildlife Service. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures provided. The Federal agency must immediately provide an explanation of the causes of the taking and review with the Service the need for possible modification of the reasonable and prudent measures.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

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1. Construction activities for this project and similar future projects should be planned to take place outside the main part of the sea turtle nesting and hatching season.
2. Appropriate native salt-resistant dune vegetation should be established on the restored dunes. The Florida Department of Environmental Protection, Office of Beaches and

Coastal Systems, can provide technical assistance on the specifications for design and implementation.

3. Surveys for nesting success of sea turtles should be continued for a minimum of 3 years following beach nourishment to determine whether sea turtle nesting success has been adversely impacted.

4. Educational signs should be placed where appropriate at beach access points explaining the importance of the area to sea turtles and/or the life history of sea turtle species that nest in the area.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the action(s) outlined in the request. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

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FLORIDA DEPARTMENT OF STATE
Sandra B. Mortham
Secretary of State
DIVISION OF HISTORICAL RESOURCES

October 21, 1997

Mr. Dennis R. Duke
Planning Division, Environmental Branch
Jacksonville District Corps of Engineers
P. O. Box 4970
Jacksonville, Florida 32232-0019

In Reply Refer To:
Robin D. Jackson
Historic Sites Specialist
Project File No. 973675

RE: Cultural Resource Assessment Request
Submerged Historic Properties Survey, Nassau County Shore Protection Project.
By Mid-Atlantic Technology and Environmental Research, Inc., July 14, 1997

Dear Mr. Salem:

In accordance with the procedures contained in 36 C.F.R., Part 800 ("Protection of Historic Properties"), we have reviewed the results of the referenced project and find them to be sufficient. Please have a survey log sheet (enclosed) filled out for the above report and forwarded to this office in order to make the report complete.

Based on the information provided in the above report and your letter of July 25, 1997, we note that 22 magnetic targets were located as a result of the above survey. Of these, ten of the magnetic and sonar targets are not considered significant. Buffer zones are not recommended for these. In the South Borrow Area, seven targets (15-21) may be significant. We note that a 300 foot "no effect" buffer zone will be maintained around each target. In the South Entrance Channel Borrow Area, five targets (6, 8, 10, 13, and 14) may be significant. We note that 300 foot radius "no effect" buffer zones will be established around these targets too. If it is later determined that one or more targets cannot be avoided, then diver investigations will be conducted in coordination with our office.

DIRECTOR'S OFFICE

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ARCHAEOLOGICAL RESEARCH
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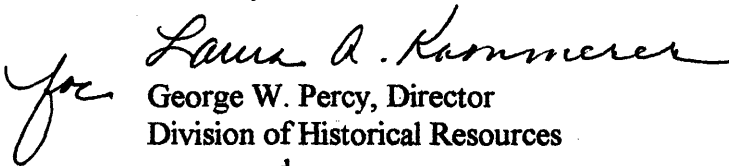
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Mr. Duke
October 21, 1997
Page 2

We concur with the above recommendations and conclusions. If the above conditions are met, it is the opinion of this office that the proposed project will have no effect on sites listed, or eligible for listing, in the *National Register of Historic Places*. If you have any questions concerning our comments, please do not hesitate to contact us. Your interest in protecting Florida's historic properties is appreciated.

Sincerely,

The signature is written in cursive and reads "George W. Percy".

George W. Percy, Director
Division of Historical Resources
and
State Historic Preservation Officer

GWP/Jrj

APPENDIX D-SECTION 103 EVALUATION



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

220
Don F.

DEC 17 1998

4WM-WCWQ

Mr. Richard E. Bonner, P.E.
Deputy District Engineer
for Project Management
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Dear Mr. Bonner:

We have received your submittals, dated August 12, 1997, and August 5, 1998, requesting a three year concurrence for ocean disposal of dredged material from the Fernandina Inner Channel and Turning Basin, and from the Kings Bay Naval Submarine Base Entrance Channel, into the Fernandina Ocean Dredged Material Disposal Site (ODMDS).

Based on the information provided we concur that, in accordance with MPRSA and the criteria published in 40 CFR Parts 220-228, the proposed dredged material from the project areas is suitable for ocean disposal in the Fernandina ODMDS. This concurrence applies only to the following specific project segments:

Fernandina Inner Channel and Turning Basin - (approximately 90,000 cy per year) project segments identified as Cut-1 through Cut-5, and a portion of Cut-6 (to Station 9+00). *(The remainder of Cut-6, and Cut-6A through Cut-10 have not been adequately characterized and evaluated, and therefore are specifically excluded from this concurrence, and are not to be included in the proposed dredge project);*

Kings Bay Naval Submarine Base Entrance Channel - (Permit 199201854)(up to 1,000,000 cy per year) project segments identified as the Georgia portion of the Kings Bay Entrance Channel from stations 0+000 to 30+000, and the Florida portion from stations 0+00 (Cut 1N) to 250+00 (Cut 2N).

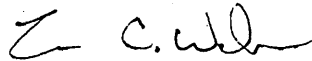
This concurrence is valid for a three year period from the date of this letter. Please note that there is a Site Management and Monitoring Plan (SMMP) for the Fernandina ODMDS, and that permitted and Civil Works projects utilizing the Fernandina ODMDS must be in compliance with the conditions in the SMMP. Additionally, we request written notification of project dredging start and end dates, and request project summaries at the completion of each dredging cycle. We

also request written notification if the estimated dredged material volumes will be or are exceeded.

For future planning purposes, please note there will be no two year extension applicable to this concurrence, and a new MPRSA Section 103 evaluation will be required for all project segments before a new 103 concurrence can be issued at that time. Please coordinate all sampling and analyses requirements with our office before conducting any sampling and testing, and before beginning preparation of the 103 Evaluation. We suggest a planning meeting be scheduled at least 18 months in advance of the expiration date of this concurrence.

If you have any questions regarding this letter, please contact Doug Johnson at 404-562-9386.

Sincerely,



Thomas C. Welborn, Chief
Wetlands, Coastal, and Water
Quality Branch

KINGS BAY ENTRANCE CHANNEL
SECTION 103 OCEAN DISPOSAL EVALUATION REPORT

I. Description of Action. This report is the chemical and biological evaluation of potential dredged material (DM) from the Kings Bay/Trident Submarine Base entrance channel maintenance project. The project includes the entrance channel between Amelia Island, Florida, and Cumberland Island, Georgia, more correctly known as the St. Marys Entrance, a portion of the St. Marys River, the section of the Intracoastal Waterway (IWW) north of the St. Marys River passing into Georgia to Kings Bays, and the U. S. Navy Trident submarine base at Kings Bay. That portion of the project that lies within the State of Georgia is maintained by the Savannah District of the U. S. Army Corps of Engineers, and that part of the project within the State of Florida is maintained by the Jacksonville District. This work was done in accordance with the Environmental Protection Agency (EPA)/ U. S. Army Corps of Engineers (Corps) joint publication, Evaluation of Dredged Material Proposed for Ocean Disposal (Testing Manual), dated February 1991, referred to as the 1991 Green Book.

II. Description of the Disposal Site. The proposed disposal site is the Fernandina Ocean Dredged Material Disposal Site (ODMDS). This site is located approximately seven miles offshore of Amelia Island and 10 miles south of the St. Marys Entrance. It has been designated for the disposal of dredged material by the U. S. Environmental Protection Agency (EPA). The site is two and a half miles square with center coordinates of 30°32'00"N latitude, and 81°18'00"W longitude. The water at the site is approximately 50 feet deep. A map showing the ODMDS can be found on page 2-2 of Volume I, of the Final Consolidated Report for Obtaining and Analyzing Sediment Samples, Water Samples, and Bioassay Samples from Kings Bay Entrance Channel. (hereafter called the "Final Report", copy enclosed).

III. Description of Dredged Material. Bottom sediments differ through the length of this project. In Kings Bay, the site of the Trident base, material is described from core borings as dark grey silty fine sand, dark brown silt, dark brown slightly sandy silt, and dark brown very sandy silt. In the IWW and St. Marys River, sediments are brown fine sand, slightly silty brown sand, and brown fine sand with shell. In the entrance channel itself, some stations were found that were described as brown very sandy silt, or as sandy silt with shells. Sieve analysis and grain size distribution data is contained in the Appendix B, Volume II of the Final Report.

Through several agreements involving the State of Florida, the U. S. Navy, and the U. S. Army Corps of Engineers, beach quality material (generally defined by the State of Florida as having 10% or less silt or clay) from that portion of the project that lies

within Florida waters will be placed on the beach at Amelia Island, south of the St. Marys Entrance. Other material is planned for upland disposal if available, or disposal in the Fernandina ODMDS.

IV. Environmental Testing Results. This evaluation started with an initial reconnaissance of 26 sediments samples taken at 26 stations beginning at the Trident submarine base at Kings Bay and extending the length of the project to include the entrance channel. Stations were numbered E-KB92-1 through 26 beginning at Kings Bay (hereafter referred to in this report as sample stations 1-26). The initial 26 samples were analyzed for grain size and settling rate only. Then, in conjunction with EPA, Region IV, the stations that proved to be mostly sand were excluded from further testing and the 10 stations with high silt content were resampled and tested as described below (see map, Final Report, Vol. I, page 2-2). Five reference stations in proximity to, but upstream from, the ODMDS, were also sampled. Upstream was determined by the general north to south flow of the longshore currents on the Atlantic coast of North America. The reference stations were numbered RS-KB92-A to E, hereafter referred to in this report as reference stations A-E.

Samples from all 15 stations and a control were subjected to chemical analysis of sediments and elutriates, bioassays of sediments and elutriates, and tissue analysis of animals exposed to the sediments to determine bioaccumulation potential. Methods used are detailed in Section 2.0, Methods and Materials, of the Final Report, Vol. I. The results of these analyses are presented in Section 3.0, Results and Discussion, of the Final Report, Vol. I. Analytical results are further reviewed below as appropriate.

a. Sediment Analysis.

(1) Heavy metals. Metals analysis results are displayed in table 4, pages 3-6 to 3-8, of the Final Report, Vol. I. Levels of heavy metals in the sediments varied between stations. Some were slightly elevated relative to the reference stations. However, none appear to be elevated above expected levels for marine sediments, nor do any of the levels reported appear to be cause for concern in view of the dilution of the dredged material and its effluent, and the characteristic of fine grained sediments to retain adsorbed metals. The following comments on specific metals are offered.

(a) Aluminum (Al). Al is of interest primarily as it relates to the clay content of sediment and the levels of other metals in that sediment. High levels of aluminum indicate high clay content, smaller grain size, and a higher potential to attract and adsorb other metals. Stations 24, 25, and 26 all show high Al content, averaging 19,400, 17,600, and 20,000 ppm dry weight respectively (all values in this report are expressed as dry weight, unless inappropriate or noted otherwise). Al

levels in sediment from the five Kings Bay samples were markedly different, none being over 50.1 ppm.

(b) Arsenic (As). The amount of As detected in sediment samples for all sample stations and the reference stations is compatible with expected values for oceanic sediment which range in value from <0.4 to 455 ppm (NRCC, 1978). The highest value observed of 9.4 ppm at both stations 24 and 25, is well within limits expected for As in oceanic sediments.

(c) Cadmium (Cd). Reported background levels of Cd range up to 1 ppm in uncontaminated marine sediments (Korte, 1983). Only a few stations had Cd above the detection limit of 0.1 ppm, and none exceed 0.2 ppm.

(d) Chromium (Cr). Rehm et al (1984) reported concentrations of Cr in sediments ranging from 3.9 ppm in intertidal sand to 162 ppm in anaerobic mud.

All Cr values reported in this study fall within the range reported by Rehm et al (1984), however, examining the Cr data from this project, it is obvious that stations 1-5 and 24-26 have significantly higher Cr levels than the reference stations, and sample stations 9 and 11. The explanation of this variation in Cr content seems to be related to differences in sediment characteristics.

Stations 24-26 show much higher iron (Fe) content than other sample and reference stations. The total organic carbon levels are also higher at sample stations 24-26 than at samples stations 9 and 11 and the reference stations. Rehm et al (1984) reported Cr concentrations in sediment varied directly with the iron (Fe) and organic content, and indirectly with grain size. If grain size is considered for this data, a relationship can be seen between smaller grain size and increased Cr levels. Lastly, as noted in paragraph IV, a, (1), (a) above, stations 24-26 have high aluminum levels indicating high clay content, small grain size and higher levels of adsorbed metals. All of these factors can result in naturally higher Cr levels in sediments.

Sample stations 9 and 11 and the five reference stations, which had much lower Cr values than samples stations 24-26 have the opposite characteristics, ie, low Fe levels, low Al levels, and, for sample stations 9 and 11, larger grain size (grain size for the reference stations is not available).

Sediments from sample stations 1-5 have some of the conditions necessary for high natural Cr levels, those being small grain size, and high organic content. However, these stations are low in Fe and Al. Since stations 1-5 have a higher Cr level with fewer of the factors that cause elevated Cr, the Kings Bay stations may reflect some low level Cr contamination.

(e) Copper (Cu). Judged primarily by comparison

to reference station values and considering the relatively low toxicity of Cu, the values displayed in table 4 of the Final Report, Vol I are not abnormal or of concern.

(f) Iron (Fe). Fe content is of interest primarily as a way of interpreting the levels of other elements in the sediment. Iron levels are significantly higher at stations 24-26 than other stations.

(g) Lead (Pb). Pb in deep ocean sediments can vary from less than 10 to more than 80 ppm (Demayo et al., 1982), and Pb concentrations have been recorded at 110 ppm in an unpolluted lake (Haux et al., 1986). Pb levels in roadside soil are commonly in the range of 500 ppm two meters from roadways and over 100 ppm 40 meters from roadways (Krishnayya and Bedi, 1986). Given these bench marks, the Pb levels at station 25, which averaged 10.1 ppm, cannot be considered to be other than natural background levels.

(h) Mercury (Hg). Mercury levels are all low with the highest level not exceeding 0.5 ppm. As reported by NAS (1978) uncontaminated sediment usually has concentrations of <1.0 ppm.

(i) Silver (Ag), and Nickel (Ni). Based on the relatively low toxicity of Ag and Ni, and the low levels of these metals in the samples, which are in general similar to the reference station values, there is nothing remarkable demonstrated in these results. No adverse environmental impacts can be expected by the ocean disposal of the sediment due to the presence of Ag, or Ni.

(j) Zinc (Zn). Zn levels are not remarkable and Zn is not a highly toxic metal. Levels at stations 24-26 are about four times the reference station average, but this is probably a reflection of smaller grain size and the higher Al content of these samples when compared to the reference stations, indicating a higher potential of the sediments at stations 24-26 to adsorb metals. Sample stations 1 and 2 have higher Zn levels than the other Kings Bay stations, and sample station 1 has the highest level of any station tested (55.8 ppm). These levels may reflect an anthropogenic origin.

(2) Nutrients, Pesticides, PCBs, PAHs and Phenols. No notable concentrations of nutrients were noted. No pesticides, PCBs, PAHs, or phenolic compounds were detected in sediments from any station (Final Report, Vol. I, tables 5-8A).

(3) Polychlorinated dibenzo-para-dioxin (PCDDs). PCDDs, or dioxin, analysis was conducted on sediments from two sample stations, 11 and 26, by agreement with EPA, Region IV. A detection limit of 1 ppt (ng/kg) was used. Data is displayed in the Final Report, Vol. I, table 8B, pages 3-14. Most isomers were not found at the detection limit. The isomer 2,3,7,8 tetrachlorodibenzo-para-dioxin (TCDF), the most toxic PCDD

isomer, was identified at 3.2 ppt at station 11 and 17.6 ppt and station 24. However, a risk analysis indicates that these levels are not significant.

b. Elutriate Analysis. The metals As, Cd, Cr, Cu, Pb, Hg, Ni, Ag, and Zn were either not detected or were not detected at elevated levels. No pesticides or PCBs, PAHs, or phenolic compounds were detected except for two phenols detected at station 26 at insignificant levels (Final Report, Vol. I, tables 9-13).

c. Bioassays. Bioassays were conducted on elutriates of sediments and sediments from all samples and reference stations.

(1) Elutriate Bioassays. Elutriate bioassays were run for 96 hours using Mysidopsis bahia, and Menidia beryllina. A fertilization test using sea urchin eggs (Strongylocentrotus purpuratus) was also conducted. Tests for all three species were conducted in 0, 10, 50 and 100 percent concentration of elutriate. Evaluation of the results of these tests is performed using the Automated Dredging and Disposal Alternatives Management System (ADDAMS) model to predict dilution at the disposal site and determine if disposal of the DM will exceed the limiting permissible concentration (LPC). The results of this testing are presented in tables 14-16 of the Final Report, Vol I, beginning on pages 3-21. Mysidopsis bahia and Menidia beryllina results were obviously adequate and no ADDAMS analysis was conducted. Strongylocentrotus purpuratus had several stations (3 and 4 in Kings Bay) where mortality was high enough to justify an ADDAMS analysis. However, as will be explained below, the removal of the Kings Bay material from consideration for ocean disposal based on sediment bioassays eliminated the need for further elutriate bioassay analysis and the ADDAMS model analysis was not performed.

(2) Sediment bioassays were conducted using two species, Mysidopsis bahia and Ampelisca abdita. The results of the testing are presented in tables 20-22 beginning on pages 3-35 of the Final Report, Vol. I. The results of the bioassays were evaluated by comparing the mortality of each species at each sample station to the average of mortality of the species at the five reference stations.

In accordance with the 1991 Green Book, if the mortality for Mysidopsis bahia exceeds the reference station by more than 10% and the data is statistically significant, the sediment does not meet the criteria for ocean disposal. The sediment bioassays produced a reference station mortality of 18.4%. All sample stations had mortality results that were less than the reference average and therefore all sample stations meet or exceed the criteria for ocean disposal based on the Mysidopsis bahia bioassays.

In accordance with the 1991 Green Book, if the mortality for

Ampelisca abdita exceeds the reference station by more than 20% and the data is statistically significant, the sediment does not meet the criteria for ocean disposal. The sediment bioassays produced a reference station mortality of 8.8%. Mortality at stations 1,2,3,4, and 5 in Kings Bay all exceeded the reference station average by more than 20%. Sample station 2 was not statistically significant. Sample stations 9, 11, 25, and 26 were all within the standard. Station 24 had a mortality 65%, or 56.2% below the reference station average. However, based on a review of other data, we do not consider this value to be valid. This is discussed in detail in paragraph VIII below.

d. Bioaccumulation tests were performed using two species, the clam Macoma nasuta and the annelid worm Nereis virens. The tests were run for 28-days. Background samples, animals selected from the batch of test organisms used for the test, but not exposed to the test sediments, were also analyzed.

(1) Heavy Metals

(a) Arsenic. The highest value recorded for As was 39.7 ppm recorded in the background sample for Macoma. The highest value observed for a sample station was 38.1 ppm for Macoma at station 3. Arsenic is a naturally occurring element in living tissue and levels of more than 100 ppm dry weight occur in marine organisms and present little hazard to the organism or to its consumers (Lunde, 1977).

(b) Cadmium. Cd levels were higher in Macoma than in Nereis, which is the normal occurrence, but did not exceed 0.9 ppm. This is in line with expected levels obtained from marine bivalves (Ratkowsy et al, 1974; Kopfler and Mayer, 1967).

(c) Chromium. Cr values were not significant. The highest value was recorded from a reference station sample at 10.6 ppm. The highest value found at a sample station was 5.7 ppm. In mussels from unpolluted environments, Korbe et al. (1977) has reported tissue concentrations of Cr ranging from 0.4 to 21.0 ppm. Phelps et al. (1975) reported Cr content as high as 24.7 ppm in soft parts of the clam Mercenaria mercenaria. Cr values do not appear to be a cause for concern.

(d) Copper. Tissue concentrations of Cu differed little between the two species tested. Most sample station results not significantly different than the reference station or background values. Higher values were reported at station 25 for Nereis of 30 ppm and 13 ppm for Macoma at station 11. However, there is no correlation between stations and the two species. Considering the low toxicity of Cu and its natural abundance in marine species, there is little significance to these values.

(e) Lead. Pb values were higher in Macoma than in Nereis, however all Pb levels in Macoma were below the level

of the background (3.8 ppm). Reference stations had the next highest levels (3.6 ppm at two stations). Sample stations ranged from 0.8 to 3.6 ppm. These values are not remarkable and are close to values reported by Graham (1972) for limpets from Pb free areas in California (8 ppm) and values reported for bivalves from the Chesapeake Bay by Di Giulio and Scanlon (1985), which averaged 5 ppm and ranged from 0.6 to 27 ppm.

(f) Mercury. Mercury values are all below the detection limit of 0.2 ppm. Keep in mind that this data is reported as a dry weight value. The U. S. Food and Drug Administration (FDA) warning levels for mercury in fish fillets start at 1.0 ppm wet weight of mercury (reduced consumption for adults/no consumption for children, and pregnant/lactating women). Wet weight values are generally four or five times less than dry weight values. Mercury in the tissues of animals used in this study did not approach this limit.

(g) Nickel. Nickel levels do not significantly exceed the background levels or reference station levels.

(h) Silver. Tissue concentrations of silver were all at or near the detection limit.

(i) Zinc. Tissue concentrations of zinc do not greatly exceed the background level or the reference station average. These low levels, the low toxicity of zinc, and its known biological function, indicate that Zn does not pose any threat to biota through bioaccumulation.

(2) Pesticides and PCB's. All pesticides and all PCBs were at or below the detection limits.

(3) Phenols. With the exception of Pentachlorophenol (PCP), all tests for phenols were at or below the detection limits. PCP was reported in all tissues at very high levels. PCP, used as a wood preservative and in other biocide roles, is very nearly ubiquitous in the environment. PCP contaminated air, precipitation, surface and groundwater, drinking water, and aquatic organisms are common (Pignatello, 1983, Choudhury et al., 1986). PCP bioaccumulates readily in some organisms. Fox and Joshi (1984) found PCP could bioaccumulate in fish up to 10,000 times the level in the aquatic environment.

However, while PCP is common in the environment and bioaccumulates, the values reported in the Final Report are extraordinarily high, ranging to 1,000 ppm. Folke and Birklund (1986) reported values for Mytilus edulis in Denmark at 32 to 244 ppb. Note that Folke and Birklund reported parts per billion versus the parts per million values found in this study. Values in freshwater organisms reported by other researchers are also in the parts per billion range. Since the values reported here are three orders of magnitude higher than values reported in the peer review literature, this data is suspect and is probably invalid.

This is supported by the fact that the control sediment tissue, background tissue, and five replicates of tissues exposed to reference station sediments all showed similarly high PCP values. The laboratory performing the chemical analysis of tissues for organics used gas chromatography. Their personnel report that this method can produce false positives. This is presumed to be the reason for the oddly high levels of PCP reported from this analysis.

It should also be noted that even if the sediment were contaminated with PCP, PCP degrades quickly in the environment due to microbial and photochemical action (Kaufman 1978; Choudhury et al. 1988). The half life of PCP in soil is 15 to 60 days and in marine sediments it degrades rapidly in increased oxygen levels and pH levels above 8.0 (DeLaune et al, 1983). Bevenue and Beckman, 1967; Wong and Crosby, 1978; Boyle et al., 1980; Niimi and Cho, 1983; Crossland and Wolff, 1985; and Smith et al, 1987, reported the half life of PCP in water ranged from .15 to 15 days. Testing done near the ODMDS reported bottom conditions with dissolved oxygen above 7.4 ppm and pH values above 8.0. It is reasonable to expect any PCP present in sediments to degrade rapidly at the ODMDS and not to impact the food web.

V. General Compatibility of Dredged Material with Disposal Site.

Data displayed in Appendix B shows that DM likely to be disposed at the ODMDS is sand and silt with traces of shell. Comparisons with the EIS data for the ODMDS shows that the dredged material is physically compatible with the material at the disposal site.

VI. Need for Ocean Disposal. Substantial amount of dredged material from this project can and will go to upland sites. This is relevant to the material from Kings Bay and parts of the IWW in Georgia, for which the Navy has upland disposal sites available.

Some material that is beach compatible will be used for beach nourishment on the beach or in near shore disposal areas at Amelia Island.

Material from the southern reach of the IWW (Station 9 and south) that is not beach compatible needs to be disposed of in the ODMDS. Upland disposal sites are not available near the St. Marys Entrance and transport of DM to upland sites near Kings Bay would not be economically feasible. Also, material suitable for disposal in the ODMDS from the IWW near Kings Bay, might be disposed of in the ODMDS to save upland disposal space for DM unsuitable for ocean disposal.

VII. Environmental Impacts of Disposal.

a. Aesthetics. The location and the distance off shore should minimize the adverse aesthetics impact of turbidity during discharge.

- b. Recreation Resources. No adverse impacts are expected.
- c. Commercial marine resources. No commercial fishery or resources would be affected.
- d. Navigation. No adverse impacts are expected.
- e. Mineral resources. No adverse impacts are expected.
- f. Cultural resources. No adverse impacts are expected.
- g. Endangered species. No adverse impacts are expected.
- h. Water quality. There will be a temporary increase in turbidity during discharge operations. This turbidity will be short lived and limiting permissible concentrations of contaminants will not be exceeded.

VIII. Determination and findings. The majority of the material from this project is suitable for ocean disposal. The material from Kings Bay, ie., the trident submarine base basin itself, tested at stations 1-5, is not suitable or is marginally suitable for ocean disposal. Therefore, the area from station 48, at the north end of Kings Bay southeast to station 38, at the south end of Kings Bay, is withdrawn from this request for concurrence for ocean disposal. Of the rest of the material, we believe that all potential dredged material in the IWW, St Marys River and the entrance channel is suitable for ocean disposal. With the exception of sample station 24, no sample station evaluated was in conflict with the guidance of the 1991 Green Book. Sample station 24 had a lower than acceptable survivorship for Ampelisca abdita at 35% which is 56.2% below the reference station average. However, we believe that this an artifact of the testing procedure and not a valid result suggesting potential impact to the marine environment. Our reasons for this position are as follows:

- a. The similarities between station 24 and nearby stations 25 and 26 are obvious. The sediments are the same and there are no significant analytical differences between these stations, yet 25 and 26 had sediment bioassays survival values of 76% and 73%.
- b. There is no chemical data that indicates that there is any significant contamination in sediment from station 24.
- c. All the elutriate bioassays are well above criteria.
- d. Sediment bioassays for Mysidopsis Bahia at station 24 are acceptable. Mysidopsis bahia had a survival rate of 95% at station 24, 13.4% above the reference station average.

Based on this evaluation, the Jacksonville and Savannah Districts of the U. S. Army Corps of Engineers propose to issue to the U.

S. Navy, a permit to transport dredged material from this project beginning south of station 38 (see map attached) and including the IWW and St. Marys Entrance, to the Fernandina ODMDS for ocean disposal as described in paragraph I above. Exceptions to this will include the use of beach or nearshore disposal for suitable material, or where available, upland disposal of some material.

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FERNANDINA HARBOR, FLORIDA
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OCEAN DISPOSAL EVALUATION REPORT

1. Description of the Action. The work would consist of removing 621,000 cubic yards of sediment with a mechanical bucket dredge, transporting it by barge and placing it offshore in the Environmental Protection Agency (EPA) designated Ocean Dredged Material Disposal Site (ODMDS) for Fernandina, Florida.

2. Description of the Disposal Site. The site is located on the shallow continental shelf in water depths of 45 to 63 feet off northeast Florida. The site, which is about 4 nautical square miles in area, is located about 10 nautical miles southeast of the St. Marys River mouth and six nautical miles east of Amelia Island. Center coordinates of the ODMDS are 30° 32'N latitude and 81° 18'W longitude. The site and its full coordinates are depicted in figures A-2 and A-2A in appendix A to the accompanying Detailed Project Report.

3. Description of Material to be Dredged. Based on grab samples the majority of the material is a soft gray clay or gray clay mixed with sand. This material is not suitable for beach disposal.

4. Environmental Testing Results. Sediment and elutriate samples were collected from the project area in December 1989 and March 1991. The results of these samples were compared with results from earlier elutriate and bioassay evaluations. Concentrations of toxic chemicals in the 1989 sediment samples were below those found in previous bioassays that determined the material to be acceptable for ocean disposal. Also, elutriate sample results were within state standards except for mercury. However, the later samples collected and evaluated in 1991 showed that mercury would not be present at detectable levels or above State water quality standards during dredging. Therefore the material is determined to be acceptable for unrestricted ocean disposal. The data and results are also discussed in section 5.08, 5.09, 5.10, 6.05, and 6.06 of the Environmental Assessment, and in appendix E to the Environmental Assessment.

5. Need for Ocean Disposal.

a. Alternatives. Several alternatives to ocean disposal have been investigated. Upland disposal, beach disposal, nearshore disposal, and wetland creation were all considered; however, ocean disposal is the only practical alternative.

b. Selection rationale. Upland disposal is not feasible because sufficient amounts of land are unavailable and their use would be prohibitively costly, if available. The dredge area is bounded on the west by vast salt marshes or islands and on the east by the port facilities that need all available land for storage of containers and the City of Fernandina. Creating a disposal site on developable (upland) property would result in esthetic visual and odor degradation and loss of valuable property within the City of Fernandina. Drying the material and trucking it to a permanent site would create odor and esthetic problems during the drying process, require handling the material, and be more costly than ocean disposal. The material, which contains silt and clay and is a gray color, is not suitable for beach disposal. Use of the material for wetland creation is not desirable, since creation would require filling tidal areas. Ocean disposal was selected since it is the most cost effective plan, does not require property near the river or rehandling of the material, and can be completed within acceptable environmental standards.

6. Environmental Impacts.

a. Esthetics. A turbidity plume would be created upon release of the material. The plume would be localized and temporary.

b. Recreation resources. The ODMDS is located at least two nautical miles from all known fish havens, artificial reefs, and fishing areas. Recreation resources should not be affected.

c. Commercial marine resources. The main commercial fishery that may be present in the general area is for shrimp. White, brown, and pink shrimp are trawled in coastal waters 20-80 feet deep. Disposal of the material in the existing disposal site would not likely have measurable impacts on the area's commercial fishery.

d. Navigation. The disposal activity would not adversely affect navigation. The activity would not interfere with use of designated ship channels. The nearest anchorage is approximately 3 nautical miles southwest of the ODMDS.

e. Mineral resources. There are no known mineral resources

within the study area.

f. Water quality. Based on 1988, 1989, and 1991 elutriate samples and bioassays, water quality would not be significantly reduced. The data has been coordinated with the State and water quality certification issued.

g. Archeological and cultural resources. Disposal at the site would not adversely affect any archeological or cultural resources.

h. Endangered and threatened species. Listed species under the jurisdiction of the National Marine Fisheries Service (NMFS) that could occur in the project area and that might be affected by the proposed action include;

Eubalaena glacialis, the endangered right whale;
Caretta caretta, the threatened loggerhead turtle;
Chelonia mydas, the endangered/threatened green turtle;
Lepidochelys kempi, the endangered Kemp's ridley turtle.

Green turtles in U.S. waters are listed as threatened, except for the Florida breeding population, which is listed as endangered.

The following protected species are under the jurisdiction of the Fish and Wildlife Service (FWS).

Trichechus manatus, the endangered West Indian manatee;
Mycteria americana, the endangered wood stork;

Additional protected species that may occur along the Florida/Georgia coast include;

Balaenoptera physalus, the finback whale;
Megaptera noveaeangliae, the humpback whale;
Balaenoptera borealis, the sei whale;
Eretmochelys imbricata, the hawksbill turtle;
Dermochelys coriacea, the leatherback turtle;
Acipenser brevirostrum, the shortnose sturgeon.

Endangered Species Act, Section 7, coordination with FWS and NMFS has been completed as noted in the Environmental Assessment. The work as proposed should not adversely affect protected species. Specific precautionary measures to protect manatees would be required of all contractors performing work on the project.

7. Determination and Findings. The project files, Environmental Assessment, and Ocean Disposal Evaluation Report have been reviewed. The proposed ocean disposal will present:

a. No unacceptable adverse effects on human health and no

significant damage to the resources of the marine environment;

b. No unacceptable adverse effects on the marine ecosystem;

c. No unacceptable adverse persistent or permanent effects due to the dumping of particular volumes or concentrations of these materials; and

d. No unacceptable adverse effects on the ocean for other uses as a result of direct environmental input.

The activity is in the overall public interest and should be implemented.

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