



REPLY TO  
ATTENTION OF

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



FINDING OF NO SIGNIFICANT IMPACT

LEE COUNTY BEACH EROSION CONTROL PROJECT  
CAPTIVA AND SANIBEL ISLANDS

I have reviewed the Environmental Assessment (EA) for the proposed action. Based on information analyzed in the EA, reflecting pertinent information obtained from cooperating Federal agencies 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:

a. One potentially significant magnetic anomaly was identified in the dredging area. A 200 foot radius buffer zone will be established around this anomaly to protect it from dredging activity. Sites of cultural or historical significance will not be affected.

b. Measures to prevent or minimize impacts to sea turtles will be implemented during and after project construction. State permits do not allow construction during the turtle nesting season. There will be no adverse impacts to other endangered or threatened species.

c. State water quality standards will be met.

d. Measures to eliminate, reduce, or avoid potential impacts to fish and wildlife resources will be implemented during project construction.

In consideration of the information summarized, I find that the proposed action does not require an Environmental Impact Statement.

2 FEB 96

Date

Terry L. Rice  
Colonel, U.S. Army  
District Engineer

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DESIGN MEMORANDUM FOR THE FIRST RENOURISHMENT  
PROJECT, CAPTIVA ISLAND SEGMENT  
LEE COUNTY, FLORIDA  
BEACH EROSION CONTROL PROJECT  
ENVIRONMENTAL ASSESSMENT



DESIGN MEMORANDUM FOR THE FIRST RENOURISHMENT  
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LEE COUNTY, FLORIDA  
BEACH EROSION CONTROL PROJECT

ENVIRONMENTAL ASSESSMENT

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LEE COUNTY, FLORIDA  
BEACH EROSION CONTROL PROJECT

ENVIRONMENTAL ASSESSMENT

**1.00 INTRODUCTION**

1.01 Purpose of Report. This Environmental Assessment (EA) has been prepared to comply with the National Environmental Policy Act (NEPA).

**2.00 NEED FOR AND OBJECTIVES OF ACTION**

2.01 Project Location. Captiva and Sanibel Islands are located in southwest Florida within Lee County. They are the barrier island shoreline separating Pine Island Sound from the Gulf of Mexico. The proposed project includes renourishment of 3.1 miles along Captiva Island, between R-93 and R-109 (Figure EA-1). The project also includes initial restoration of 0.74 miles along Sanibel Island between R-110 and R-114. The Captiva and Sanibel segments are separated by Blind Pass. The proposed primary borrow area (Borrow Area III) is located approximately 4 nautical miles offshore of Captiva Island (Figure EA-1). The secondary borrow areas (III-A & III-B) are located approximately 5 to 6 nautical miles off of Sanibel Island.

2.02 Study Authority.

2.02.01. The beach erosion control project for Lee County, Florida was authorized in accordance with recommendations of the Chief of Engineers in House Document number 91-393, under the provisions of Section 201 of the Flood Control Act of 1965 enacted by House and Senate Resolutions (December 15, 1970 and December 17, 1970, respectively). The authorization provides for Federal participation in beach restoration and periodic nourishment along portions of the Gulf shore of Lee County. The northern end of the Captiva Island segment at South Seas Plantation was nourished in 1981 by placement of 665,000 cubic yards of dredged material. The entire Captiva Island segment was nourished in 1988-89 by placement of 1,594,000 cubic yards of sand.

2.02.02. The Captiva Erosion Prevention District (CEPD), established by Chapter 59-1496, Laws of Florida 1959, will act as the local sponsor for the proposed project. The CEPD is a political subdivision of the State of Florida and as such will act as liaison between all interested agencies, groups or individuals for this portion of Lee County's Federal Shore Protection project.

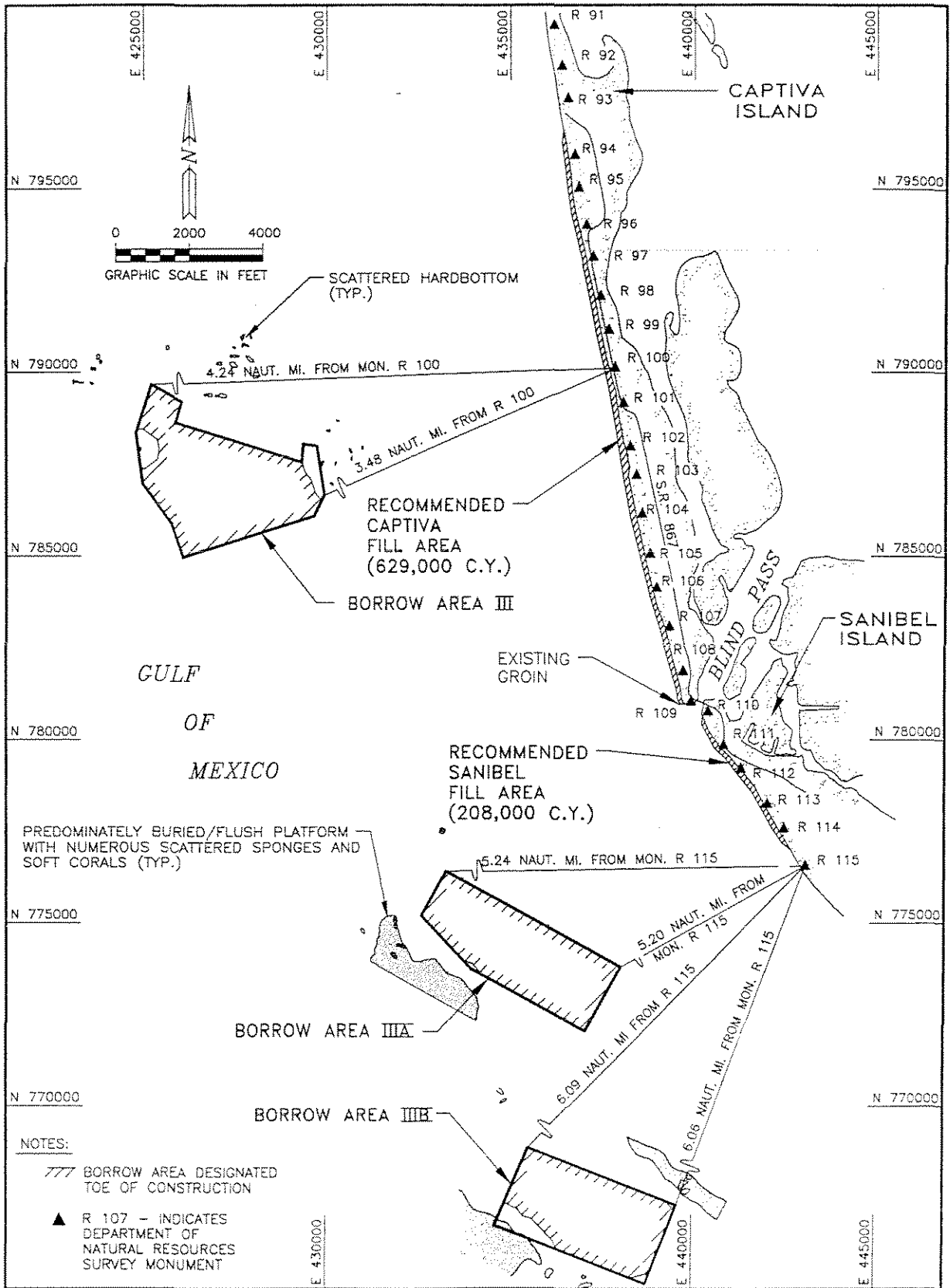


FIGURE EA-1

BEACH EROSION CONTROL  
 LEE COUNTY, FLORIDA  
 CAPTIVA / SANIBEL SEGMENT  
 RECOMMENDED PLAN

2.03 Public Concerns about Erosion. The majority of the beach fronting the Gulf shore of Captiva Island and the northern one mile of Sanibel Island has a history of erosion. As a result of this erosion, upland property is vulnerable to severe damage during relatively minor storm events. Captiva Island residents, Sanibel Island residents and Lee County are concerned about potential storm damages. The maintenance of the beach protects life and property. In addition to providing protection, a maintained beach attracts tourists to the area and is vital to the economy of the area.

2.04 Borrow Area Concerns. Concern about borrow area selection has been expressed. The City of Sanibel has concerns regarding increases in wave height resulting from use of Borrow Areas III-A and III-B, proposed as the source of sand for the Sanibel Island portion of the project. An analysis of waves travelling over Borrow Areas III-A and III-B was performed using the wave refraction program within the Corps' ACES coastal analysis software package (USACE, 1992). The results of the analysis showed that average wave height would not increase nor would wave angle be affected as a result of dredging to the maximum proposed dredge depth in Borrow Areas III-A and III-B.

**3.00 ALTERNATIVES TO THE PROPOSED ACTION.** The alternative actions which may be taken to reduce the rate of existing beach erosion, protect property from storm damage and maintain the aesthetic and recreational appeal of the shoreline were examined, and are described below.

3.01 No Action Alternative. The no action alternative would allow existing conditions to continue. The beach would continue to erode, property would become more vulnerable to damage from coastal storms and a valuable recreational resource would be lost.

3.02 Nonstructural Alternatives

3.02.01 Rezoning of Beach Areas. Structures built in areas adjacent to the project area after the plan was implemented would be less vulnerable to storm damage because rezoning would require construction in relatively safer areas. This alternative would not provide erosion control or protection from tidal flooding.

3.02.02 Modification of Building Codes. This alternative would require hurricane proofing of new structures. Building code modifications would incorporate limited provisions which require, under certain circumstances, that existing structures comply with these regulations. This alternative would not provide erosion control or protection from tidal flooding.

3.02.03 Construction Setback Line. This alternative requires that all new structures be placed landward of a line determined to border a relatively storm-safe area. In the event of substantial damage, existing structures would be required to comply with the setback line requirements. This alternative has been implemented by

the State of Florida but does not provide erosion control or protection from tidal flooding.

3.02.04 Flood Insurance. This alternative provides an early warning system in the event of approaching storms and establishing an evacuation route for the area's inhabitants. This option protects human life but does not reduce or prevent structural damage. This alternative does not provide erosion control or protection from tidal flooding.

3.02.05 Evacuation Planning This alternative would provide an early warning system in the event of approaching storms and would allow establishment of an evacuation route for the area's inhabitants. This option would protect human life but would not reduce or prevent structural damage. This alternative would not provide erosion control or protection from tidal flooding.

3.02.06 Various Nonstructural Combinations. All of the considered nonstructural alternatives would be beneficial to the project area either singly or in any possible combination, but they would not address the beach erosion problem or consequences of this erosion.

3.03 Structural Alternatives The following structural alternatives were also considered: groin fields, revetments, vertical seawalls, beach nourishment using upland sand sources, and beach nourishment using offshore borrow material from several sites near the project area. Four of these alternatives were eliminated from further consideration. The reasons for elimination of each alternative are summarized below:

3.03.01 Groin fields were eliminated due to documented effects of groin fields in the area. Groin fields which were constructed between 1961 and 1963 did not control erosion, and were removed in 1988.

3.03.02 Revetments are a temporary solution which transfers the erosion problem further down the beach. The cost and the potential for loss of recreational beach were also considered as negative effects.

3.03.03 Vertical seawalls were rejected due to high initial costs and expected loss of recreational beach if constructed.

3.03.04 Beach nourishment using sand from upland sources was rejected due to the exorbitant cost of trucking sand from sand mines.

3.03.05 Extensive sand searches were performed in offshore areas near the project site. Figure EA-2 identifies the location of each site. The areas investigated included the Captiva Pass ebb shoal, the Redfish Pass ebb shoal, Redfish Pass flood shoals, Blind Pass shoals, and the area offshore of Captiva and Sanibel Islands extending approximately five to

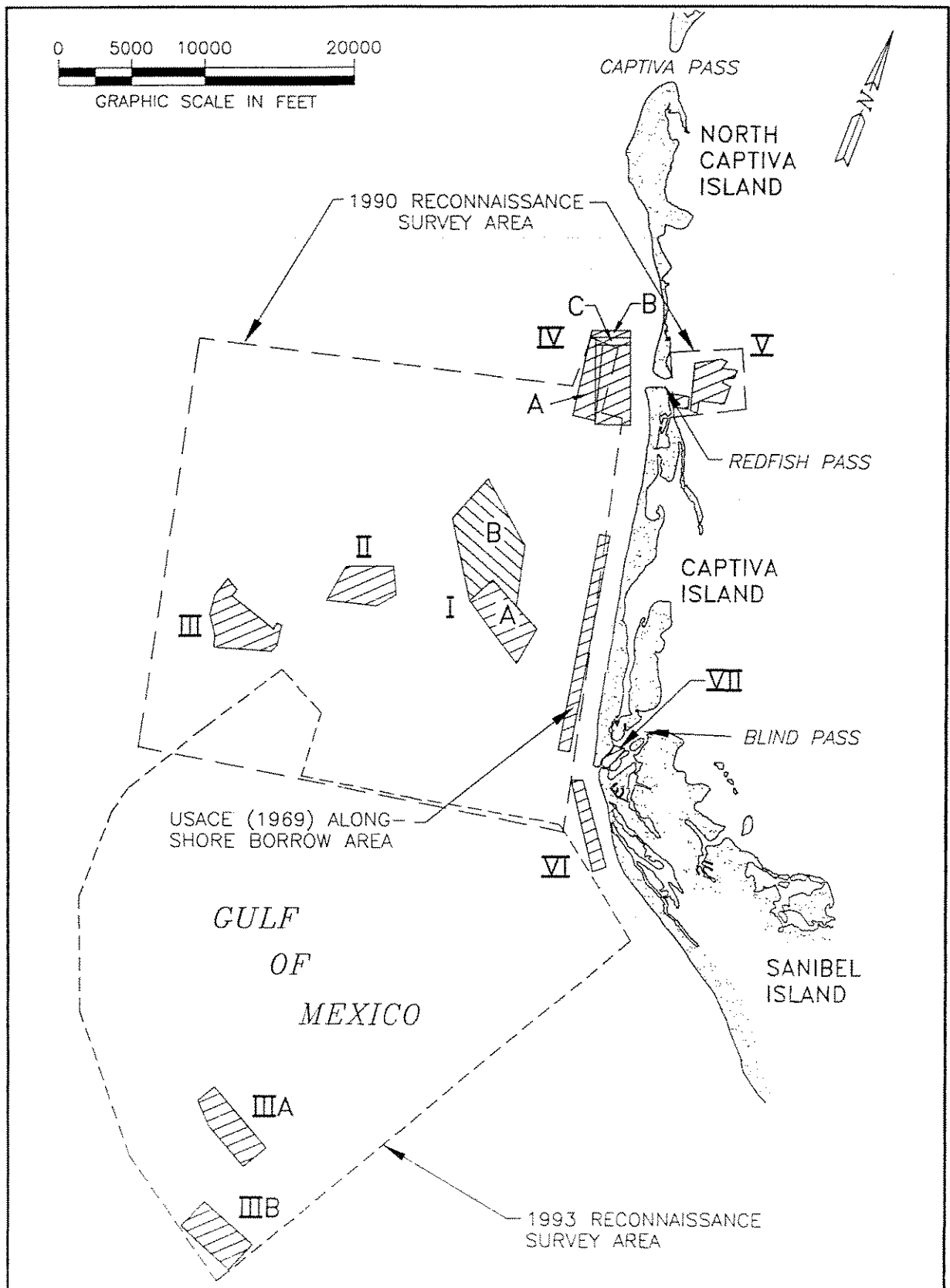


FIGURE EA-2

CAPTIVA ISLAND  
SAND SEARCH POTENTIAL BORROW AREAS

six miles offshore. The geotechnical appendix of the DM describes the findings of the sand investigations. The reasons for rejection of each non-selected area are summarized in Table EA-1.

Table EA-1

Summary of Sand Source Investigations

Sand Source	Figure EA Designation	Accepted/ Rejected	Reason for Rejection
Captiva Pass Ebb Shoal	-	Rejected	High cost
Redfish Pass Ebb Shoal	IVA	Rejected	High silt/clay content
	IVB	Rejected	High silt/clay content
	IVC	Rejected	Insufficient volume
Redfish Pass Flood Shoal	V	Rejected	Insufficient volume
Blind Pass Ebb Shoal	VI	-	Not investigated
Blind Pass Flood Shoal	VII	Rejected	Insufficient volume/ environmental concerns
Offshore Sand Sources			
Alongshore Borrow Area	-	Rejected	High silt/clay content
IA	IA	Rejected	High silt/clay content
IB	IB	Rejected	High silt/clay content
II	II	Rejected	High silt/clay content
III	III	Accepted	-
IIIA	IIIA	Accepted	-
IIIB	IIIB	Accepted	-

3.04 Proposed Action. The proposed work would consist of the placement of 629,400 cubic yards of dredged material along the Gulf shore of Captiva Island, and 208,200 cubic yards of fill along the northern one mile of Sanibel Island. The beach fill would extend along 3.1 miles of the Gulf shoreline of Captiva Island, from R-93 to R-109. The fill on Sanibel Island would extend from R-110 in the north to R-114 in the south (0.74 miles). The proposed project would provide protection against a 10 year return frequency storm. Table EA-2 presents a comparison of alternatives and their effects on environmental factors.

Table EA-2

Summary of Direct and Indirect Impacts for Alternatives Considered

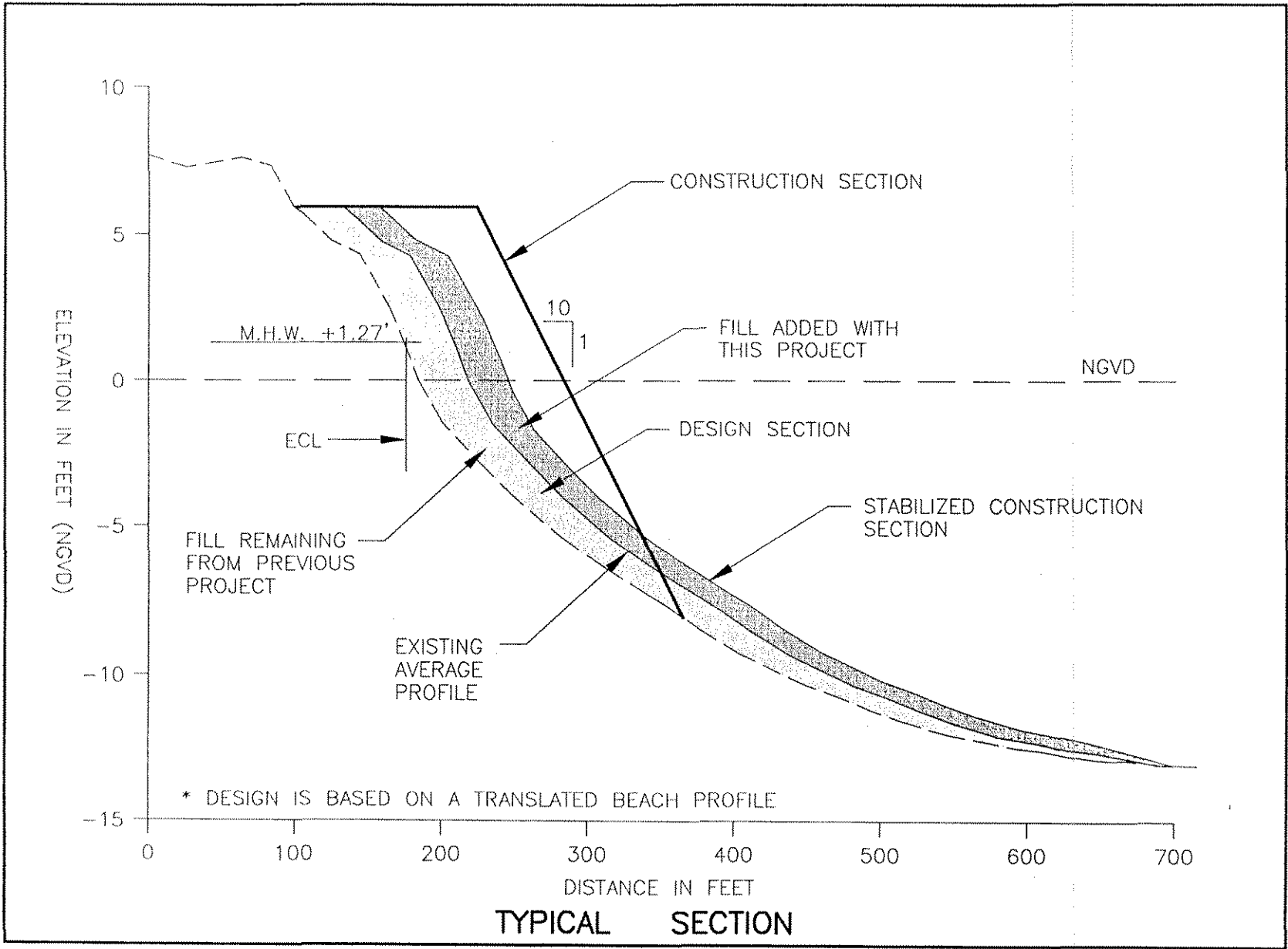
ENVIRONMENTAL FACTOR	PROPOSED BORROW AREA	OTHER OFFSHORE SAND SOURCES	OTHER SHORE PROT. MEASURES	UPLAND SAND SOURCES	NO ACTION
VEGETATION	no vegetation at borrow site	some borrow sites could have sea grasses	could also protect shore vegetation	sand hill vegetation, or other	continued erosion of beach and dune
PROTECTED SPECIES	minor impact on manatee and sea turtle	possible impacts to manatee, sea turtle, sea grass	could fail to protect sea turtle nesting beach	depends on sand source (i.e., scrub jay in sand hills)	loss of sea turtle nesting beach
HARD GROUND	none in borrow site	other sites could have hardground	probably not impact hardground	0	0
COASTAL BARRIER RESOURCES	borrow area not within a CBR unit, no impact	depends on site	probably no impact on CBR	depends on location of sand source	0
WATER QUALITY	increased turbidity from dredging & discharge	increased turbidity from dredging & discharge	depends on measure, shore hardening no impact	depends on sand source location and character	0
WILDLIFE	beach habitat improved	depends on wildlife at sand source, beach habitat improved	depends on whether beach protected	depends on wildlife use at borrow site	continued loss of beach area
FISH	borrow site not very productive	borrow site may have sea grass, hard bottom, or reef	groins or breakwater may attract fish	possible fish on aquatic sand sources	0
CULTURAL RESOURCES	no effects	investigation required; possible adverse effects	investigation required; possible adverse effects	investigation required; possible adverse effects	potential adverse effects on shoreline resources
ECONOMICS	uses nearby economic sand source, beach enhanced	no other suitable nearby sources	could cost less but less beach enhancement	higher hauling or bulk costs (1 1/2-2 times more)	continued beach degradation
ENERGY REQUIREMENTS AND CONSERVATION	small energy use in comparison	impact would be similar to alt. 1	depends on measure	higher in comparison, greater hauling distance	0

- 3.05 Typical Cross-Section. The typical cross-section on Captiva Island would have a constructed berm height of 6 feet NGVD, and would extend the existing 6 foot contour an average of 128 feet toward the Gulf of Mexico (Figure EA-3). The constructed beach would have a 1 vertical to 10 horizontal slope from the seaward 6 foot contour to an intercept of the existing bottom. The constructed beach will adjust over time to an equilibrium shape, with a 1 vertical to 12 horizontal slope from the 6 foot NGVD contour to the mean water line, and then a slope of 1 vertical to 25 horizontal from the mean water line to an intercept with the existing bottom. The constructed and adjusted beach profile on northern Sanibel Island would have similar characteristics, except that the constructed berm would extend the natural berm an average of 155 feet towards the Gulf of Mexico.
- 3.06 Departure from Authorized Plan. The local sponsor (CEPD) plans to place 118,000 cubic yards of sand on Captiva Island in addition to the 629,000 recommended in this plan. The majority of this additional sand will be placed between DNR survey monuments R85 and R94 (Figure EA-3).

#### **4.00 EXISTING CONDITIONS.**

- 4.01 General. The entire project area has been developed. Resort and beach recreation development is prevalent in the northern segment of Captiva Island with the remainder being primarily single family residences. State Road 867 parallels the shoreline for a distance of approximately one mile and a rubble revetment was constructed to protect this roadway. Vegetation was planted on the dune along the entire island following completion of the 1988-1989 construction. This project enhanced the sea oat community that exists on the northern end of the island which was established as part of the South Seas Plantation restoration project in 1981. Northern Sanibel is a mix of single family residences and resort motels.
- 4.02 Environmental Setting. The project is in an area of overlap between subtropical marine species and temperate marine species. Many of the sessile tropical species are at the northern limit of their range and are under some natural stress during the winter months because of lowered temperatures and the increased turbidities brought on by storms. Many motile forms, such as fish, migrate in and out of the area with the seasons. During the warmer summer months, tropical species predominate, while during the cooler winter months, temperate species are relatively more abundant.
- 4.03 Threatened and Endangered Species. Construction would take place in habitat which may be utilized by the species listed in Table EA-3. The dredged material would be deposited on habitat utilized for turtle nesting. The project site is not critical habitat for any of these species.





BEACH EROSION CONTROL  
 LEE COUNTY, FLORIDA  
 CAPTIVA ISLAND SEGMENT  
 RECOMMENDED PLAN

FIGURE EA-3

EA-9

Table EA-3

Threatened, Endangered, and Rare Species Which May Exist  
Near the Captiva Island Project Area

Species Name (Scientific Name)	Agency Listing <sup>(1)</sup>		
	USFWS	State of FL (FGFWFC)	NMFS
West Indian manatee ( <i>Trichechus manatus latirostris</i> )	E	E	NL
Right whale ( <i>Balaena glacialis</i> )	E	E	E
Sei whale ( <i>Balaenoptera borealis</i> )	E	E	E
Finback whale ( <i>Balaenoptera physalus</i> )	E	E	E
Humpback whale ( <i>Megaptera novaeanglia</i> )	E	E	E
Sperm whale ( <i>Physeter catodon</i> )	E	E	E
Atlantic green turtle ( <i>Chelonia mydas</i> )	E	E	T
Atlantic hawksbill turtle ( <i>Eretmochelys imbricata imbricata</i> )	E	E	E
Kemp's Ridley turtle ( <i>Lepidochelys kempii</i> )	E	E	E
Atlantic loggerhead turtle ( <i>Caretta caretta</i> )	T	T	T
Atlantic leatherback turtle ( <i>Dermochelys coriacea</i> )	E	E	E
Common snook ( <i>Centropomus undecimalis</i> )	NL	SSC	NL
Gulf sturgeon ( <i>Acipenser oxyrinchus desotoi</i> )	T	SSC	T

(1) E=Endangered; T=Threatened; SSC=Species Special Concern; NL=Not Listed

Compiled From: Florida Game and Fresh Water Fish Commission. Official Lists of Endangered and Potentially Endangered Fauna & Flora in Florida. 1 June 1994. D. A.Woods, compiler. 23 pg.

J. N. "Ding" Darling National Wildlife Refuge - Mammal List. 1 pg.

Endangered and Threatened Species and Critical Habitats under NMFS Jurisdiction, Florida Gulf Coast, National Marine Fisheries Service, July 23, 1993, 1 page.

4.04 Fish and Wildlife Resources. The project area may, conceivably, be used by a number of species of reptiles: Atlantic green turtle (*Chelonia mydas*), Atlantic hawksbill turtle (*Eretmochelys imbricata*), Atlantic Ridley turtle (*Lepidochelys kempii*), Atlantic loggerhead turtle (*Caretta caretta*), and Atlantic leatherback turtle (*Dermochelys coriacea*), from March to September.

4.04.01 Sea turtle nesting surveys are performed annually on Captiva and Sanibel Islands. Table EA-4A presents nesting data for Captiva Island for the years 1975 through 1994. Table EA-4B presents nesting data for Sanibel Island for the years 1979 through 1994.

Table EA-4A

Sea Turtle Nesting Data  
For  
Captiva Island  
(5 Miles)

	1975 <sup>(1)</sup>	1976 <sup>(1)</sup>	Nourished 1988 <sup>(1)</sup>	1989* <sup>(1)</sup>	1990 <sup>(1)</sup>	1991 <sup>(2)</sup>		1992 <sup>(3)</sup>	1993 <sup>(3)</sup>	1994 <sup>(3)</sup>
						<i>in situ</i>	relocated			
Nests	26	12	44	39	73	47	24	75	112	108
False Crawls	45	21	67	Not Available	85	86		99	125	104
% Nesting Success	36.6	36.4	39.6	Not Available	46.2	83.1	71.3	N/A	N/A	N/A

\* incomplete data (only July 1 - August 31)

Sources: <sup>(1)</sup> "Sea Turtle Conservation - Captiva Style" by Mr. Charles R. LeBuff, Jr., of Caretta Research, Inc. 1990.

<sup>(2)</sup> Erick Lindblad, Sanibel Captiva Conservation Foundation, personal communication. 1992.

<sup>(3)</sup> Erick Lindblad, Sanibel Captiva Conservation Foundation, personal communication. 1995.

Table EA-4B

Sea Turtle Nesting Data  
For Sanibel Island  
(11.5 miles)

	1979 <sup>(1)</sup>	1980 <sup>(1)</sup>	1981 <sup>(1)</sup>	1982 <sup>(1)</sup>	1983 <sup>(1)</sup>	1984 <sup>(1)</sup>	1985 <sup>(1)</sup>	1991 <sup>(2)</sup>		1992 <sup>(3)</sup>	1993 <sup>(3)</sup>	1994 <sup>(3)</sup>	
								East	West		NORTHERN 1 MILE OF SANIBEL ISLAND, INCLUDING PROJECT AREA		
									<i>in situ</i>	relocated			
Nests	86	65	72	70	92	134	128	32	125	2	2	6	0
False Crawls	Not Available	15	32	30	28	Not Available	58	50	132		N/A	N/A	0
% Nesting Success	Not Available	81.3	69.2	70	76.7	Not Available	68.8	86.3	79.2*	91.5	N/A	N/A	0

\* 110 nests were evaluated.

Sources: <sup>(1)</sup> "Lee County Beach Management Plan Environmental Analysis" by Continental Shelf Associates, Inc., March 30, 1987. p. 14.

<sup>(2)</sup> Erick Lindblad, Sanibel Captiva Conservation Foundation, personal communication. 1992.

<sup>(3)</sup> Erick Lindblad, Sanibel Captiva Conservation Foundation, personal communication. 1995.

4.05 Borrow Area. Dredging operations to obtain sand for the Captiva Island segment of the beach renourishment would take place in the borrow area located approximately 4 nautical miles directly west of southern Captiva (Borrow Area III) as shown in Figure EA-1. Borrow Areas III-A and III-B, located approximately 5 to 6 nautical miles offshore of Sanibel Island, will be used as sand sources for the Sanibel Island segment. Table EA-5 presents sediment characteristics in the borrow areas.

Table EA-5

Sediment Characteristics for  
Borrow Areas III-A, and III-B

Borrow Area	Volume of Material (million cy)	Mean Grain Size	Sorting ( $\phi$ )	Silt (%)
III	1.2	0.39 mm (1.37 $\phi$ )	1.41	3.6
III-A	1.2	0.41 mm (1.28 $\phi$ )	.95	3.8
III-B	1.1	0.36 mm (1.46 $\phi$ )	.90	4.0

4.05.01 Biota.

4.05.01(a) Hardbottom and Seagrass. The area proposed for dredging is characterized by a featureless sandy bottom. A "pseudo" limestone layer was found at or just below the surface in adjacent areas based on a seismic survey and limited side scan sonar survey conducted in 1990 (CPE, 1991). In September 1995, a more detailed side scan sonar survey was performed in each of the three borrow areas proposed for dredging. Diver surveys were performed at each potential hardground location identified by the side scan sonar. Several areas of hardground were located outside of the proposed dredge areas. The borrow areas will be modified as shown in Figure EA-1 to provide a minimum offset of 500 feet from the exposed hardground. The construction plans will be modified to reflect the location of hardgrounds and the modified borrow areas as shown in Figure EA-1. Aerial photographs of the project area shoreline have no indication of nearshore hardbottom.

4.05.01(b) Invertebrates and Fishes. Species of relatively nonmotile infaunal invertebrates, such as mollusks, may inhabit the proposed borrow areas. Motile organisms including fish, crabs, and sand dwelling organisms should be able to escape the area during construction. Many of those species that are not able to escape the construction area are expected to recolonize within 6 months to a year after project completion.

- 4.06 Historic, Cultural, and Archeological Resources. There are no known historic or archeological resources in the beach segment to be renourished. Reports resulting from cultural resource investigations of the proposed borrow areas were prepared by Dr. Robert Baer for Coastal Planning and Engineering, Inc. (CPE) and are titled: "Cultural Resource and Hydrographic Investigations of a Captiva Island Offshore Borrow Area", dated February 1994 and "Cultural Resource and Remote Sensing Magnetometer Surveys of Two Designated Sand Borrow Sites Selected as Sources for Beach Renourishment Offshore of Captiva and Sanibel Islands, Florida", dated May 1995. During these investigations, six magnetic anomalies were identified in the three proposed borrow areas. Only anomaly 4 in Borrow Area IIIB may represent a potentially significant cultural resource. Two anomalies are located outside of the proposed borrow areas and the analysis of the gamma readings for the remaining anomalies indicates that they do not represent significant submerged cultural resources.
- 4.07 Water Quality. The waters fronting the project are classified as Class III by the State of Florida. Class III waters are considered suitable for recreation and the management of fish and wildlife.
- 4.08 Noise. Ambient noise levels in the project area are low to moderate. The major noise producing sources are breaking surf and adjacent residential and resort areas. These sources are expected to continue at their present noise levels.
- 4.09 Air Quality. Air quality along Captiva Island and Sanibel Island is good due to the presence of either on or off shore breezes. Lee County is classified as a ~~non~~-attainment area for ozone and an attainment area for all other Federal Air Quality Standards. *R for Lee County*
- 4.10 Hazardous, Toxic and Radioactive Wastes. The waters offshore of the project area have historically been used for fishing and recreation. There are no records indicating use of the waters or the beach which would indicate the possibility of hazardous, toxic, or radioactive wastes. The nature of the work involved with renourishing beaches is such that contamination by hazardous and toxic wastes is very unlikely. The areas under study are high energy littoral zones and the materials used for nourishment are composed of particles with large grain sizes that do not normally have contaminants adsorbing to them. No contamination from hazardous and toxic waste spills is known in the project area.
- 4.11 Aesthetics. Captiva Island and Sanibel Island possess visually pleasing attributes including the waters of the Gulf of Mexico and the existing natural appearing beach. The white sand contains fragments of shells, which tend to give the beach a golden tint. The beaches of Captiva and Sanibel Islands, although eroded, are famous for the shells which are sought by visitors. The islands are developed residentially along the majority of their lengths. Hotels and condominiums are present in some areas of South Seas Plantation and intermittently along the rest of Captiva Island and the

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northern end of Sanibel. There is a vegetated dune along the entire length of Captiva Island. The dune height along Captiva and Sanibel Islands averages approximately +7.6 feet NGVD. Vegetation along the dune includes native dune plants such as sea oats. Some sections of the dune are adjacent to the Captiva-Sanibel Road, which is the only route to mainland Florida. The maintenance nourishment project will result in an average berm width of 128 feet on Captiva Island and 155 feet on Sanibel Island. Beachgoers will benefit from the additional available beach area.

**5.00 IMPACT OF PROPOSED ACTION.**

5.01 Fish and Wildlife Resources. There would be a temporary impact on marine and shore life in the immediate vicinity of construction. Nearshore free-swimming organisms would temporarily leave the construction area due to an increase in turbidity and construction related activities. A study of the nearshore fish populations of Captiva Island was conducted in conjunction with the 1988-89 nourishment project to determine the effects, if any, of the nourishment project on the resident nearshore fishes of the area. The study concluded that the impact of the nourishment process was minimal and limited to the period of dredging. No long term adverse impacts could be detected; the composition of the nearshore fish fauna and related seasonal distribution of the various species was found to be similar to that of other Gulf of Mexico beaches (Mote Marine Laboratory, December 1991). Free-swimming organisms would avoid the vicinity of the dredging due to the dredge related noise, vibration and turbidity. They would return to the area when dredging stopped.

5.01.01 Littoral and sublittoral invertebrates in the stretches receiving fill would be buried and lost, but many species inhabiting the high energy surf zone are well suited for burrowing, and some of these organisms could burrow up through the fill material and survive. Those areas covered by fill would become repopulated by organisms similar to those destroyed. Benthic monitoring studies conducted along the beach before, during and after the 1988-89 restoration project showed that biological community patterns and abundant species recovered to pre-project levels within six months to one year after project completion (CSA, 1992).

5.01.02 Infauna would be destroyed during dredging of the borrow area. The borrow areas would quickly be repopulated by marine animals of the same type as those destroyed by dredging. Monitoring of the borrow area used in the South Seas Plantation Project showed repopulation occurred within one year. Benthic monitoring studies conducted before, during and after the 1988-89 restoration project indicated that the beach project had a minimal effect on the borrow area in terms of the biological assemblage summary parameters. Changes in these parameters that may have been related to deposition of sand during the restoration project appeared to last for approximately one year (CSA, 1992).

5.02 Endangered Species Act. The U.S. Army Corps of Engineers/Jacksonville District has initiated consultation with the U.S. Fish and Wildlife Service (FWS) and the

National Marine Fisheries Service (NMFS) by public notices dated 30 September 1994 and 3 March 1995. The purpose of the consultation was to determine the effect of the proposed project on the West Indian manatee, the various species of sea turtles and other endangered species known to inhabit the project area.

The Corps has determined that the project may have an effect on the nesting habitat of the threatened loggerhead sea turtle (Caretta caretta) and the endangered green sea turtle (Chelonia mydas). In a letter dated 25 October 1994, NMFS deferred to the FWS for comments on the Captiva segment of the project. NMFS again deferred comment in a 28 March 1995 letter for the Sanibel segment. The FWS concurred with the Corps' determination and requested the initiation of consultation for these two species of sea turtles in accordance with Section 7 of the Endangered Species Act of 1973, as amended (Johnson, 1995).

The Corps and the FWS have determined that the project is not likely to affect the West Indian manatee (Trichechus manatus latirostris) nor its critical habitat (Johnson, 1995).

5.02.01 Manatees. Construction of the project may potentially result in injuries to manatees during vessel movement or fill material discharge activities. Precautionary measures would be implemented to help prevent boat collision and propeller laceration injuries to manatees. The following two paragraphs will be included in the contract for the project.

"The Contractor will instruct all personnel associated with the construction of the project about the presence of manatees in the area and the need to avoid collisions with manatees. 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 of the bottom. Vessels transporting personnel between the landing and dredge shall follow routes of deep water to the greatest extent possible. All personnel should be advised that there are civil and criminal penalties for harming, harassing, or killing manatees, which are protected under the Endangered Species Act of 1973, as amended; the Marine Mammal Protection Act of 1972, and Section 370.12, Florida Statutes. The Contractor shall be held responsible for any manatees harmed, harassed, or killed as a result of the construction of the project."

"The Contractor shall keep a log detailing all sightings, collisions, damage, or killing of manatees which have occurred during the contract period. Any collision with a manatee resulting in death or injury to the animal shall be reported immediately to the Chief, Environmental Branch (Jacksonville District), and the U.S. Fish and Wildlife Service (Vero Beach Field Office). Following project completion, a report summarizing the above incidents shall be submitted to the Chief, Environmental Branch."



5.02.02 Sea Turtles. Construction of the project could adversely affect nesting sea turtles and/or sea turtle nesting habitat. As a result, the Corps will require the Contractor to comply with all State and Federal permit requirements designed to help minimize potential adverse impacts to nesting sea turtles and sea turtle nesting habitat. Precautionary measures that may be implemented may include the monitoring of sea turtle nesting and hatching activities following construction, the minimization of construction lighting during the nesting season and the monitoring of post-construction beach compaction and scarp formation.

To minimize impacts to nesting and hatching sea turtles, construction of the project is planned for the months of November through February. However, it may be necessary to construct the project between March and October due to planning and cost constraints. Beach restoration and periodic renourishment, if performed from March to October, could cover up sea turtle nests, and could interfere with or prevent the natural hatching process. Construction during the nesting season will occur only if a permit modification is granted by the DEP. In addition, the FWS Biological Opinion permits construction during the nesting season only for the Sanibel segment of the project. If any section of Captiva Island were to be constructed during turtle nesting season, reconsultation with the FWS would be necessary. If beach renourishment is to occur during the sea turtle nesting season, the preventative measures described below will be implemented.

5.02.03 Environmental Protection. Under an agreement with the USFWS, the Florida Department of Environmental Protection (DEP) controls sea turtle egg recovery/relocation operations within the State of Florida. The DEP specifies the qualifications of the recovery personnel and the procedures they are to use. In the event that construction occurs during the sea turtle nesting season (March to October), the Captiva Island Beach Erosion Control Federal Project dredge and fill contract will be specially conditioned by the Corps of Engineers to hold the contractor responsible for meeting all DEP sea turtle nest relocation criteria. The Contractor shall be responsible for daily dawn patrols of the entire beach work area for the purpose of locating, recovering/relocating and incubating sea turtle eggs and for the release of sea turtle hatchlings in accordance with the conditions of accepted DEP sea turtle nest relocation procedures. The FWS Biological Opinion states that "for any beach nourishment activity in the spring, nest survey and relocation activities must begin 65 days prior to the beginning of beach construction activities or by May 1, whichever is later. In the fall, nest surveys and relocations must begin 65 days prior to the initiation of beach construction and continue until September 15." If work is scheduled from March to October, the contractor will be required to abide by the stipulations in the FWS Biological Opinion. Construction during nesting season will be performed only if a permit modification is issued by DEP.

5.03 Historic, Cultural, and Archeological Resources. There are no known historic or archeological resources located on the beach segments proposed for renourishment for this project. During cultural resource magnetometer surveys conducted for this

project, only one potentially significant magnetic anomaly was identified. A 200-foot radius buffer zone will be established around this anomaly to protect it from dredging activity. In a letter dated December 9, 1994, the Florida State Historic Preservation Officer (SHPO) concurred with the no effect determination for use of Borrow Area III. In a letter dated July 17, 1995, the SHPO concurred with the no effect determination for use of Borrow Areas IIIA and IIIB, conditioned upon the establishment of a 200-foot buffer zone around the anomaly in Borrow Area IIIB.

- 5.04 Water Quality. The waters fronting the project are classified as Class III by the State of Florida. Class III waters are considered suitable for recreation and the management of fish and wildlife. The project would cause temporary increases in turbidity at the dredging and discharge sites. These will be temporary conditions and will not significantly affect the area's water quality. The State of Florida granted a mixing zone variance for the 1988-1989 nourishment project, which allowed state water quality standards to be exceeded for a limited time during spoil placement. The mixing zone extended 300 meters offshore and 1,000 meters downcurrent from the discharge point except within 1,500 meters of Blind Pass or Redfish Pass. A similar variance has been requested for this project, and will be included as an attachment in the final EA.
- 5.05 Noise. There would be a temporary increase in the noise level during construction. The principal noise would stem from the vicinity of the discharge point on the beach and dredge. Construction equipment will be properly maintained in order to minimize the effects of noise. Increases to the current levels of noise as a result of this project will be localized and minor, and will be limited to the time of construction.
- 5.06 Air Quality. The short-term impact from emissions by the dredge and other construction equipment associated with the beach nourishment will not significantly impact air quality. The Florida Department of Environmental Protection does not regulate marine or mobile emission sources (dredge and construction equipment) within Lee County. No air quality permits are required for this project.
- 5.07 Hazardous and Toxic Waste. The waters offshore of the project area have historically been used for fishing and recreation. There are no records which would indicate the possibility of hazardous, toxic, or radioactive wastes along the beach or within the adjacent waters. The nature and composition of the fill material is similar to that of the native beach; there is no indication that hazardous toxic waste is present or would be introduced into the water column or transferred to the project area.
- 5.08 Aesthetics. The renourishment of the beach will maintain the natural appearance of the protective beach along the gulf front of the island. Two sections of dune on Captiva Island will be rebuilt as a part of the project. Native dune vegetation will be planted in both areas. Two sections of dune in the Sanibel Island project area will also be replanted with native dune vegetation. As a result, the construction of coastal structures to protect upland property will not be required. There will only be a

temporary reduction in aesthetics during construction; there is no expectation of adverse affects to the environment as a result of construction.

- 5.09 Beach Appearance. To prevent the formation of a scarp along the new beach fill, during construction the face of the beach will be sloped to reflect a stabilized condition and will be shaped and graded to prevent ponding of water. The elevation of the beach will be set to prevent frequent overtopping.
- 5.10 Relationship of Project to Environmental Protection Statutes and the Florida Coastal Zone Management Plan (CZMP). The effect of this project on the coastal zone would be to enhance the zone's appearance and suitability for beach-type recreation and to restore some of the coastal zone's ability to provide protection against storms and flooding. No lasting adverse effect on water quality is expected. Restoration of the State's beaches is a policy statement within the State CZMP Chapter 161 (Coastal Construction).
- 5.11 Dredge Material Discharge. The project would cause temporary increases in turbidity at the dredging and discharge sites. These are temporary conditions and would not significantly affect the area's water quality. The State of Florida granted a mixing zone variance for the 1988-1989 nourishment project, which allowed state water quality standards to be exceeded for a limited time during spoil placement. The mixing zone extended 300 meters offshore and 1,000 meters downcurrent from the discharge point except within 1,500 meters of Blind Pass or Redfish Pass. A similar variance has been requested for this project, and will be included as an attachment in the final EA.
- 5.12 Coastal Barrier Resources Act. The project area, Captiva Island, is not part of the Coastal Barrier Resources System.
- 6.00 **ENVIRONMENTAL COMMITMENTS.** The Captiva Erosion Prevention District (CEPD) and its contractors commit to avoiding, minimizing or mitigating for adverse effects during construction activities. The CEPD will incorporate FWS conditions, included in its Section 7 review, into the contract specifications, and will incorporate DEP permit conditions into the contract plans and specifications. The CEPD will fulfill the requirements of Federal, State, and Local environmental laws, as described in Section 7.00 of this Environmental Assessment.
- 7.00 **COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS.**
- 7.01 National Environmental Policy Act of 1969, as amended. Environmental information on the borrow and beach fill areas has been compiled and an Environmental Assessment has been prepared. The project is in compliance with the National Environmental Policy Act.

- 7.02 Endangered Species Act of 1973, as amended. This project has been coordinated with the National Marine Fisheries Service (NMFS) and the United States Fish and Wildlife Service (FWS). The NMFS deferred to the FWS. The FWS issued a Biological Opinion dated September 5, 1995 allowing construction of the Sanibel segment during turtle nesting season, with the establishment of a nest monitoring and relocation program. This project is fully coordinated under the Endangered Species Act of 1973, and will be in full compliance with the act.
- 7.03 Fish and Wildlife Coordination Act of 1958, as amended. This project is being coordinated with the FWS, and will be in full compliance with the act.
- 7.04 National Historic Preservation Act of 1966, as amended, and the Archeological and Historic Preservation Act, as amended. Cultural resource investigations and analyses were completed for this project and consultation with the Florida State Historic Preservation Officer has been completed. In a letter dated December 9, 1994, the SHPO concurred with the no effect determination for use of Borrow area III. In a letter dated July 17, 1995, the SHPO concurred with the no effect determination for use of Borrow Areas IIIA and IIIB, conditioned upon the establishment of a 200 foot buffer around the anomaly in Borrow Area IIIB. Therefore the project is in compliance with these Acts and with 36 CFR Part 800.
- 7.05 Clean Water Act of 1972, as amended. Full compliance will be achieved with the issuance of a Section 401 permit from the State. A permit modification will be obtained from the State before turtle nesting season if there is a possibility of construction occurring during nesting season. Application has been made for a mixing zone variance during the project construction. A Section 404(b) Evaluation is included in this report as Appendix EA-I.
- 7.06 Clean Air Act of 1972, as amended. No air quality permits will be required for this project. Full compliance will be achieved with receipt of comments on the final EA from the United States Environmental Protection Agency.
- 7.07 Coastal Zone Management Act of 1972, as amended. The study is in partial compliance at this time. Full compliance will be achieved with receipt of comments from the State Clearinghouse which will be initiated by the U.S. Army Corps of Engineers. A Federal consistency determination in accordance with 15 CFR 930 Subpart C is included in this report as Appendix EA-II.
- 7.08 Farmland Protection Policy Act of 1981. No prime or unique farmland will be impacted by implementation of this project. This act is not applicable.
- 7.09 Wild and Scenic River Act of 1968, as amended. No designated Wild and Scenic river reaches will be affected by project related activities. This act is not applicable.

- 7.10 Marine Mammal Protection Act of 1972, as amended. Incorporation of the safe guards used to protect threatened or endangered species during project implementation will also protect any marine mammals in the area, therefore, this project is in compliance with the Act.
- 7.11 Estuary Protection Act of 1968. No designated estuary will be affected by project activities. This act is not applicable.
- 7.12 Federal Water Project Recreation Act, as amended. There is no cost-shared recreation proposed for this project.
- 7.13 Fishery Conservation and Management Act of 1976. This project is being coordinated with the NMFS, and will be in full compliance with the act.
- 7.14 Submerged Lands Act of 1953. The project will occur in submerged lands of the State of Florida. The project is being coordinated with the State and is in compliance with the Act.
- 7.15 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.
- 7.16 Rivers and Harbors Act of 1899. The proposed work will not obstruct navigable waters of the United States. The project is in full compliance.
- 7.17 Anadromous Fish Conservation Act. Anadromous fish species will not be affected. The project is being coordinated with the National Marine Fisheries Service and will be in full compliance with the act.
- 7.18 Migratory Bird Treaty Act of Migratory Bird Conservation Act. No migratory birds will be affected by project activities. The project is in compliance with these acts.
- 7.19 E.O. 11990, Protection of Wetlands. No wetlands will be affected by project activities. The project is in compliance with the goals of this Executive Order.
- 7.20 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.
- 8.00 AGENCY COORDINATION.** This proposed project is being coordinated with the following agencies: the United States Fish and Wildlife Service, the National Marine Fisheries Service, the United States Environmental Protection Agency, the Florida State Clearinghouse, the Southwest Florida Regional Planning Council, the Florida State Historic Preservation Officer, and the Florida Department of Environmental Protection.

8.01 Responsibility of the CEPD. The CEPD is a political subdivision of the State of Florida, and as such will act as liaison between all interested agencies, groups or individuals for this portion of Lee County's Federal Shore Protection project.

## 9.00 PUBLIC INVOLVEMENT.

9.01 Scoping and Draft EA. A public notice describing the Captiva segment of the project was published October 31, 1994 and November 6, 1994. A revised public notice was mailed to potentially interested parties March 3, 1995, to describe the addition of the Sanibel segment of the project. In response to the public notice, comments have been received from the Fish and Wildlife Service and the Southwest Florida Regional Planning Council.

9.02 Comments Received. Comments below are taken from letters included in Appendix EA-III, Pertinent Correspondence.

Comment # 1. In a December 9, 1994 letter, the State Historic Preservation Officer stated that removal of borrow from Borrow Area III "will have no effect on historic properties listed, or eligible for listing in the National Register of Historic Places".

Comment # 2. In an April 28, 1995 letter, the United States Department of the Interior, Fish and Wildlife Service (FWS) concurred with the Corps' opinion that the project would have no effect on the West Indian manatee or its critical habitat.

Comment # 3. In a letter dated March 14, 1995, the Southwest Florida Regional Planning Council found the project to be "Regionally Significant and Consistent with adopted goals, objectives, and policies of the Regional Comprehensive Policy Plan".

Comment #4. The State Historic Preservation Officer, in a letter dated July 17, 1995, stated that "conditioned upon a 200 foot buffer zone being maintained around the anomaly in Borrow Area III-B, the proposed activities will have no adverse effect on any significant resources listed or eligible for listing in the National Register of Historic Places."

## 10.00 REFERENCES.

Coastal Planning & Engineering, Inc. and Robert Baer, "Cultural Resource and Hydrographic Investigations of a Captiva Island Offshore Borrow Area," Boca Raton, FL, February 1994.

Coastal Planning & Engineering, Inc. and Robert Baer, "Cultural Resource and Remote Sensing Magnetometer Surveys of Two Designated Sand Borrow Sites Selected as Sources for Beach Renourishment Offshore of Captiva and Sanibel Islands, Florida," Boca Raton, FL, May 1995.

Coastal Planning & Engineering, Inc., "General and Detailed Design Memorandum for Lee County, Florida Beach Erosion Control Project (Captiva Island Segment)," Boca Raton, FL, July 1989.

Coastal Planning & Engineering, Inc., "Captiva Island Beach Maintenance Nourishment Project Phase II - Sand Search," CEPD, April 1991.

Continental Shelf Associates, Inc., "Lee County Beach Management Plan Environmental Analysis," March 30, 1987.

Continental Shelf Associates, Inc., "Captiva Beach Restoration Plan Benthic Monitoring Project," Jupiter, FL, February 1992.

Florida Game and Fresh Water Fish Commission, "Official Lists of Endangered and Potentially Endangered Fauna & Flora in Florida," 1 June 1994, D.A. Woods, compiler, 23 pg.

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Johnson, Craig, Letter from Mr. Craig Johnson, Supervisor, South Florida Ecosystem Office, USFWS, to Colonel Terry Rice, District Engineer, Jacksonville District, USACE, April 28, 1995, 2 pg.

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Mote Marine Laboratory, "Captiva Nearshore Fisheries Study, Final Report," Sarasota, FL, December 1991.

National Marine Fisheries Service, "Endangered and Threatened Species and Critical Habitats under NMFS Jurisdiction, Florida Gulf Coast," NMFS, July 23, 1993, 1 pg.

United States Army Corps of Engineers, "Automated Coastal Engineering System, Version 1.07," Coastal Engineering Research Center, Department of the Army, Waterways Experiment Station, Corps of Engineers, Vicksburg, MS, 1992.

## **11.00 REPORT PREPARATION.**

This report was prepared by Coastal Planning & Engineering, Inc.

