Environmental Assessment and Finding of No Significant Impact

Jupiter Carlin Segment
Shore Protection Project and Borrow Area

Palm Beach County, Florida

U.S. Army Corps
of Engineers
JACKSONVILLE DISTRICT

July 2013

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FINDING OF NO SIGNIFICANT IMPACT
JUPITER CARLIN SHORE PROTECTION PROJECT AND BORROW AREA
PALM BEACH COUNTY, FLORIDA

I have reviewed the Environmental Assessment (EA) for 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 agencies having jurisdiction by law and/or special expertise, I conclude that the proposed action will not significantly impact the quality of the human environment and does not require an Environmental Impact Statement (EIS). Reasons for this conclusion are, in summary:

a. The proposed action will be conducted in accordance with the Endangered Species Act, and specifically in compliance with the Statewide Programmatic Biological Opinion issued by the U.S. Fish and Wildlife Service (USFWS) in August 2011, and the Programmatic Piping Plover Biological Opinion issued in May 2013. The work will not jeopardize the continued existence of any threatened or endangered species or affect any designated critical habitat under the purview of USFWS and the National Marine Fisheries Service.

b. This project has been coordinated with the State of Florida, and all applicable water quality standards will be met.

c. The proposed work is being coordinated through the State of Florida and is expected to be consistent with the Florida Coastal Zone Management Program upon receipt of the DEP Permit.

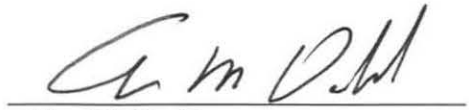
d. The proposed work has been coordinated with the Florida State Historic Preservation Officer and appropriate federally recognized tribes. It has been determined that the proposed dredging will not adversely affect any properties eligible for or listed on the National Register of Historic Places.

e. There are no known sources of hazardous, toxic, or radioactive wastes in the project area. Sediments and materials for the areas to be excavated during construction have been evaluated to be sandy material, with no indication of contaminants.

f. Public benefits will be provided with a renourished beach.

g. Measures will be in place during construction to eliminate, reduce, or avoid adverse effects below the threshold of significance to fish and wildlife resources.

In view of the above, I conclude that the proposed action for the Jupiter Carlin segment for shore protection will not result in a significant adverse effect on the human environment. This Finding incorporates by reference all discussions and conclusions contained in the EA herewith and does not require an EIS.



Alan M. Dodd
Colonel, U.S. Army
District Commander

25 July 13
Date

ENVIRONMENTAL ASSESSMENT

JUPITER CARLIN SEGMENT
PALM BEACH COUNTY SHORE PROTECTION PROJECT
SECTION 934 STUDY
PALM BEACH COUNTY, FLORIDA

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1.0 PROJECT PURPOSE AND NEED

1.1 PROJECT AUTHORITY

This report provides an Environmental Assessment (EA) of the Jupiter Carlin segment of the Palm Beach County, Florida Shoreline Protection Project (SPP). The SPP extends from the Martin County line to Lake Worth Inlet and South Lake Worth Inlet to the Broward County line. The Jupiter Carlin segment of the SPP begins at Jupiter Inlet and extends south 1.1 miles.

The original authorization for the Jupiter Carlin Segment project was a general authorization for initial Palm Beach shore protection project construction under WRDA 1962. However, the project was not constructed at that time. WRDA 1976, Section 156, stated "The Secretary of the Army, is authorized to provide periodic beach nourishment, where such nourishment has been authorized for a limited period for such additional period he determines necessary but in no event shall such additional nourishment extend beyond the fifteenth (15) year which begins after the date of initial construction". WRDA 1986 added Section 934 to amend Section 156 of WRDA 1976 to change the authorization from "15" to "50". The General Design Memorandum (GDM) Report for all of Palm Beach was prepared in 1987. The GDM Addendum for the Jupiter Carlin segment was completed in 1994 and outlined the project for initial construction, also changing the authorized project from 1.2 to 1.1 miles. The GDM Addendum was approved Feb 23, 1995. The Jupiter Carlin project initial construction began on April 13, 1995 and was completed May 4, 1995.

The existing Project Partnership Agreement (PPA) was executed March 21, 1995 for an authorized periodic nourishment period of 10 years following completion of initial construction. The PPA for periodic nourishment expired 10 years from the completion of initial construction, thus, in May 4, 2005. WRDA 1996 (Section 506b)3)B)) authorized the Secretary to carry out periodic beach nourishment for a period of 50 years beginning on the date of initiation of construction, if the Secretary determines necessary, specifically for the Palm Beach projects, including Jupiter Carlin.

If the Addendum had been approved after the 1996 WRDA, Jupiter Carlin could have been approved for a 50 year period of Federal participation. However, because the 1995 Addendum had been approved just a year earlier than the 1996 WRDA, it could not serve as the authorizing document to extend Federal participation. Therefore, the 934 Report, in progress, will serve as the decision document to extend Federal participation for 50 years from the date of initial construction (April 13, 1995) and if approved, will extend it through April 13, 2045.

This EA is being prepared according to the authority provided by Section 156 of the Water Resources Development Act of 1976 (PL 94-587), as amended by Section 934 of the 1986 Water Resource Development Act (PL 99-662). Under the authority, the Secretary of the Army, acting

through the Chief of Engineers, was granted discretionary authority to extend Federal participation to the fiftieth year after the date of initial construction of a project. The Palm Beach County Board of County Commissioners approved development of a Section 934 Study for the Jupiter Carlin segment on February 24, 2009.

1.2 Authorized Project History and Performance

The Jupiter Carlin segment has been constructed twice. The State of Florida issued two separate permits authorizing the 1995 and 2002 projects (50-1753379-9 and DBS90-258), a five-year permit, authorized the one-time construction of the initial 1995 restoration project. After expiration of that permit, FDEP issued permit no. 0163093-001-JC to Palm Beach County on July 27, 2001 authorizing the 2002 nourishment. Similarly, the Corps issued two Department of Army permits authorizing each nourishment. Most recently, the Corps issued permit no. 199000902 (IP-TA) for the 2002 nourishment of the Jupiter Carlin segment.

The 1995 Jupiter Carlin project placed sand from the Jupiter Inlet ebb shoal; the 2002 project placed sand from another offshore borrow area. During those same years, the beach also received nourishment sand from Jupiter Inlet sand trap dredging and dredging of the local reaches of the ICWW (**Table 1**).

Table 1. Authorized Project Dredging and Total Project Area Sand Placement for Jupiter Carlin during each Project Nourishment Year

Year	Ebb Shoal/Offshore Dredge Volume (cy)	Dredge Method	Total Beach Nourishment Volume (cy)
1995	603,800	Hydraulic Dredge	786,300
2002	625,000	Hopper Dredge	789,000

1.3 CHANGES TO THE AUTHORIZED PROJECT

Since publication of the 1994 SEIS, changes to the recommended plan have included the location and use of additional borrow areas.

1.4 PROJECT LOCATION

The Jupiter Carlin segment lies south of Jupiter Inlet between Florida Department of Environmental Protection (FDEP) reference monuments R-13 and R-19 in Palm Beach County, Florida. The segment is situated along the Atlantic Ocean in Section 5, Township 41 South, Range 43 East (**Figure 1**). Sand sources for currently proposed project beach nourishments in this segment include the Jupiter Inlet ebb shoal and an offshore borrow site called Singer Island (described in Section 2.2.1).

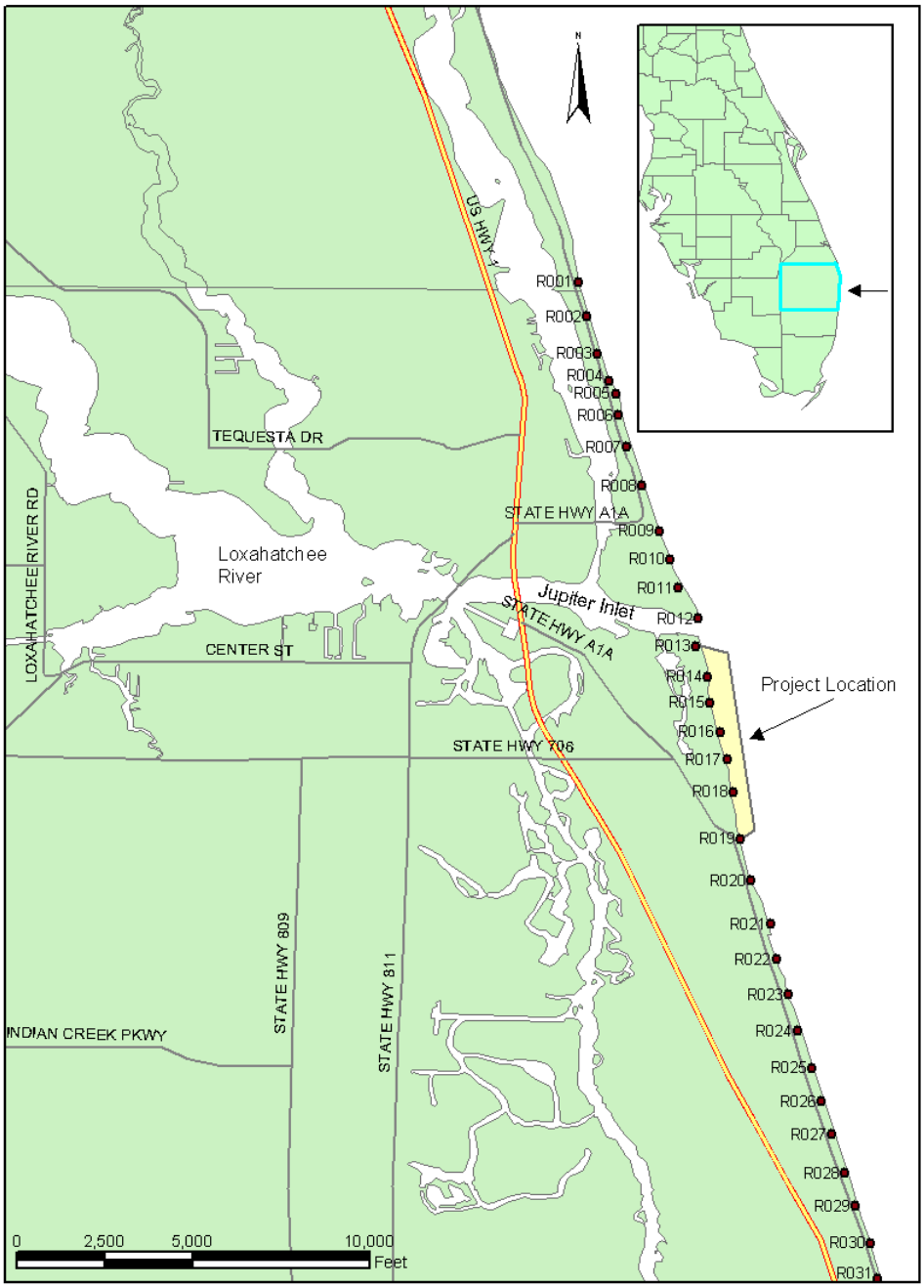


Figure 1. Jupiter Carlin Shoreline Protection Project Location

1.5 PROJECT NEED OR OPPORTUNITY

The project need is to protect existing shoreline, which remains the same as stated in the 1994 SEIS. The 1987 GDM, 1987 FEIS, and the FDEP in 2008 identified the area south of Jupiter Inlet as critically eroded. The Palm Beach County SPP increases the level of storm protection in the project area and feeds sand to beaches south of the project. The SPP has reduced existing shoreline recession from FDEP reference monuments R-13 to R-19 and southward since the 2002 nourishment.

1.6 AGENCY GOAL OR OBJECTIVE

As outlined in the countywide 1987 FEIS, and documented in the 1994 SEIS, planning objectives for this project include reducing expected storm-induced damage, reestablishing beaches suitable for current and future recreational beach activity demand, maintaining a suitable beach (sand) habitat for sea turtle nesting, supporting invertebrate and shorebird species, and maintaining recreational uses (including tourism). This EA excludes any additional planning objectives.

The objective of this EA is to provide sufficient information to assess a recommendation of extension of the project life through 2045. This EA updates the 1994 SEIS with current information concerning the project activities and associated environmental evaluations.

1.7 RELATED ENVIRONMENTAL DOCUMENTS

- 1987 GDM/FEIS for beach erosion control projects within Palm Beach County, Florida.
- 1994 GDM supplemented the 1987 GDM and included a Supplemental Environmental Impact Statement (1994 SEIS).

1.8 PERMITS, LICENSES, AND ENTITLEMENTS

Before start of construction, the project will achieve full compliance with the Clean Water Act, the Fish and Wildlife Coordination Act, Endangered Species Act, and the Magnuson-Stevens Fishery Conservation and Management Act. The FDEP and the Corps must issue environmental permits for the proposed action.

Placement of sand on the beach and dredging in the coastal waters of the State of Florida by the Corps requires compliance with Section 401 of the Clean Water Act (33 USC §1251 et seq.) as amended or 401 Water Quality certification issued by FDEP. The proposed action requires review by the Florida State Clearinghouse, Florida State Historic Preservation Office (SHPO), and the FDEP to receive the certification. Application to obtain the State's water quality certification for the proposed project was submitted to FDEP in January 2010. The SHPO previously approved the use of the proposed borrow area for the 2009 Juno Beach (non-federal) restoration project (SHPO, 2008). After review of an additional remote sensing site survey, SHPO (2009) recommended no further investigation of the site and approved the use of the area for the Jupiter Carlin segment.

The United States Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), the U.S. Environmental Protection Agency (EPA), and the Florida Fish and Wildlife Conservation Commission (FWC) will also coordinate and evaluate the proposed action. The USFWS has declared that projects along the shoreline of southeast Florida will require consultation for potential impacts to overwintering piping plovers in addition to consultation on potential impacts to marine turtles.

1.9 DECISIONS TO BE MADE

Federal agencies must decide whether to authorize participation in the Jupiter Carlin segment of the Palm Beach County Shoreline Protection Project until 2045. This EA provides an evaluation of effects to the human and natural environment with regards to the project.

1.10 SCOPING AND ISSUES

This EA compiles information from a variety of sources, including other National Environmental Policy Act (NEPA) documents prepared for this project and other similar projects in the region, Palm Beach County monitoring reports, and Biological Opinions. Information was obtained from literature search and coordination with Federal, state, and local resource agencies having expertise in certain areas.

2.0 ALTERNATIVES

The 1987 FEIS and 1994 SEIS provide full evaluations of reasonable alternatives to the proposed Jupiter Carlin segment of the SPP. The alternatives considered in this EA include the No Action alternative and the proposed action.

2.1 Alternative 1: No Action Alternative

The No Action alternative assumes that the current project area conditions and activities would not change. These conditions and activities would include small beach placement projects associated with Atlantic Intracoastal Waterway (ICWW) and Jupiter Inlet sand trap dredging under existing FDEP permits.

The 1994 SEIS presented the history of maintenance dredging of the Jupiter Inlet sand trap and of the Loxahatchee River ICWW dredging. These two projects repeatedly placed dredged material along the beach south of the inlet between 1952 and 1990. Small-volume beach sand placements between 1947 and 1995 had not provided sufficient beach to protect upland development, State Road A1A, dunes, dune vegetation, and provide appropriate recreational opportunities. Sand placement operations occurred in 36 of the 47 years between 1947 and 1994, and averaged 94,683 cubic yards (cy) each year placement occurred. Over the 47-year period, annual average sand placement equaled 69,512 cubic yards (based on data from 1994 SEIS). **Table 2** presents the more recent history (1995 – 2009) of placement on the beach south of the inlet resulting from maintenance dredging of the sand trap and ICWW.

Table 2. Jupiter Inlet Sand Trap and ICWW Dredging History since 1995

Year	Sand Trap Dredging* (cy)	ICWW Dredging* (cy)	Beach Placement (cy)
1995	72,000	110,500	182,500
1997	31,540		31,540
1999	85,000		85,000
2000	80,000	100,000	180,000
2001	82,900		82,900
2002	44,000	120,000	164,000
2004	58,000	150,000	208,000
2005	78,000		78,000
2006	70,500		70,500
2008	86,817	106,934	193,751
2009	66,754		66,754
Annual Average 1995 - 2009			89,530

*Hydraulic pipeline used for all beach placements

The No Action alternative would result in the continued erosion of the shoreline by wave and storm generated forces and interception of longshore sand transport by the inlet and inlet structures. The project area's downdrift proximity to the Jupiter Inlet and storm events has resulted in chronic erosion, which extends from the inlet south. From Bridges et al. (2008), the project area loses about 210,000 cy/yr. The loss of the protective beach would expose beachfront development and infrastructure (buildings, roads, utilities, parking lots) to destructive

storm waves. Loss or reduction of the shoreline would likely decrease turtle nesting habitat in this area. The erosion would negatively affect the public directly and indirectly through damage to or loss of residences and infrastructure, loss of recreational opportunity, high costs associated with storm damage repairs, and loss of tourism and associated income to the local economy.

2.2 Alternative 2: Preferred Alternative – Shoreline Protection and Borrow Area

The proposed action would continue the authorized Palm Beach County SPP, Jupiter Carlin segment, through 2045. The authorized project as described in the 1994 GDM provides for nourishment of the primary dune and a protective berm along 1.1 miles of shoreline from FDEP reference monuments R-13 to R-19. The proposed beach fill profile consists of a berm at elevation 7.5 feet (ft)-NAVD (9 ft-NGVD) with an average construction berm width of approximately 200 ft. Sand dredged from borrow areas in the Atlantic Ocean provides the fill for the project. A borrow area (Singer Island), which serviced the non-federal Juno Beach restoration project in Palm Beach County in spring 2010 and lies approximately 8.5 miles south of Jupiter Inlet, will service the Jupiter Carlin project (described further in 2.2.1). Sand source analysis concluded that after completion of the Juno Beach project, sufficient sand should remain for the Jupiter Carlin project. The Juno Beach project excavated approximately 1,235,000 cy from the borrow area in spring 2010. Approximately 3,052,000 cy of beach-quality sand remains in the borrow area.

A dredge will excavate and transport the fill material to the project site. The dredge will moor within approved contractor work areas and pump the material through a pipeline to the beach. Upon reaching the shorefront, the pipeline will extend along the beach either north or south, depending on construction progress. The contractor will relocate the pipeline discharge point as the project advances.

The dredging contractor will construct a shore-parallel dike of existing beach sand prior to initial pumping. The dike will advance ahead of the dredge pipe discharge point by a minimum distance of 300 ft. The dike length can increase to meet turbidity and water quality standards in the discharge water.

Replacement of sea oats (*Uniola paniculata*) and other native plants lost due to any erosion of the dune will occur as required as part of each beach renourishment project.

2.2.1 PROPOSED BORROW AREA

The proposed borrow site (**Figure 2**) lies at elevations -46 to -72 ft-NAVD centered about 3,900 ft offshore Singer Island and about 8.5 miles south of Jupiter Inlet. Roughly rectangular, the site encompasses approximately 350 acres, with its long axis oriented roughly parallel to the shoreline and a maximum length and width of 11,000 ft (2.1 miles) and 1,500 ft (0.28 miles).

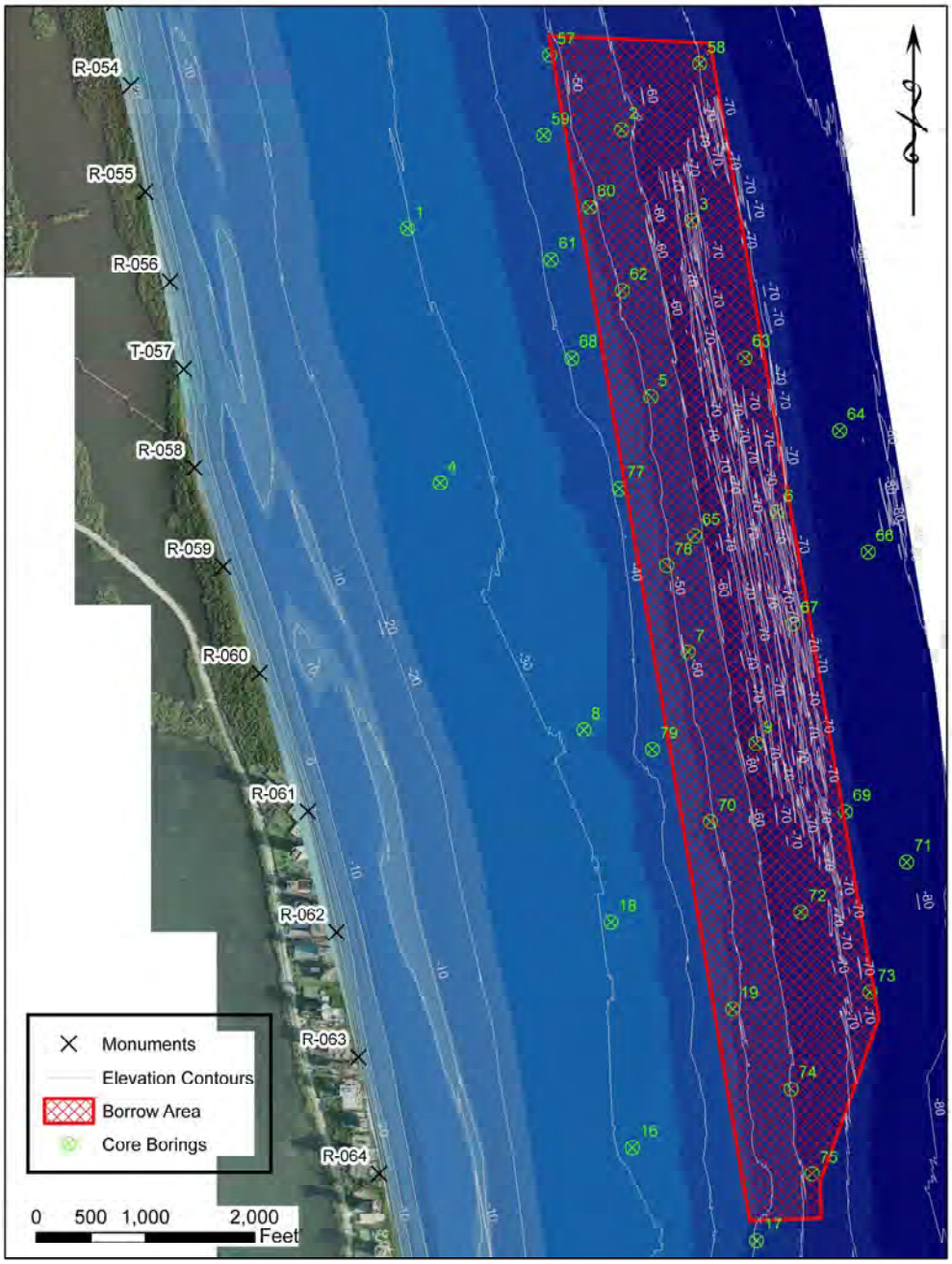


Figure 2. Proposed Singer Island Borrow Area (Post-Juno Beach Construction), Palm Beach County, Florida

As designated, the borrow site serviced the Juno Beach (non-federal) beach nourishment project and will service the Jupiter Carlin segment of the Palm Beach County SPP. The Juno Beach project, completed in March 2010, excavated roughly 1,235,000 cy of material from the borrow area. Figure 3 presents the post-construction borrow area survey and vibracore locations. The survey shows that the contractor generally dredged approximately five feet below the existing grade in the eastern portion of the delineated borrow area.

Geotechnical investigations of the proposed borrow area occurred in 2004. The investigations included sub-bottom seismic profiles; core borings of the full potential borrow area; and granularmetric, carbonate content, and Munsell color analyses of the sand. These data allowed determination of locations and depths of beach-compatible sand within the general borrow area. Note that the geotechnical information developed for this Singer Island borrow area is identical to that furnished to the FDEP for the permitted Juno Beach renourishment (Permit 0276415-001-JC). Therefore, data for the Singer Island borrow area currently reside in the FDEP Reconnaissance Offshore Sand Search database.

According to reconnaissance and detailed-level geotechnical investigations conducted by Palm Beach County, the borrow area contained approximately 4,300,000 cy of beach compatible material before construction of the Juno Beach project. Subtracting the volume dredged for Juno Beach leaves approximately 3,052,000 cy of material for the Jupiter Carlin project. Given the beach fill requirement of 995,600 cy, the borrow area potentially contains 300% of the required volume.

The 2010 Juno Beach project encountered rock during sand dredging operations. This unacceptable material for beach placement will also likely be encountered during the Jupiter Carlin renourishment because it is using the same sand source. With the knowledge gained from the Juno Beach project, the contracted dredger will screen the material on the dredge and provide only appropriate beach quality sand to the beach. The screened rock will be replaced at the dredged location within the confines of the borrow area, reducing impacts to the natural bathymetry of the sea floor and enhancing fish habitat.

The Singer Island borrow area may not contain enough sand to qualify as a borrow source for the remainder of the project life (through 2045) of the Jupiter Carlin segment of Palm Beach County SPP. The Corps (Taylor Engineering, 2009) has produced a draft Southeast Atlantic Regional Sediment Management Plan for Florida that examined the long-term sediment sources for beach nourishment projects in St. Lucie, Martin, Palm Beach, Broward, and Miami-Dade counties. The results of the draft plan indicate multiple borrow areas exist offshore northern Palm Beach and Martin counties with potentially 63,952,000 (Palm Beach County) and 282,734,000 cy (Martin County). These areas could potentially yield a long-term source of economical sediment for future renourishments of the Jupiter Carlin segment of the Palm Beach County SPP.

3.0 AFFECTED ENVIRONMENT

The Affected Environment section describes the environmental resources affected by the No Action or preferred action alternatives. This EA focuses on responses to federal agency comments expressed in letters concerning the 1994 SEIS. This document also addresses relevant changes to environmental resources that have occurred since the 1994 SEIS.

3.1 GENERAL ENVIRONMENTAL SETTING

Residential and public land uses have resulted in a fully developed shoreline in the project area, with a substantial portion dedicated to publicly owned and accessible open space and recreational areas. Jupiter Beach Park and Carlin Park, owned by Palm Beach County, comprise about 40% of the upland adjacent to the project beach. The remaining upland border comprises multiple-unit residential, vacation development, and open space.

3.1.1 Geology

The State of Florida lies on the Floridian Plateau. Exposure of the plateau has occurred during periods of relatively low sea level. Each historic sea level retreat left behind a wide variety of hard marine deposits, which waves and currents have subsequently moved about. These deposits formed the current sandy beaches, offshore bars, and barrier Islands (Kennett, 1982). South of Jupiter Inlet, the Atlantic shoreline presents a sandy beach with abundant sedimentary deposits offshore. Relatively thin (2 m thick or less) sandy beach deposits perch over a limestone base exposed as expanses of hardbottom in the nearshore and offshore of the beach (Finkl and Andrews, 2008). Historically, the shoreline dunes merged into extensive marshes to the west, which merged with upland areas. Much of the marshland has undergone development, and remaining marshland generally occurs as relatively isolated areas through which the ICWW runs and within which stormwater ponds have been constructed.

3.1.2 Climate

The project area's subtropical climate is greatly influenced by the proximity of the Gulf Stream. Annual precipitation averages approximately 60 inches per year in West Palm Beach, Florida. Temperatures typically range between approximately 92˚ Fahrenheit (F) and 58˚ F (Arrington, 2008).

3.1.3 Water Quality

The beach and nearshore environment in the project area is influenced by several factors including ebb and flood tidal waters through the Jupiter Inlet with a mean tidal range of 2.9 ft; waves averaging 2.7 ft in height; water temperatures ranging from 65° – 86° F (18.3° – 30° C). Long-term records of turbidity in Jupiter Inlet, the most relevant long-term dataset for the project area (1998 and 2008) showed a median turbidity of about 2.5 Nephelometric Turbidity Units (NTU) with a range of <1 to >12 NTU (Arrington, 2008). The ebb and flood of the tidal waters through Jupiter Inlet alternately flush the project area with oceanic and estuarine waters with varying degrees of velocity associated with tidal currents. The tides also create daily changes in the location and extent of wave impact on the bottom. These factors and the shifting sand of the nearshore and ebb tidal shoal create an environment in a constant state of change.

3.2 FISH AND WILDLIFE RESOURCES

3.2.1 Dune and Beach

The primary dune within the project area varies in height between about 10 ft NAVD and about 25 ft NAVD. Pedestrian-caused erosion and erosion due to natural forces have reduced dune quality in many areas to a relatively poor condition. The foredune at Ocean Trail is eroding rapidly and a single storm could potentially eliminate the foredune in that area. Species such as salt grass, sand spur, bay bean, sea oats, and sea grape vegetate the dunes along a significant fraction of the project reach. Wildlife is limited to small mammals, reptiles, invertebrates, and a variety of shore and wading birds. The beach, moderately sloped (approximately 1V:l0H), primarily contains medium and fine sediments composed of quartz particles and carbonates. Analysis of available sand samples from the existing beach (collected from dune toe, berm crest, and mean high water at FDEP reference monuments R-13, R-14, and R-15 in late spring 2009) revealed the following sand characteristics: Mean grain size (phi) = 1.39 (0.39 mm), sorting (phi) = 0.89, silt content = 0.97%, and 45% average carbonate content. Munsell Color evaluation reported Hues of 5Y, 10YR, Value 4 or lighter, and 1 – 2 Chroma (see Appendix A of the main Section 934 report).

The beach provides foraging and resting habitat for numerous seabirds and shorebirds such as terns, gulls sandpipers, plovers, and skimmers. Fish and invertebrates within the intertidal zone are the staple diet for these species.

In the supralittoral zone, ghost crabs (*Ocypode quadrata*) and mole crabs (*Emeria talpoida*), are the most visible and motile inhabitants of the sandy substrate.

3.2.2 Unconsolidated Substrate

The intertidal swash zone and the majority of the subtidal habitat in the project area consist of unconsolidated sand substrate beginning in the beach swash zone and continuing in subtidal areas. These zones lack dense populations of sessile plant and animal species (FNAI, 1990). The intertidal and subtidal zones consist of sand of varying thickness overlying rock outcrop; occasional rock outcrop exposure occurs as the sand shifts.

Inhabitants in the intertidal swash zone must cope with a tide that leaves many of these organisms aerially exposed for up to six hours at a time, as well as exposed to the high energy of the ocean waves. Typically, these habitats have low species diversity because of the harsh environmental conditions. Within the swash zone, a few mollusks (e.g., *Donax variabilis*), small crustaceans such as haustorid amphipods, and a variety of polychaete worms dominate the environment.

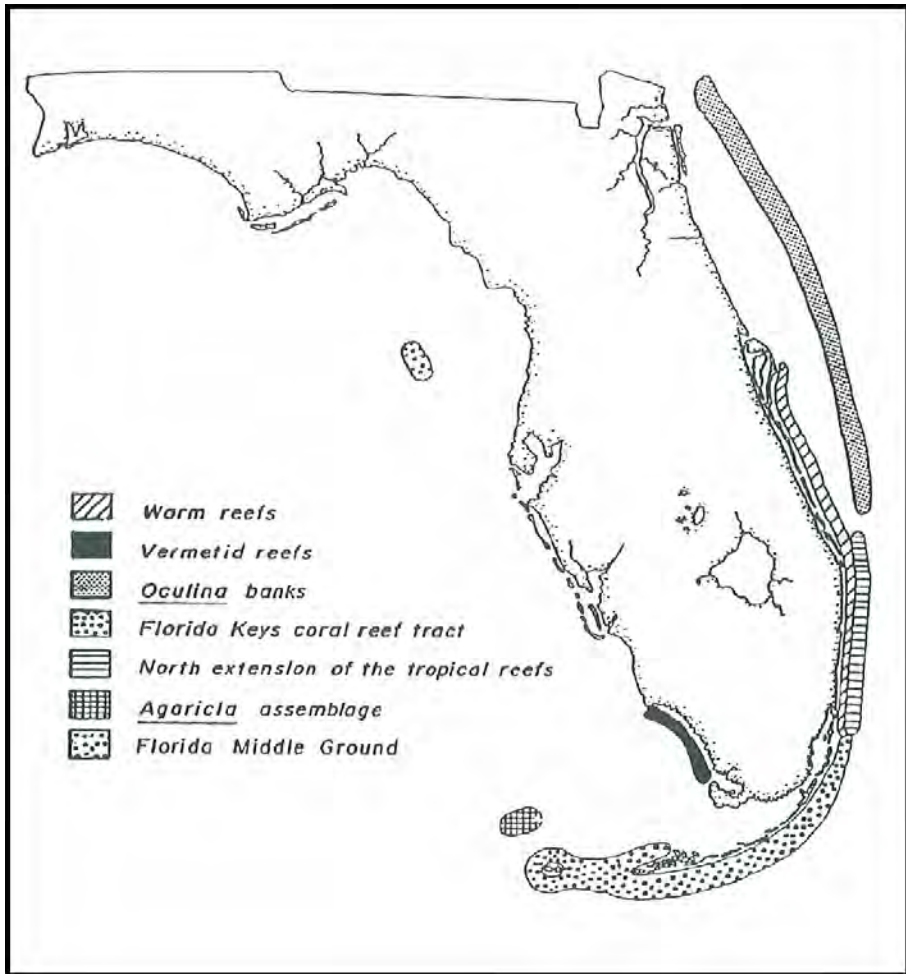
Subtidal unconsolidated habitats are also typified by relatively low diversity communities.

3.2.3 Hardbottom

Beginning at the shoreline, the nearshore hardbottom habitat in the project area runs in roughly shore-parallel zones. The first zone of intermittently exposed hardbottom typically occurs seaward of a short sandy zone containing the shoreline surf area. A sand and rubble zone locates between the first and second hardbottom zones, and abundant sand occurs between the second

and third hardbottom zones. The hardbottom habitat at most locations in the project area undergoes cycles of sand coverage and exposure caused by tides and storm events.

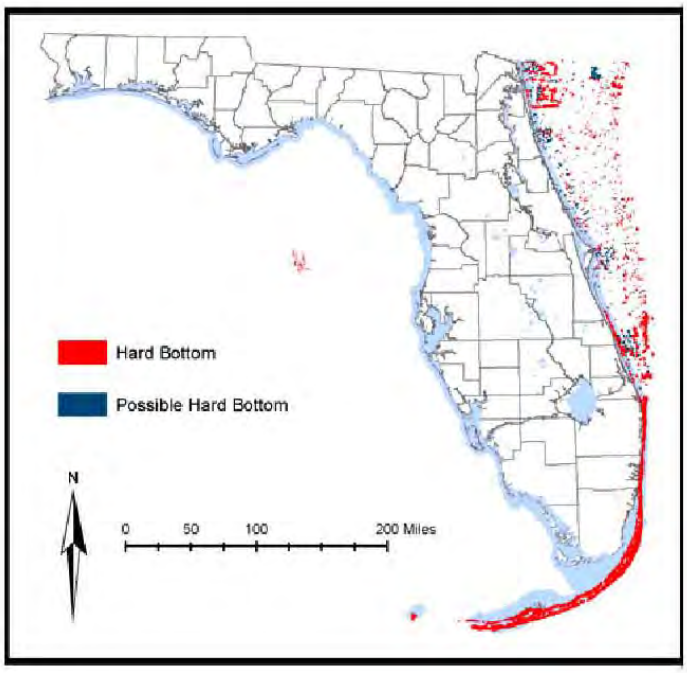
The hardbottom habitat includes areas with patches of limerock outcropping with or without sessile floral and faunal populations, within the larger unconsolidated substrate habitat (FNAI, 1990). A variety of hardbottom habitats or reefs may occur along the coast of Florida. **Figure 3** shows the potential distribution of such habitats; actual occurrences are typically patchy, and become more widely separated north of the project area (**Figure 3 and 4**). Many commercially, recreationally, and ecologically important fish species inhabit the nearshore hardbottom area of the east coast of Florida. The biological and physical complexity of hardbottom habitats attracts both commercial and recreational fish species. Colonies of tube-building polychaete worms and other invertebrates and macroalgae species increase the habitat complexity of these hardbottom communities (Kirtley and Tanner, 1968; Goldberg, 1973; Nelson, 1989; Nelson and Demetriades, 1992). Nearshore and offshore limestone outcrops and ridges provide significant hardbottom habitat for a variety of invertebrate and vertebrate species. These habitats serve an important function as nurseries for fish and juvenile marine turtles (Bresette et al., 1998 and 2006; Gilmore, 2008).



(Note: Map units describe extent of potential habitat distribution)

Figure 3. Distribution of Florida Reef Assemblages from Jaap and Hallock (1990)

The nearshore hardbottom is composed of "flat platforms and rounded boulders and fins" (1994 SEIS) exposed within the larger bare sand bottom. The limerock hardbottom habitats are often referred to as "live bottoms" because they generally support a diversity of sessile invertebrates such as corals and sponges. The biological communities in and adjacent to hardbottom areas are relatively consistent, although species composition may vary from site to site based on physical parameters such as distance from shore, hard ground profile, and burial history.



Source: http://myfwc.com/docs/WildlifeHabitats/Legacy_Hard_Bottom.pdf

Figure 4. Locations of Hardbottom Habitats on the East Coast of Florida.

3.2.4 Worm Reef

Worm reef may occur in the shallow nearshore environment along the Atlantic coast of Florida, south of Cape Canaveral (**Figure 3**). Large colonial conglomerates of rigid sabellariid worm tubes of the species Phragmatopoma lapidosa comprise the worm reef community. This species constructs its tubes on a hardbottom substrate from grains of sand, which results in large structures that serve a larger community of other species. These shallow water "reefs" generally occur in the lower reaches of the intertidal zone or upper reaches of the subtidal zone. Worm reefs provide shelter for a diverse assortment of small benthic vertebrate and invertebrate organisms, which increases the faunal diversity of the area (FNAI, 1990).

3.3 FISH AND WILDLIFE SPECIES

The various biological communities found in the general project area are well adapted to the harsh and variable conditions associated with the supralittoral beach zone, intertidal swash zone, subtidal sandy zone, and nearshore hardbottom habitats. **Table 3** list species commonly found in the general project area.

Table 3. Summary of Shorebird Monitoring Data by Month, Jupiter Carlin Survey Area, 2010 (Loggerhead Marinelife Center, 2010)

Species	April	May	June	July	August	Overall
Black-Bellied Plover	14	2				16
Brown Pelican	61	17	5	12	28	123
Common Tern	1				2	3
Double-crested Cormorant	2					2
Great Egret			1	1		2
Laughing Gull	1	25	2		45	73
Least Sandpiper	1					1
Least Tern		10	29			39
Little Blue Heron			1	2		3
Mottled Duck			2	0		2
Osprey	1	1	1	1		4
Ring-Billed Gull	4					4
Royal Tern	16	1	2	1	6	26
Ruddy Turnstone	75	62			31	168
Sanderling	94	36		8	72	210
Sandwich Tern	3			1	32	36
Snowy Egret	1	1	3		3	8
Spotted Sandpiper				1		1
Tricolor Heron			1			1
Willet	2					2
Yellow-Crowned Night Heron			1	2	1	4
Activity	**April**	**May**	**June**	**July**	**August**	**Overall**
Courtship						0
Flying	75	56	44	16	107	298
Foraging/Feeding	138	96	4	12	93	343
Nesting						0
Resting	62	4		1	20	87
Grand Total	**275**	**156**	**48**	**29**	**220**	**728**

Of the species generally found in the area, the most likely species that a beachgoer would see include the sanderling, magnificent frigatebird, herring and laughing gull (http://www.pbcgov.com/parks/nature/green_cay_nature_center/birdchecklist.htm).

3.4 THREATENED OR ENDANGERED SPECIES

A number of threatened and endangered species may occur in Palm Beach County (**Table 4 and 5**). Several threatened and endangered species in Palm Beach County may use project-affected habitats. These include the piping plover, eastern indigo snake, green sea turtle, hawksbill sea turtle, leatherback sea turtle, loggerhead sea turtle, West Indian manatee, staghorn coral, beach jacquemontia, Florida perforate cladonia, and tiny polygala.

Table 4. State or Federally Listed Marine Fishes and Plants That May Occur in the Project Area (http://el.erdc.usace.army.mil/tessp/) (T = Threatened, E = Endangered, C = Candidate, SC= Species of Concern)

Category	Scientific Name	Common Name	Federal Status				State
			T	E	C**	SC	
Fishes	*Acipenser oxyrinchus oxyrinchus*	Atlantic sturgeon				X	SC
	Centropomus undecimalis	Common snook					SC
	Carcharhinus obscurus	Dusky shark			X		
	Mycteroperca spp	Grouper					
	Epinephelus itajar	Goliath grouper				X	
	Menidia conchorum	Key silverside				X	T
	Epinephelus striatus	Nassau grouper				X	
	Carcharhinus signatus	Night shark				X	
	Microphis brachyurus lineatus	Opossum pipefish				X	
	Syngnathus spp.	Pipefish				X	
	Odontaspis Taurus	Sand tiger shark				X	
	Epinephelus drummondhay	Speckled hind				X	
	Epinephelus nigritus	Warsaw grouper				X	
Terrestrial Plants	*Suriana maritime*	Bay cedar					E
	Jacquemontia reclinata	Beach clustervine		X			E
	Ernodea littoralis	Beach-creeper					T
	Remirea maritime	Beachstar					E
	Avicennia germinans	Black mangrove					SC
	Okenia hypogaea	Burrowing Four-o'clock					E
	Tephrosia angustissm	Devil's shoestring			X		E
	Lantana depressa	Florida lantana			X		E
	Chamaesyce garberi	Garber's spurge	X				E
	Helianthus debilis sp. Vestitu	Hairy beach sunflower			X		
	Scaevola plumieri	Inkberry					T
	Conradina grandiflora	Large-flowered Rosemary			X		E
	Eriochloa michauxli var. simpsonii	Longleaf cupgrass	X				
	Rhizophora mangle	Red mangrove					
	Chamaesyce cumulicola	Sand-dune Spurge			X		E
	Limonium carolinianum	Carolina sea lavender					
Marine Plants	*Halophila johnsonii*	Johnson's sea grass					T

**Candidate species are not protected under the ESA, but concerns about their status indicate they may warrant listing in the future. Federal Agencies and the public are encouraged to consider these species during project planning.

Table 5. Federally Listed and Candidate Species That May Occur in the Project Area, Palm Beach County, Florida (http://www.fws.gov/verobeach/images/pdfLibrary/Palm Beach County2.pdf)

Scientific Name	Common Name	Federal Status	Habitat
Trichechus manatus	West Indian manatee	Endangered, Critical Habitat	Fresh and saltwater habitats, mangroves
Aphelocoma coerulescens	Florida scrub-jay	Threatened	Scrub, Scrubby flatwoods and adjacent areas
Dendroica kirtiandii	Kirtland's warbler	Endangered	Migrant 1982
Charadrius melodus	Piping plover	Threatened	Sandy beaches, mudflats, sandflats, spoils islands, areas adjacent to inlets and passes. Historic date unknown
Calidris canutus rufa	Red knot	Candidate	Shorelines
Chelonia mydas	Green sea turtle	Endangered	Beach dune/coastal strand, seagrass, nearshore reef
Eretmochelys imbricata	Hawksbill sea turtle	Endangered	Beach dune/coastal strand, seagrass, nearshore reef
Dermochelys coriacea	Leatherback sea turtle	Endangered	Beach dune/coastal strand, seagrass, nearshore reef
Caretta caretta	Loggerhead sea turtle	Threatened	Beach dune/coastal strand, seagrass, nearshore reef
Lepidochelys kempii	Kemp's ridley sea turtle	Endangered	Nearshore and offshore sand bottom
Pristis pectinata	Smalltooth sawfish	Endangered	Nearshore, inlets, estuaries
Acropora cervicornis	Staghorn coral	Threatened	Nearshore reef
Jacquemontia reclinata	Beach jacquemontia	Endangered	Beach dune/coastal strand
Cladonia perforata	Florida perforate cladonia	Endangered	Beach dune/coastal strand
Asimina tetramera	Four-petal pawpaw	Endangered	Beach dune/coastal strand
Polygala smallii	Tiny polygala	Endangered	Beach dune/coastal strand
Halophila johnsonii	Johnson's seagrass	Endangered	Estuarine polyhaline/euhaline waters

3.4.1 Smalltooth Sawfish

Relatively little is known about the life history and distribution of smalltooth sawfish (*Pristis pectinata*), but the species occurs most commonly in shallow waters less than 25 m in depth (Adams and Wilson, 1995) and could occur in the nearshore adjacent to the project area beach and in the proposed borrow area.

3.4.2 Marine Turtles

The beaches of Palm Beach County provide nesting habitat for four (loggerhead, green, leatherback, and hawskbill) of the five sea turtle species identified by the USFWS and the state of Florida as threatened or endangered. The loggerhead (*Caretta caretta*) is a threatened species; the green (*Chelonia mydas*), hawksbill (*Eretmochelys inbricata*), Kemp's ridley (*Lepidochelys kempi*), and leatherback (*Dermochelys coriacea*) are endangered. Researchers and volunteers trained in identifying turtle tracks, nest shape, and nest size monitor sea turtle nesting in the project area. Palm Beach County provides one of the largest nesting habitats for the loggerhead sea turtle in the western hemisphere. Kemp's ridley sea turtle, smallest of the five species and a shallow water benthic feeder, and while very rare, may occur in project waters. The turtle usually remains in the Gulf of Mexico, although adults are occasionally found in nearshore waters off south Florida. One Kemp's ridley was killed during dredging operations for the non-federal Juno Beach Nourishment Project that concluded in March 2010.

Sea turtle nesting within this area usually occurs during March – September. To protect nesting and hatching turtles, state policy prohibits construction activities on the beach between May 1 and October 31 of each year. **Table 6** provides annual (1998 – 2008) summaries of turtle nesting data collected by Palm Beach County within the project and survey areas. **Tables 7** provides sea turtle nesting data for Palm Beach County in 2012.

Table 6. Turtle Nesting Survey Summary for the Project Fill Template Area and the Entire Jupiter Carlin Turtle Survey Area, 1998 – 2008 (Robert Ernest, Ecological Associates, Inc., Personal Communication, June 2009)

Fill Template Limits (R-13 to R-19)

Nests

Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Loggerhead	856	874	862	757	434	592	500	571	708	386	594
Green	54	1	47	0	48	7	26	38	47	84	74
Leatherback	3	8	7	18	21	22	14	10	5	21	9

False Crawls

Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Loggerhead	1373	1308	1299	1154	905	1149	1107	1039	928	1013	1137
Green	106	2	112	0	131	21	67	148	60	187	150
Leatherback	1	1	3	4	8	2	3	6	1	5	2

Total Crawls

Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Loggerhead	2229	2182	2161	1911	1339	1741	1607	1610	1636	1399	1731
Green	160	3	159	0	179	28	93	186	107	271	224
Leatherback	4	9	10	22	29	24	17	16	6	26	11

Nesting Success

Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Loggerhead	38%	40%	40%	40%	32%	34%	31%	35%	43%	28%	34%
Green	34%	33%	30%	0%	27%	25%	28%	20%	44%	31%	33%
Leatherback	75%	89%	70%	82%	72%	92%	82%	63%	83%	81%	82%

Jupiter Carlin Survey Limits (R-13 to R-21)

Nests

Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Loggerhead	1228	1173	1107	971	657	763	637	864	929	521	788
Green	74	2	61	0	89	13	41	57	54	102	94
Leatherback	5	12	12	26	27	26	20	25	11	42	18

False Crawls

Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Loggerhead	1942	1595	1563	1480	1221	1515	1502	1429	1240	1310	1457
Green	159	3	153	0	186	26	97	247	91	252	210
Leatherback	1	1	4	5	13	3	3	8	1	6	2

Total Crawls

Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Loggerhead	3170	2768	2670	2451	1878	2278	2139	2293	2169	1831	2245
Green	233	5	214	0	275	39	138	304	145	354	304
Leatherback	6	13	16	31	40	29	23	33	12	48	20

Nesting Success

Species	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Loggerhead	39%	42%	41%	40%	35%	33%	30%	38%	43%	28%	35%
Green	32%	40%	29%	0%	32%	33%	30%	19%	37%	29%	31%
Leatherback	83%	92%	75%	84%	68%	90%	87%	76%	92%	88%	90%

Table 7. Florida Fish and Wildlife Commission Nesting Survey Data for Sea Turtles in 2012.

County	Survey Length (KM)	C. caretta Nest	C. caretta Non-nesting emergence	C. mydas Nest	C. mydas Non-nesting emergence	D. coriacea Nest	D. coriacea Non-nesting emergence
Palm Beach	65.6	22192	27709	2285	2412	622	76

3.4.3 Piping Plover

The piping plover (*Charadrius melodus*), a state and federally listed species, generally winters in a variety of areas of Florida, including the Atlantic coast. Piping plovers migrate south to Florida as early as late July and remain as late as early April (non-breeding season). This small shorebird may be found inland but prefers sandy beaches and tidal mudflats where it forages along the waterline or high up the beach along the wrack line. Piping plovers primarily use intertidal habitats within estuaries, but sightings along the Atlantic Coast intertidal area have occurred (Robert Ernest, Ecological Associates, Inc., personal communication, June 2009). Piping plovers feed within the intertidal zone on invertebrates such as marine worms, insect larvae, crustaceans, and mollusks (Atlantic Coast Piping Plover Recovery Team, 1995). Piping plover foraging and resting habitat may occur within the project area. Tagged piping plover observations have occurred on Juno Beach (August 2009) and in the Town of Palm Beach (January 2011) (personal communication, Kimberly Miranda, February 2011).

Decline of the species in population have resulted from direct and unintentional harassment by people, dogs, and vehicles; destruction of beach habitat for development; and changes in water level regulation (Haig, 1992). Florida Atlantic coast designated critical habitat for wintering piping plovers locates around St. Lucie and Ponce de Leon inlets, and near the northern border of Florida on Fort George Island within Huguenot Memorial Park, Jacksonville, Florida (http://www.fws.gov/plo http://www.fws.gov/plover/ver/). The project area does not contain designated piping plover critical habitat.

3.4.4 West Indian Manatee

The Endangered Species Act (ESA) classifies West Indian manatees *(Trichechus manatus)* as endangered. Assessments via routine aerial surveys during winter (when individuals concentrate in warm-water refuges) provide West Indian manatee numbers in Florida. Aerial surveys conducted in January 2009 produced a preliminary abundance estimate of 3,807 individuals throughout Florida (FWC, 2009) including 2,153 manatees on Florida's East Coast (found during the count in estuarine and freshwater areas). January 2010 aerial produced a preliminary abundance estimate of greater than 5,000 and in 2011, an estimate of 4,800. Surveys were not completed in 2012 and 2013 due to warmer than average weather (FWC, 2013). The project area does not contain designated manatee critical habitat. Manatees use Palm Beach County waters year-round, with increased sightings during the winter. Manatees occasionally swim in open ocean waters but they typically remain in more protected coastal waters such as estuaries. **Table 8** provides sightings of manatees in estuarine waters adjacent to the project beach and in the nearshore of Palm Beach County beaches.

Table 8. Manatee Sightings near Project Area and Palm Beach County Nearshore Atlantic Ocean, 2009-2013 (derived from Powell and Koelsch, 2010)

Date	Location		
	Jupiter Sound	Loxahatchee River + Jupiter Inlet	Ocean
2/5/2009	1	9	16
2/25/2009	11	7	2
3/11/2009	0	5	3
3/31/2009	No survey	No survey	1
4/30/2009	0	4	1
5/11/2009	3	1	0
5/27/2009	1	0	0
6/10/2009	0	3	3
7/6/2009	0	5	2
7/15/2009	0	3	0
7/31/2009	2	0	0
8/11/2009	0	4	1
8/20/2009	0	1	0
9/18/2009	0	2	0
10/7/2009	0	0	0
10/15/2009	0	0	1
10/28/2009	0	2	0
11/13/2009	0	1	0
11/30/2009	0	2	2
12/23/2009	10	1	4
12/30/2009	5	3	14
1/15/2010	12	6	6
1/27/2010	20	17	24
2/11/2010	26	15	23
2/19/2010	20	4	17
3/16/2010	10	5	3
3/30/2010	0	6	1
4/23/2010	0	0	0
5/4/2010	0	1	0
5/14/2010	3	0	0
5/21/2010	0	1	0
6/11/2010	0	3	3
7/9/2010	0	2	10
7/17/2010	0	1	0
7/26/2010	4	4	0
8/4/2010	3	0	1
8/28/2010	2	8	0
Total	**133**	**126**	**138**

3.4.5 North Atlantic Right Whale

The North Atlantic right whale *(Eubalaena glacialis)* is the rarest of the world's baleen whales, with a North Atlantic population of 325 – 350 individuals (New England Aquarium, 2004). They range from Iceland to eastern Florida and are seasonal "residents" in inner shelf and mid-shelf waters (Hammer et al., 2005). Southward migration to calving grounds within inner shelf waters off southeastern Georgia and northeastern Florida occurs from mid-October to early January (Kraus et al., 1993). Calving occurs from December through March (Silber and Clapham, 2001). The ESA designates one calving and two feeding areas in U.S. waters as critical habitat for North Atlantic right whales (http://www.nmfs.noaa.gov/pr/species/criticalhabitat.htm). The project area does not contain designated North Atlantic right whale critical habitat.

3.5 ESSENTIAL FISH HABITAT (EFH)

The Magnuson-Stevens Fishery Conservation and Management Act requires identification of habitats necessary for sustainable fisheries and comprehensive fisheries management plans. The Act also requires preparation of an EFH assessment when impacts to EFH are likely to occur.

3.5.1 Nearshore and Offshore

The South Atlantic Fisheries Management Council (SAFMC) has designated the entire nearshore bottom of southeastern Florida (including the project area) as EFH habitat areas of particular concern (EFH -HAPC) (SAFMC, 1998).

Managed species that commonly inhabit the project area include pink shrimp (*Penaeus duorarum*) and spiny lobster (*Panularis argus*). Members of the 73-species snapper-grouper complex that commonly use the hardbottom habitats during their adult life include blue stripe grunts (*Haemulon sciurus*), French grunts (*Haemulon flavolineatum*), mahogany snapper (*Lutjanus mahogoni*), yellowtail snapper (*Ocyurus chysurus*), red grouper (*Epinephelus morio*), gray triggerfish (*Balistes capriscus*), and hogfish (*Lachnolaimus maximus*). Coastal migratory pelagic species also commonly use the offshore area adjacent to the project area, and may occur in the project area. In particular, the king mackerel (*Scomberomorus cavalla*) and the Spanish mackerel (*Scomberomorus maculatus*) are the most common. As many as 60 species of corals can occur off the coast of Florida (SAFMC, 1998) and are under the Coral Fishery Management Plan.

Gilmore (2008) developed a regional fisheries resource literature review of existing fisheries information for the southeast Florida area from Cape Canaveral to Jupiter Inlet. The following paragraph from that review also summarizes the fisheries community habitat in the project area.

> "The most diverse continental shelf fish assemblage within the United States occurs south of Cape Canaveral to Jupiter Inlet. A wide variety of factors produces this rich local fish fauna. The relatively small area, only 24,426 sq nm, between the beach to the upper end of the Florida-Hatteras slope, to roughly 100 m depths along 80º 00' W longitude, contains a wide variety of habitats from sabellariid worm reef, rock and coral reefs to sand, shell and mud bottoms, troughs, small canyons, 20-30 m pinnacles, ridges and shoals. Numerous artificial reefs from bridge pilings to sunken ships add to this habitat diversity. More importantly, this complex continental shelf topography is gradually reduced in

size toward St. Lucie Inlet and Jupiter as the Florida coastline angles toward the deep (700-1000 m depths) Florida Straits."

3.5.2 Water Column

SAFMC (1998) states that gradients and discontinuities in temperature, salinity, density, nutrients, light, etc., define specific habitats within the water column. The marine water column is defined as the open water (ocean) environment. It extends vertically from the water surface to the ocean bottom. The water column provides habitat for phytoplankton to carry out the processes of primary productivity. Zooplankton also utilize the water column for habitat, thus creating the foundation of the ocean food web and ecosystem. Some benthic invertebrates living on or in the ocean floor filter the water column to collect suspended food particles. Most marine fish and shellfish broadcast spawn pelagic eggs; thus, most species use the water column during some portion of their early life history (e.g., egg, larvae, or juvenile stages). Higher vertebrates (fishes, marine mammals, and sea turtles) use the water column for foraging, migration, and breeding.

Turbidity is a key water quality factor in coastal waters of South Florida. Turbidity may result from planktonic organisms in the water column and from fine materials suspended in the water column from wave and current action. Turbidity levels typically follow a seasonal pattern of low (clearer water) levels during low-wind early summer months and increasing to annual maxima during windier winter months.

Florida standards restrict turbidity values associated with dredging and beach placement to a maximum of 29 NTU above ambient conditions in Class III Marine waters.

3.6 WATER QUALITY

The FDEP classifies the coastal waters in the project area as Class III Marine defined as waters suitable for recreation and the propagation of fish and wildlife. The project waters do not have contaminants in excess of numeric or non-numeric water quality standards and are available for their intended uses.

3.7 COASTAL BARRIER RESOURCES

Coastal Barrier Resources Act (CBRA), Public Law 97-348 (96 Stat. 1653; 16 U.S.C. 3501 et seq.), enacted October 18, 1982, designated various undeveloped coastal barrier islands, depicted by specific maps, for inclusion in the Coastal Barrier Resources System. Areas so designated are ineligible for direct or indirect Federal financial assistance that might support development, including flood insurance, except for emergency life-saving activities. The Act includes exceptions for activities such as fish and wildlife research. The Act also excludes National Wildlife Refuges and other, otherwise protected areas from the system.

The project area includes parts of two Coastal Barrier Resource Units — FL-16P and FL-17P. The two units are associated with Jupiter Beach Park and Carlin Park.

3.8 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTES (HTRW)

Residential and public land uses have fully developed the shoreline, with a substantial portion dedicated to publicly owned and accessible open space and recreational areas.

3.9 AIR QUALITY

Air quality is generally good. The popularity of the beaches contributes to vehicular traffic on roads adjacent to the beach; these vehicles may produce airborne pollutants in the project area. However, persistent ocean breezes readily disperse these pollutants.

3.10 NOISE

Low to moderate noise levels in the beach project area result from breaking waves, nearby urban activities, and recreational activities on the beach. Elevated noise levels (above the noise levels of breaking waves), primarily from recreating beachgoers, may occur during the summer and on most weekends.

3.11 AESTHETIC RESOURCES

The clean beach and nearshore hardbottom habitats provide a visually pleasing environment to beachgoers, swimmers, and divers.

3.12 RECREATIONAL RESOURCES

The beach and nearshore environments provide extensive opportunities for recreational activities such as sunbathing, nature observation, surfing, skin and scuba diving, fishing, and boating.

3.13 ECONOMICS

The project area provides extensive opportunities for local recreational activity, vacation and eco-tourism, and seasonal residency in addition to full-time residency. These activities generate a significant portion of the local economy.

3.14 CULTURAL RESOURCES

Archival research, archeological field investigations and consultation with the SHPO demonstrate that two historic sites are located in the near-shore of the project area. . The 1994 SEIS identified a marine archaeological site, known as the Jupiter Wreck, approximately 300 ft south of the inlet and just north of the project area. The wreck probably dates back to the Spanish Colonial era. A second wreck is located near the south end of the project area. Neither have been affected by previous shore protection projects. The USACE has determined that no historic properties will be affected within the Singer Island borrow area. The SHPO concurred with this determination (SHPO, 2009).

4.0 ENVIRONMENTAL EFFECTS

Changes to the existing environment can include direct, indirect, and cumulative impacts. This section describes how the implementation of the No Action and proposed project alternatives would affect the environmental resources in the project area.

Direct impacts result from an action and occur at the same time and place as the action. Indirect impacts result from an action and occur later in time or farther removed in distance, but are still reasonably foreseeable. Indirect impacts may include impacts related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR § 1508.8). 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 regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over time. (40 CFR § 1508.7)

This section provides a means to assess the environmental impact of the proposed project on natural resources in the project area. Implementation of the No Action plan and the proposed action are assessed for their expected environmental impact. The 1994 SEIS and the 1987 FEIS provide assessments of all reasonable alternatives and their potential impacts.

4.1 GENERAL ENVIRONMENTAL SETTING

4.1.1 No Action Alternative

The No Action alternative would result in cumulative impacts due to erosion that would eventually threaten the existence of the beach, dunes, adjacent uplands, and any development in those areas. Loss of sand from the project area would ultimately result in reduced sand transport to downdrift areas and thus significantly reduce or eliminate sea turtle nesting habitat in the project area and beyond. Indirect effects may include loss of recreational opportunities and reduced local economy from reduced beach uses.

4.1.2 Preferred Alternative – Shoreline Protection and Borrow Area

The proposed project design remains consistent with the authorized project template. The proposed design includes no expansion or increase in volume that would impact hardbottoms outside of the approved project's equilibrium toe of fill. Patches of hardbottom lie exposed 300 feet or less offshore in the shallow intertidal zone. The placement of fill material within the design template would impact these hardbottom areas. However, the proposed beach fill template for the design and advance nourishment placement remains identical to that in the authorized project. Based on the equilibrated profile determination and the equivalence of sand grain size characteristics proposed for placement and those previously placed, the present project should have no additional impact on hardbottom resources lying within the equilibrium toe of fill. Previous projects have provided mitigation for all such affected resources.

4.2 WATER QUALITY

4.2.1 No-Action Alternative

The No Action alternative would not affect water quality.

4.2.2 Preferred Alternative – Shoreline Protection and Borrow Area

The proposed action would temporarily impact water quality at the borrow site and in the intertidal swash zone at the sand placement site. Dredging and sand placement activities may temporarily increase turbidity by introducing additional fine material into the water column. The increased fines may increase biological oxygen demand, thus reducing water column oxygen levels. The FDEP rules, however, require the fill material to be very similar to existing beach sand to ensure minimization of turbidity during construction. Dredging and discharges from sand placement may also alter water temperatures in the immediate dredging and sand placement areas.

The FDEP requires intensive monitoring of turbidity at dredging and sand placement locations during project operations. If the monitoring detects turbidity exceeding permitted levels, the construction activity must halt until the contractor takes appropriate steps to reduce the turbidity to acceptable levels and the turbidity returns to those levels. Monitoring results demonstrating project performance are submitted to the FDEP regularly during the construction period. Given the naturally dynamic waters of the Atlantic Ocean, organisms inhabiting the nearshore zone adapt to environmental changes such as moderate increases in turbidity. Fish and other mobile species may temporarily leave the dredging site or surf zone adjacent to the beach placement site if turbidity becomes too great.

4.3 DUNE AND BEACH

4.3.1 No-Action Alternative

Implementation of the No Action alternative would result in continued loss of dune and beach habitat from continuing erosion. These losses would in turn reduce available turtle nesting habitat, recreational opportunities, and revenues to the local economy from beach visitation and tourism.

4.3.2 Preferred Alternative – Shoreline Protection and Borrow Area

The proposed project may result in minimal short-term impacts to the vegetation that covers the existing dunes in areas where the fill will join with the existing dune face. The proposed renourishment project will temporarily stabilize the beach and dune vegetative communities and prevent further erosion-related losses. The beach fill will furnish additional material to existing dune vegetation so the plants can collect and bind wind-blown and storm-driven sand into dune formations.

Specific measures that could be considered to minimize impacts include no placement of fill landward of the existing line of woody or scrub vegetation (e.g., sea grapes). The precise landward limit of the fill depends upon the dune conditions at the time of project construction.

4.4 UNCONSOLIDATED SUBSTRATE

4.4.1 No Action Alternative

The no action alternative would result in no impact to unconsolidated substrate.

4.4.2 Preferred Alternative – Shoreline Protection and Borrow Area

Placement of sand on the beach will result in some change to the existing sand grain size distribution. However, the project area has been nourished twice (in 1995 and 2002) as part of the federal project and numerous other times. Slight differences in grain size distribution between the native sand and the placed sand were considered acceptable. An analysis of the sand proposed for use (Appendix A of the main Section 934 report) indicated that the Singer Island borrow area sand is compatible for the Jupiter Carlin segment.

4.5 HARDBOTTOM

4.5.1.1 No Action Alternative

The No Action alternative would not impact hardbottom resources.

4.5.2 Preferred Alternative – Shoreline Protection and Borrow Area

Impacts to hardbottom from burial during placement of sand and subsequent equilibration of the beach project area may occur. However, the project template has not changed from the authorized project template; Palm Beach County has mitigated for the impacts to worm reef and other hardbottom habitats of the initial 1995 project (Continental Shelf Associates, 2005); the 2002 nourishment did not impact hardbottom beyond the originally projected impact area. Mitigation included the creation of 1.16 acres of artificial reef habitat consisting of 3-4 foot diameter limestone boulders that were placed north of the Riviera Public Beach off of Singer Island (8-10 feet of water). The proposed project does not anticipate any additional impact to hardbottom habitat, and hardbottom buffer requirements will be followed during construction.

4.6 WORM REEF

4.6.1 No Action Alternative

The No Action alternative would not impact worm reef.

4.6.2 Preferred Alternative – Shoreline Protection and Borrow Area

Impacts to worm reef from burial during placement of sand and subsequent equilibration of the beach project area may occur. However, the project template and corresponding equilibrium toe of fill has not changed from the authorized project. Palm Beach County has mitigated for the impacts to worm reef and other hardbottom habitats of the initial (1995) project (Continental Shelf Associates, 2005); the 2002 nourishment did not impact hardbottom beyond the originally projected impact area. The proposed project does not anticipate any additional impact to worm reef or hardbottom habitats.

4.7 FISH AND WILDLIFE RESOURCES

4.7.1 No Action Alternative

The No Action alternative would result in continuing beach erosion, which would reduce the supralittoral area beach and dune habitat. Species affected would include those that use the supralittoral zone and dune zones for resting, feeding, and breeding.

4.7.2 Preferred Alternative – Shoreline Protection and Borrow Area

The proposed project would temporarily impact fish and wildlife species that use the project area. Species with sufficient motility would avoid the project area during construction and return after completion of construction activities. Dredging and beach placement of sand would disrupt organisms living in the dredged sediments and bury those organisms at the beach placement site before construction. Other potential negative temporary impacts due to beach nourishment construction include destruction of wildlife nests by operation of heavy equipment, disruption of nesting, resting, or foraging birds by excessive vehicle noise or movement, destruction of vegetation suitable for food, protective cover, or nesting sites, degradation or destruction of habitat resulting from placement of unsuitable material or excessive turbidity, death or injury of sea life due to contact, entanglement, or collision with the dredge draghead, equipment, and vessels, and destruction or degradation of habitat.

Some possible methods to minimize environmental impacts to fish and wildlife that could be considered includes educating the contractor and employees on possible environmental impacts and ways to minimize these impacts, ensuring construction methods and materials provide the least impact, policing the effects of construction via turbidity monitoring and turbidity control measures, or constructing during periods when affected populations are lowest in the project area.

Dredging and beach placement would result in significant mortality of non-motile benthic organisms. However, these organisms typically adapt well to the dynamic coastal environment. With their high fecundity and recruitment potential, they should repopulate the affected areas in a relatively short time usually less than a year.

A review of the readily available literature concerning the potential effects of beach nourishment on benthos and benthic habitats identified a number of reports detailing effects of beach placement and dredging on benthic communities. Key findings included

- The majority of the articles suggested that nourishing a beach in winter has less of an impact on the benthic habitat than nourishing in other seasons. The articles also suggest that selecting sediments for a nourishment project that match the receiving beach's native sand should lessen the impacts to benthic habitat (Atlantic States Fisheries Commission, 2002; Ray and Burlas, 2003).
- Research suggested that benthic habitat within nourished areas typically recover in one to two seasons (Saloman and Naughton, 1984; Ray et al., 2003).

4.8 THREATENED AND ENDANGERED SPECIES

4.8.1 Marine Turtles

4.8.1.1 No Action Alternative

The No Action alternative would result in continued beach erosion, which would reduce nesting habitat for threatened or endangered marine turtles, including loggerhead, green, and leatherback. Loss of nesting habitat may occur from reduced area of beach above mean high tide elevation. In addition, loss of nesting opportunities above the high tide line may result in turtle nesting at lower elevations where nests may wash out.

4.8.1.2 Preferred Alternative – Shoreline Protection and Borrow Area

Offshore equipment employed for the proposed project includes a dredge, pipeline, equipment barges, marker buoys, and small tugs. Death or injury to marine turtles may result from contact, entanglement, or collision with the dredge drag head, equipment, and vessels. Onshore equipment employed for beach restoration generally consists of light vehicles, heavy earth moving equipment, and dredge pipe.

Dredging operations and the subsequent placement of sand on the beach could potentially impact marine turtles and other marine mammals in a variety of ways. These include actions (e.g., cutting, suction, sediment removal, and hydraulic pumping of water and sediment) of the dredging equipment; physical contact with dredging equipment and vessels, physical barriers (e.g., pipelines) imposed by the dredging equipment; and placement of dredged material in various locations (e.g., covering, compaction, escarpment formation, ruts caused by vehicles and construction operation). Additional potential negative effects of dredging on marine turtles include direct impacts to bottom habitats, disrupted feeding opportunities and loss of prey, interference with underwater resting areas, and noise disruption (Tomlinson et al., 2006).

Beach renourishment may affect the marine turtle incubation environment and nest success. Potential negative impacts to marine turtles include destruction of nests deposited within the project area during construction, harassment in the form of disturbing or interfering with female turtles attempting to nest within the construction area or on adjacent beaches, artificial lighting-induced disorientation of hatchlings as they emerge from the nest and crawl to the water, and behavior modification of nesting females caused by escarpment formation within the project area. Escarpment formation during the nesting season can cause false crawls or selection of marginal or unsuitable nesting areas to deposit eggs. Additionally, the quality and color of the placed sand could affect nesting success as related to excavation, incubation environment, and hatchling emergence. Construction will not occur during the official nesting season (May 1 – October 31) so potential effects related to construction are relatively unlikely to occur.

Although placement of sand on beaches may provide a greater quantity of nesting habitat, the habitat quality may prove less suitable than preexisting natural beaches. Constructed beaches tend to differ from natural beaches in several important ways. They are typically wider, flatter, more compact, and contain moister sediments than those found on natural beaches (Nelson and Dickerson, 1988; Ackerman et al., 1992; Ernest and Martin, 1999). On severely eroded sections of beach, where little or no suitable nesting habitat previously existed, sand placement can result in increased nesting (Ernest and Martin, 1999). However, despite the greater quantity of available nesting habitat, nesting density and success often declines for the first year or two following construction (Trindell et al., 1998; Ernest and Martin, 1999; Herren, 1997).

Reduced nesting density and success on constructed beaches have been attributed to increased sand compaction, escarpment formation, and changes in beach profile (Nelson et al., 1987; Crain et al., 1995; Lutcavage et al., 1997; Steinitz et al., 1998; Ernest and Martin, 1999; Rumbold et al., 2001). Changes in beach profile (increased slope) can reduce nesting activity. Compaction can inhibit nest construction or increase the amount of time it takes to construct nests. Escarpments often cause female turtles to return to the ocean without nesting or to dig their nests seaward of the escarpment, where the nests are more susceptible to frequent and prolonged inundation and erosion. In short, sub-optimal nesting habitat may cause decreased

nesting success, place an increased energy burden on nesting females, result in abnormal nest construction (Carthy, 1996), and reduce the survivorship of eggs and hatchlings. In addition, sand used in nourishing beaches may introduce lighter or darker sand that consequently affect nest temperatures (Ackerman 1997; Milton et al., 1997, Hayes et al., 2001).

Impacts of a renourishment project on marine turtle nesting habitat are typically short-term because natural processes will rework the beach in subsequent years. Beach compaction resulting from renourishment and the frequency of escarpment formation will decline over time (South Florida Multi-Species Recovery Plan). Ernest and Martin (1999) analyzing turtle nesting monitoring data for Martin County, Florida, found that reduction in marine turtle nest success fell the first year following construction compared to pre and post-construction year levels. The second nesting season after construction and thereafter, marine turtle reproductive success rebounded to pre-construction levels.

One needs to consider nesting success on Jupiter Carlin beach in the context of the turtle population nesting activity, weather, and human induced effects in addition to the impacts of beach nourishment. Examination of annual nesting reports for 9 of the past 11 years (2000 – 2010) (Palm Beach County ERM, 2000, 2001, 2002, 2003, 2004; EAI, 2007 and 2008; Loggerhead Marinelife Center, 2009 and 2010) indicate some similar findings to those reported by Ernest and Martin (1999) and Rumbold et al. (2001), who reported on the 1995 beach nourishment's effect on loggerhead nesting. Before the 2001 nesting season, sand trap and ICWW maintenance dredging material nourished part of the project beach. The Palm Beach County reports indicate that while fill beach nesting was slightly lower than on the natural beach areas, the generally lower nesting on the beach nearest the jetty could have contributed to some of the changes. They also noted that hatching success of fill and non-fill beaches was very similar. The report concluded, "there was no evidence of JID or ICW maintenance dredging impacts on sea turtles in the 2001 nesting season." Palm Beach County ERM (2002) concluded that while nesting on the "fill" (nourished) beach was lower than the natural beach "effects were less than expected and much less than those of the first [1995] nourishment project."

Taken as a whole, the first (1995) nourishment appears to have had the greatest negative impact on turtle nesting. Since that time, changes in annual nesting success measures have not related in as clear a fashion to nourishment events, and have not changed as dramatically.

The proposed project has the potential to increase marine turtle nesting habitat because the project will increase available nesting habitat. The total nesting habitat area will increase; the new sand will be very similar to the pre-existing material; compaction and escarpment observation and remediation measures will ensure that the beach shape and sand density remain appropriate for nesting. In addition, the project will reconstruct the sand dune in areas of reduced elevation due to erosion, and as necessary replant the dune with native vegetation to replace vegetation buried during the renourishment and cover newly constructed dune areas.

The State of Florida requires regular compaction testing and, if necessary, tilling of the beach to achieve appropriate sand compaction for nesting turtles.

A hopper dredge may cause incidental takes of marine turtles, but the proper use of rigid deflecting dragheads called "turtle excluder devices" (TED) can minimize the chance of

incidental takes (Nelson and Schafer, 1996). All hopper dredging projects must employ the marine turtle deflecting draghead during the months that marine turtles may be present, unless the Corps (in consultation with NMFS) grants a waiver.

This project may affect, but is not likely to adversely affect sea turtles.

4.8.2 Smalltooth Sawfish

4.8.2.1 No Action Alternative

The No Action alternative would not impact the smalltooth sawfish.

4.8.2.2 Preferred Alternative – Shoreline Protection and Borrow Area

No smalltooth sawfish are expected to occur in the borrow area, but may occur adjacent to the sand placement. The Corps would comply with NMFS's Sea Turtle and Smalltooth Sawfish Construction Conditions through the SARBO during dredging. This project may affect, but is not likely to adversely affect the smalltooth sawfish.

4.8.3 Piping Plover

4.8.3.1 No Action Alternative

The No Action alternative would result in continuing beach erosion, which would reduce piping plover resting habitat. Intertidal foraging habitat area would remain relatively constant, although shifting spatially as the beach eroded.

4.8.3.2 Preferred Alternative – Shoreline Protection and Borrow Area

Potential impacts to the piping plover may include disruption of resting or foraging birds by excessive vehicle noise or movement and temporary degradation of feeding habitat in intertidal zone. These impacts would be temporary in nature and only occur during construction.

4.8.4 West Indian Manatee

4.8.4.1 No Action Alternative

The No Action alternative would not impact the West Indian manatee.

4.8.4.2 Preferred Alternative – Shoreline Protection and Borrow Area

Death or injury to manatees may result from contact, entanglement, or collision with the dredge, and construction vessels, and related equipment. However, manatees are not typically found in the Atlantic Ocean except in the extreme nearshore and very seldom during November – February when the project would likely occur, as manatees typically overwinter in warm water refuges during that period. During the winter of 2010, however, observers spotted relatively high numbers of manatees in the ocean along the coast. Such events, however unusual, suggest the need for caution and vigilance whenever working near the coastline. All standard manatee protection measures would be followed.

4.8.5 North Atlantic Right Whale

4.8.5.1 No Action Alternative

The No Action alternative would not impact the North Atlantic right whale.

4.8.5.2 Preferred Alternative – Shoreline Protection and Borrow Area

Marine mammals are unlikely to incur injury from dredging as they can usually avoid contact with dredging vessels and equipment (Hammer et al., 2005). However, right whales are more susceptible to dredging-related injury because they rest on the water surface and often swim relatively slowly. In 1997, NMFS (1997b) issued regulations restricting vessel approaches to within 460 meters of any right whale. The project area does not include right whale critical habitat; therefore, the likelihood of an encounter between the dredge vessels and a whale is relatively unlikely.

Marine mammals may encounter increased turbidity in waters adjacent to dredging activity but could easily avoid these areas. Given the relatively small turbidity plume generated by dredging compared to the available habitat area, turbidity will not likely cause significant impacts to marine mammal behavior or survival (Hammer et al., 2005).

An observer spotted and photographed a right whale offshore the Juno Beach Pier on January 1, 2010 (Palm Beach Post News) and a right whale also appeared several days later near the Juno Beach project pumpout location (USACE Turtle Data Warehouse). Such visitations, though unusual, suggest that caution and constant vigilance are necessary to make sure that encounters do not occur.

4.9 ESSENTIAL FISH HABITAT (EFH)

4.9.1 No Action Alternative

The No Action alternative would not affect EFH in the project area.

4.9.2 Preferred Alternative – Shoreline Protection and Borrow Area

The proposed project would alter the bathymetric characteristics of the borrow area. Dredging would increase turbidity from sediment disturbance during dredging operations. Dredging would entrain sedentary species and slow-moving vertebrate species (e.g., marine turtles) living on and in the dredged sediment and planktonic species living in the water column. The dredging would affect fish feeding and movement; fishes and other highly mobile marine organisms would likely avoid the area of dredge operation.

NMFS believes that dredging offshore shoals could result in adverse impacts to the shoreline and living marine resources, and that such shoals serve as a benthic nursery, refuge, and feeding ground for a variety of fishery resources (USACE 2009 – NMFS 2007 EIS scoping letter). The South Atlantic Fishery Management Council (SAFMC) identifies sandy shoals as EFH for migratory pelagic fish including king mackerel, Spanish mackerel, cobia, and dolphin. Michel (et al., 2001) noted that the geomorphology of some offshore shoals could provide a unique assembly of microhabitats that facilitate high biological productivity.

The proposed borrow area, however, may best be described as a surface deposit of sand, characterized as a gently sloping area with relatively little vertical relief. The EFH functions of such areas are less understood than locations such as shoals or underwater sand "dunes" with significant vertical relief. Shoals with significant vertical relief present a variety of microhabitats that may not occur in the surface deposit area proposed for use in this project. Shoal and surface deposit removal could alter local wave climate, causing erosion that could affect EFH (Hayes and Nairn, 2004; Kelly et al., 2004). Wave climate changes could result in alteration of erosion and accretion rates along the shore. Such changes could affect nearshore hardbottom and worm reefs, identified as EFH.

Coastal migratory species, such as cobia, jacks, king and Spanish mackerels, round scad, and Spanish sardine have an affinity for man-made and natural structures, and would likely be attracted to a dredge. In addition, the likely long-term change in the bathymetry of a shoal could preclude quick recovery for species dependent on specific relief features removed during dredging (Hammer et al., 2005). In addition, a dredge hole provides relief, which attracts fish, and can lead to concentrated fishing similar to artificial reefs.

Snapper-grouper complex species likely exist on hardbottom areas local to the project area. The proposed project could impact this species via burial of hardbottom, entrainment, and turbidity.
Threats to nearshore and offshore red drum habitats include dumping and mining of sand resulting in burial of bottom habitat, harmful increases in turbidity levels, and hydrologic alterations that could result in diminished habitat quality (SAFMC, 2003). Turbidity generated during a dredging project could impact highly migratory species. The proposed project, however, will create turbidity plumes of relatively short duration and will not likely alter normal feeding or migratory patterns.

4.9.3 Proposed Project Water Column

4.9.3.1 No Action Alternative

The no action alternative would not result in impacts to water column EFH.

4.9.3.2 Preferred Alternative – Shoreline Protection and Borrow Area

Construction activities will impart temporary water quality effects on the EFH by producing temporary, localized increases in turbidity in the project area. Elevated turbidity levels resulting from dredging and beach placement, however, should not have a significant negative effect on organisms inhabiting the project area. Given the naturally dynamic waters of the Atlantic Ocean, organisms inhabiting the nearshore zone adapt well to reasonable environmental changes such as moderate increases in turbidity. Fish and other mobile species may temporarily leave the adjacent surf zone if turbidity becomes too great. Construction noise may also drive fish away from the project area. Additionally, sediments disturbed during beach fill placement activities would settle on adjacent habitats and loss of benthic fauna during these activities would temporally affect fish feeding habitat in the project area. With their high fecundity and recruitment potential, the benthic fauna should repopulate the affected areas in a relatively short time. See comments in Section 4.8.2 for results from past studies on long term affects on benthic communities from beach restoration.

4.10 HISTORICAL AND CULTURAL RESOURCES

4.10.1 No Action Alternative

The No Action alternative would likely have no impact on historical and cultural resources. Continuing erosion could uncover cultural artifacts. This EA, however, knows of no historic or cultural resources identified in the project footprint other than the marine archaeological site approximately 300 ft south of the inlet and just north of the project area identified in the 1994 SEIS and the wreck near the south end of the project area.

4.10.2 Preferred Alternative – Shoreline Protection and Borrow Area

The 1994 SEIS identified a marine archaeological site approximately 300 ft south of the inlet and just north of the project area; the memorandum concluded that the 1995 (initial) project would not impact historic or archaeological resources. The 2002 project included no dredging impacts to archaeological or cultural resources. The borrow site proposed for the 2012 project was most recently investigated for archaeological and cultural resources by Panamerican Consultants, Inc. (2009). The investigation concluded that the proposed borrow area included no significant archaeological or cultural resources. The SHPO (2009) concurred with that finding.

4.11 SOCIO-ECONOMIC

4.11.1 No Action Alternative

The No Action alternative could potentially affect the local economy. The beaches would continue to erode and provide less width for recreation. The No Action alternative would likely lead to a decrease in tourism revenue.

4.11.2 Preferred Alternative – Shoreline Protection and Borrow Area

The beaches of Palm Beach County play an important economic role in the recreational resources of the area. The tourist dollars brought into the county each year account for a significant portion of the county's revenue base. Particularly along the coast, many tourist-oriented businesses rely on revenue generated from tourists. This project will maintain and enhance the use of the beach by residents and tourists. Construction will temporarily curtail use of the beach and nearshore areas for beachgoers and surfers.

4.12 AESTHETICS

4.12.1 No Action Alternative

The No Action alternative would reduce aesthetics because of loss of beach width.

4.12.2 Preferred Alternative – Shoreline Protection and Borrow Area

During construction, aesthetic qualities of the project beach will be diminished with the operation of construction equipment and with construction activities. In the longer term, the renourishment of the beach in accordance with the design considerations included in the 1995 and 2002 projects will result in an improved aesthetic quality after completion of the project. The placement of material on the shore would restore the natural pleasing visual appearance of the considered 1.1 miles of shore. During construction, short-term impacts will include turbidity in the immediate vicinity of the dredge and discharge point on the beach, construction equipment on the beach along with their associated audio impacts, pipeline placement on the beach, and fill

containment berms. For safety reasons, access to certain parts of the beach will be temporarily restricted. Sand samples of borrow site material were generally slightly darker in color than the existing beach sand. The placed and the existing beach sand are expected to eventually blend so that the net result will not detract from the long-term aesthetic appearance of the beach. The project protects existing dunes and restores those sections of dune destroyed by storm erosion. Dune restoration will include replanting with appropriate native vegetation.

4.13 RECREATIONAL RESOURCES

4.13.1 No Action Alternative

Loss of beach associated with erosion would result in less beach width available for recreation along the project area.

4.13.2 Preferred Alternative – Shoreline Protection and Borrow Area

Once completed, the project would provide a large, dry beach, which will supply more area for active and passive recreational activities.

The overall project area, popular for a variety of recreational activities, accommodates surfing and fishing activities. A majority of surfing occurs in the area south of the Jupiter Inlet south jetty to about the northern two-thirds of Jupiter Beach Park and at the north end of Carlin Park. For a short time, the construction process would limit surfing opportunities, especially near the dredge discharge point along the beach. The proposed project will not significantly impact recreational fisheries activities except during dredging operations. During construction, there will be short-term construction impacts including turbidity in the immediate vicinity of the dredge. Fishermen will be unable to access the area immediately around the dredge while it remains on site.

4.14 COASTAL BARRIER RESOURCES

4.14.1 No Action Alternative

The No Action alternative will likely result in a minimization or elimination of coastal barrier resources due to continued beach erosion.

4.14.2 Preferred Alternative – Shoreline Protection and Borrow Area

The project will result in the maintenance of a protective beach for the Coastal Barrier Resource System Units associated with the project beach. The project will not encourage additional development, as the area is already fully developed outside the park areas.

4.15 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

4.15.1 No Action Alternative

No sources of HTRW have been identified in the project area. The No Action alternative would not result in any sources of pollutants occurring in the project area.

4.15.2 Preferred Alternative – Shoreline Protection and Borrow Area

Dredging equipment, staging areas, construction equipment, and other motorized vehicles used during construction have the potential to spill gasoline and lubricating oils. Accident and spill

prevention plans provided in contract specifications should help avoid most spills. All motorized vehicles will be maintained and stored offsite the project area and the contractor will take appropriate precautions to avoid accidental spills.

4.16 AIR QUALITY

4.16.1 No Action Alternative

The No Action alternative would not affect air quality in the project area.

4.16.2 Preferred Alternative – Shoreline Protection and Borrow Area

The proposed project would cause minor, temporary effects on air quality because of emissions from the dredge and other construction equipment. Ambient sea breezes, prevalent throughout the project area, will help limit these effects.

4.17 NOISE

4.17.1 No Action Alternative

The No Action alternative would not affect the noise levels in the project area.

4.17.2 Preferred Alternative – Shoreline Protection and Borrow Area

The proposed project would cause a temporary increase in noise, primarily from heavy equipment and dredges. Increases to the ambient noise levels because of the project would only occur during construction.

4.18 PUBLIC SAFETY

4.18.1 No Action Alternative

As the beach continues to erode, the No Action alternative could lead to decreased public safety because of reduced storm protection to upland shorefront structures.

4.18.2 Preferred Alternative – Shoreline Protection and Borrow Area

The proposed project would provide for an increase in public safety because of increased storm protection from the widened beach. Dredging and beach restoration construction operations, however, would temporarily decrease public safety due to operation of the dredge and large earthmoving equipment.

Dredging operations and beach restoration mandate rigid application of safety and health requirements. Dredging with deep draft equipment, operating in relatively shallow water, requires extreme skill to stay within safe operating tolerances. Additionally, heavy equipment and transport operators must employ the same extreme caution on the beach, where the public may not truly appreciate the inherent danger. Accordingly, the project sponsors require contractors to submit extensive health, safety, and accident prevention plans to protect the onsite personnel, public, and environment.

4.19 NATURAL OR DEPLETABLE RESOURCES

4.19.1 No Action Alternative

The No Action alternative would result in no impact to natural resources.

4.19.2 Preferred Alternative – Shoreline Protection and Borrow Area

Removing sand from the borrow area would deplete the sand from the borrow area. Over a long period, the excavated borrow area may at least partially refill with sand.

4.20 INDIRECT IMPACTS

4.20.1 No-Action Alternative

As the shoreline continues to erode, the No Action alternative may result in indirect impacts to the environment due to the loss of storm protection and subsequent storm damage to buildings and other infrastructure, resulting in debris being deposited on the beach during storms. Other losses would include loss of natural habitat, loss of recreational area, and loss of the visual amenity that the beach offers.

4.20.2 Preferred Alternative – Shoreline Protection and Borrow Area

The proposed project should not result in adverse indirect effects, however, beach renourishment may result in indirect impacts such as formation of scarps, sand migration over time, and long-term changes in sand composition. Because a large portion of the beachfront is within county-owned parks and most of the remainder is already developed, the project will not likely cause significant additional development to occur.

Appropriate post-nourishment management (also required by state and federal permits) will ensure scarp knockdown occurs. Monitoring of turtle nesting since the original 1995 nourishment project have indicated that nourishment may result in a temporary reduction in turtle nesting (although this does not always occur) and a temporary loss of benthic communities. The last two project nourishments have not resulted in decreased nesting. Marine turtle nesting frequency and success are clear indicators of habitat quality. Continuing careful conduct of future projects will ensure that future nourishment projects will not result in indirect impacts.

4.21 CUMULATIVE IMPACTS

Overall cumulative impacts, defined as 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 regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7), may result in both beneficial and adverse impacts. Primary benefits from beach and dune management mainly consist of beach or dune habitat restoration previously eroded by natural and artificial causes. Secondary benefits may include mitigation planting, wildlife species monitoring, and habitat enhancement.

Beach management can also result in environmental impacts to species and the areas they inhabit. However, a thorough understanding of the habitat and the species involved can help minimize or avoid environmental impacts. Methods to minimize environmental impacts caused by beach management practices include species observation, trapping and relocation, relocation of nest, nest identification/marking, avoidance of species and/or sensitive areas, lighting

restrictions, noise abatement, and project time constraints. If one implements adequate environmental protection measures, environmental impacts from beach management activities are generally short-term and minimal.

Table 9 provides a summary comparison of expected effects identified in the SEIS (1994 GDM) and cumulative effects of the project since the initial project construction. The table also shows those issues identified in the SEIS (1994 GDM) as concerns. The proposed project will not alter this assessment of cumulative impacts.

Table 9. Cumulative Effects of Jupiter Carlin Shoreline Protection Project

Resource	Expected Effect	Summary of Cumulative Effect
Air Quality	Some decrease as number of visitor trips increase	No evidence of air quality impact
Noise	Increase due to larger crowds and more traffic; temporary increase during construction	Crowds have increased in proportion to state growth
Water Quality	Temporary turbidity during construction and maintenance	Temporary turbidity impacts have remained within permitted limits
Manmade Resources	Protect structures from flooding and wave damage due to storms	Sub-Tropical Storm Andrea (May 2007) damaged Jupiter Beach Park maintenance building and dunes. No other notable damage along project area from storms since project initiation
Natural Resources	Temporary disruption of beach, nearshore, and ebb tidal shoal ecosystems	Jupiter Inlet ebb shoal used for initial nourishment; use of shoal contributed to poorer than expected project performance; other offshore borrow site used for subsequent fill project with no significant beach or nearshore effects
Aesthetic Values	Temporary unsightliness during construction and nourishment; wider, darker beach with dune protected; burial of intertidal outcrops and tide pools	The project has remained within anticipated footprints and permit compliance conditions for two major and multiple minor nourishments
Public Facilities	Increased need for public facilities as crowds and traffic increases; provides wider recreational beach	County has continued to maintain services in the project area
Public Services	Increase need for public safety services and water supply, sewer service, and other utilities as area develops and use increases	County has maintained required services in the general area
Employment	Some jobs during construction; slight increase in service industry as visitation increases	No evaluation available
Property Values	Stabilized beach should enhance beachfront property values	No evaluation available
Fish and Wildlife	Stabilization of beach/dune habitats; short term reduction in fish and invertebrate populations;	Stabilization of beach/dune habitats, successful artificial reef mitigation developed. See detailed discussion

Resource	Expected Effect	Summary of Cumulative Effect
	nearshore impacts offset by artificial reef construction	
Threatened or Endangered Species	Potential for erosion of marine turtle nest; compaction may reduce marine turtle nesting and hatching success; slight increase in risk of manatee/vessel collision	Maintenance of the beach has provided for continued successful nesting; projects have recorded no manatee collisions associated with construction. See detailed discussion
Recreation	Increased recreational beach width; temporary disruption of snorkeling, fishing, boating during construction and until after mitigation reefs are constructed	Mitigation reef constructed and has become a snorkeling/diving/fishing destination
Cultural and Historical Resources	Existing shipwreck buffered from borrow area; burial of existing shipwreck	Projects have avoided cultural and historic resource sites; burial of existing shipwreck
Navigation	Temporary effect during construction due to position of dredge and pipeline near inlet; no permanent effect due to dredging	No permanent effects identified
Jetties at Jupiter Inlet	No effect	No effect
Saltwater Intrusion	No effect	No effect – no apparent intrusion recorded

4.22 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

4.22.1 Irreversible

For the proposed action, the fossil fuels for construction and public funds represent an irreversible commitment of resources, defined as forever losing the ability to use and/or enjoy the resource.

4.22.2 Irretrievable

Temporary reductions of benthic communities, aesthetics, recreational opportunities, water quality, and air quality represent irretrievable commitments of resources, defined as opportunities lost for a period to use or enjoy the resource, as they presently exist, for the proposed action.

4.23 UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS

Unavoidable adverse environmental impacts resulting from the proposed action include a temporary loss of beach habitat, a localized increase in turbidity levels, a temporary reduction in sea turtle nesting, and a temporary loss of benthic communities in the nearshore area and in the borrow area.

4.24 LOCAL SHORT-TERM USES AND MAINTENANCE/ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The Jupiter Carlin segment of the Palm Beach County SPP site will experience localized, temporary turbidity plumes, and sedimentation adjacent to the beach fill and offshore borrow areas. Beach fill projects have short-term impacts on benthic and fishery communities, and marine turtle nesting. However, the impacts are typically short-lived; benthos recover quickly and extended periods of improved conditions for turtle nesting follow re-equilibration of the beach profile. Appropriate mitigation and monitoring should ensure that these populations remain sustainable.

4.25 COMPATIBILITY WITH FEDERAL, STATE, AND LOCAL OBJECTIVES

The proposed project complies with Federal, state, and local objectives.

4.26 ENVIRONMENTAL COMMITMENTS

The Corps' commits to avoiding, minimizing, or mitigating for adverse effects during construction activities by employing the following practices and all environmental permit requirements.

4.26.1 Migratory Birds

The local sponsors will require the contractor to conduct construction activities in such a way as to prevent impacts to migratory birds and their nests in accordance with the Corps' Jacksonville District's Migratory Bird Protection Policy. Additionally, the Florida Endangered and Threatened Species Act of 1977, Title XXVIII, Chapter 372.072, and the U.S. Fish and Wildlife Service (USFWS) pursuant to the Migratory Bird Treaty Act of 1918 and the Endangered and Threatened Species Act of 1982, as amended, protect migratory birds.

4.26.2 Marine Turtles

Monitoring of the construction area will continue daily from March 1 through October 31, if construction activities occur during that period. If nesting occurs within the construction area, the contractor will implement guidelines set forth in the USFWS and Department of the Army permits.

4.26.3 Manatees

Implementation of the following protection measures would minimize potential impacts to manatees:

- The contractor shall instruct all personnel associated with the project of the potential presence of manatees and the need to avoid collisions with manatees
- The contractor shall advise all construction personnel that one will face civil and criminal penalties for harming, harassing, or killing manatees, which the Marine Mammal Protection Act of 1972, the Endangered Species Act of 1973, and the Florida Sanctuary Act of 1978 protect. The local sponsors may hold the contractor responsible for any manatee harmed, harassed, or killed as a result of construction activities;
- All vessels associated with the project shall operate at "no wake/idle" speeds at all times while in water where the draft of the vessel provides less than four feet clearance from the bottom and that vessels shall follow routes of deep water whenever possible
- If one sights a manatee within 100 yards of the project area, the contractor shall implement all appropriate precautions to ensure protection of the manatee. These

precautions shall include the operation of all moving equipment no closer than 50 ft of a manatee. If a manatee is closer than 50 ft to moving equipment or the project area, the contractor shall shut down the equipment and cease all construction activities. Construction activities shall not resume until the manatee has departed the project area;

- The contractor shall immediately report any collision with and/or injury to a manatee to the "Manatee Hotline" at 1-800-DIAL-FMP (1-800-342-5367). The contractor should also report any collision and/or injury to the U.S. Fish and Wildlife Service at the Vero Beach - South Florida Field Office at 561-562-3909.
- The contractor shall post temporary signs concerning manatees prior to and during construction activities. The contractor shall remove all signs upon completion of the project; and
- If nighttime construction occurs, the contractor must place lights that illuminate a 100-ft radius around the construction site.

4.26.4 Turbidity

To help avoid/minimize turbidity related impacts, the contractor shall monitor water quality at the frequency required by project permits both at the dredging and sand placement sites. If turbidity values at the dredging site exceed permitted values, the contractor shall suspend all dredging activities. Dredging shall not continue until water quality meets state standards.

4.27 COMPLIANCE WITH ENVIRONMENTAL REQUIREMENTS

4.27.1 National Environmental Policy Act Of 1969

Environmental information on the project has been compiled and a final EA will be posted online in accordance with NEPA.

4.27.2 Endangered Species Act Of 1973

USFWS consultation was initiated through a consolidated letter concerning emergency shore protection and navigation projects that are covered under the SPBO on May 20, 2013. This project was coordinated under the Endangered Species Act and is therefore in full compliance with the Act. Species under the jurisdiction of NMFS are covered under the South Atlantic Regional Biological Opinion (1998).

4.27.3 Fish and Wildlife Coordination Act Of 1958

This project has been coordinated with USFWS. This project has been fully coordinated with respect to and will remain in full compliance with the Fish and Wildlife Coordination Act of 1958.

4.27.4 National Historic Preservation Act Of 1966

PL 89-665, the Archeology and Historic Preservation Act (PL 93-291), and executive order 11593 -- Archival research, field work, and consultation with 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. In a March 13, 2009 letter, SHPO (2009) concurred with the USACE no adverse effect determination. The project will not affect historic properties included in or eligible for inclusion in the National Register of Historic places. The project complies with each of the federal laws cited in this paragraph.

4.27.5 Clean Water Act Of 1972

The project complies with the Clean Water Act. A Section 401 water quality certification will be issued by FDEP. All State water quality standards would be met. A Section 404(b) evaluation is included in this report as Appendix B.

4.27.6 Clean Air Act Of 1972

No air quality permits would be required for this project.

4.27.7 Coastal Zone Management Act Of 1972

A federal consistency determination in accordance with 15CFR930 Subpart C is included in this report as Appendix A. The State is expected to concur through the approval of the Water Quality Permit with the Federal CD that this activity is consistent with the Florida Coastal Management Program.

4.27.8 Farmland Protection Policy Act Of 1981

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

4.27.9 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.

4.27.10 Marine Mammal Protection Act Of 1972

Incorporation of the safeguards used to protect threatened or endangered species during dredging and disposal operations will also protect any marine mammals in the area, therefore, this project complies with the Marine Mammal Protection Act of 1972.

4.27.11 Estuary Protection Act Of 1968

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

4.27.12 Federal Water Project Recreation Act

The principles of the Federal Water Project Recreation Act (Public Law 89-72), as amended, have been fulfilled by complying with the recreation cost-sharing criteria as outlined in Section 2 (a), paragraph (2). Another area of compliance includes the public beach access requirement on which the renourishment project hinges [Section 1, (b)].

4.27.13 Fishery Conservation and Management Act Of 1976

NMFS responded to our EFH assessment on May 19, 2011. The project area or intent did not change from the proposed project in 2011, therefore the Corps responded to NMFS' conservation measure recommendations in June 2013. This project is in compliance.

4.27.14 Submerged Lands Act Of 1953

The project would occur on submerged lands within of the State of Florida. The project complies with the Submerged Lands Act of 1953.

4.27.15 Coastal Barrier Resources Act and Coastal Barrier Improvement Act Of 1990

This project complies with the Coastal Barrier Resource Act and Coastal Barrier Improvement Act of 1990.

4.27.16 Rivers and Harbors Act Of 1899

The proposed work would not obstruct navigable waters of the United States. The project is in full compliance.

4.27.17 Anadromous Fish Conservation Act

Anadromous fish species would not be affected. The project has been coordinated with NMFS and complies with the Anadromous Fish Conservation Act.

4.27.18 Migratory Bird Treaty Act and Migratory Bird Conservation Act

Impacts to migratory birds will be mitigated by implementation of the Migratory Bird Treaty Act and the Migratory Bird Conservation Act; thus the project will comply with both acts.

4.27.19 Marine Protection, Research, and Sanctuaries Act

The term "dumping" as defined in the Marine Protection, Research and Sanctuaries Act {3[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). Therefore, the Marine Protection, Research, and Sanctuaries Act does not apply to this project. The disposal activities addressed in this EA have been evaluated under Section 404 of the Clean Water Act.

4.27.20 Magnuson-Stevens Fishery Conservation and Management Act

This act requires preparation of an EFH assessment and coordination with NMFS. The EFH correspondence is provided in Appendix C and complies with this Act.

4.27.21 Executive Order 11990, Protection of Wetlands

No wetlands would be affected by project activities. This project complies with the goals of this Executive Order 11990.

4.27.22 Executive Order 11988, Flood Plain Management

No activities associated with this project will take place within a riparian, lacustrine, or estuarine floodplain; therefore, this project complies with the goals of Executive Order 11988.

4.27.23 Executive Order 12898, Environmental Justice

The proposed project would not result in adverse human health or environmental effects, nor would the activity impact subsistence consumption of fish or wildlife. The project complies with Executive Order 12898.

4.27.24 Executive Order 13089, Coral Reef Protection

The proposed project may affect U.S. coral reef ecosystems as defined in Executive Order 13089. The offshore borrow areas will be designed to avoid impacts to hardbottom resources by establishing a minimum 200-foot buffer around any identified resources. Additional protective measures will be implemented to minimize impacts to adjacent hardbottom resources, including turbidity monitoring with cessation of construction activities in the beach nourishment area if

turbidity exceeds the state limit of 29 NTU above background, real-time sedimentation monitoring during project construction, and post-construction monitoring of nearshore hardbottom resources adjacent to the beach fill areas to evaluate potential long-term impacts of turbidity and sedimentation. The nearshore hardbottom epibenthic communities landward of the equilibrium toe of fill do not represent irreplaceable resources. With proper placement of artificial reefs, suitable replacement habitat has been created for nearshore epibenthic species. The proposed project will comply with Executive Order 13089.

4.27.25 Outer Continental Shelf Lands Act

The federal government administers the submerged lands, subsoil, and seabed, lying between the states' seaward jurisdiction and the seaward extent of federal jurisdiction. The Outer Continental Shelf Lands Act (OCSLA) and subsequent amendments, in later years, outlines the Federal responsibility over the submerged lands of the Outer Continental Shelf. Additionally, it authorizes the Secretary of the Interior to lease those lands for mineral development. The project occurs in state waters and does not involve the extraction of sand from the Outer Continental Shelf.

4.27.26 Coordination

Any work performed because of this study will be fully coordinated with all appropriate Federal, state, and local agencies. Previous consultation concerning the authorized beach nourishment has been coordinated with the USFWS, NMFS, EPA, FDEP, and the Division of Historical Resources. This document will be posted online as a Final Environmental Assessment.

5.0 LIST OF PREPARERS

5.1 PREPARERS

Table 10 presents people responsible for preparing this EA.

Table 10. List of Preparers

Name	Discipline/Company	Role
David L. Stites Ph.D.	Environmental Scientist, Taylor Engineering	Author
Alexandra Carvalho, Ph.D.	Environmental Scientist, Taylor Engineering	Co-Author
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Stacie Auvenshine	Biologist, Corps	NEPA/FWS compliance
Pat Griffin	Biologist, Corps	NEPA Reviewer

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Appendix A. Coastal Zone Management Act
Federal Consistency Determination

Jupiter Carlin Shore Protection Project 2013

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COASTAL ZONE MANAGEMENT ACT AND FLORIDA COASTAL MANAGEMENT PROGRAM FEDERAL CONSISTENCY DETERMINATION FOR JUPITER CARLIN SHORELINE PROTECTION PROJECT

Enforceable Policy. Florida State Statues considered "enforceable policy" under the Coastal Zone Management Act (www.dep.state.fl.us/cmp/federal/24_statutes.htm).

Applicability of the Coastal Zone Management Act.

The following summarizes the process and procedures under the Coastal Zone Management Act for Federal Actions and for non-Federal Applicants[1].

Item	Non-Federal Applicant (15 CFR 930, subpart D)	Federal Action (15 CFR 930, subpart C)
Enforceable Policies	Reviewed and approved by NOAA (in FL www.dep.state.fl.us/cmp/federal/24_statutes.htm)	Same
Effects Test	Direct, Indirect (cumulative, secondary), adverse or beneficial	Same
Review Time	6 months from state receipt of Consistency Certification (30-days for completeness notice) Can be altered by written agreement between State and applicant	60 Days, extendable (or contractible) by mutual agreement
Consistency	Must be Fully Consistent	To Maximum Extent Practicable[2]
Procedure Initiation	Applicant provides Consistency Certification to State	Federal Agency provides "Consistency Statement" to State
Appealable	Yes, applicant can appeal to Secretary (NOAA)	No (NOAA can "mediate")
Activities	Listed activities with their geographic location (State can request additional listing within 30 days)	Listed or Unlisted Activities in State Program
Activities in Another State	Must have approval for interstate reviews from NOAA	Interstate review approval NOT required
Activities in Federal Waters	Yes, if activity affects state waters	Same

[1] There are separate requirements for activities on the Outer Continental Shelf (subpart E) and for "assistance to an applicant agency" (subpart F).

[2] Must be fully consistent except for items prohibited by applicable law (generally does not count lack of funding as prohibited by law, 15 CFR 930.32).

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 have been voluntarily submitted to the State in compliance with this Chapter.

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. Its 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 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 SCP through preservation and protection of the shorefront development and infrastructure.

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 dredging of the Singer Island borrow area in order to protect the shoreline conditions of the Jupiter/Carlin segment in Palm Beach County. Therefore, this project is consistent with the efforts of the Division of Emergency Management.

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: The proposed project complies with State regulations pertaining to the above resources. The work complies with the intent of this chapter.

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

Response: Lands will not be acquired by the federal government for the dredging or placement. The borrow area has been previously used for Juno Beach renourishment.

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: This project would not impact state parks or preserves. Natural resources will be protected to the extent practicable through use of best management practices and implementation/monitoring guidelines that are found within the State Programmatic Biological Opinion.

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). Because of the nature of the project there is little potential for impact to historic properties. The project is consistent with this chapter.

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 and placement of borrow area material encourage commercial and recreational use on the beach that in turn provides economic benefits to the area. This would be compatible with tourism for this area and therefore, is consistent with the goals of this chapter.

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

Response: The dredging and placement of borrow area material would not improve or degrade transportation.

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: The dredging and sand placement on the shoreline would not have a substantial adverse impact on saltwater living resources. Benthic organisms may be adversely affected by the work, and full recovery may be delayed in the borrow area or at the placement areas due to the fact that dredging and sand placement is a recurring need. However, the project footprint is relatively small and lies adjacent to similar habitat. Therefore, substantial impacts to the aquatic ecosystem are not anticipated. Based on the overall impacts of the project, the project is consistent with the goals of this chapter.

Chapter 372, Living Land and Freshwater Resources. This chapter establishes the Fish and Wildlife Conservation 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 would not have a substantial adverse impact on living land and freshwater resources. Use of the placement areas could temporarily adversely impact wildlife, but these areas should be re-colonized between uses.

Chapter 373, Water Resources. The waters in the state of Florida are managed and protected to conserve and preserve water resources, water quality, and environmental quality. This statute addresses sustainable water management; the conservation of surface and ground waters for full beneficial use; the preservation of natural resources, fish, and wildlife; protecting public land; and promoting the health and general welfare of Floridians. The state manages and conserves water and related natural resources by determining whether activities will unreasonably consume water; degrade water quality; or adversely affect environmental values such as protected species habitat, recreational pursuits, and marine productivity.

Specifically, under Part IV of Chapter 373, the Department of Environmental Protection, water management districts, and delegated local governments review and take agency action on wetland resource, environmental resource, and stormwater permit applications, which address the construction, alteration, operation, maintenance, abandonment, and removal of any stormwater management system, dam, impoundment, reservoir, or appurtenant work or works, including dredging, filling and construction activities in, on, and over wetlands and other surface waters. This chapter regulates the withdrawal, diversion, management and storage of surface waters, water supply, and permitting of consumption use of water.

Response: This project will temporarily increase the turbidity of water during the dredging operations. Environmental permits would be obtained prior to construction, which would keep turbidity levels within the state standards.

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.

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.

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 renourishment project will not have any regional impact on resources in the area. Therefore, the project is consistent with the goals of this chapter.

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 shall not further the propagation of mosquitoes or other pest arthropods.

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 Protection.

Response: A final EA has been prepared and will be made available to the public and resource agencies including DEP. Environmental protection measures will be implemented to ensure that no lasting adverse effects on water quality or other environmental resources will occur. The project complies with the intent of this chapter.

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: Agricultural lands do not occur in the vicinity of the project; therefore this chapter does not apply.

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Appendix B – Section 404(b) Evaluation
Jupiter Carlin Shore Protection Project 2013

I. PROJECT DESCRIPTION

a. Location. The Jupiter/Carlin segment lies south of Jupiter Inlet between Florida Department of Environmental Protection (FDEP) reference monuments R-13 and R-19 in Palm Beach County, Florida. The segment is situated along the Atlantic Ocean in Section 5, Township 41 South, Range 43 East. Sand sources for past and currently proposed project beach nourishments in this segment include the Jupiter Inlet ebb shoal and offshore borrow sites (see Environmental Assessment (EA) for figures 1 and 2).

b. General Description. The Jupiter/Carlin segment of the Palm Beach County Shore Protection Plan would nourish a 1.1-mile stretch of beach south of Jupiter Inlet between FDEP monuments R-13 and R-19. The proposed beach fill profile consists of a berm at elevation 7.5 feet (ft)-NAVD (9 ft-NGVD) with an average construction berm width of approximately 200 ft. Sand dredged from borrow areas in the Atlantic Ocean provides the fill for the project. A borrow area, which recently serviced the non-federal Juno Beach restoration project in Palm Beach County in spring 2010 and lies approximately 8.5 miles south of Jupiter Inlet, will service the Jupiter/Carlin 2013 project. Sand source analysis concluded that after completion of the Juno Beach project, sufficient sand should remain for the 2013 Jupiter/Carlin project.

c. Authority and Purpose. See section 1.1 of the associated project EA.

d. General Description of Dredged Material

(1) General Characteristics of Material: The material is comprised of mainly sand and rock.

(2) Quantity of Material: It is estimated that 995,000 cubic yards of material will be removed and placed in the disposal site.

(3) Source of Material: Material will be dredged from the borrow area.

e. Description of the Proposed Discharge Site(s)

(1) Location. Dredged material would be placed along the beach between DEP monuments R13 and R19. Rock will be screened on the dredge and placed back into the borrow area.

(2) Size. The beach placement size is approximately 1.1 miles.

(3) Type of Site. Beach placement.

(4) Type(s) of Habitat. Beach placement would be sandy slopes with a vegetated berm.

(5) Timing and Duration of Discharge. The exact timing of dredging operations is not known, although dredging activities are expected to occur in the winter months.

f. Description of Disposal Method. Disposal could be either from a pipeline via hydraulic dredging or clamshell dredge and transport barge.

II. Factual Determinations

a. Physical Substrate Determinations

(1) Substrate Elevation and Slope: The proposed beach fill profile consists of a berm at elevation 7.5 feet (ft)-NAVD (9 ft-NGVD) with an average construction berm width of approximately 200 ft.

(2) Sediment Type. The material to be disposed on the beach will only be of beach quality sand.

(3) Dredged Material Movement: Material will settle and remain within boundaries of upland site or be moved to downdrift beaches by wave action if placed in beach placement.

(4) Physical Effects on Benthos: Some benthic organisms that are not mobile may be may be covered by the beach material. Recolonization soon after project completion is expected to replace those organisms that do not survive project construction. It is anticipated that no long-term adverse impacts will occur.

(5) Other Effects: Not applicable.

(6) Actions Taken to Minimize Impacts: BMPs and other benthic protection measures have been coordinated with the resource agencies to minimize impacts.

b. Water Circulation. Fluctuation and Salinity Determinations

(1) Water column: During beach or nearshore disposal operations, turbidity will increase temporarily in the water column adjacent to the project. The increased turbidity will be short-term; therefore beach placement or nearshore placement will have no long-term or significant impacts, if any, on salinity, water chemistry, clarity, color, odor, taste, dissolved gas levels, nutrients or eutrophication

(2) Current Patterns and Circulation: Net movement of water is from the north to the south. The project will have no significant effect on existing current patterns, current flow, velocity, stratification, or the hydrologic regime in the area.

(3) Normal Water Level Fluctuations: Mean tidal range in the project area is 3.5 feet with a spring tide range of approximately 4.1 feet.

(4) Salinity Gradients: Salinity is that of oceanic water. Dredged material placement will not affect normal tide fluctuations or salinity.

(5) Actions That Will Be Taken to Minimize Impacts: BMPs and other benthic protection measures have been coordinated with the resource agencies to minimize impacts.

c. Suspended Particulate/Turbidity Determinations

(1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site: There may be a temporary increase in turbidity levels in the project area along the disposal site during discharge. Turbidity will be short-term and localized and no significant adverse impacts are expected. State water quality standards for turbidity outside an allowable mixing zone would not be exceeded.

(2) Effects (degree and duration) on Chemical and Physical Properties of the Water Column: The sea floor, at this location, is characterized by a sandy beach. There would be little, if any adverse effects to chemical and physical properties of the water as a result of placing clean beach compatible sand on the beach.

(a) Light Penetration: Some decrease in light penetration may occur in the immediate vicinity of the disposal area. This effect will be temporary, limited to the immediate area of construction, and will have no adverse impact on the environment.

(b) Dissolved Oxygen: Dissolved oxygen levels will not be altered by this project due to the high energy wave environment and associated adequate reaeriation rates.

(c) Toxic Metals and Organics: No toxic metals or organics are expected to be released by the project.

(d) Pathogens: No pathogens are expected to be released by the project.

(e) Aesthetics: The aesthetic quality of the water in the immediate area of the project will be reduced during construction due to increased turbidity. This will be a short-term and localized condition. The placement of clean beach compatible sand on an erosive beach will likely improve the aesthetic quality of the immediate area. Material placed in the nearshore would likely provide improved beach width downdrift.

(f) Others as Appropriate: None.

(3) Effects on Biota

(a) Primary Production, Photosynthesis: Primary productivity is not a recognized, significant phenomenon in the surf zone, where a temporarily increased level of suspended particulates will occur. There will be no effect on the nearshore productivity as a result of the proposed disposal area.

(b) Suspension/Filter Feeders: An increase in turbidity could adversely impact burrowing invertebrate filter feeders within and adjacent to the immediate construction area. It is not expected that a short-term, temporary increase in turbidity will have any long-term negative impact on these highly fecund organisms.

(c) Sight Feeders: No significant impacts on these organisms are expected as the majority of sight feeders are highly motile and can move outside the project area.

(4) Actions taken to Minimize Impacts: BMPs and other benthic protection measures will be coordinated with the resource agencies to minimize impacts.

d. Contaminant Determinations: The material that will be disposed will not introduce, relocate, or increase contaminants at the area. The material would be clean sand meeting the sand specification and compatible with the existing beach or sandy material with some silt in the nearshore or upland.

e. Aquatic Ecosystem and Organism Determinations: The material that will be placed on the beach is similar enough to the existing substrate so that no impacts are expected. The materials meet the exclusion criteria, therefore, no additional chemical-biological interactive testing will be required.

(1) Effects on Plankton: No adverse impacts on autotrophic or heterotrophic organisms are anticipated.

(2) Effects on Benthos: The material will bury some benthic organisms. Recolonization is expected to occur within a year after construction activities cease. No adverse long-term impacts to non-motile or motile benthic invertebrates are anticipated.

(3) Effects on Nekton: No adverse impacts to nektonic species are anticipated.

(4) Effects on Aquatic Food Web: No adverse long-term impact to any trophic group in the food web is anticipated.

(5) Effects on Special Aquatic Sites: Hardbottom resources are located near the project site. Previous sand placement activities have already mitigated for those

impacts, however, buffers would need to be established if any new hardbottoms were encountered. Section 4 of the EA offers a more detailed discussion on impacts.

(6) Threatened and Endangered Species: Appropriate measures to avoid, minimize, and mitigate for impacts to listed species have been coordinated with NMFS and FWS.

(7) Other Wildlife: No adverse impacts to small foraging mammals, reptiles, or wading birds, or wildlife in general are expected.

(8) Actions to Minimize Impacts: BMPs along with terms and conditions associated with ESA Biological Opinions will be followed.

f. Proposed Disposal Site Determinations

(1) Mixing Zone Determination: Clean sand, compatible with the existing beach, would be placed on the beach. This will not cause unacceptable changes in the mixing zone water quality requirements as specified by the State of Florida's Water Quality Certification permit procedures. No adverse impacts related to depth, current velocity, direction and variability, degree of turbulence, stratification, or ambient concentrations of constituents are expected from implementation of the project. Rock will need to be screened from the sand, and rock placement is yet to be determined. All appropriate permits will be attained prior to rock disposal.

(2) Determination of Compliance with Applicable Water Quality Standards: Because of the inert nature of the material to be to be disposed, Class III water quality standards will not be violated.

(3) Potential Effects on Human Use Characteristic

(a) Municipal and Private Water Supply: No municipal or private water supplies will be impacted by the implementation of the project.

(b) Recreational and Commercial Fisheries: Fishing in the immediate construction area will be prohibited during construction. Otherwise, recreational and commercial fisheries will not be impacted by the implementation of the project.

(c) Water Related Recreation: Beach/water related recreation in the immediate vicinity of construction will be prohibited during construction activities. This will be a short-term impact.

(d) Aesthetics: The existing environmental setting will not be adversely impacted. Construction activities will cause a temporary increase in noise and

air pollution caused by equipment as well as some temporary increase in turbidity. These impacts are not expected to adversely affect the aesthetic resources over the long term and once construction ends, conditions will return to pre-project levels.

(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves: No such designated sites are located within the project area.

g. Determination of Cumulative Effects on the Aquatic Ecosystem: There will be no cumulative impacts that result in a major impairment in water quality of the existing aquatic ecosystem resulting from the placement of material at the project site.

h. Determination of Secondary Effects on the Aquatic Ecosystem: There will be no secondary impacts on the aquatic ecosystem as a result of the dredging.

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

a. Adaptation of the Section 404(b)(l) Guidelines to this Evaluation: No significant adaptations of the guidelines were made relative to this evaluation.

b. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem: No practicable alternative exists which meets the study objectives that does not involve discharge of fill into waters of the United States. Further, no less environmentally damaging practical alternatives to the proposed actions exist. To test the suitability of upland sand sources, the borrow areas proposed by the contractor will be used for this project. In addition, the impacts of using other sources on cultural resources, protected species, and other environmental factors would likely be equal to or greater than the impacts of the proposed action.

c. Compliance with Applicable State Water Quality Standards: After consideration of disposal site dilution and dispersion, the discharge of dredged materials will not cause or contribute to, violations of any applicable State water quality standards for Class III waters.

d. Compliance with Applicable Toxic Effluent Standard or Prohibition: Under Section 307 Of the Clean Water Act: The discharge operation will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

e. Compliance with Endangered Species Act of 1973: The disposal of dredged material 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. Standard conditions for monitoring and relocating turtle nests would be employed.

f. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972: No marine sanctuaries are located within the project area.

g. Evaluation of Extent of Degradation of the Waters of the United States: The placement of dredged 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.

h. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem: Appropriate steps have been taken to minimize the adverse environmental impact of the proposed action. The material proposed as beach has low silt content, therefore, turbidity due to silt will be low when discharging. Turbidity will be monitored so that if levels exceed State water quality standards of 29 NTU's above background, the contractor will be required to cease work until conditions return to normal. In the vicinity of reef and other hard grounds, measures would be taken to minimize sediment deposition on sensitive reef organisms.

i. On the basis of the guidelines, the proposed dredging and disposal sites are specified as complying with the requirements of these guidelines.

Appendix C. Correspondence
Jupiter Carlin Shore Protection Project 2013

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

REPLY TO
ATTENTION OF

20 MAY 2013

Planning and Policy Division
Environmental Branch

Mr. Larry Williams
State Supervisor
U.S. Fish and Wildlife Service
1339 20th Street
Vero Beach, Florida 32960-3559

Dear Mr. Williams:

I am writing you concerning the upcoming activities under the Flood Control and Coastal Emergencies Act (FCCE) and other emergency appropriations. Since some of these activities fall within the jurisdiction of the Jacksonville Field Office, a copy of this letter is being sent to that office. These activities are to address erosion of shoreline and shoaling of navigation channels associated with Hurricane Sandy and Tropical Storm Debby. The purpose of this letter is (1) to update you on the status of these projects since our 30-day notification letter of February 26, 2013, pursuant to the Statewide Programmatic Biological Opinion (SPBO), (2) to include activities under the emergency supplemental appropriation, and (3) to provide your office notification of activities subject to the pending Programmatic Piping Plover Biological Opinion (P3BO). See attached table for a summary status of these activities.

The attached spreadsheet shows the current status of the FCCE and emergency appropriation projects. I have also attached location maps for these proposed efforts. These items are updated periodically. The participation of Fish and Wildlife Service staff (Jeff Howe and Peter Plage) in the bi-weekly interagency webinar and their interest in these efforts is very much appreciated.

In addition to those activities indicated in our 30-day notification letter, the following shore protection projects should be added: Manatee County (may have been overlooked in the 30-day notification letter) and the Long Key segment in Pinellas County. The following navigation dredging projects should be added: St. Lucie Inlet (or amend the existing Biological Opinion of 2011), Ponce de Leon Inlet (near shore placement), St. Augustine Inlet, Jupiter Inlet, Bakers Haulover Inlet, and, potentially, Ft. Pierce Inlet. Enclosed are updated information sheets concerning the new and updated items. Except as otherwise indicated on the enclosed spreadsheet, please add these items to our 30-day notification letter (Some items have a separate Biological Opinion and would not be under the SPBO).

With respect to the pending P3BO, I have enclosed information sheets concerning those items involving beach or near shore placement. Note that the following shore protection projects would be considered Optimal Piping Plover habitat as defined in the proposed P3BO (public lands within one mile of an inlet): the Gasparilla segment in Lee County, the Ocean Ridge segment in Palm Beach County, and the Jupiter-Carlin segment in Palm Beach County. Also, the following navigation dredging projects would be in Optimal Piping Plover habitat: Jupiter Inlet, St. Lucie Inlet (including Critical Habitat), and St. Augustine Inlet (if material is placed on Anastasia State Park). There is Optimal Piping Plover Habitat (including Critical Habitat) at Ponce de Leon Inlet, but the dredged material will not be placed on the beach. The remaining items listed in the previous paragraph and in the enclosures to this letter, would not be in Optimal Piping Plover Habitat and are not likely to adversely affect Piping Plovers.

In the attached spreadsheet, I have included the anticipated award dates for construction of these activities. Note that these are emergency appropriations intended to repair storm damage and to minimize further risk to the shoreline and navigation channels. Due to time and other constraints, monitoring for Piping Plover will be limited to the duration of the construction contract. In addition, it will not be practicable to limit construction to the 49-day window (May 16 to July 4). Also it will not be practicable, in most cases, to limit placement of material to the near shore.

If you have any questions, please contact Kenneth Dugger at 904-232-1686 or contact me at 904-232-1665.

Sincerely,

Eric P. Summa
Chief, Environmental Branch

Enclosures

Copies Furnished:

Geoffrey Wikel, Bureau of Ocean Energy Management, 381 Elden Street, MS 4042, Herndon, Virginia 20170

Dawn Jennings, Acting Field Supervisor, U.S. Fish and Wildlife Service, 7915 Baymeadows Way, Suite 200, Jacksonville, Florida 32256-7517

ESA Consultation Summary

Activity	Dredging/Borrow	Placement	ESA Consultation
Pinellas County Treasure Is (N Treas Is, Sunset Bch)	Egmont Shoal	R127-R128; R138-R141	P3BO, SPBO, GRBO
Pinellas County Long Key	Egmont Shoal	R144-R148; R160-R165	P3BO, SPBO, GRBO
Lee County- Captiva	Borrow area VI-E plus re-handling area	R85-R109	7 Nov 2012 BO, SPBO, GRBO
Lee County - Gasparilla	Borrow Area 2, Ebb Shoal at Boca Grande	R11-R24	P3BO (OPPH), SPBO, GRBO
Manatee County	Expanded Off Shore Borrow Area	R12-R33	P3BO, SPBO, GRBO
Broward County-Seg II	Upland Sand Source, truck haul	R26-R53, above mean high water	P3BO, SPBO
Brevard County- North	Canaveral Shoal II or Canaveral Shoal I	R1-R53 plus near shore re-handling area and disposal area	P3BO, SPBO, SARBO
Brevard County-South Reach	Canaveral Shoal II or Canaveral Shoal I	R119-R137.5 plus near shore re-handling area	P3BO, SPBO, SARBO
Palm Beach-Jupiter/Carlin	Off-Shore	R13-R19	P3BO (OPPH), SPBO, SARBO
Palm Beach-Delray	Off-Shore	R175-R188	2012 EA, SPBO, SARBO
Palm Beach- North Boca Raton	New Off-Shore	R202-R212	P3BO, SPBO, SARBO
Palm Beach- Ocean Ridge	North and South off-shore borrow sites	R152-R159	P3BO (OPPH), SPBO, SARBO
Ft Pierce Inlet (includes ODMDS placement)	Channel and sediment basin	Suitable material on beach, near shore, ODMDS, or upland	P3BO, SPBO, SARBO
St Lucie Inlet	Channel and impoundment basin	Beach Placement: R59-R75 north to south, Hobe Sound	Nov 2011 BO, P3BO (OPPH), SPBO, SARBO
St Augustine Inlet	Channel	immediately south of inlet on beach berm	P3BO, SPBO, SARBO
Ponce de Leon Inlet	north and south federal channels	Near shore only	P3BO, SPBO, SARBO
IWW-Jacksonville to Miami, Bakers Haulover	Channel	Beach Placement to South, Bal Harbour	P3BO, SPBO, SARBO
IWW-Jacksonville to Miami, Jupiter Inlet		beach south of inlet (R13-R19)	25 May 2007 BO or P3BO (OPPH), SPBO, SARBO

P3BO=Programmatic Piping Plover BO; OPPH=Optimal Piping Plover Habitat; SPBO=Statewide Programmatic BO, GRBO=Gulf Regional BO, SARBO=South Atlantic Regional BO

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960
May 22, 2013

Eric P. Summa
Chief, Environmental Branch (PD-E)
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Dear Mr. Summa:

This document transmits the U.S. Fish and Wildlife Service's (Service) Programmatic Piping Plover Biological Opinion (P^3BO) for the effects of U.S. Army Corps of Engineers (Corps) planning and regulatory shore protection activities on the non-breeding piping plover (*Charadrius melodus*) and its designated Critical Habitat in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 et seq.). The current status of the federally listed piping plover is threatened, and the Service designated Critical Habitat for wintering piping plovers on July 10, 2001. This P^3BO is for the North Florida Ecological Services Office (NFESO) and the South Florida Ecological Services Office (SFESO) areas of responsibility (AORs). You requested formal consultation by letter of May 7, 2013.

This P^3BO is based on the information provided in the Corps May 7, 2013, letter, the Statewide Programmatic Biological Assessment of February 17, 2011, subsequent meetings between Corps and Service personnel, and other sources of information. We have assigned Consultation Code 04EF1000-2013-F-0124 to this consultation. A complete administrative record of this consultation is on file at the NFESO. Each project proposing to utilize this P^3BO will undergo an evaluation process by the Corps to determine if it properly fits within this programmatic approach. If it is determined that the minimization measures, Reasonable and Prudent Measures, and Terms and Conditions in the P^3BO are applicable to the project, the Service will concur within 30 days and it will be covered by this programmatic consultation. The Corps will consult separately on individual projects that do not fit within this programmatic approach unless the Service grants an exception in accordance with the Incidental Take Statement in the P^3BO.

This consultation includes the following proposed activities conducted in the AORs of the NFESO and the SFESO:

1. Operations and maintenance dredging activities of navigational channels and sand placement on the sandy beach and dune (including up to or over hardened structures), the swash zone, and the nearshore regions associated with both shore protection projects and maintenance dredging;
2. Sand placement as an associated authorization of sand extraction from the outer continental shelf by the Bureau of Ocean Energy Management (BOEM);
3. Sand by-passing/back-passing; and
4. Groins and jetty repair, or replacement.

For Civil Works activities, the Corps specified during the consultation process that "fish and wildlife enhancement" activities beyond mitigation of project impacts must be authorized as a project purpose, be authorized as a project feature, or be otherwise approved through Corps headquarters (Engineer Regulation ER 1105-2-100 Appendix G, Amendment #1, 30 June 2004). At the present time, no beach fill placement or shore protection activity in Florida has fish and wildlife enhancement as a project purpose or project feature. Since adding fish and wildlife enhancement as a project purpose or feature is not a budgetary priority [ER 1105-2-100 22 Apr 2000, Appendix C, part C-3b.(3)], the Corps does not expect to receive authorization and funding for it. However, the Corps proposes to implement the following Conservation Measures to reduce impacts on piping plovers for all projects (those in both non-optimal and optimal piping plover habitat) included in this consultation with the potential to affect piping plovers or their critical habitat:

1. Adhere to appropriate seasonal windows to the maximum extent practicable;

2. Implement survey guidelines for non-breeding shorebirds when appropriate. For Corps Civil Works projects, the "surveys" must be limited to the term of the construction unless they are otherwise authorized and funded by Congress;

   [Note: The term of the construction is considered to be the time in which the construction contractor is working on the beach. This usually starts soon after the "notice to proceed" and ends when the contractor finishes placing sand or finishes conducting other shore protection activities on/near the beach.]

3. Pipeline alignment and associated construction activities may be modified to reduce impacts to foraging, sheltering, and roosting;

4. Avoid impacts to the primary constituent elements (PCEs) of piping plover Critical Habitat to the maximum extent practicable;

5. The Corps or Applicant will evaluate the project area prior to consultation for the presence of piping plover PCEs as a basis for making their initial determination of effect;

6. The Corps will work with the Service to develop shore protection design guidelines and/or mitigation measures that can be utilized during future project planning to protect and/or enhance high value piping plover habitat locations (*i.e.*, washover fans). For Corps Civil Works projects, "enhancement" must be limited to the extent authorized and funded as a project feature or project purpose;

7. The Corps will attempt to time the construction of Civil Works sand placement and dredging projects to prevent two adjacent beaches or inlets from being constructed in the same year;

8. The Corps Civil Works program will work with the Florida Department of Environmental Protection (FDEP) to consider the value and context of inlet habitat features (*i.e.*, emergent spits, sand bars, etc.) within each inlet's management plan and adjust future dredging frequencies, to the maximum extent practicable and consistent with applicable law, so that adjacent habitats are made available and total habitat loss would not occur at one time within a given inlet complex; and

9. The Corps Civil Works program will consider placing dredged materials in the nearshore region as an alternative to beach placement to minimize effects to piping plovers and their habitat.

With the implementation of these Conservation Measures, the Corps has determined the proposed activities may affect, but are not likely to adversely affect the piping plover in areas not identified as Optimal Piping Plover Areas. Optimal Piping Plover Areas are defined as having documented use by piping plovers, and they include coastal habitat features that function mostly unimpeded. Optimal Piping Plover Areas include:

1. Designated piping plover Critical Habitat Units (see Appendix A);

2. All Federal, State, and County publicly owned land where coastal processes are allowed to function, mostly unimpeded, that have any of the following features in the Action Area:

    a. Located within 1 mile of an inlet;
    b. Emergent nearshore sand bars;
    c. Washover fans;
    d. Emergent bayside and Ocean/Gulf-side shoals and sand bars;
    e. Bayside mudflats, sand flats, and algal flats; or
    f. Bayside shorelines of bays and lagoons.

[Publicly owned land where coastal processes are allowed to function, mostly unimpeded, generally does not include public lands that are solely state-owned water bottoms, street ends, parking lots, piers, beach accesses, or shoreline developed for commercial or residential purposes. It generally does include public lands consisting of parks, preserves, and natural undeveloped shoreline and dunes.]; and

3. The following additional areas are also considered optimal piping plover habitat (FDEP Range Monuments provided in parentheses):

    a. Charley Pass, south of Critical Habitat Unit FL-23 on North Captiva Island, Lee County (R-75.5 and R-83);
    b. Stump Pass and the beaches adjacent to it, Charlotte County (R-15.5 to R-33);
    c. Palmer Point Park, Sarasota County (R-77 to R-83);

d. St. Lucie Inlet and associated shoals, Martin County (R-42 to R-78);
e. Crandon Park, Miami-Dade County (R-89 to R-101); and
f. Sanibel Island, Lee County (R-109 to R-174).

The Service concurs with this determination as it applies to projects in non-optimal habitat, and the Corps will reinitiate consultation if they are unable to implement the Conservation Measures as described above. No additional consultation is required for projects located in habitat determined to be non-optimal for piping plovers. The attached P^3BO addresses projects located in optimal piping plover habitat, as defined above.

As with the Service's Statewide Programmatic Biological Opinion (SPBO), the Corps and the Service will meet annually during the fourth week of August to review the proposed activities, assess new data, identify information needs, and scope methods to address those needs, including, but not limited to, evaluations and monitoring specified in this P^3BO, reviewing results, formulating or amending actions that minimize take of listed species, and monitoring the effectiveness of those actions. This programmatic consultation will be reviewed every 5 years. If new information concerning the projects or the piping plover arises, this consultation will be reviewed sooner than 5 years. Reinitiation of formal consultation is required 10 years after the issuance of this P^3BO.

We are available to meet with agency representatives to discuss this consultation. If you have any questions, please contact Dawn Jennings at the NFESO (904-731-3103) or Craig Aubrey in the SFESO (772-469-4309).

Sincerely yours,

Larry Williams
State Supervisor

FLORIDA DEPARTMENT OF STATE
Kurt S. Browning
Secretary of State
DIVISION OF HISTORICAL RESOURCES

Mr. Eric P. Summa
Acting Chief, Environmental Branch
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

March 13, 2009

Re: DHR Project File No.: 2009-00710 / Received by DHR: February 12, 2009
1A-32 Permit No.: 0809.046
Draft Report: *Remote Sensing Survey of the Proposed Juno Beach Renourishment Borrow Area, Offshore Singer Island, Palm Beach County, Florida*

Dear Mr. Summa:

Our office received and reviewed the above referenced survey report in accordance with Section 106 of the *National Historic Preservation Act of 1966* (Public Law 89-665), as amended in 1992, and *36 C.F.R., Part 800: Protection of Historic Properties*, and Chapter 267, *Florida Statutes,* for assessment of possible adverse impact to cultural resources (any prehistoric or historic district, site, building, structure, or object) listed, or eligible for listing, in the National Register of Historic Places (NRHP).

In December 2008, Panamerican Consultants, Inc. (PCI) conducted an underwater remote sensing survey and diver investigation of the proposed Juno Beach renourishment borrow area offshore Singer Island. The survey was conducted on behalf of Taylor Engineering, Inc. PCI encountered thirty-six (36) magnetic anomalies and two (2) side-scan sonar targets within the surveyed area during the investigation.

PCI identified two clusters of anomalies associated with the side-scan sonar targets (M20, M21, & SS1; M10, M13 & SS2) that were further investigated by divers. Divers determined both to be modern debris. The remainder of the identified anomalies also appears to represent signatures of modern materials.

PCI determined that the proposed dredging will have no effect on submerged cultural resources listed, or eligible for listing, on the NRHP. PCI recommends no further investigation of the proposed borrow area.

Based on the information provided, our office concurs with the determinations of the U.S. Army Corps of Engineers and finds the submitted report complete and sufficient in accordance with Chapter 1A-46, *Florida Administrative Code.*

For any questions concerning our comments, please contact Rudy Westerman, Historic Preservationist, by electronic mail at amwesterman@dos.state.fl.us, or by phone at (850) 245-6333. We appreciate your continued interest in protecting Florida's historic properties.

Sincerely,

Frederick P. Gaske, Director, and
State Historic Preservation Officer

Xc: Mr. Louis Tesar, Interoffice Mail Station #8B

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701-5505
(727) 824-5312, FAX (727) 824-5309
http://sero.nmfs.noaa.gov

F/SER31: KBD

JUL 21 2010

Ms. Tori White
Palm Beach Gardens Regulatory Office
Jacksonville District Corps of Engineers
4400 PGA Boulevard, Suite 500
Palm Beach Gardens, FL 33410

Federal Emergency Management Agency
Region IV
3003 Chamblee Tucker Road
Atlanta, GA 30341

Re: SAJ-1995-3779 (IP-DLR)

Dear Ms. White:

This responds to your letter dated November 2, 2009, regarding the referenced permit application submitted by the Town of Palm Beach to place sand within the footprint of a previously authorized beach nourishment along Mid-town Reaches 3 and 4 in Palm Beach County, Florida. According to Mr. Larry Gianangeli, the Lead Public Assistance Coordinator for Palm Beach County, Florida Division of Emergency Management, the Federal Emergency Management Agency (FEMA) will provide 75 percent of the project funding with the State of Florida and the Town of Palm Beach each funding 12.5 percent of the project cost. NMFS requested additional information via e-mail on December 4 and 16, 2009, and January 22, 2010. An endangered species checklist and post-construction biological monitoring reports from the previous nourishment were provided on March 30, 2010. You determined that the proposed activity may affect, but is not likely to adversely affect swimming green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles and smalltooth sawfish. You also determined that the project would have no effect on staghorn and elkhorn coral and Johnson's seagrass. You requested concurrence from NMFS with this determination for smalltooth sawfish and swimming sea turtles, pursuant to section 7 of the Endangered Species Act (ESA).

NMFS' determinations regarding the effects of the proposed action are based on the description of the action in this informal consultation. You are reminded that any changes to the proposed action may negate the findings of the present consultation and may require reinitiating consultation with NMFS.

The shoreline stabilization project area is located at latitude 26.7024°N, longitude 80.0331°W (NAD83), adjacent to the Atlantic Ocean between Florida Department of Environmental Protection monuments R-95 and R-100 in the Town of Palm Beach, Palm Beach County, Florida. The area was most recently nourished in 2006, but additional erosion was caused by Tropical Storm Fay in 2008. Working with FEMA, the applicant has quantified the net loss and received approval from FEMA for the placement of 52,000 cubic yards of sand along Mid-town Reaches 3 and 4, excluding the rockpile complex near the Breakers Hotel. An upland borrow site is proposed as the sand source for this project. The sand will be trucked from the borrow area to beach access points established during the original dune restoration event. The sand was determined to have between 0 and 0.9 percent fines. A quality assurance (QA) and quality control (QC) plan was developed to ensure that the sediment from the borrow area will comply with the conditions of the issued permit and will meet the standard Florida Administrative Code Rule 62B-41.007(2)(j). The previously permitted renourishment actions required implementation of a post-construction biological monitoring plan, which includes documentation and analysis of adjacent nearshore hardbottom habitats (including green sea turtle foraging habitat), benthic surveys and sand accumulation surveys at Breaker's Rock pile, sediment cover analysis of nearshore hardbottom, and fish census.

Similarly to the previous nourishment, the currently proposed project does not propose any impacts to nearshore hardbottom. The approximate distance from the equilibrium toe of fill to the closest nearshore hardbottom is 310 feet. The COE will require the applicant to continue monitoring post-construction to ensure that no nearshore hardbottom has been impacted. If the results of the monitoring indicate hardbottom burial by the project, the COE will need to reinitiate ESA section 7 consultation with NMFS. The proposed construction will occur outside of sea turtle nesting season and is anticipated to take approximately 6 to 8 weeks. The applicant has proposed the following conservation measures concerning ESA-listed species:

> The applicant will be required to comply with NMFS' March 23, 2006, Sea Turtle and Smalltooth Sawfish Construction Conditions.
>
> The applicant will be required to comply with the Florida Department of Environmental Protection's water quality standards for turbidity (should the State of Florida decide to issue a permit for the proposed work) and turbidity monitoring will be required.
>
> The applicant will be required to conduct post-construction monitoring under the previously established biological monitoring program semi-annually for the first three years and annually for two additional years (five years total). Mitigation for unanticipated impacts is included as a specific condition of the project permit; impacts to nearshore hardbottom may require reinitiation of consultation with NMFS.

No benthic survey was included with the public notice; however, the post-construction biological monitoring report for 2009, associated with the previous nourishment, provided information for the area between R-90 to R-101, and indicated that neither Johnson's seagrass, nor acroporid species of corals are present. A 2006 post-construction biological monitoring report indicated potential secondary impacts to the quality and quantity of juvenile green sea turtle foraging habitat, as some transects had at least one genera of sea turtle-preferred macroalgae present.

However, the 2009 monitoring report showed increases in macroalgal genera richness, with at least four genera of macroalgae preferred by juvenile green sea turtle present as a foraging resource, and also indicated there was an increasing trend in relative percent cover of macroalgae at transects located at R-97 to R-100.

Five species of sea turtles (green, hawksbill, Kemp's ridley, leatherback, and loggerhead) and smalltooth sawfish protected by the ESA may be found in or near the action area. There is no designated critical habitat for these species in or near the project area. Since all of the nourishment activities will be conducted via upland construction, the potential route of effects associated with the project is limited to the spread of the toe of fill and the resulting temporary nearshore turbidity. NMFS does not anticipate impacts to foraging habitat for leatherback or Kemp's ridley sea turtles or smalltooth sawfish, and NMFS believes the only species that may be affected by the proposed action are green, hawksbill, and loggerhead sea turtles.

The proposed project is not anticipated to permanently impact nearshore hardbottom. The nearshore hardbottom adjacent to the action area may be temporarily covered by sand after beach nourishment when the beach fill seeks equilibrium in the nearshore zone. This situation will be temporary as physical forces continually resuspend/redistribute littoral sediment. Although hawksbill, loggerhead, and juvenile green sea turtles may use the nearshore hardbottom habitat in the action area for foraging or resting, NMFS believes they are more likely to utilize offshore reef habitats located beyond the project area because their favored prey items are more abundant on the offshore reefs and the reefs offer more vertical relief conducive to providing resting areas. Therefore, NMFS believes the temporary loss of foraging and resting habitat due to turbidity (i.e., caused by shifting sand) for hawksbill, loggerhead, and juvenile green sea turtles would be discountable. NMFS believes that adult green sea turtles would not be affected because adult green sea turtles typically forage on seagrasses (which are not present in the project area) and adult green sea turtles do not prefer nearshore hardbottom habitats. NMFS concludes that effects on hawksbill, loggerhead, and juvenile green sea turtles associated with the project will be insignificant due to the proposed use of upland sources for beach nourishment (no in-water construction activities), the limited spread of the toe-of-fill with no permanent covering of nearshore hardbottom habitats, and the species' mobility and ability to avoid undesirable conditions (i.e., turbidity). Therefore NMFS believes that the project is not likely to adversely affect green, hawksbill, and loggerhead sea turtles.

This concludes your consultation responsibilities under the ESA for species under NMFS' purview. Consultation must be reinitiated if a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action.

We have enclosed additional information on other statutory requirements that may apply to this action, as well as information on NMFS' Public Consultation Tracking System (PCTS) that allows you to track the status of ESA consultations. If you have any questions, please contact Kay Davy at (954) 356-6791 or by e-mail at Kay.Davy@noaa.gov. Thank you for your continued cooperation in the conservation of listed species.

Sincerely,

Roy E. Crabtree, Ph.D.
Regional Administrator

Enclosures

File: 1514-22.F.4.
Ref: I/SER/2009/06319

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701

SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS

The permittee shall comply with the following protected species construction conditions:

a. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.

b. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.

c. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.

d. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.

e. If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.

f. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.

g. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

Revised: March 23, 2006
O:\forms\Sea Turtle and Smalltooth Sawfish Construction Conditions.doc

PCTS Access and Additional Considerations for ESA Section 7 Consultations (Revised 7-15-2009)

Public Consultation Tracking System (PCTS) Guidance: PCTS is an online query system at **https://pcts.nmfs.noaa.gov/** that allows federal agencies and U.S. Army Corps of Engineers' (COE) permit applicants and their consultants to ascertain the status of NMFS' Endangered Species Act (ESA) and Essential Fish Habitat (EFH) consultations, conducted pursuant to ESA section 7, and Magnuson-Stevens Fishery Conservation and Management Act's (MSA) sections 305(b)2 and 305(b)(4), respectively. Federal agencies are required to enter an agency-specific username and password to query the Federal Agency Site. The COE "Permit Site" (no password needed) allows COE permit applicants and consultants to check on the current status of Clean Water Act section 404 permit actions for which NMFS has conducted, or is in the process of conducting, an ESA or EFH consultation with the COE.

For COE-permitted projects, click on "Enter Corps Permit Site." From the "Choose Agency Subdivision (Required)" list, pick the appropriate COE district. At "Enter Agency Permit Number" type in the COE district identifier, hyphen, year, hyphen, number. The COE is in the processing of converting its permit application database to PCTS-compatible "ORM." An example permit number is: SAJ-2005-000001234-IPS-1. For the Jacksonville District, which has already converted to ORM, permit application numbers should be entered as SAJ (hyphen), followed by 4-digit year (hyphen), followed by permit application numeric identifier with no preceding zeros. For example: SAJ-2005-123; SAJ-2005-1234; SAJ-2005-12345.

For inquiries regarding applications processed by COE districts that have not yet made the conversion to ORM (e.g., Mobile District), enter the 9-digit numeric identifier, or convert the existing COE-assigned application number to 9 numeric digits by deleting all letters, hyphens, and commas; converting the year to 4-digit format (e.g., -04 to 2004); and adding additional zeros in front of the numeric identifier to make a total of 9 numeric digits. For example: AL05-982-F converts to 200500982; MS05-04401-A converts to 200504401. PCTS questions should be directed to Eric Hawk at Eric.Hawk@noaa.gov. Requests for username and password should be directed to PCTS.Usersupport@noaa.gov.

EFH Recommendations: In addition to its protected species/critical habitat consultation requirements with NMFS' Protected Resources Division pursuant to section 7 of the ESA, prior to proceeding with the proposed action the action agency must also consult with NMFS' Habitat Conservation Division (HCD) pursuant to the MSA requirements for EFH consultation (16 U.S.C. 1855 (b)(2) and 50 CFR 600.905-.930, subpart K). The action agency should also ensure that the applicant understands the ESA and EFH processes; that ESA and EFH consultations are separate, distinct, and guided by different statutes, goals, and time lines for responding to the action agency; and that the action agency will (and the applicant may) receive separate consultation correspondence on NMFS letterhead from HCD regarding their concerns and/or finalizing EFH consultation.

Marine Mammal Protection Act (MMPA) Recommendations: The ESA section 7 process does not authorize incidental takes of listed or non-listed marine mammals. If such takes may occur an incidental take authorization under MMPA section 101 (a)(5) is necessary. Please contact NMFS' Permits, Conservation, and Education Division at (301) 713-2322 for more information regarding MMPA permitting procedures.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
(727) 824-5317; FAX (727) 824-5300
http://sero.nmfs.noaa.gov/

May 19, 2011 F/SER4:JK/pw

(Sent via Electronic Mail)

Colonel Paul L. Grosskruger, Commander
Jacksonville District Army Corps of Engineers
Jacksonville Regulatory Office, South Permits Branch
PO Box 4970
Jacksonville, Florida 32232

Attention: Linda Knoeck

Dear Colonel Grosskruger:

NOAA's National Marine Fisheries Service (NMFS) reviewed public notice SAJ-1990-00902 (IP-LCK), dated April 6, 2011, for the Palm Beach County Department of Environmental Resources Management to conduct beach nourishment along the Atlantic Ocean shoreline between Jupiter Inlet and the south end of Carlin Park. Approximately 1.2 miles of shoreline between Florida Department of Environmental Protection (FDEP) monuments R-13.5 to R-19 would be filled with 995,600 cubic yards of material. The sandy material would be dredged from an offshore borrow site 8.5 miles south of the fill sites. According to the information provided, approximately 4.4 acres of nearshore hardbottom would be buried by the project. The Jacksonville District's initial determination is that the project would have a substantial adverse impact on essential fish habitat (EFH) or federally managed fisheries. As the nation's federal trustee for the conservation and management of marine, estuarine, and anadromous fishery resources, the following comments and recommendations are provided pursuant to authorities of the Fish and Wildlife Coordination Act and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).

Essential Fish Habitat at the Project Site
The public notice indicates that approximately 4.4 acres of nearshore hardbottom would be buried by the project. NMFS believes the hardbottom habitat likely includes worm reef. SAFMC designates hardbottom as EFH for coral, red grouper (*Epinephelus morio*), gag grouper (*Mycteroperca microlepis*), gray snapper (*Lutjanus griseus*), mutton snapper (*Lutjanus analis*), white grunt (*Haemulon plumieri*), and spiny lobster (*Panulirus argus*). Sand habitats are designated EFH for cobia (*Rachycentron canadum*), black seabass (*Centropristis striata*), king mackerel (*Scomberomorus cavalla*), Spanish mackerel (*S. maculates*), spiny lobster, and pink shrimp (*Farfantepenaeus duorarum*). These habitats directly benefit fishery resources by

providing foraging habitat. SAFMC also designates hardbottoms (including worm reef) and corals as a habitat area of particular concern (HAPC), which is a subset of EFH that is either rare, particularly susceptible to human-induced degradation, especially important ecologically, or located in an environmentally stressed area. SAFMC provides detailed information on federally managed fisheries and their EFH in the 1998 comprehensive amendment to the fishery management plans for the South Atlantic region and in the *Fishery Ecosystem Plan of the South Atlantic Region* (April 2009 and available on-line at *www.safmc.net*).

Nearshore hardbottom habitats are the primary natural reef structures at depths of 0 to 4 m offshore southeast Florida. Nearshore hardbottom fish assemblages of this area are characterized by diverse, tropical faunas dominated by early life stages (SAFMC 2009). The habitat complexity of nearshore reefs is expanded by colonies of tube-building polychaete worms (Kirtley and Tanner 1968) and other invertebrates and macroalgae (Goldberg 1973; Nelson and Demetriades 1992). Nelson (1990) recorded 325 species of invertebrates and plants from nearshore hardbottom habitats at Sebastian Inlet. Vare (1991) recorded 118 species from nearshore hardbottom sites in Palm Beach County. Use of hardbottom habitats was recorded for newly settled stages of over 20 species (Lindeman and Snyder 1999). Hardbottom habitats are often centrally placed between mid-shelf reefs to the east and estuarine habitats within inlets to the west and likely serve as settlement habitats for immigrating larvae or as intermediate nursery habitats for juveniles emigrating out of inlets (Vare 1991; Lindeman and Snyder 1999). The cross-shelf positioning, coupled with their role as the only natural structures in these areas suggests nearshore hardbottom represent important EFH resources.

Lindeman and Snyder (1999) conducted a study that examined fish assemblages at two Palm Beach County sites, including Carlin Park. They also examined the effects of beach nourishment at Carlin Park from the 1995 beach nourishment project. Notably, they documented that over 80% of the individuals at all hardbottom sites were early life stages, with 8 of the top 10 species consistently represented by early life history stages. In addition, they recorded the use of hardbottom habitats for more than 20 species of newly settled stages of fish. They concluded that burial of the nearshore hardbottom habitat at Carlin Park with dredged sand significantly lowered the abundances of both species and individuals. Before burial, 54 species of fish were recorded, with mean abundances of 38 individuals and 7.2 species per transect (n=112 transects). After burial, eight species of fish were recorded with mean abundances of less than one individual and species per transect (n=92 transects).

Impacts to Essential Fish Habitat

Borrow sites: The same borrow site proposed for use in the subject application was dredged in 2010 for the Juno Beach project (SAJ-2007-5479). Using data from the Florida Fish and Wildlife Conservation Commission and coordinates listed in the public notice, the closest coral reef or hardbottom habitat to the borrow area is approximately 900 feet from the eastern edge of the borrow site. During the Juno Beach project, mid-project modifications were needed due the dredge encountering a rock rubble layer[1]. Additionally, information contained in our administrative record indicates that a layer of fine sands are located in western portions of the

[1] These issues are described by FDEP at: http://bcs.dep.state.fl.us/env-prmt/palm_bch/issued/0276415_Juno_Beach_Nourishment/004_JN/Modification%2001-25-2010/004-JN%20Minor%20Mod%20FO%2001-25-2010.pdf

borrow area. Based on this, we request the District provide an analysis of the borrow site that specifies the portions of the borrow site that would be dredged and how information learned from dredging the borrow site in 2010 would be integrated into the current plan to dredge. This information should also include a compatibility analysis, with overfill ratios, of the proposed beach fill and native sediments. In the case that this analysis determines that the borrow site is not suitable, NMFS concurs with FDEP's recommendation, provided in the request for additional information dated December 29, 2010, to look for an alternative source of fill material that is outside and distinct from the geologic setting of the subject borrow area.

Fill sites: Beach nourishment can affect fishery resources by significantly lowered the abundances of both species of fish and number of individuals as evidenced in Lindeman and Snyder (1999). Beach nourishment can also affect fishery resources by covering hardbottom habitat and by creating a chronic source of suspended material and turbidity, which can interfere with foraging by fish and shrimp and abrade their gills and other soft tissues. It is not clear why hardbttom maps from 2006 only are being used to determine hardbottom impacts. Further, the distance between the projected equilibrium-toe-of-fill and the nearest edge of hardbottom is not provided in the public notice.

EFH Conservation Recommendations
Section 305(b)(4)(A) of the Magnuson-Stevens Act requires NMFS to provide EFH conservation recommendations when an activity is expected to adversely impact EFH. Based on this requirement, NMFS provides the following:

EFH Conservation Recommendations

1. A buffer of at least 400 feet shall be maintained between the equilibrium-toe-of-fill and all hardbottom habitat, including worm reefs. A map shall be provided to NMFS showing the locations of these buffers along with locations of the hardbottoms, worm reef, coral, or coral reef habitats. Given the shifting nature of sand in nearshore areas, the maps shall be based on historical and recent data.
2. Best management practices to minimize effects from sedimentation and turbidity shall be incorporated into the project design. This shall include providing NMFS with a compatibility analysis, with overfill ratios, of the proposed beach fill and native sediments. In addition, clarification on which portions of the borrow site will be dredged and how information learned from dredging the borrow site in 2010 will be integrated into the current plan to dredge.
3. Compensatory mitigation shall be provided for any impacts to nearshore hardbottom habitat that have not been addressed previously via successful mitigation projects. A report shall be provided to NMFS reviewing the status of the past mitigation efforts with respect to their success criteria. Any new mitigation amounts shall be supported by a functional assessment.

Section 305(b)(4)(B) of the Magnuson-Stevens Act and its implementing regulation at 50 CFR Section 600.920(k) require your office to provide a written response to this letter within 30 days of its receipt. If it is not possible to provide a substantive response within 30 days, in accordance with our "findings" with your Regulatory Functions Branch, an interim response should be provided to NMFS. A detailed response then must be provided prior to final approval of the action. Your detailed response must include a description of measures proposed by your agency

to avoid, mitigate, or offset the adverse impacts of the activity. If your response is inconsistent with our EFH Conservation Recommendation, you must provide a substantive discussion justifying the reasons for not following the recommendation.

Thank you for the opportunity to provide comments. Related correspondence should be directed to the attention of Ms. Jocelyn Karazsia at our West Palm Beach office, which is co-located with the US Environmental Protection Agency at USEPA, 400 North Congress Avenue, Suite 120, West Palm Beach, Florida, 33401. She may be reached by telephone at (561) 616-8880, extension 207, or by e-mail at Jocelyn.Karazsia@noaa.gov.

Sincerely,

/ for

Miles M. Croom
Assistant Regional Administrator
Habitat Conservation Division

cc:

FWS, Jeffrey_Howe@fws.gov
FWCC, Lisa.Gregg@MyFWC.com
FDEP, Stephanie.Gudeman@dep.state.fl.us
EPA, Miedema.Ron@epa.gov
SAFMC, Roger.Pugliese@safmc.net
NMFS PRD, Eric.Hawk@noaa.gov
F/SER4, David.Dale@noaa.gov
F/SER47, Jocelyn.Karazsia@noaa.gov

Literature Cited:

Goldberg, W.M. 1973. The ecology of the coral-octocoral communities off the southeast Florida coast: Geomorphology, species composition, and zonation. Bulletin of Marine Science 23:465-488.

Kirtley, D.W., and W.F. Tanner. 1968. Sabellariid worms: builders of major reef type. Journal of Sedimentary Petrology 38(1): 73-78.

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Lindeman, K.C., and D.B. Snyder. 1999. Nearshore hardbottom fishes of southeast Florida and effects of habitat burial by dredging. Fishery Bulletin 97(4): 508-525.

South Atlantic Fishery Management Council (SAFMC). 1998. Final Comprehensive Amendment Addressing Essential Fish Habitat in Fishery Management Plans of the South Atlantic Region. Including a Final Environmental Impact Statement /Supplemental Environmental Impact Statement, Initial Regulatory Flexibility Analysis, Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement. South Atlantic Fishery Management Council, 1 Southpark Cir., Ste 306, Charleston, S.C. 29407-4699. 136pp.

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Vare, C.N. 1991. A survey, analysis, and evaluation of the nearshore reefs situated off Palm Beach County, Florida. M.S. Thesis, Florida Atlantic University, Boca Raton, FL. 165 pp.

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
4400 PGA BOULEVARD, SUITE 500
PALM BEACH GARDENS, FL 33410

JUN 0 8 2011

REPLY TO
ATTENTION OF

Palm Beach Gardens Regulatory Section
SAJ-1992-00902(IP-LCK)

Mr. Miles M. Croom
Assistant Regional Administrator
Southeast Regional Office, Habitat Conservation
NOAA, National Marine Fisheries Service
263 13th Avenue South
St. Petersburg, Florida 33701

Dear Mr. Croom:

We have received your Essential Fish Habitat Recommendations provided by letter dated May 19, 2011, regarding permit application SAJ-1992-00902(IP-LCK). The project is located along the shoreline and in the navigable Atlantic Ocean from Environmental Protection (DEP) monuments R-13.5 to R-19, approximately 800 feet south of the Jupiter Inlet to the south end of Carlin Park (Section 05, Township 41 South, Range 43 East), in Palm Beach County Florida. The proposed borrow site is located about 8.5 miles south of the project and lies about 3,900 feet offshore of monument R-54-R65 at the southern portion of Singer Island.

The U.S. Army Corps of Engineers (Corps) acknowledges your response, and is considering your comments. A final decision will not be made within 30 days of the date of your letter. Once the Corps completes its evaluation of the proposed project and is ready to make a final decision, the Corps will inform the National Marine Fisheries Service of that final decision at least 10 days prior to taking final agency action.

Sincerely,

Linda C. Knoeck

Linda C. Knoeck
Project Manager

Copy Furnished:

NMFS, HCD (email)

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
701 SAN MARCO BLVD
JACKSONVILLE, FL 32207

July 3, 2013

REPLY TO
ATTENTION OF

Planning and Policy Division

JUL 03 2013

Ms. Virginia Fay
Assistant Regional Administrator
Habitat Conservation Division
263 13th Avenue South
St. Petersburg, Florida 33701

Dear Ms. Fay:

We received your preliminary Essential Fish Habitat (EFH) Recommendations provided by a letter dated May 19, 2011, regarding Department of the Army (DA) permit application number SAJ-1990-00902(IP-LCK). The project is located along the Atlantic Ocean from Environmental Protection (DEP) monuments R-13.5 to R-19, approximately 800 feet south of the Jupiter Inlet to the south end of Carlin Park (Section 5, Township 41 South, Range 43 East), in Palm Beach County Florida. The proposed borrow site is located about 8.5 miles south of the project and lies about 3,900 feet offshore of monument R-54 to R-65 at the southern portion of Singer Island. Until recently, this effort has been on hold. The Corps now proposes to pursue this beach renourishment as required by recent coastal emergency and emergency supplemental appropriations in response to the affect of Hurricane Sandy. Therefore, the Corps is now providing response to the conservation measures in your letter.

In your letter, you provided 3 EFH Recommendations:

1. A buffer of at least 400 feet shall be maintained between the equilibrium-toe-of-fill and all hardbottom habitats, including worm reefs. A map shall be provided to NMFS showing the locations of these buffers along with locations of the hardbottoms, worm reef, coral, or coral reef habitats. Given the shifting nature of sand in nearshore areas, the maps shall be based on historical and recent data.

Response: A buffer of 400 feet is not possible for this project because it would reduce the project footprint below what had been previously authorized and would not allow the project purpose to be met. The proposed project's fill template and estimated toe of fill (ETOF) both fall within the previously authorized footprint and ETOF of the previously authorized nourishment (Attachment A: revise project drawings). Hardbottom impacts from previous sand placement efforts in the same area have already been mitigated for and no additional impacts are being proposed or are anticipated. The applicant will perform physical monitoring to determine if unanticipated secondary impacts to the adjacent hardbottom have occurred. Compensatory mitigation will be required should unanticipated impacts occur.

2. Best management practices to minimize effects from sedimentation and turbidity shall be incorporated into the project design. This shall include providing NMFS with a compatibility analysis, with overfill ratios, of the proposed beach fill and native sediments. In addition, clarification on which portions of the borrow site will be dredged and how information learned from dredging the borrow site in 2010 will be integrated into the current plan to dredge.

Response: Please see Attachment B: QA/QC Sedimentation Plan dated January 2013 that addresses the best management practices and also discusses the compatibility analysis. The Sedimentation Plan will ensure that the sediment from the borrow area will be compatible beach fill material that maintains the general character and functionality of the material occurring on the beach and in the adjacent dune and coastal system. Information gained from the Juno Beach renourishment revealed that the placement of large rocks and/or sediment occurred from within the borrow area that were not compatible with the beach. Additional information regarding the material within the borrow area is provided in Attachment C: AVS Vibracore Report and Attachment D: Parkinson Geologic Report. The Corps will adhere to the Rock Removal Specification (Attachment E) and the revised QA/QC Sedimentation Plan.

3. Compensatory mitigation shall be provided for any impacts to nearshore hardbottom habitat that have not been addressed previously via successful mitigation projects. A report shall be provided to NMFS reviewing the status of the past mitigation efforts with respect to their success criteria. Any new mitigation amounts shall be supported by a functional assessment.

Response: The proposed project is within a previously authorized fill template and all impacts to hardbottom have been previously mitigated for. The Corps has determined that the permit including mitigation is in compliance. No additional impacts are being proposed or are anticipated beyond what was previously mitigated for in the previously authorized fill template.

Due to the urgent nature of this action, this constitutes our response to your conservation recommendations and concludes the EFH consultation unless you notify us of a decision to elevate the matter to Corps Headquarters within 10 days after the date of this letter.

Sincerely,

Kenneth A Duggan

for Eric P. Summa
Chief, Environmental Branch

Enclosures:
Attachment A: revise project drawings
Attachment B: Sediment QA-QC Plan
Attachment C: Vibracore Report
Attachment D: Parkinson Geologic Report
Attachment E: Rock Removal Specification
Attachment F: Correspondence

Copies Furnished: Jocelyn Karazsia
NOAA Fisheries Service
Fishery Biologist
Habitat Conservation Division
400 North Congress Ave
West Palm Beach, FL 33401

Auvenshine, Stacie SAJ

From: Jocelyn Karazsia - NOAA Federal [jocelyn.karazsia@noaa.gov]
Sent: Thursday, July 11, 2013 10:31 AM
To: Auvenshine, Stacie SAJ
Cc: Knoeck, Linda C SAJ; Dugger, Kenneth R SAJ; Kurtis Gregg - NOAA Affiliate
Subject: Re: Jupiter Carlin EFH Response Letter (UNCLASSIFIED)

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Stacie,

The letter indicates a 400 ft buffer can not be maintained, however I can not find in the letter or drawings the length of the buffer between ETOF and hardbottom that can be maintained. Also, the information provided does not include the physical monitoring plan.

It is widely accepted that sediments are not contained within the ETOF. In the absence of adequate buffers, a biological monitoring plan, and/or mitigation, we will not be able to conclude that the COE has met the intent of the EFH provisions of the Magnuson-Stevens Act. We are preparing our official response to the letter now.

Jocelyn

On Wed, Jul 3, 2013 at 2:17 PM, Auvenshine, Stacie SAJ <Stacie.J.Auvenshine@usace.army.mil> wrote:

> Classification: UNCLASSIFIED
> Caveats: NONE
>
> Hi Jocelyn,
>
> I work for the Corps planning division and we are finishing the environmental assessment on the Jupiter Carlin project that regulatory started a couple of years ago. I am attaching our EFH response letter to your conservation recommendations that were sent to Linda Knoeck.
>
> The attachments are quite large, so I may have to break them up into a couple of emails. I am attaching the letter as a separate file just in case the all the attachments don't make it today.
>
> Please let me know if you have any questions! The hardcopy files will be available upon request.
>
> Thanks!
> Stacie
>
> Stacie Auvenshine
> US Army Corps of Engineers
> South Florida Section
> Environmental Branch, Planning Division

904-232-3694
stacie.j.auvenshine@usace.army.mil

Classification: UNCLASSIFIED
Caveats: NONE

--
Jocelyn Karazsia
Fishery Biologist
NOAA National Marine Fisheries Service
Southeast Region, Habitat Conservation Division

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960

June 28, 2013

Colonel Alan M. Dodd
District Commander
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Service CPA Code:	2013-CPA-0183
Date Received:	April 4, 2013
Formal Consultation Initiation Date:	June 5, 2013
Project:	Dredging and Sand Placement
Counties:	Broward, Lee, Miami-Dade, Palm Beach, St. Lucie

Dear Colonel Dodd:

This document transmits the U.S. Fish and Wildlife Service's (Service) decision to apply the August 22, 2011, Statewide Programmatic Biological Opinion (SPBO) (Service 2011) and the May 22, 2013, Programmatic Piping Plover Biological Opinion (P^3BO) (Service 2013) to the proposed Flood Control and Coastal Emergency (FCCE) sand placement and navigation dredging projects. The U.S. Army Corps of Engineers (Corps) determined on April 4 and 5, 2013, the proposed projects located in South Florida "may affect" the threatened loggerhead sea turtle (*Caretta caretta*), endangered leatherback sea turtle (*Dermochelys coriacea*), endangered green sea turtle (*Chelonia mydas*), endangered hawksbill sea turtle (*Eretmochelys imbricata*), and endangered Kemp's ridley sea turtle (*Lepidochelys kempii*); "may affect, but is not likely to adversely affect" the endangered West Indian manatee (*Trichechus manatus*), and threatened piping plover (*Charadrius melodus*); and will have "no effect" on beach mice. Additionally, in a letter dated May 20, 2013, the Corps added three navigation channel dredging projects (Bakers Haulover, Jupiter Inlet, and Fort Pierce Inlet) to the list of proposed FCCE projects. Furthermore, in this letter, the Corps determined whether the proposed FCCE projects were located in optimal or non-optimal piping plover habitat as outlined in the P^3BO. This document is provided in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 *et seq.*), the Marine Mammal Protection Act of 1972, as amended (16 U.S.C. 1361 *et seq.*), and the provisions of the Fish and Wildlife Coordination Act of 1958, as amended (FWCA) (48 Stat. 401; 16 U.S.C. 661 *et seq.*).

The Service and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) share Federal jurisdiction for sea turtles under the Act. The

TAKE PRIDE® IN AMERICA

Service has responsibility for sea turtles on the nesting beach and NOAA Fisheries has jurisdiction for sea turtles in the marine environment. Our analysis will only address activities that may impact nesting sea turtles, their nests and eggs, and hatchlings as they emerge from the nest and crawl to the sea. The Corps will assess and consult with NOAA Fisheries concerning potential impacts to sea turtles in the marine environment.

PROJECT DESCRIPTION

The Corps proposes to conduct nine FCCE navigation dredging and/or sand placement projects in Broward, Lee, Miami-Dade, Palm Beach, and St. Lucie counties, Florida (Table 1). Using a cutterhead, hopper, or hydraulic dredge, the authorized volume of beach compatible material will be dredged from an authorized borrow area, navigation channel, or upland mine and placed in the sand placement fill templates (Table 1). Once the beach compatible material has been deposited in the fill template, it will be graded to the authorized profile using bulldozers. Non-beach compatible material may be placed in nearshore waters or in an offshore dredge material disposal site.

The proposed projects will take place during day and nighttime hours with a construction timeframe varying between 3 and 6 months (Table 1). All staging areas and beach access corridors will be sited to avoid impacts to upland habitat. If impacts are incurred, all impacted areas and vegetation will be restored to preconstruction condition and elevation.

The action area is defined as all areas to be affected directly or indirectly by the action and not merely the immediate area involved in the action. The Service identifies the action area to include the staging areas, pipeline corridors, beach access corridors, offshore borrow areas, sand placement fill templates, downdrift areas, and navigation channel dredge templates associated with the proposed FCCE projects. The intent of the proposed FCCE projects is to address shoreline erosion and navigation channel shoaling from damage incurred from Tropical Storm Debby or Hurricane Sandy.

The Service has determined the SPBO is appropriate to apply to the proposed FCCE projects. That said, the Service and Corps predicted emergency events to occur once every 10 years as outlined in the amount or extent of anticipated take for sea turtles reflected in the SPBO. Given the proposed FCCE projects are scheduled to be completed sooner than the 10-year frequency, the Service, in a letter dated May 2, 2013, analyzed effects, provided additional conditions, and modified the take for emergency projects to occur once every 7 years. The Corps has agreed to follow and implement the minimization measures, Reasonable and Prudent Measures, and Terms and Conditions in the SPBO and those included in the May 2, 2013, letter (Enclosure), as they relate to nesting sea turtles. Therefore, the Service has determined the proposed projects are consistent with the SPBO and the Service concurs with the Corps' determinations. That said, the Corps has requested an exception to Term and Condition A11 in the SPBO and Term and Condition 3 in the May 2, 2013, letter relating to lighting surveys. Lighting surveys will be conducted just prior to construction and immediately post-construction; however, due to timing and funding restraints, the Corps cannot commit to additional lighting surveys as outlined in the above referenced Terms and Conditions. The requested exception is authorized by the Service provided the Corps expedites the lighting survey report to the Service and the Florida Fish and Wildlife Conservation Commission (FWC), and sets up a meeting with the Service and FWC

within a week after the survey has been completed. This will enable all parties to take appropriate measures to minimize lighting impacts.

In addition, the Standard Manatee Conditions for In-Water Work (FWC 2011) and the minimization measures outlined in the SPBO shall be implemented to avoid potential impacts on manatees. Because the proposed projects specific to the South Florida Ecological Services Office are outside the range of all five beach mice species covered in the SPBO, the Service concurs with the Corps' "no effect" determination.

Please note the provisions of this consultation do not apply to sea turtles in the marine environment such as swimming juvenile and adult sea turtles. If applicable, you are required to consult with NOAA Fisheries on these projects. For further information on Act compliance with NOAA Fisheries, please contact Ms. Cathy Tortorici, Chief of the Interagency Cooperation Branch, by e-mail at cathy.tortorici@noaa.gov or by phone at 727-209-5953.

The Service has also determined the proposed FCCE projects are appropriate to apply to the P^3BO. The conservation measures are applicable for projects located in both non-optimal and optimal piping plover habitat, and the Reasonable and Prudent Measures, and Terms and Conditions for those projects located in optimal piping plover habitat as outlined in the P^3BO (Table 1). The Corps has agreed to follow and implement the conservation measures, Reasonable and Prudent Measures, and the Terms and Conditions that apply to the proposed projects. Therefore, the Service has determined the proposed projects are consistent with the P^3BO and the Service concurs with the Corps' determinations. That said, the Corps has requested an exception to Term and Condition 8 in the P^3BO relating to piping plover monitoring. Due to time and funding restraints, the Corps cannot conduct monitoring for 1 year prior to construction and 2 years post-construction, respectively. The requested exception is authorized by the Service.

In order to comply with the Migratory Bird Treaty Act (16 U.S.C. 701 et seq.) and address the potential for the proposed projects to impact nesting shorebirds, the Corps shall comply with FWC's standard shorebird protection guidelines to protect against impacts to nesting shorebirds during implementation of these projects on the Gulf Coast during the periods from February 15-August 31, or on the Atlantic Coast from April 1-August 31. All sand placement events could impact nesting shorebirds protected under the MBTA.

FISH AND WILDLIFE RESOURCES

This section is provided in accordance with the FWCA of 1958, as amended (48 Stat. 401; 16 U.S.C. 661 *et seq.*) to address other fish and wildlife resources in the project area.

Hardbottom reef habitat and seagrasses

The FCCE projects involve fill templates previously constructed; hence, hardbottom and seagrass issues have been addressed and appropriately mitigated. Furthermore, the Corps will continue to consult with NOAA Fisheries, who will assess all potential effects to hardbottom habitat and submerged aquatic vegetation within the dredge and sand placement templates, and shoreline downdrift areas. In addition, the Corps will assess and consult with NOAA Fisheries

concerning potential impacts to foraging and swimming sea turtles, and all other marine species under their jurisdiction within the action area.

Please submit a report by July 31 of the year immediately following construction, as described in Term and Condition A22 or B19 in the SPBO and 9 in the P^3BO.

REINITIATION NOTICE

This concludes formal consultation on the actions 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 outlined in the SPBO, P^3BO, or the May 2, 2013, letter is exceeded. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation;
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.

Thank you for your cooperation in the effort to conserve fish and wildlife resources. Should you have additional questions or require clarification regarding this letter, please contact Jeff Howe at 772-469-4283.

Sincerely yours,

for Victoria A. Foster

Larry Williams
Field Supervisor
South Florida Ecological Services Office

Enclosure

cc: electronic only
Corps, Jacksonville, Florida (Ken Dugger)
DEP, Tallahassee, Florida (Lanie Edwards, Liz Yongue)
EPA, West Palm Beach, Florida (Ron Miedema)
FWC, Tallahassee, Florida (Robbin Trindell)
NOAA Fisheries, West Palm Beach, Florida (Jocelyn Karazsia)
NOAA Fisheries, Fort Lauderdale, Florida (Audra Livergood)
NOAA Fisheries, St. Petersburg, Florida (Mark Sramek, Dennis Klemm)
Service, Atlanta, Georgia (Ken Graham)
Service, Panama City, Florida (Patty Kelly)
Service, St. Petersburg, Florida (Anne Marie Lauritsen)
USGS, Gainesville, Florida (Susan Walls)

LITERATURE CITED

Florida Fish and Wildlife Conservation Commission (FWC). 2011. Standard Manatee Conditions for In-Water Work 2011. Tallahassee, Florida [Internet]. [cited March 6, 2013]. Available from: http://myfwc.com/wildlifehabitats/managed/manatee/permit-review/#Main

U.S. Fish and Wildlife Service (Service). 2011. Statewide programmatic biological opinion to the U.S. Army Corps of Engineers (Service Log No. 41910-2011-F-0170) for shore protection activities along the coast of Florida (August 22, 2011). Jacksonville, Panama City, and Vero Beach Field Offices, Florida.

U.S. Fish and Wildlife Service (Service). 2013. Programmatic piping plover biological opinion to the U.S. Army Corps of Engineers (Service Consultation Code 04EF1000-2013-F-0124) for shore protection activities in the geographical region of the north and south Florida Ecological Services Field Offices (May 22, 2013). Jacksonville and Vero Beach Field Offices, Florida.

Table 1. List of proposed 2013 FCCE sand placement and dredging projects located within the South Florida Ecological Service Office.

PROJECT	COUNTY	DESCRIPTION	FILL TEMPLATE	SAND VOLUME (cubic yards [cy])	SAND SOURCE	PIPING PLOVER HABITAT DESIGNATION[1]
Atlantic Coast						
Bakers Haulover	Miami-Dade	Hopper dredge. Project duration: approximately 3 months.	R-28 to R-32 (4,224 linear feet)	50,000 cy	Channel dredge material.	Non-optimal
Broward Segment II	Broward	Truck haul. Material placed above the mean high water line. Project duration: approximately 4.5 months.	R-26 to R-53 (26,928 linear feet)	113,500 cy	Upland sand source (Ortona or Witherspoon mines).	Non-optimal
Delray Beach	Palm Beach	Hopper dredge. Project duration: approximately 6 months.	R-175 to R-188 (14,784 linear feet)	1,358,000 cy	Offshore borrow area 1 and 2.	Non-optimal
Fort Pierce Inlet	St. Lucie	Cutterhead dredge. Project duration: approximately 3 months.	Beach placement (R-34 to R-41; 7,392 linear feet), and/or in the nearshore, upland, or at an offshore dredge material disposal site.	580,000 cy	The channel and the inlet sediment basin.	Optimal
Jupiter Carlin	Palm Beach	Hopper dredge. Project duration: approximately 4 months.	R-13 to R-19 (5,808 linear feet)	822,000 cy	Offshore borrow area.	Optimal
Jupiter Inlet	Palm Beach	Hopper dredge. Project duration: approximately 3 months.	R-13 to R-19 (5,808 linear feet)	150,000 cy	Intracoastal waterway dredge material.	Optimal
North Boca Raton	Palm Beach	Hopper dredge. Project duration: approximately 6 months.	R-205 to R-212 (7,392 linear feet)	614,400 cy	New offshore borrow area.	Non-optimal
Ocean Ridge	Palm Beach	Hopper dredge. Project duration: approximately 6 months.	R-152 to R-159 (7,392 linear feet)	519,300 cy	North and south offshore borrow areas.	Optimal
Gulf Coast						
Gasparilla	Lee	Hopper dredge. Project duration: approximately 3.5 months.	R-11 to R-24 (13,200 linear feet)	79,250 cy	Boca Grande ebb shoal (Borrow Areas 1 and 2).	Optimal

[1] Piping plover habitat (non-optimal or optimal) designation based on the P^3BO (Service 2013).

United States Department of the Interior

U. S. FISH AND WILDLIFE SERVICE

7915 BAYMEADOWS WAY, SUITE 200
JACKSONVILLE, FLORIDA 32256-7517

IN REPLY REFER TO:
FWS Log No. 41910- 2013-F-0148

May 2, 2013

Mr. Eric Summa
Chief, Environmental Branch
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Dear Mr. Summa:

The U.S. Fish and Wildlife Service (Service) received your letter dated April4, 2013, regarding sand placement activities under Public Law 84-99 for Flood Control and Coastal Emergencies (FCCE) to repair storm damage to the shoreline associated with storm events in 2012.

The Service issued a Statewide Programmatic Biological Opinion (SPBO) dated August 22, 2011, analyzing the impacts of sand placement projects on the loggerhead *(Caretta caretta),* green *(Chelonia mydas),* leatherback *(Dermochelys coriacea),* hawksbill *(Eretmochelys imbricata),* and Kemp's ridley *(Lepidochelys kempii)* sea turtles, and southeastern *(Peromyscus polionotus niveiventris),* Anastasia Island *(Peromyscus polionotus phasma),* Choctawhatchee *(Peromyscus polionotus a/lophrys),* St. Andrews *(Peromyscus polionotus peninsularis),* and Perdido Key *(Peromyscus polionotus trissy/lepsis)* beach mice and designated critical habitat for the Perdido Key beach mouse, Choctawhatchee beach mouse, and St. Andrews beach mouse.

The Service and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) share Federal jurisdiction for sea turtles under the Endangered Species Act of 1973 (Act). The Service has responsibility for sea turtles on the nesting beach and NMFS has jurisdiction for sea turtles in the marine environment. Our analysis will only address activities that may impact nesting sea turtles, their nests and eggs, and hatchlings as they emerge from the nest and crawl to the sea. NMFS will assess and consult with the U.S. Army Corps of Engineers (Corps) concerning potential impacts to sea turtles in the marine environment.

The amount or extent of anticipated take for sea turtles in the SPBO is as follows:

The Service anticipates that no more than 27.7 miles of highly eroded shoreline along the Florida coastline (no more than 8.8 miles within the NGMRU and no more than 18.9 miles within the PFRU) would receive sand placement per year during nonemergency years with a maximum of 102 miles of shoreline (38 miles within the NGMRU and 64 miles of shoreline within the PFRU) receiving sand during or following an emergency event (declared disaster or Congressional Order) as a result of the Statewide Programmatic action. This represents two

percent of the entire shoreline per year during a nonemergency year and seven percent of the entire shoreline during an emergency year. Over the last 10 years, one Congressional Order occurred due to emergency events in the 2004-2005 period. The increased sand placement on 102 miles of shoreline is expected to occur once in a 10-year period due to emergency events.

The projects that are proposed under Public Law 84-99 for FCCE are considered an emergency and a Congressional Order was issued. The amount of take expected during an emergency events was expected to be no more than 38 miles within the loggerhead sea turtle's NGMRU (Franklin, Gulf, Bay, Walton, Okaloosa, Santa Rosa, Escambia Counties) and 64 miles of shoreline within the loggerhead sea turtle's PFRU (Nassau, Duval, St. Johns, Flagler, Volusia, Brevard, Indian River, St. Lucie, Martin, Palm Beach, Broward, Miami-Dade, Monroe, Collier, Lee, Charlotte, Sarasota, Manatee, Hillsborough, Pinellas Counties).

The Service and the Corps predicted these emergency events to occur once every 10 years as reflected in the SPBO. It follows that the previous emergency action occurred during the 2004-2005 period, about 7 years ago. Although the frequency of storm events is expected to increase as a result of climate change, it is difficult to predict how this will affect the amount of large scaled sand placement events that follow.

A large number of sand placement projects occurring within a short period of time have the potential to adversely affect nesting females, nests, and hatchlings on a much higher level by significantly reducing the amount of nesting habitat available for nesting females. The nesting beaches during construction are considered "temporarily lost" and degraded for over two nesting seasons following construction. The impact of these projects were outlined and assessed in the SPBO; however, given the large number of projects that will occur during a short period of time, the Service remains concerned about the following effects during the 2013 and 2014 nesting season:

1. Decreased nesting numbers over a larger stretch of nesting habitat during the 2013 and 2014 nesting season;
2. Decreased nesting success over a larger stretch of nesting habitat; and
3. Increased disorientations as a result of an increased effect of artificial lighting due to elevated beaches and work conducted at night.

The Corps' Commitments, Reasonable and Prudent Measures, and Terms and Conditions in the SPBO are applicable to the proposed projects and will minimize the impact to sea turtles. Given that this large scaled event is proposed sooner than the 10-year frequency, the Service continues to emphasize the importance of the sea turtle windows (May 1 through October 31) in the high density nesting beaches (Brevard through Broward). These windows represent the major part of the nesting season and do not represent the entire nesting and hatching season. The Service has determined that each project must coordinate with the Service's representative in that area to avoid as much of the early and late part of the nesting season as possible. Completing construction in a phased approach where all equipment can be removed from the beach would result in less nests being relocated as well as more nesting habitat available for females.

Decreased nesting success following sand placement projects is a concern on a widespread level. The Service has determined that a "sea turtle friendly profile" will minimize this impact. The Service is supportive of the 'sea turtle friendly profile" testing on a sand placement project in Martin County. Following the results of this study the Service would like to meet with a Corps representative to discuss next steps in implementing a "sea turtle friendly profile." This represents a practical application of Term and Condition A5 in the SPBO.

> *The Corps shall continue to work with the Florida Department of Environmental Protection (FDEP), the Florida Fish and Wildlife Conservation Commission (FWC) and the Service in conducting the second phase of testing on the sea turtle friendly profile during project construction. This includes exploring options to include a dune system in the project design for existing authorized projects and new non-Federal projects and how the existing sand placement template may be modified.*

Increased hatchling disorientations as a result of the elevated beaches can be minimized with upfront coordination. Term and Condition A11 in the SPBO minimizes this impact.

> *Two surveys shall be conducted of all lighting visible from the beach placement area by the Applicant or Corps, using standard techniques for such a survey (Appendix C), in the year following construction. The first survey shall be conducted between May 1 and May 15 and a brief summary provided to the Service. The second survey shall be conducted between July 15 and August 1. A summary report of the surveys, including any actions taken, shall be submitted to the Service by December 1 of the year in which surveys are conducted. After the annual report is completed, a meeting shall be set up with the Applicant, county or municipality, FWC, Corps, and the Service to discuss the survey report, as well as any documented sea turtle disorientations in or adjacent to the project area. If the project is completed during the nesting season and prior to May 1, the Corps may conduct the lighting surveys during the year of construction.*

Given the large number of projects, the Service has determined these lighting surveys must occur prior to the nesting season to enable early coordination and prevent high loss of hatchlings from the 2013 cohort.

In an effort to provide early coordination and specific details for each project as outlined in Term and Condition A8, the Corps shall also provide the Service with specific shoreline lengths and timing of the actual project that is going to proceed at the preconstruction meeting. To summarize, the following additional Terms and Conditions must be applied to the proposed projects under this emergency event to minimize the comprehensive impact over the shortened time period:

1. The Corps must conduct early coordination on each project with the Service's representative to avoid as much of the early and late part of the nesting season as possible. Completing construction in a phased approach where all equipment can be removed from the beach would lessen nest relocation as well as provide more nesting habitat for nesting females must be explored;

2. Following the "sea turtle friendly" profile testing in Martin County, the Corps must meet with the Service, the FDEP, and the FWC to discuss the results of the study and discuss next steps for implementing a "sea turtle friendly" profile for sand placement projects;

3. In addition to the Term and Condition A11, a lighting survey must be conducted prior to May 20 for each project proposed and the report submitted immediately to the Service's representative. After the first report is submitted, a meeting shall be set up with the Applicant, county or municipality, FWC, Corps, and the Service to discuss the survey report, as well as any documented sea turtle disorientations in or adjacent to the project area; and

4. The Corps shall also provide the Service with specific shoreline lengths and timing of the actual project that is going to proceed at the preconstruction meeting using the form on the following web link: hnp: ww' f, s go tnorthflondaJSeaTurtle Doc !Corp⁰o20o1%20Engineers%o20Sea⁰o20 Turtle%20Permit%20Information.pdf). This form shall be emailed to the Service at seaturtle@fws. gov.

5. The Service would also like to clarify Term and Condition A14 would states the following:

   If available, staging areas for construction equipment shall be located off the beach during early (March 1 through April 30) and late (November 1 through November 30) nesting season for Brevard through Broward counties and peak nesting season (May 1 through October 31) for the remaining counties. 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 placed on the beach shall be located as far landward as possible without compromising the integrity of the dune system. Pipes placed parallel to the dune shall be 5 to 10 feet away from the toe of the dune if the width of the beach allows. Temporary storage of pipes shall be off the beach to the maximum extent possible. If the pipes are stored on the beach, they shall be placed in a manner that will minimize the impact to nesting habitat and shall not compromise the integrity of the dune systems.

   If the pipes that are placed parallel to the dune cannot be placed between 5 to 10 feet away from the toe of the dune during nesting and hatching season, the Corps must reinitiate consultation with the Service as this represents take that was not considered in the SPBO.

Provided the additional Terms and Conditions included in this letter are included in the proposed project, the Service has determined that the proposed projects under Public Law 84-99 for FCCE is appropriate to apply to the SPBO concerning sand placement activities along the coast of Florida for the Corps dated April19, 2011 (FWS Log No. 41910-2011-F-0170). The Service has modified the take for these emergency projects to occur once in 7 years.

The Incidental Take for Sea Turtles has been modified as follows:

Incidental take of nesting and hatchling sea turtles and sea turtle nests is anticipated to occur during project construction and during the life of the project. Take will occur on nesting habitat consisting of the length of the beach where the material will be placed or where jetty or groin maintenance is located, but is not expected to exceed 8.8 miles of shoreline per year within the northwest portion of Florida for the NGMRU and 18.9 miles of shoreline per year within the PFRU during a nonemergency year. Take will occur on nesting habitat consisting of the length of the beach where the material will be placed or where groin maintenance is located, but is not expected to exceed 102 miles of shoreline (38 miles of shoreline per year within the northwest portion of Florida for the NGMRU and 64 miles of shoreline per year within the PFRU) during an emergency (declared disasters or Congressional Orders) year. The increased sand placement of 102 miles of shoreline is expected to occur once in a 7-year period due to emergency events.

The incidental take for the beach mouse is not expected to exceed the amount provided in the SPBO.

Please submit a report for the proposed project as described in the SPBO Term and Condition A22 following completion of the proposed work.

Thank you for your cooperation in the effort to conserve fish and wildlife resources. Should you have any questions or require clarification regarding this letter, please contact Terri Calleson of this office at (904) 731-3286.

Sincerely,

Dawn Jenning
Acting Field Supervisor

cc:

DEP, Tallahassee, Florida (Lanie Edwards)
FWC, Imperiled Species Management Section, Tallahassee, Florida (Robbin Trindell)
NOAA Fisheries, St. Petersburg, Florida (Dennis Klemm)
Service, Atlanta, Georgia (Kenneth Graham)
Service, National Sea Turtle Coordinator (Sandy MacPherson