

## **1.0 PROJECT PURPOSE AND NEED**

### **1.1 Project Purpose and Agency Goal**

The purpose of this Project is to provide sand to the now sand-starved littoral system to: (1) mitigate the long-term erosion impacts of Lake Worth Inlet and the erosion impacts of the armored coastline north of the Project Area, (2) provide and maintain storm protection to upland improvements, structures and infrastructure; (3) restore and maintain the beach for recreational use, and (4) restore and maintain the beach for marine turtle nesting habitat. The goal of the agency is to accomplish the purpose of the Project by authorizing construction of the most effective project design while incorporating considerations for minimizing and/or mitigating for environmental impacts.

### **1.2 Project Need**

The Phipps Ocean Park Beach Restoration Project is necessary because the current and projected shoreline in the Project Area is subject to chronic erosion and, if left unabated, the long-term erosion impacts of Lake Worth Inlet and the armored shoreline north of the Project Area will not be mitigated, upland improvements, structures and infrastructure will be more vulnerable to storm damage, the public recreational beach will continue to recede exposing the underlying rock, and marine turtle nesting habitat will be adversely impacted by the loss of sandy beaches.

The need to address the shoreline retreat in the proposed Project Area has been recognized by both the FDEP and the USACE. In 1997, the FDEP re-evaluated the extent of shoreline retreat in Phipps Ocean Park Beach Restoration Project Area between DNR Monuments R-116 and R-126 and concluded that the entire Project Area shoreline is “critically eroded.”<sup>1</sup> As stated in the FDEP Erosion Control guidelines:

“Critically eroded is a designation given to a segment of shoreline where natural processes or human activities have caused or contributed to erosion and recession of the coastal system *to such a degree that upland development, recreational interests, wildlife habitat or important cultural resources are threatened or lost.* Critically eroded designations may also include peripheral segments and gaps which, although they may be stable or slightly

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<sup>1</sup> Paden Woodruff, FDEP, confirmed the critical erosion designation of the Phipps Project Area by e-mail on May 6, 2003, providing the following statement: “I reviewed our Critical Erosion Reports back to 1998. We have correspondence from the Town of Palm Beach dated September 23, 1997 that requests the Department designate (as a critical erosion area) the area from R-117 to R-125 due to high erosion rates over the previous 7 years. In March 1999 the area from R-76 to R-121 was designated. This area remained unchanged in the January 2000 report. By letter dated June 13, 2000, FDEP agreed to extend the area from R-121 to R-124. This was primarily to improve continuity and success of the Phipps Ocean Park Project. In 2001 due to continued recent erosion conditions during a period of general beach stability and accretion, the Department extended the area an additional length from R-124 to R-128 ending just north of the Lake Worth Pier. The most current Critical Erosion Report is available on our Web Page.”

erosional now, are necessary for continuity of management of the coastal system or for the design integrity of adjacent beach management projects (emphasis added).”

Consistent with prior Federal findings by the USACE, the data, analysis and findings in the FSEIS clearly support the FDEP’s determination that the Project Area shoreline is historically and critically eroding. Section 3.2.3, Palm Beach Island - Shoreline and Volumetric Changes, is particularly instructive on the matter. The increasing instability of the Palm Beach Island Shoreline, including the Phipps Project Area, is apparent from Table 3.6, Mean High Water Line Change Rates. From 1928 to 1974, Table 3.6 reflects a "quiet" shoreline, with little fluctuation in the location of the line of mean high water (MHW). From 1974 to 1990, the position of the shoreline becomes increasingly dynamic and unstable, but the greatest shoreline fluctuations, as measured by the position of the MHW line, occurred from 1990 to 2000. During this ten-year period, significant swings in the shoreline position of the MHW line are evident, particularly in Reach 7, the location of the Phipps Project.

The volumetric changes in the nearshore sediment budget on Palm Beach Island are equally dynamic and unstable, as reflected in Table 3.7, Volumetric Change Rates. The data for Reach 7 again demonstrates substantial fluctuation and net loss of sediment since 1929. The total annual volumetric losses in Reach 7, including the Phipps Project Area, averaged about 13,000 cubic yards per year from 1929 to 1957, about 10,000 cubic yards per year between 1974 and 1990; and, increased three-fold to about 35,000 cubic yards per year from 1990 to 1997. The data does not support the conclusion that the Phipps Project Beach is "historically stable."

The Applicant’s Preferred Alternative is intended first to mitigate for the negative shoreline impacts associated with construction of Lake Worth Inlet and shoreline armoring structures north of the Project Area. The three miles of shoreline immediately north of the proposed Project Area are fronted by numerous armoring structures including rock revetments, seawalls, and groins. The existing groins north of Phipps Ocean Park deter southerly longshore transport to Phipps Ocean Park and the Project Area. In combination with the effects of Lake Worth Inlet, armoring structures have disrupted longshore sediment transport and contributed to a substantial sediment deficit in the Project Area (see Section 3.2 for an analysis and quantification of these impacts). While proposed updrift beach restoration projects may over time alleviate the sediment deficit in the Project Area, any such benefit is speculative and remote in time. For example, the Mid-Town Beach Nourishment Project would not be expected to benefit the Project Area until sand fills the “monster” groin at Widener’s Curve and other groins immediately north of the proposed Project Area.

The need to mitigate for the disruption of longshore sediment transport into the Project Area was specifically recognized by the FDEP *in the Lake Worth Inlet Management Study and Implementation Plan*, (FDEP, 1996). In the inlet plan, FDEP specifically required that additional studies be undertaken to ensure that the downdrift beaches are restored as mitigation for the effects of the inlet. Similarly, the USACE has previously concluded that longshore sediment transport into the Project Area has caused erosion in the Project Area to the extent that beach nourishment is warranted. (See *Beach Erosion Control Projects for Palm Beach County, Florida - General Design Memorandum with Environmental Impact Statement*” (USACE, 1987) and the *Final Environmental*

Impact Statement for the “Coast of Florida Erosion and Storm Effects Study - Region III (USACE, 1996).

The second purpose of the proposed Project is to protect upland structures and infrastructure from potential storm damage. The *Comprehensive Coastal Management Plan Update* prepared by the Town of Palm Beach recommended beach nourishment in the Project Area to avoid significant damage to structures and upland infrastructure from a 15-year return interval storm. The Plan estimated annual storm protection benefits from the proposed Project to be \$1,429,162. One measure of the threat to upland development is the extent to which property owners have constructed hardened structures to protect their property from erosion damage. Within the study area, multi-family high-rise condominium buildings dominate upland development and seawalls front many of these buildings. Table 1.1 summarizes properties in the Project vicinity, their approximate location (by DNR monument) and the seawall length. Of the approximately 10,211 linear feet of shoreline in the project vicinity, about 6,060 feet of the shoreline is fronted by seawalls. Project construction would bury these seawalls and project maintenance would eliminate the potential adverse effects of these seawalls upon the beach-dune system and marine turtle nesting habitat. Following project construction, the Applicant will continue to monitor and evaluate the shoreline conditions and the exposure of hard structures in the area. Based on these site evaluations and as determined necessary, the Applicant may install dunes and dune vegetation, as described in FSEIS Section 2.3.9, to further reduce the potential adverse impact of hard structures in the Project Area.

<b>Table 1.1 Properties with Seawalls in the Project Vicinity</b>		
<b>DNR Monuments</b>	<b>Property Name</b>	<b>Seawall Length</b>
R-116.5	Sloan’s Curve Townhouses	1,100 ft
R-119.75	The Reef Condo	335 ft
R-120	Harbor House	350 ft
R-120.5	Sea Lord Hotel	110 ft
R-124	Palm Beach White House 3	220 ft
R-125	Ambassador Hotel	210 ft
R-125.5	2770 South Ocean Blvd	380 ft
R-125.75	Ambassador South Coop.	295 ft
R-126.25	Ambassador II Coop.	295 ft
R-126.5	Ocean Grand Hotel	490 ft
R-127	Hilton	200 ft
R-127	Palm Worth Inc. Coop	190 ft
R-128	Kreusler Park	560 ft
R-128	Lake Worth Municipal Beach	1,220 ft
R-128.5	WPBR-AM	105 ft
	<b>Total Seawall Length</b>	<b>6,060 ft</b>

The existing property within the Project Area is estimated to have a value in excess of \$322 million and the Project is estimated to provide annual storm protection benefits in excess of \$1.4 million (ATM, 1998). Continued erosion in the Project Area would make existing buildings more vulnerable to damage by high frequency storms and would likely lead to construction of additional seawalls. Existing and future seawalls are also expected to lead to additional loss of recreational beach area and sea turtle nesting habitat.

All prior Federal investigations of the proposed Project Area have confirmed the need for a beach nourishment project in the Phipps Ocean Park area to provide storm damage protection to upland improvements, structures and infrastructure. These investigations have consistently concluded that the reliance on existing exposed hardbottom will not provide storm protection for upland properties and improvements. (See Section 2.1.1)

In response to comments received on the Draft SEIS, additional investigations were undertaken to update and document the risk of storm damage to properties in the Project Area. The results of this investigation are included in Appendix N, Storm Impact Risk Assessment, Phipps Ocean Park Beach Restoration Project, Palm Beach County Florida (Taylor Engineering, Inc., December 2003). This analysis reveals that two structures are vulnerable to damage from continued erosion in a 10-year storm event, seven structures are vulnerable to damage in a 20-year storm event, and 15 structures are vulnerable to damage in a 50-year storm event. If a 100-year storm were to impact the Project Area under existing shoreline conditions, 20 structures would be vulnerable to damage. These results are consistent with prior investigations of potential storm damage to structures in the Project Area.

The implications of the December 2003 storm damage assessment are also addressed in the context of the No Action Alternative (see Section 2.1.1) and the Applicant's Preferred Alternative (see Section 2.1.3). The extent to which the Applicant's Preferred Alternative will reduce the expected impact to structures in the Project Area is evaluated.

The third purpose of the proposed Project is to restore and maintain public recreational beach. Phipps Ocean Park is located near the mid-point of the proposed fill area and provides the primary public access to the beach in the Project Area. Beach erosion has detrimentally affected public recreational use of the sandy beach by narrowing and steepening the beach and exposing rock outcrops along the shoreline. Over time and in the absence of beach restoration, the recreational beach will continue to become narrower, steeper, rockier, and consequently less suitable for many types of public recreation.

Since 1993, as the beach has narrowed and become rockier, recreational use of Phipps Ocean Park has substantially diminished, resulting in negative economic consequences for the community. Between 1993 and 1999, recreational use of Phipps Ocean Park Beach fell by more than 38%, based on visitor data compiled by the Town.

<b>Table 1.2 Recreational Use of Phipps Ocean Park, 1993 vs. 1999</b>		
<b>Item</b>	<b>1993 values</b>	<b>1999 values</b>
Parking Rate	\$ 0.75 / hr.	\$1.00 / hr.
Parking Revenue	\$39,750	\$20,000
Total Parking Hours	53,000 hours	20,000 hours

Historical erosion and steepening of the beach have resulted and will continue to result in loss of recreational beach area. Future erosion and seawall construction would lead to further loss of recreational beach.

Finally, the proposed Project is necessary to restore and maintain marine turtle nesting habitat that would otherwise be lost if erosion were to continue unabated. Throughout the study area, a narrow beach limits the available marine turtle nesting habitat. The existing seawalls pose a physical barrier to nesting sea turtles. Future erosion and seawall construction would lead to further loss of marine turtle nesting habitat. An in-depth discussion regarding sea turtle nesting habitat and nesting success is provided in Sections 3.5.1 and 4.5.

Several comments were received on the Draft SEIS questioning the extent to which the Project Area shoreline is eroding or stable. In addition to the expanded analysis provided above, these comments prompted a thorough reexamination of the Federal and State record concerning the condition of the Project Area shoreline and collection of additional field data to document the location and elevation of existing hardbottom outcrops (See Appendix N and Section 2.1.1 for a discussion of the updated hardbottom field data). The following discussion is intended to more fully discuss the need for the project in light of the prior investigations.

The condition and stability of the shoreline in Palm Beach County, including the Phipps Project Area shoreline, has been the subject of great interest and extensive investigation by the USACE for more than five decades. Appropriately, reference to and reliance on the prior Federal findings and analysis of the Project Area shoreline is appropriate. Based on a review of previous studies and the analysis presented in the FSEIS, the previous Federal determinations justifying the need to nourish Phipps Ocean Park beach are sound.

Almost 50 years ago, Congress approved the first beach nourishment project for the “Atlantic Shoreline of Palm Beach County from Lake Worth Inlet to South Lake Worth Inlet,” including the Phipps Project Area now under consideration by the USACE in the Phipps Project FSEIS. Authorized on 3 July 1958 (PL 85-500), the 15.6-mile project was described in House Document 342/85/2 and called for periodic beach renourishment of the area and construction of the sand transfer plant at Lake Worth Inlet. The formal statement of “Views and Recommendations of the Federal Beach Erosion Control Board,” which formed the basis of the 1958 Congressional project authorization, is enlightening:

“The Board has carefully considered the reports of the reporting officers. It concurs in their views that the most suitable plan for protection of Palm Beach Island comprises restoration of a protective beach of adequate width and elevation and stabilization thereof by periodic artificial nourishment, and that the work is justified by prospective benefits. As periodic beach nourishment is believed to be the most economical method of protecting the shore, it is considered construction eligible for Federal aid under Public Law 826.”

In 1977, Congress authorized the USACE to undertake another investigation of the shoreline erosion problems in Palm Beach County.<sup>2</sup> In June 1987, the USACE released the first comprehensive analysis for this troubled shoreline reach with issuance of the “Beach Erosion Control Projects for Palm Beach County, Florida, General Design Memorandum with Environmental Impact Statement, April 1987.”

According to the 1987 Palm Beach Island GDM/EIS, more than 50 Federal studies and project actions were undertaken between 1935 and 1987 to address shoreline retreat, sediment transport, and related problems on Palm Beach Island and to develop shoreline restoration and stabilization strategies. (See 1987 Palm Beach Island GDM/EIS, Appendix C, Prior Reports and Corrective Actions).

The conclusion in the FSEIS that the Phipps Project Area shoreline is unstable, eroding, and in need of periodic beach nourishment is neither new nor counter to previous conclusions reached by Congress, the USACE, or the FDEP, which has issued a State permit authorizing the Applicant’s Preferred Alternative. In 1987, the USACE addressed the apparent incongruous data indicating that portions of the Lake Worth to South Lake Worth shoreline can at times appear “stable.” The Corps concluded:

“The shorelines in the surveyed area (Lake Worth to South Lake Worth) have shown a buildup of sand in most areas, which is contrary to the reported erosion losses. This is an indication that offshore erosion is occurring and the offshore profile is steepening. The 10-year storm impact analysis shows that over 13.3 miles of Palm Beach Island structures would be damaged if a 10-year storm were to occur. *The lack of shoreline recession, given the indication of erosion, is in part caused by the armoring of the shoreline and the exposure of nearshore rock formations by erosion.*” (See 1987 Palm Beach Island GDM/EIS, pg. 20) (emphasis added).

It is also noteworthy that in 1987, the USACE identified as one “major indicator of erosion” to be “the exposure of nearshore rock formations.” (See 1987 Palm Beach Island GDM/EIS, pg. 18). The continued loss of sediment volume in the Phipps Project Area is an indicator that the shoreline remains in a dynamic and unstable condition and is not in equilibrium.

In the 1987 Palm Beach Island GDM/EIS, the USACE identified and recommend a periodic beach restoration project for the Phipps Project Area. Designated “Lake Worth (Reach 6) in 1987, the

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<sup>2</sup> DAEN-CWP-E, 14 December 1977 endorsement to SAJEN-RC letter “Palm Beach County Beach Erosion Control Projects – Post-Authorization Studies,” dated 26 July 1977.

Phipps Project proposed by the USACE was 2.1 miles long, beginning at the northern boundary of Phipps Ocean Park and extending to a point 500 feet south of Lake Worth Park. (See 1987 Palm Beach Island GDM/EIS, pg. 54 and Table 5, Considered Reaches, Summary of Cost Estimates (NED Plan) pg.58). The 25-foot added beach width planned for the area was estimated to require an initial fill volume of 770,000 cubic yards or approximately 69 cubic yards per linear foot of beach, including 8 years of advance fill and overfill. The planned renourishment interval was 8 years at an estimated volume of 527,000 cubic yards of sand. Like the Applicant's Preferred Alternative, the sand for the 1987 Federal project would have been obtained from an offshore borrow area. The initial project cost was estimated to be \$4,976,000.

The 1996 COFS is the most recent and comprehensive Federal evaluation of the Phipps Project Area and the USACE reaffirmed both Congress's 1958 conclusion and the USACE's 1987 recommendation that a beach nourishment project encompassing the entire length of the Applicant's Preferred Alternative was necessary and economically justified. (See COFS, Detailed Project Alternatives, Palm Beach County, pg. 95).

Designated the "Palm Beach County, Florida Shore Protection Project, South-end Palm Beach Island" in the COFS, the Federal project recommended in 1996 would have extended from DNR Monuments R-116 to R-132, a distance of 3.25 miles. Similar to the Applicant's Preferred Alternative, which extends from DNR Monuments R-116 to R-126, the USACE proposed to place 1,525,700 cubic yards of fill over the first eight years of the project. The initial fill volume of 674,500 cubic yards was to be renourished at 4-year intervals at a fill volume of 425,600 cubic yards per renourishment. The USACE further determined that the South-end Palm Beach Island project would bury 5.4 acres of nearshore hardbottom resources, which would be mitigated through creation of artificial reefs located adjacent to the project site. The total cost for the 1996 project was estimated to be approximately \$5.99 million, with the Federal government picking up almost 51% of the total cost, or \$3.036 million.

In comparison, the Applicant's Preferred Alternative is shorter at 1.9 miles in length and extends from only DNR Monument R-116 to R-126, instead of DNR Monument R-116 to R-132, as proposed by the USACE. The Applicant's Preferred Alternative also impacts less nearshore hardbottom at 3.1 acres compared to 5.4 acres for the proposed 1996 Federal project described in the COFS. By redesigning the project to increase the initial fill volume and shortening the project length, the Applicant has reduced the nearshore hardground impacts by 57% and increased the required renourishment interval from 4 to 8 years, when compared to the Federal project proposed in 1996. By reducing the need for offshore dredging of the borrow areas by one-half, the Applicant's Preferred Alternative design effectively reduces potential impacts to sensitive offshore reefs in the vicinity of the borrow areas.

As the USACE determined in 1996, the No Action alternative is unacceptable on Palm Beach Island generally and within the proposed Project Area specifically. If no action is taken, the USACE concluded that Palm Beach Island beaches would continue to recede, decreasing the available beach for recreational activities and decreasing the natural attenuation of wave damage during storm events resulting in greater post-storm recovery costs. The COFS also concluded that the absence of beach nourishment might also endanger sea turtle nests through inundation. (See COFS, EIS-5).

Two broad conclusions can be drawn from the Federal record regarding the condition of the Phipps Project Area. First, Palm Beach Island, including the proposed Phipps Project Area, is eroding and is in fact historically unstable. Second, a broad consensus has emerged over the last 50 years at the Federal, State and local levels that periodic beach nourishment is the most cost-effective, environmentally sensitive solution to the threat of erosion in the Phipps Project Area. The designation of the Phipps Project Area as critically eroding by FDEP is consistent with the Federal finding that the Phipps Project Area shoreline is unstable and eroding.

In 1987, the USACE responded to questions raised by the U.S. Environmental Protection Agency (EPA) about the stability of the Palm Beach Island shoreline and need for beach restoration projects at Phipps Ocean Park and in other areas. In responding to EPA's comments<sup>3</sup> on the 1987 Palm Beach Island GDM/EIS, Charles T. Meyers III, District Engineer, USACE-Jacksonville concluded the following:

"Specific problem areas in Palm Beach County were identified using mean high water shoreline and volumetric changes and potential damages to development from a 10-year storm event as indicators of erosion. Erosion is not a systematic annual loss of land except in cases of sea level rise, but rather, the cumulative impact over the long term of significant events such as northeasters, tropical storms, and hurricanes. Erosion caused by the cumulative impacts of these causative factors is normally expressed as an average annual value, not limited to shorelines just south of inlets, although inlets can exacerbate naturally occurring erosion. All reaches of the shoreline are susceptible to storm damage."

In summarizing the outcome of the 1987 GDM/EIS, the Corps notified the Town of Palm Beach that there were several projects for which Federal participation would be forthcoming, including the "Phipps Park Project." In a June 15, 1987 letter from A. J. Salem, Chief, Planning Division, USACE-Jacksonville, to Mr. Douglas Delano, Town Manager, Town of Palm Beach, the USACE specifically offered the following Federal perspective:

"This is to inform you that the report titled "Beach Erosion Control projects for Palm Beach County, Florida, General Design Memorandum with Environmental Impact Statement, dated April 1987, has been approved by the Division Engineer."

"Nine miles of the authorized project for Palm Beach Island have been recommended for construction to solve the Island's storm damage problems. The four areas on Palm Beach Island recommended for construction are, from north to south: the northern 1.9 miles of the island; the 3.0 mile Midtown area from Wells road to Southern Boulevard; the 2.0 mile area between Sloan's Curve and Wideners Curve; and the 2.1 mile area from Phipps Ocean Park to Lake Worth Park." (Emphasis added).

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<sup>3</sup> Letter dated May 13, 1987 from Col. Charles T. Meyers, III, District Engineer, U.S. Army Corps of Engineers, Jacksonville to Bruce R. Barrett, Director Water Management Division, U.S. Environmental Protection Agency, Atlanta, Georgia (See 1987 Palm Beach Island GDM/EIS, Appendix F, Pertinent Correspondence).

“Federal participation in the 2.1 mile Phipps Park to Lake Worth park project would be 30.9 percent of the first cost, based on current shore ownership, and use, and estimated project benefits.”

“The authorized project, or separable segments thereof, can either be constructed by local interests with subsequent Federal reimbursement of the Federal Share of the project costs, or constructed by the Corps with an upfront cash contribution from the local sponsor.”

In the 1987 Palm Beach Island GDM/EIS and reaffirmed in the 1996 COF study, the USACE documented a clear and sufficient need and economic justification for a Federal beach restoration project at Phipps Ocean Park, including a 31% share for the 1987 Federal project and a 51% share for the 1996 Federal project.

The Applicant’s Preferred Alternative is based upon virtually identical project objectives to those articulated by the USACE in the 1987 Palm Beach Island GDM/EIS and 1996 COFS. Both the Applicant and the USACE concluded that the most cost effective, environmentally sound method to accomplish the Project purpose and need was periodic beach renourishment of the shoreline. This FSEIS constitutes the fourth comprehensive investigation of shoreline retreat and erosion problems undertaken since the 1958 investigation by the Federal Beach Erosion Control Board. In preparation of the FSEIS, the re-examination of the shoreline dynamics between Lake Worth and South Lake Worth Inlet found no basis to dispute the USACE’s 1958, 1987 and 1996 analysis and conclusions regarding the shoreline dynamics in the Phipps Project Area. It is evident from the Federal record, and from the analysis in this FSEIS that a beach restoration project for the shoreline between DNR Monuments R-116 and R-126 is prudent, needed and justified.

### **1.3 Proposed Action**

To optimize shore protection and accomplish the purpose of the Project, an extensive alternatives analysis has been conducted to evaluate the positive and potential negative impacts and cost benefit ratio of 16 possible alternatives. Section 2.0 of this document provides details of this alternatives analysis. An additional alternative, T-Head Groins and Reduced Fill, is also evaluated in detail in Appendix M.

As depicted in Figure 1.1, the Applicant’s Preferred Alternative would authorize construction of a 1.9 mile beach restoration Project in the vicinity of Phipps Ocean Park between DNR Monuments R-116 and R-126. Approximately 1.5 million cubic yards of sand would be dredged from two borrow areas located approximately 3,500 feet offshore and approximately 1.5 and 2.6 miles south of the fill area. The beach fill profile consists of a +9 feet NGVD berm elevation with an average construction berm width varying from 140 to 330 feet with a projected life of eight years. The

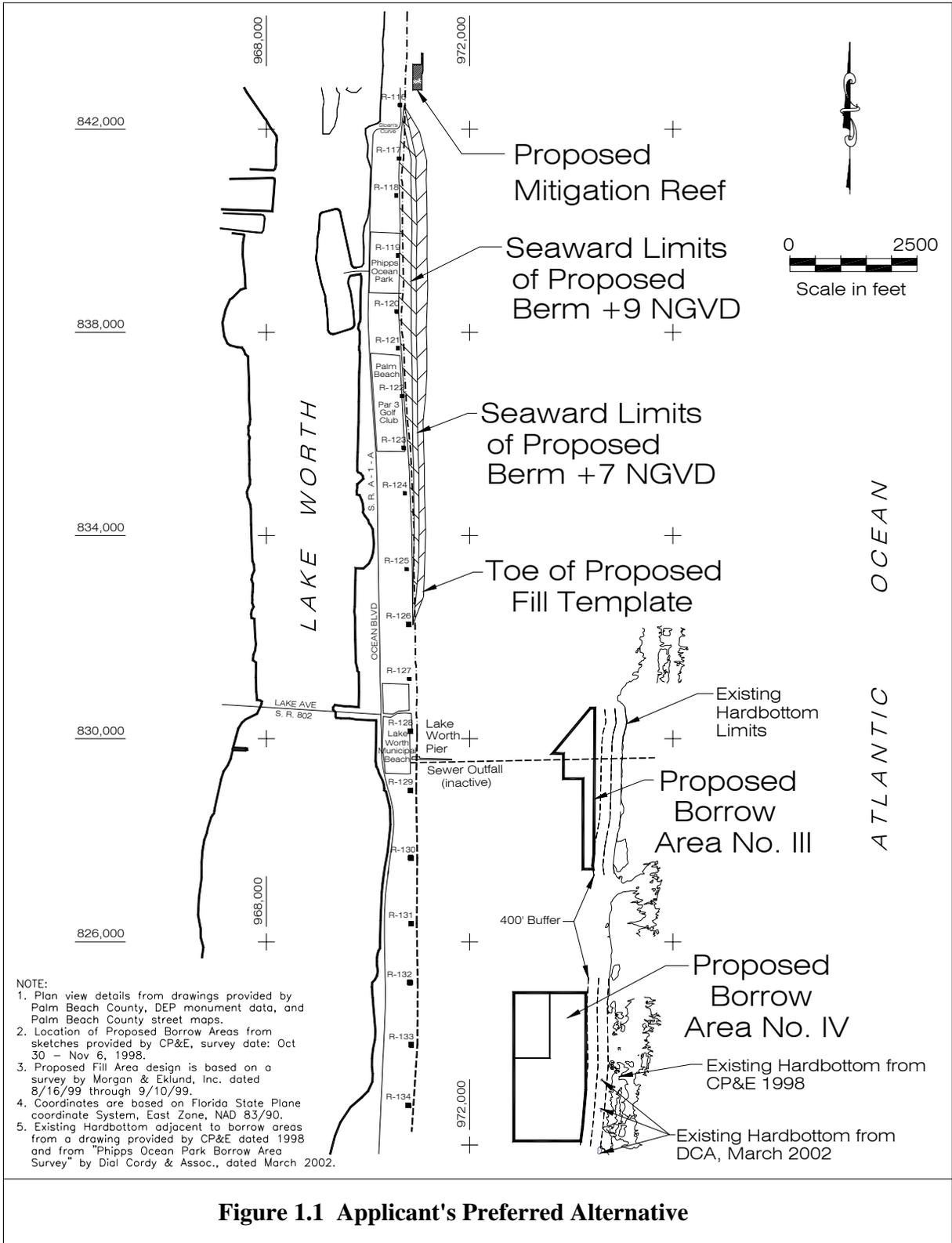
adjusted berm width is projected to range from 80 feet to 160 feet. A 3.1 acre mitigation reef is proposed for hardbottom mitigation.

The southern portion of the proposed fill, between DNR Monuments R-123 and R-126, is intended to provide a transition fill area to the existing beach. Placement of fill in the northern area between DNR Monuments R-116 and R-123 is intended to serve, in part, as a feeder beach to the shoreline to the south between DNR Monuments R-123 and R-126 and further south. Due to this expected movement of placed sand, less sand is needed in the southern portion of the Project Area between DNR Monuments R-123 and R-126. Thus, with less or “minimal” fill proposed in this area, this area is characterized as “transitional” to the beach south of DNR Monument R-126, where no sand will be placed.

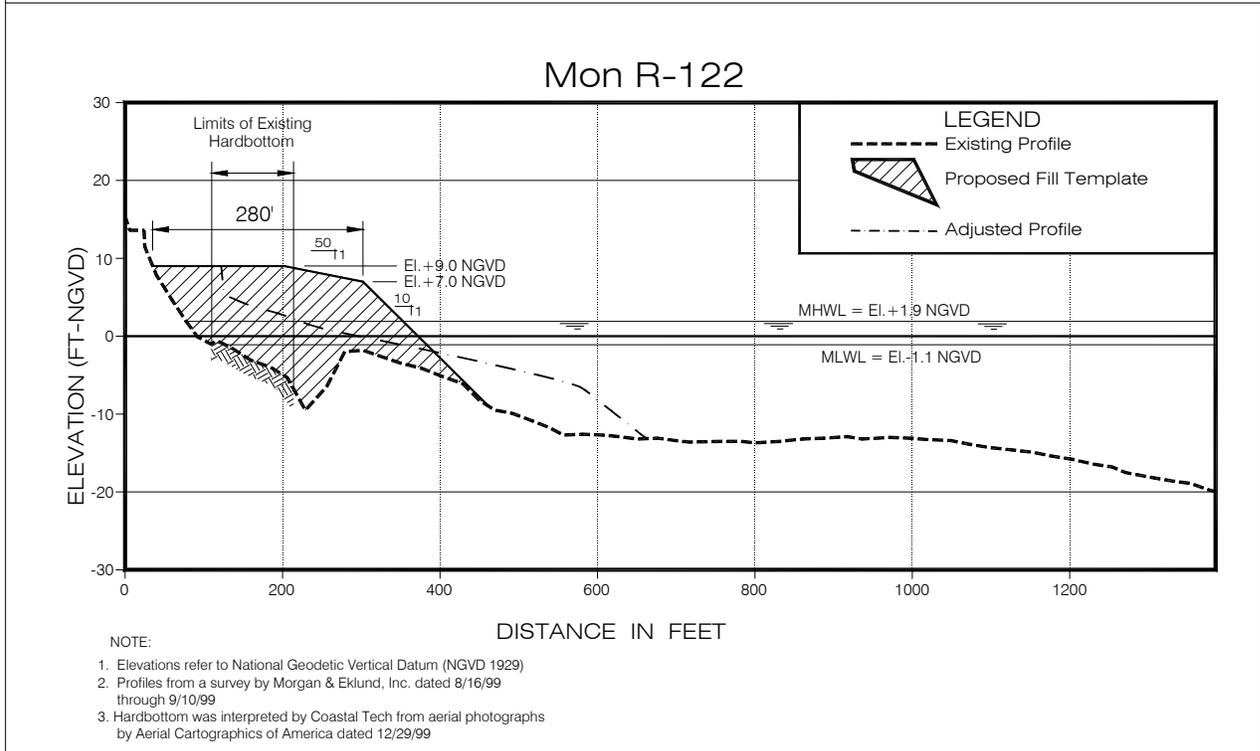
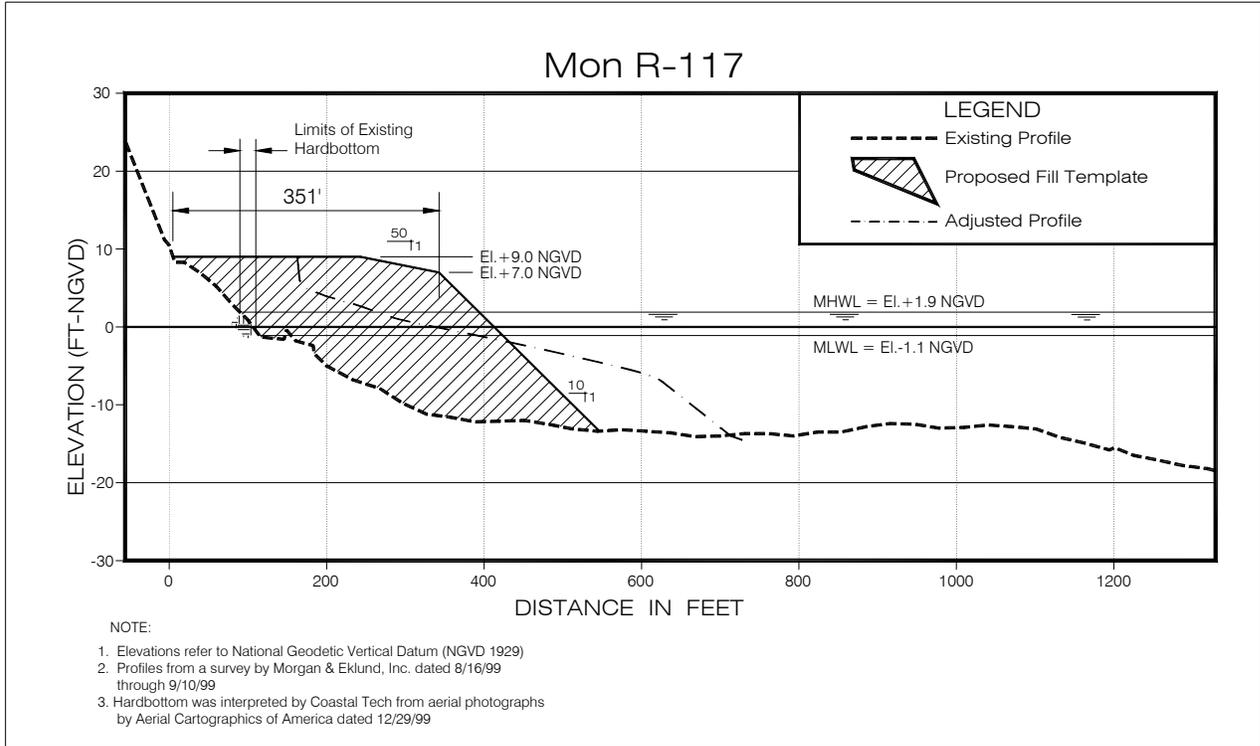
All sand excavated from the borrow area will be transported and deposited on the beach as shown in the cross-sections (Figure 1.2). All fill within 25 feet of dunes, seawalls, or vegetation will be placed by mechanical or manual means. All other fill will be hydraulically placed to avoid and minimize damage to structures or natural features.

A temporary mixing zone of 900 feet offshore and 3,000 feet down current from the point of sand discharge onto the beach fill area shall be monitored and maintained. Shore parallel sand dikes shall be constructed and maintained at the beach disposal area at all times during hydraulic discharge on the beach - as required to meet State of Florida turbidity standards and the associated State permit.

A 400-ft dredge buffer zone, where dredging is prohibited, shall be maintained around the adjacent hardbottom areas in the vicinity of the borrow area(s). A 200-ft anchor buffer zone, where anchoring is prohibited, shall be maintained around the adjacent hardbottom areas in the vicinity of the borrow area(s). No anchoring, including the dredge, support vessels and swing wires, shall be allowed within the 200-ft buffer zone. No anchor placement will be allowed during nighttime and anchor placement shall be diver assisted during daylight. No equipment or structures will be placed within the anchor buffer zones. A 100-ft sewer outfall buffer zone shall be maintained and marked with lighted buoys around the dormant sewer outfall located in Borrow Area III. Dredging and anchoring shall be prohibited within this area.



**Figure 1.1 Applicant's Preferred Alternative**



**Figure 1.2 Select Fill Template Profiles**  
Applicant's Preferred Alternative

## 1.4 Project Authority

### 1.4.1 Initial Authorization.

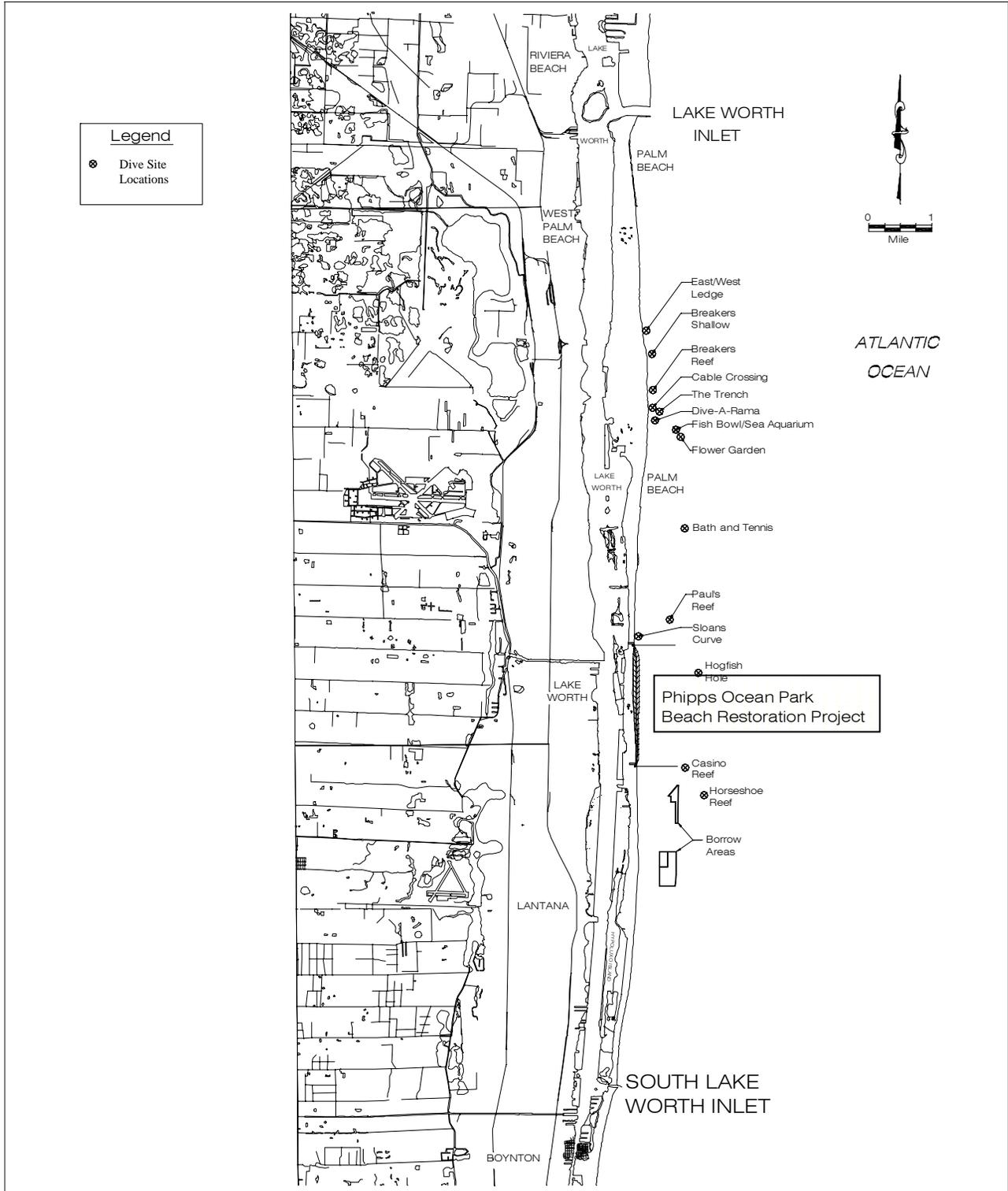
The Coast of Florida Erosion and Storm Effects Study was conducted in response to Section 104 of Public Law (PL) 98-360, an Appropriations Act for the fiscal year ending 30 September 1985, and a resolution dated 8 August 1984 by the Committee on Public Works and Transportation, of the U.S. House of Representatives, which provided for the following:

Section 104, PL 98-360. The Secretary of the Army, acting through the Chief of Engineers, was authorized to review, in cooperation with the State of Florida, its political subdivision, agencies and instrumentalities thereof, all previous published reports of the Chief of Engineers pertaining to shoreline erosion on the entire coast of Florida with a view to determining whether any modifications of the recommendations contained therein are advisable at this time, with particular reference to developing a comprehensive body of knowledge, information, and data on coastal area changes and processes. For this Project and the Supplemental Environmental Impact Statement (SEIS), the appropriate study area is between Lake Worth Inlet and South Lake Worth Inlet as shown in Figure 1.3.

House Resolution. Resolved by the Committee on Public Works and Transportation of the U.S. House of Representatives that the Secretary of the Army, acting through the Chief of Engineers, in accordance with the provisions of Section 110 of the River and Harbor Act of 1962, is hereby authorized to study, in cooperation with the State of Florida, its political subdivision and agencies and instrumentalities thereof, the entire coast of Florida, including a determination of whether any modifications of the recommendations contained in previously published reports of the Chief of Engineers pertaining to shoreline erosion on the coast of Florida are advisable, and also including the development of a comprehensive body of knowledge, information, and data on coastal area changes and processes for such entire coast.

### 1.4.2 Supplemental Information

Pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act, the U.S. Army Corps of Engineers (USACE) has regulatory authority to permit the discharge of dredge and fill material into waters of the United States. In compliance with its responsibilities under the National Environmental Policy Act (NEPA) of 1969, the Jacksonville District, USACE prepared this FSEIS in response to the Section 10/Section 404 Federal Dredge and Fill Permit Application submitted by the Town of Palm Beach, Florida for the Phipps Ocean Park, Beach Restoration Project (permit application number 200000380 (IP-PLC)). This FSEIS is a supplement to the Coast of Florida FEIS prepared by the USACE - Jacksonville District in October 1996 for Region III (hereinafter COF FEIS).



**Figure 1.3 Project Area Location Map**  
 Lake Worth Inlet to South Lake Worth Inlet

## 1.5 Project Location

The Project is located along the southeast Florida coast within Palm Beach County. The specific Project Area is approximately 1.9 miles of beach, between Sloan's Curve and the Ambassador South II Condominium including Phipps Ocean Park and the Palm Beach Par 3 Golf Club, located within the Town of Palm Beach, Florida, in Sections 11, 14, and 23, Township 44 South, Range 43 East.

## 1.6 Project History

On 3 July 1958, the U.S. Congress under Public Law 85-500 authorized restoration of the Project Area. The "*Views and Recommendations of the Beach Erosion Board*" was the basis of this congressional authorization. The Beach Erosion Board recommended "*a protective beach*" for the beach from Lake Worth Inlet to South Lake Worth Inlet including "*a berm elevation of 10 feet above mean low water, ... with a general width ... at mean high water ... of 100 feet*" in the Project Area. No fill placement is known to have occurred in the Project Area.

In April 1987, the USACE published a report titled "*Beach Erosion Control Projects for Palm Beach County, Florida - General Design Memorandum with Environmental Impact Statement*" (USACE, 1987). This report recommends nourishment of the shoreline from the north end of Phipps Park at 2.1 miles south to 500 feet south of Lake Worth Park. In addition, the report recommends nourishment of the shoreline north of the Project Area between Sloan's Curve and Southern Boulevard; extensive existing hardbottom is now recognized in this area north of the Project Area.

The *Lake Worth Inlet Management Plan* was formally adopted by the FDEP on 25 November 1996 (Appendix I). Condition 3 of the implementation actions states, "*Conduct additional studies to determine the downdrift beaches to be restored as mitigation for the effects of the inlet.*" To document the changes, which have occurred to the Palm Beach Island shoreline over the last decade, and to develop new shoreline management goals and objectives, the Town of Palm Beach prepared the 1986 Comprehensive Coastal Management Plan (CCMP). As cited in the CCMP:

*"The benefits associated with undertaking the plan recommendations are significant. Recreational benefits, contributions to the Island's economy attributable to a high quality beach, and reduced requirements for private upland shore protection structures are a few. Restoration of the sand transport deficit is another physical benefit, which will accrue to the Island. The primary benefit, however, will be to provide island properties [estimated assessed value of over four (4) billion dollars] with improved storm protection at an annualized cost of approximately 4.16 million dollars (assuming a 30-year project life.)"*

In October 1996, the USACE released the *Final Environmental Impact Statement for the "Coast of Florida Erosion and Storm Effects Study and - Region III"*. This study recommends beach nourishment in the Project Area (DNR Monument R-116 to R-126) and further south to DNR Monument R-132 about 3,500 feet south of the Lake Worth Pier.

In June 1998, the Town prepared a *Comprehensive Coastal Management Plan Update* (Plan). This Plan recommends beach nourishment in the Project Area to achieve recreational benefits and storm protection benefits “... to avoid significant damage from a 15-year return interval storm at any time between the initial restoration ... and subsequent renourishments.” The Plan estimates annual storm protection benefits at \$1,429,162 attributable to the Project.

On 14 March 2001, the FDEP issued to the Town of Palm Beach a Consolidated Joint Coastal Permit, for the Phipps Ocean Park Beach Restoration Project pursuant to Chapter 161 and Part IV of Chapter 373, Florida Statutes (F.S.), and Title 62 and 40, Florida Administrative Code (F.A.C.)

## **1.7 Related Environmental Documents**

The following is a list of related documents:

- a. Beach Erosion Control Projects for Palm Beach County, Florida - General Design Memorandum with Environmental Impact Statement. U.S. Army Corps of Engineers, Jacksonville District, April 1987 (USACE, 1987a).
- b. Lake Worth Inlet Management Plan, Applied Technology & Management, Inc., April 1995 (ATM, 1995).
- c. Coast of Florida Erosion and Storm Effects Study - Regional III. Feasibility Report with Final Environmental Impact Statement, U.S. Army Corps of Engineers, Jacksonville District, October 1996 (USACE, 1996).
- d. Biological Opinion for the Coast of Florida Study, Region III, U.S. Fish & Wildlife Service, October 1996 (USFWS, 1996).
- e. Shoreline Management Recommendations - Comprehensive Coastal Management Plan Update - Palm Beach Island, Florida. Applied Technology & Management, Inc. September 1997 (ATM, 1997) and June 1998 (ATM, 1998) (update).
- f. Town of Palm Beach, Evaluation of Critical Erosion in the Vicinity of Phipps Ocean Park, Coastal Technology Corporation, November 1999 (Coastal Tech, 1999), and January 2000 (Coastal Tech, 2000a) (update).
- g. Town of Palm Beach, Evaluation of Critical Erosion in the Vicinity of Phipps Ocean Park, Letter Report, Coastal Technology Corporation, January 4, 2000 (Coast Tech, 2000b).
- h. Town of Palm Beach Offshore Sand Source Investigation, Coastal Planning & Engineering, March 2000 (CPE, 2000).
- i. Pre-Construction Hardbottom Mapping and Characterization Survey for Phipps Ocean Park, Palm Beach, Florida, Continental Shelf Associates, Inc., March 2000 (CSA, 2000a).
- j. Submerged Cultural Resource Remote Sensing Survey of Three Proposed Borrow Areas Selected as Sources for Beach Renourishment Projects, File No. 2000-00450, Dr. Baer, Robert H., May 2000 (Baer, 2000).
- k. Offshore Video Transect Along Western Edge of Hardbottom East of Two Proposed Borrow Areas for Phipps Ocean Park Beach Restoration Project (letter report with video survey), Continental Shelf Associates, Inc., June 2000 (CSA, 2000b).

- l. Town of Palm Beach, Phipps Ocean Park Beach Restoration Project, Project Justification, Coastal Technology Corporation, June 2000 (Coastal Tech, 2000c).
- m. Town of Palm Beach, Phipps Ocean Park Beach Restoration Project, Supplemental Geotechnical Analysis, Coastal Technology Corporation, September 2000 (Coastal Tech, 2000d).
- n. Town of Palm Beach, Phipps Ocean Park Beach Restoration Project: Vessel Operations Plan, Coastal Technology Corporation, September 2000 (Coastal Tech, 2000e).
- o. Town of Palm Beach, Phipps Ocean Park Beach Restoration Project: Mitigation Reef Plan, Coastal Technology Corporation, October 2000 (Coastal Tech, 2000f).
- p. Town of Palm Beach, Phipps Ocean Park Beach Restoration Permit Sketches, Coastal Technology Corporation, January 28, 2000 (Coastal Tech, 2000g) and revised June 26, 2000 (Coastal Tech, 2000h), September 26 and 28, 2000 (Coastal Tech 2000i), October 10, 2000 (Coastal Tech, 2000j).
- q. Biological Opinion, Town of Palm Beach, Phipps Ocean Park Beach Restoration Project - Application No. 200000380 (IP-DSG), Service Log No. 4-1-00-F-497, U.S. Fish & Wildlife Service, October 31, 2000 (USFWS, 2000).
- r. Critical Beach Erosion Areas in Florida, Florida Department of Environmental Protection, Bureau of Beaches & Coastal Systems, January 2001 (FDEP, 2001a)
- s. Joint Coastal Permit for Phipps Ocean Park Beach Restoration Project, Town of Palm Beach, Florida Department of Environmental Protection, (JCP No: 0165332-001-JC) March 2001 (FDEP, 2001b).

## **1.8 Decisions to be Made**

This FSEIS evaluates whether to issue a Section 404/Section 10 permit to the Town of Palm Beach, Florida (permit applicant) to construct and maintain the Project to mitigate for losses to the nearshore sediment budget, provide shore protection, restore and maintain a public recreational beach, and restore marine turtle nesting habitat, and if so, evaluate alternatives to accomplish these goals.

## **1.9 Scoping and Issues**

Scoping for the proposed Project was initiated by a letter dated 10 April 2001. A Notice of Intent (NOI) to prepare a Draft Supplemental Environmental Impact Statement (DSEIS) appeared in the Federal Register on 28 August 2001, Vol. 66, No. 167, page 45291. Copies of the scoping letter and the NOI were distributed by letter dated 31 August 2001 to the appropriate Federal, State and local agencies, city, and county officials, and other parties known to be interested in the Project. Copies of the scoping letter, NOI, the list of addressees used for distribution, and letters of response are included in Appendix B, Pertinent Correspondence. A scoping meeting was held in the EPA office, West Palm Beach, Florida on 15 October 2001 and was attended by: Brice McKoy, Robert Paulson and Dale Beter with the U.S. Army Corps of Engineers; John Wrublik, U.S. Fish & Wildlife Service; Mike Johnson, National Marine Fisheries Service; Ron Miedema and Beth Burger, Environmental Protection Agency; Al Dusey, Town of Palm Beach; Rich Hammer, Continental

Shelf Associates, Inc; and, Michael Walther, Peter Ravella (by phone) and Lois Edwards, Coastal Technology Corporation.

### 1.9.1 Issues Evaluated in Detail

The following issues were identified during scoping and determined by the preparers of this FSEIS to be relevant to the proposed action and appropriate for detailed evaluation:

- a) Functions and values of nearshore and offshore hardbottom resources.
- b) Primary, secondary and cumulative impacts of the Project on hardbottom resources.
- c) Compensation for hardbottom impacts and temporal losses and the design and efficacy of mitigation reefs.
- d) Potential impacts of the Project on Essential Fish Habitat.
- e) Turbidity and sedimentation impacts to hardbottom and reef communities in the vicinity of the borrow areas.
- f) Impacts and benefits of the Project on sea turtle nesting and foraging habitat.
- g) Impact of current conditions on future public recreational use.
- h) Need for the Project, particularly the historical erosion rate, littoral processes, and sediment budget in and adjacent to the Project Area.

### 1.9.2 Impact Measurement

The following provides the means and rationale for measurement and comparison of impacts of the proposed action and alternatives.

#### *1.9.2.1 Hardbottom and Reef Impacts*

Alternatives for accomplishing the Project purpose will be evaluated on the basis of the potential impact on hardbottom and reef resources in the Project Area. Based on comments received on the Draft SEIS, an additional alternative was developed and evaluated to potentially reduce the hardbottom impacts expected from the Applicant's Preferred Alternative. This alternative, designated the T-Head Groin and Reduced Fill Alternative, is evaluated in Appendix M. Based on extensive experience with beach nourishment and use of off-shore borrow areas in Palm Beach County and other Florida beaches, impacts to hardbottom and reefs can be reasonably predicted based on proximity, currents, nature of borrow material, buffer zones and other factors.

#### *1.9.2.2 Nesting Sea Turtles and Impacts to Foraging Habitat*

Alternatives are also evaluated based upon the extent to which the alternative accomplishes the Project purpose of restoring and maintaining sea turtle nesting habitat and the potential detrimental impacts of that alternative in reducing nesting habitat or interfering with nesting success.

Sea turtle nesting is closely monitored along the Phipps Ocean Park Beach Restoration Project Area. As discussed in Section 6 of Appendix C, Cumulative Impact Assessment Report, continued beach erosion would further reduce available nesting habitat. Corrective and mitigative protocols have been established and compliance with conditions and restrictions established by the USFWS Biological Opinion for the Phipps Ocean Park Project October 31, 2000 (USFWS, 2000) (Service Log No. 4-1-00-F-497), and the Biological Opinion for the Coast of Florida Study Region III FEIS, October 24, 1996, (USFWS, 1996) (Service Log No. 4-1-96-F-268) is provided for in the Applicant's Preferred Alternative. It is the Applicant's goal to minimize impacts to sea turtles and to comply with the requirements of the Endangered Species Act .

### *1.9.2.3 Impact to Public Recreational Opportunities*

Project alternatives are evaluated to determine the extent to which they accomplish the Project purpose to restore and maintain a public recreational beach in the Project Area. The recreational beach provides an important economic resource for the community and visitorship to the Project beach has been declining as a result of erosion of the shoreline.

Continued erosion, coupled with future shoreline hardening, will lead to further loss of recreational beach within the Project Area. Phipps Ocean Park and Lake Worth Public Beach are the primary public beach accesses in the study area. Erosion at Phipps Ocean Park has exposed intertidal rock along the shoreline resulting in a significant reduction in the use of the Park by the public. At Phipps Ocean Park, public use in 1999 dropped by 38% compared to 1993. The beaches at Lake Worth Public Beach (between DNR Monuments R-127 and R-129) and the surrounding areas are relatively narrow, limiting public use of the beaches.

### *1.9.2.4 Impact on Upland Property*

Project alternatives are evaluated to determine the extent to which they accomplish the Project purpose to protect upland property and infrastructure from potential damage as a result of storm conditions. Upland development in the Project Area is dominated by multi-family high-rise condominium buildings fronted by seawalls. The private buildings are generally non-compliant (not elevated on a pile foundation) with new building standards, are unlikely to withstand the impacts of a severe storm event, and are considered structurally vulnerable to erosion (see Appendix N, Storm Impact Risk Assessment, Phipps Ocean Park Beach Restoration Project, Palm Beach County, Florida, (Taylor Engineering, Inc., December 2003).

In addition to the buildings, the public infrastructure (entrance road and parking area) at Lake Worth Public Beach is vulnerable. The estimated value of the Phipps Ocean Park project property is in excess of \$322 million. Beach nourishment is estimated to provide annual storm protection benefits in excess of \$1.4 million (ATM, 1998).

#### *1.9.2.5 Sediment Budget Restoration*

Project alternatives are evaluated to determine the extent to which they accomplish the Project purpose to restore the nearshore sediment budget deficit. If No Action is taken to alleviate the deficit caused by the construction of Lake Worth Inlet and updrift armoring structures, the beaches within the study area are expected to continue to erode and expose nearshore hardbottom resulting in the loss of recreational beach and turtle nesting habitat, and damage to upland property including public infrastructure.

#### *1.9.2.6 Impact on Public Safety*

Project alternatives are evaluated to determine the extent to which the alternative creates or exacerbates conditions that give rise to public safety risks. A concern has been expressed regarding the safety of children, swimmers, and surfers as a result of emergent, intertidal hardbottom. Boater and Jet Ski safety are also a concern relative to the siting of a mitigation reef(s) in shallow water. In addition, work vessels for construction of artificial reefs cannot operate safely in shallow waters. With respect to public safety, the Applicant is particularly concerned with protection of the South Fire Station located landward of the proposed project. The Applicant's Preferred Alternative will provide upland protection to this critical facility and other upland structures.

#### *1.9.2.7 Other Impacts*

The basis for impact measurement and comparison including coastal barrier resources, offshore borrow area resources, water quality, and air quality are stated more specifically in Section 4.0, Environmental Consequences, and other sections of this document and its appendices.

### 1.9.3 Issues Eliminated From Detailed Analysis

Two issues were not considered important or relevant to the proposed action based on scoping and the professional judgment of the preparers of this FSEIS. The proposed action would not involve the disposal of dredged material or other substances subject to the Marine Protection Research and Sanctuaries Act (a.k.a. the Ocean Dumping Act). No issue has been raised regarding the presence of contaminants or toxic compounds in potential sand sources under consideration. No other issues were specifically identified for elimination.

## 1.10 Permits, Licenses, and Entitlements

The proposed beach nourishment is subject to the Coastal Zone Management Act. Consultation with the State Historic Preservation Officer (SHPO) is also required. Since there would be a discharge of dredged or fill material into waters of the United States, the proposed action is subject to Section 404 of the Clean Water Act (CWA). In addition, the proposed action is subject to Section 401 of the CWA for certification of water quality by the State.

If conducted during the sea turtle nesting and hatching season, the proposed action will require daily sea turtle nest surveys and nest relocations. A permit from FDEP to handle sea turtles and relocate nests will be required for the person(s) performing the surveys and nest relocations associated with the proposed action. The Project Applicant, Town of Palm Beach, is responsible for obtaining any real estate easements and rights of way required for this Project and establishment of the Erosion Control Line.

The Applicant's Preferred Alternative would require the following permits and licenses:

**CWA Section 404 Permit (33 U.S.C. 1344)/Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).** The purpose of this FSEIS is to evaluate the issues and alternatives associated with the Section 404/Section 10 permit application submitted by the Town of Palm Beach.

**Consolidated Joint Coastal Permit, Florida Department of Environmental Protection.** Issued under the authority of Chapter 161 and Part IV of Chapter 373, Florida Statutes (F.S.), and Title 62 and 40, Florida Administrative Code (F.A.C.), the Town has been granted by FDEP a Consolidated JCP (Permit No: 0165332-001-JC, March 14, 2001) for the Phipps Ocean Park Beach Restoration Project.

**CMP Consistency Certification, Florida Coastal Zone Management Act.** The FDEP permit issued for the Project constitutes a finding of consistency with Florida's Coastal Zone Management Program, as required by Section 307 of the Coastal Zone Management Act.

**CWA 401 State Water Quality Certification.** The FDEP permit issued for the Project constitutes certification of compliance with State water quality standards pursuant to Section 401 of the Clean Water Act, 33 U.S.C. 1341.

**Proprietary Authorization, Sovereign Submerged Lands.** This Project also requires and has been granted proprietary authorization for use of and construction on sovereign submerged lands owned by the Board of Trustees of the Internal Improvement Trust Fund, pursuant to Article X, Section 11 of the Florida Constitution, and Sections 253.002 and 253.77, F.S. As staff to the Board of Trustees, the FDEP has reviewed the proposed Project and has determined that the beach fill placement area and pipeline corridors qualify for a consent to use sovereign, submerged lands, as long as the work performed is located within the boundaries as described and is consistent with the terms and conditions of the issued FDEP permit. Therefore, consent has been granted, pursuant to Chapter 253.77, F.S., to perform the activity on the specified sovereign submerged lands.

**Public Easement, Borrow Areas.** As staff to the Board of Trustees, the FDEP has reviewed the proposed Project described herein, and has determined that the borrow areas require a Public Easement for the use of those lands, pursuant to Chapter 253.77, F.S. The Department has issued the Public Easement for the borrow areas (Instrument No. 30601, BOT File No. 500222419).

**Historic Preservation.** Consultation with the State Historic Preservation Officer was completed on June 22, 2000 in accordance with 36 CFR, Part 800 ("Protection of Historic Properties") and Chapter 267.061, Florida Statutes, as implemented through 1A-46 Florida Administrative Code.