

**FINAL ENVIRONMENTAL IMPACT STATEMENT
ON
BROWARD COUNTY SHORE PROTECTION PROJECT
SEGMENTS II AND III
BROWARD COUNTY, FLORIDA**

1. PROJECT PURPOSE AND NEED

1.1. PROJECT AUTHORITY.

1.1.1. INITIAL AUTHORIZATION.

The Broward County Erosion Prevention District (BCEPD) was established in June, 1963, by a Special Act of the Florida Legislature, Chapter 863-1175. The District, under the authorization of the Act, was charged with the responsibility and authority to implement a beach preservation program for the 24 miles of Atlantic shoreline of Broward County.

The Broward County, Florida, Beach Erosion Control and Navigation Project was authorized by Public Law (PL), Public Works - River and Harbor (79 Stat. 1073) passed 27 October 1965 in accordance with recommendations of the Chief of Engineers in House Document 91, 89th Congress. The authorization combines beach erosion control, including periodic renourishment, for 8.9 miles of shoreline in Broward County and navigation improvements at Hillsboro Inlet. Three separate project segments are identified in the authorizing document. This Environmental Impact Statement will address the second and third segments of the project, Pompano Beach to Fort Lauderdale and John U. Lloyd State Park to Hallandale, involving 17.4 miles of coastline, of which 11.8 miles are proposed for fill placement.

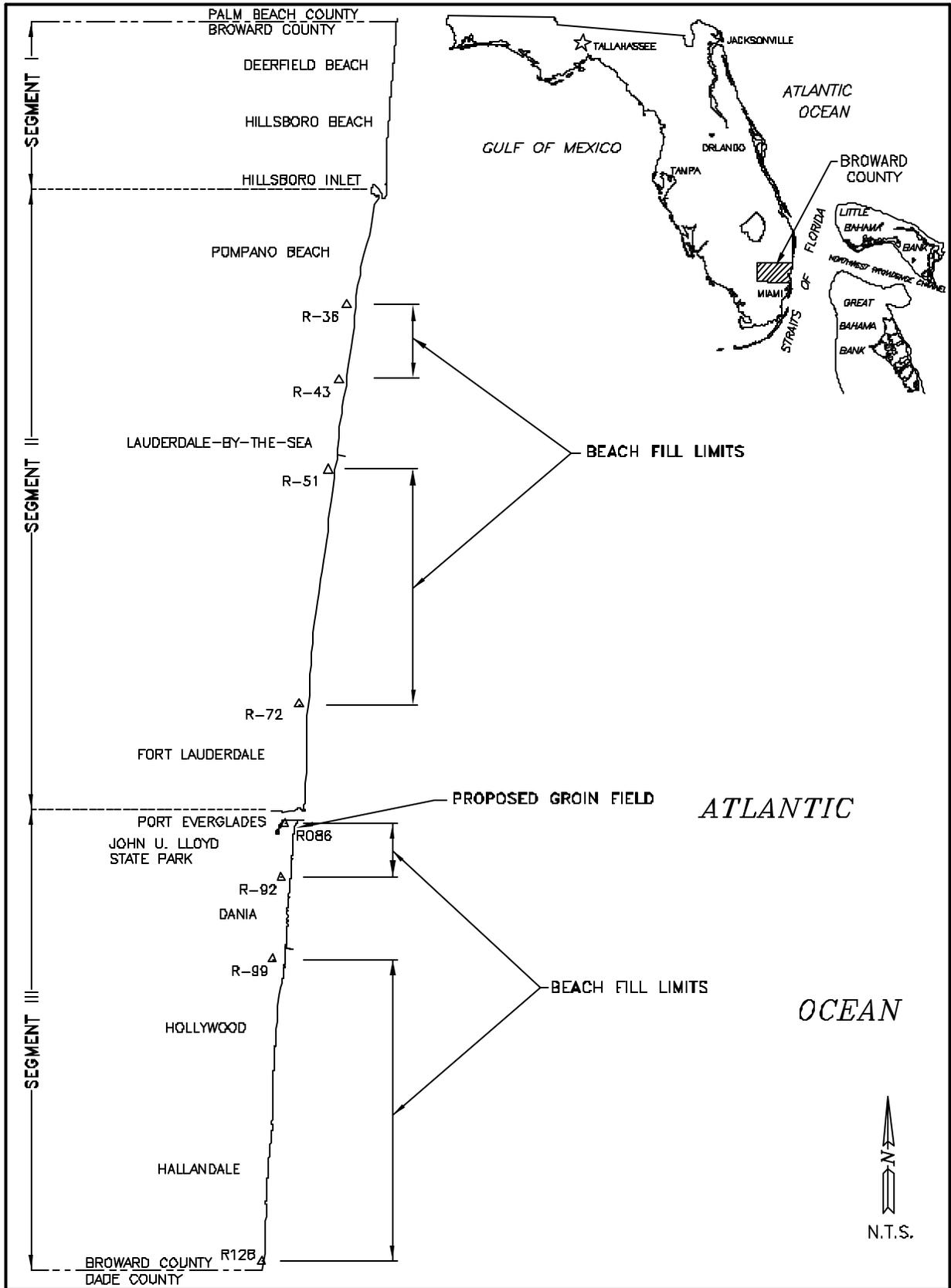
1.1.2. SUPPLEMENTAL APPROPRIATION.

Re-evaluation studies for Segments II and III were completed in April 1994, and April 1991, respectively, under the authority of Section 156 of the Water Resources Development Act of 1976 (PL 99-662), as amended by Section 934 of the Water Resources Development Act of 1986 (PL 99-662). Under this authority, the Assistant Secretary of the Army for Civil Works (ASA (CW)) was granted discretionary authority to extend Federal participation to the fiftieth year after initial construction of a project by Sec. 506(a) of the Water Resources Development Act of 1986, PL 104-303. Authorization for Segments II and III expires in 2020 and 2026, respectively.

1.2. PROJECT LOCATION.

Broward County is located on the southeast coast of Florida and includes 24 miles of coastline and two coastal inlets (See Figure 1- Location Map). The coastal cities from north to south are Deerfield Beach, Hillsboro Beach, Pompano Beach, Lauderdale-By-The-Sea, Fort Lauderdale, Dania Beach, Hollywood and Hallandale.

Hillsboro Inlet is located approximately 4 miles south of the north county line. This is an improved inlet designed for recreational and commercial navigation. Port Everglades channel is located approximately 10 miles south of Hillsboro Inlet, providing entrance to Port Everglades, the second largest commercial port in the State of Florida.



**BROWARD COUNTY
 LOCATION MAP
 AND
 SEGMENTS II AND III BEACH FILL LIMITS**

FIGURE 1

1.3. PROJECT NEED OR OPPORTUNITY.

The coastline of Broward County is low-lying and vulnerable to storm surge and other storm event damages. Shoreline recession continues to be a problem. The sediment transport rate along the Atlantic coastline is generally from north to south with some localized reversals due to tidal inlets or bathymetric irregularities. Inlets interrupt the normal transport of sediments along the coastline, and the need to maintain inlet channels for commercial and recreational purposes while providing and protecting beaches often results in conflicting interests and competing needs. Previously, beach protection projects within these segments were considered on a project-by-project basis. With the development of new technology, new laws, regulations and requirements, the existing and proposed projects will be considered two units with regard to cost effectiveness and more efficient coastal management.

Prior to 1930, Hillsboro Inlet was a freely migrating, unimproved tidal entrance. Shoaling and instability caused navigational problems, and a jetty was constructed in 1930, with subsequent improvements in 1952, 1964 and 1965 (CPE, 1992). Maintenance dredging provides for sand placement on the beach south of the inlet (CPE, 1987), but there continues to be a shortage of material reaching the shore. Comparison of mean high water lines surveyed in 1927 and 1978 demonstrated shoreline recession north and south of the inlet, and shoreline advance beginning approximately one mile south of the inlet (CPE, 1987).

From 1929 to 1961, the average annual recession rate for Pompano Beach and Lauderdale-By-The-Sea ranged from -4 to -8 ft/yr (USACE, 1994). Pompano Beach was nourished in 1970 using 1,060,962 cubic yards of sand from an offshore borrow area. A renourishment was carried out in 1983 and was expanded to include Lauderdale-By-The-Sea. The shoreline between FDEP control monuments R-25 and R-36 in northern Pompano Beach accreted a total of 14.7 feet from 1983 to 1998, or an annual average of 1.0 ft/yr (Appendix A, February 2002 General Reevaluation Report [GRR]). Overall, this reach was accretional or stable because of the increased transfer of sand across Hillsboro Inlet. The beach between R-36 and R-54 (southern Pompano Beach and Lauderdale-By-The-Sea) lost an average of 67 feet (4.5 ft/yr) of shoreline between 1983 and 1998.

From 1947 to 1978, the Fort Lauderdale shoreline between monuments R-54 and R-69 retreated an average of 44.4 feet (USACE, 1981). Between 1979 and 1993 the average shoreline advancement was 2.8 feet with alternating regions of advancement and recession. During this same time period, the beach volume increased 52,000 cubic yards. Some of the gain may be attributed to the spreading losses from the 1983 Pompano Beach/Lauderdale-By-The-Sea project.

Between 1993 and 1998, the Fort Lauderdale shoreline has receded an average of 0.9 feet. Areas of advancement and recession alternate alongshore with a maximum advancement of 17.7 feet at R-70 and a maximum recession of -19.5 feet at R-54. During the same time period the beach eroded 71,000 cubic yards between R-54 and R-74. The beach is moderately erosive.

Port Everglades is a deep-draft Federal harbor project located within the city limits of Fort Lauderdale and Hollywood Beach. Local interests made the initial harbor improvements in 1927. The Federal government began maintenance in 1930. The channel was deepened, widened and realigned in 1979. One of the principal causes of erosion in Segment III is the littoral barrier caused by the Port Everglades jetties which caused erosion rates of -5 ft/year prior to the 1976/1977 restoration (USACE, 1963).

John U. Lloyd State Park is located in Segment III, just south of the south jetty. The Florida Department of Environmental Protection estimated that 80,000 cubic yards should be bypassing the inlet channel from north to south to maintain the beaches in John U. Lloyd State Park (Dean, 1987). The inlet is a complete littoral barrier, with all sand moving south being accreted on beaches north of the north jetty, or moving into the channel. In 1976/1977, 1,090,000 cubic yards of beach material were placed along the 1.5 miles of shoreline fronting John U. Lloyd State Park. In 1989, renourishment of the 1.5 mile length of John U. Lloyd State Park was completed with the placement of 603,000 cubic yards of sand. Survey data following completion of the 1977 project suggested severe shoreline recession along the first 3,000 to 3,500 feet south of the inlet, decreasing at 5,000 to 6,000 feet south. It was estimated that the annual volumetric loss along the northern reach of John U. Lloyd State Park was approximately -31,000 cubic yards per year following the 1977 project (USACE, 1990). From 1989 to 1998, the average annual volumetric change in the northern reach of John U. Lloyd State Park was -53,000 cubic yards per year, and the annual shoreline change was -9.0 ft/year (Appendix B, November 2002 GRR).

The 0.6 mile stretch of beach at Dania Beach has never been nourished and is considered a transition between the two already constructed projects (John U. Lloyd State Park and Hollywood/Hallandale). Between 1929 and 1961, Dania Beach lost approximately 19,000 cy of sand/year, and the shoreline receded an average of 140 feet. Erosion has stabilized since placement of fill north and south of this beach. Sediment from these two projects has moved into the area, offsetting erosion losses (CPE, 1987).

Between 1929 and 1961, the average annual volumetric loss at Hallandale Beach was approximately 84,000 cubic yards/year and the average shoreline change was approximately -1.0 ft/yr (USACE, 1963). In 1971, a 4,000 foot segment was restored with 350,000 cubic yards of material in a non-Federally funded project.

This was followed by a combined, Federally funded nourishment of Hollywood and Hallandale in 1979 (1.98 million cy) and the first renourishment of Hollywood and Hallandale in 1991 (1.11 million cy). From 1989 to 1998, the average annual volumetric loss in Hollywood/Hallandale was approximately -77,000 cubic yards per year and the average annual shoreline change was -4.0 ft/yr (Appendix B, November 2002 GRR).

1.4. AGENCY GOAL OR OBJECTIVE.

Federal and County objectives include: (1) the reduction of expected storm damages through beach nourishment and other project alternatives; (2) reestablishing beaches as suitable recreational areas; (3) maintaining suitable beach habitat for nesting sea turtles, invertebrate species and shorebirds; and (4) maintaining commerce associated with beach recreation in Broward County.

The Project goal is to reduce the continued erosion with one beach renourishment project of two components: Segment II: Hillsboro Inlet to Port Everglades; and Segment III: Port Everglades to the south County line. An additional objective is the construction of three groins along the first 700 feet south of Port Everglades to minimize effects of the inlet on shoreline erosion. Estimated construction start date is April 2003 (see Plates 1-29 in the General Reevaluation Report main text).

1.5. RELATED ENVIRONMENTAL DOCUMENTS.

The following is a list of related documents:

- a. Coast of Florida Erosion and Storm Effects Study, Region III: Feasibility Report with Draft Environmental Impact Statement. U.S. Army Corps of Engineers, 1996.
- b. Beach Erosion Control and Hurricane Protection Project, Dade County, Florida Modifications at Sunny Isles, Final Environmental Impact Statement, U.S. Army Corps of Engineers, Jacksonville District, July 1998.
- c. Technical Report 95-03. Final Report Biological Monitoring of the Hollywood-Hallandale Beach Nourishment. R.E. Dodge, W. Goldberg, C. Messing and D. Hess. Nova Southeastern University Oceanographic Center and Coral Reef Associates, Inc., September 1995.
- d. Final Report: Biological Monitoring of the John U. Lloyd Beach Renourishment: 1989. R.E. Dodge, C. Messing, and S. Hess. Nova Southeastern University Oceanographic Center and Environmental Resources Management South, Inc., January 1991.

- e. Long Term Effects of Beach Restoration in Broward County, Florida. A Three Year Overview. Parts I and II. W. Goldberg and S. Mehadevan. Coral Reef Associates, Inc., Florida International University and Mote Marine Laboratory, 1984.
- f. Permanent Reef Community Monitoring Sites Offshore of Broward County: Preliminary Comparative Results. Broward County Department of Planning and Environmental Protection Biological Resources Division.
- g. Reef Edge Mapping and Habitat Classification Scheme Adjacent to Seven Borrow Areas in Broward County. Final report submitted December 7, 2001. Prepared by the National Coral Reef Institute, Nova Southeastern University Oceanographic Center, for the Broward County Department of Planning and Environmental Protection as part of the proposed Broward County Shore Protection Project. RLI #040897-RB. 80 pp plus Appendices. Nova Southeastern University, 2001.
- h. Broward County Proposed Beach Renourishment: Fishes. Final report submitted December 3, 2001. Prepared by Nova Southeastern University Oceanographic Center for the Broward County Department of Planning and Environmental Protection as part of the proposed Broward County Shore Protection Project. RLI #040897-RB. 35 pp. plus Electronic Appendices. Spieler, R.E., 2001.
- i. Technical Report 01-08. Marine Biological Monitoring in Broward County, Florida: Year 1 Annual Report. D.S. Gilliam, R.E. Dodge, R.G. Spieler, S.L. Thornton, and L.K.B. Jordan, Nova Southeastern University Oceanographic Center, April 23, 2001.
- j. Technical Report DPEP 02-01. Marine Biological Monitoring in Broward County, Florida: Year 2 Annual Report. D.S. Gilliam, R.E. Dodge, R.G. Spieler, S.L. Thornton, and L.K.B. Jordan, Nova Southeastern University Oceanographic Center, not dated.

1.6. DECISIONS TO BE MADE.

This Environmental Impact Statement will evaluate whether construction of the proposed Broward County Shore Protection Project will cause any significant impacts to irreplaceable environmental resources and will make available to all decision makers and interested parties, a discussion of alternatives which eliminate or minimize adverse impacts.

1.7. SCOPING AND ISSUES.

1.7.1. ISSUES EVALUATED IN DETAIL.

The proposed project has been coordinated with the following agencies: U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Environmental Protection Agency, Florida State Clearinghouse, Florida Fish and Wildlife Conservation Commission, Florida Department of Environmental Protection, and Florida State Historic Preservation Officer. Issues of concern raised by the State and Federal agencies relevant to the proposed renourishment have been incorporated into this Final Environmental Impact Statement for detailed evaluation. The FEIS considers impacts on coral reefs and other hardbottom communities, endangered species, health and safety, water quality, aesthetics and recreation, fish and wildlife resources, essential fish habitat, energy conservation, and socio-economic resources. The proposed action will involve evaluation for compliance with guidelines pursuant to Section 404 (b) of the Clean Water Act; application (to the State of Florida) for Water Quality Certification pursuant to Section 401 of the Clean Water Act; certification of state lands, easements, rights of way; and determination of Coastal Zone Management Consistency.

1.7.2. IMPACT MEASUREMENT.

The following provides the means and rationale for measurement and comparison of impacts of the proposed action and alternatives. Section 4.0 Environmental Effects specifically investigates impact measurement and comparison.

1.7.2.1. Hardbottom impacts.

Impacts to hardbottom and reef habitat can be predicted based upon proximity, currents, nature of borrow material, buffer zones and other factors (USACE, 1998). The preferred alternative has been selected to minimize impacts to hardbottom habitats in consideration of other project requirements.

1.7.2.2. Sea turtles.

Broward County has relocated all discovered sea turtle nests at Pompano Beach, Deerfield Beach, Hollywood-Hallandale, and Fort Lauderdale since the inception of its sea turtle conservation program in 1978 (Burney and Margolis, 1998). Continued beach erosion would reduce available nesting habitat. Protective and mitigative protocols have been established with the goal of minimization of impacts to sea turtles and compliance with the requirements of the Endangered Species Act.

1.7.3. ISSUES ELIMINATED FROM DETAIL ANALYSIS.

The scoping process involves Federal, State, County and municipal agencies, and other interested persons and organizations. To date, no issues or concerns have been eliminated from detail analysis.

1.8. PERMITS, LICENSES, AND ENTITLEMENTS.

A USACE permit is required for the proposed project, as the renourishment will be a locally constructed project. Also, the Department of Environmental Protection has issued a joint coastal permit (File No. 0163435-001-JC, May 12, 2003) for Segment III and granted authorization to use submerged lands to Broward County. The Department of Environmental Protection has conditioned issuance of the joint coastal permit (File No. 0163435-005-JC) for Segment II until eighteen months of post-construction monitoring within Segment III has been completed and the Department has evaluated project effects. Consultation with the State Historic Preservation Officer has been completed as required. Sea turtle monitoring (daily nest surveys and nest relocations) will be performed by the authorized Florida Fish and Wildlife Conservation Commission (FWCC) marine turtle permit holder.