

Department of Environmental Protection

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David B. Struhs
Secretary

In the Matter of an
Application for Permit/Water Quality Certification,
and Authorization to Use Sovereign Submerged Lands by:

APPLICANT:
Broward County
C/o Stephen Higgins
218 S.W. 1st Avenue
Ft.Lauderdale, FL 33301

PROJECT NAME: Broward County Beach
Nourishment (Segment III)
File No. 0163435-001-JC
Broward County

CONSOLIDATED NOTICE OF INTENT TO ISSUE JOINT COASTAL PERMIT AND AUTHORIZATION TO USE SOVEREIGN SUBMERGED LANDS

The Department of Environmental Protection gives consolidated notice of its intent to:

(a) issue a joint coastal permit under Chapter 161 and Part IV of Chapter 373, Florida Statutes (F.S.), and Title 62, Florida Administrative Code (F.A.C.) for the activity described below (draft copy of permit attached). Issuance of the joint coastal permit also constitutes certification of compliance with state water quality standards pursuant to Section 401 of the Clean Water Act, 33 U.S.C. 1341.

(b) grant a letter of consent to use sovereign submerged lands for the proposed beach fill placement area, under Article X, Section 11 of the Florida Constitution, Chapter(s) 253, F.S., and Title 18, F.A.C., and the policies of the Board of Trustees.

(c) grant public easements to use sovereign submerged lands for the proposed offshore borrow areas, the proposed groins, and the proposed jetty spur under Article X, Section 11 of the Florida Constitution, Chapter 253, F.S., Title 18, F.A.C., and the policies of the Board of Trustees, as described below.

Where applicable (such as activities in coastal counties), issuance of the joint coastal permit constitutes a finding of consistency with Florida's Coastal Zone Management Program, as required by Section 307 of the Coastal Zone Management Act.

I. DESCRIPTION OF THE PROPOSED ACTIVITY

The applicant, Broward County, applied on December 6, 1999, to the Department of Environmental Protection for a permit/water quality certification and authorization to use sovereign submerged lands owned by the Board of Trustees of the Internal Improvement Trust

Fund (Board of Trustees) to construct Segment III of the Broward County Beach Nourishment Project. The proposed project involves: 1) nourishment of the beach at John U. Lloyd State Park (JUL) from R-86 to R-92; 2) nourishment of the beach at Hollywood/Hallandale (H/H) from R-98 (Dania Beach Pier) to R-128 (Broward/Dade County line); 3) installation of a spur connected to the south jetty of Port Everglades Inlet; 4) installation of two T-head groins in JUL; 5) construction of 8.9 acres of artificial reef as mitigation; 6) transplantation of scleractinian corals from the impacted areas to 0.67 acres of mitigation reef; 7) removal of derelict structures. The total volume of nourishment is approximately 1.54 million cubic yards of material, which will be placed along 6.82 miles of the Broward County coastline. Beach compatible material will be obtained from four discrete borrow areas (II, III, IV, and VI) located offshore of the central and northern portions of Broward County.

The beach activities are located at John U. Lloyd State Park from R-86 to R-92 and in the Hollywood/Hallandale area from R-98 (Dania Beach Pier) to R-128 (Broward/Dade County line). Borrow Areas II and III are situated north of Hillsboro Inlet. Borrow Area IV is located approximately 4,000 feet south of Hillsboro Inlet. Borrow Area VI is located offshore of Lauderdale-by-the-Sea. The project is located within Broward County, in the Atlantic Ocean, Class III Waters.

II. AUTHORITY FOR REVIEW

The Department has permitting authority under Chapter 161 and Part IV of Chapter 373, F.S., and Chapters 62B-41, 62B-49 and 62-343, F.A.C. The activity qualifies for processing as a joint coastal permit pursuant to Sections 161.055 and 373.4145, F.S. Pursuant to Operating Agreements executed between the Department and the water management districts, as referenced in Chapter 62-113, F.A.C., the Department is responsible for reviewing this application.

The activity also requires a proprietary authorization, as it is located on sovereign submerged lands owned by the Board of Trustees of the Internal Improvement Trust Fund. The activity is not exempt from the need to obtain a proprietary authorization. Pursuant to Article X, Section 11 of the Florida Constitution, Sections 253.002 and 253.77, F.S., Sections 18-21.0040, 18-21.0051, 62-343.075, F.A.C., the policies of the Board of Trustees, and the Operating Agreements executed between the Department and the water management districts, as referenced in Chapter 62-113, F.A.C., the Department has the responsibility to review and take final action on this request for proprietary authorization.

III. BACKGROUND/BASIS FOR ISSUANCE

A. General

History.

The construction and development of a deep-draft inlet for Port Everglades began in 1927. The last deepening, widening and realignment of the Port channel occurred in 1979. Port Everglades is located at the northern border of Segment III and, therefore, has a major impact on the sediment

budget of the project area. The north and south jetties at the Port block littoral sediment transport, and prior to Port reconstruction, the rate of erosion in JUL was -5 foot/yr. Between 1989 and 1998, the average rate of erosion in JUL was approximately -9.0 foot/yr. The most severe erosion occurs along the first 3,000 to 3,500 feet south of the south jetty. The volume of sand bypassing at Port Everglades Inlet to the beaches of John U. Lloyd State Park should be 80,000 cy according to the estimations of FDEP (Dean, 1987). To compensate for the loss of littoral sand, approximately 1.09 million cy of sand were placed along 1.5 miles of shoreline at JUL in 1976/77. The beach was again nourished in 1989 with 603,000 cubic yards of sand.

The 0.6 miles long part of the shoreline at Dania Beach has never been nourished and is considered a transition between the two, previously constructed projects at JUL and H/H. Between 1929 and 1961, the shoreline at Dania Beach receded an average of 140 feet with annual average loss of approximately 19,000 cy. Erosion has stabilized since fill placement north and south of this beach. Sediments from the JUL and H/H projects have moved into this area, offsetting erosion losses (CPE, 1987).

The annual volumetric loss at Hallandale beach was approximately 84,000 cy and the average shoreline change was -1.0ft/yr during the period of 1929 to 1961 (USACE, 1963). In 1971, a 4,000 foot segment was restored with 350,000 cy of sand. The H/H beach was then nourished in 1979 with 1.98 million cy and again in 1991 with 1.11 million cy of sand. The annual loss in H/H between 1989 and 1998 was approximately -77,000 cubic yards and the shoreline change was -4.0 cy/yr.

The applicant, Broward County, applied to the Department on December 6, 1999, for a Joint Coastal Permit to construct the Broward County Beach Nourishment Project along Segments II and III of the Federally authorized project. On June 13, 2002, Broward County requested that their application be split into two separate applications (for Segment II and Segment III). The Segment III application kept the original file no. (0163435-001-JC), and the application for Segment II was assigned file no. 0163435-004-JC. This intent is for the Segment III project only and does not include the beach nourishment areas north of the Port Everglades Inlet or Borrow Area I near Deerfield Beach.

Strategic Beach Management Plan

Pursuant to Section 161.161, F.S., the Department develops and maintains a comprehensive long-term management plan for the restoration of the State's critically eroded beaches. The beaches within the proposed Broward County Shore Protection Project have been designated as critically eroded by the Department. The strategy adopted by the Department in the beach management plan for the project area is beach restoration and nourishment of the remaining critically eroded beaches for the purposes of restoring recreational beach, providing storm protection for upland properties and establishing or maintaining habitat. In accordance with Rule 62B-41.005(4), F.A.C., flexible coastal structures, such as beach and dune restoration, will be used whenever practicable to achieve coastal protection objectives. Armoring to protect upland buildings has been constructed along the majority of the Broward County coastline, and without beach nourishment, the beach is likely to erode away along much of the Segment III project area. The

proposed activity is consistent with public policy as established in the Strategic Beach Management Plan, in accordance with applicable statute and rule.

Beach Fill Design

The beach fill design consists of two elements: a design berm that is intended to remain intact between renourishment events; and advance nourishment, which is sand placed seaward of the design berm that is eroded away by coastal littoral processes between nourishment events. The design berm provides storm damage reduction benefits, sea turtle nesting habitat and recreational area. The advance nourishment is associated with the long-term cost of maintaining the design berm and must be replaced (nourished) at an economically and environmentally feasible interval. The width or extent of the design berm is described by reference to the location of the mean high water (MHW) shoreline. The MHW line was surveyed prior to the initial beach restoration project and formally recorded as the Erosion Control Line (ECL) to mark the boundary between upland property and state-owned submerged lands.

Several alternative design berm widths and renourishment intervals were evaluated by the Applicant's coastal engineer to formulate a final design that minimizes adverse environmental impacts and maximizes net project benefits. To determine the storm damage reduction benefits provided by various design berm widths, the coastal engineer applied a generally accepted methodology to predict storm surge and waves and associated erosion impacts to the beach and upland property. A 50-foot wide design berm was found to maximize net project benefits. The renourishment interval and the volume of fill material needed for advance nourishment is based upon an estimate of the annual background erosion rate for the area and the spreading losses of the beach fill. The coastal engineer used both historic shoreline information and topographic/bathymetric surveys of previous beach nourishment projects to estimate a background erosion rate. A numerical model of coastal littoral processes was used to estimate the spreading losses of the beach fill. The volume of advance nourishment is based upon a six-year renourishment interval that provides the maximum net project benefits.

Due to construction constraints associated with placement of fill material below the water line, the seaward slope of the beach fill after initial placement is steeper than can be maintained in nature. Therefore, the construction slope will gradually change into the equilibrium slope, on which the fill material will reside after it is subjected to wave forces. Hence, a wider berm width (i.e., the portion of the fill that is above water) is initially constructed with the intention that it will recede as the slope adjusts through the offshore movement of fill material to the submerged portion of the beach profile. The coastal engineer applied a generally accepted method to predict the adjusted equilibrium beach profile and the location of the equilibrium toe of fill. The design was modified to minimize adverse impacts to nearshore hardbottom that could be potentially covered by the adjusted beach fill.

To minimize impacts to nearshore hardbottom, a design berm extending seaward of the ECL has not been included in the project design for the reach of shoreline at John U. Lloyd State Park. The beach fill construction template consists entirely of material placed on the existing beach landward of the ECL and six years of advance nourishment placed seaward of the ECL to maintain the

existing beach until the next nourishment event. To achieve this interval between maintenance events, the advance nourishment will be placed farther north within the Park than previous projects and a groin field, consisting of two T-head groins and a jetty spur, will be constructed on the northern side of the Park to help retain sand on the Park beaches.

The beach fill design of the Hollywood/Hallandale reach consists of a 50-foot extension seaward of the ECL as the design berm and six years of advance nourishment. To minimize impacts to nearshore hardbottom, the minimum volume of material that is typically used as the industry standard necessary for construction was relaxed such that less than 20 cubic yards of sand per linear foot of beach will be placed in some sections. The advance nourishment has been tapered approximately 2,000 feet beyond the northern end of the design berm to reduce end losses from the spreading of the fill material.

In total, the current project for Segment III contains a significant reduction in proposed fill, which resulted in the avoidance/minimization of hardbottom impacts (as compared to the initial proposal). Since the filing of the application for a combined Segment II (north of Port Everglades Inlet to Hillsboro Inlet) and Segment III project in December 1999, both segments of the project have been substantially reduced in scope and impact. Early Segment III Project designs proposed the placement of 2.2 million cubic yards of material from seven borrow areas and the installation of 11 shore stabilization structures, placing sand along 8.0 miles of beach. This design would have impacted over 20 acres of nearshore hardbottom. The currently proposed Segment III project will involve the placement of 1.54 million cubic yards of dredged sand along 6.82 miles of beach, installation of only two T-head groins and one spur connected to the south jetty of Port Everglades Inlet, impacts to only 7.6 acres of nearshore hardbottom, and excavation of four of the seven, originally proposed borrow areas. The parameters of the fill template will vary considerably along the shore in order to minimize possible impacts to hardbottom communities. These parameters are given in the table below:

	Average	Minimum	Maximum
JOHN U. LLOYD			
Sectional Volume (cy/ft)	78.6	8.8	134.2
Construction Berm Width (ft)	139.3	33.7	243.1
Construction Berm Elev. (ft-NGVD)	+10		
HOLLYWOOD/HALLANDALE			
Sectional Volume (cy/ft)	38.9	11.2	79.9
Construction Berm Width (ft)	81.5	13.1	168.3
Construction Berm Elev. (ft-NGVD)	+7		

In accordance with Rule 62B-41.005(3), F.A.C., the Applicant's coastal engineer has submitted adequate design analyses consistent with established practices of coastal engineering that provides reasonable assurance of the expected effects of the proposed activities on the coastal littoral system. In accordance with Rule 62B41.007(1)(a), F.A.C., the proposed design minimizes impacts to nearshore hardbottom while providing a viable beach berm for storm protection, sea

turtle habitat and recreational use. Beach profile and offshore surveys of the borrow area as part of a post-construction monitoring program are recommended as a condition of the permit in accordance with Rule 62B-41.005(16), F.A.C.

Borrow Areas Investigation and Fill Material Compatibility

Pursuant to Rule 62B-41.007(2)(j), F.A.C., to protect the environmental functions of Florida's beaches, only beach compatible fill shall be placed on the beach or in any associated dune system. Beach compatible fill is material that maintains the general character and functionality of the material occurring on the beach and in the adjacent dune and coastal system. In accordance with Rule 62B-41.008(1)(k)4., F.A.C., the Applicant submitted the results of geotechnical investigations conducted in 1996 and 2001 of the ocean bottom sediments within the offshore borrow areas, and the results of the 1999 analysis of the beach and nearshore sediments in the project area. The procedures employed by the Applicant's coastal engineer in the data collection, processing and analysis for the geotechnical investigation are consistent with generally accepted professional standards and practices of coastal engineering.

The Applicant submitted Appendix E, Geotechnical Data, General Reevaluation Report Segments II and III, Broward County, Florida, Beach Nourishment Project, dated June 2000 and revised December 2001, which provides a description of the beach and offshore geotechnical investigations and data collection, the analysis and characterization of the borrow area sediments, and an analysis of the beach compatibility of the borrow sediments. The 1997 offshore investigation includes bathymetric surveys, sub-bottom seismic and side-scan sonar surveys, jet probes, and vibracores of sediment extracted from the ocean bottom of each borrow site. The 2001 offshore investigation includes vibracores of the deeper bottom sediments within each borrow site. The data processing includes photographs and schematic logs depicting the strata of sediment recovered in each vibracore and indicating the general character of the material. Representative samples of material were tested from calcium carbonate versus silica content. Grain size distribution curves and data analysis sheets from laboratory analysis of sediment samples taken from each stratum in the vibracores were submitted by the Applicant. The data analysis includes comparison of the distinguishable strata indicated in the sub-bottom seismic survey and jet probes with the strata of sediment recovered in the vibracores to understand the general character and layering of the borrow area sediments. The coastal engineer estimated the composite sediment grain size distribution of a borrow area by the sediment grain size distribution of each strata weighted by the thickness of the strata.

The upper continental shelf or offshore area of Broward County is divided into a series of shore-parallel, intermittent hardbottom ridges ("reefs") divided by troughs filled with soft sediments. The geotechnical investigation identified borrow areas in these troughs, which contain predominately carbonate sand, some quartz sand, and lesser amounts of limestone gravel, clay and silt. The volumes of sand in borrow areas and sediment data shown below are taken from Table E-3 of the geotechnical appendix of the General Reevaluation Report.

Borrow Area Designation	Total Volume (cy)	Surface Area (ac)	Gravel larger than 3/4 inches	Silt and Clay Content	Composite Mean Grain Size	Clean Sand Volume (cy)
II	2,482,000	140.1	6.0 %	1.9 %	0.31mm	2,288,000
III	560,000	38.1	7.5 %	4.4 %	0.43mm	495,000
IV	84,600	10.5	4.5 %	2.6 %	0.31mm	78,000
VI	106,000	8.6	4.5 %	2.1 %	0.42mm	99,000

The geotechnical investigation found horizons of limestone gravel and coarser particles (e.g. coral fragments) between strata of sand and some of this coarser material distributed within the strata of sand. The depth of dredging in the borrow areas is varied where practicable to avoid this coarser material. The Applicant will use hopper dredges to excavate and transport the sediment to the beach, and these dredges will include screening devices to separate the coarser material from the sand. The coarser limestone fragments exceeding 3/4 inches (19 mm) in diameter will be placed in a two, deepwater disposal areas. This construction methodology has been successfully employed in a number of beach nourishment projects in Dade County. The silt and clay content is widely distributed in the strata of sand. The overflow discharge of the hopper dredge and the pipeline discharge of sand on the beach releases some of this material back into the ocean waters where it is dispersed by currents and waves. The relatively small volume of this material is not expected to exceed water quality standards for turbidity, however, monitoring will be required. The calcium carbonate content of sediments from the borrow areas ranged from approximately 50% to 70% compared to the silica content, except for Borrow Area III, located further offshore where the calcium carbonate was approximately 90%.

In 1999, beach and nearshore sediment samples were collected at several stations between the dune and the offshore contour of -16 ft (NGVD) from shore-perpendicular transects spaced approximately 6,000 feet along the beach. Additional beach sediment samples were collected from the dune and a mid-berm station at approximately 3,000-foot intervals along the beach. Grain size distribution curves and data analysis sheets from laboratory analysis of the sediment samples were submitted by the Applicant. The analysis indicates the material has a mean grain size of 0.34 mm with approximately 1% silt/clay content. Samples taken from the mid-berm station indicate a slightly coarser mean grain size of 0.39 mm and 84% calcium carbonate content.

Based upon the information and analysis provided by the applicant, the material to be excavated from the proposed borrow area for placement in the beach project area is expected to maintain the general character and functionality of the material occurring on the beach and in the adjacent dune and coastal system in accordance with Rule 62B-41.007(2)(j), F.A.C. The general character of the sediments at the borrow areas and beach project area is fine to medium grain carbonate sand.

Pursuant to Rule 62B-41.008(1)(k)4.b., Florida Administrative Code (F.A.C.), permit applications for beach restoration and nourishment shall include a quality control/assurance plan that will ensure that the sediment from the borrow sites to be used in the project will meet the standard in

Rule 62B-41.007(2)(j), F.A.C. An approved plan would then be incorporated into the permit by reference. If a plan is not completed before issuance of the Permit, then the Department may require submittal of a plan for review and approval prior to issuance of a Notice to Proceed with the authorized construction. This requirement has been recommended as a specific condition of the permit. Offshore surveys of the borrow areas as part of a post-construction monitoring program are recommended as a condition of the permit in accordance with Rule 62B-41.005(16), F.A.C.

Dredging and Vessel Operations Plan

The Applicant has submitted a Vessel Operations Plan, including specified vessel and pipeline access corridors, as additional measures for reasonable assurance that the proposed activity will avoid or minimize adverse impacts to the coastal system. The operations plan specifies equipment and procedures that are consistent with industry standards that have been accepted by the Department for construction of similar projects. However, stricter standards are incorporated into the proposal to monitor sedimentation and any effects on adjacent coral communities, and to rotate the dredging operation between the several borrow sites in order to minimize the potential sedimentation impacts. The borrow area rotation plan is designed to allow organisms on the adjacent hardbottom, which are adapted to naturally occurring levels of sedimentation, to recover from a small amount of sedimentation associated with overflow from the hopper dredge before the borrow site is used again (Attachment 1). The vessel and pipeline access corridors, as proposed, are necessary for construction of the project and are located to avoid or minimize disturbance to nearshore hardbottom.

Shore Protection Structures

The applicant has proposed shore protection structures to extend the life of beach restoration project and reduce the frequency of beach nourishment at John U. Lloyd State Park, which is consistent with Rule 62B-41.005(5), F.A.C., if a net positive benefit to the coastal system can reasonably be expected to occur and mitigation is provided for any adverse impacts which may occur to the coastal system. The Applicant's coastal engineer conducted an analysis of the coastal littoral processes at John U. Lloyd State Park and the effect of shore protection structures on these processes and the performance of the beach fill. This work has been documented in several reports submitted in conjunction with the applications for environmental permits and continued federal funding of the project. These reports demonstrate that the engineer used due diligence in applying established engineering practices in the analysis and the design of the project.

The analysis shows that it is not feasible to place enough advance nourishment sand in this reach in order to protect the upland property through the six-year nourishment period. The wide beach created by the large quantity of sand required would project so far seaward that it would be subject to accelerated spreading losses above the high historical erosion for which it is attempting to compensate. The two T-head groins and the spur groin attached to the existing south jetty of Port Everglades Entrance are intended to reduce the loss of beach fill material from the north end of the project by acting as a barrier to the alongshore transport of the beach fill material, and thereby, retain it on the Park's beaches for a longer period of time. This constitutes a net positive benefit that can reasonably be expected to occur.

The proposed T-head groins and spur at the Park will not significantly effect the overall performance of the project in the Dania Beach/Hallandale/Hollywood area. Within the area immediately adjacent to the inlet, the net littoral transport of sand is northward toward the inlet and cross-shore. The cross-shore transport is predominantly responsible for the loss of sediments into the nearshore zone in this area. The analysis does not demonstrate with reasonable assurance that the potential for adverse impact to the downdrift shore immediately adjacent to the structures has been completely eliminated. Hence, a physical monitoring program and mitigation is required pursuant to Rule 62B-41.005(17) and (18), F.A.C., as a condition for approval of construction of the structures. If the monitoring reveals significant impact from the groins, those impacts shall be remediated with subsequent beach nourishment or with modifications to the groins.

Pursuant to Rule 62B-41.007(2)(m), F.A.C., all coastal structures shall be marked in accordance with Section 327.40, F.S., for navigation and boating safety. Also, it is generally known that under present conditions, the existing coastal structures and strong tidal currents at this segment of beach shore can create hazardous conditions for swimming. The design of the shore protection structures as demonstrated in the engineering analysis referenced above is intended to reduce longshore currents in the vicinity of the structures as a means to retain the beach fill material. However, the analysis does not demonstrate that the potential for unsafe swimming conditions due to tidal currents in this area has been eliminated. In addition, breaking waves and large swell can create hazardous conditions to swimmers who approach the structures during these conditions. Caution is advised, and as a condition of the permit, signage shall be provided along the shoreline adjacent to the groins to warn recreational beach users of hazardous conditions to swimmers in the vicinity of the structures.

Nearshore Hardbottom Communities and Impact of the Project

The Broward County nearshore and offshore underwater landscape consists of a complex combination of hardbottom and softbottom communities. In general, these communities are represented by shore-parallel rock ridges divided by troughs that are filled with a variable thickness of predominantly carbonate sediments. These rock ridges are often called "reefs," although most of the ridges are not coral/algal carbonate buildups. The hardbottom communities in Broward County are developing at the northern proximity of the coral reef belt of the Atlantic Ocean. In comparison to the coral reefs of Florida reef tract along the Florida Keys and reefs of northern Cuba and the Bahamas, the Broward County coastal systems are depleted in scleractinian coral fauna (i.e. major reef-builders). There are no developed *Acropora palmata* barriers and *Montastraea annularis* buildups like in the adjacent areas mentioned above. Although it has been demonstrated that *Acropora* reefs existed in south Florida during the Holocene time (i.e. very recently on the geological time scale, within just a few thousand years); the slight change in environmental conditions (sea-level rise and, most likely, a decrease in annual temperatures) led to the decline of coral reef development (Lighty, 1979). The contemporary process of reef building is very restricted. Few areas of hardbottom in Broward County have cover by reef-building corals of more than 2-3%. Hardbottom formations are mostly dominated by algal-octocoral-sponge communities. Many scientists, commercial and amateur divers, who worked in the area through the years, have been documenting the anthropogenic impact on coral fauna and its decline. At the

same time, an advance of opportunistic staghorn coral, *Acropora cervicornis*, has been documented in Broward County. *A. cervicornis* is not considered to be a primary reef-building coral, mostly contributing to rubble accumulation rather than rigid “reef-frame.”

The nearshore hardbottom habitat in the Segment III project area includes a composite of seasonally stressed and species depauperate, nearshore hardbottom communities at very shallow water depths of less than 3 meters. More stable hardbottom communities typically occur at deeper water depths of 3.0– 4.5 meters. The nearshore hardbottom edge community is characterized by high frequency environmental stresses such as high-energy wave action, abrasive and burial effect of sediment transport, and low water clarity due to turbidity. This area is dominated by opportunistic algae such as *Jania adherens*, *Wrangelia argus*, *Cladophora* spp., *Chaetomorpha* spp. (*aerea*, *linum*), *Ulva lactuca*, *Enteromorpha flexuosa* and blue-green algae (*Lyngbya* sp.) The dominance of the last three species usually is an indicator of anthropogenic nutrification. Scleractinian reef-building corals are not common in this zone, with the exception of small colonies of genera *Siderastrea*, which is characterized by a high recruitment rate, i.e. the same life strategy as the algae mentioned above, which compensates for high mortality in a naturally stressful environment. High mortality leads to the situation where few epilithic species achieve considerable size.

Areas of higher relief (higher rugosity) are more stable and provide higher habitat heterogeneity (higher environmental gradients), and therefore, are usually supportive of a higher number of species, biomass and average size of algae and sedentary fauna. In these areas, an increased diversity and size of octocoral species is generally observed, as well as an increased diversity and density of scleractinian corals, e.g. *Diploria clivosa*, *Porites astreoides*, *Solenastrea bournoni*, *Montastraea cavernosa*, *Oculina diffusa*; and algae, e.g. *Caulerpa prolifera*, *C. racemosa*, *C. sertularioides* and *C. mexicana*, *Padina sanctae-crucis*, *Dictyota* spp, *Dasya* sp., *Halimeda discoidea* and *H. incrassata*, and *Lyngbya* sp.

Another prominent feature of very nearshore areas are *Phragmatopoma lapidosa* buildups (wormrock reefs). Unlike scleractinian corals, sabellariid worms (*Phragmatopoma lapidosa*) do not secrete CaCO₃, but agglutinate sand particles while building their tubes. The very nearshore environment, which is turbid with high amounts of suspended sand particles, is favorable for these animals. An area of wormrock reef exists in Segment III between DEP control monuments R-102 and R-104 in Hollywood, and scattered colonies of live wormrock occur along the Segment II nearshore hardbottom edge.

Several modifications/reductions to beach fill amounts and widths were performed in Segment III during project development to reduce avoidable impacts to nearshore hardbottom communities. Fill placement between FDEP monuments R-92 and R-99 in Dania Beach was eliminated from the original project design. In John U. Lloyd State Park, the design beach was eliminated and the advanced nourishment was redistributed. In total, approximately 295,800 cubic yards of fill were deleted between R-86 and R-95.5. In the Hollywood/Hallandale section, the volume of sand fill was reduced from 1,238,000 to 1,100,000 cubic yards, and associated indirect hardbottom impacts were reduced from 2.7 to 1.5 acres. Overall, the Segment III project, as initially proposed in 1999,

has been reduced from 2.20 million cubic yards to 1.54 million cubic yards, and associated hardbottom impacts have been reduced from 20 plus acres to 7.6 acres of net hardbottom impact.

Unavoidable impacts to nearshore hardbottom resources during construction of Segment III are expected to consist of the direct burial of 2.0 acres of hardbottom (0.9 acres of hardbottom in John U. Lloyd State Park and 1.1 acres of *Phragmatopoma lapidosa* buildups (wormrock) in Hollywood), and the indirect burial of an additional 5.6 acres (4.1 acres in John U. Lloyd and 1.5 acres in Hollywood/Hallandale). The indirect burial is expected to occur gradually from one to three years following fill placement as waves and currents rework the construction fill profile, narrowing the upland beach, shallowing the submerged slopes, and moving material seaward until an equilibrium configuration of cross-shore profile is achieved.

Secondary impacts from turbidity and sediment plumes may also occur from project implementation. The permit is conditioned upon the implementation of a biological monitoring program to document the occurrence of both short-term and long-term turbidity and sedimentation effects. A network of nearshore monitoring stations/transects will be maintained to specifically identify and address potential effects from sediment and turbidity movement to the adjacent, deeper and more stable nearshore hardbottom communities. The short-term monitoring program includes both preventative and corrective actions that will be implemented if significant impacts occur to hardbottom resources seaward of the equilibrium toe of fill during construction activities. The long-term nearshore monitoring is a continuation and expansion of the County's 2001 nearshore hardbottom characterization study.

Recent studies have indicated that nearshore hardbottom areas along the Broward County shoreline serve as important developmental habitat for juvenile green sea turtles *Chelonia mydas*. The results of the County's 2001 sea turtle survey suggest that, compared to Segment II, the Segment III shoreline south of Port Everglades does not provide significant foraging habitat for juvenile sea turtles. Of the 33 total sightings observed during the study, only 6 sightings occurred in Segment III, and there were no records of sea turtles along the Segment III equilibrium toe of fill towed-diver transect.

Offshore Hardbottom Communities and Possible Impact of the Project

As mentioned above, the underwater landscape of Broward County is represented by shore-parallel rock ridges ("reefs") divided by troughs that are filled with a variable thickness of predominantly carbonate sediments. The reef distribution pattern described for southeast Florida north of Key Biscayne consists of three, separate parallel reef ridges. The first reef occurs in approximately 10 to 20 feet of water and ranges from 100 to 2,000 feet from shore. The second reef is located 3,000 to 6,500 feet offshore in water depths of 10 to 55 feet; and the third reef is in water depths of 45 to 90 feet and approximately 8,000 feet or more offshore (JUL GDM, 1987). The overall offshore hardbottom assemblages of stony corals, soft corals, and sponges on second and third reefs of Broward County basically remain consistent with those along all of southeast Florida, including offshore reefs of Dade and Palm Beach (Blair and Flynn, 1989). Hardbottom communities are mostly dominated by algal-octocoral-sponge communities. The most common scleractinian (stony coral) species at Broward County's reef community monitoring sites are

Siderastrea siderea and *S. radians*, *Montastraea cavernosa*, *Stephanocoenia michilini*, *Porites astreoides*, and the hydrocoral *Millepora alcicornis*. Mean stony coral coverage at the 23 sites in January/February 2001 was 2.25+/-3.41% (NSU, 2001). Scleractinian corals are not a major component of the epibenthic communities on the nearshore and offshore ridges along southeast Florida. Few areas of hardbottom in Broward County have cover by reef-building corals of more than 2-3%. However, the richest patches of scleractinian cover are generally located on the offshore ridges. Scleractinian corals on the offshore ridges also typically reach larger sizes and higher abundance than most inshore areas. In some areas favorable for coral settlement and growth, scleractinian coral cover can be as high as 25-30%. In particular, *Montastraea cavernosa* can form this kind of dense cover on the seaward parts of the first and second ridges. Avoidance of these areas was emphasized during project design and development, including borrow area design, selection of submerged pipeline corridors from the offshore areas to the beach disposal sites, and beach fill design.

A detailed biological assessment of the reef edges adjacent to the borrow areas was performed during the summer of 2001. A total of 25 scleractinian coral species and 15 soft coral species, and the hydrocoral *Millepora alcicornis*, were identified. Three typical benthic assemblages were identified by ecological survey: 1) first reef and nearshore hardground: low cover (<30%) dominated by green macroalgae (*Halimeda discoidea*) and turf algae, fauna dominated by bushy hydrozoans and the octocoral, *Pseudopterogorgia americana*; 2) second reef: high cover (up to 50%), dominated by green macroalgae (*Halimeda opuntia*) and fauna dominated by barrel sponges (*Xestospongia muta*) and octocorals (*Eunicea* spp. and *Pseudopterogorgia* spp.); and 3) third reef: medium cover (mostly 10-30%), dominated by turf algae, fauna dominated by *Eunicea* spp. and sponges (*Aplysina* spp.). The benthic assemblages along the reef edges were significantly different between the first reef (and nearshore hardbottom), second reef, and third reef tracts and were also significantly different among sample sites (NSU, 2001).

A towed-diver, DGPS integrated digital video survey with SCUBA verification by biologists was performed during the summer of 2001 to provide complete visual coverage of the ocean bottom within the interior of the seven, original borrow areas. Two of the borrow areas (VI and VII) contained contiguous cover of the seagrass, *Halophila decipiens*. The southern half of Borrow Area VI and all of Borrow Area VII were deleted from the proposed project design to avoid impacts to seagrass communities. Borrow Area V was also eliminated due to geotechnical concerns and the presence of a small patch reef within the interior of the borrow area. The boundaries of the remaining borrow areas were redefined to avoid rubble areas with reef benthic communities and to increase buffer distances to adjacent reefs.

Original borrow area dimensions and locations were adjusted to provide the maximum sediment quantity/quality with minimal biological resource impact. In general, the greatest quantity of beach quality sediment is usually present on the east (seaward) side of the reefs. These seaward reef edges also typically support denser, more diverse, epibenthic communities. The boundaries of the borrow areas were adjusted to maximize the buffer distance to these communities while simultaneously providing a sufficient quantity of suitable fill material to construct the project. Average buffers between higher quality reef communities are 285 feet for Borrow Area II, 375

feet for Borrow Area III, 361 feet for Borrow Area IV, and 235 feet for Borrow Area VI. Corresponding buffer zones between the east edges of the borrow areas and adjacent, landward reef edges are 719 feet for Borrow Area II, 700 feet for Borrow Area III, 512 feet for Borrow Area IV, and 680 feet for Borrow Area VI.

Direct offshore hardbottom habitat impacts are limited to the hardbottom communities within the submerged pipeline corridors. Eight pipeline corridors are proposed in the vicinity of the following FDEP control monuments: R-37, R-57, R-68, R-104, R-113, R-120, R-121, and R-127. Of the five pipeline corridors in Segment III, one is an alternative location at R-120 or R-121. The corridors are 100 feet wide and the pipeline diameter is 3 feet. The eight corridors were documented with DGPS integrated video during the summer of 2002 to identify any irreplaceable biological resources. During these investigations, it was discovered that the corridor originally proposed near R-66.5 contained large areas of significant scleractinian coral and soft coral resources (high density of young sea fans, *Gorgonia ventalina*). This corridor was abandoned and an alternative corridor was located approximately 200 feet south of R-68. Avoidance areas of significant scleractinian coral coverage were mapped with DGPS along each corridor and buffered for avoidance. Immediately prior to pipeline placement, Broward DPEP staff will place buoys to mark the routes through each corridor for pipeline placement, avoiding areas of significant bottom resources. Video and still photography will document the route before and after pipeline placement and removal to accurately evaluate impacts to hardbottom habitats. Pipeline "collars" will be used to support the pipeline for considerable distances and reduce the area of physical contact between the pipe and hardbottom communities. Pipeline corridor hardbottom impacts are estimated at 0.03 acre. Mitigation is proposed to compensate for these impacts.

Direct hardbottom impacts to offshore reefs from the suction dredge heads will be avoided by using real-time precision, electronic navigation and location equipment supplemented by lighted buoys during offshore operations. Indirect impacts to offshore hardbottom habitat adjacent to the borrow sites from sedimentation generated from hopper dredging operations will be monitored throughout construction. The monitoring program will measure the amount and duration of sedimentation on the reefs and will include observations for indicators of biological stress to certain species of stony (scleractinian) corals and soft corals. There will be multiple sediment monitoring stations adjacent to each borrow area and six control stations will be located at six of the County's permanent reef monitoring stations.

To minimize the effects of sedimentation upon the adjacent hardbottom communities, the dredging contractor will rotate the use of each borrow site in sequential order. This procedure will maximize the time intervals between subsequent visits to each site (Attachment 1). Turbidity monitoring will be conducted during the excavation of sand from the borrow areas.

Mitigation – Artificial Reef Structural Design and Scleractinian Coral Transplantation

Compensatory mitigation for unavoidable nearshore hardbottom impacts is required as a condition of the Permit. The Applicant, Broward County DPEP, proposes the construction of nearshore artificial reefs as mitigation for adverse impacts to nearshore hardbottom caused by the beach fill project. The artificial reefs consist of limestone boulders placed on the sandy ocean bottom

landward of the first offshore reef. The Applicant submitted a hydrodynamic stability report prepared by the coastal engineer on the resistance of the boulders to sliding along the sand bottom and/or tipping under the influence of storm waves. The report demonstrates that the engineer used due diligence in applying established engineering practices in the analysis and the design of the artificial reef. Based upon the storm surge and waves of a 20-year hurricane event, the analysis found that boulders of a nominal dimension of 4 feet or greater (specific gravity 2.1) will remain stable in terms of sliding or tipping/rolling when placed in mean water depths greater than of 15 feet. These design specifications, which have been proposed by the Applicant, are consistent with Department guidelines and general practices used in the construction of artificial reefs along the Atlantic Coast of Florida.

The limestone boulders will be approximately 4 to 6 feet in diameter and are expected to provide two to three feet of residual relief following settlement. Thus, the selected placement areas should not contain a layer of the sand over the hardbottom more than two feet thick. The eleven proposed sites are located inshore of the natural nearshore hardbottom, offshore of the estimated equilibrium toe of fill, and in water depths of 15 to 20 feet. A 50-foot wide buffer from all significant natural hardbottom will be maintained during boulder placement. The mitigation reef sites in Segment III are located between FDEP control monuments R-101 and R-104, and R-123 and R-126. The proposed mitigation reef sites in Segment II are between FDEP monuments R-41 and R-46, R-61 and R-64, R-71 and R-72, and R-72 and R-73. A portion of the artificial reef site between R-101 and R-104 will serve as the scleractinian coral transplantation receiver site in Segment III. Deployment of the artificial reefs will begin in April 2003 at Mitigation Area 5 located between FDEP monuments R-70 and R-71. This 0.5 acre site was chosen as the algal recruitment test site because of its close proximity to the natural nearshore hardbottom where the highest number of juvenile green sea turtle sightings occurred in the summer of 2001 (R-52 to R-74). After this site is constructed, artificial reef construction will continue in Segment III at Mitigation Area 8 (R-101 to R-104). Artificial reef deployment will continue until September 30, 2003. If the mitigation reef construction is not completed by September 30, 2003, construction will resume in April 2004, but additional mitigation may be required if the mitigation time lag is increased.

The mitigation goals are to create a natural limestone substrate for colonization by epifauna/flora adapted to the nearshore environment and characteristic of the organisms growing on the natural hardbottom within the project impact area. The mitigative reefs will provide foraging habitat and shelter for larval, juvenile and adult fishes and foraging habitat for juvenile sea turtles, as was being provided in the impact sites. Long-term monitoring of the mitigative reefs will be performed to determine the replacement habitat value compared to natural nearshore hardbottom. An assessment of algal recruitment with an emphasis upon replacement of preferred algal food species for sea turtles will be conducted as a part of the monitoring program of the mitigation area. An algal recruitment survey in the Fort Lauderdale section of Segment II will be compared to control mitigation area in Segment III as well as to areas of natural substrate in the impacted areas. If the monitoring records will show the algal recruitment is going too slowly and target bottom percent cover is not achieved after 1 year, acceleration of succession of selective algal species ("turtle food species") shall be initiated by algal transplantation to the test sites.

Transplantation of scleractinian corals from the areas of direct and *secondary* impact to the mitigation reef is required for saving important and declining reef-building fauna of the nearshore area and for initiation of coral succession. All scleractinian coral colonies over 15 cm shall be removed from areas of expected impact and cemented onto the artificial reefs. Corals of this dimension are at least 15 years old and have much greater chance of survival than smaller corals. Scleractinian corals of this size have already achieved the reproductive stage of their growth and their transplantation onto the artificial reef is expected to stimulate coral recruitment. The transplantation must be done in the pattern that will a) create percent bottom cover by corals of about 3%; and b) concentrate particular species to stimulate local recruitment and enhance succession. Approximately 1,500 corals greater than 15 cm in diameter will be transplanted from the impact areas to the mitigation reefs. The created coral community will also be the subject of a long-term monitoring program to document survival and growth of the transplanted corals. The Department and the Applicant are also investigating the opportunity to transplant octocorals as a part of the mitigation program.

Implementation of Segments II and III of the Broward County Shore Protection Project will result in a gross nearshore hardbottom impact of 13.6 acres. This gross total impact includes the areas of sand between exposed hardbottom formations as well as sand-covered hardbottom and exposed hardbottom formations. The net total hardbottom impact for Segments II and III is 10.1 acres. A net total of 7.6 acres of hardbottom will be impacted in the Segment III project area. The Department has determined that 10.1 acres of net hardbottom impact would require 12.4 acres of compensatory mitigative reef. This determination accounts for functional differences between the impact site and the artificial reef and for the time it will take the artificial reef to reach functionality. The Applicant has elected to offset the temporal lag in habitat functionality by transplanting scleractinian corals greater than 15 cm diameter and constructing the majority of the mitigative artificial reefs prior to project fill equilibration impacts. This reduction of the temporal lag by coral transplantation reduced the Department's overall mitigation requirement from 12.4 acres to 11.9 acres for Segments II and III combined. In Segment III, the net 7.6 acres of hardbottom impact require 8.9 acres of mitigative artificial reef.

MONITORING

Physical Monitoring

Beach profile and offshore surveys of the borrow areas as part of a post-construction monitoring program are recommended as a condition of the permit in accordance with Rule 62B-41.005(16), F.A.C. Physical monitoring of this project should be required through acquisition of project-specific data to include, at a minimum, topographic/bathymetric surveys of the beach, offshore and borrow site areas, and aerial photography. The monitoring data are necessary in order for both the project sponsor(s) and the Department to regularly observe and assess, with quantitative measurements, the performance of the project, any adverse effects which have occurred (e.g. to nearshore hardbottom areas or adjacent shorelines), and the need for any adjustments, modifications, or mitigative response to the project. The scientific monitoring process also provides the project sponsor(s) and the Department information necessary to plan, design, and optimize subsequent follow-up projects, potentially reducing the need for and costs of unnecessary

work, as well as potentially reducing any environmental impacts that may have occurred or be expected.

Turbidity monitoring in the vicinity of the borrow area and the beach nourishment sites is part of physical monitoring during construction. Turbidity will be measured at background and compliance stations at the borrow and beach nourishment sites. In the event that turbidity exceeds 29 Nephelometric Turbidity Units (NTUs) above background levels, construction activities will immediately cease until corrective measures have been taken, and the turbidity has returned to acceptable levels.

The beach nourishment work will be accomplished in a manner, which minimizes the potential for elevated turbidity, including the use of construction dikes and a minimum setback for the discharge pipe from open water at the beach.

Biological Monitoring

The biological monitoring program consists of 1) construction phase and long-term, post-construction borrow area reef edge sedimentation surveys; 2) weekly inspections of the pipelines during construction to check for leaks and immediate pre-construction and post-construction surveys of the corridors to document impacts to hardbottom communities along the routes; 3) a long-term, County-wide reef community health assessment; 3) construction phase and long-term post-construction nearshore hardbottom surveys; 4) a long-term mitigation monitoring program which includes monitoring of epibenthos, including transplanted corals and coral recruitment, fish, and algal recruitment; and 5) a construction phase and long-term sea turtle monitoring program. The goals of biological monitoring program are to identify project-related impacts upon protected species and significant biological resources, document succession on the artificial reefs to determine the replacement habitat value of the artificial reefs compared to natural nearshore hardbottom, and to provide a quantitative approach to mitigation for unavoidable and unexpected project-related impacts.

Biological and sedimentation monitoring of the nearshore hardbottom habitats adjacent to the beach fill disposal sites will occur during the pre-construction phase; construction phase, immediately after construction, and post-construction. During construction, weekly observations of sedimentation/siltation impacts will be performed in the nearshore zone via a series of cross-shore transects that extend 300 feet seaward of the equilibrium toe of fill. Stress indicators on scleractinian (stony) and soft coral species will be used in conjunction with standing sediment levels to trigger implementation of corrective actions that include construction and/or extension of shore-parallel dykes on the beach, cessation of sand pumping until the discharge plume dissipates, and/or shifting the dredge to an alternate sand source within the approved borrow sites. A network of nearshore monitoring stations/cross shore permanent transects will be maintained to specifically identify and address potential effects from sediment and turbidity movement to the adjacent, deeper and more stable nearshore hardbottom communities. Semi-annual surveys will be conducted during the first two years post-construction (Years 1 and 2), and annual surveys will be conducted at the end of the third and fourth year (Years 3 and 4) post-construction. Fish populations will be also be assessed at 30 of the epibenthos monitoring sites within the impact

areas according to the same monitoring schedule. Two hardbottom edge surveys will be also conducted using diver propelled via scooter with attached DGPS antennae: an immediate pre-construction survey and a three year post-construction survey. The monitoring of the nearshore hardbottom edge at the end of Year 3 will represent the final impact of fill equilibration.

Indirect impacts to offshore hardbottom habitat adjacent to the borrow sites from sedimentation generated from hopper dredging operations will be monitored throughout construction. The monitoring program will measure the amount and duration of sedimentation on the reefs and will include observations for indicators of biological stress to certain species of stony (scleractinian) corals and soft corals. There will be multiple sediment monitoring stations adjacent to each borrow area and six control stations will be located at six of the County's permanent reef monitoring stations. The sites will be monitored once every week starting 8 weeks prior to construction, once every week during construction, and once every week for 8 weeks after construction. In addition to this monitoring schedule, Borrow Area VI will be used as a test site during the first 28 days of dredging operations and will be monitored on a daily basis or each second day, dependent upon construction with one or two dredges. The results of the daily/bi-daily monitoring will be compared after 28 days to the results of weekly monitoring to determine if the increased frequency of visits yields different average daily sedimentation rates. Provided no significant difference is revealed, sedimentation monitoring will be continued weekly during the construction period. Use of a borrow area will be suspended if the average daily measure of sediment exceeds defined standards, and histological tissue analyses of the corals will be conducted if stress indicator index values exceed defined levels. All sites will be revisited, photographed, and examined for cumulative sediment impact six months post-construction and one year post-construction. The long-term, annual reef community monitoring is a continuation and expansion of Broward County's current countywide reef monitoring program.

The colonization of the mitigation reefs by epibenthos will be monitored semi-annually during the first two years (Years 1 and 2) post-construction, and annually during the third and fourth years (Years 3 and 4) post-construction. The density of epifauna and percent bottom cover will be assessed along a series of twenty-five 30-meter long, cross-shore transects. Fish transect counts will be performed along 30 transects for correlation between fish populations and epibenthic communities. A direct comparison of the epibenthic communities and fish assemblages on the mitigation reefs to adjacent (nearby) natural hardbottom will be made to determine the replacement habitat value of the mitigation reefs.

The monitoring program for mitigation reefs includes an assessment of algal recruitment with an emphasis upon replacement of sea turtle foraging habitat. Two stations, each consisting of three (3), 30 meter long transects spaced at 1 meter intervals, will be established over a 0.5 acre area of the artificial reef in Fort Lauderdale (Mitigation Area V between R-70 and R-71), located in the close proximity to the natural nearshore hardbottom with the highest number of juvenile green sea turtle sightings recorded in the summer of 2001 (R-52 to R-74). In Segment III, two control stations will be established over a 0.5 acre area of the artificial reef located between FDEP control monuments R-101 and R-104. The 30 meter transects will be established following the rugosity of the boulders so that algal recruitment on both horizontal surfaces and boulder slopes will be

assessed. The same methodology survey will be used in two control stations on natural hardbottom. The 30 meter long transects will be documented using digital video sampling (Sony TRV-900) in progressive scan mode. Macroalgae abundance will be assessed by percent cover using frame grabbing and PointCount'99 software. Species identification within the stations will be performed *in situ* by a second, qualified diver/biologist (M.S. degree or higher). The biologist will swim two 1-meter wide corridors within the station and record a comprehensive taxonomic list of species present in the entire 60 square meter box. The algae surveys will be conducted on a semi-annual basis (spring/summer and fall/winter) for a period of 4 years in compliance with the FDEP permit.

Several studies have indicated diet selectivity in green sea turtles (*Chelonia mydas*) with algal genera *Bryothamnion*, *Gracilaria*, and *Hypnea* and turf algae of the Family Gelidiaceae documented as food sources in Broward County nearshore waters (Wershoven and Wershoven 1990). Target bottom coverage for the preferred algal food species, *Bryothamnion* sp., *Gracilaria* sp., and *Hypnea* sp. on the Mitigation Area V test site will be required in the permit and are based upon abundance of these species on the adjacent natural hardbottom. If the target bottom coverage is not achieved after one year of monitoring, transplantation of these species from the equilibrium toe of fill impact areas between R-52 and R-72 to the Mitigation Area V test site will be performed to achieve the target abundance. If algal transplantation is required, the transplanted algae will be monitored semi-annually in conjunction with the macroalgae recruitment assessment during the 4-year post-construction period.

The Project is the subject of a Biological Opinion (BO) issued pursuant to Section 7 of the Endangered Species Act by the U.S. Fish and Wildlife Service (FWS) in March 2002 and the Biological Opinion for the Coast of Florida Study issued in October 1996. The FWS BO includes Terms and Conditions and Reasonable and Prudent Measures sufficient to allow dredge and beach fill activities south of Dania Pier and groin construction at John U. Lloyd Beach State Park during the turtle nesting season. The FWS BO addresses both Segments II and III of the Broward Project and contains specific requirements in regard to construction lighting, fill compaction, sea turtle nesting monitoring, escarpment leveling, and groin construction. The Project is also consistent with the terms and conditions of a BO issued by the National Marine Fisheries Service in 1995 and amended in 1997. The NMFS BO provides for monitoring of and safeguards to sea turtles with respect to potential impacts from use of hopper dredges for beach nourishment. A sea turtle monitoring program will be implemented to address effects upon nesting and hatching sea turtles. The program includes a daily early morning nest relocation component, an egg relocation component, a light reduction component, compaction testing, and escarpment monitoring and leveling. Portions of this program, i.e. nest/egg relocation activities, are a part of the County's sea turtle conservation program that was established in 1978.

B. Specific Regulatory Basis for Issuance

Through the above and based on the general/limiting and specific conditions to the permit, the applicant has provided affirmative reasonable assurance that the construction of the activity, considering the direct, secondary and cumulative impacts, will comply with the provisions of Part

IV of Chapter 373, F.S., and the rules adopted thereunder. Specifically, construction of the activity will not result in violations of water quality standards pursuant to Section 373.414(1), F.S., and set forth in Chapters 62-4, 62-302, 62-520, 62-522, and 62-550, F.A.C. The applicant also has demonstrated that the construction of the activity, is not contrary to the public interest, pursuant to paragraph 373.414(1), F.S.

Furthermore, after considering the merits of the proposal and any written objections from affected persons, the Department finds that on compliance with the permit conditions, the activities indicated in the project description are of such a nature that they will result in no significant adverse impacts to the sandy beaches of the state; are not expected to adversely impact nesting sea turtles, their hatchlings, or their habitat; will not interfere, except during construction, with the use by the public of any area of the beach seaward of mean high water; and are appropriately designed in accordance with Rule 62B-41, F.A.C.

C. Specific Proprietary Basis for Issuance

Through the above and based on the general/limiting and specific conditions to the permit, the applicant has met all applicable requirements for proprietary authorizations to use sovereign submerged lands, pursuant to Article X, Section 11 of the Florida Constitution, Chapter(s) 253, F.S., associated Rule(s) 18-21, F.A.C., and the policies of the Board of Trustees. The applicant has provided reasonable assurance that the activity:

- (1) is "not contrary to the public interest";
- (2) will maintain essentially natural conditions;
- (3) will not cause adverse impacts to fish and wildlife resources or public recreation or navigation; and
- (4) will not interfere with the riparian rights of adjacent property owners.

In addition, the project is consistent with the goals and objectives of the "Conceptual State Lands Management Plan" adopted by the Board of Trustees on March 17, 1981, and modified on March 15, 1983.

IV. PUBLICATION OF NOTICE

The Department has determined that the proposed activity, because of its size, potential effect on the environment or the public, controversial nature, or location, is likely to have a heightened public concern or likelihood of request for administrative proceedings. Therefore, pursuant to Section 373.413(4), F.S., and paragraph 62-312.060(14), F.A.C., you (the applicant) are required to publish at your own expense the enclosed notice of this Consolidated Notice of Intent to Issue. The notice is required to be published one time within 30 days, in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. The applicant shall provide proof of publication to:

Department of Environmental Protection
Bureau of Beaches and Wetland Resources
3900 Commonwealth Boulevard, Mail Station 300
Tallahassee, Florida 32399-3000

The proof of publication shall be provided to the above address within seven days of publication. Failure to publish the notice and provide proof of publication within the allotted time shall be grounds for denial of the permit and authorization to use sovereign submerged lands.

V. RIGHTS OF AFFECTED PARTIES

The Department will issue the permit (draft attached), a Consent of Use, and an intent to grant an easement on sovereign submerged lands unless a sufficient petition for an administrative hearing is timely filed pursuant to sections 120.569 and 120.57, Florida Statutes, as provided below. The procedures for petitioning for a hearing are set forth below. The actual terms of the easement will be formally executed at a later date. Mediation under Section 120.573, F.S., is not available for this proceeding.

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57, F.S. The petition must contain the information set forth below and must be filed (received by the clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000.

Because the administrative hearing process is designed to redetermine final agency action on the application, the filing of a petition for an administrative hearing may result in a modification of the permit or even a denial of the application.

Under rule 62-110.106(4), Florida Administrative Code, a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, before the applicable deadline. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon. If a request is filed late, the Department may still grant it upon a motion by the requesting party showing that the failure to file a request for an extension of time before the deadline was the result of excusable neglect.

In the event that a timely and sufficient petition for an administrative hearing is filed, other persons whose substantial interests will be affected by the outcome of the administrative process have the right to petition to intervene in the proceeding. Any intervention will be only at the discretion of the presiding judge upon the filing of a motion in compliance with rule 28-106.205, F.A.C.

In accordance with rules 28-106.111(2) and 62-110.106(3)(a)(1), F.A.C., petitions for an administrative hearing by the applicant must be filed within 14 days of receipt of this written notice. Petitions filed by any persons other than the applicant, and other than those entitled to written notice under section 120.60(3), F.S., must be filed within 14 of publication of the notice or within 14 days of receipt of the written notice, whichever occurs first.

Under section 120.60(3), F.S., however, any person who has asked the Department for notice of agency action may file a petition within 14 days of receipt of such notice, regardless of the date of publication.

The petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition for an administrative hearing within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57, F.S.

A petition that disputes the material facts on which the Department's action is based must contain the following information:

- (a) The name and address of each agency affected and each agency's file or identification number, if known;
- (b) The name, address, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests are or will be affected by the agency determination;
- (c) A statement of when and how the petitioner received notice of the agency decision;
- (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
- (e) A concise statement of the ultimate facts alleged, including the specific facts that the petitioner contends warrant reversal or modification of the agency's proposed action;
- (f) A statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action; and
- (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts on which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by rule 28-106.301, F.A.C. Under sections 120.569(2)(c) and (d), F.S., a petition for administrative hearing must be dismissed by the agency if the petition does not substantially comply with the above requirements or is untimely filed.

This action is final and effective on the date filed with the Clerk of the Department unless a petition is filed in accordance with the above. Upon the timely filing of a petition this order will not be effective until further order of the Department.

This intent to issue constitutes an order of the Department. The applicant has the right to seek judicial review of the order under section 120.68, F.S., by the filing of a notice of appeal under rule 9.110 of the Florida Rules of Appellate Procedure with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000; and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate district court of appeal. The notice of appeal must be filed within 30 days from the date when the final order is filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION



Michael Sole, Chief Bureau of Beaches and
Wetland Resources

Copies furnished to:

Tim Rach, DEP, Southeast District
Robbin Trindell, FWCC, BPSM
Allan Webb, USFWS
Ron Meidema, EPA
Michae Johnson, NMFS
George Getsinger, NMFS
FWC-Division of Law Enforcement
John Studt, South Permits Branch, USACE

Linda Shelley
Chris Creed, OAI
Norman Beumel, CPE
Dan Clark, Cry of the Water
BBWR Permit Information Center
Jackie Thompson, BBWR
Bob Brantly, BBWR
BBWR File

FILING AND ACKNOWLEDGMENT

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


Deputy Clerk Date 10/17/02



DEPARTMENT OF PLANNING AND ENVIRONMENTAL PROTECTION - Biological Resources Division
218 S.W. 1st Avenue • Fort Lauderdale, Florida 33301 • 954-519-1230 • FAX 954-519-1412

RECEIVED

OCT 24 2002

JACKSONVILLE DISTRICT
USACE

October 21, 2002

Mr. Dale Beter
Regulatory Division, South Permits Branch
US Army Corps of Engineers
4400 PGA Blvd., Suite 500
Palm Beach Gardens, FL 33410

Subject: Broward County, Segments II and III, Shore Protection Project
USACE Permit Application Number 199905545 (IP-BM)

Dear Mr. Beter:

In accordance with our recent discussions via teleconference, this letter will address concerns expressed by the National Marine Fisheries Service (NMFS) regarding the above-referenced project. These concerns are expressed in written form by means of a letter dated June 3, 2002 in which NMFS provides comments on the Draft Environmental Impact Statement (DEIS) for the project.

Concern: Borrow Area Buffers and Adjacent Reef Resources. In a letter dated June 26, 2000 which contains comments on the Public Notice for the Department of the Army Permit Application, NMFS recommended that surveys be conducted of the proposed borrow sites and of the adjacent reef resources. NMFS also recommended that a 500-foot buffer zone be maintained between the borrow areas and adjacent reefs; that borrow area boundaries be straightened; that plans should be developed which avoided or minimized the potential for damage to benthic habitats from mechanical operations, siltation, turbidity, and burial by sediment; and that a plan be developed and implemented to fully compensate for unavoidable impacts to hardbottom, coral, and other sensitive habitats.

Response: The NMFS letter dated June 3, 2002 acknowledged the County's efforts to avoid and minimize impacts to EFH and other NMFS-trust resources. Detailed and comprehensive surveys were conducted of the interior of the borrow sites and of the reef resources adjacent to the reefs, leading to elimination of two borrow sites and modifications to four others. These modifications resulted maximizing the buffers between the borrow areas and adjacent reefs, and in providing assurance to NMFS that the most sensitive resources would be protected by the largest buffers. As noted in the June 3, 2002 NMFS letter, "Generally, the hard bottom communities located seaward of the borrow areas (i.e. eastern boundaries) contain higher relief structure and higher percentage of hard and soft coral than the hard bottom communities located landward of the borrow areas. The average buffer distance to the western boundaries of the five proposed borrow areas are: 357 feet for Borrow Area 1; 285 feet for Borrow Area 2; 375 feet for Borrow Area 3; 361 feet for Borrow Area 4; and 235 feet for Borrow Area 6. The average buffer distance for the eastern boundaries of the five proposed borrow areas are: 513 feet for Borrow Area 1; 1,718 feet for Borrow Area

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Page 1 of 4

2; 671 feet for Borrow Area 3; 512 feet for Borrow Area 4; and 680 feet for Borrow Area 6.” In the letter, NMFS did not object to the proposed buffers.

Concern: Monitoring Programs. In the June 3, 2002 letter, NMFS expressed concerns over the monitoring plans proposed for the offshore and nearshore resources. It was noted that in order to protect the resources adjacent to the borrow areas and the beach fill areas, monitoring should be as close to “real-time” as possible, with daily visits to reefs around borrow areas that are being utilized. Also, NMFS recommended that physiological stress indicators be noted in addition to the sedimentation measurements that were proposed and that triggers be incorporated to halt or modify the dredging and beach fill placement if certain thresholds are exceeded. Further, it was recommended that nearshore hardbottom edge mapping be conducted at intervals adequate to determine the actual extent of migration of the toe of fill.

Response: NMFS noted in the letter that consultations with the agency would be welcome in addressing these concerns and in developing acceptable monitoring plans. The County took advantage of this offer and conducted numerous joint agency meetings and conference calls, and included appropriate State agencies as well as NMFS, the Corps of Engineers, the Fish and Wildlife Service, and EPA. These consultations have resulted in the production of an offshore construction and monitoring plan which incorporates the elements recommended by the agencies: i.e. a dredging plan which rotates use of the borrow sites, reducing pressure on the nearby resources; seven-day-per-week monitoring of numerous stations around the borrow sites, in sequences consistent with the dredging plan; and inclusion of sedimentation accumulation measurements, biological stress observations, and tissue examinations of certain hard coral species if levels of sedimentation stress warrants. In addition, triggers are incorporated that halt dredging in applicable borrow areas if sedimentation and/or stress levels reach specified thresholds.

Nearshore hardbottom monitoring protocols have also been developed and refined to address concerns of NMFS and the other agencies. The plan now includes baseline establishment of additional monitoring stations, during-construction and post-construction examination of sediment accumulation and stress indicators on the nearshore hardbottom communities, and triggers which halt and/or modify filling operations if specified thresholds are exceeded. Additionally, hardbottom edge mapping will now be carried out consistent with agency wishers.

Concern: Mitigation: The proposed mitigation plan was also a source of concern for NMFS. The agency’s June 3, 2002 letter recommended incorporation of an analysis of temporal losses in habitat value by application of the Habitat Equivalency Analysis (HEA) and that corals of significant size should be relocated from the impact areas to the mitigation substrate.

Response: Again in consultation with NMFS and the other agencies, the mitigation plan was modified and refined. HEA was run for various scenarios, and the transplanting of between 1000 and 2000 corals of a size 15 cm or greater from the impact area to the mitigation will now be accomplished. Application of the HEA and inclusion of coral transplanting resulted in a calculated quantity of mitigation which slightly exceeds the predicted acreage of impacts to hardbottoms, an outcome which now satisfies state regulatory and federal resource agencies, including NMFS.

Cumulative Effects. The NMFS letter of June 3, 2002 reflected dissatisfaction with the Cumulative Impacts section of the DEIS. The letter recommended that additional beach nourishment projects be incorporated into the analysis to better assess all potential and known significant impacts. The agency noted that a more thorough examination of the impacts on the nearshore hardbottom habitats, offshore reefs, fishery resources, and macro-invertebrate communities from previous projects in the area is needed,

and also recommended that a Programmatic Environmental Impact Statement should be prepared for the east coast of Florida.

Response: The Cumulative Impact Assessment section of the DEIS is being supplemented by inclusion of additional projects in the analysis. The Final EIS will include a broader look at the impacts from past projects on nearshore and offshore hardbottoms and reefs and on benthic invertebrate habitats. The analysis will also provide more details regarding the suitability of the proposed mitigation as compensation for impacts to fish habitats.

Preparation of a Programmatic Environmental Impact Statement for the east coast of Florida is beyond the purview of Broward County; however, we understand that a Regional Environmental Impact Statement for beach nourishment activities in several southeastern Florida counties is being implemented by the US Army Corps of Engineers (USACE). It is expected that data and analyses from Broward County's EIS will be of value to that effort, and the County will be happy to assist in any way possible.

Cost-Benefit Analysis. NMFS has pointed out that Broward County's economic analysis of the benefits and costs of the project does not incorporate data generated by a recent multi-agency study on the socioeconomic value of regional reef resources. NMFS speculates that consideration of the loss of use of nearshore hardbottom habitat until the mitigation achieves full value may result in significant economic losses, influencing the benefit/cost ratio which is used to justify the project.

Response: In the General Reevaluation Report (GRR) for the project, National Economic Development benefits of various project alternatives are examined. The selected alternative is the one which maximizes the NED benefits relative to project costs, in accordance with US Army Corps of Engineers Principles and Guidelines. In general, primary benefits are those associated with storm damage reduction to upland properties, and costs are calculated based on expenses related to project design, engineering, monitoring, and construction. Secondary benefits in the form of certain recreational inputs may be considered but the project must initially be justified (net benefits exceed costs) based on primary benefits only. The Corps' Principles and Guidelines do not ordinarily consider loss of use of natural resources as project costs. In any event, the GRR for the project was completed by the County prior to completion of the socioeconomic study of the reef resources. Notwithstanding the foregoing, the County has requested that the lead economists in the preparation of the socioeconomic study prepare an analysis of the costs of temporary loss of nearshore hardbottoms due to the beach project, and to apply the results to the benefit/cost calculations. The report, in the form of a White Paper, is currently being reviewed by economists at NOAA, but communications with the authors indicates that the benefit/cost ratio of the project is not significantly affected by consideration of the impacts of the project to the nearshore hardbottoms. In fact, according to the authors of the White Paper, the modified benefit/cost ratio is not less than 5 to 1. The results of the White Paper will be included in the FEIS.

Concern: Worm Reef Impacts. NMFS expresses concern over the small amount of worm reef that will be impacted by the project, and wonders if the mitigation will offset the loss of this habitat.

Response: The project proposes to cover 1.1 acres of wormrock which is located extremely close to shore in a particular location in Segment III. It is noted that the area in which the wormrock exists has been the recipient of two prior beach nourishment projects in the past and that the wormrock has colonized scattered pieces of limestone rock over the last several years. County biological investigations associated with the proposed project have documented that this particular wormrock is deteriorating over time, and may not persist until project construction. In any event, in Broward County wormrock frequently colonizes exposed hard substrate in shallow water, including pilings, seawalls, and even the odd concrete block or large rock. There is every reason to believe that wormrock will colonize significant areas of the proposed mitigation.

Concern: Pipeline Damage Assessment. NMFS recommends that surveys of the areas impacted by the submerged sand delivery pipelines be surveyed both before deployment and after removal.

Response: Concur. Surveys of the pipeline corridors have been completed and the County will be on-site to provide exact routing of each pipeline deployment within the corridors to minimize the impacts of the pipeline to the resources. The entire length of each pipeline will be visually inspected regularly during use, and after removal a detailed survey will be conducted to precisely document impacts.

Concern: EFH Assessment. NMFS concludes in the June 3, 2002 letter that the EFH section of the DEIS does not adequately address potential effects of this and other projects in southeast Florida. Reference is made to the Cumulative Impact comments provided earlier in the letter.

Response: The EFH Assessment in the FEIS will include consideration of all additional data gathered in response to NMFS comments and will incorporate the modified monitoring and mitigation plans, construction and operations plans, and updated cumulative impact analyses.

The June 3, 2002 letter from NMFS concludes that the DEIS does not adequately address adverse impacts of the project, a conclusion that is based on the then-inadequacy of the monitoring plans, the mitigation plan, and the cumulative effects assessment. In the letter the agency furthermore continues to recommend against issuance of a Department of the Army (DA) Permit and retains the option to elevate this matter pursuant to Part IV, paragraph 3(a) and 3(b) of their Clean Water Act 404(g) Memorandum of Agreement.

As noted above, all issues of concern expressed in the NMFS letter have been addressed, and as witnessed by participants in the conference call of October 11, 2002 among NMFS, the USACE, the County, and the State of Florida, NMFS has agreed not to elevate the matter and to withdraw its objection to issuance of the DA permit. In accordance with the request of Mike Johnson of NMFS, we ask that you write to the appropriate NMFS authority to obtain confirmation of their concurrence with the currently proposed project. We are gratified that the County, the USACE, NMFS, the State of Florida Department of Environmental Protection, and other agencies were able to work together to resolve these important issues.

Please feel free to contact me if you have questions or need additional information.

Sincerely,



Stephen Higgins
Beach Erosion Administrator

c: Eric Myers, Director, Broward County Biological Resources Division
Linda Shelley, Fowler White, Tallahassee
Mike Sole, Bureau of Beaches and Wetland Resources
Charlie Stevens, USACE Jacksonville District
Terri Jordan, USACE Jacksonville District
Michael Johnson, NMFS
George Getsinger, NMFS
Jocelyn Karazsia, NMFS
Norm Beumel, CPE
Craig Kruempel, CPE
Chris Creed, OAI

Beter, Dale E SAJ

From: STEPHEN HIGGINS [SHIGGINS@broward.org]
Sent: Friday, May 16, 2003 11:37 AM
To: Jocelyn.Karazsia@noaa.gov
Cc: DAVID STOUT; ERIC MYERS; KENNETH BANKS; LOUIS FISHER; PAMELA FLETCHER; Ckruempel@coastalplanning.net; nbeumel@coastalplanning.net; Cheryl.Miller@dep.state.fl.us; Vladimir.Kosmynin@dep.state.fl.us; shelley@fwbb.org; Allen_Webb@fws.gov; Mike.R.Johnson@noaa.gov; ccreed@olsen-associates.com; Beter, Dale E
Subject: Re: Broward County beach project

Ok, Jocelyn. We will do the additional survey at 1.5 years post-construction. Thank you for expediting the correspondence. I believe Dale is poised to send you his letter.

Stephen Higgins, Beach Erosion Administrator
 Broward County Department of Planning & Environmental Protection
 218 SW 1 Avenue
 Fort Lauderdale, FL 33301
 phone: 954-519-1265
 fax: 954-519-1412
 e-mail: shiggins@broward.org

>>> "Jocelyn Karazsia" <Jocelyn.Karazsia@noaa.gov> 05/16/03 11:32AM >>>
 Steve and Dale:

Thanks for addressing our concern. After further review, we would like you to please consider conducting the survey 1.5 years after construction (halfway to year 3), rather than one year post-construction.

Regarding our outstanding elevation and the procedure to finalize EFH coordination: First, the COE should send us a letter advising that, in their opinion, the issues have been resolved or at least satisfactorily resolved and advise that they intend to issue the permit.

Dale: my records indicate that we have not received this letter from the COE. Once we receive this letter, we will notify the COE as well as Broward County DPEP as to whether we will continue to seek elevation or not.

Jocelyn

STEPHEN HIGGINS wrote:

Hey Jocelyn. We don't think that the toe will have equilibrated out to the edge after one year, but you raise valid points and therefore we will conduct a 1 year post construction survey to find out. Thus we will conduct nearshore hardbottom edge surveys immediately pre-construction (this will be compared to our baseline data to get info on natural variability), 1 year post construction, and 3 years post construction. We will alter the nearshore monitoring plan accordingly, and distribute a copy when revisions are made. Again not to pester (well maybe a little), but your letter to the Jacksonville District's Planning Division is the only thing we lack to complete the Final EIS. We will revise the nearshore hardbottom monitoring plan, distribute it to all, and include with the FEIS. Can we expect the letter soon?

>>> "Jocelyn Karazsia" <Jocelyn.Karazsia@noaa.gov> 05/15/03 12:14PM >>>

Hi Steve: I recognize that the beach fill will take 1-3 years to reach the equilibrium toe of fill (ETOF) line and potential impacts to the hard bottom will take at least one year. However, we are concerned that if the ETOF buries part of the hard bottom reef in say, year one, it could erode in year two and expose the hard bottom again (the live reef would be dead, of course). In this case, if you conduct a reef edge survey in year 3 it may be possible to conclude that the ETOF did not impact the reef unless you knew that the reef was actually buried sometime between year 1 and year 3. This is a potential problem. NOAA Fisheries wants to ensure that there will be adequate monitoring to assess potential sedimentation impacts to the nearshore reefs. How will Broward County determine if burial to the reef has occurred between the completion of the project and the proposed reef survey at year-3 if a buried section of reef has been re-exposed? For example, if a section of the reef contained live soft and hard corals in the pre-construction survey and the survey in year-3 indicates dead hard coral and no soft coral species, how will you assess whether the change in the community was due to "natural events" (e.g. coral die-off due to disease or burial due to a storm event) or due to burial from the migration of the equilibrium toe of the fill? Conducting a post-construction survey at the end of year-1 (i.e. 1 year after construction) would provide additional evidence of the causes of any community changes.

Jocelyn

5/16/2003

STEPHEN HIGGINS wrote:

Hi, Jocelyn. If I remember correctly, we all realized that the construction toe of fill (CTOF) is far inshore of the equilibrium toe of fill (ETOF). The CTOF will not approach the nearshore edge so the edge is theoretically in the same position as pre-construction. It is only when the new beach profile has approached an equilibrium condition that the hardbottom will be impacted. It is anticipated that equilibrium will be reached in 1 to 3 years, so to be sure that we accurately reflect the ETOF effects on the nearshore hardbottom, it was agreed that the edge would be surveyed pre- construction and three years post. That way we see the full effects of the ETOF evolution and we avoid the expense of additional monitoring that will not yield useful data. Does this clarify? Not to pester you, but we are preparing revisions to the FEIS in response to some relatively minor CESAJ comments and the letter from NMFS is one of the comment items. We expect to have the changes wrapped up in a week or two. Can we expect to have the letter by then? If you need additional info, please let me know and we'll get you what you need. Thank you very much. Steve

>>> "Jocelyn Karazsia" <Jocelyn.Karazsia@noaa.gov> 05/06/03 10:58AM >>>

Hi Steve, Thank you for providing Mike and I with the requested monitoring plans. Please provide clarification on the following: Page 2 of your 21 October 2002, letter states that hardbottom edge mapping will be carried out consistent with agency wishes, that is immediately post-construction and three years post-construction (i.e., post-construction years 1, 2, and 4; see our 3 June 2003 letter). However, the revised 20 January, 2003, monitoring plan states that only pre-construction and three year post-construction mapping is proposed (page 4 part 2B). It does not mention immediate post-construction mapping.

Jocelyn

STEPHEN HIGGINS wrote:

Hi, Jocelyn and Mike. Jocelyn, per your request, attached are the latest iterations of the nearshore and offshore monitoring plans. Just as a reminder, we need something from NMFS in response to our November 13, 2002 letter to Andreas Mager in order to complete the coordination in the FEIS. Thanks. Please let me know if you need anything additional. Mike, how goes it? Family ok? Still cold up there? Stephen Higgins, Beach Erosion Administrator
Broward County Department of Planning & Environmental Protection
218 SW 1 Avenue
Fort Lauderdale, FL 33301
phone: 954-519-1265
fax: 954-519-1412
e-mail: shiggins@broward.org

5/16/2003



DEPARTMENT OF PLANNING AND ENVIRONMENTAL PROTECTION - Biological Resources Division
218 S.W. 1st Avenue • Fort Lauderdale, Florida 33301 • 954-519-1230 • FAX 954-519-1412

November 13, 2002

Andreas Mager, Jr., Asst. Regional Administrator
Habitat Conservation Division
National Marine Fisheries Service
9721 Executive Center Drive, N.
St. Petersburg, FL 33702

Subject: Broward County, Segments II and III, Shore Protection Project
Response to NMFS Comments on the DEIS dated June 3, 2002

Dear Mr. Mager:

This letter responds to concerns expressed by the National Marine Fisheries Service (NMFS) regarding the above-referenced project. These concerns are expressed in written form by means of a letter dated June 3, 2002 in which NMFS provides comments on the Draft Environmental Impact Statement (DEIS) for the project.

Concern: Borrow Area Buffers and Adjacent Reef Resources. In a letter dated June 26, 2000 which contains comments on the Public Notice for the Department of the Army Permit Application, NMFS recommended that surveys be conducted of the proposed borrow sites and of the adjacent reef resources. NMFS also recommended that a 500-foot buffer zone be maintained between the borrow areas and adjacent reefs; that borrow area boundaries be straightened; that plans should be developed which avoided or minimized the potential for damage to benthic habitats from mechanical operations, siltation, turbidity, and burial by sediment; and that a plan be developed and implemented to fully compensate for unavoidable impacts to hardbottom, coral, and other sensitive habitats.

Response: The NMFS letter dated June 3, 2002 acknowledged the County's efforts to avoid and minimize impacts to EFH and other NMFS-trust resources. Detailed and comprehensive surveys were conducted of the interior of the borrow sites and of the reef resources adjacent to the reefs, leading to elimination of two borrow sites and modifications to four others. These modifications resulted maximizing the buffers between the borrow areas and adjacent reefs, and in providing assurance to NMFS that the most sensitive resources would be protected by the largest buffers. As noted in the June 3, 2002 NMFS letter, "Generally, the hard bottom communities located seaward of the borrow areas (i.e. eastern boundaries) contain higher relief structure and higher percentage of hard and soft coral than the hard bottom communities located landward of the borrow areas. The average buffer distance to the western boundaries of the five proposed borrow areas are: 357 feet for Borrow Area 1; 285 feet for Borrow Area 2; 375 feet for Borrow Area 3; 361 feet for Borrow Area 4; and 235 feet for Borrow Area 6. The average buffer distance for the eastern boundaries of the five proposed borrow areas are: 513 feet for Borrow Area 1; 1,718 feet for Borrow Area

2; 671 feet for Borrow Area 3; 512 feet for Borrow Area 4; and 680 feet for Borrow Area 6.” In the June 3, 2002 letter, NMFS did not object to the proposed buffers.

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Response: NMFS noted in the letter that consultations with the agency would be welcome in addressing these concerns and in developing acceptable monitoring plans. The County took advantage of this offer and conducted numerous joint agency meetings and conference calls, and included appropriate State agencies as well as NMFS, the Corps of Engineers, the Fish and Wildlife Service, and EPA. These consultations have resulted in the production of an offshore construction and monitoring plan which incorporates the elements recommended by the agencies: i.e. a dredging plan which rotates use of the borrow sites, reducing pressure on the nearby resources; seven-day-per-week monitoring of numerous stations around the borrow sites, in sequences consistent with the dredging plan; and inclusion of sedimentation accumulation measurements, biological stress observations, and tissue examinations of certain hard coral species if levels of sedimentation stress warrants. In addition, triggers are incorporated that halt dredging in applicable borrow areas if sedimentation and/or stress levels reach specified thresholds.

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Concern: Mitigation: The proposed mitigation plan was also a source of concern for NMFS. The agency’s June 3, 2002 letter recommended incorporation of an analysis of temporal losses in habitat value by application of the Habitat Equivalency Analysis (HEA) and that corals of significant size should be relocated from the impact areas to the mitigation substrate.

Response: Again in consultation with NMFS and the other agencies, the mitigation plan was modified and refined. HEA was run for various scenarios, and the transplanting of between 1000 and 2000 corals of a size 15 cm or greater from the impact area to the mitigation will now be accomplished. Application of the HEA and inclusion of coral transplanting resulted in a calculated quantity of mitigation which slightly exceeds the predicted acreage of impacts to hardbottoms, an outcome which now satisfies state regulatory and federal resource agencies, including NMFS.

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and also recommended that a Programmatic Environmental Impact Statement should be prepared for the east coast of Florida.

Response: The Cumulative Impact Assessment section of the DEIS is being supplemented by inclusion of additional projects in the analysis. The Final EIS will include a broader look at the impacts from past projects on nearshore and offshore hardbottoms and reefs and on benthic invertebrate habitats. The analysis will also provide more details regarding the suitability of the proposed mitigation as compensation for impacts to fish habitats.

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Cost-Benefit Analysis. NMFS has pointed out that Broward County's economic analysis of the benefits and costs of the project does not incorporate data generated by a recent multi-agency study on the socioeconomic value of regional reef resources. NMFS speculates that consideration of the loss of use of nearshore hardbottom habitat until the mitigation achieves full value may result in significant economic losses, influencing the benefit/cost ratio which is used to justify the project.

Response: In the General Reevaluation Report (GRR) for the project, National Economic Development benefits of various project alternatives are examined. The selected alternative is the one which maximizes the NED benefits relative to project costs, in accordance with US Army Corps of Engineers Principles and Guidelines. In general, primary benefits are those associated with storm damage reduction to upland properties, and costs are calculated based on expenses related to project design, engineering, monitoring, and construction. Secondary benefits in the form of certain recreational inputs may be considered but the project must initially be justified (net benefits exceed costs) based on primary benefits only. The Corps' Principles and Guidelines do not ordinarily consider loss of use of natural resources as project costs. In any event, the GRR for the project was completed by the County prior to completion of the socioeconomic study of the reef resources. Notwithstanding the foregoing, the County has requested that the lead economists in the preparation of the socioeconomic study prepare an analysis of the costs of temporary loss of nearshore hardbottoms due to the beach project, and to apply the results to the benefit/cost calculations. The report, in the form of a White Paper, is currently being reviewed by economists at NOAA, but communications with the authors indicates that the benefit/cost ratio of the project is not significantly affected by consideration of the impacts of the project to the nearshore hardbottoms. In fact, according to the authors of the White Paper, the modified benefit/cost ratio is not less than 5 to 1. The results of the White Paper will be included in the FEIS.

Concern: Worm Reef Impacts. NMFS expresses concern over the small amount of worm reef that will be impacted by the project, and wonders if the mitigation will offset the loss of this habitat.

Response: The project proposes to cover 1.1 acres of wormrock which is located extremely close to shore in a particular location in Segment III. It is noted that the area in which the wormrock exists has been the recipient of two prior beach nourishment projects in the past and that the wormrock has colonized scattered pieces of limestone rock over the last several years. County biological investigations associated with the proposed project have documented that this particular wormrock is deteriorating over time, and may not persist until project construction. In any event, in Broward County wormrock frequently colonizes exposed hard substrate in shallow water, including pilings, seawalls, and even the odd concrete block or large rock. There is every reason to believe that wormrock will colonize significant areas of the proposed mitigation.

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Response: Concur. Surveys of the pipeline corridors have been completed and the County will be on-site to provide exact routing of each pipeline deployment within the corridors to minimize the impacts of the pipeline to the resources. The entire length of each pipeline will be visually inspected regularly during use, and after removal a detailed survey will be conducted to precisely document impacts.

Concern: EFH Assessment. NMFS concludes in the June 3, 2002 letter that the EFH section of the DEIS does not adequately address potential effects of this and other projects in southeast Florida. Reference is made to the Cumulative Impact comments provided earlier in the letter.

Response: The EFH Assessment in the FEIS will include consideration of all additional data gathered in response to NMFS comments and will incorporate the modified monitoring and mitigation plans, construction and operations plans, and updated cumulative impact analyses.

The June 3, 2002 letter from NMFS concludes that the DEIS does not adequately address adverse impacts of the project, a conclusion that is based on the then-inadequacy of the monitoring plans, the mitigation plan, and the cumulative effects assessment. In the letter the agency furthermore continues to recommend against issuance of a Department of the Army (DA) Permit and retains the option to elevate this matter pursuant to Part IV, paragraph 3(a) and 3(b) of their Clean Water Act 404(g) Memorandum of Agreement.

As noted above, all issues of concern expressed in the NMFS letter have been addressed. In a conference call on October 11, 2002 among representatives of NMFS, the USACE, the County, and the State of Florida, it was agreed that NMFS would not elevate the matter and would withdraw its objection to issuance of the DA permit. In accordance with this agreement, we respectfully request that your agency acknowledge this letter and confirm that your agency's concerns have been addressed and that you no longer oppose issuance of the DA permit. We are gratified that the County, the USACE, NMFS, the State of Florida Department of Environmental Protection, and other agencies were able to work together to resolve these important issues.

Please feel free to contact me if you have questions or need additional information.

Sincerely,



Stephen Higgins
Beach Erosion Administrator

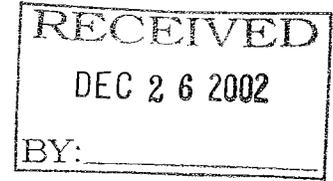
c: Eric Myers, Director, Broward County Biological Resources Division
Linda Shelley, Fowler White, Tallahassee
Mike Sole, Bureau of Beaches and Wetland Resources, FDEP
Charlie Stevens, USACE Jacksonville District
Terri Jordan, USACE Jacksonville District
Jocelyn Karazsia, NMFS, 11420 North Kendall Drive, Suite 103, Miami, FL 33176
Michael Johnson, NMFS, One Blackburn Drive, Gloucester, MA 01930-2298
George Getsinger, NMFS, 6620 Southpoint Dr., Ste 310, Jacksonville, FL 32216-0958
Norm Beumel, CPE
Craig Kruempel, CPE
Chris Creed, OAI

5350.43
NB, DM, CK, TC



DEPARTMENT OF PLANNING AND ENVIRONMENTAL PROTECTION - Biological Resources Division
218 S.W. 1st Avenue • Fort Lauderdale, Florida 33301 • 954-519-1230 • FAX 954-519-1412

December 20, 2002



Dan Clark
Cry of the Water
P.O. Box 8143
Coral Springs, FL 33075

Subject: Broward County, Segment III, Shore Protection Project

Dear Dan:

Based on our recent telephone conversations and your email of 12/20/02, 2:00pm (attached), it is our understanding that you will not refile your petition for administrative hearing on the above-referenced project if we add specific language to one of the five action items offered by us in our letter of December 6, 2002. Accordingly, we have added your suggested language to Action Item 3, and the County now offers the following actions in exchange for the commitment from Cry of the Water to drop its challenge to the Segment III permit:

1. The JCP will contain language which specifies that hard corals relocated from impact areas in Segment III will remain in the Segment III nearshore area;
2. Sediment collection devices will be added to nearshore monitoring stations;
3. Observations of coral health parameters will be added to the nearshore hardbottom monitoring program. This will include the recording of data on all observations of corals that appear to be affected by bleaching, diseases, sediment, cyano bacteria, or macroalgae. Also, one additional nearshore monitoring station will be established at monument R-104 in northern Hollywood to enable monitoring of a higher quality nearshore community in that area.
4. We will provide you with monthly updates on the progress of the Port Everglades Sand Bypassing Project; and
5. The JCP will contain language which authorizes the installation of appropriate vegetation on Segment III beaches, and the County will coordinate with John U. Lloyd Beach State Park, Dania Beach, Hollywood, and Hallandale Beach to develop and implement beach vegetation projects following beach construction.

We appreciate your willingness to reach a consensus on this matter. Please be advised that the representations contained herein are in the nature of settlement discussions and are not admissible in any

legal proceeding. Additionally, any settlement reached is subject to approval by the Florida Department of Environmental Protection-Bureau of Beaches and Wetland Resources, the Director of the Department of Planning and Environmental Protection, the County Administrator, and/or the Broward County Commission.

Please feel free to contact me if I can be of further assistance.

Sincerely,



Stephen Higgins
Beach Erosion Administrator

attachment

c: Steve Somerville, Director, DPEP
Eric Myers, Director, Biological Resources Division
Jose Gonzales, Assistant County Attorney
Linda Shelley, Fowler White Boggs Banker
Mike Sole, FDEP, Bureau of Beaches and Wetland Resources
Norm Beumel, Coastal Planning & Engineering, Inc. ✓
Chris Creed, Olsen Associates, Inc.

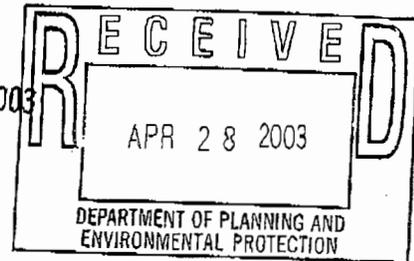


DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
P. O. BOX 4970
JACKSONVILLE, FLORIDA 32232-0019

REPLY TO
ATTENTION OF

Planning Division
Environmental Branch

APR 24 2003



Dr. Janet S. Matthews
State Historic Preservation Officer
Division of Historical Resources
500 South Bronough Street
Tallahassee, Florida 32399-0250

Dear Dr. Matthews:

As the lead Federal agency for the Broward County Shoreline Protection Project, the Jacksonville District, U.S. Army Corps of Engineers has determined that there are no significant historic properties within Segments II & III of the project. Seven borrow areas were investigated by Dr. Robert Baer in 1999, *Cultural Resource Archeological Investigations of Potential Beach Nourishment Sand Borrow Sites Offshore of Broward County, Florida* and Dr. John Gifford in 2001, *Archeological SCUBA/ROV Investigation of Fifteen Potentially Significant Submerged Archeological Resources for the Broward County Shoreline Protection Project*. These investigations included a remote sensing survey and diver investigations. After analysis of the data, we have concluded that no significant historic properties will be affected by the project. Shipwreck remains of the bow section of the *Copenhagen* were discovered near Borrow Area VI. This area, which has been designated as part of the *SS Copenhagen Underwater Archeological Preserve*, will be avoided.

We ask for your concurrence with these findings in accordance with the procedures contained in 36 CFR, Part 800 ("Protection of Historic Properties"). If there are any questions regarding this project, please contact Mr. Tommy Birchett, Archeologist, at 904-232-3834.

Sincerely,

James C. Duck
Chief, Planning Division

Copy Furnished:

Mr. Stephen Higgins, Broward County Department
of Planning and Environmental Protection, 218 Southwest 1st
Avenue, Fort Lauderdale, Florida 33301



United States Department of the Interior

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



April 30, 2003

James Duck
U.S. Army Corps of Engineers
Planning Division
701 San Marco Boulevard, Room 372
Jacksonville, Florida 32207-8175

Service Log No.: 4-1-99-I-506

Project: Broward County Shore Protection Project,
Coastal Barrier Resources Act
Determination

Applicant: Broward County Department of Planning
and Environmental Protection

County: Broward

Dear Mr. Duck:

The following describes the history and the applicability of the Coastal Barrier Resources Act (CBRA) of 1982 and the Coastal Barrier Resources Improvement Act (CBRIA) of 1990 to the Broward County Shore Protection Project located in Broward County, Florida. The proposed project will overlap the boundaries of two "otherwise protected areas" (OPAs) (Birch Park, FL-19P and Lloyd Beach, FL-20P) and one CBRA unit (North Beach, P-14A).

Historically, some Federal expenditures (e.g., Federal flood insurance and other Federal financial assistance) had the effect of encouraging development in fragile, high-risk coastal barrier systems (e.g., barrier islands, sand spits, and mangrove forests). The CBRA and CBRIA limit federally-subsidized development within a defined Coastal Barrier Resources Unit. Three important goals of these acts are to: (1) minimize loss of human life by discouraging development in high-risk areas; (2) reduce wasteful expenditure of Federal resources; and (3) protect the natural resources associated with coastal barriers. In addition, CBRIA also provided development goals for undeveloped coastal property held in public ownership, such as wildlife refuges, parks, or other lands set aside for conservation, which are identified as OPAs. The only restriction applied to an OPA prohibits the expenditure of Federal Flood Insurance to new construction of structures (buildings) in an OPA, as stated in Section 9, Prohibitions of Flood Insurance Coverage In Certain Coastal Barriers. There are no other restrictions placed on Federal expenditures in an OPA.

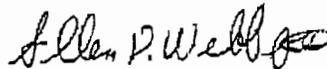
James Duck
April 30, 2003
Page 2

Federal monies can be spent within the Coastal Barrier Resource System for certain activities, which are exempted under Section 6, Exceptions To Limitations On Expenditures. These activities include: (1) projects for the study, management, protection, and enhancement of fish and wildlife resources and habitats; (2) establishment of navigation aids; (3) projects funded under the Land and Water Conservation Fund Act of 1965; (4) scientific research; (5) assistance for emergency actions essential to saving lives and the protection of property and the public health and safety, if preferred pursuant to the Disaster Relief, Emergency Assistance Act, and National Flood Insurance Act and are necessary to alleviate the emergency; (6) maintenance, repair, reconstruction, or repair, but not expansion of publically owned or publically operated roads, structures, or facilities; (7) nonstructural projects for shoreline stabilization that are designed to mimic, enhance, or restore a natural stabilization system; (8) any use or facility necessary for the exploration, extraction, or transportation of energy resources; (9) maintenance or construction of improvements of existing Federal navigation channels, including the disposal of dredge materials related to such projects; and (10) military activities essential to national security.

Since the proposed Broward County Shore Protection Project does not include the construction of structures that would require Federal Flood Insurance, then Federal expenditures for the proposed project are not restricted in the FL-19P, Birch Park and FI-20P, Lloyd Beach OPAs. The Service has determined that the construction activities proposed within CBRA Unit, P-14A, North Beach are consistent with the intent of the Act and are exempt pursuant to section 6(a)(G) which authorizes "nonstructural projects for shoreline stabilization that is designed to mimic, enhance, or restore a natural stabilization system."

Thank you for your cooperation and effort in protecting fish and wildlife resources. If you have any questions regarding this determination, please contact Allen Webb at 772-562-3909, extension 246.

Sincerely yours,



Linda S. Ferrell
Assistant Field Supervisor
South Florida Ecological Services Office

cc:

Broward County Department of Planning and Environmental Protection, Ft. Lauderdale, Florida
(Stephene Higgins)

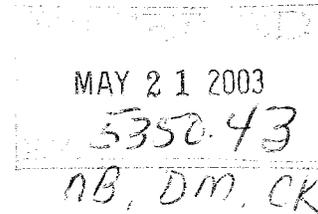


DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
PALM BEACH GARDENS REGULATORY OFFICE
4400 PGA BOULEVARD, SUITE 500
PALM BEACH GARDENS, FLORIDA 33410

May 19, 2003

Regulatory Division
South Permits Branch
199905545 (IP-DEB)

Mr. Andreas Mager, Jr.
Southeast Regional Office
National Marine Fisheries Service
9721 Executive Center Drive North
St. Petersburg, Florida 33702-2449



Dear Mr. Mager:

We have received your Essential Fish Habitat (EFH) Recommendations provided by letter dated June 26, 2000, regarding Department of the Army (DA) permit application number 199905545 (IP-DEB), submitted by Broward County.

In your letter, you requested the applicant's project incorporate the following EFH Recommendations:

1. Provide a 500' wide buffer zone between the borrow areas and adjacent hard-bottom reefs. Borrow site boundaries should be revised to eliminate acute angles and 'dog-leg' features,
2. Provide a plan to avoid and/or minimize damage caused by mechanical operations, siltation, turbidity, and burial of all hard-bottom areas and live coral habitats. This plan should be made available to NMFS for review prior to final approval, and
3. Provide a plan for full compensation of unavoidable adverse impacts to hard bottom, coral, and other sensitive near-shore habitats.

Also, in a letter dated April 23, 2002, you requested the applicant provide additional information on the following other recommendations, in concurrence with the USFWS, related to EFH:

1. Short-term sedimentation and biological monitoring at the nearshore hard-bottom reefs.

2. Long-term sedimentation and biological monitoring at the nearshore hard bottom.
3. Long-term sedimentation of biological monitoring at specific coral reef stations.
4. Cumulative effects of this and other similar projects.

By electronic mail, dated May 16, 2003, your agency also requested the applicant conduct a survey of nearshore reef and hard bottom resources, 1.5 and 3 years after construction, which would provide additional evidence of the causes of any community changes.

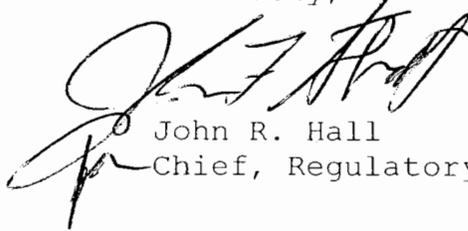
The applicant responded to your recommendations by letter, dated October 21, 2002, and electronic mail, dated May 16, 2003, which is attached for your review. Specifically, the applicant has agreed to the following terms, which were also discussed during a teleconference on October 11, 2002, with your agency and the applicant, to comply with your EFH concerns:

1. In an effort to avoid and minimize impacts to EFH, the county has proposed buffer distances, which on the average at the eastern boundary of the borrow areas, meet or exceed the 500' requirement.
2. Implement a construction and monitoring program (to include additional monitoring stations, which will be monitored during, and following construction), which rotates use of the borrow areas, implements daily monitoring at stations around reef areas adjacent to the borrow sites, and monitors sedimentation and indicators of physiological stress. Triggers will be developed to serve as thresholds and all dredge and fill activities will cease if these thresholds are exceeded.
3. The mitigation will now accommodate the transplanting of 1000 - 2000 corals of a size 15cm or greater from the impact area. The Habitat Equivalency Analysis indicates that the final plan's mitigation slightly exceeds the acreage proposed for impact.

4. The Final Environmental Impact Statement (FEIS) will incorporate a broader look at cumulative impacts, to include a review of impacts from past projects.
5. Considering cost benefit analysis, the county agrees to incorporate the costs of temporary loss of nearshore hard-bottoms due to the beach project, and to apply the results to the benefit/cost calculations. This will be included in the FEIS.
6. With reference to concerns over the proposed impacts to 1.1 acres of worm rock reef, the county asserts that this will be offset by natural colonization of the proposed mitigation structures.
7. The county will assist with the exact routing of the pipeline, within the corridors, to minimize the impacts of the pipeline to the resources. The length of the pipeline will be visually inspected regularly, during use, and after removal, a detailed survey will be conducted in order to document impacts.
8. The EFH assessment in the FEIS will include consideration of all additional data gathered in response to NMFS comments and will incorporate the (afore-mentioned) monitoring and mitigation plans, construction and operation plans, and updated cumulative impact analyses.
9. The county will conduct a post construction survey of nearshore hard-bottom resources immediately prior to construction (this will be compared to baseline data to get info on natural variability), and then 1.5 and 3 years after construction. This requirement will be included in the nearshore monitoring plan, accordingly.

Based on the above information, the Corps feels that the applicant has complied with your EFH recommendations, number 1 through 3, and as well as all other EFH concerns, and intends to issue permit number 199905545(IP-DEB) following 10 days from the date of this letter. We also request that you remove your concerns, as stated in your letter dated July 6, 2000, pursuant to Part IV 3(b) of the 1992 404q Memorandum of Agreement (MOA) between our agencies.

Sincerely,



John R. Hall

Chief, Regulatory Division

Enclosures

Copies furnished:

Jocelyn Karazzia, NMFS, Habitat Conservation, Miami

Doug Manning, Coastal Planning and Engineering, Inc., Boca Raton



FLORIDA DEPARTMENT OF STATE

Glenda E. Hood

Secretary of State

DIVISION OF HISTORICAL RESOURCES

Mr. James C. Duck, Chief
 Jacksonville District Corps of Engineers
 Planning Division, Environmental Branch
 P.O. Box 4970
 Jacksonville, Florida 32232-0019

May 21, 2003

RE: DHR No. 2003-3635
 Received by DHR: April 28, 2003
 Project Name: Broward County Shoreline Protection Project
 Broward County, Florida

Dear Mr. Duck:

Our office received and reviewed the above referenced project in accordance with *National Environmental Policy Act of 1969*, and Section 106 of the *National Historic Preservation Act of 1966*, as amended. The State Historic Preservation Officer is to advise and assist federal agencies when identifying historic properties listed or eligible for listing, in the National Register of Historic Places, assessing the project's effects, and considering alternatives to avoid or reduce the project's effect on such properties.

We concur with the determination that no historic properties will be affected by the project and note that the shipwreck remains of the bow section of the *SS Copenhagen* shall be avoided.

If you have any questions concerning our comments, please contact Samantha Earnest, Historic Sites Specialist, at searnest@dos.state.fl.us or (850) 245-6333. Your interest in protecting Florida's historic properties is appreciated.

Sincerely,

Janet Snyder Matthews, Deputy SHPO

for Janet Snyder Matthews, Ph.D., Director, and
 State Historic Preservation Officer

500 S. Bronough Street • Tallahassee, FL 32399-0250 • <http://www.flheritage.com>

Director's Office
 (850) 245-6300 • FAX: 245-6435

Archaeological Research
 (850) 245-6444 • FAX: 245-6436

Historic Preservation
 (850) 245-6333 • FAX: 245-6437

Historical Museums
 (850) 245-6400 • FAX: 245-6433

Palm Beach Regional Office
 (561) 279-1475 • FAX: 279-1476

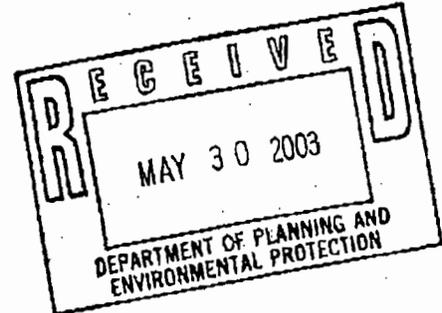
St. Augustine Regional Office
 (904) 825-5045 • FAX: 825-5044

Tampa Regional Office
 (813) 272-3843 • FAX: 272-2340



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, Florida 33702-2432

May 28, 2003



Colonel James G. May
District Engineer, Jacksonville District
Regulatory Division, South Permits Branch
Department of the Army, Corps of Engineers
c/o Palm Beach Gardens Regulatory Office
4400 PGA Boulevard, Suite 500
Palm Beach Gardens, Florida 33410

Dear Colonel May:

This responds to your staff's May 19, 2003, letter concerning permit application number 199905545 (IP-DEB) submitted by Broward County. Your letter transmits the Department of the Army's reply to National Marine Fisheries Service (NOAA Fisheries) Essential Fish Habitat (EFH) Conservation Recommendations provided in our June 26, 2000, and April 23, 2002, letters and May 16, 2003, electronic correspondence.

By letter dated June 26, 2000, NOAA Fisheries provided the following EFH Conservation Recommendations:

1. Provide a 500-foot wide buffer zone between the borrow areas and adjacent hardbottom reefs. Borrow site boundaries should be revised to eliminate acute angles and "dog-leg" features;
2. Provide a plan to avoid and/or minimize damage caused by mechanical operations, siltation, turbidity, and burial of all hardbottom areas and live coral habitats. This plan should be made available to NOAA Fisheries for review prior to final approval; and
3. Provide a plan for full compensation of unavoidable adverse impacts to hardbottom, coral, and other sensitive nearshore habitats.

In response to new and additional information provided to us, NOAA Fisheries, by letter dated April 23, 2002, requested additional information concerning:

1. Short-term sedimentation and biological monitoring at the nearshore hardbottom reefs;
2. Long-term sedimentation and biological monitoring at the nearshore hardbottom;



3. Long-term sedimentation of biological monitoring at specific coral reef stations; and
4. Cumulative effects of this and other similar projects.

By electronic mail dated May 16, 2003, NOAA Fisheries requested that the applicant conduct hardbottom mapping of nearshore reef and hardbottom resources 1.5 and 3 years following project construction. This was requested to allow determination of causes of bottom community changes and habitat burial.

The applicant responded to our recommendations by letter dated October 21, 2002, and electronic mail dated May 16, 2003. Specifically, Broward County has agreed to the following terms, which were also discussed during a teleconference on October 11, 2002.

1. In an effort to avoid and minimize impacts to Essential Fish Habitat (EFH), the county has proposed buffer distances which, on the average at the eastern boundary of the borrow area, meet or exceed the 500-foot requirement;
2. Implement a construction and monitoring program (to include additional monitoring stations that will be monitored during and following construction), which rotates the use of borrow areas, implements daily monitoring at stations around reef areas adjacent to the borrow sites, and monitors sedimentation and indicators of physiological stress. Triggers will be developed to serve as thresholds and all dredge and fill activities will cease if these thresholds are exceeded;
3. The mitigation will include transplantation of 1000-2000 corals of a size 15-cm or greater from the impact area. The Habitat Equivalency Analysis indicates that the final plan's mitigation slightly exceeds the acreage proposed for impact;
4. The Final Environmental Impact Statement (FEIS) will incorporate a broader evaluation of cumulative impacts, to include a review of impacts from past projects;
5. Considering the cost-benefit analysis, the county agrees to incorporate the cost of temporary loss of nearshore hardbottom due to the beach project, and apply the results of this analysis to the cost-benefit calculations. This will be included in the FEIS;
6. With reference to concerns over the proposed impact to 1.1 acres of worm rock reef, the county asserts that this would be offset by natural colonization of the proposed mitigation structures;
7. The county will assist with the exact routing of the pipeline, within the corridors, to minimize the impacts of the pipeline to the resources. The length of the pipeline will be visually inspected regularly, during use, and after removal, an detailed survey will be conducted in order to document impacts;
8. The EFH Assessment in the FEIS will include consideration of all additional data gathered in

response to NOAA Fisheries' comments and will incorporate the aforementioned mitigation and monitoring plans, construction and operation plans, and updated cumulative impact analyses; and

9. The county will conduct a post-construction survey of the nearshore hardbottom resources immediately prior to construction and this will be compared to baseline data to evaluate natural variability). Subsequent surveys will be performed 1.5 and 3-years after construction is completed. This requirement will be included in the nearshore monitoring plan.

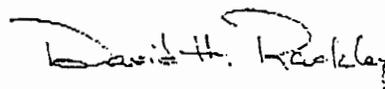
NOAA Fisheries does not concur with the applicants response to item #5 above. In order to accurately reflect the true cost associated with the project, the county should incorporate the cost of permanent (not temporary) loss of nearshore hardbottom, in the FEIS. NOAA Fisheries recognizes that although mitigation reefs will provide functional habitat, the natural reefs and associated habitat functions and values at these locations will be permanently lost. We encourage the county to include a section in the cost-benefit analysis that compares the costs of the natural reef loss to the benefits of the mitigation reefs at other locations.

NOAA Fisheries is also concerned regarding the applicant's response to item #9. Based on previous dialogue with the Corps of Engineers and Broward County, we believe the COE may have inadvertently termed this hardbottom mapping as post-construction rather than pre-construction. In the event that a post-construction survey is performed immediately after construction, it should be designed to detect impacts and change via hardbottom mapping rather than changes associated with natural variability within the system. Hardbottom mapping that is designed to detect natural variability would need to be performed prior to the commencement of the placement of beach fill.

In an effort to move forward with project authorization, NOAA Fisheries concludes that addressing the two abovementioned concerns regarding items # 5 and #9 would resolve our concerns and no further action relevant to our elevation options involving the Magnuson-Stevens Fishery Conservation and Management or Section 404(q) of the Clean Water Act will be pursued. However, we request that in the event that impacts exceed those described in the DEIS, or if changes in the monitoring or construction conditions are planned, NOAA Fisheries should be immediately notified and EFH consultation should be reinitiated.

Related action or matters needing our attention should be directed to the attention of Ms. Jocelyn Karaszia at our Miami Office. She may be reached at 11420 North Kendall Drive, Suite #103, Miami, Florida 33176, or by telephone at (305) 595-8352.

Sincerely,



 Frederick C. Sutter III
Deputy Regional Administrator

cc:

EPA, WPB

DEP, WPB

FFWCC, Tallahassee

FWS, Vero

DPEP, Broward

F/SER4

F/SER45-Karazsia

Craig Kruempel

From: Dale.E.Beter@saj02.usace.army.mil
Sent: Friday, May 16, 2003 12:07 PM
To: SHIGGINS@broward.org; Jocelyn.Karazsia@noaa.gov
Cc: DSTOUT@broward.org; EMYERS@broward.org; KBANKS@broward.org; LFISHER@broward.org; PFLETCHER@broward.org; Craig Kruempel; Norman Beumel; Cheryl.Miller@dep.state.fl.us; Vladimir.Kosmynin@dep.state.fl.us; shelley@fwbb.org; Allen_Webb@fws.gov; Mike.R.Johnson@noaa.gov; ccreed@olsen-associates.com; Dale.E.Beter@saj02.usace.army.mil; John.F.Studt@saj02.usace.army.mil
Subject: RE: Broward County beach project

I'll change the letter, accordingly. Jocelyn, we hope to get the letter to you ASAP. It is basically a summary of all EFH comments, as well as this most recent issue, and how the County has, addressed all of them.

dale

[Beter, Dale E SAJ] -----Original Message-----

From: STEPHEN HIGGINS [mailto:SHIGGINS@broward.org]
Sent: Friday, May 16, 2003 11:37 AM
To: Jocelyn.Karazsia@noaa.gov
Cc: DAVID STOUT; ERIC MYERS; KENNETH BANKS; LOUIS FISHER; PAMELA FLETCHER; Ckruempel@coastalplanning.net; nbeumel@coastalplanning.net; Cheryl.Miller@dep.state.fl.us; Vladimir.Kosmynin@dep.state.fl.us; shelley@fwbb.org; Allen_Webb@fws.gov; Mike.R.Johnson@noaa.gov; ccreed@olsen-associates.com; Beter, Dale E
Subject: Re: Broward County beach project

Ok, Jocelyn. We will do the additional survey at 1.5 years post-construction. Thank you for expediting the correspondence. I believe Dale is poised to send you his letter.

Stephen Higgins, Beach Erosion Administrator
 Broward County Department of Planning & Environmental Protection
 218 SW 1 Avenue
 Fort Lauderdale, FL 33301
 phone: 954-519-1265
 fax: 954-519-1412
 e-mail: shiggins@broward.org

>>> "Jocelyn Karazsia" <Jocelyn.Karazsia@noaa.gov> 05/16/03 11:32AM >>>
 Steve and Dale:

Thanks for addressing our concern. After further review, we would like you to please consider conducting the survey 1.5 years after construction (halfway to year 3), rather than one year post-construction.

Regarding our outstanding elevation and the procedure to finalize EFH coordination: First, the COE should send us a letter advising that, in their opinion, the issues have been resolved or at least satisfactorily resolved and advise that they intend to issue the permit.

Dale: my records indicate that we have not received this letter from the COE. Once we receive this letter, we will notify the COE as well as Broward County DPEP as to whether we will continue to seek elevation or not.

Jocelyn

STEPHEN HIGGINS wrote:

Hey Jocelyn. We don't think that the toe will have equilibrated out to the edge after one year, but you raise valid points and therefore we will conduct a 1 year post construction survey to find out. Thus we will conduct nearshore hardbottom edge surveys immediately pre-construction (this will be compared to our baseline data to get info on natural variability), 1 year post construction, and 3 years post construction. We will alter the nearshore monitoring plan accordingly, and distribute a copy when revisions are made. Again not to pester (well maybe a little), but your

6/9/2003

letter to the Jacksonville District's Planning Division is the only thing we lack to complete the Final EIS. We will revise the nearshore hardbottom monitoring plan, distribute it to all, and include with the FEIS. Can we expect the letter soon?

>>> "Jocelyn Karazsia" <Jocelyn.Karazsia@noaa.gov> 05/15/03 12:14PM >>>

Hi Steve: I recognize that the beach fill will take 1-3 years to reach the equilibrium toe of fill (ETOF) line and potential impacts to the hard bottom will take at least one year. However, we are concerned that if the ETOF buries part of the hard bottom reef in say, year one, it could erode in year two and expose the hard bottom again (the live reef would be dead, of course). In this case, if you conduct a reef edge survey in year 3 it may be possible to conclude that the ETOF did not impact the reef unless you knew that the reef was actually buried sometime between year 1 and year 3. This is a potential problem. NOAA Fisheries wants to ensure that there will be adequate monitoring to assess potential sedimentation impacts to the nearshore reefs. How will Broward County determine if burial to the reef has occurred between the completion of the project and the proposed reef survey at year-3 if a buried section of reef has been re-exposed? For example, if a section of the reef contained live soft and hard corals in the pre-construction survey and the survey in year-3 indicates dead hard coral and no soft coral species, how will you assess whether the change in the community was due to "natural events" (e.g. coral die-off due to disease or burial due to a storm event) or due to burial from the migration of the equilibrium toe of the fill? Conducting a post-construction survey at the end of year-1 (i.e. 1 year after construction) would provide additional evidence of the causes of any community changes.

Jocelyn

STEPHEN HIGGINS wrote:

Hi, Jocelyn. If I remember correctly, we all realized that the construction toe of fill (CTOF) is far inshore of the equilibrium toe of fill (ETOF). The CTOF will not approach the nearshore edge so the edge is theoretically in the same position as pre-construction. It is only when the new beach profile has approached an equilibrium condition that the hardbottom will be impacted. It is anticipated that equilibrium will be reached in 1 to 3 years, so to be sure that we accurately reflect the ETOF effects on the nearshore hardbottom, it was agreed that the edge would be surveyed pre-construction and three years post. That way we see the full effects of the ETOF evolution and we avoid the expense of additional monitoring that will not yield useful data. Does this clarify? Not to pester you, but we are preparing revisions to the FEIS in response to some relatively minor CESAJ comments and the letter from NMFS is one of the comment items. We expect to have the changes wrapped up in a week or two. Can we expect to have the letter by then? If you need additional info, please let me know and we'll get you what you need. Thank you very much. Steve

>>> "Jocelyn Karazsia" <Jocelyn.Karazsia@noaa.gov> 05/06/03 10:58AM >>>

Hi Steve, Thank you for providing Mike and I with the requested monitoring plans. Please provide clarification on the following: Page 2 of your 21 October 2002, letter states that hardbottom edge mapping will be carried out consistent with agency wishes, that is immediately post-construction and three years post-construction (i.e., post-construction years 1, 2, and 4; see our 3 June 2003 letter). However, the revised 20 January, 2003, monitoring plan states that only pre-construction and three year post-construction mapping is proposed (page 4 part 2B). It does not mention immediate post-construction mapping.

Jocelyn

STEPHEN HIGGINS wrote:

Hi, Jocelyn and Mike. Jocelyn, per your request, attached are the latest iterations of the nearshore and offshore monitoring plans. Just as a reminder, we need something from NMFS in response to our November 13, 2002 letter to Andreas Mager in order to complete the coordination in the FEIS. Thanks. Please let me know if you need anything additional. Mike, how goes it? Family ok? Still cold up there? Stephen Higgins, Beach Erosion Administrator
Broward County Department of Planning & Environmental Protection
218 SW 1 Avenue
Fort Lauderdale, FL 33301
phone: 954-519-1265
fax: 954-519-1412
e-mail: shiggins@broward.org