APPENDIX C
404 (b)(1) Evaluation Report

Section 404(b)(1) Evaluation Report
Miami Harbor General Reevaluation Report
Miami-Dade County, Florida

I. PROJECT DESCRIPTION:

1. a. Location. Miami Harbor is located in Miami-Dade County on the Atlantic coast of Florida.

b. Authority and Purpose. The Miami-Dade County Seaport Department of the Port of Miami (Port) requested the U.S. Army Corps of Engineers (USACE), Jacksonville District, to study the feasibility of widening and deepening portions of the Port of Miami, Miami-Dade County, Florida. A resolution from the Committee on Transportation and Infrastructure, United States House of Representatives, adopted October 29, 1997, provides the study authority as follows:

> "Resolved by the Committee on Transportation and Infrastructure of the United States House of Representatives, That the Secretary of the Army is requested to review the report of the Chief of Engineers on Miami Harbor published as Senate, Document 90-93, 90th Congress, 2nd Session, and other pertinent reports, with a view to determining the feasibility of providing channel improvements in Miami Harbor and channels."

Additional authorization appeared in a subsequent appropriations bill for Miami Harbor, Florida, which contained the following language:

> "The Committee has provided $25,000,000 to reimburse the Miami-Dade Seaport Department for the Federal share of dredging work which has been accomplished and an additional $300,000 to initiate a General Reevaluation Report (GRR) to determine the feasibility of further Port deepening."

Improvements including channel deepening and widening are required to provide improved navigation and safety within the Federal channel and Port and to more effectively handle the existing and future commercial ship fleet. The recommended improvements would allow commercial ships with increased draft and cargo tonnage to call at the Port, resulting in transportation cost savings.

c. General Description.

The Corps proposes to deepen and widen the following channels:

Component 1C. Flaring the existing 500-foot wide entrance channel to provide an 800-foot wide entrance at Buoy 1. The widener extends from the beginning of the entrance channel about 150 feet parallel to both sides of the existing entrance channel for about 900 feet before tapering back to the existing channel edge over a total distance of about 2000 feet. Deepening of the entrance channel and proposed widener along Cut 1 and Cut

2 from an existing depth of 44 feet in one-foot increments to a depth of 52 feet received consideration.

Component 2A. Widen the southern intersection of Government Cut with Lummus Island (Fisherman's) channel at Buoy 15. The length of the widener is about 700 feet with a maximum width of about 75 feet. Depths considered for 2A varied from an existing project depth of 42 feet to 50 feet.

Component 3B. Extend the existing Fisher Island turning basin to the north. A turning notch of about 1500 feet by 1200 feet extends approximately 300 feet to the north of the existing channel edge near the West End of Cut-3. Depths from 43 to 50 feet at one-foot increments below the existing depth of 42 feet received consideration in the area of the turning notch.

Component 4. Relocate the west end of the main channel (cruise ship channel or Cut-4) about 250 feet to the south between channel miles 2 and 3 over a two or three degree transition to the existing cruise ship turning basin. No dredging is expected for measure four since existing depths allow for continuation of the authorized depth of 36 feet.

Component 5A. Increase the width of the Lummus Island Cut (Fisherman's Channel) about 100 feet to the south of the existing channel. Measure 5 includes a 1500-foot diameter turning basin, which would reduce the existing size of the Lummus Island (or Middle) turning basin. A widener at the northwest corner of the turning basin helps ease the turn to the Dodge Island Cut. The deepening evaluation examined depths below the existing 42-foot depth at one-foot increments from 43 to 50 feet along the proposed widened channel from Cut-3, Station 0+00 to Cut-3, Station 42+00.

The following describes general dredging information:

a. Approximately 6,000,000cy of material will be removed for the improvement work. Material from the project will be placed in the seagrass mitigation site, the artificial reef mitigation site, or an approved upland disposal area located. Blasting will be required to remove some of the material.

d. General Description of Dredged or Fill Material. Due to previous dredging projects of the Port and Entrance Channel, the majority of the project area is exposed rock. A few localized areas are mantled by a few feet of sand due to shoaling. The sand is usually tan or gray, contains some fines and also fills solution holes in the underlying rock. A portion of the Entrance Channel, between the reefs is sand with no rock. In areas not previously dredged, yellow to white massive limestone and sandstone units of the Miami Oolite Formation are overlain by sand and silt. The Miami Oolite Formation has many solution channels and is very permeable. It has a maximum thickness of 30 feet in the project area and has its base at an approximate elevation of –35.0 ft. MLW. The presence of a hard basal conglomerate at this elevation signifies the unconformable contact with the older Fort Thompson Formation. The Fort Thompson consists of tan colors, sandy limestone, calcareous sandstone, and seams of sand. With deeper depths, the sand seams increase in size and are thicker than the rock strata in some places. Many solution holes

are present and are either open or filled with sand or secondary limestone. In both the Miami Oolite and the Fort Thompson Formations solution activity and re-crystallization have created zones of different rock strength that cause the rock to fragment into large pieces that makes excavation difficult.

e. Description of the Proposed Disposal Sites. The appropriate sand and rock material will be placed in the proposed seagrass mitigation area, additional rock will be placed in the confines of the permitted artificial reef creation area, and an additional upland disposal. The upland site will be diked with weirs and pipelines for settlement of the material and return flow.

The seagrass mitigation area consists of old borrow holes north of the Julia Tuttle Causeway. used for fill materials for the causeway. The natural elevation prior to excavation was approximately two to six feet below MHW, and the existing contour elevation range from eight to 30 feet below the historic elevations. Geology and sediments on the site consist of rock, sand and silts. The site is mostly unvegetated; however, some algae and scattered seagrasses inhabit some of the shallow slopes of the borrow areas. The area adjacent to the site are vegetated by dense seagrass.

The artificial reef site (specifically, the areas to be used for disposal placement with this project) consists of unvegetated sandy substrates.

The upland disposal site has not been determined.

f. Description of Disposal Methods. The disposal method at the seagrass mitigation site will be primarily hopper dredge pumpout. Clamshell barge may be used at the excavation site, where material will be segregated for disposal at the various disposal sites based on size and quality of the material.

II. FACTUAL DETERMINATIONS:

a. Physical Substrate Determinations.

(1). Substrate Elevations The existing depths are between approximately -8 feet and –52 feet.

(2). Sediment Type. Sand, rock, silt, and clay.

(3). Fill Material Movement. No movement is expected at the upland site or the artificial reef site. Only slight shifting of materials may occur at the seagrass mitigation area.

(4). Physical Effect on Benthos. Wherever material is placed on the substrate, the benthic inhabitants will be lost. However, rapid recovery of the benthic community is expected.

(5). Other Effects. Other than the loss of benthic organisms, environmental impacts at the site are expected to be minimal.

b. Water Circulation, Fluctuation and Salinity Determinations. Water fluctuation, circulation and salinity will not be adversely affected.

c. Suspended Particle/Turbidity Determinations.

(1). Expected Changes in Suspended Particulates and Turbidity Levels in the Vicinity of the Disposal Sites. Except for minor disturbances at the disposal site, little or no turbidity is expected during construction and State water quality and turbidity standards will be met unless an mixing zone exemption is required.

(2). Effects (Degree and Duration) on Chemical and Physical Values

(a). Light Penetration. No difference in light penetration is expected in the vicinity of construction activities. A reduction of light penetration during placement of the materials at the seagrass mitigation site may occur, but because of tidal action in the harbor these effects will be of short duration. However, benthic resources would not be much impacted by the work.

(b). Dissolved Oxygen. Dissolved oxygen (DO) levels should be unaffected by disposal activities.

(c). Toxic Metals and Organics. No toxic metals or organics are known to occur at the sites.

(d). Pathogens. Not applicable.

(e). Aesthetics. The presence of equipment during dredging activities will be aesthetically displeasing; however, upon completion of these activities all equipment will be removed. Therefore, there will be no long-term adverse aesthetic impacts.

d. Contaminant Determinations. No sources of pollutants or contaminants have been identified within the construction or disposal areas.

e. Aquatic Ecosystem and Organism Determinations.

(1). Effects on Plankton. No adverse impacts expected.

(2). Effect on Benthos. Benthic organisms at the disposal sites will be lost. Rapid recovery of those populations is expected.

(3). Effect on Nekton. No adverse impacts expected.

(4). Effect on the Aquatic Food Web. No significant adverse impacts expected.

(5). Effects on Special Aquatic Sites.

(a). Sanctuaries or Refuges. No significant adverse impacts are expected to the adjacent Critical Wildlife Area. Only minor turbidity may occur during construction.

(b). Wetlands. No wetlands would be affected.

(c). Mud Flats. No adverse impacts expected.

(d). Vegetated Shallows. A small amount of vegetation located on some of the slopes of the seagrass mitigation site will be affected. However, the seagrass population after completion will be substantially greater than pre-project conditions.

(e). Reefs. Existing reefs and hardbottom communities would not be affected by disposal of the dredged materials. New reef and hardbottom habitat will be created with disposal as mitigation for project impacts.

(f). Threatened and Endangered Species. Threatened or endangered species will not be affected by disposal of the dredged materials. Appropriate manatee and sea turtle protection measures will be implemented during dredging and disposal operations.

(g). Other Wildlife. Adverse impacts to other wildlife will not occur due to disposal of the dredged materials.

f. Proposed Disposal Site Determinations.

(1). Mixing Zone Determination. Not applicable.

(2). Determination of Compliance with Applicable Water Quality Standards. State water quality certification will be obtained for the work and applicable state water quality standards will be met during construction. An exemption may be required during placement of dredged materials in the seagrass mitigation area.

(3). Potential Effects on Human Use Characteristics. No adverse impacts expected.

(a). Municipal or Private Water Supply. No effect.

(b). Recreational and Commercial Fisheries. No adverse impacts expected.

(c). Water Related Recreation. No impacts expected.

(d). Aesthetics. The presence of construction equipment during the construction period will be unsightly; however, upon completion of construction the equipment will be removed and there will be no long-term adverse aesthetic impacts.

(e). Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites and Similar Preserves. Some increased turbidity may occur in the Biscayne Bay Aquatic Preserve. These impacts are expected to be minor and temporary.

g. Determination of Cumulative Effects on the Aquatic Ecosystem. No significant impacts expected. The long-term effect of the disposal and restoration of seagrass beds would reverse past trends of water quality and aquatic habitat degradation.

h. Determination of Secondary Effects on the Aquatic Ecosystem. Secondary impacts on the aquatic ecosystem will be a stabilization of the system. Water quality will see improvement due to stabilization of substrates, and increased seagrass beds will provide foraging habitat for aquatic species.