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#17001

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Water and Sewer

October 8, 2004

U.S. Army Corps of Engineers
ATTN: CECW-P (IP)
7701 Telegraph Road
Alexandria, VA 22315-3860

Re: FEIS Miami Harbor, Miami-Dade County, Florida

Dear Chief of Engineers:

The Miami-Dade County Department of Environmental Resources Management (DERM) has reviewed the above referenced document and provides the following comments.

If the recommended project is constructed, dozens of acres of habitat containing coral hardbottom reefs, seagrass beds, and other benthic communities will be adversely impacted. Within these areas, more than 10 acres of seagrasses and corals will be directly eliminated by expanding channels, turning basins and slopes in areas never before dredged. These seagrass beds and coral reefs provide important habitat to a number of listed species. In addition, short term impacts will occur throughout a much larger area during construction of the project, which will take a number of years to complete. These short term impacts include disturbance-type impacts from dredging and blasting as well as turbidity plumes and sedimentation at and adjacent to the project. In addition, encroachment southward within the Biscayne Bay Aquatic Preserve towards the state designated Manatee No Entry Zone and Bill Sadowski Critical Wildlife Area located adjacent to Virginia Key will result in degradation of habitat values of this important area.

Not all of the proposed environmental impacts can be offset with mitigation. Furthermore, the mitigation proposed in the EIS is not adequate to offset the impacts for which it is intended. A detailed discussion of these issues and other concerns is included as attachment A. Copies of previous letters from DERM to the Army Corps and your consultants regarding these issues are also included as attachments B and C.

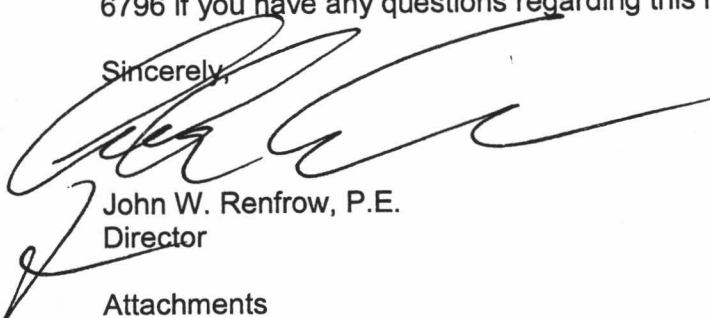
More effort is needed to minimize impacts through further refinement of the proposed design as well as existing and proposed operating practices. To this end, we continue to recommend further analysis relating to consideration of a possible realignment of at least a portion of the Lummus Island shoreline berthing area along the northern side of Fisherman's Channel. The objective would be to achieve some portion of the proposed Fisherman's Channel and berthing area expansion to the north rather than construction of the entire expansion area to the south. In the FEIS, the Army Corps considers the concept to be infeasible due to relocation of the

BISC: 11-17-04:ea.

cranes to the north side of the Port (Appendix N, DEIS Comment 26 Response). However, DERM was not suggesting that the cranes be relocated to the north side of the Seaport, but rather that the cranes remain along a realigned southern bulkhead line. Since the southern bulkhead and piles would need to be reconstructed anyway if the channel and berthing area were deepened, it may be that at least some of the increase in channel width could be obtained in a cost effective manner along the north side of Fisherman's Channel by a slight relocation of the berthing areas northward at the time the bulkhead and pilings are being reconstructed. For every foot the bulkhead line was realigned northward, almost two feet of encroachment southward could be eliminated. Perhaps more importantly, the constriction located at the entrance to Fisherman's Channel would be correspondingly reduced. The proposed expansion of the channel to the south may actually exacerbate existing safety and navigation issues in this area since the expansion is intended to attract larger ships with no corresponding increase in the distance between Fisher Island and the Seaport Bulkhead line. Based on the aforementioned explanation by the Corps given in response to our May 9, 2003 letter, it appears that the Army Corps misunderstood our recommendation and as a result, it was not formally evaluated in the GRR/EIS process.

Thank you for the opportunity to comment on this EIS. Please contact Carlos Espinosa, P.E. at (305) 372-6796 if you have any questions regarding this matter.

Sincerely,



John W. Renfrow, P.E.
Director

Attachments

Copies to:

- Miami-Dade County Seaport Dept.
- Miami-Dade County Planning Dept.
- EPA
- FWS
- BNP
- NOAA/AOML
- NOAA/NMFS
- FDEP
- FFWCC
- SFWMD

ATTACHMENT A

MANATEES

Data from regular aerial surveys, manatee monitoring for other permitted projects, opportunistic sightings, tagged and tracked animals, and carcass recovery documents that the waters surrounding the Port of Miami, including existing dredged channels, are utilized by manatees. Manatees have been most frequently observed in channels and seagrass beds south and west of the Port. These areas are included in "essential manatee habitat" as defined in the Miami-Dade Manatee Protection Plan which has been approved by the State of Florida notwithstanding the statement to the contrary in Army Corps' biological assessment (Appendix H of the EIS, p. 12/27). In addition, portions of the seagrass beds south of the Port are part of a State-designated manatee protection "no-entry" zone, one of only two such zones in Miami-Dade County. Dredging of seagrass habitat and blasting in essential manatee habitat is generally not recommended in the State approved Manatee Protection Plan for Miami-Dade County.

The Army Corps Biological Assessment states "fewer manatees are using the general area of the Port in summer" (Appendix H, p. 21/27 of the EIS). Although we agree that manatees are most numerous during the winter months, and are most frequently sighted near the Miami River and in shallow seagrass beds north and west of Virginia Key, manatees also use the waters of the Port channels and shallow areas proposed to be dredged in this project on a year-round basis. It is also important to note that important feeding and travel corridors to the west and south of the "Port proper" may be affected by blasting, turbidity plumes, or support vessel traffic during actual construction, resulting in indirect habitat degradation or disturbance of animals.

Aerial survey data collected by Miami-Dade County from 1989 to present has documented manatee adults and calves resting, feeding, drinking, mating, and traveling in the existing channels and in adjoining areas on numerous occasions in all seasons. Satellite telemetry data collected by the U.S.G.S. Sirenia Project documenting the movement of several tagged adult manatees shows that these individuals were tracked in the Port proper or traversed the general area while traveling between nearshore tributaries and seagrass feeding habitat. Further evidence that manatees use the Port is demonstrated by State of Florida mortality data from 1974 to June 2004 which show 20 carcasses recovered within two miles of the Port, including several animals recovered within existing channels, and nine killed by vessel collisions.

Since both project construction and operation are expected to occur in all seasons, the fact cited in the Army Corps biological assessment that manatees are more numerous during winter months is not relevant to the evaluation of possible impact. Furthermore, monitoring in the Port channels during filming and other vessel operations has documented that manatees are likely to move through the area multiple times per day, even during warm summer months. The EIS concludes that impacts to

manatees are not likely to result in take because of conditions in blasting and construction plans, which presumably will require operations to halt or be significantly modified when manatees are present within a certain distance of the work. The multiple lines of scientific evidence, as well as opportunistic sightings, underscore the importance of minimizing impacts to manatee feeding areas, mitigating for unavoidable impacts, and incorporating rigorous monitoring and construction operating conditions into project plans, specifications, and permits or certifications of various types. Since it is clear that manatees are likely to enter the zone of project influence on a daily basis or more frequently, it will be critical to assure that specifications require strict adherence to monitoring and operation plans, and that all potential bidders be clearly advised that frequent cessation or delay of work for manatee protection is expected. At a minimum, monitoring should include aerial surveys prior to blasting, and dedicated and trained manatee-observers on all construction vessels and barges at all times that they are in operation.

OTHER LISTED SPECIES

We continue to be concerned with the adequacy of the analysis as it relates to potential impacts to listed species. As an example, we do not believe that it should be assumed at this point that Johnson's Seagrass will not be impacted by the recommended project. The observation of this species by a NMFS biologist in the shallow area north of the existing channel/turning basin (an area that would be destroyed by expansion northward of the Fisher Island Turning Basin during construction of component 3B), has been discussed in a previous letter included as an attachment herein.

We also believe that impacts to listed species that would occur after the project was constructed should be evaluated, not just the impacts that would occur during dredging. As an example, the FEIS concludes that the North Atlantic Right Whale will not be impacted by the project "due to the scarcity of the right whale in the project area and the unlikelihood of encountering a northern right whale" during construction. We agree that is not likely that the dredge and associated equipment itself will impact right whales during construction, but we are concerned generally with long term impacts to listed species that would occur or be causally related to ship movements or other day-to-day port operations if the recommended project expansion is constructed. With regard to the northern right whale, we note that a mother and calf were observed and photographed by DERM biologists on January 30, 2004 and that these animals crossed the shipping lanes of Miami Harbor at least once on that day in the vicinity of the seabuoy. Besides net entanglement, shipping traffic between deepwater ports is believed to be perhaps the most important factor impeding recovery of this critically endangered species. Wounds and scars from ship collisions are sometimes observed and right whale injury and mortality from vessel collisions has been previously documented. All impacts (including causally related indirect impacts) to listed species that would result from operation of the recommended larger, expanded port should be considered before determining if expansion is appropriate.

ESSENTIAL FISH HABITAT

The mitigation proposed in the EIS is only for impacts to seagrasses and hardbottom reef community. No mitigation is proposed for impacts to other Essential Fish Habitat (EFH) as defined by NMFS. In particular, we are concerned with unmitigated impacts to sponge and macroalgae communities that provide significant habitat to shrimp and fish. Although DERM agrees with the Army Corps that the habitat values provided by seagrasses and hardbottom differ from those habitat values provided by other types of EFH, we believe that mitigation is necessary for proposed impacts to this other EFH habitat. Examples of this EFH include the areas between the existing channels/turning basins and the seagrass beds that would be impacted by components 3 (including 3A and 3B) and (including 5A). Impacts to EFH offshore that do not involve hardbottom communities are also proposed without mitigation. DERM reiterates its recommendation to provide mitigation for EFH habitat losses other than seagrasses and hardbottom reef communities. In the response to our May 9, 2003 letter (Appendix N, DEIS Comments 19, 20, and 21, response to DERM letter), the Army Corps indicates that they do not intend to mitigate for this type of habitat because it "is not considered EFH by NMFS". We have coordinated with NMFS on this issue and believe that this habitat is EFH.

INSHORE SEAGRASS IMPACTS

The revised side slope assumptions (based on a 0.5H to 1V slope in deeper areas) result in a 7.9 acre estimate of seagrass impacts (Appendix G). Based on past experience at Miami Harbor, we continue to believe that the assumptions are overly optimistic and that additional seagrass losses may result. It is recommended that post construction monitoring be conducted to document erosion along the channel edge for a period of at least five years. If additional bay bottom habitat is lost beyond the template assumed in the impact analysis, additional in-kind mitigation should be performed at the ratios authorized for the 7.9 acres of impact.

OFFSHORE HARDBOTTOM IMPACTS

DERM concurs with the Army Corps response with regard to anchor/cable impacts to hardbottom should they be necessary (Appendix N, DEIS Comment 8 response to DERM letter) assuming that the phrase "if you break it, you buy it" means that any hardbottom damaged by the contractor outside the channel template shown in the EIS will be restored and short term losses mitigated.

With regard to the hardbottom that would be directly removed by widening offshore, the Habitat Equivalency Analysis used to estimate the amount of mitigation has been incorrectly applied as outlined in our February 25, 2004 letter (copy attached). As a result, the calculated amount of mitigation is not sufficient to mitigate impacts to 2.7 acres of high relief hardbottom and 0.6 acres low relief hardbottom. In addition, mitigation for impacts to other hardbottom is needed as outlined in the aforementioned letter and the letter dated May 9, 2003 (copy attached). In particular, we are concerned with direct losses of corals and sponges along the channel edges if it is to be deepened. The Army Corps response (Appendix N, DEIS Comment 13) incorrectly assumes that mitigation for hardbottom along the channel slopes has been

performed during the placement of 15.91 acres of hardbottom mitigation in 1996. However, no dredging of these slopes was authorized during the Phase I Deepening Project and no direct impact has occurred to these areas for many years. Furthermore, the mitigation that the Army Corps refers to was not for impacts to these slopes. If the FEIS recommended project is intended to preserve these resources throughout all slope areas where widening is not to be performed, then this should be clearly stated. If these resources are to be preserved, DERM would concur that no mitigation is necessary for corals and sponges on the existing slopes with the exception of those slope areas that will be removed during widening.

DERM continues to recommend that the large corals (12 inches or larger in size) be relocated, both from the expansion area offshore and along any other slopes that would be impacted by the recommended project. We do not concur with the rationale provided in the EIS that such could not be performed in a cost effective manner and note that regulatory agencies have previously required relocation of such corals in a number of large public works type projects throughout south Florida and that such efforts have been successful.

UTILITIES

Figure 9 of the EIS entitled "utility map" shows an incorrect location and alignment for the 54 inch wastewater force main which crosses Biscayne Bay between Bayside Marina and the Virginia Key POTW. The locations and compatibility of all utilities that could be impacted by the recommended plan should be confirmed prior to any construction.



ENVIRONMENTAL RESOURCES MANAGEMENT

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February 25, 2004

Mr. Lee Swain
Vice President
Dial Cordy
490 Osceola Avenue
Jacksonville Beach, FL 32250

Re: Miami Harbor GRR/DEIS Proposed Expansion and the Habitat Equivalency Analysis (HEA)
for Hardbottom Impacts

Dear Mr. Swain:

This letter is in response to your letter dated October 7, 2003. Based on the material contained in the GRR and draft Environmental Impact Statement and from information provided by USFWS, NOAA and Dial Cordy, we are providing the following comments with regard to the Habitat Equivalency Analysis (HEA) and the mitigation proposed to offset hard bottom impacts that would occur offshore if the channel were to be widened and deepened:

IMPACTS WITHIN THE PROPOSED CHANNEL FOOTPRINT EXPANSION AREA

A standard Habitat Equivalency Analysis requires that interim losses be calculated in perpetuity if the natural resources at the proposed impact site (and services provided by these resources) are not expected to recover fully (see attached NOAA HEA guidance document). Furthermore, full recovery would be predicated on suitable substrate of similar relief and depth. However, the HEA performed for the proposed Miami Harbor expansion (Appendix B, Volume I of the GRR/DEIS) appears to assume 100% recovery within 12 years for low relief hardbottom and within 30 years for high relief hardbottom. We do not believe these assumptions are appropriate because the reef that would be removed by widening of the offshore channel would be replaced by substrate 50 to 55 feet deep and this substrate would be located within a shipping channel. This substrate would be subject to daily impacts associated with the passage of large ships, as well as periodic maintenance dredging. Any marginal recovery within the expansion area would be temporary and limited to the length of time between such impacts.

DERM agrees that an assumed initial service level of 10% may be appropriate after dredging is completed. However, it appears that the HEA assumes a 10% level of service when dredging commences with a linear increase in service even during the three to five years that it will take to construct the project. We do not believe that any service level should be assumed while dredging of the project is ongoing due to the continuing direct and indirect impacts associated with the dredging operations including turbidity, anchoring, etc. Therefore, the length of time to achieve maximum recovery of impact sites should be increased by the length of time that is projected for completion of dredging (i.e., impacts begin when dredging commences and recovery begins at project completion).

Based on conversations with Dial Cordy, we understand that the assumed recovery time for low relief hardbottom may have been based on the period of time between the HEA that was performed and the last offshore dredging project in 1991. We also understand that the recovery that is assumed for this low relief hardbottom is based on observed recovery of the areas impacted by the 1991 dredging project (for which mitigation in the form of artificial reefs was performed). If we are incorrect in these assumptions, we request written clarification.

It should be noted that only those areas temporarily damaged by the 1991 dredging project (by anchors and cables placed outside the channel slopes) were mitigated through the aforementioned artificial reefs. No other impacts were permitted to hard bottom resources for this 1991 project and as far as we are aware, none occurred, even on the channel slopes, since dredging was limited to deepening only in the already dredged channel bottom (not on the slopes). We recommend that Dial Cordy consider the locations of any out-of-channel areas surveyed by your biologists for this recovery analysis in relation to the known areas of anchoring impact as depicted in the Miami-Dade County Seaport Department's survey of anchoring locations for the 1991 dredging project. Since the total impact area that resulted from the out-of-channel anchoring is made up of many smaller impact areas that are separated by zones where no impacts occurred, it is possible, if not likely, that some of the areas that your biologists considered "recovered" were in fact never impacted at all. Furthermore, since some of the anchoring locations were as much as 500 to 1000 feet outside of the channel slopes, it is not clear to us that all of the larger impact areas were examined.

Assuming your biologists determined that full recovery had occurred in some or all low relief areas, it is not clear to DERM how they could distinguish between areas that had fully recovered from impacts and other areas where no impacts had ever occurred. If this patchy and disconnected distribution of impacted areas is not considered in the interpretation of the field data, the assumed time period for recovery could be significantly less than the actual time period necessary and the output from the HEA would tend to underestimate the amount of mitigation needed. Therefore, DERM recommends that the recovery analysis for low relief impacts be based on the degree to which recovery (as a percentage of maximum expected recovery) is projected to be (in the impacted areas only) at the currently projected commencement date. In addition, data collected from areas where impacts did not occur should not be considered in this analysis since such data would not be relevant.

We also recommend further refinement in the assumed recovery rates for high relief hardbottom. We do not believe that the large corals (some colonies of *Diploria* and *Montastrea* greater than three feet in diameter) that would be impacted by the project are 30 years or less in age. We also do not expect high relief hardbottom to fully recover (i.e. development of equivalent relief and biotic communities) in the thirty years projected in the HEA. We believe that these large corals have colonized since the 1960s dredging of the channel and that they have persisted from that time to the present because subsequent offshore dredging in these areas has been within the toe of slopes, not on the channel slopes. The length of time for maximum recovery should not be less than the age of these larger corals.

IMPACTS ON THE PROPOSED CHANNEL SLOPES

In several sections of the GRR/DEIS we have noted the following statement: "the Corps has not proposed compensation for the removal of biotic communities which have colonized the channel walls

since the last dredging event approximately 10 to 15 years ago". The assumption that the hard bottom resources along the channel walls are only 10 to 15 years old is incorrect and appears to be based on the mistaken belief that the last deepening project involved dredging of the slopes and therefore the removal of these communities. Since the last dredging project (in 1991) was a deepening project within the toe of slope boundaries, dredging of the slopes in the offshore areas did not occur with the exception of a widener that was permitted at the point where the channel turns (the intersection of cut I and cut II).

Therefore, the large corals that have colonized the slopes in some of these areas are approximately 40 years old, as are the associated benthic communities in these areas. In all areas where such resources would be destroyed by dredging along existing slopes, as well as those slope areas that would be destroyed by expansion of the channel, we believe that mitigation is necessary. Furthermore, the larger corals should be relocated consistent with other large public works projects in South Florida.

It is also not clear to us what the design template for the offshore slope is. We note that the offshore slopes historically have been permitted at 2:1 (horizontal:vertical) at Miami Harbor. In order to properly and accurately assess impacts, we also request clarification of the slope issue in the EIS. This should include both the construction template slope that would be achieved by dredging, as well as the projected final, stabilized slopes after erosion. It should be clear in the GRR/DEIS whether the design (and the ultimately anticipated slope) is a departure from the standard Army Corps 3:1 slopes typical of such projects. For any anticipated slopes less steep than the historically permitted 2:1 slopes, mitigation for impacts beyond the 2:1 design template should be provided since such slopes will create new, never before permitted (or mitigated) impacts.

IMPACTS BEYOND THE CHANNEL SLOPES

As you may be aware, the last time dredging was performed offshore at Miami Harbor in 1991, the contractor claimed (and DERM, DEP and the Army Corps agreed) that it would not be possible to dredge without anchor/cable impacts beyond the channel slopes. Anchor and cable impacts were therefore authorized. Off-site mitigation in the form of constructed limerock boulder reefs was required and performed for these unavoidable impacts. This mitigation was only for temporary impacts to adjacent reefs due to anchor/cable placement. No mitigation was required for hard bottom communities on the channel slopes since dredging was limited to deepening within the toe of slope limits, not on the slopes. DERM therefore reiterates the recommendation contained within our May 9, 2003 comment letter. Impacts to hardbottom beyond the proposed channel that would be caused by anchors, cables and ancillary equipment necessary for dredging should be estimated and a mitigation plan developed. Recovery times for such temporary impacts should be based on the expected length of time for complete recovery and should be calculated to commence after completion of the dredging (not at the start or during construction). This mitigation plan should also include compensation for the full extent of all hardbottom that has not yet recovered in the anchoring/cable areas outside the channel, since the amount of mitigation previously required for these impacts was based on the assumption that impacts to these areas would be temporary and that these areas would be able to fully recover. Even if the high relief hardbottom areas impacted by the 1991 dredging were

able to fully recover in the 30 years estimated by Dial Cordy, we note that complete recovery would not occur until approximately 2022.

In the unlikely event that a contractor was able to complete the dredging without anchoring/cable impacts by performing the work without placement of anchors beyond the permitted channel slopes, the recommended mitigation plan for anchoring impacts would not have to be implemented.

In summary, we question the appropriateness of this HEA to determine mitigation for coral reefs that will never fully recover due to conversion of these reefs into ship channels. Refinements to the HEA consistent with our recommendations above may result in an output that would more fully compensate for the impacts that are proposed in the expansion areas. In all other areas where hardbottom impacts would occur as a result of the proposed project, mitigation is needed. HEA may be more appropriate for determination of mitigation in the reef areas outside the channel where the reef could be expected to recover fully given sufficient time between future maintenance or construction dredging events.

Thank you for the additional coordination on this issue prior to finalization of the draft EIS. Please contact me at (305) 372-6522 if you have any questions regarding this matter.

Sincerely,



Craig K. Grossenbacher
Special Projects Administrator

Attachment: NOAA HEA Guidance Document

Copies Furnished:

Miami-Dade County Seaport Dept.
Army Corps of Engineers
Fish & Wildlife Service
National Marine Fisheries Service
Department of Environmental Protection
Fish & Wildlife Conservation Commission
Environmental Protection Agency

Habitat Equivalency Analysis: An Overview

*Damage Assessment and Restoration Program
National Oceanic and Atmospheric Administration
Department of Commerce*

March 21, 1995
(Revised October 4, 2000)

1. Introduction

1.1 Goals of the paper

Natural resource trustees are authorized to act on behalf of the public to protect the resources of the nation's environment. Serving as a trustee for coastal and marine resources, NOAA determines the damage claims to be filed against parties responsible for injuries to natural resources resulting from discharges of oil, releases of hazardous substances, or physical injury such as vessel groundings.¹ Habitat equivalency analysis (HEA) is a methodology used to determine compensation for such resource injuries. The principal concept underlying the method is that the public can be compensated for past losses of habitat resources through habitat replacement projects providing additional resources of the same type. Natural resource trustees have employed HEA for groundings, spills and hazardous waste sites. Habitats involved in these analyses include seagrasses, coral reefs, tidal wetlands, salmon streams, and estuarine soft-bottom sediments.

The goals of this paper are to present an overview of HEA and illustrate the method with a simple, hypothetical example. In section 1.2 below, we outline briefly the natural resource damage context for HEA applications and the conditions for use of HEA. An example of how HEA is used to estimate the appropriate level of compensation for injuries to natural resources is presented in section 2. Appendices A through C present an algebraic representation of the HEA calculations and provide detailed tables from the example.

¹ The Under Secretary for Oceans and Atmosphere (NOAA Administrator) acts on behalf of the Secretary of Commerce as a Federal trustee for natural resources under the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"; 42 U.S.C. § 9601 *et seq.*), the Clean Water Act (33 U.S.C. § 1251 *et seq.*), the National Marine Sanctuaries Act (16 U.S.C. § 1431 *et seq.*), and the 1990 Oil Pollution Act ("OPA"; 33 U.S.C. § 2701 *et seq.*).

1.2 Use of HEA in natural resource damage assessments

Natural resource damage claims have three basic components: (1) the cost of restoring² the injured resources to baseline, or "primary restoration," (2) compensation for the interim loss of resources from the time of injury until the resources recover to baseline *plus* (3) the reasonable costs of performing the damage assessment.³ Following statutory requirements, all recovered damages are used to restore, replace, rehabilitate or acquire the equivalent of the injured resources (or to cover the costs of assessments). Consequently, recoveries for interim losses are spent on "compensatory restoration" actions providing resources and services equivalent to those lost. To ensure full compensation for interim losses, the trustees determine the scale of the proposed compensatory restoration actions for which the gains provided by the actions equal the losses due to the injury. The damage claim then is the cost of implementing the selected primary and compensatory restoration actions (plus the costs of the assessment) or alternatively, the responsible parties may be allowed to implement the projects themselves, subject to performance criteria established by the trustees. To develop the restoration plan, trustees must determine and quantify injury, develop restoration alternatives that consist of primary and compensatory actions, scale restoration alternatives, and select a preferred restoration alternative. This paper examines a method for scaling restoration alternatives, HEA.⁴

For compensatory restoration actions, the scaling question is: what scale of compensatory restoration action will compensate for the interim loss of natural resources and services from the time of the incident until full recovery of the resources? The scale of compensatory restoration actions is conditional upon the choice of primary restoration actions. Consequently, for each restoration

² Restoration refers to human actions taken after the removal of the cause of injury (e.g., after remediation of a hazardous waste site, removal of the vessel in the event of a grounding), to return an injured resource to its pre-injury conditions. We use the term in its broad sense, to encompass the statutory concepts of "restoration, rehabilitation, replacement, and/or acquisition of the equivalent" of the injured resources.

³ At any point in time, baseline refers to the condition of the natural resources and services that would have existed had the incident not occurred. If the resources are not expected to recover fully, interim losses will be calculated in perpetuity.

⁴ This description characterizes the process outlined in the natural resource damage assessment (NRDA) regulations implementing OPA (15 CFR Part 990) and in the proposed statutory changes to the CERCLA NRDA provisions (43 CFR Part 11).



ENVIRONMENTAL RESOURCES MANAGEMENT

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May 9, 2003

Mr. James Duck
Planning Division, Environmental Branch
U.S. Army Corps of Engineers
Jacksonville District
P.O. Box 4970
Jacksonville, FL 32232

Re: Miami Harbor GRR/DEIS

Dear Mr. Duck:

The Miami-Dade County Department of Environmental Resources Management (DERM) has reviewed the above referenced documents dated March 14, 2003. The following comments address the recommended NED and locally preferred plans which include proposals to widen and deepen the entrance channel near the sea buoy, widen and deepen the Fisher Island Turning Basin, and widen and deepen Fisherman's Channel, among other modifications.

Modeling of the Proposed Miami Harbor Modifications

DERM agrees that the TABS-MDS model is a helpful tool; however, we have serious reservations concerning limitations of the TABS-MDS model for detailed evaluation of the proposed Miami Harbor deepening project unless additional efforts are made to refine its resolution, calibration and verification. Refinements should address the following issues:

- The first phase of model development was intended to produce a hydrodynamic model for Biscayne Bay that would reproduce general conditions. Data collection to calibrate and validate the model was limited by funding availability and was therefore focused on locations that would give a representative picture of conditions in the bay as a whole and on a larger scale, rather than specific locations within the bay. Conducting a focused study on a specific location in the bay falls outside the goals and objectives of this phase of model development; thus any results from such a scenario should be viewed with extreme caution, since there are insufficient data to support or refute the results.
- Although the hydrodynamic model is capable of modeling in 3-dimensional mode, it must be run in 2-D vertically averaged mode for scenarios because data to support 3-D modeling were never collected and are not available. The complex bathymetry of the harbor area, with deep

ship channels and shallow surrounding bottom, should be modeled with 3-D because of the real likelihood of countercurrents along the bottom of the channels, especially with strong surface currents during ebb and flood tides that are known to exist in this area. In addition, outflows from the Miami River cause stratification around the mouth of the river, with resulting complex circulation patterns for the freshwater discharges from the river. Two-dimensional modeling will not adequately represent the fate of freshwater in a stratified system because the model mixes water along a vertical front when in actuality the freshwater flows on top of the more dense saline water and spreads out horizontally.

- The area around Government Cut is highly dissected with deep dredged ship channels. Although velocity data used to calibrate the model were collected for the two main channels in Government Cut and many of the surrounding major channels, the period was short (two daytime periods, one in October 1997 and one in February 1998) and conducted only under ideal weather conditions. This provides only a limited view of how currents are moving in and out of the channels in this area. More detailed studies over a longer period that includes some weather extremes should be conducted in order to support more accurate modeling in this area.
- The bathymetry used to represent the bay under calibration conditions was not the same as the bathymetry being used to run the scenarios.

The scenarios presented average results. Problems resulting from modification to the ship channels are most likely to arise during more extreme events, e.g. during the strong currents of a spring tide, during a high discharge event from the Miami River, or during frontal passage when strong and rapidly changing winds may alter or even reverse local currents. Navigational safety concerns will be more pronounced during such times, as will potential changes including (but not limited to) discharges and/or other salinity impacts that could prove harmful to benthic communities. Such events deserve careful and prolonged examination in the EIS to assess the degree to which adverse effects would occur as a result of the proposed harbor modification.

Inshore Seagrass Impact

The vertical cut assumption used to estimate the amount of seagrass impacts caused by expansion of Fisherman's channel 100 feet to the south (as well as other proposed cuts) is unlikely and also is not supported by past experience at Miami Harbor. The GRR/DEIS indicates that the channel slopes will be constructed as a vertical cut extending from approximately 50 feet in depth to a depth of about 12 feet (the so-called box cut). However, despite past efforts at Miami Harbor by dredging contractors to achieve a vertical box cut within the consolidated limestone, the resulting slopes at depth are typically (on average) no steeper than approximately 0.5:1 to 1:1 over the vertical extent of the consolidated limestone. Whether such slopes resulted from an inability of the rock to stand vertically or were caused by difficulties inherent in the construction of dredged vertical slopes at such depths is not relevant since the end result is the same. Attachment A illustrates a more typical slope that is likely to be achieved even with considerable effort on the contractor's part to make the channel edges

as vertical as possible. DERM believes that the projected slope shown in the Attachment A cross section is conservative in that it tends to underestimate seagrass impacts. This is because we believe the actual depths where the steeper slope will transition to the less steep 7:1 slopes will be greater in some areas than the Army Corps estimate of 12-16 feet. Based on this conservative slope estimate, the total amount of seagrass loss would be on the order of 11 acres, not the approximately 6 acres estimated in the GRR/DEIS.

Proposed Seagrass Mitigation

In kind seagrass mitigation ratios in the Biscayne Bay Aquatic Preserve typically range from 3:1 to 5:1 with higher ratios dependent on time lag (whether planting is initially performed), distance from impact site, likelihood of success, and habitat values provided. Out of kind ratios typically start at 5 or 6:1. The assumptions made in the GRR/DEIS to calculate the mitigation amount are overly optimistic and in some cases unrealistic. Furthermore we do not agree that the seagrass habitat that would be created north of Julia Tuttle Causeway would exceed the habitat values of the seagrasses south of Fisherman's Channel. As a measure of comparison, the 2.4 acre dredge hole that DERM filled with Miami Harbor dredge spoil and planted with seagrasses in 1994 not far from the proposed mitigation site still (after almost 10 years) does not provide the coverage or the habitat values that are provided by the seagrasses that would be destroyed by the proposed Fisherman's Channel widener. It should also be noted that seagrass coverage is currently estimated to be only 30% at the restoration project site.

In addition, even considering economies of scale, the cost estimates to perform the mitigation are not consistent with costs for numerous restoration and mitigation projects conducted by Miami-Dade County. As a measure of comparison, DERM's costs to fill in the aforementioned 2.4 acre dredge hole (not including seagrass planting) were \$550,000. It should be noted that the DERM project was built without the use of capping material, due to the nature of the fill, construction methods, and budget. If the estimated costs (\$162,000) for the sand cap are included (as is proposed in the GRR/DEIS), this type of seagrass mitigation cost DERM approximately \$300,000 per acre using a lowest cost public bidding process. There are also significant costs associated with the need to use fill material (grain size, chemistry, etc.) and construction techniques that will achieve results consistent with OFW standards, aquatic preserve requirements, and protection of nearby resources. Depending on techniques for spoil conveyance and placement, it may be necessary to completely enclose the restoration site with temporary sheet pile in order to meet OFW water quality standards beyond approved mixing zones. Such techniques were permitted by the DEP and Army Corps and successfully employed in the construction of the cross bay force main to Virginia Key in the early 1990's. The same techniques were again used to construct the Virginia Key ocean outfall project in the late 1990's.

It is worth noting that the Miami-Dade County consultants that prepared the technical report cited in the GRR/DEIS (to support filling of dredge holes) have calculated that due to economies of scale, such seagrass mitigation could be performed for as little as \$140,000 per acre in 1989 dollars. However, any economy of scale cost reductions for the mitigation proposed in the GRR/DEIS would be offset by the greater depths (and therefore greater volume of fill) that would be necessary in comparison with the DERM project. Cost estimates in the GRR/DEIS of \$4000 to \$7000 per acre are not supported by past experience using dredge spoil from Miami Harbor.

Appropriate, minimum in kind mitigation in the form of restored dredge holes north of Julia Tuttle Causeway would therefore be on the order of 33 acres to 55 acres for widening and deepening Fisherman's Channel alone based on the above, depending on the degree of uncertainty, the length of time it would take to achieve maximum habitat values, and the differences in the created habitat values in comparison with the seagrasses along Fisherman's Channel. The per acre cost to perform such work could be roughly 50 to 100 times greater than estimated in the GRR/DEIS.

Johnson's Seagrass

Additional survey work is needed to determine the extent to which Johnson's seagrass would be impacted by the proposed alternatives. The GRR and draft EIS do not mention the Johnson's seagrass that was found by an NMFS biologist in the area of the Fisher Island Turning Basin. Furthermore, we believe that the seagrass areas between the Fisherman's Channel/Lummus Island Turning Basin and the Rickenbacker Causeway need to be surveyed because of the large turbidity plumes that extend over these seagrasses (during flood tides) when dredging any of the south channels and turning basins at Miami Harbor. Surveys should be conducted in both of these areas during the upcoming summer months in accordance with state and federal requirements for surveying of this species.

The Bill Sadowski Critical Wildlife Area

The northernmost corner of the Critical Wildlife Area (CWA) is located less than 200 feet south of the currently permitted channel top of slope (Army Corps Permit 79B-0623). Assuming the toe of slope channel edge is constructed 100 feet beyond the currently permitted toe of slope (with a 20 foot box cut proposed beyond it to allow a steep slope), the resultant top of slope of the project will extend just into the northernmost portion of the CWA. This determination is based on the cross section included as Attachment A.

It should be noted that the existing toe of slope of Fisherman's Channel in most areas extends 10 to 20 feet (or more) south of the authorized toe of slope. If the channel is widened 100 feet from the existing toe of slope rather than the permitted toe of slope, the extent to which the CWA will be impacted will be correspondingly greater. In addition, since even the northernmost portions of the CWA are owned by the City of Miami and since the City's ownership of submerged lands may extend north of the CWA, a portion of the project (at least the channel slopes) may be located on land not owned by the Seaport. This ownership interest is not reflected in the GRR/DEIS.

Offshore Hardbottom Impacts

The offshore portions of the Miami Harbor Project were last deepened in 1992, although little or no direct impact to the extensive hardbottom habitat along the channel slopes occurred at the time since the project was limited to deepening within the toe of slope. This work was authorized by federal, state and local permits including DEP permit 131982259. It should be noted that these permits authorized 4.92 acres of hardbottom destruction beyond the top of slope limits of the project related to anchor and anchor cable impacts because all agencies acknowledged that the anchoring impacts were

unavoidable given the type of dredging equipment (large hydraulic cutterhead) that would be needed to perform the project. The contractor agreed that it would not be possible to dredge the project without anchors placed beyond the project boundaries. The project required 341 anchor sets and the locations of these anchor sets have been documented in a survey map dated 11/16/93 prepared by Miami-Dade County Seaport Department consultants Bermello Ajamil & Partners. This map indicates that the typical distance anchors were needed outside the channel was about 300 feet. However, some anchors were placed more than 900 feet from the channel and inspections conducted after the project was completed confirmed that predicted impacts did occur from both the anchors and cables. Approximately 5 acres of hard bottom outside of the project limits (top of slope) were destroyed by the anchors and cables. It is likely that at least 5 acres of hardbottom impact outside the channel will occur in addition to the impacts that will result within the channel and channel slopes. Therefore a separate mitigation plan should be developed for such losses; in the unlikely event that the project is authorized and constructed without such impacts, implementation of this additional mitigation would not be required.

Based on the DEIS estimates and the likely anchoring impacts described above, the total amount of hardbottom that would be lost (not including rubble habitat) for which mitigation is appropriate is:

- at least 0.6 acres of low relief hardbottom and 2.7 acres of high relief hardbottom that would be destroyed by dredging within the expanded vertical footprint of the entrance channel,
- approximately 18 acres of high relief hardbottom habitat within the existing channel that would be destroyed by deepening,
- approximately 28 acres of low relief hardbottom habitat within the existing channel that would be destroyed by deepening,
- approximately 5 acres of hardbottom that would be destroyed by anchors and cables placed beyond the channel during dredging, and
- very significant large corals and sponges growing along the channel slopes that would be destroyed.

It should also be noted that at the public meeting held in Miami by the Army Corps on May 6, 2003 for this project, we were informed that the offshore impact analysis assumed 3:1 channel side slopes. Based on these statements and the information in the GRR/DEIS, it is not clear what the assumed slope template is for the impact analysis. This needs to be clarified and clearly detailed before finalization of the DEIS to insure that the impacts analysis is accurate.

Proposed Hardbottom Mitigation

In kind hardbottom mitigation ratios for these types of reefs typically range from 2:1 to 3:1 in the form of limerock boulders with higher ratios dependent on the length of time for establishment of mature coral colonies on the material, distance from impact site, likelihood of success, etc. Furthermore,

while the 20% spacing proposed between the reef units may be important, it is not appropriate to consider mitigation credit for such open areas. In addition, we do not believe that the assumptions made in the GRR/DEIS to determine what hardbottom impacts would be mitigated, and the amount of such mitigation, are consistent with past projects at Miami Harbor. For example, it does not appear that mitigation is proposed for the extensive hardbottom located along the channel slopes throughout the project. These areas contain large hard corals (some colonies greater than three feet in diameter including *Montastrea sp.* and *Diporia sp.* noted in the April 28, 2003 comment letter from NMFS and also observed by DERM biologists) that have likely been growing on the channel edges since the dredging project conducted offshore during the 1960's. Mitigation for the loss of the hardbottom along the channel edges is needed. In addition, the length of time that would be required for the development of large hard coral colonies of this size on artificial reef substrate (if such large colonies are even possible) could easily be on the order of 50 years or more.

In addition, we question the proposed construction techniques, source of material and costs. As a measure of comparison, the artificial reefs constructed by DERM contractors for the Phase I (offshore) deepening in the early 1990's cost \$3.5 million for 120,000 tons of limerock placed near the locations proposed in the GRR/DEIS for a per ton cost of \$29 dollars in 1995 dollars. Cost estimates in the GRR/DEIS that depend on material generated by the deepening operation may not be appropriate for several reasons. Mitigation for similar work at Miami Harbor in the past focused upon creation of physically stable hardbottom habitat with similar relief, texture, and structure of the destroyed substrate. This required natural limestone boulders (from local quarries located in western Miami-Dade County) or prefabricated modules without fine-grained material or contaminants. This allowed placement of the material without turbidity or siltation and in a manner that insured the material would remain in place. Since the dredging methods and equipment are undefined, and since the Army Corps will not likely define which type of dredge to use in a contract, there is no certainty that the dredging equipment used will produce material suitable for placement as artificial reefs. In all likelihood, offshore dredging would be performed by a large, hydraulic cutterhead similar to the one used successfully (without blasting) during the Phase I deepening project at Miami Harbor. Such an operation does not produce material suitable for artificial reef placement. In the unlikely event that the dredging was performed by a hydraulic excavator or similar equipment used during the Phase II deepening project (that is capable of producing large rocks), past experience at Miami Harbor has shown that the costs associated with separation of the large rocks from the dredge spoil, cleaning, and double handling add significantly to the cost. In addition, the lack of a staging area to perform this work creates significant logistical problems and can further increase costs. For planning purposes and for calculation of costs, mitigation materials and methods that have been employed successfully in the past at the Miami Harbor project should be used rather than experimental techniques and sources of material that have been previously rejected at Miami Harbor.

DERM believes that the assumptions made in the Habitat Equivalency Analyses may need some refinement to determine the appropriate, minimum in kind mitigation for offshore impacts. We therefore request continued coordination on this issue prior to finalization of the DEIS. Mitigation is also necessary for the aforementioned impacts to hardbottom throughout the project that will occur with the possible exception of rubble habitat provided significant coral colonies are relocated from the rubble. It shall also be noted that DERM has placed natural limerock boulders throughout the

proposed mitigation site identified in the GRR/DEIS as DERM Artificial Reef Site B – South; as such there is little or no more available area for materials placement. DERM also does not recommend the small limerock boulders (in the one to two foot size range) proposed to offset impacts to low relief hardbottom. A significantly greater portion of such small boulders can be buried and the material can be transported during hurricane events. Placement of such small boulders may also not be cost effective due to the reduced habitat values provided.

Soft Bottom Impacts

The GRR/DEIS estimates that 23.3 acres of soft bottom habitat will be destroyed in areas never before dredged. No mitigation is proposed for these areas in the DEIS/GRR despite the importance of this habitat and the fact that the natural values of such habitat would be permanently lost. Although DERM acknowledges that a new type of habitat would be created by dredging to replace this softbottom habitat, the habitat values of the new habitat would generally be significantly less and of a temporary rather than permanent nature, because each time the channel is subsequently dredged for maintenance or deepening purposes, this newer habitat would be destroyed. Therefore it is appropriate to mitigate for the large areas of softbottom that would be destroyed by the expansion proposals.

Soft Bottom Mitigation

Mitigation for dredging of previously undredged benthic areas that do not contain hardbottom or seagrasses is typically a 1:1 ratio with higher ratios for out of kind mitigation. As an example, the DEP and Army Corps permits for Miami-Dade County's cross bay force main that was installed in the early 1990's in this basin required mitigation for this habitat type. Therefore, for the permanent elimination of 23.3 acres of this habitat, appropriate, minimum in-kind mitigation in the form of restored dredge holes would be on the order of 23.3 acres.

Water Quality Impacts

Moderate to high quality seagrass and hardbottom habitat is present along much of the channel edges. The swift tidal currents of Miami Harbor make it difficult to protect water quality and benthic resources from turbidity, sedimentation, or release of contaminants that could be present in inshore sediments not previously dredged. In addition to numerical water quality standards, antidegradation standards for Outstanding Florida Waters (OFW) must be met at least within the inshore portions of the project. It should be noted that the GRR/DEIS concludes that turbidity impacts will be temporary and that water quality standards will be met within the approved mixing zone. However, past dredging projects at Miami Harbor, including the Army Corps maintenance dredging in approximately 1990, have resulted in turbidity plumes sometimes extending for miles onto seagrass beds. During this Army Corps maintenance dredging project, turbidity values several hundred times background levels were repeatedly measured one half mile or more away. Even in the most recent Phase II construction dredging project where large turbidity curtains were used, extensive turbidity plumes were routinely documented in violation of water quality standards. Given that turbidity curtains have proven ineffective at Miami Harbor, it is not clear in the GRR/DEIS how water quality standards will be met. This should be clearly outlined in the EIS as well as the extent to which unavoidable impacts will

likely occur including sedimentation impacts. Given that daily turbidity plumes are possible if not likely during the 4 to 5 years of anticipated construction, these impacts should not be dismissed due to their "temporary" nature.

Blasting

Successful completion of the Phase I deepening project (1991-1992) demonstrates that blasting is an avoidable impact at Miami Harbor. The Phase I deepening project involved dredging to depths of 44-46 feet in moderately hard and hard limestone. In some areas, overdredging depths of up to 48 to 49 feet were achieved. This work was performed from the offshore seabuoy throughout the offshore portions of the project and extending into the eastern end of Fisherman's Channel by a hydraulic cutterhead without blasting and the majority of spoil generated was placed on Virginia Key. Since that work was performed, advances in the size and technology of large hydraulic dredges have only increased their power and efficiency.

According to DERM records, the last time blasting was conducted at Miami Harbor was in 1980. During monitoring of test blasts conducted on April 16-18, 1980, DERM documented the average number of observable fish killed (at the surface) to be 25 per blasting event. Furthermore, despite continuing efforts to reduce fish mortality after the test blasting was concluded (which included small warning blasts which we believe are of little, if any value), conspicuous fish mortality continued to be documented which notably included a school of large tarpon (approximately 50 individuals). During at least one blasting event, approximately 100 fish were observed on the surface to have died. A partial listing of observed species killed included barracuda, red snapper, tarpon, Spanish mackerel and grunts.

DERM acknowledges the difficulties in predicting the magnitude of fish and invertebrate mortality that would occur with blasting. However, we believe it is appropriate to require mitigation for these impacts if blasting is to be conducted. In addition and perhaps of greater concern are the sublethal impacts that would result, particularly to listed species. Given the close proximity of the Critical Wildlife Area to the proposed project and the extraordinary habitat values the CWA provides to marine turtles, manatees, sharks/rays, crocodiles, and commercially and/or recreationally important fish species in addition to birds, we believe that blasting (which may be contracted to occur almost continuously for approximately 4 to 5 years) would result in profound disturbance-type impacts, thereby degrading the habitat values provided by the CWA. The EIS should provide a careful analysis of the extent to which sensitive behaviors would be disrupted by blasting with particular emphasis on listed species.

DERM does not believe it appropriate to allow blasting unless it is demonstrated that blasting is unavoidable. In such a case, blasting should be authorized only in the specific areas where the project cannot be otherwise completed and only with comprehensive aerial surveillance prior to and during each blasting event. Mitigation should also be provided for unavoidable impacts. Coordination with the Miami-Dade County Water and Sewer Department (WASD) is also needed for concurrence on measures to protect and monitor critical infrastructure including sewer and water mains in and adjacent to the project. Agreement with WASD should be reached prior to the finalization of contract specifications and bidding documents for any blasting proposed at Miami Harbor.

Recommendations for Additional Analysis Prior to Finalization of the DEIS:

Inshore: Deepening of Fisherman's channel to 51 feet will require replacement of the existing Seaport bulkhead since the toe of this bulkhead is not deep enough. Therefore, consideration should be given to a partial or complete realignment of this bulkhead along the northern side of Fisherman's Channel if the channel is to be deepened. Realignment of the bulkhead northward would result in a corresponding increase in width of Fisherman's Channel without dredging along the south channel boundary. Landward realignment of the bulkhead would not necessarily have to result in any net loss of uplands for existing Seaport operations since any fill removed could be used to extend the northern shoreline of Lummus Island to the bulkhead line approved under the Port of Miami Master Plan and Army Corps Permit 79B-0623. By locating the Fisherman's Channel bulkhead northward from its present location when it is reconstructed, a number of important benefits could be achieved in a cost effective way:

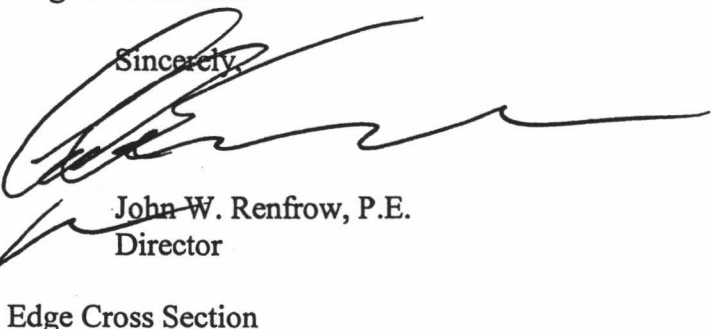
- Fisherman's Channel could be widened northward instead of southward thereby reducing or eliminating impacts to seagrass.
- Required mitigation would be reduced or eliminated.
- The slight channel misalignment at the intersection of Fisherman's Channel and Fisher Island would be reduced, thereby improving navigational safety; this intersection of the main channel and Fisherman's Channel was identified during the 2000 Miami Harbor Ports and Waterways Safety Assessment (PAWSA) exercise as contributing significantly to channel complexity with a corresponding increase in near collisions, collisions and other incidents.
- The extent of needed realignment or expansion of the channel to the south (that the GRR suggests) in the area of Fisher Island's bulkhead would be reduced or eliminated, thereby minimizing or eliminating potential infrastructure conflicts between the channel and the side slope necessary to protect and maintain existing Fisher Island bulkheads.
- A greater safety buffer could be maintained between the Coastal Tug & Barge fuel terminal and ships traveling in or out of Fisherman's Channel in comparison with both current and proposed conditions; previous incidents including collisions with barges/ships docked at this facility indicate that the existing distance may already be inadequate. The proposed modifications may further exacerbate this existing problem since they are intended to attract larger ships with no corresponding increase in the distance between the Fisher Island bulkhead and the Seaport bulkhead.

Offshore: The most seaward portions of the proposed offshore channel widening would occur in depths greater than the proposed controlling depth of 52 feet. Due to the existing depths in the seaward portions of the channel, no dredging would be required in these deeper areas. Therefore, consideration should be given to shifting the proposed widener to deeper water by extending the ship channel seaward from the seabuoy and widening of the channel in these deeper areas through the

installation of additional navigational aids. By locating the proposed widener further offshore, it could be even wider and deeper than proposed and little or no dredging would be needed. In order to evaluate whether similar (or additional) navigational benefits could be achieved by extending and widening the channel further seaward instead of dredging large areas proposed in the GRR/DEIS, further study of the currents in the area of the seabuoy is needed. If a monitoring system was implemented at the Seabuoy (and other appropriate nearby areas) to collect current and wind information not unlike NOAA's system for monitoring currents at the Miami ODMDS, important data would be generated. These data would likely lead to refinements in the design of Alternative 1 to improve navigational safety, reduce hardbottom impacts and reduce cost. This information could also be made available in real time to the Harbor Pilots which could increase navigational safety even without the proposed project.

We appreciate the coordination efforts of your staff and consultants and thank you for the opportunity to comment on these documents. Please contact Carlos Espinosa or Craig Grossenbacher at (305) 372-6796 if you have any questions regarding these matters.

Sincerely,



John W. Renfrow, P.E.
Director

Attachment A Fisherman's Channel Edge Cross Section

cc: Miami-Dade Seaport Dept. ✓
Miami-Dade Water & Sewer Dept. ✓
Miami-Dade Planning Dept. ✓
FDEP West Palm Beach ✓
FDEP Tallahassee ✓
FFWCC Tallahassee ✓
SFWMD ✓
FWS Vero Beach ✓
NOAA/AOML ✓
NOAA/NMFS ✓
BNP ✓
EPA West Palm Beach ✓

Fisherman's Channel

(Typical Cross Section That Would Result From Widening*)

