

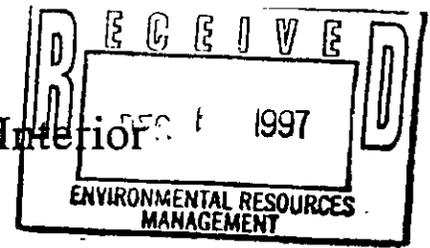
APPENDIX C - PERTINENT CORRESPONDENCE





United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecosystem Office
P.O. Box 2676
Vero Beach, Florida 32961-2676



November 18, 1997

Dennis R. Duke, Acting Chief
U.S. Army Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

Handwritten routing slip with initials 'CW' and '12/3' and a list of names.

Attn: Planning Division

FWS Log No.: 4-1-98-I-237
1135 Project: Peanut Island
County: Palm Beach

Dear Mr. Duke:

The U.S. Fish and Wildlife Service (FWS) has reviewed the U.S. Army Corps of Engineers' (COE) restoration plan for Peanut Island under Section 1135 of the Water Resources Development Act of 1992. This letter represents the FWS' opinion on the effects of the proposed action in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.) (ESA) and with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). We have assigned FWS Log Number 4-1-98-I-237 to this consultation.

PROJECT DESCRIPTION

Originally a shallow water area, Peanut Island was created in 1918 as a result of material excavated from creating Lake Worth Inlet. Since 1934, the COE has used the island as a deposition site for material dredged from Lake Worth Inlet and the Atlantic Intracoastal Waterway. As a result of these numerous dredging efforts, a 79-acre island was formed and subsequently vegetated with exotic plants such as Australian pines (Casuarina equisetifolia). The island is located adjacent to the inlet in Lake Worth Lagoon, Palm Beach County, Florida.

In 1994, Palm Beach County, the Port of Palm Beach, and the Florida Inland Navigation District proposed to restore Peanut Island by removing exotic vegetation, enhancing native plant communities, and improving the island's passive recreational opportunities. In 1996, Palm Beach County requested the COE's assistance (through the Section 1135 Program) to restore Peanut Island, thereby providing these benefits. The restoration proposal consists of three components: (1) creating 9.1 acres of maritime hammock, (2) enhancing 3.5 acres of intertidal mangroves, and (3) creating one acre of shallow water hardbottom habitat. Though not an objective under Section 1135, the restoration proposal will also result in providing some limited passive recreational benefits. The details for each restoration component are as follows:

1. **Maritime hammock**

Two maritime hammocks, totaling 9.1 acres, are proposed on the east and west sides of the island. The proposed actions include clearing and chipping exotic vegetation followed by replanting with native vegetation.

2. **Mangrove wetlands**

Two isolated mangrove areas, totaling 3.5 acres along the west side of the island, are proposed to be hydrologically reconnected to the lagoon. The proposed action consists of excavating approximately 3,000 feet of channel to tidally flush the mangrove areas.

3. **Shallow water reef**

This one acre site is located along the southeast corner of the island. The proposed actions include (a) the excavation of approximately 24,000 cubic yards of material to create a basin with a depth of -10 feet NGVD and (b) the placement of approximately 4,800 tons of limestone boulders to create the reef complex. The transitional zone created between the basin and the adjacent uplands will be resloped and stabilized with native vegetation.

THREATENED AND ENDANGERED SPECIES

We have reviewed the information in the restoration plan as well as information available to us on the presence of threatened and endangered species and designated critical habitat in the vicinity of the project site. Based on our review, the West Indian manatee (*Trichechus manatus*) as well as threatened and endangered sea turtles are present in and around Lake Worth Lagoon.

West Indian manatee

Our records indicate that the endangered West Indian manatee is present year-round in Lake Worth Lagoon. Furthermore, the lagoon is designated critical habitat for the manatee (50 CFR 17.95). The COE did not determine if the proposed action will have an effect on the manatee or its designated critical habitat. The restoration plan indicates some work is occurring below the mean low water line; therefore, we have determined a "may affect" for the manatee.

In a phone conversation with Kalani Cairns (FWS biologist) on November 4, 1997, Paul Stevenson (COE Project Manager) indicated that prior to the commencement of any operational activities associated with this project, the COE would implement the standard manatee construction precautions. Based on the COE's willingness to comply with these protective measures, we conclude that the restoration plan for Peanut Island is not likely to adversely affect the manatee nor is it likely to adversely modify or destroy its designated critical habitat.

Sea turtles

The proposed restoration project is located within the nesting ranges of the threatened loggerhead sea turtle (*Caretta caretta*) as well as the endangered green sea turtle (*Chelonia mydas*), leatherback sea turtle (*Dermochelys coriacea*), and hawksbill sea turtle (*Eretmochelys imbricata*). Again, the COE did not determine if the proposed action will have an effect on these

species. Since the restoration plan indicates work is occurring below the mean low water line, we have determined a "may affect" for listed sea turtles. However, based on the nature of the proposed work, we conclude that the restoration plan for Peanut Island is not likely to adversely affect threatened and endangered sea turtles. Currently, there is no critical habitat designated for the sea turtles listed above; therefore, none will be affected.

Although this does not constitute a Biological Opinion described under section 7 of the ESA, it does fulfill the requirements of the ESA, and no further action is required. If modifications are made to the project or if additional information involving potential effects on listed species becomes available, reinitiation of consultation may be necessary.

FISH AND WILDLIFE RESOURCES

Fish and wildlife resources have been previously documented by Palm Beach County and summarized by the COE in the restoration plan for Peanut Island. Hence, it is unnecessary to present this same information on these resources within this letter. Instead, the discussion should focus on the expected benefits associated with this restoration effort. The purpose of the restoration plan is to create and enhance habitat for fisheries and wildlife. For each of the components, the anticipated environmental benefits are as follows:

1. **Shallow water reef**

Due to its close proximity to Lake Worth Inlet, the shallow water reef will provide substrate for oceanic larvae to settle and grow as well as offer excellent habitat for a wide range of fish species.

2. **Mangrove wetlands**

The creation of flushing channels will reconnect the isolated mangrove areas to the lagoon. Hence, the mangrove areas will be tidally flushed with clearer oceanic water, thereby providing habitat and water quality conditions preferred by nearshore reef fish species.

3. **Maritime hammock**

The creation of a maritime hammock will provide food and shelter for migratory birds and other wildlife. As background, tremendous development pressure throughout South Florida has created a multitude of ecosystem problems. Increased human habitation has increased additional development of coastal uplands, which has led to an increase in invasive exotic flora and fauna. The concurrent loss of habitat has resulted in declining numbers of neotropical migratory avifauna. This assemblage of birds utilizes a wide variety of habitats extending throughout North, Central, and South America. Habitat loss and fragmentation have affected their survival and propagation. An additional and significant concern is the loss of refueling depots, areas where these birds have historically paused in their journeys to feed and rest. Maritime hammocks are a very unique and important biological resource. Creating over nine acres of maritime hammock will promote natural ecological functions to occur and increase biodiversity in an area with a diminishing coastal ecosystem. An additional ecological benefit includes the enhancement of upland habitat by creating the native plant species diversity upon which neotropical migrants depend. For instance, the

coastal spoil islands in the Indian River Lagoon have provided unique opportunities for creating appropriate forage habitat for migratory birds.

SUMMARY AND RECOMMENDATIONS

In summary, Palm Beach County and the COE are cooperating under Section 1135 to restore Peanut Island. The FWS supports the proposed restoration plan for Peanut Island. We believe the restoration proposal qualifies for partial funding support from the FWS' South Florida Coastal Ecosystem Program (SFCEP). The primary objective of the SFCEP is to identify opportunities to protect, conserve, and restore coastal living resources. We accomplish this by actively forming partnerships with other federal and state agencies, local governments, non-governmental entities, and private property owners to implement "on-the-ground" restoration projects as well as to perform research, monitoring, and public outreach activities. Thus, we could participate in the creation of the maritime hammock with funding assistance from the SFCEP.

Once again, we are available to coordinate with you on this project as it continues to develop. Thank you for your interest in the effort to protect, conserve, and restore coastal living resources. If you have any questions, please contact Mr. Cairns of our office at (561) 562-3909.

Sincerely,

Kalani Cairns

for James J. Slack
Project Leader
South Florida Field Office

cc:

NMFS, Miami, FL

GFC, Vero Beach, FL

DEP, Tallahassee, FL

✓ Palm Beach County, West Palm Beach, FL

FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES
AND CANDIDATE SPECIES FOR FEDERAL LISTING
IN PALM BEACH COUNTY

Scientific Name	Common Name	Status
Amphibians and Reptiles		
<i>Alligator mississippiensis</i>	American alligator	T (S/A)
<i>Caretta caretta</i>	Loggerhead sea turtle	T
<i>Chelonia mydas</i>	Green sea turtle	E
<i>Dermochelys coriacea</i>	Leatherback sea turtle	E
<i>Drymarchon corais couperi</i>	Eastern indigo snake	T
<i>Eretmochelys imbricata</i>	Hawksbill sea turtle	E
<i>Lepidochelys kempii</i>	Kemp's (=Atlantic) ridley sea turtle	E
Birds		
<i>Aphelocoma coerulescens</i>	Florida scrub-jay	T
<i>Campephilus principalis</i> (probably extinct in south Florida)	Ivory-billed woodpecker	E
<i>Charadrius melodus</i>	Piping plover	T
<i>Dendroica kirtlandii</i>	Kirtland's warbler	E
<i>Haliaeetus leucocephalus</i>	Bald eagle	T
<i>Mycteria americana</i>	Wood stork	E
<i>Picoides borealis</i>	Red-cockaded woodpecker	E
<i>Polyborus plancus audubonii</i>	Audubon's crested caracara	T
<i>Rostrhamus sociabilis plumbeus</i>	Everglade snail kite	E*
<i>Sterna dougalli dougalli</i>	Roseate tern	T
<i>Vermivora bachmanii</i>	Bachman's warbler	E
Mammals		
<i>Felis concolor</i>	Mountain lion	T (S/A)
<i>Felis concolor coryi</i>	Florida panther	E
<i>Trichechus manatus latirostris</i>	West Indian manatee	E*
<i>Ursus americanus floridanus</i>	Florida black bear	C
Plants		
Family Annonaceae		
<i>Asimina tetramera</i>	Four-petal pawpaw	E
Family Convolvulaceae		
<i>Jacquemontia reclinata</i>	Beach jacquemontia	E
Family Cucurbitaceae		
<i>Cucurbita okeechobeensis</i>	Okeechobee gourd	E

* Critical habitat has been designated for this species in this county.

Scientific Name	Common Name	Status
Plants (continued)		
Family Polygalaceae <i>Polygala smalli</i>	Tiny polygala	E

* Critical habitat has been designated for this species in this county.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
9721 Executive Center Drive N.
St. Petersburg, Florida 33702

January 29, 1999

Colonel Joe R. Miller, District Engineer
Jacksonville District Corps of Engineers
Planning Division, Environmental Branch
P.O. Box 4970
Jacksonville, Florida 32232-0019

Dear Colonel Miller:

The National Marine Fisheries Service (NMFS) has reviewed the Environmental Assessment as requested by your staff, in a letter dated December 21, 1998, regarding the Section 1135 Environmental Restoration Report for Peanut Island located near the Lake Worth Inlet in Palm Beach County, Florida.

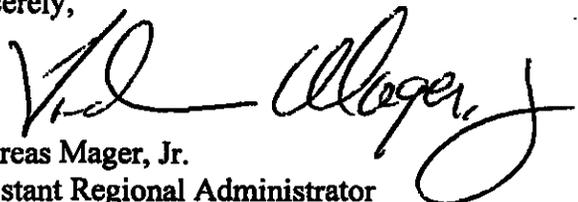
The proposed action would improve fish and wildlife habitats located on Peanut Island which is a 79-acre man-made dredged material disposal island. Specifically, a one-acre lagoon, a 7.7-acre maritime hammock, and 2.2 acres of transitional wetlands would be created from portions of the existing island. Additionally, a one-acre reef will be constructed adjacent to the island and three acres of existing mangroves will be reconnected to the Lake Worth Lagoon through a series of inlets, tidal ponds, and channels. The selected alternative takes into full consideration the existing habitats, on and near the island, while maintaining existing disposal capability and cultural resources.

Based on our review, the subject document adequately identifies the living marine resources of the project area and accurately describes the probable affects on those resources. However, we note several discrepancies that should be addressed before the report is finalized. Sections 4.2.1c (page 15) and 4.5.4 (page 35) should be revised to reflect that the NMFS listed *Halophila johnsonii* (Johnson's seagrass), effective October 14, 1998, as a threatened species. Additionally, Section 9.2 (page 48) indicates that lists of threatened and endangered species have been received from and coordinated has been completed with both the U.S. Fish and Wildlife Service(FWS) and the NMFS in accordance with the Endangered Species Act (ESA). However, we note that Appendix C contains correspondence only from the FWS pertaining to ESA consultation. We recommend that you contact our Protected Resources Division to ensure full compliance with the ESA. They may be contacted at 727/570-5312.



The Habitat Conservation Division of the NMFS supports this restoration effort and believe the project will have a positive impact on living marine resources. If we can be of further assistance, please advise. Related comments, questions or correspondence should be directed to Mr. David N. Dale in St. Petersburg, Florida. He may be contacted at 727/570-5311 or at the letterhead address above.

Sincerely,



Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division



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

February 26, 1998

Department of the Army, Corps of Engineers
Mr. John R. Hall, Acting Chief
Planning Division
P.O. Box 4970
Jacksonville, Florida 32232-0019

Dear Mr. Hall:

The National Marine Fisheries Service (NMFS) has reviewed your notice of intent dated January 27, 1998, regarding the Corps of Engineers proposal to prepare an environmental assessment for the environmental restoration of Peanut Island in Lake Worth, Palm Beach County, Florida.

The proposed restoration project includes constructing of a 9.1 acre maritime hammock, removing exotic vegetation, excavating tidal channels for the establishment of 3.5 acres of mangrove habitat, and constructing of a 1.0 acre shallow water reef habitat. The NMFS supports this restoration effort and believes the project will have a positive impact to living marine resources.

A NMFS ecologist conducted an on-site inspection of the project site. The project site is excellent in terms of fishery recruitment potential and water quality because it is located at the Lake Worth Inlet. The project design should maximize this potential by providing as much tidally influenced habitat as possible, perhaps increasing the mangrove or tidal creek habitats. Also, there is possibility that the proposed tidal creeks may recruit and support seagrasses. Therefore, any project modifications that would result in additional seagrass habitat are desirable.

We appreciate the opportunity to provide comments on the project and look forward to the draft environmental assessment when it becomes available. If there are questions regarding these comments please contact Mr. John Iliff of our Panama City Office in Miami at 305/595-8352.

Sincerely,

Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
9721 Executive Center Drive N.
St. Petersburg, Florida 33702

January 29, 1999

Colonel Joe R. Miller, District Engineer
Jacksonville District Corps of Engineers
Planning Division, Environmental Branch
P.O. Box 4970
Jacksonville, Florida 32232-0019

Dear Colonel Miller:

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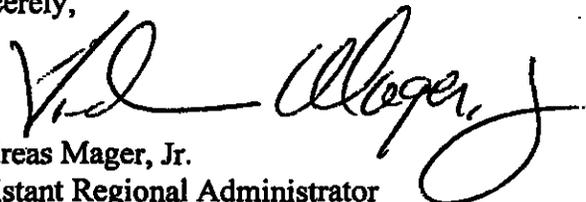
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Based on our review, the subject document adequately identifies the living marine resources of the project area and accurately describes the probable affects on those resources. However, we note several discrepancies that should be addressed before the report is finalized. Sections 4.2.1c (page 15) and 4.5.4 (page 35) should be revised to reflect that the NMFS listed *Halophila johnsonii* (Johnson's seagrass), effective October 14, 1998, as a threatened species. Additionally, Section 9.2 (page 48) indicates that lists of threatened and endangered species have been received from and coordinated has been completed with both the U.S. Fish and Wildlife Service(FWS) and the NMFS in accordance with the Endangered Species Act (ESA). However, we note that Appendix C contains correspondence only from the FWS pertaining to ESA consultation. We recommend that you contact our Protected Resources Division to ensure full compliance with the ESA. They may be contacted at 727/570-5312.



The Habitat Conservation Division of the NMFS supports this restoration effort and believe the project will have a positive impact on living marine resources. If we can be of further assistance, please advise. Related comments, questions or correspondence should be directed to Mr. David N. Dale in St. Petersburg, Florida. He may be contacted at 727/570-5311 or at the letterhead address above.

Sincerely,



Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division

FEB 05 1999

Planning Division
Environmental Branch

Mr. Charles Orvetz, Chief
Protected Species Branch
National Marine Fisheries Service
9721 Executive Center Drive N.
St. Petersburg, Florida 33702

Dear Mr. Orvetz:

I am writing you concerning the letter of January 29, 1999 from Mr. Andreas Mager, Jr., of your office (copy enclosed). The letter indicated the U. S. Army Corps of Engineers (Corps) might not be in compliance with the Endangered Species Act for the 1135 Peanut Island Environmental Restoration Project. The reason noted in the letter was due to a lack of coordination and response with the National Marine Fisheries Service, (NMFS) Protected Species Branch.

The seagrass survey in the Draft Environmental Assessment (EA) on page 16 and our recent efforts to survey sea grasses in the vicinity of Palm Beach Harbor (see enclosed Draft Marine Seagrass Survey) indicate that *Halophila* species occur in the vicinity of Peanut Island. Neither surveys distinguish the Johnson Seagrass from other species of *Halophila*. Neither survey enables us to determine exactly how much Johnson Seagrass occurs in the area. The only direct impacts below Mean High Water would be for the construction of the artificial reef component. As shown in Figure 2 of the EA, the reef would be located to avoid any seagrasses.

There may be some indirect impacts to seagrass during construction through increased turbidity and sedimentation. Turbidity and sedimentation will be controlled in accordance with the requirements of the State of Florida Water Quality Certificate. Following project construction, there may be some change in the tidal flushing patterns around the island. We have not been able to determine how much sea grass could be impacted but we do estimate that a net benefit to the environment will be realized by the construction of the project. Therefore we are initiating consultation under Section 7 of the Endangered Species Act for the Johnson Seagrass based on the above information.

Enclosed you will find the Public Notice of January 27, 1998 and the Draft EA for Peanut Island 1135 Environmental Restoration Project. Please review the notice and EA, and provide us with

-2-

any comments you may have by the end of February 1999. The Corps' Draft Marine Seagrass Survey for the Intracoastal Waterway in the Vicinity of the Palm Beach Harbor, October 1998 is included for your information.

Direct any questions concerning this letter to Mr. Paul Stevenson of my staff at telephone 904 232-2130 or email address paul.c.stevenson@usace.army.mil. Thank you.

Sincerely,

James C. Duck,
Chief, Planning Division

Enclosures



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, FL 33702
(727) 570-5312, FAX 570-5517

MAR - 9 1999

F/SER3:LEB

Mr. James C. Duck
Chief, Planning Division
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

Dear Mr. Duck:

This responds to your February 5, 1999 letter to me regarding the Section 1135 Peanut Island Environmental Restoration Project in Lake Worth Lagoon, Palm Beach County, Florida. The purpose of this project is to reestablish historic habitat for fisheries and wildlife by creating wetland and upland habitat on Peanut Island. The project proposes the creation of a 1.0 acre shallow-water reef habitat to -10 feet National Geodetic Vertical Datum (NGVD), by clearing exotic vegetation, excavating dredged material and placing limestone boulders as substrate for reef habitat on the southeast side of the island, and creating an adjacent 1.0 acre shallow-water lagoon to a depth of -5 feet NGVD by removing dredged material. According to your letter, there may be impacts to seagrass, including the Federally-listed threatened Johnson's seagrass, *Halophila johnsonii*. This initiates consultation under section 7 of the Endangered Species Act (ESA).

In order for National Marine Fisheries Service (NMFS) to complete a section 7 consultation, we need complete information regarding the presence and amount of Johnson's seagrass that occurs in the project site and how this species may be affected by the project's actions. The 1.0 acre seagrass bed located at the site of the proposed shallow-water reef habitat on the southeast end of Peanut Island has not been identified by species. In addition, the Draft Marine Seagrass Survey is of little use for this project since it constitutes a survey of the Intracoastal Waterway (ICW) and is not a survey around Peanut Island. Any *Halophila* observed was not identified to species. The shallow shoreline, an area where Johnson's seagrass is known to occur, was not surveyed. The survey occurred in October rather than in the summer, as recommended, when growth and abundance of seagrass are optimal. In addition, a trained surveyor should be able to identify Johnson's seagrass, distinguishing it from other *Halophila* species, with the naked eye. A surveyor could choose to use an underwater magnifier or light, however, taking of samples should not be necessary (particularly during preferred summers surveys) unless water clarity is so poor that it prevents in-water identification.



Lake Worth Lagoon is a significant area for Johnson's seagrass. According to Figure 2, Page 4 of the Environmental Assessment Report, the 1.0 acre of seagrass will not be directly affected by the construction of the artificial reef with the chosen Alternative A. However, the loss of sea floor adjacent to seagrass beds can negatively impact their existence. NMFS Ecologist Mark Fonseca (1998) wrote: "What we have found is that patchy seagrass beds colonize new space and vacate existing, occupied space over time. This is not news, we have simply documented this in seagrass beds of *Halodule wrightii* and *Zostera marina* in North Carolina. Some of this movement is from vegetative propagation (e.g., runners or tillers), some is the result of successful seed colonization, and some is from plant mortality (creation of vacancies). The rate at which this movement occurs depends upon the inherent population growth rate of the species involved, and *Halophila* spp. have some of the highest rates on record (Josselyn *et al.* 1986, Kenworthy *et al.* 1989). So to remove a section of the sea floor among existing patches from future colonization is to prevent existing seagrass, which *must* migrate, from colonizing new areas and maintaining its local overall abundance. Such a removal ultimately deletes a portion of the baseline resource and when represented as a spatial pattern on the sea floor, constitutes a fragmentation of the existing resource."

It is unclear from the information provided whether the new artificial reef structure (fingers) would eliminate open patches of sea floor that allow for the natural future colonization of seagrasses, particularly Johnson's seagrass which is known to rely heavily on vegetative propagation and migration to adjacent open sea floor. The southeast corner of the proposed reef appears to have the most potential of interrupting seagrass growth. NMFS may concur that this project offers a net benefit to the environment but only if it is not eliminating seagrass habitat in the process. A combination of beneficial and adverse effects is still "likely to adversely affect" Johnson's seagrass.

Although you state that the construction of the artificial reef would be located to avoid any seagrasses, you state further in your letter that "there may be some change in the tidal flushing patterns around the island" and "have not been able to determine how much seagrass could be impacted." Page 35, 4.5.4 of the Environmental Restoration Report states that the proposed tidal changes have the potential to recruit *Halophila johnsonii*. NMFS agrees that the creation of shallow-water habitat adjacent to the shallow-water reef *has the potential* for seagrass recruitment and therefore *may* have an eventual beneficial effect upon Johnson's seagrass. However, if recruitment does occur, it cannot be determined with certainty that it would be of Johnson's seagrass.

If Johnson's seagrass does exist in the project area, then the *preliminary assessment* appears to be that this project may affect but not adversely affect Johnson's seagrass. However, a final determination cannot be made, and a section 7 consultation under the ESA can not be concluded, until further information is provided to NMFS, Protected Resources Division on: a) the presence and amount of Johnson's seagrass in the project area, and b) the submerged structure of the proposed shallow-water reef. If Johnson's seagrass does not exist in the project area, a section 7 consultation with this office is not necessary.

NMFS requests the following information:

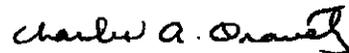
1. Does Johnson's seagrass exist in this 1.0 acre of seagrass? If so, please identify its relative abundance at this site.
2. How much of the sea floor (potential seagrass habitat) will be covered by the new shallow-reef structure? What are the dimensions of the "fingers" that will occur on either side of the seagrass bed? To what maximum depth will they extend? What will be the approximate distance(s) between the reef and seagrass bed? (Figure 2, Page 5, Environmental Restoration Report).
3. Could changes in tidal flushing patterns produce an erosion or deposition of sand on the 1.0 acre seagrass bed or adjacent areas?

In addition, NMFS strongly recommends pre- and post-monitoring for three years of the 1.0 acre seagrass bed and the proposed shallow-water lagoon, regardless of the presence of Johnson's seagrass. Such monitoring could include: species identification and abundance, bed/patch dimensions, seagrass bed location (using GPS to map its boundaries). Changes in the existing seagrass bed would be tracked over time, and the monitoring of the "new" shallow-water lagoon could provide valuable information on the recruitment of seagrass, including Johnson's seagrass, into such an area. This information will be useful to the COE and NMFS when considering future COE permitting requests in areas where *Halophila johnsonii* exists and will facilitate and expedite the permitting process. The COE should develop estimates of annual take of Johnson's (and other) seagrass anticipated by projects within Florida's intracoastal waterways within Johnson's seagrass habitat.

NMFS suggests that the Environmental Restoration Report be amended to include the Federally-listed threatened species under NMFS purview, Johnson's seagrass, *Halophila johnsonii*.

We appreciate the opportunity for initial consultation on this project and look forward to working with you for the conservation of listed species. If you have any questions please contact Ms. Layne Bolen, Fishery Biologist, of the Protected Resources Division at 727-570-5312.

Sincerely,



Charles A. Oravetz
Chief, Protected Resources Division

References Cited:

Fonseca, M.S. 1998. Memorandum to M. Thompson, NMFS Habitat Conservation Division, Response to comments by C. Isiminger and attachments. 18 August.

Josselyn, M., M.S. Fonseca, T. Niesen and R. Larson. 1986. Biomass, production and decomposition of a deep-water seagrass, *Halophila decipiens* Ostenf. Aquatic Botany, Vol. 25, p. 47-61.

Kenworthy, W.J., C.A. Currin, M.S. Fonseca and G. Smith. 1989. Production, decomposition, and heterotrophic utilization of the seagrass *Halophila decipiens* in a submarine canyon. Mar. Ecol. Prog. Ser. 51:277-290.

Planning Division
Environmental Branch

DEC 08 1999

Mr. Charles A. Oravetz
Chief, Protected Resources Division
National Marine Fisheries Services
Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, Florida 33702

Dear Mr. Oravetz:

This is in reference to the Section 1135 Peanut Island Environmental Restoration Project Study in Lake Worth Lagoon, which we are currently conducting. We received your March 9, 1999 Section 7 consultation reply (enclosed) that requested additional information concerning the listed Johnson's Seagrass in the project vicinity. After further investigations and design considerations, adverse affect to the Johnson's Seagrass within the project vicinity are unlikely.

The approximate 1.0 acre area of seagrass located to the southeast of the proposed Section 1135 Peanut Island Environmental Restoration Project was inspected by a U.S. Army Corps of Engineers and local sponsor dive team September 20, 1999. No activity is planned within 25 feet of this area. The team's inspection revealed the seagrass area to be comprised primarily of Cuban Shoalweed (*Halodule wrightii*) with Johnson's Seagrass (*Halophila johnsonii*) in the deeper areas (down to 6-0' MLW) and shallow areas (up to 1-0' MLW). It was also noted the substrate changed from sand to small rock along the eastern edge of the seagrass area. Some areas of mixed seagrass (co-dominance of both species) was also noted (see enclosure 2).

The shallow water reef and lagoon component proposed on the southeast corner of Peanut Island is proposed to be excavated from the island upland area to avoid adverse affects to the existing seagrass patch in that vicinity. The "fingers" are no longer proposed in the shallow water reef and lagoon restoration component. The approximate distance between the proposed reef and the existing seagrass bed is still being finalized at this time. The proposed environmental restoration components are not anticipated to change the tidal flushing patterns to adversely affect the seagrass patch in the project vicinity. The National Marine Fisheries Service monitoring recommendations have been noted. We concur that the 'new lagoon' could provide valuable information on the recruitment of seagrasses in a manner similar to the environmental restoration completed at Munyon Island in Lake Worth Lagoon.

Based on this information, we do not believe the existing patch of seagrass in the vicinity of the proposed environmental restoration project will be adversely affected. In addition, the proposed project is an environmental restoration project that proposes to restore historical maritime hammock, mangrove and seagrass habitat. Therefore, pursuant to Section 7 of the Act, we have determined that the proposed action would not likely adversely affect Johnson's Seagrass and are asking for concurrence in this matter.

While we believe there would be no "incidental take" of Johnson's Seagrass, it appears that there is no incidental take prohibition for this threatened plant species (Final ESA Consultation Handbook, March 1998). This action would not occur in or impact any proposed critical habitat for the species (Federal Register, December 2, 1999).

If you have any questions concerning this project, please contact Mr. Paul Stevenson at 904-232-2130.

Sincerely,

James C. Duck
Chief, Planning Division

Enclosures

Copy Furnished:

Mr. Carmen Vare-Vernachio, Environmental Specialist, Palm Beach County DERM
3323 Belvedere Road, Bldg 502, West Palm Beach Florida 33406

DIVISIONS OF FLORIDA DEPARTMENT OF STATE

Office of the Secretary
Office of International Relations
Division of Elections
Division of Corporations
Division of Cultural Affairs
Division of Historical Resources
Division of Library and Information Services
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Department of Veterans' Affairs

FLORIDA DEPARTMENT OF STATE
Katherine Harris
Secretary of State
DIVISION OF HISTORICAL RESOURCES

Mr. George M. Strain
Jacksonville District Corps of Engineers
P. O. Box 4970
Jacksonville, FL 32232-0019

December 17, 1999

RE: DHR Project File No. 997623
Cultural Resource Assessment Survey of Peanut Island, Palm Beach County, Florida. By
Environmental Services, Inc., October 1998.

Dear Mr. Strain:

In accordance with the procedures contained in 36 C.F.R., Part 800 ("Protection of Historic Properties"), as well as those contained in Chapter 267.061, Florida Statutes, implemented through 1A-46 *Florida Administrative Code*, we have reviewed the results of the field survey of the referenced project and find them to be complete and sufficient.

We note that no historic properties were located as a result of the above referenced survey, except for the previously recorded Lake Worth Inlet USCG Station and the Kennedy Bunker. It is the opinion of this agency that because of the nature of the project, removal of vegetation will not impact any historic resources.

If you have any questions concerning our comments, please contact Ms. Robin Jackson, Historic Sites Specialist at (850) 487-2333 or 1-(800) 847-7278. Your interest in protecting Florida's historic properties is appreciated.

Sincerely,

Janet Snyder Matthews, Ph.D, Director
Division of Historical Resources
State Historic Preservation Officer

JSM/Jrj

Planning Division
Environmental Branch

FEB 14 2000

Mr. Charles A. Oravetz
Chief, Protected Resources Division
National Marine Fisheries Services
Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, Florida 33702

Dear Mr. Oravetz,

This letter initiates coordination under the Magnuson-Stevens Fishery Conservation and Management Act. It is in reference to the Section 1135 Peanut Island Environmental Restoration Project Study in Lake Worth Lagoon, which we are currently conducting. The project proposes to restore approximately 3 acres of existing mangroves habitat by creating 1.5 acres of tidal flushing channels and inlet ponding areas. The project also proposes to create 1.3 acres of shallow water reef, 3 acres of shallow water lagoon, remove exotic vegetation and plant approximately 7 acres of native maritime hammock species, 4 acres of coastal strand species, 4.6 acres of beach dune species and 16 acres of submerged wetlands (see enclosure 1).

The shallow water reef and lagoon component proposed on the southeast corner of Peanut Island is proposed to be excavated from the island upland area to avoid adverse affects to the existing seagrass patch in that vicinity. The proposed environmental restoration components are not anticipated to change the tidal flushing patterns to adversely affect the seagrass patch in the project vicinity (see enclosure 2). The project would provide additional habitat and habitat improvement for seagrass, mangroves and open water.

Therefore, pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (Section 600.920(g)), we have determined that the proposed action would not likely adversely affect any essential fish habitat within the project area and are asking for concurrence in this matter.

A copy of the revised draft Peanut Island, Environmental Assessment, January 2000, is enclosed for your information.

James C. Duck
Chief, Planning Division

Enclosure

Copies Furnished:

**Mr. Mark Thompson, National Marine Fisheries Service, Environmental Assessment
Branch, 3500 Delwood Beach Road, Panama City, Florida 32407-7499**

**Mr. Carmen Vare-Vernachio, Environmental Specialist, Palm Beach County Department
Environmental Resources Management, 3323 Belvedere Road, Building 502, West
Palm Beach, Florida 33406**

has:



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

February 29, 2000

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

Dear Mr. Duck:

The National Marine Fisheries Service (NMFS) has reviewed your staff's letter dated February 7, 2000, concerning coordination under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and the revised draft Environmental Assessment (EA) dated January 2000 for the proposed Peanut Island Environmental Restoration Project in Lake Worth, Palm Beach County, Florida.

The proposed restoration project includes constructing a 1.3 acre shallow water reef, 3.0 acres of mangrove restoration, 3.0 acres of shallow water lagoon, tidal ponds and channels, 7.1 acres of maritime hammocks restoration, 3.9 acres of coastal strand restoration, and 4.6 acres of beach dune restoration. In addition, dredged material used in the above mentioned restoration components of Peanut Island will be used for the restoration of 16.0 acres of a previously dredged site within Lake Worth (City of Lake Worth Wetland Restoration area). The latter will restore the shallow water habitat of the dredged area in order to provide suitable conditions for recolonization of seagrasses and benthic communities. The close proximity of the project to the Lake Worth Inlet should provide high water quality and recruitment of marine organisms to the restored habitat. The project design should maximize the amount of tidally influenced habitat and may increase the potential of mangrove and seagrass recruitment to Peanut Island. For this aspect of the work, we concur with your determination that the proposed action would not likely adversely affect *Essential Fish Habitat* as designated under the Magnuson-Stevens Act.

However, it is not clear in the EA how the shallow water reef habitat will be designed and constructed, other than placement of limestone boulders will occur in the vicinity of the proposed lagoon area on the southeast side of the island. Because of the apparent close proximity of the proposed shallow water reef to existing seagrasses, the seagrass area should be monitored to assess direct impact during reef construction and from any scouring that may occur from wave energy deflecting from the limestone boulders.



Also, based on a recent Corps of Engineers' (COE) Notice of Noncompliance (199603357[NC-BM]) to Palm Beach County and their contractor, Intercounty Engineering Inc., for unauthorized work in seagrasses at the Light Harbor Marina Park from barges and tug boats associated with permitted work on Peanut Island, the NMFS has concerns that barges and other equipment working within the area around Peanut Island during the COE's restoration project will also impact shallow seagrass beds in Lake Worth. The COE should prepare, and provide for our review, a construction plan that details the operating depths of the barge staging areas, routes to and from Peanut Island, locations in the area where seagrasses exist and the means to avoid impacting these areas. We recommend a pre- and post-construction seagrass monitoring schedule be implemented. This will provide current data if impacts to seagrass habitat do occur.

In consideration of the potential impacts associated with seagrass habitat and to ensure the conservation of Essential Fish Habitat and fishery resources, the NMFS recommends that the final action on the proposed action should require the following:

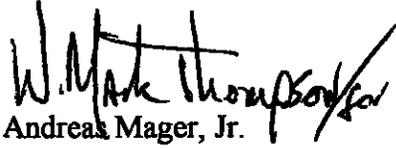
EFH Conservation Recommendation

1. That a construction plan for all aspects of the project be developed to avoid seagrass impacts.
2. A seagrass monitoring plan be developed for the area of Lake Worth that will be subjected to construction equipment and activities associated with this project.

Please be advised that the Magnuson-Stevens Act and the regulation to implement the EFH provisions (50 CFR Section 600.920) require your office to provide a written response to this letter. That response must be provided within 30 days and at least 10 days prior to final agency action. A preliminary response is acceptable if final action cannot be completed within 30 days. Your final response must include a description of measures to be required to avoid, mitigate, or offset the adverse impacts of the activity. If your response is inconsistent with our EFH Conservation Recommendation, you must provide an explanation of the reasons for not implementing those recommendations.

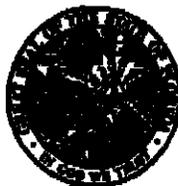
We appreciate the opportunity to provide these comments. If we can be of further assistance, please advise. Related comments, questions or correspondence should be directed to Mr. Michael R. Johnson in Miami, Florida, at 305-595-8352.

Sincerely,



Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division

DIVISIONS OF FLORIDA DEPARTMENT OF STATE
 Office of the Secretary
 Office of International Relations
 Division of Elections
 Division of Corporations
 Division of Cultural Affairs
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FLORIDA DEPARTMENT OF STATE
 Katherine Harris
 Secretary of State
 DIVISION OF HISTORICAL RESOURCES

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 Department of Highway Safety and Motor Vehicles
 Department of Veterans' Affairs

LAKE WORTH LAECEN

Mr. John R. Hall
 Regulatory Division, Permits Branch
 Jacksonville District, Corps of Engineers
 P.O. Box 4970
 Jacksonville, Florida 32232-0019

September 27, 2000

RE: Corps of Engineers - Individual Permits
 Public Notice Applications Reviewed by the Florida State Historic Preservation Office
 No Historic Properties Affected - See Attached List

Dear Mr. Hall:

Our office has received and reviewed the above referenced project in accordance with Section 106 of the National Historic Preservation Act of 1966 (Public Law 89-665), as amended in 1992, and 36 C.F.R., Part 800: Protection of Historic Properties. The State Historic Preservation Officer (SHPO) is to advise and assist federal agencies when identifying historic properties (listed or eligible for listing, in the National Register of Historic Places), assessing effects upon them, and considering alternatives to avoid or reduce the project's effect on them.

We have reviewed the Florida Master Site File and our records and no historic properties are known to exist in the area of potential effect. Therefore, based on the information provided, it is the opinion of this office that no historic properties will be affected by this undertaking.

If you have any questions concerning our comments, please contact Scott Edwards, Historic Preservation Planner, at 850-487-2333 or 800-847-7278. Your interest in protecting Florida's historic properties is appreciated.

Sincerely,

Janet Snyder Matthews, Ph.D., Director
 Division of Historical Resources
 State Historic Preservation Officer

JSM/Ese

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

- | | | | |
|---|--|--|---|
| <input type="checkbox"/> Director's Office
(850) 245-6300 • FAX: 245-6435 | <input type="checkbox"/> Archaeological Research
(850) 245-6444 • FAX: 245-6436 | <input type="checkbox"/> Historic Preservation
(850) 245-6333 • FAX: 245-6437 | <input type="checkbox"/> Historical Museums
(850) 245-6400 • FAX: 245-6433 |
| <input type="checkbox"/> Palm Beach Regional Office
(561) 279-1475 • FAX: 279-1476 | <input type="checkbox"/> St. Augustine Regional Office
(904) 828-5045 • FAX: 825-5044 | <input type="checkbox"/> Tampa Regional Office
(813) 272-3843 • FAX: 272-2340 | |

Mr. Hall
September 27, 2000
Page 2

DHR's NO.	PERMIT NO	COUNTY	APPLICANT
2000-06505	199905053 (IP-DH)	Okaloosa	Benedict Engineering Co.
2000-06193	200002515 (IP-RM)	Palm Beach	City of Lake Worth Wetland Restoration ✓
2000-06407	199901558 (IP-ES)	Pasco	Devco III, LLC
2000-06408	200002380 (IP-RLW)	St. Johns	Robert Davis
2000-06443	199904367 (IP-ME)	St. Johns	Richard Smith
2000-06195	199100082 (IP-TA)	St. Lucie	Ballantrae Homeowners Association
2000-06232	200002421 (IP-JC)	St. Lucie	Tropicana Products, Inc
2000-06235	199803448 (IP-DH)	Walton	The St. Joe Company



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

December 20, 2000

Colonel James G. May
District Engineer, Jacksonville District
Construction-Operations Division
Department of the Army, Corps of Engineers
P.O. Box 4970
Jacksonville, Florida 32232-0019

Dear Colonel May:

The National Marine Fisheries Service (NMFS) has reviewed Public Notice PN-PBH-246, dated November 21, 2000, regarding the removal and disposal of 600,000 cubic yards of spoil material from Peanut Island at Lake Worth, Palm Beach County, Florida. The Army Corps of Engineers (COE) proposes to place the spoil material over approximately 584 acres of estuarine and marine tidal and subtidal waters in at least one of three alternative disposal sites. The three proposed disposal sites include the nearshore waters south of Lake Worth Inlet, beach renourishment at Palm Beach Midtown Beach, and an open water area adjacent to the Lake Worth Municipal Golf Course.

The proposed project is located in an area identified as Essential Fish Habitat (EFH) by the South Atlantic Fishery Management Council (SAFMC). Categories of EFH that may occur within the project vicinity include estuarine and marine water column, seagrass, live/hard bottoms, and coral and coral reefs. Some of the managed species associated with estuarine and marine water column, seagrass, live/hard bottoms, and coral and coral reefs at the project site include postlarval, juvenile, and adult gray snapper, white grunt, and red and gag groupers. Seagrass habitat, estuarine mud bottoms, and areas adjacent to South Atlantic inlets have been identified as EFH for the eggs, larvae, postlarvae/juvenile, subadults, and adult red drum. In addition, postlarval/juvenile and adult brown and pink shrimp are known to inhabit seagrass habitat, areas adjacent to inlets, and estuarine mud bottoms found within the area. Detailed information on shrimp, red drum, snapper/grouper complex (containing ten families and 73 species), coral and coral reefs and other Federally managed fisheries and their EFH is provided in the 1998 amendment of the Fishery Management Plans (FMP) for the South Atlantic region prepared by the SAFMC. The 1998 generic amendment was prepared as required by the Magnuson-Stevens Fishery Conservation and Management Act (P.L. 94-265). The NMFS has developed an applicable FMP for highly migratory species that utilize the estuarine and marine water column, seagrass beds, live/hard bottoms, and coral and coral reefs in this area, including nurse, bonnethead, lemon, black tip, Caribbean reef, and bull sharks. In addition, submerged aquatic vegetation, inlets, hard bottom, and coral reefs have been defined as Habitat Area of Particular Concern (HAPC) by the SAFMC for shrimp, snapper/grouper complex, red drum, and



coral and coral reefs. HAPCs are subsets of EFH that are rare, particularly susceptible to human-induced degradation, especially ecologically important, or located in an environmentally stressed area.

In addition to EFH for federally managed species, seagrasses provide nursery, foraging, and refuge habitat for other commercially and recreationally important fish and shellfish. Species such as blue crab, snook, striped mullet, spotted seatrout, sheepshead, black drum, and various tropical reef fishes are among the many species that utilize this habitat. Seagrass habitat also produces and exports detritus (decaying organic material) which is an essential element of the marine and estuarine food webs. Cumulatively, adverse impacts to seagrass, live/hard bottom, coral and coral reef habitats result in a reduction of overall fisheries productivity within the south Florida ecosystem.

Information provided in the public notice indicates that beach-grade spoil material will first be placed in the nearshore area south of Lake Worth Inlet and the remainder at the Palm Beach Midtown beach. Although details regarding the location and methods for placement of this material were lacking in the public notice, we presume that it is intended to supplement the fill material for the renourishment of these beaches. The NMFS has reviewed the Midtown Beach renourishment project for the Town of Palm Beach (COE permit application 199503779) and provided EFH Conservation Recommendations. Due to the adverse impacts related to burial and sedimentation of live/hard bottoms, coral and coral reefs, and artificial/manmade reefs, we recommended denial of the project as proposed. Regarding the spoil disposal in the nearshore area south of Lake Worth Inlet, information about the presence of hard bottom/coral reef habitats was not mentioned in the public notice. However, these habitats are known to exist in this area and a benthic survey to include the equilibrium toe of fill should be completed if this area is selected as one of the disposal sites.

A third alternative disposal site is an open water area, characterized as containing anoxic holes, adjacent to the Lake Worth Municipal Golf Course. The NMFS has previously reviewed this proposed project through permit application 200002515 (IP-RM) for the Palm Beach County Board of Commissioners. The NMFS has objected to this proposed project for several reasons, but primarily due to the elimination of 0.67 acre of seagrass habitat and the great uncertainty that seagrasses will reestablish in the area after fill has been placed. Furthermore, the enlargement of two golf tees over 0.4 acre of tidal and subtidal waters, resulting in adverse impacts to submerged aquatic vegetation, did not appear to have any beneficial wetland restoration function.

Several species of seagrasses are found in the area of Lake Worth near Peanut Island, including shoalgrass, manatee grass, turtlegrass, paddle grass and Johnson's seagrass. Johnson's seagrass is listed as threatened under the Endangered Species Act. To adequately evaluate impacts to Johnson's seagrass, consultation under Section 7 of the Endangered Species Act may be required. Layne Bolen of our Protected Resources Division should be contacted at (850) 234-6541, ext. 237.

Seagrass density is relatively low in the areas associated with previously dredged portions of Palm Beach Harbor. However, seagrass density and abundance is high surrounding Peanut Island. Figure 6 of the Environmental Restoration Report and Environmental Assessment for Peanut Island, dated January 2000, indicates that seagrass beds were found along Peanut Island's north, east and south shorelines. Although limited to areas within and bordering the Atlantic Intracoastal Waterway, the

COE 1999 seagrass survey (Marine Seagrass Survey of the Atlantic Intracoastal Waterway, Palm Beach County, December 1999), indicated that due to the close proximity to Lake Worth Inlet and the extensive shallow flats north of Peanut Island, seagrass cover and diversity were higher here than at any location in the study area. In view of the extensive, shallow seagrass beds in the area, a construction operations plan should include measures to avoid impacts from barges and/or pipelines used to remove spoil material from Peanut Island.

Page 5 of the public notice contains information regarding Magnuson-Stevens Fishery Conservation and Management Act and EFH. A determination was made that the proposed project would impact approximately 584 acres of estuarine substrata, but that it would not have a substantial adverse impact on EFH on Federally managed fisheries in the Gulf of Mexico. Please note that the subject project is located within an area under the jurisdiction of the South Atlantic Fishery Management Council, which does not include waters of the Gulf of Mexico. Regardless, considering the 0.67 acre of seagrass impacts associated with the Lake Worth Municipal Golf Course project, at least 0.3 acre of hard bottom habitat associated with the Midtown Beach project, and an undetermined amount of hard bottom habitat that could be impacted at the nearshore area south of Lake Worth Inlet, the NMFS does not agree with the COE determination of no adverse impact to EFH.

According to the public notice, an environmental assessment (EA) for the project was completed in October 2000, and used as the basis for the environmental review for this public notice. Based upon the EA, a Finding of No Significant Impact was made for the proposed project. The NMFS' Habitat Conservation Division was not provided an opportunity to review and comment on the EA, although a copy recently was forwarded to us at our request. Based upon our review of the EA, the following comments are provided.

Determinations were made by the COE that no adverse effects to seagrasses or any threatened and endangered species are anticipated with the disposal of spoil material at the Lake Worth Municipal Golf Course site. However, based upon surveys by the Palm Beach County, there would be 0.67 acre of seagrass impacts, including 0.25 acre of impacts to Johnson's seagrass, from the proposed project.

A COE determination was also made that no impacts or adverse effects to threatened or endangered species are anticipated from the disposal of spoil at the Midtown Beach location. However, recent aerial surveys revealed that nearly 60 percent of all turtles sighted along the Atlantic coastline in Palm Beach County were along a 2.5-mile stretch of nearshore reef in front of the Breaker's Hotel (Midtown Beach)¹. The study suggests that sea turtles may be attracted to these reefs due to the high vertical relief and complexity and the relatively shallow water depths they provide. The proposed disposal at this site would bury nearshore hard bottom habitats that juvenile and adult sea turtles use for feeding and foraging.

¹Carson, D.C. (in press). Relative abundance and distribution of sea turtles in the marine and estuarine waters of Palm Beach County, Florida, USA based on aerial surveys, 1990-1993. *In* 19th Annual Symposium on Sea Turtle Biology and Conservation, March 1999, South Padre Island, Texas.

The discussion of the MSFCMA contains a statement that EFH coordination with NMFS has been completed with this EA coordination. Because NMFS's Habitat Conservation Division was not provided an opportunity to comment on the October EA, EFH coordination has not been completed.

A determination was made that spoil disposal in the open waters adjacent to Lake Worth Municipal Golf Course should not pose a turbidity problem. The NMFS has concerns regarding the resuspension of fine sediments that exist on the bottom after the placement of 600,000 cubic yards of fill over 99 acres of open water habitat. Resuspension of this sediment is likely given the Palm Beach County's report indicating that the existing sediments are composed of 83 percent silt/clay. Information on how turbidity will be controlled during the disposal operations has not been provided by either Palm Beach County or the COE.

Inconsistencies were noted in Table 1. A "No Adverse Effects Anticipated" assessment was made for the disposal at all three proposed sites. In view of the anticipated impacts to seagrass and hard bottom habitats, this determination does not appear to accurately reflect impacts to fish and wildlife resources. Under the Water Quality category, a "No Discharge into Wetlands or Florida Waters" assessment was made for all three proposed disposal sites, which seems contrary to the purpose of the proposed project. Finally, for the Lake Worth Municipal Golf Course, a "No Impacts" determination was made for the Vegetation category. Considering the impacts to seagrass habitat from this project, this assessment seems inappropriate.

In view of the potential adverse effects of this project to EFH, HAPC and NOAA trust resources, the NMFS recommends that additional information be provided for our review. At a minimum, recent surveys and assessments should encompass the following:

1. A complete description of the anticipated direct and indirect impacts to aquatic resources, including seagrasses and hard bottom/coral reef communities, should be assessed. This should include areas within the proposed spoil disposal sites and any pipeline corridors, as well as adjacent areas that may be impacted by turbidity plumes or by construction barges and tug boats. Because Johnson's seagrass may exist within the vicinity, seagrass surveys should be conducted between May and August.
2. The COE should prepare and provide for our review a construction plan that details the operating depths of the barge staging areas, routes to and from the project dredge sites, locations in the area where seagrasses exist and the means to avoid impacting these areas.

After our review of the requested information, NMFS will be able to more thoroughly assess the potential adverse impacts to EFH and associated marine resources. When the information needs that we have identified are met, we will reevaluate these recommendations and provide supplemental recommendations, as appropriate.

EFH Conservation Recommendations

1. A plan should be developed and implemented to avoid and/or minimize damage by mechanical operations, siltation, turbidity and burial of any seagrass, hard bottom and live coral habitats. This plan should be made available to NMFS for review prior to final approval.

2. A plan to fully compensate for unavoidable adverse impacts to seagrass, hard bottom, coral and other sensitive habitats should be designed and should be made available to NMFS for review prior to final approval.

Please be advised that the Magnuson-Stevens Act and the regulation to implement the EFH provisions (50 CFR Section 600.920) require your office to provide a written response to this letter. That response must be provided within 30 days and at least 10 days prior to final agency action. A preliminary response is acceptable if final action cannot be completed within 30 days. Your final response must include a description of measures to be required to avoid, mitigate, or offset the adverse impacts of the activity. If your response is inconsistent with our EFH Conservation Recommendation, you must provide an explanation of the reasons for not implementing those recommendations.

If we can be of further assistance, please advise. Related comments, questions or correspondence should be directed to Michael R. Johnson in Miami. He may be contacted at 305-595-8352 or at the letterhead address above.

Sincerely,


for Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division

cc:
EPA, WPB
DEP, WPB
FFWCC, Tallahassee
FWS, Vero Beach
F/SER3
F/SER4
F/SER43-Johnson

11-9-01

Planning Division
Environmental Branch

11/22/01

Mr. Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation
National Marine Fisheries Service
Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, Florida 33702

Dear Mr. Mager:

The U.S. Army Corps of Engineers (Corps), Jacksonville District, proposes to offload 600,000 cubic yards of dredged material stored on Peanut Island, and change maintenance operations from winter hopper dredging to summer pipeline dredging. The project would also involve the removal of an existing berm and constructing a new berm, in addition to, removing material to facilitate the new environmental restoration of Peanut Island under Section 1135 of the Water Resources Act, as amended. The project site is located on Peanut Island, Palm Beach County, Florida.

One of three disposal options is proposed for the offloaded material. The Corps' recommended disposal option is located adjacent to the City of Lake Worth Municipal Golf Course. This area has been subjected to seagrass surveys conducted by the Palm Beach County, Department of Environmental Resources Management (1998 and 2000) and the Corps' contractor, Dial Cordy and Associates (1999). Each survey documents the presence of seagrass, including the threatened species Johnson's seagrass (*Halophila johnsonii*). Johnson's seagrass occur in sparse quantity (about 0.25 acre) along the shoreline. The project would not directly impact the species or involve the creation of fastland for the existing golf course. We believe the project would not jeopardize the continued existence of any threatened or endangered species or have adverse impacts to critical habitat. Also, the proposed action would not adversely impact marine/estuarine resources or essential fish habitat. The project would provide habitat for seagrass. This would be achieved by filling existing deep holes and raising the elevation to support the colonization and attachment of seagrass species, including Johnson's seagrass.

In accordance with your letter commenting on this proposed activity and the presence of Johnson's seagrass in the project area, the Corps requests formal consultation for the species under Section 7 of the Endangered Species Act.

In addition, we propose to monitor the success of seagrass in this area and claim mitigation credit for future dredging in Lake Worth and Palm Beach Harbor. We request your concurrence that successful colonization of seagrass in this mitigation area would compensate for equivalent loss of seagrass from dredging.

Sincerely,

James C. Duck
Chief, Planning Division

Copies Furnished:

Mr. George Getsinger, National Marine Fisheries Service, 6620
Southpoint Drive South, Suite 310, Jacksonville, Florida
32216-0958

U.S. Environmental Protection Agency, Office of Environmental
Assessment, Region Four, Atlanta Federal Center, 61 Forsyth
Street Southwest, Atlanta, Georgia 30303-8960

U.S. Fish and Wildlife Service, South Florida Ecosystem Office,
1339 20th Street, Vero Beach, Florida 32960-3559

Florida State Clearinghouse, Department of Community Affairs,
2555 Shumard Oak Boulevard, Tallahassee, Florida 32399-2100

APR 15 2002

Planning Division
Environmental Branch

Mr. Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division
National Marine Fisheries Service
9721 Executive Center Drive North
St. Petersburg, Florida 33702

Dear Mr. Mager:

Reference is made to your letter of December 7, 2001, wherein a response was provided to the U.S. Army Corps of Engineers' (Corps) letter of November 9, 2001 (enclosure 1). The Corps and the Florida Inland Navigation District (FIND) propose to offload dredged material stored on Peanut Island and change the harbor dredging method from hopper to pipeline dredge. The preferred material disposal site is a deep dredged hole located adjacent to the City of Lake Worth Municipal Golf Course, in Palm Beach County, Florida.

The Corps shares your agency's concerns for adverse impacts and losses that may result to essential fishery habitat (EFH) of managed species, including submerged aquatic vegetation (SAV) in the vicinity of Palm Beach Harbor and Lake Worth Inlet. As you are aware, the Corps and Palm Beach County propose restoration activities on behalf of the Florida Inland Navigation District. The proposed restoration efforts would create 11.1 acres of mangrove habitat, 2.3 acres of oyster reef area, 2.8 acres of salt marsh, and potentially 73.8 acres of seagrass habitat (see enclosure 2).

We believe as stated in the environmental narrative submitted to the South Florida Water Management District by Palm Beach County (enclosure 3), that once the deep hole has been filled to the proper elevations with suitable substrate, Seagrass recruitment will likely occur. This process should be greatly enhanced by sea grasses which currently exist within the project's vicinity. A similar project proposed at Munyon Island located 2 miles north of the Lake Worth Inlet was also successful within three years of the final restoration phase sea grasses had recruited in tidal channels constructed during

Phases I and II of Munyon Island restoration efforts (enclosure 3).

Below you will see a summary of your concerns and the Corps' response in the order presented:

1. The NMFS recommended the Corps (a) estimate seagrass coverage and density that may be achieved in the mitigation area; (b) compare the average coverage and density of seagrass beds anticipated in the mitigation area to existing seagrass beds that would be impacted by the project; and (c) analyze and compare ecological functions of the proposed mitigation area and impact area from future dredging in the area, including impacts to fish and invertebrates occurring in each area.

Response:

(a) Estimate of Seagrass Coverage in Mitigation Area:

Our contractor Dial Cordy and Associates Inc. conducted a seagrass survey of the subject advanced seagrass mitigation site in August 2000. They used the Braun Blanquet method for assessing cover, abundance and density. A copy of this report is enclosed for your use. While this report gives you a good idea of what was present at that time, it does not really reflect what can be restored. We are considering additional baseline survey work as warranted, especially as it relates to determining the compensation depth for seagrass and defining desired depths.

(b) Cover and Density of Seagrass in Mitigation vs. Seagrass Impacted: At present, we can't provide you with exact details pertaining to seagrass data as the proposed dredging projects for the Atlantic Intracoastal Waterway (AIWW) and Palm Beach Harbor are not far enough along. As you are aware, we expect to prepare an Environmental Impact Statement (starting this fiscal year) that will address impacts associated with the AIWW dredging. While our preliminary analysis prior to plan formulation did indicate as much as 25 acres of seagrass could be impacted. We expect considerable revisions to occur over the next year. Once we have determined what the plan will entail, we will provide this information to you. We expect that similar methods, as defined above, would be used to quantify and compare seagrass conditions at potential impacted sites and the proposed

seagrass mitigation site. At this time, we expect to fill the site with material from Peanut Island and based on success, as measured by monitoring, gain advanced credit for future work.

(c) Analysis of Ecological Function (i.e., fish abundance:
At present, we are not planning to conduct fish and benthic surveys in all the areas. Our assumptions are that if we restore seagrass habitat we will attract the typical benthic and fish species common to seagrass communities in Lake Worth. Due to the physio-chemical gradient differences between potential impact areas and the fill area, located further south in the lagoon. It is entirely possible that the restored seagrass habitat would support a faunal community somewhat different from the impacted areas. In terms of fish migration, there would remain a more or less continuous access corridor between shallow water habitats and the deeper channels between the inlets and advanced mitigation site. We believe by conducting baseline surveys and designing the site in accordance with guidelines by Fonseca et al 1998 that we will create conditions suitable for the recruitment and maturation of seagrass habitat and its associated biological communities. We expect the measure of success to be based on the cover abundance and density of seagrass at the restored site.

2. Provide information on how turbidity is to be controlled during the disposal operations. This information should also include existing fine sediments that might be displaced during and after construction.

Response:

Control Turbidity and Fine Sediments. Material placement could contribute to turbidity and fine sediments suspension. However, assurances are proposed that would confine turbidity and prevent suspension beyond the footprint of the work area. Turbidity controls would encompass the entire project area and preserved seagrass area. Pilings would secure the controls in place and would open only to allow work vessels entrance and exits. We further propose to place the material in the dredged hole mechanically. This method would greatly reduce sediment suspension. Enclosed is a copy of our turbidity specifications (enclosure 4). These specifications will be modified if appropriate. Also enclosed is the geotechnical report on

material to be offloaded from Peanut Island, in addition to, a sediment analysis on material representative of the dredged hole (enclosure 5).

3. Provide information regarding the allocation of mitigation for the County's Lake Worth Wetland Restoration Project and the Corps' mitigation project. This information should include aerial boundaries of the two projects to effectively determine seagrass recruitment criteria and success.

Response:

Mitigation Benefits Allocation. The current plan for the site includes restoration of mangrove, oyster and seagrass habitat, with the former two being designed and monitored by Palm Beach County as part of the Section 1135 project. The portion of the environmental restoration attributable to the Section 1135 Environmental Restoration Project cannot and will not be used for mitigation credits. Approximately 3 acres of the seagrass restoration would be the County's and the balance (71 acres) would be the Corps' responsibility. It is expected that success will be detectable within the first two growing seasons.

We are working with Palm Beach County to prepare a plan depicting aerial limits of both projects as well as defining success criteria and monitoring obligations.

4. Develop a mitigation plan with success criteria, monitoring schedules, and contingencies measures.

Response:

Mitigation Monitoring Plan. We agree with this comment and will prepare a definitive plan, including schedules, success criteria, monitoring methodology and contingencies. Please realize we will only be asking for credit for those areas where success criteria is evident on a yearly basis. The success criteria we will use will be based on parameters such as areal cover, density and abundance values as compared to reference station values. These standards are commonly used to determine the health of existing seagrass beds. Reference stations will be established in the same reach of Lake Worth and monitored

prior to and concurrently with the annual restoration site monitoring. Due to differences in the site conditions and seagrass communities closer to the inlet, a comparison to seagrass bed data there with conditions further south at the restoration site would not be practicable. We have considerable data throughout the lagoon and believe excellent reference sites can be selected based on concurrence with your office.

5. Provide an evaluation of alternative seagrass mitigation sites which include identified borrow or dredged holes in the vicinity of Palm Beach Intracoastal Waterway and Palm Beach Harbor dredging projects.

Response:

Alternative Mitigation Sites. The Lake Worth Municipal Golf Course site is the largest dredged hole in Lake Worth. There are possibly other dredged holes or abandoned slips or prop scars sites which may present a mitigation opportunity. We are discussing alternative site locations with Palm Beach County staff and will provide a list for your agency's review upon receipt. These sites, however, may be small, scattered, and cost prohibitive. Cumulatively we don't believe they would approach the proposed mitigation site in size and are probably less cost effective than restoring a single large site. The larger site also provides an environmentally beneficial means of disposing of dredged material. Future dredging needs may approach 1 million cubic yards of material and require the proposed increased capacity from off-loading the Peanut Island disposal site.

Comparative restorative mitigation has been accomplished on Munyon Island with great success. The Corps always welcomes an opportunity to enhance or restore degraded aquatic ecosystems. However, the extent of Corps participation is usually dictated by project size. Material quantity and transport cost usually prohibit transport to scattered and smaller sites. The cost of using some of the smaller sites may be somewhat offset by the possibility of requiring less material and creating denser seagrass. However, for the simplicity of construction and monitoring, we support the use of the proposed mitigation site. Additionally, the restoration of 90 acres of shallow water habitat and seagrass beds within a deep non-productive

dredged hole will greatly enhance secondary production in this area of Lake Worth. Following modifications to the C-51 Canal discharges within the next 5 years, we expect the ecological benefits of the restored habitat to be even more elevated due to improved water quality and water clarity.

We believe the project proposes positive environmental benefits and provides an opportunity to increase EFH and SAV habitats in this area and vicinity. Should you require any additional information, please contact Ms. Catherine L. Brooks, of my staff at either the letterhead address, e-mail address Catherine.l.brooks@usace.army.mil, or telephone number 904-232-2130.

Sincerely

James C. Duck
Chief, Planning Division

Enclosures



May 15, 2001

County Administration

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Addie L. Greene

County Administrator

Robert Weisman

James C. Duck, Chief
Planning Division
Department of the Army
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

Dear Mr. Duck:

**SUBJECT: DETAILED PROJECT REPORT PALM BEACH HARBOR LAKE
WORTH ACCESS CHANNEL EXPANSION, SECTION 107
SMALL NAVIGATION PROJECT**

We appreciate the opportunity to comment on the subject report and support the concept of the Lake Worth Access Channel Expansion or "Megayachts". Deep water access to local marinas and boatyards will provide economic incentives, employment opportunities and marine industry improvements for Palm Beach County.

Although the report provides a methodical breakdown of the cost benefits associated with various channel depths and project scopes, the principle weakness of the plan lies in the lack of a regional management analysis to include other planned and existing dredging projects in the same area. The analysis should consider construction schedules, the relative quality of the available material, permitting criteria, funding alternatives and construction methodologies in terms of both cost and environmental impacts.

Palm Beach County proposes an alternative plan to deal with these concerns (see enclosed comments and sand management plan). As a first step, we advocate downloading Peanut Island and utilizing the material to fill the Lake Worth Wetland Restoration (LWWR) project (referred to as the anoxic depression area in the Section 107 Report), which will provide advanced mitigation for the subject project. This will allow for the beneficial use of suitable material from the Megayachts project to be placed on the beach and nearshore. The entire Megayachts project could be accomplished in a cost-effective manner using hydraulic equipment (rather than employing two different methodologies) to facilitate the placement of material in appropriate locations on the beach, nearshore and Peanut Island.

The County has received the state environmental permit and partial funding for the LWWR project and we are in the process of establishing an agreement with the City of Lake Worth. With City approval, we will continue on our present course to download Peanut Island and would recommend that a majority of the LWWR project be used as advanced mitigation for the construction of the Megayachts project. This concept has the support of the Florida Inland Navigation District and the Marine Industries Association, our two greatest allies in seeing the project go forward.

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J.C. Duck
May 15, 2001
Page 2

Completing the LWWR project with Peanut Island spoil and naming the Megayachts project as the recipient for the mitigation credit will likely minimize the future mitigation requirements by providing an established seagrass-mangrove system. This is an economically and environmentally feasible alternative that provides higher mitigation certainty than post-construction mitigation which typically requires a higher ratio compensation to account for possible failure. The National Marine Fisheries Service and other resource agencies are likely to embrace this concept versus post-construction mitigation, with no guarantees for success.

The Megayachts project is at the beginning of what may be a lengthy process of receiving the necessary permits and approvals. Currently, we are continuing with the construction plans for the Peanut Island, John's Island and LWWR projects. If work is not undertaken as scheduled, the County could lose up to \$1.8 million dollars from the Lake Worth Lagoon Partnership Program. Timing is one of our main concerns. Downloading and restoring Peanut Island at the same time would appear to be the most efficient use of barges, tugs, and heavy equipment. Coordinated project efforts will represent cost savings for mobilization and will also create an area on Peanut Island capable of holding non-suitable material generated from dredging the Megayachts project and provide advance mitigation for expected seagrass losses.

We look forward to cooperative agency efforts and are eager to begin these projects that will improve the Lake Worth Lagoon both environmentally and economically. We are willing to work with the Jacksonville District to balance the mixed objectives of this project and to provide the most productive and feasible result for all parties concerned. Please call me at (561) 355-2712 or Richard Walesky at (561) 233-2400, if you have any questions or need additional information.

Sincerely,

Robert Weisman
County Administrator

REW:JOB
Enclosures

c: Palm Beach County Board of County Commissioners
Richard E. Walesky, Director, Department of Environmental
Resources Management
Dennis Eshleman, Director, Parks and Recreation Department
David K. Roach, Executive Director, Florida Inland Navigation District
Tony Taramino, Executive Director, Port of Palm Beach
John Sprague, President, Marine Industries Association
Peter Elwell, Manager, Town of Palm Beach
James Bronstien, President, Rybovich Spencer
Bill Hayes, Executive Director, Perry Technologies
John Smundin, Marina Manager, Palm Harbor Marina
Michael Carey, Vice-President, Florida Marine
John Grant, President, Palm Beach Maritime Museum and Charter School

**DETAILED PROJECT REPORT PALM BEACH HARBOR
LAKE WORTH ACCESS CHANNEL EXPANSION
SECTION 107 SMALL NAVIGATION PROJECT**

PALM BEACH COUNTY COMMENTS - May, 2001

GENERAL

- The economic analysis (para. #141) and Recommended Plan (para. #145) state that "this project is disposal site capacity limited". The County's proposed plan for sand management eliminates the disposal site capacity limitations and accommodates sand management alternatives dictated by environmental benefits.
- The report indicates the need to complete the entire Federal (1.9 mile) and non-Federal (3.3 mile) project in order to have enough dredged material to complete the Lake Worth Wetland Restoration (LWWR) project to fulfill anticipated mitigation requirements. If the non-Federal portion is not built, there may not be sufficient fill to create enough seagrass habitat to meet the mitigation requirements for the Federal portion. The County's proposed plan for sand management eliminates the disposal site capacity limitations with or without the non-Federal project segment. However, the non-Federal project will generate the majority of non-beach compatible material (over 400,000 cy³ based on >5% silt-clay and/or >3% organics).
- #47. Lake Worth Inlet is not a natural inlet.
- #154/#161 "...Any unsuitable material could be disposed on Peanut Island." The report's recommended plan will require the construction of another dike on top of Peanut Island (which is already at +40' NGVD elevation) in preparation for the disposal of unsuitable material associated with Megayachts. This may compromise the beach quality material currently available on the island. Dredging Peanut Island, as proposed by the County and the Florida Inland Navigation District (FIND) will provide an opportunity to utilize the suitable material for the nearshore ocean environment and provide a greater capacity (on Peanut Island) for any unsuitable material associated with the Megayachts project or future projects.
- The timing of the Megayachts project versus the County's three major environmental projects (Peanut Island, John's Island and LWWR) that are permitted, funded and ready for construction, is of major concern to Palm Beach County. The delay of these projects due to the Megayachts project (as currently proposed) will effectively sacrifice these projects in terms of funding, if they are postponed due to revisions to incorporate the Megayachts project (as proposed which recommends filling the LWWR).

ENVIRONMENTAL CONCERNS/CONSTRAINTS

- **EA 3.1 and 3.2. The extent of estimated seagrasses impacted is substantially higher than expected based on earlier correspondence (from 2 acres to 21 acres). The report does not include the extent of proposed island freighter marshalling basin (Para. #91), south of the port at the old Coast Guard property, which would increase the seagrass impact total. While it is understood that the impacts of the marshalling area will be developed in greater detail in another report, the potential impacts to seagrasses from the marshalling project should also be discussed in the Section 107 report.**
- **#100 and EA 1.7. The report suggests dredging the waterway for expansion by clamshell or cutter-suction dredge and utilizing a clamshell/barge operation for filling in the Lake Worth Lagoon. This method for inshore filling will generate high levels of turbidity which is environmentally unacceptable for a lagoon that we are trying to restore and preserve. Barging the dry/decanted material from Peanut to fill the LWWR area will be a much cleaner and efficient process and quite frankly, more acceptable to the permitting agencies.**
- **Appendix A, Section 404(b)(1) Evaluation, Paragraph 11c(1), Turbidity- It is expected that turbidity generated by clamshelling and placement of wet fill will be extensive and will be difficult to prevent water quality violations. Alternative methods proposed above will reduce these impacts.**
- **Seagrass impacts are greater than originally anticipated, though the majority appear to be related to IWW maintenance. Applicable mitigation should be addressed for relevant impacts resulting from the project.**
- **Appendix A, Section 404(b)(1) Evaluation, Paragraph 11c(2)(c), Toxic Metals- Copper has been found in sediments in the lagoon. Testing of sediments should be performed to determine extent of contamination and whether other constituents are present, particularly in the vicinity of existing marine terminals. Sampling from other portions of the lagoon indicate that metals (especially copper) will be found in the sediments. Sampling and testing for toxic metals should be performed on the sediments proposed for dredging to answer anticipated permitting issues.**
- **#137 and EA 3.13, 4.2. This project will be carefully reviewed for impacts to manatees because the waters of Palm Beach County have been determined by the United States Fish and Wildlife Service to be "manatee areas of heightened scrutiny". Contract alternatives and the dry load hauling should be used to minimize the number of barge trips along a heavily used manatee travel corridor.**
- **# 128. The report indicates that hydrodynamic effects are not expected from the dredging of the channels and the filling of the anoxic depression. This assumption should be tested in terms of water quality, tidal flushing and shoaling effects by using the Lake Worth Lagoon flow model currently being developed by the South Florida Water Management District.**

USE OF "ANOXIC DEPRESSION AREA" FOR MATERIAL DISPOSAL

- **#116.** As property owner of the submerged lands associated with the LWWR project, the City of Lake Worth requires a shoreline erosion protection project to be associated with the LWWR project. To our knowledge, the Corps has made no effort to contact the City for their approval and does not include an erosion control feature with their proposal.
- **#116 / #158** The Section 107 Report states that the LWWR area has a capacity to hold 1,050,000 cy³ to "create 90 acres of seagrasses", which is incorrect by our calculations. While the footprint of the project area approaches 100 acres, the above capacity may be achieved only with the creation of a seagrass/mangrove system, which will have the potential to provide approximately 45 acres of seagrass and 11 acres of mangroves. The remaining area will likely be too deep to support seagrasses.
- Supplemental bathymetry should be completed within the Lake Worth Lagoon to detail known anoxic dredged areas that may be utilized for mitigation or inshore disposal associated with the Megayachts project.

DREDGED MATERIAL MANAGEMENT

- **#151.** As the Section 107 Report states, there is substantial material from the Megayachts project that is suitable for beach and nearshore placement. However, the recommended plan puts the majority of the material in the anoxic dredged hole, with only 210,000cy³ going to nearshore. In our preliminary Sand Management Plan (see Attachment), Palm Beach County recommends that all material from the northern segment (except around core #8), inlet channel and settling basin be transported to the beach or nearshore.
- **# 127.** For additional mitigation credit, serious consideration should be given to the acquisition of submerged lands which currently support seagrasses. There are a number of privately held submerged parcels in the north end of the lagoon that could be purchased for this purpose.
- **#152.** Emphasis should be placed on obtaining the remaining easements from upland property owners to increase the potential volume of the existing permitted disposal site south of the inlet jetty. Funding from the Town of Palm Beach and FIND could be sought for deposition in established project areas when necessary.
- **#156** Indicates beach disposal of 210,000cy³ associated with Megayachts, with the remaining material to be placed in the anoxic depression. The County's preliminary assessment for beach disposal indicates that over 545,000 cy³ (megayachts + Peanut Island material) is suitable for beach or nearshore placement.

- The Port of Palm Beach's dredged material maintenance area on Peanut Island should be included in this plan to download Peanut, with their approval. The dredged material on Peanut Island will be further evaluated and all compatible material will be placed on the beach or nearshore environs.
- Due to the fines and high silt/clays, material from the southern portion of the megayacht project, turning basin, and possibly the access channels, should be transported to Peanut Island or other suitable inland sites. The plan needs to address the quality of the material proposed to be dredged from the marina access channels.
- The material presently stored on Peanut Island should be used to restore all compatible sand to the beach, fill any other potential inland sites and to fill the LWWR project as advanced mitigation for the Megayachts project. The high percentage of gravel and silt throughout the site limits the viability of much of the material as beach fill. The preliminary assessment has identified approximately 100,000cy³ of material which could be deposited in the nearshore area south of the inlet or screened and placed on the beach.
- #113. The capacity of the disposal area south of the Lake Worth Inlet (LWI) is vastly underestimated. Dredging of the Megayachts project will take a full dredging season (November through March) and the downloading of Peanut Island will take at least a year. The cross shore and long shore transport of such fine grained sediments in an ocean environment is very high which will result in rapid fill dispersal. The capacity of the disposal area is being assumed from dimensions contained in the permit for the Palm Beach Harbor federal navigation project. Those dimensions are not the result of an environmental constraint and do not apply to this project. The actual dimensions for these projects are presently unknown since a permit has not been issued. Even if the disposal area dimensions remain the same, these projects are not likely to exceed the dimensions with 600,000 cubic yards being placed over a two year period.

Preliminary Assessment

- The attached table provides a preliminary assessment of a sand management plan based on the information available to date. Though driven by sand characteristics, emphasis has been placed on maximizing beach deposition while providing sufficient material to fill the LWWR site.
- The volume of sand removed from Peanut Island could be adjusted to meet the requirements of the various projects.
- The beach quality sand removed from Peanut Island could be placed in the permitted nearshore area to eliminate the need for screening the gravel sized fraction.
- The characteristics of the material from the proposed Megayacht access channels is presently unknown, so for the purposes of the plan is not assumed to be beach compatible.
- The plan would entail the use barges to offload Peanut Island and pipeline dredging for the Megayachts and inlet maintenance projects.

LAKE WORTH INLET SAND MANAGEMENT
PRELIMINARY ASSESSMENT
BASED ON MATERIAL QUALITY AND DISPOSAL SITE VOLUME PROJECTIONS

LOCATION	TOTAL MATERIAL VOLUME (cy)	PROPOSED BEACH FILL VOLUME	MEAN GRAIN SZ (mm)	SILT/CLAY %	GRAVEL %	PROPOSED LWMR FILL VOLUME	SILT/CLAY %	GRAVEL %	PROPOSED P.I. STORAGE VOLUME*	SILT/CLAY %	GRAVEL %	ORGANICS %
Peanut												
FIND site to +7' NGVD	537,191					537,191	4.3%	15.1%		15.0%	16.5%	
Port Site to +2' NGVD	413,523					413,523	3.0%	13.0%				
Restoration Features	284,608	99,856	0.37	2.3%	3.8%	99,298	4.1%	17.8%	85,454	14.0%	18.6%	
Megayacht calculated to 17' o.d. depth	636,111	210,648	0.17	3.6%	0.0%				425,463	5.2%	2.7%	5.7%
M.Y. Access Channels sediment characteristics unknown, volume calc. by USACE	473,658								473,658	?	?	?
Settlement Basin 1 67,500 sq ft x 12	30,000	30,000										
New Settlement Basin 100,000 sq ft x 20	74,074	74,074										
												grab samples only
Entrance Channel 400x1600x3	71,111	71,111										
Inner Channel 300x2700x2	60,000	60,000										
Turning Basin 1550x1400x1	82,667								82,667			
Ext Turning Basin 650x500x1	12,037								12,037			
	2,674,980	545,689				1,050,012			1,079,279			

NOTES: 1. Volume to be removed from Peanut could be adjusted to meet requirements

2. Some access channel material may be beach compatible or used to fill other depressions

*May include other depression areas.



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October 12, 2001

Mr. Robert W. Paulson, Jr.
Jacksonville District Corps of Engineers
West Palm Beach Regulatory Office
400 N. Congress Ave., Ste. 130
West Palm Beach, FL 33401

Dear Bob:

**SUBJECT: CITY OF LAKE WORTH WETLAND RESTORATION
PROJECT, FILE #20002515 (IP-RM)**

This letter is a follow up to our August 29, 2001 meeting with staff from the National Marine Fisheries Service (NMFS), Habitat Conservation Division (HCD). The proposed modifications to the referenced project address the concerns raised by the HCD.

Two seagrass surveys have been conducted at the project site. The first survey occurred October 8, 1998. One person swam the entire length of the project looking for seagrass, while another recorded the observations communicated by the swimmer. The survey was completed in one day, and the results were published in the project's permit application.

At the request of HCD staff, a second seagrass survey was conducted on September 14 and 15, 2000. This survey occurred close to the end of the worst drought on record. Water quality and transparency were excellent due to the lack of freshwater discharges into the lagoon. This survey almost certainly represents the best coverage of seagrasses possible under current site conditions.

The original seagrass survey revealed that seagrasses occurred at depths between approximately -1.0 and -4.0 referenced to the National Geodetic Vertical Datum of 1929 (NGVD). A hydrographic survey of the site had previously been conducted, with depth data collected along 34 transects located 200 feet apart (Figure 1). These same transects were used for the 2000 seagrass survey so that coverages could easily be equated to approximate water depths.

A Trimble real time corrected differential global positioning system was used to place a buoy on each transect in approximately 3 feet of water. Two divers then surveyed the transect using a measuring tape to record

the distance of observed seagrasses from the buoy. The divers swam along each transect line, recording any seagrasses visible from the transect. Visibility ranged from approximately 1 to 3 feet during the two survey days. Data recorded included the distance from the buoy (both east and west), seagrass species present, and a subjective relative measure of coverage (sparse, medium, dense). Although much of the seagrass coverage could be characterized as patchy, this characterization was not used.

Table 1 summarizes the raw data from each transect. Table 2 is the spreadsheet used to calculate the estimated seagrass coverage at the project site. A total of 1.29 acres of seagrass cover was estimated at the project site, with *H. johnsonii* covering an estimated 0.92 acres. The relative densities of each seagrass area are ignored. It should be noted that a mixture of *H. johnsonii* and any other species was assumed to be *H. johnsonii*. This provided a conservative estimate of *H. johnsonii* cover. Figure 1 shows the seagrass transect data on an aerial of the project site.

Proposed Project Modification

HCD has objected to the seagrass impacts proposed by this project. Our original proposal included impacting virtually all of the seagrasses at the site based on the original seagrass survey (0.67 total acres, 0.27 acres of *H. johnsonii*). We concur with HCD's suggestion that a seed source be preserved within the project footprint to facilitate reestablishment of *H. johnsonii* after construction. We are proposing a project modification to avoid impacts to 0.71 acres (55.0%) of the total seagrass cover, including preservation of 0.65 acres (70.7%) of the existing *H. johnsonii* cover revealed during the September 2000 survey.

Figure 2 shows the proposed modifications to the project. The northern toe of fill was pulled back, and those seagrasses along transects 66+00 and 64+00 will be preserved. Seagrasses will also be preserved along transects 18+00, 16+00, 10+00, and 8+00. A total of 2.9 acres of existing bottom between -1.0 and -4.0 NGVD will be preserved under this proposal (Figure 2). Table 3 is the spreadsheet used to calculate the modified projects' proposed seagrass impacts.

In a December 1, 2000 letter to the Corps, HCD indicated concerns that this project would: 1) adversely impact Essential Fish Habitat (EFH), 2) have uncertain effects on adjacent seagrass beds and future seagrass recruitment, and 3) have adverse impacts to EFH resulting from non-water dependent components. HCD indicated that "there is no certainty that seagrasses will re-establish" after fill placement. They cite a number of factors that may preclude seagrass from regrowing at the site, including a lack of seed or vegetative growth source in the area, influences of freshwater outflow from the C-51 canal, and resuspension of existing fine sediments after placement of the new fill. HCD then recommended denial of the project as proposed.

The proposed modification should relieve the concerns raised by the HCD. The new plan will preserve 70.7% (0.65 acres) of existing *H. johnsonii* cover in three separate areas spread out along the project footprint. These areas will provide the seed source for reestablishment of *H. johnsonii* at the site after construction.

Mr. Robert W. Paulson, Jr.
Page 3
October 12, 2001

HCD's concern that freshwater discharges from the C-51 canal will prevent the regrowth of *H. johnsonii* (or other seagrass species) is unwarranted. Seagrasses are currently growing in this very environment, and there is no reason to believe they won't reestablish after construction of a project that will actually create a more hospitable environment. We have already proved that *H. johnsonii* is capable of reestablishing in a newly created environment through the Munyon Island restoration project.

HCD's concern that resuspension of fine sediments will prevent regrowth is also unwarranted. The proposed fill will have a lower percentage of fines than currently exist at the site. Moreover, resuspension of fine sediments is directly dependent upon wave energy. The proposed project's mangrove islands and oyster reefs (Figure 2) will provide a wavebreak along the entire shoreline. This will substantially reduce the wave energy that reaches the proposed seagrass recruitment areas, with a concomitant reduction in the resuspension of sediments at the site.

HCD also objected to the "non-water dependant" component of the original proposal (0.4 acres of golf tees). HCD staff indicated that if the golf tees were not removed, then the project would be recommended for denial. Period. No exceptions. We find this harsh position particularly disturbing. The project is proposed on 100 acres of privately owned submerged land. The City of Lake Worth (City) has title granted by a deed from the Trustees of the Internal Improvement Fund of the State of Florida. Should the City insist on having the tees (which represents only 0.4% of total fill impacts) in exchange for use of their land, the entire 100 acre restoration project would be compromised.

40 C.F.R § 230.10(a)(3) provides that where an activity "does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose (i.e. is not "water dependent"), practicable alternatives that do not involve special aquatic sites are presumed to be available." The City's requirement that the tees be included in exchange for use of their property for restoration purposes would render the tees water dependent within this definition. That is, the projects basic purpose (restoration) could not be fulfilled without the use of the special aquatic site in question (tees). Although § 230.10(a)(3) clearly would not presumptively preclude construction of the tees as HCD suggests, we recognize that compromises must sometimes be made to demonstrate good faith efforts for compliance with the law. We have modified the project to eliminate the golf tees, and expect that HCD will likewise make a good faith effort to recommend this project for approval.

It is our understanding that NMFS Protected Resources Division (PRD) has yet to review and comment on this proposal. We recognize that there will be temporary impacts to the threatened species *Halophila johnsonii*. Section 1536(a)(2) of the Endangered Species Act requires insurance that any action authorized by the agency is "not likely to jeopardize the continued existence of any endangered or threatened species," or result in the "destruction or adverse modification" of critical habitat. 50 C.F.R. § 402.02 defines "jeopardize the continued existence of" as an action that "reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood for both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species."

Mr. Robert W. Paulson, Jr.

Page 4

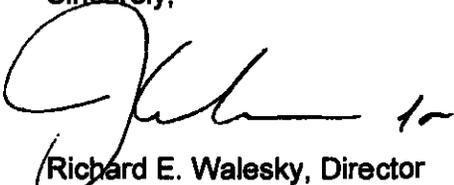
October 12, 2001

This project is specifically designed to increase directly the amount and quality of *H. johnsonii* habitat (as well as other diverse EFH resources) available at the project site. No designated critical habitat will be impacted. We expect any recommendation of denial by the PRD to be accompanied by a thorough and fact based explanation of how this project could possibly "reduce appreciably" the likelihood for both the survival and recovery of *Halophila johnsonii*. We do not believe such a good faith argument can be made.

Mitigation for project seagrass impacts at a 5:1 ratio is proposed. The proposed mitigation plan is outlined in the SFWMD permit special conditions attached to this correspondence.

It is the Corps' responsibility to decide whether a permit should be issued for this project. We understand the need for mutual cooperation between federal agencies. However, this project is so important for the future health and availability of EFH resources in the lagoon to be denied for the temporary impacts to EFH and to *H. johnsonii* as HCD suggests. We believe we have made the necessary modifications to the proposal that satisfy the concerns raised by the HCD, and ask that a decision on this permit be made as quickly as possible. We look forward to working with you to achieve successful project construction. If you have any further questions, feel free to contact me or Mr. David Carson at (561)233-2400. Thank you for your consideration of this matter.

Sincerely,



Richard E. Walesky, Director
Department of Environmental Resources Management

cc:

Rob Robbins

South Florida Water Management District

Andreas Mager, Jr.

Habitat Conservation Division

Georgia Cranmore

Protected Resources Division

James J. Slack

US Fish and Wildlife Service

Spencer Simon

US Fish and Wildlife Service

David K. Roach

Florida Inland Navigation District

John Jorgenson, P.A.

Scott/Harris

Jud Kenworthy

NOAA Beaufort Laboratory

TABLE 1. RAW SEAGRASS SURVEY DATA
SEPTEMBER 14-15, 2000

Transect (1-10)	Length (ft)	Johnson			Nicolais			Ducharme			JHN Int.			JHD Int.			HWD Int.		
		Date of buoy	Density	Proportion (A%)															
8	41	10-25	S																
10	35	0-25	S																
16	42																		
18	37																		
20	41																		
22	48	0-5	S		12-15	S		10-18	M										
24	42	3-5	S		13-18	S													
34	35																		
36	35																		
38	30																		
40	25	4-8	S		0-10	M													
42	50	0-15	S																
48	34																		
56	33																		
60	64																		
64	48																		
68	32	0-10	S		0-12	S													

5-2-2000: J. JOHNSON, D. NICOLAIS, J. DUCHARME, J. H. JOHNSON, J. D. JOHNSON, J. H. WOOD

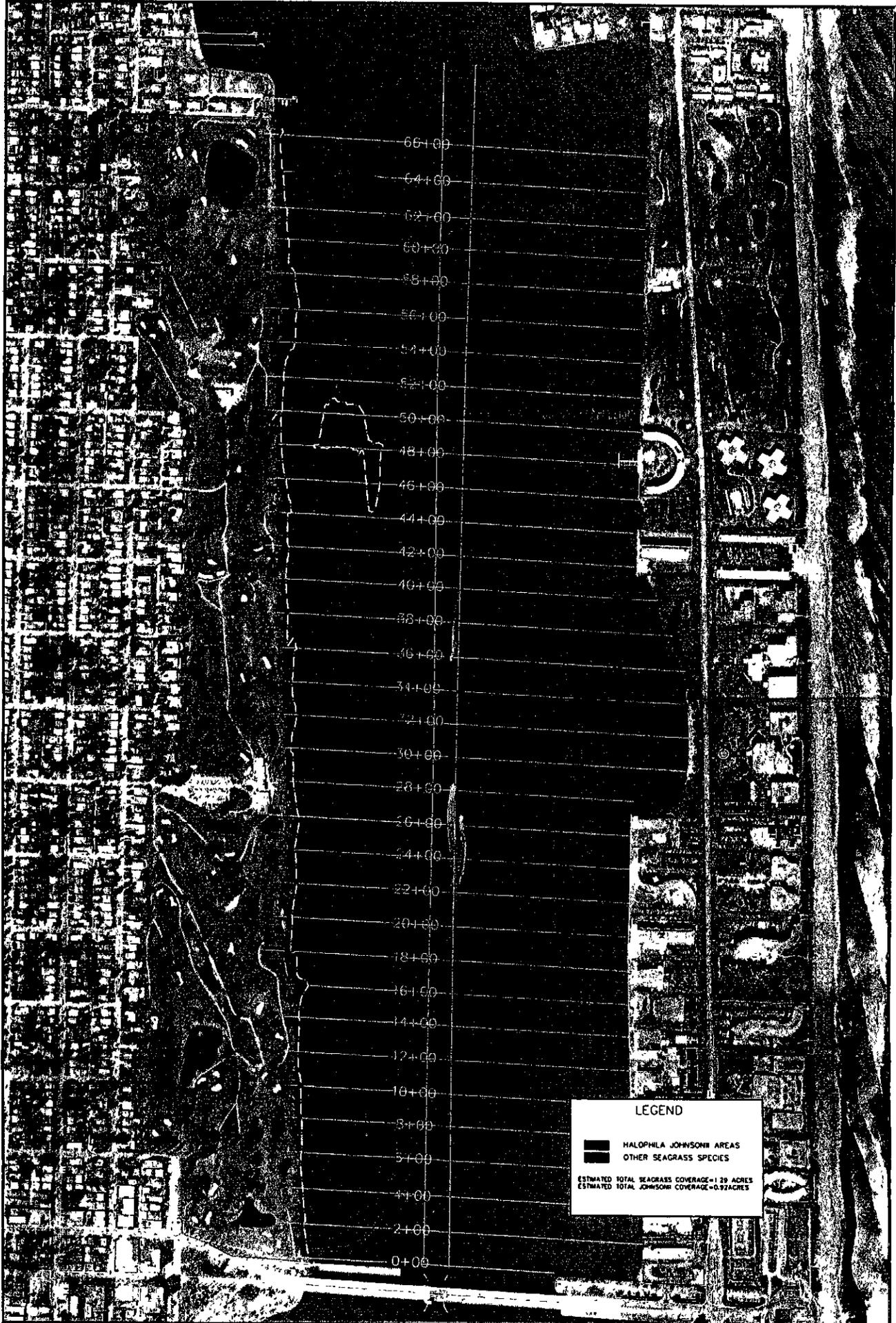
TABLE 2. ESTIMATED EXISTING SEAGRASS TOTALS

TRANSECT	TRANSECT LENGTH (1 to 4 INVD)	PERCENT TRANSECT PROGRASS	PERCENT TRANSECT REGRASS	Avg LENGTH BY TRANSECT (1 to 4 INVD)	BWT TRANSECTS (1 to 4 INVD)	EST. TOTAL ACRES BETWEEN TRANSECTS (1 to 4 INVD)	Avg % COARSE ACRES (ALL SPECIES/ALL SPECIES)	EST. TOTAL JOHNSON COVER	EST. TOTAL JOHNSON ACERAGE	HJ	MW	TD	HPHW	HLWD	HPHW
8	44	0.48	0.48	34.5	200	0.18	0.28	0.04	0.23	0.04	20				
10	35	0.71	0.71	39.5	200	0.18	0.58	0.11	0.58	0.11	25				
18	92	0.81	0.54	67.5	200	0.31	0.30	0.18	0.27	0.08	6	50			
18	57	0.82	0.82	74.5	200	0.34	0.72	0.25	0.68	0.23			47		
20	41	0.54	0.00	48	200	0.22	0.88	0.15	0.41	0.09					22
22	48	0.38	0.11	43.5	200	0.20	0.44	0.09	0.05	0.01	3	3	8		
24	42	0.17	0.06	44	200	0.20	0.26	0.05	0.08	0.02	2	3			
34	65	0.25	0.13	68.5	200	0.28	0.19	0.03	0.08	0.02	7				7
38	50	0.40	0.20	68.5	200	0.31	0.13	0.04	0.08	0.02					
40	28	0.18	0.18	24	200	0.28	0.20	0.08	0.10	0.03			10		10
42	50	0.60	0.60	37.5	200	0.17	0.28	0.05	0.18	0.03	4				
46	34	0.06	0.00	37.5	200	0.17	0.38	0.07	0.38	0.07					
46	34	0.06	0.00	32.5	200	0.24	0.30	0.07	0.30	0.07					
46	34	0.06	0.00	44.5	200	0.20	0.03	0.01	0.00	0.00					
58	63	0.08	0.00	28	200	0.13	0.63	0.00	0.00	0.00					
60	64	0.02	0.00	104.5	200	0.48	0.04	0.02	0.00	0.00					
64	46	0.78	0.50	78.5	200	0.36	0.05	0.02	0.00	0.00					
66	32	0.68	0.31	80.5	200	0.27	0.01	0.00	0.00	0.00					
TOTAL				50.5	200	0.23	0.38	0.09	0.26	0.06	10	12			23
NOTE	R=HALORHILA JOHNSONII; H=HALOPHILA DECIPENS; HP=HALODULE VARIEGATA														
											1.29				0.92

TABLE 3. ESTIMATED TOTAL SEAGRASS IMPACTS

TRANSECT	TRANSECT LENGTH (1.9-4.1M) (M)	PERCENT TRANSECT W/SEAGRASS	PERCENT TRANSECT W/JOHNSONIA	Avg LENGTH B/W TRANSECTS (1.9-4.1M) (M)	EST BMT B/W TRANSECTS	Avg TOT ALGAE BETWEEN TRANSECTS (1.9-4.1M) (M)	Avg % GRASS COVER	EST TOTAL GRASS ACRES	Avg % JOHNSONIA COVER	EST TOTAL JOHNSONIA ACRES	NO	NO	NO	NO	NO	NO
8	44	0.00	0.00	34.5	200	0.18	0.00	0.00	0.00	0.00	20					
	36	0.00	0.00	30.5	200	0.18	0.00	0.00	0.00	0.00	25					
10	36	0.00	0.00	30	200	0.13	0.00	0.00	0.00	0.00						
16	34	0.00	0.00	27.5	200	0.31	0.00	0.00	0.00	0.00						
	37	0.00	0.00	34.5	200	0.34	0.00	0.00	0.00	0.00						
18	37	0.00	0.00	48	200	0.22	0.00	0.00	0.00	0.00						
20	41	0.00	0.00	43.5	200	0.20	0.00	0.00	0.00	0.00						
22	48	0.00	0.11	44	200	0.20	0.00	0.00	0.00	0.00	3					
	42	0.17	0.00	40	200	0.18	0.00	0.00	0.00	0.00	3					
24	42	0.17	0.00	40	200	0.18	0.00	0.00	0.00	0.00	3					
34	36	0.26	0.13	34.5	200	0.28	0.19	0.03	0.08	0.02	7					
	34	0.26	0.13	34.5	200	0.31	0.15	0.04	0.08	0.02	7					
38	30	0.40	0.20	34	200	0.29	0.20	0.08	0.10	0.03	10					
	28	0.16	0.18	37.5	200	0.17	0.20	0.05	0.18	0.03	4					
40	30	0.60	0.35	37.5	200	0.17	0.20	0.07	0.20	0.07	30					
	30	0.60	0.35	37.5	200	0.14	0.20	0.07	0.20	0.07	30					
42	34	0.00	0.00	44.5	200	0.20	0.00	0.00	0.00	0.00						
	34	0.00	0.00	28	200	0.13	0.00	0.00	0.00	0.00	3					
56	63	0.00	0.00	704.5	200	0.48	0.04	0.02	0.00	0.00						
	64	0.02	0.00	70.5	200	0.26	0.00	0.02	0.00	0.00						
60	64	0.02	0.00	69.5	200	0.27	0.01	0.00	0.00	0.00						
64	48	0.00	0.00	50.5	200	0.23	0.00	0.00	0.00	0.00	12					
	32	0.00	0.00	38	200	0.00	0.00	0.00	0.00	0.00	10					
TOT. IMPACT						0.58				0.27						

NOTE: HAWAIIAN MONOCULTURE JOHNSONIA REDUCES IMPACTS TO NEARLY ZERO





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, FL 33702
(727) 570-5312; FAX 570-5517
<http://caldera.sero.nmfs.gov>

MAY 22 2002

F/SER3:BH:egh

Mr. James C. Duck
Jacksonville District Corps of Engineers
P.O. Box 4970
Jacksonville, FL 32232-0019

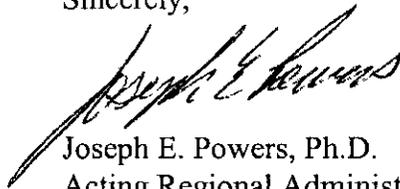
Dear Mr. Duck:

This constitutes the National Marine Fisheries Service's (NMFS) biological opinion (Opinion) based on our review of the removal of stored dredge material from Peanut and John's Islands and its use in the Lake Worth Lagoon Wetlands Restoration, Palm Beach County, Florida, and their effects on Johnson's seagrass (*Halophila johnsonii*) in accordance with section 7 of the Endangered Species Act (ESA) of 1973 as amended. You requested formal ESA section 7 consultation on August 24, 2000.

This Opinion is based on information provided in your August 24, 2000, letter; a subsequent letter from your office dated November 8, 2001; a public notice dated November 30, 2001; information from Palm Beach County dated October 21, 2001; and information received from Palm Beach County via e-mail on January 18, 2002. NMFS initiated formal consultation following receipt of the January 18, 2002, e-mail information. A complete administrative record of this consultation is on file at the NMFS, Southeast Regional Office (Consultation Number F/SER/2001/01187).

We look forward to further cooperation with you on other Corps of Engineers projects to ensure the conservation and recovery of our threatened and endangered marine species.

Sincerely,



Joseph E. Powers, Ph.D.
Acting Regional Administrator

Enclosures (2)

cc: FHWA, FDOT, F/PR

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File: 1514-22.1



Endangered Species Act - Section 7 Consultation

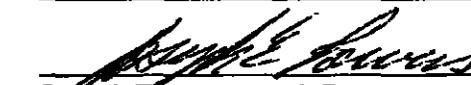
Agency: United States Army Corps of Engineers, Jacksonville District

Activity: The Removal of Stored Dredge Material on Peanut Island and Its Use in the Lake Worth Lagoon Wetlands Restoration, Palm Beach County, Florida (F/SER/2001/01187)

Consultation Conducted By: National Marine Fisheries Service, Southeast Region

Date Issued:

Approved By:



Joseph E. Powers, Ph.D.
Acting Regional Administrator

This constitutes the National Marine Fisheries Service's (NMFS) biological opinion (Opinion) based on our review of the removal of stored dredge material from Peanut and John's Islands and its use in the Lake Worth Lagoon Wetlands Restoration, Palm Beach County, Florida, and their effects on Johnson's seagrass (*Halophila johnsonii*) in accordance with section 7 of the Endangered Species Act (ESA) of 1973 as amended. You requested formal ESA section 7 consultation on August 24, 2000.

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Consultation History

The Corps of Engineers (COE) initiated consultation with NMFS in a letter dated August 24, 2000 and a follow-up letter dated November 8, 2000; however, the COE was in consultation with the NMFS Southeast Regional Office's (SERO) Habitat Conservation Division (HCD) for the proposed action's effects on essential fish habitat (EFH), not its effects on federally listed species. HCD objected to many of the provisions of the proposed action and was attempting to negotiate changes in the proposed action to limit its effects on EFH. NMFS SERO Protected Resources Division (PRD) decided to delay the completion of ESA section 7 consultation until

HCD had completed its EFH consultation and the COE and Palm Beach County prepared a final proposed action. NMFS SERO PRD received the finalized proposed action via e-mail from Palm Beach County on January 18, 2002.

BIOLOGICAL OPINION

I. Description of the Proposed Action

The proposed project involves moving approximately 1,000,000 cubic yards of spoil material from upland sites to the action area. The spoil material will come from existing stockpiles of material at Peanut Island and John's Island (Figure 1). Ninety-eight percent of the material will come from Peanut Island.

Peanut Island has an off-loading facility constructed on the southwest side of the island. The facility includes a seawall and staging area to allow a barge to pull up to the island and easily take on spoil material for transport. A haul road also exists allowing heavy equipment access to the spoil storage areas on the island. A 1-foot contour chart is provided in Figure 2, demonstrating approximate water depths in the off-loading area.

When the tug and barge dock at the Peanut Island off-loading facility, the tug will remain on the edge of the port turning basin in approximately 20 feet of water. The barge will arrive and depart the docking facility in the same manner each trip. Because of the depth of water maintained under the tug, the applicant anticipates no damage to submerged resources from fill off-loading operations at Peanut Island.

John's Island will be accessed at two sites along the western shore (Figure 3). A shallow-draft tug and barge will be used to remove and transport the fill from John's Island. The tug and barge will draft a maximum of 4 feet of water. A 1-foot contour chart is provided in Figure 3.

Because of the shallow depths along the edge of the island, it may be necessary to temporarily beach a small barge at high tide at the access site to act as a "finger pier." The working tug and barge would then dock on the west end of the beached barge, leaving the working barge with enough water for ingress and egress. Heavy equipment would then cross the beached barge, and load material onto the working barge. Alternatively, a temporary ramp system may be constructed to span the shallow water and allow equipment to reach the working tug and barge.

The entire area from the western shore of John's Island out into the Intracoastal Waterway (ICW) channel consists of an outcrop of Anastasia limestone rock. No seagrasses are present in the area due to the rock substrate. The applicant anticipates no detrimental impacts to submerged resources as a result of tug and barge ingress or egress.

A large, deep-draft tug and barge (maximum draft 6-7 feet) will be used to transport the large volume of material from Peanut Island. At the beginning of construction, the material on the deep draft barge can be off-loaded directly into the dredged hole at the action area. However, once rough grade elevations are approached, the deep-draft tug and barge will be restricted by the shallow grades. At that point, the remaining material will be transferred from the larger vessel to a shallow draft vessel for final grading.

Once the material has been transported to the project site, design specifications require grading the material to shallow inter- and sub-tidal elevations. By necessity, a shallow draft (maximum draft 4-5 feet) tug and barge will be required to work in and around these shallow areas.

Depths at the action area are currently sufficient to accommodate either the deep-draft or shallow-draft barge. Figure 4 shows the tentative barge access sites in the action area. The current submerged resources (seagrasses) are located in a narrow band along the existing shoreline. The COE plans to fill over this band of seagrasses in order to reestablish a gradual littoral slope. Approximately 2.9 acres of seagrass near the action area will be surrounded by turbidity curtains to protect it from disturbance by construction. The barge access areas are outside of the seagrass areas.

Mitigative Measures

Monitoring of the project and mitigation areas will be conducted annually for five years following construction. Fixed transect vegetative and photo sampling will be conducted. A typical plan view with associated transects is shown in Figure 5. The success of all habitat types (mangrove, seagrass, and oyster reefs) will be monitored. Fish and wildlife utilization will also be recorded.

Monitoring will be continued on a periodic basis in perpetuity as a consequence of general department policy regarding construction of environmental enhancement projects. The project will be maintained free of exotics in perpetuity.

Palm Beach County expects to see evidence of seagrass recruitment within this area in the first or second year following construction. If seagrass recruitment occurs over 30 percent of the required mitigation area by the second year, no immediate action will be taken beyond continued monitoring. If natural recruitment over 30 percent of the required area is not accomplished by the third year, it is proposed to transplant *Halodule wrightii* at the site. If 1 acre of seagrass is impacted by the project, one acre of *Halodule* planting would be executed. Transplanting would be intended to accelerate successful seagrass establishment.

The seagrass mitigation will be deemed successful when 2.9 acres of seagrass of at least 30 percent density per square meter persists for two of the five annual monitoring reports. Monitoring will continue for five years. Once the successful mitigation area has been identified, a conservation easement will be executed to cover the appropriate areas.

Action Area

Lake Worth Lagoon, Palm Beach County, Florida, Latitude 26°37'30" North, Longitude 80°02'44" West.

II. Status of the Species

The following endangered (E) and threatened (T) marine mammal, sea turtle, and marine plant species under the jurisdiction of NMFS are known to occur in or near the action area:

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Johnson's seagrass	<i>Halophila johnsonii</i>	T
Loggerhead sea turtle	<i>Caretta caretta</i>	T
Green sea turtle	<i>Chelonia mydas</i>	E/T*
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	E
Hawksbill sea turtle	<i>Eretmochelys imbricata</i>	E
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E
Right whale	<i>Eubalaena glacialis</i>	E
Humpback whale	<i>Megaptera novaeangliae</i>	E

* Green turtles in U.S. waters are listed as threatened except for the Florida breeding population, which is listed as endangered. Due to the inability to distinguish between the populations away from the nesting beaches, green turtles are considered endangered wherever they occur in U.S. waters.

Although sea turtles may be present in the vicinity of the action area, NMFS does not expect that the five above-listed sea turtle species will be adversely affected by the proposed action. The proposed construction methods (hopper dredges and explosives will not be used) have not been shown to adversely affect sea turtles. Any effects of noise, disturbance, reduced water clarity, and movements of boats and equipment associated with the proposed action are expected to be insignificant and temporary in nature and therefore not likely to result in any adverse effects to sea turtles.

The two species of endangered marine mammals listed above—the humpback whale and the right whale—may be found seasonally in inshore waters of the southeastern United States but are extremely unlikely to occur in the action area. For the reasons given above for sea turtles, these marine mammal species are also not expected to be adversely affected by the action. Since NMFS has determined that the sea turtles and marine mammals listed above are not likely to be adversely affected by the proposed action, these species will not be considered further in this

Opinion. The remainder of this opinion will focus on the only federally listed species likely to be adversely affected by the proposed action, Johnson's seagrass.

Johnson's Seagrass (*Halophila johnsonii*)

A. Species Description

Johnson's seagrass was listed as threatened under the ESA on September 14, 1998, based on the results of field work and a status review initiated in 1990. Johnson's seagrass is the first marine plant ever listed under the ESA. Kenworthy (1993, 1997, 1999) discusses the results of the field studies and summarizes an extensive literature review and associated interviews regarding the status of Johnson's seagrass. The following discussion summarizes those findings relevant to our evaluation of the proposed action.

Range

Johnson's seagrass has only been found growing along approximately 200 km of coastline in southeastern Florida between Sebastian Inlet, Indian River County, to northern Key Biscayne. This narrow range and apparent endemism suggests that Johnson's seagrass may have the most limited known geographic distribution of any seagrass in the world.

Johnson's seagrass occurs in dynamic and disjunct patches throughout its range. Growth appears to be rapid and leaf pairs have short life spans while horizontally spreading from dense apical meristems (Kenworthy, 1997). Kenworthy suggested that the observed horizontal spreading, rapid growth patterns, and high biomass turnover could explain the dynamic patches observed in distribution studies of this species. New information reviewed in Kenworthy (1999, 1997) confirms *H. johnsonii*'s limited geographic distribution in patchy and vertically disjunct areas between Sebastian Inlet and northern Biscayne Bay. Surveys conducted by NMFS and Florida Marine Research Institute staff in Biscayne Bay, Florida Bay, the Florida Keys, outer Florida Bay, Puerto Rico, and the Virgin Islands have provided no verifiable sightings of Johnson's seagrass outside of the range already reported.

Extent of critical habitat

The northern and southern ranges of Johnson's seagrass are defined as Sebastian Inlet and central Biscayne Bay, respectively. These limits to the species' range have been designated as critical habitat for Johnson's seagrass (May 5, 2000; 65 FR 17786). The designation of critical habitat provides explicit notice to Federal agencies and the public that these areas and features are vital to the conservation of the species. Within its range, Johnson's seagrass critical habitat has been designated for 10 areas: a portion of the Indian River Lagoon, north of the Sebastian Inlet Channel; a portion of the Indian River Lagoon, south of the Sebastian Inlet Channel; a portion of the Indian River Lagoon near the Fort Pierce Inlet; a portion of the Indian River Lagoon, north of the St. Lucie Inlet; a portion of Hobe Sound; a site on the south side of Jupiter Inlet; a site in central Lake Worth Lagoon; a site in Lake Worth Lagoon, Boynton Beach; a site in Lake Wyman, Boca Raton; and a portion of Biscayne Bay. Based on the best available

information, NMFS identified the following physical and biological features as those constituent elements which are essential to the conservation of Johnson's seagrass: adequate water quality, salinity levels, water transparency, and stable, unconsolidated sediments that are free from physical disturbance. The specific areas designated as critical habitat which are currently occupied by Johnson's seagrass include one or more of the following criteria: 1) locations with populations that have persisted for 10 years; 2) locations with persistent flowering populations; 3) locations at the northern and southern range limits of the species; 4) locations with unique genetic diversity; and 5) locations with a documented high abundance of Johnson's seagrass compared to other areas in the species range.

B. Life History

Reproductive strategy

The species is perennial and may spread even during winter months under favorable conditions (Virnstein *et al.*, 1997). Sexual reproduction in Johnson's seagrass has not been documented. Female flowers have been found; however, dedicated surveys in the Indian River Lagoon have not discovered male flowers, fertilized ovaries, fruits, or seeds either in the field or under laboratory conditions (Jewett-Smith *et al.*, 1997). Searches throughout the range of Johnson's seagrass have produced the same results, suggesting that the species does not reproduce sexually or that the male flowers are difficult to observe or describe, as noted for other *Halophila* species (Kenworthy, 1997). Surveys to date indicate that the incidence of female flowers appears to be much higher near the inlets leading to the Atlantic Ocean, suggesting that inlet conditions are qualitatively better for flowering than conditions further inshore (Kenworthy, pers. comm. 1998). It is possible that male flowers, if they exist, occur near inlets as well. Maintenance of good water quality around inlets may be essential for promoting flowering in the Johnson's seagrass population.

Niche

The essential features of habitat appear to be adequate water quality, salinity, water clarity, and stable sediments free from physical disturbance. Important habitat characteristics include shallow intertidal as well as deeper subtidal zones (2-5 m). Water transparency appears to be critical for Johnson's seagrass, limiting its distribution at depth to areas of suitable optical water quality (Kenworthy, 1997). In areas in which long-term poor water and sediment quality have existed until recently, such as Lake Worth Lagoon, *H. johnsonii* appears to occur in relatively higher abundance perhaps due to the previous inability of the larger species to thrive. These studies support unconfirmed previous observations that suspended solids and tannin, which reduce light penetration and water clarity, may be important factors limiting seagrass distribution in the Indian River Lagoon (Woodward-Clyde, 1994). Good water clarity is essential for *Halophila johnsonii* growth in deeper waters.

Johnson's seagrass occurs over varied depths, environmental conditions, salinities, and water quality. In tidal channels *H. johnsonii* is found in coarse sand substrates, although it has been found growing on sandy shoals, and in soft mud near canals and rivers where salinity may

fluctuate widely (Virnstein *et al.*, 1997). Virnstein has called Johnson's seagrass a "perennial opportunistic species." Within his study areas in the Indian River Lagoon, *H. johnsonii* was found by itself, with other seagrass species, in the intertidal, and (more commonly) at the deep edge of some transects in water depths of up to 180 cm. *H. johnsonii* was found shallowly rooted on sandy shoals, in soft mud, near the mouths of canals, rivers, and in shallow and deep water (Virnstein *et al.*, 1997). Additionally, recent studies have documented large patches of Johnson's seagrass on flood deltas just inside Sebastian Inlet, as well as far from the influence of inlets (reported at the workshop discussed in Kenworthy, 1997). These sites encompass a wide variety of salinities, water quality, and substrates.

Competitors

Halophila johnsonii appears to be out-competed in ideal seagrass habitats where environmental conditions permit the larger species to thrive (Virnstein *et al.*, 1997; Kenworthy, 1997).

C. Population Dynamics

Population stability

A factor leading to the listing of *H. johnsonii* is its rareness within its extremely restricted geographic range. Johnson's seagrass is characterized by small size (it is the smallest of all of the seagrasses found within its range, averaging about 3 cm in height), fragile rhizome structure and associated high turnover rate, and its apparent reliance on vegetative means to reproduce, grow, and migrate across the sea bottom. These factors make Johnson's seagrass extremely vulnerable to human or environmental impacts by reducing its capacity to repopulate an area once removed. The species and its habitat are impacted by human-related activities throughout the length of its range, including bridge construction and dredging, and the species' threatened status produces new and unique challenges for the management of shallow submerged lands. Vessel traffic resulting in propeller and anchor damage, maintenance dredging, dock and marine construction, water pollution, and land use practices could require special management within critical habitat.

Population (genetic) variability

The Boca Raton and Boynton Beach sites which have been designated as critical habitat have populations which are distinguished by a higher index of genetic variation than any of the central and northern populations examined to date (Kenworthy, 1999). These two sites represent a genetically semi-isolated group which could be the reservoir of a large part of the overall genetic variation found in the species. Information is still lacking on the geographic extent of this genetic variability.

D. Status and Distribution

Reasons for listing

Kenworthy (1997, 1999) summarized the newest information on Johnson's seagrass biology, distribution and abundance, and confirmed the limited range and rareness of this species within

its range. Additionally, the apparent restriction of propagation through vegetative means suggests that colonization between broadly disjunct areas is likely difficult, suggesting that the species is vulnerable to becoming endangered if it is removed from large areas within its range by natural or anthropogenic means. Human impacts to Johnson's seagrass and its habitat include: (1) vessel traffic and the resulting propeller dredging and anchor mooring; (2) dredging; (3) dock and marina construction and shading from these structures; (4) water pollution; and (5) land use practices including shoreline development, agriculture, and aquaculture.

Activities associated with recreational boat traffic account for the majority of human use associated with the designated critical habitat areas. The destruction of the benthic community due to boating activities, propeller dredging, anchor mooring, and dock and marina construction was observed at all sites during a study by NMFS from 1990 to 1992. These activities severely disrupt the benthic habitat, breaching root systems, severing rhizomes, and significantly reducing the viability of the seagrass community. Propeller dredging and anchoring in shallow areas are a major disturbance to even the most robust seagrasses. This destruction is expected to worsen with the predicted increase in boating activity. Trampling of seagrass beds, a secondary effect of recreational boating, also disturbs seagrass habitat. Populations of Johnson's seagrass inhabiting shallow water and close to inlets, where vessel traffic is concentrated, will be most affected.

The constant sedimentation patterns in and around inlets require frequent maintenance dredging, which could either directly remove essential seagrass habitat or indirectly affect it by redistributing sediments, burying plants, and destabilizing the bottom structure. Altering benthic topography or burying the plants may remove them from the photic zone. Permitted dredging of channels, basins, and other in- and on-water construction projects causes loss of Johnson's seagrass and its habitat through direct removal of the plant, fragmentation of habitat, and shading. Docking facilities that, upon meeting certain provisions, are exempt from state permitting also contribute to loss of Johnson's seagrass through construction impacts and shading. Fixed add-ons to exempt docks (such as finger piers, floating docks, or boat lifts) have recently been documented as an additional source of seagrass loss due to shading (Smith and Mezich, 1999).

Decreased water transparency caused by suspended sediments, water color, and chlorophylls could have significant detrimental effects on the distribution and abundance of the deeper water populations of Johnson's seagrass. A distribution survey in Hobe and Jupiter Sounds indicates that the abundance of this seagrass diminishes in the more turbid interior portion of the lagoon where reduced light limits photosynthesis.

Other areas of concern include seagrass beds located in proximity to rivers and canal mouths where low salinity, highly colored water is discharged. Freshwater discharge into areas adjacent to seagrass beds may provoke physiological stress upon the plants by reducing the salinity levels. Additionally, colored waters released into these areas reduce the amount of sunlight available for photosynthesis by rapidly attenuating shorter wavelengths of Photosynthetically Active Radiation.

Continuing and increasing degradation of water quality due to increased land use and water management threatens the welfare of seagrass communities. Nutrient overenrichment caused by inorganic and organic nitrogen and phosphorous loading via urban and agricultural land run-off stimulates increased algal growth that may smother Johnson's seagrass, shade rooted vegetation, and diminish the oxygen content of the water. Low oxygen conditions have a demonstrated negative impact on seagrasses and associated communities.

Range-wide trend

Lamentably, there is currently insufficient information to clearly determine trends in the Johnson's seagrass population, which was first described in 1980 and has only been extensively studied during the 1990s. Generally, seagrasses within the range of Johnson's seagrass have declined in some areas and increased in others. Where multi-year mapping studies have been conducted within the Indian River Lagoon, recent increases in Johnson's seagrass have been noted but may be attributed in part to the recent increase in search effort and increased familiarity with this species (Virnstein *et al.*, 1997). The authors conclude that from 1994 through 1997, no strong seasonal distribution or increases or decreases in abundance or range can be discerned.

E. Analysis of the Species Likely to be Affected

Of the listed species under NMFS jurisdiction occurring in the Atlantic Ocean in the Southeast Region, NMFS believes that only Johnson's seagrass may be adversely affected by the proposed action. *Halophila johnsonii* may be affected because of its limited range, distribution within its range, reproductive capacity, and largely unknown ability to recover from removal from a site. Spread of the species into new areas is limited by its reproductive potential. Johnson's seagrass is thought to possess only female flowers; thus, vegetative propagation, most likely through asexual branching, appears to be its only means of reproduction and dispersal. If an established community is disturbed, the extent of regrowth and reestablishment, if any, are uncertain. If extirpated from an area, it is doubtful that the species would be capable of repopulation. This species' method of reproduction impedes the ability to increase distribution as establishment of new vegetation requires considerable stability in environmental conditions and protection from human-induced disturbances.

III. Environmental Baseline

A. Status of the Species Within the Action Area

The range-wide status of the species, given in Section II above, most appropriately reflects the species status within the action area.

B. Factors Affecting the Species Environment Within the Action Area

This seagrass occurs within inshore waters of the most populated counties in Florida, and is therefore influenced by numerous actions and potential sources of harm. Since 1981, the state of

Florida has regulated activities that affect seagrasses and has implemented measures to minimize these effects. These protective measures directly benefit Johnson's seagrass.

Inlets into the ICW have been established or stabilized and maintained since the early 1900s, in some cases creating a marine environment where freshwater once occurred. Naturally-occurring channels have been expanded, deepened, and stabilized into continuous channels with access to harbors and inlets. These activities have had a dominant effect on the seagrass habitat throughout the range of *H. johnsonii*.

Urban development since the 1960s has affected inshore water quality throughout the range of Johnson's seagrass. However, Woodward-Clyde (1994) opined that improvements in erosion and sediment control in association with urban development in the 1980s and 1990s may have been responsible for reduced turbidity in those decades as compared to the previous two decades of development. Reductions in seagrasses were apparent in the 1970s, along with areas of highly turbid water. Increases in submersed aquatic vegetation were noted until coverage and density peaked in 1986, albeit at levels remaining below those observed in the decades prior to 1960.

In association with upland development, water quality and transparency within the range of Johnson's seagrass are affected by storm water and agricultural runoff, wastewater discharges, and other point and non-point sources. The effects of water management may result in large discharges of fresh water from Lake Okeechobee. Nutrient overenrichment resulting from these discharges may stimulate increased algal growth that may smother seagrasses, shade rooted vegetation, and diminish the oxygen content of the water. Water clarity, which has been identified as an essential feature to allow Johnson's seagrass to occur in the deeper reaches of its range, may also be affected by these discharges. Although Johnson's seagrass has shown tolerance of wide salinity ranges, the discharge of large amounts of fresh water into the ICW may exceed even these ranges.

Increasing recreational vessel traffic in the range of Johnson's seagrass results in marina and dock construction, anchor mooring, propeller scoring and scouring by vessels operating outside of boat channels, and intentional, illegal propeller dredging. Additionally, seagrass beds may be trampled by fishermen and others using these inshore waters. These activities disrupt the benthic habitat, and easily breach the shallow root systems of Johnson's seagrass.

Natural disasters, including hurricanes and large coastal storms, could also significantly harm seagrass beds. Storm surges could easily pull the shallowly-rooted *H. johnsonii* from the sediments and remove a large portion of its population in proximity to inlets. Because of its restricted geographic distribution and apparent reliance on asexual reproduction, it is less likely to survive environmental perturbations and to be able to repopulate an area when lost.

A wide range of activities funded, authorized, or carried out by Federal agencies may affect the essential habitat requirements of Johnson's seagrass. These include authorization by the COE for beach nourishment, dredging, and related activities including construction of docks and marinas;

bridge construction projects funded by the Federal Highways Administration; actions by the Environmental Protection Agency and the COE to manage freshwater discharges into waterways; regulation of vessel traffic by the U.S. Coast Guard (USCG); management of national refuges and protected species by the U.S. Fish and Wildlife Service; management of vessel traffic (and other activities) by the U.S. Navy; authorization of state coastal zone management plans by National Oceanic and Atmospheric Administration's National Ocean Service; and management of commercial fishing and protected species by NMFS.

Summary and Synthesis of the Environmental Baseline

In summary, several factors are presently adversely affecting Johnson's seagrass within the action area. These factors are ongoing and are expected to occur contemporaneously with the proposed action:

- the creation, widening, and deepening of inlets and channels will continue to fragment, smother, and directly remove seagrass beds;
- urban development will continue to create demands for new docks and marinas which will preclude the expansion of seagrasses by direct displacement and shading;
- upland development and associated runoff will continue to degrade water quality and decrease water clarity necessary for growth of seagrasses; and
- increased vessel traffic will continue to result in fragmentation of seagrass beds due to accidental groundings and propeller scarring.

These activities are expected to combine to adversely affect the recovery of Johnson's seagrass throughout its range.

IV. Effects of the Action

The proposal to list Johnson's seagrass as a threatened species identified a number of human and natural perturbations which adversely affect the species including 1) dredging and filling, 2) propeller scarring, 3) storm surge, 4) alterations in water quality, and 5) siltation. Due to the fragile nature of *H. johnsonii*'s shallow root system, these seagrasses are vulnerable to human-induced disturbances in addition to the major natural disturbances to the sediment.

Based on seagrass surveys completed by Palm Beach County, approximately 0.58 acre of sparse to moderate seagrass coverage is expected to be impacted as a result of project construction, of this 0.25 acre is Johnson's seagrass. The COE and Palm Beach County believe that when the project is completed upwards of 2.9 acres of sparse to moderate seagrasses (comparable to existing densities) will recruit to the project area within three years of project construction. They expect the species composition of the area to be similar to that currently present (*Halodule*

wrightii, *Halophila johnsonii*, and *Halophila decipiens*). However, NMFS cannot use uncertain future best-case expectations of seagrass recruitment when determining an action's effects on Johnson's seagrass and considers the loss of the 0.25 acre a permanent loss.

The area of the proposed action is in the mid-portion of the range of Johnson's seagrass. There are no detailed baseline distribution estimates on the amount of Johnson's seagrass throughout its range, including the mid-portion. The total range of this species is believed to be limited to only 200 km of eastern Florida coastline from Sebastian Inlet south to northern Biscayne Bay. Almost 19,000 acres of critical habitat have been designated for Johnson's seagrass to help preserve the species. *The proposed action is not within the boundaries of this critical habitat. Therefore,* NMFS believes that the loss of up to 0.25 acre of Johnson's seagrass from the action area is not likely to appreciably reduce the numbers, distribution, or reproduction of Johnson's seagrass in a way which would reduce its ability to remain viable throughout its range.

V. Cumulative Effects

Cumulative effects include the effects of future state, tribal, or local private actions that are reasonably certain to occur in the action area considered in this Opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

No effects beyond those already described in Sections IIIB and IV are expected in the action area. Dock and marina construction will likely continue at current rates, with concomitant loss and degradation of seagrass habitat, including Johnson's seagrass; however, these activities are subject to COE permitting and thus the ESA section 7 consultation requirement. Furthermore, NMFS and the COE are working on guidelines to mandate the use of light-transmitting materials in future constructions of single-family docks within the range of Johnson's seagrass.

In or near the action area it is expected that recreational watercraft use will continue to increase; however, it is expected that boater education programs and posted signage about the dangers to seagrass beds (and manatees) of propeller scarring will reduce boat interactions with listed species at a rate greater than the increase in boating activity. NMFS does not believe that continuation of recreational boating activities at the current rate of increase will jeopardize the existence of *Halophila johnsonii* because of boater education programs and because of the designation of critical habitat for the species. This designation will help protect areas with persistent patches (patches that have been viable for at least 10 years), and areas of genetic variability, from adverse modifications.

Integration and Synthesis of Effects

The effects of construction, turbidity, shading, and filling from activities associated with the proposed action are expected to cause the permanent removal of 0.25 acre of Johnson's seagrass from the action area. It is expected that the Johnson's seagrass not directly removed from the

action area will continue to exist in its current form. The Johnson's seagrass remaining in the area is expected to persist and remain viable, with the potential to expand to the north and south of the action area as well as back into the action area itself, after construction. NMFS expects that additional seagrass beds occurring in other areas adjacent to the action area will not be adversely affected. This, combined with the presence of seagrass beds in other parts of Lake Worth Lagoon, including those designated as critical habitat, lead NMFS to conclude that the projected loss of up to 0.25 acre associated with the proposed action is not likely to appreciably reduce the numbers, distribution, or reproduction of Johnson's seagrass in the wild.

Projects such as the proposed action contribute to the environmental baseline for the species because of direct removal and permanent loss of Johnson's seagrass due to fragmentation of habitat.

The action area is not in or adjacent to designated critical habitat for Johnson's seagrass; therefore, none will be affected.

VI. Conclusion

After reviewing the current status of Johnson's seagrass, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is NMFS' biological opinion that the action, as proposed, is not likely to jeopardize the continued existence of Johnson's seagrass or result in the destruction or adverse modification of critical habitat. Further surveys and monitoring of the action area after construction are necessary to quantify the effects of this project and to verify the conclusion of this Opinion.

VII. Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

NMFS believes the following conservation recommendations are reasonable, necessary, and appropriate to minimize impacts of incidental loss of Johnson's seagrass. The NMFS strongly recommends that these measures be considered and adopted.

1. NMFS recommends that a report of all current and proposed COE projects in the range of Johnson's seagrass be prepared and used by the COE to assess impacts on the species from these projects, to assess cumulative impacts, and to assist in early consultation that will avoid and/or minimize impacts to Johnson's seagrass and its critical habitat. Information in this report should include location and scope of each project and identify the Federal lead agency for each project.

The information should be made available to the USCG, South Florida Water Management District, and NMFS.

2. NMFS recommends that the COE conduct and support research to assess trends in the distribution and abundance of Johnson's seagrass. Data collected should be contributed to the Florida Fish and Wildlife Conservation Commission's Florida Marine Research Institute to support ongoing GIS mapping of Johnson's and other seagrass distribution.
3. NMFS recommends that the COE, in coordination with seagrass researchers and industry, support ongoing research on light requirements and transplanting techniques to preserve and restore Johnson's seagrass, and on collection of plants for genetics research, tissue culture, and tissue banking.
4. NMFS recommends that the COE participate in state efforts to preserve and restore seagrass, and in the implementation of the Seagrass Preservation and Restoration Plan for the Indian River Lagoon.
5. NMFS recommends that the COE prepare an assessment of the effects of other actions under its purview on Johnson's seagrass for consideration in future consultations. NMFS recommends that the standardized survey methods identified at Attachment 1 (Recommendations for Sampling *Halophila johnsonii* at a Project Site) be used to collect data to support assessments of these new projects.

Reinitiation of Consultation

As provided in 50 CFR Section 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if (1) the amount or extent of taking specified in the proposed action is exceeded, (2) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered, (3) the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in the biological opinion, or (4) a new species is listed or critical habitat designated that may be affected by the identified action.

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ATTACHMENT 1

Recommendations for Sampling *Halophila johnsonii* at a Project Site

The above-suggested approaches for sampling *H. johnsonii* are recommendations of the *H. johnsonii* Recovery Team.

Objective:

To outline recommended survey methods for determining the distribution and abundance of *H. johnsonii* at sites under permit review. The methods should be applicable to a broad range of project scales, from a 20-m long dock, to marinas, bridges, and channels several kilometers long.

Problem:

Three aspects make quantitative sampling for *H. johnsonii* difficult: (1) Poor visibility; it is sometimes difficult to see more than 0.1 or even 0.01 m² at a time. (2) Patchy and clumped distribution, with patches as small as 0.01 m², which may be clumped together within a sub-area of the project area. (3) Stratified distribution, with occurrence perhaps limited to a particular depth gradient within a project area.

Recommended Methods:

The most appropriate approach depends on scale, and the amount of expected error depends on the approach. Unless a complete survey of the entire area is done, the estimated distribution and abundance of this species may be significantly in error. With the exception of very small project areas, efficient field sampling may require sampling in two stages. A preliminary visual reconnaissance of the site should be conducted to locate any occurrences of *H. johnsonii*. "The importance of preliminary sampling is probably the most under emphasized principal related to field studies. There is no substitute for it." (Green, 1979). Following the preliminary reconnaissance, a more comprehensive sampling, using one of the techniques outlined below, should be initiated.

In situ monitoring for *H. johnsonii* is absolutely necessary. Aerial photography may be used to map distributions of larger canopy-forming species; however, mapping of *H. johnsonii* cannot be done reliably from aerial photos. Because of significant seasonal and annual variation in distribution and abundance of *H. johnsonii*, surveys must be conducted during spring/summer (April 1-August 31) period of maximum abundance, and sampling in more than one summer is recommended. Length of time between survey date and actual start of project should consider the potentially rapid turnover and migration of *H. johnsonii*. Personnel conducting the survey should clearly demonstrate that they can distinguish between *H. johnsonii* and *H. decipiens*. Surveys labeled simply as "*Halophila*" are not sufficient.

Deliverables: 1) amount (acres or square meters) impacted, 2) estimate of percent coverage and the species present/absent, 3) site map with seagrass patch or bed locations, 4) size of the patches, and 5) shoot density estimate.

SMALL PROJECT SITES (<0.1 ha, e.g. 10 m by 100 m, such as single-family docks). Two methods.

1. Provide a site map of submerged lands adjacent to the action area. The site map should include transects approximately every 7.5 m apart, perpendicular to the shore, and for a length 6 m longer than the proposed activity. A preliminary visual reconnaissance is necessary to fill in the information between the transects. Seagrass patches should be identified by species composition and drawn on the site map. Density can be accomplished with random sub-sampling for density within the identified patches. (An overall site map is important since it identifies seagrass habitat, not just existing seagrass patches.) (Mezich 2000).

2. The site is sub-divided into m² grids. A complete and intensive mapping of the entire area of concern can be developed by using DGPS, with coordinates provided every m², or every patch >0.01-0.1 m², with a tested map accuracy of >50%-95%. If percent cover is not used, an illustrated, standardized scale of density should be used. Presence-absence should be determined for every m² grid cell.

For monitoring project effects, additional information on shoot density, blade length, and flowering, can be collected from a random sub-sample of grids using 25- by 25-cm quadrants or multiple 10- by 10-cm sub-cells within the m² grid.

INTERMEDIATE-AREA PROJECT SITES (0.1 to 1 ha, e.g., a 100-m by 100-m marina). A two-step process is required.

- a. Preliminary visual reconnaissance to locate general *H. johnsonii* areas and distribution.
- b. The site should then be surveyed using transects across the dominant spatial gradient (e.g., depth, inshore-offshore, channel-shoal, etc.) of the site. The number of transects and sample intervals should adequately describe distribution and abundance of *H. johnsonii* patches. Besides noting presence-absence, x-y-z diameters of encountered patches should be noted, together with sub-samples of shoot density, blade length, and presence of flowering.

LARGE-AREA PROJECT SITES (>1 ha). Three choices are possible after preliminary visual reconnaissance.

1. Random sampling of points or quadrats within the area.

Sampling at least 1%-30% of the total area.

- 2 stages: (1) visual reconnaissance, then stratify, (2) second intensive sampling, with intensity relative to abundance of *H. johnsonii* within the strata.
- single step of 100-1,000 points/quadrats (min. # = ?).

2. Intensive survey of transects.

Transects across the entire area, sampling at least 1%-30% of the total area.

- point-intersects sampling along transects (with the size of a "point" defined, e.g., 5 x 5 or 10 x 10 cm).
- belt transect, of 0.1-2 m width.
- transects randomly located (min. # transects = 10-50 or min. spacing = 50 m).
- regularly-spaced transects (min. # transects = 10-50 or min. spacing = 50 m).
- quadrants at regular intervals along line (min. # = 10-50 or min. spacing = 50 m).

For any of these transect methods, x-y-z diameters of any patches encountered should be measured. At a minimum, presence-absence should be recorded at each point of each quadrant.

3. Combinations of above methods, e.g.,

(a) Intensive mapping in area of primary impact (e.g., within footprint of proposed dock), plus random points in surrounding, potentially affected area.

(b) Stratify from random point sampling, then map intensively in areas of greatest abundance.

It is the position of the Recovery Team, however, that the adoption of a valid survey protocol for identifying Johnson's seagrass be required by permitting agencies in the range of the species. In all seagrass surveys, emphasis should be placed on the identification of seagrass habitat as well as the distribution of currently existing patches. Identifying impacts to seagrass habitat, particularly from large projects, is more important in the long run than the "point-in-time" management approach of avoiding currently existing patches.

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**STANDARD PROTECTION GUIDELINES (EXCERPTS)
FOR THREATENED AND ENDANGERED SPECIES
PALM BEACH HARBOR AND PEANUT ISLAND
CHANGE OF MAINTENANCE OPERATIONS AND OFFLOADING
PALM BEACH COUNTY, FLORIDA**

The Contractor shall instruct all personnel associated with the project of the potential presence of manatees, and sea turtles in the area, and the need to avoid collisions with and harming these animals. All construction personnel shall be advised that there are civil and criminal penalties for harming, harassing, or killing manatees, or sea turtles which are protected under the Marine Mammal Protection Act of 1972, the Endangered Species Act of 1973, and the Florida Manatee Sanctuary Act. The Contractor shall be held responsible for any manatee or sea turtle harmed, harassed, or killed as a result of construction activities.

In the event that a threatened or endangered species is harmed as a result of construction activities, the Contractor shall cease all work and notify the Contracting Officer.

a. Siltation Barriers: If siltation barriers are used, they shall be made of material in which manatees cannot become entangled, are properly secured, and are regularly monitored to avoid manatee entrapment. Barriers must not block manatee entry to or exit from essential habitat.

b. Special Operating Conditions:

(1) All vessels associated with the project shall operate at "no wake/idle" speeds at all times while in waters where the draft of the vessel provides less than a four-foot clearance from the bottom, and vessels shall follow routes of deep water whenever possible. Boats used to transport personnel shall be shallow-draft vessels, preferably of the light-displacement category, where navigational safety permits. Mooring bumpers shall be placed on all barges, tugs, and similar large vessels wherever and whenever there is a potential for manatees to be crushed between two moored vessels. The bumpers shall provide a minimum stand-off distance of four feet.

(2) If a manatee(s) is sighted within 100 yards of the project area, all appropriate precautions shall be implemented by the Contractor to ensure protection of the manatee. These precautions shall include the operation of all moving equipment no closer than 50 feet of a manatee. If a manatee is closer than 50 feet to moving equipment or the project area, the equipment shall be shut down and all construction activities shall cease within the waterway to ensure protection of the manatee. Construction activities shall not resume until the manatee has departed the project area.

(3) Dredging operations shall cease if 3 turtles are taken until the Contracting Officer notifies the Contractor to resume dredging.

c. Manatee Monitoring (Clamshell Only): During clamshell dredging operations, a dedicated observer shall monitor for the presence of manatees. The dedicated observer shall have experience in manatee observation and be equipped with polarized sunglasses to aid in observing. If manatees are present, the observer shall document all activities with the use of a video camera with the capabilities of video taping at night. The videotape shall have date/time signature and record all manatee movements in the construction area and note any reactions to turbidity, sound, and light. Nighttime lighting of waters within and adjacent to the work area shall be illuminated, using shielded or low-pressure sodium-type lights, to a degree that allows the dedicated observer to sight any manatee on the surface within 200 feet of the operation. The dredge operator shall gravity-release the clamshell bucket only at the water surface, and only after confirmation that there are no manatees within the safety distance identified in the standard construction conditions. The Contractor shall forward 3 copies to Dr. Loren Mason, Chief,

Environmental Branch, P.O. Box 4970, Jacksonville, Florida, 32232-0019, within 10 days of completion of the dredging.

d. Manatee Signs: Prior to commencement of construction, each vessel involved in construction activities shall display at the vessel control station or in a prominent location, visible to all employees operating the vessel, a temporary sign at least 8-1/2" x 11" reading, "CAUTION: MANATEE HABITAT/IDLE SPEED IS REQUIRED IN CONSTRUCTION AREA." In the absence of a vessel, a temporary 3' x 4' sign reading "CAUTION: MANATEE AREA" shall be posted adjacent to the issued construction permit. A second temporary sign measuring 8-1/2" x 11" reading "CAUTION: MANATEE HABITAT. EQUIPMENT MUST BE SHUTDOWN IMMEDIATELY IF A MANATEE COMES WITHIN 50 FEET OF OPERATION" shall be posted at the dredge operator control station and at a location prominently adjacent to the issued construction permit. The Contractor shall remove the signs upon completion of construction. Sample Manatee Caution Signs are appended to the end of this Section.

Endangered Species Observers (Hopper Dredge Only)

During dredging operations, an observer approved by the National Marine Fisheries Service (NMFS) for sea turtles and whales shall be aboard to monitor for the presence of the species. During transit to and from the disposal area, the observer shall monitor from the bridge during daylight hours for the presence of endangered species, especially the right whale, during the period December through March. During dredging operations, the observer shall monitor the inflow screening for turtles and/or turtle parts.

a. Observation Sheets: The results of the monitoring shall be recorded on the appropriate observation sheet. An observation sheet shall be completed for each dredging cycle whether or not sea turtle or sea turtle parts are present. Sample observation sheets are appended to the end of this Section.

b. Endangered Species Observer(s): NMFS-approved firms shall provide and manage the endangered species observer(s). A list of acceptable firms can be obtained by contacting NMFS Chief of Office of Protective Species in St. Petersburg, Florida at 727-570-5312. The trained observer(s) shall require quarters on board the dredge.

Manatee and Sea Turtle Sighting Reports

Any take concerning a manatee, sea turtle, or whale or sighting of any injured or incapacitated manatees, sea turtles, or whales shall be reported immediately to the Corps of Engineers. The order of contact within the Corps of Engineers shall be as follows:

Order of Contact of Corps Personnel for Dredging Contractor to Report Endangered Species Death or Injury

<u>Title</u>	<u>Telephone Number</u>	
	<u>Work Hours</u>	<u>After Hours</u>
Corps, Inspector	On site	Lodging Location
Mr. [], [Area][Resident][Antilles] Engineer, []	[]	[]
(CESAJ-[]-[])	[]	To be Provided
Dr. Loren Mason, Chief, Environmental Branch, Planning		
Division (CESAJ-PD-E)	904-232-1010	To be Provided
Mr. Charles McGehee, Chief, Construction		
Branch, Construction-Operations		
Division (CESAJ-CO-C)	904-232-1122	To be Provided
Mr. Gordon M. Butler, Jr., Chief,		
Construction-Operations Division		
(CESAJ-CO)	904-232-3765	To be Provided

3.1.5.6 Hopper Dredge Equipment

Hopper dredge drag heads shall be equipped with rigid sea turtle deflectors which are rigidly attached. No dredging shall be performed by a hopper dredge without a turtle deflector device that has been approved by the Contracting Officer. (Sample Turtle Deflector Design Details are appended to the end of this Section.)

a. Deflector Design:

(1) The leading vee-shaped portion of the deflector shall have an included angle of less than 90 degrees. Internal reinforcement shall be installed in the deflector to prevent structural failure of the device. The leading edge of the deflector shall be designed to have a plowing effect of at least 6" depth when the drag head is being operated. Appropriate instrumentation or indicator shall be used and kept in proper calibration to insure the critical "approach angle". (Information Only Note: The design "approach angle" or the angle of lower drag head pipe relative to the average sediment plane is very important to the proper operation of a deflector. If the lower drag head pipe angle in actual dredging conditions varies tremendously from the design angle of approach used in the development of the deflector, the 6" plowing effect does not occur. Therefore, every effort should be made to insure this design "approach angle" is maintained with the lower drag pipe.)

(2) If adjustable depth deflectors are installed, they shall be rigidly attached to the drag head using either a hinged aft attachment point or an aft trunnion attachment point in association with an adjustable pin front attachment point or cable front attachment point with a stop set to obtain the 6" plowing effect. This arrangement allows fine-tuning the 6" plowing effect for varying depths. After the deflector is properly adjusted there shall be NO openings between the deflector and the drag head that are more than 4" by 4".

b. In Flow Basket Design:

(1) The Contractor shall install baskets or screening over the hopper inflow(s) with no greater than 4" x 4" openings. The method selected shall depend on the construction of the dredge used and shall be approved by the Contracting Officer prior to commencement of dredging. The screening shall provide 100% screening of the hopper inflow(s). The screens and/or baskets shall remain in place throughout the performance of the work.

(2) The Contractor shall install and maintain floodlights suitable for illumination of the baskets or screening to allow the observer to safely monitor the hopper basket(s) during non-daylight hours or other periods of poor visibility. Safe access shall be provided to the inflow baskets or screens to allow the observer to inspect for turtles, turtle parts or damage.

c. Hopper Dredge Operation:

(1) The Contractor shall operate the hopper dredge to minimize the possibility of taking sea turtles and to comply with the requirements stated in the Incidental Take Statement provided by the National Marine Fisheries Service in their Biological Opinion.

(2) The turtle deflector device and inflow screens shall be maintained in operational condition for the entire dredging operation.

(3) When initiating dredging, suction through the drag heads shall be allowed just long enough to prime the pumps, then the drag heads must be placed firmly on the bottom. When lifting the drag heads from the bottom, suction through the drag heads shall be allowed just long enough to clear the lines, and then must cease. Pumping water through the drag heads shall cease while maneuvering or during travel to/from the disposal area. (Information Only Note: Optimal suction pipe densities and velocities occur when the deflector is operated properly. If the required dredging section includes compacted fine

sands or stiff clays, a properly configured arrangement of teeth may enhance dredge efficiency which reduces total dredging hours and "turtle takes." The operation of a drag head with teeth must be monitored for each dredged section to insure that excessive material is not forced into the suction line. When excess high-density material enters the suction line, suction velocities drop to extremely low levels causing conditions for plugging of the suction pipe. Dredge operators should configure and operate their equipment to eliminate all low-level suction velocities. Pipe plugging in the past was easily corrected, when low suction velocities occurred, by raising the drag head off the bottom until the suction velocities increased to an appropriate level. Pipe plugging cannot be corrected by raising the drag head off the bottom. Arrangements of teeth and/or the reconfiguration of teeth should be made during the dredging process to optimize the suction velocities.)

(4) Raising the drag head off the bottom to increase suction velocities is not acceptable. The primary adjustment for providing additional mixing water to the suction line should be through water ports. To insure that suction velocities do not drop below appropriate levels, the Contractor's personnel shall monitor production meters throughout the job and adjust primarily the number and opening sizes of water ports. Water port openings on top of the drag head or on raised stand pipes above the drag head shall be screened before they are utilized on the dredging project. If a dredge section includes sandy shoals on one end of a tract line and mud sediments on the other end of the tract line, the Contractor shall adjust the equipment to eliminate drag head pick-ups to clear the suction line.

(5) Near the completion of each payment section, the Contractor shall perform sufficient surveys to accurately depict those portions of the acceptance section requiring cleanup. The Contractor shall keep the drag head buried a minimum of 6 inches in the sediment at all times. Although the over depth prism is not the required dredging prism, the Contractor shall achieve the required prism by removing the material from the allowable over depth prism.

(6) During turning operations the pumps must either be shut off or reduced in speed to the point where no suction velocity or vacuum exists.

(7) These operational procedures are intended to stress the importance of balancing the suction pipe densities and velocities in order to keep from taking sea turtles. The Contractor shall develop a written operational plan to minimize turtle takes and submit it as part of the Environmental Protection Plan.

(8) The Contractor must comply with all requirements of this specification and the Contractor's accepted Environmental Protection Plan. The contents of this specification and the Contractor's Environmental Protection Plan shall be shared with all applicable crew members of the hopper dredge.

3.1.5.7 Recording Charts for Hopper Dredge(s)

All hopper dredge(s) shall be equipped with recording devices for each drag head that capture real time, drag head elevation, slurry density, and at least two of the following: Pump(s) slurry velocity measured at the output side, pump(s) vacuum, and/or pump(s) RPM. The Contractor shall record continuous real time positioning of the dredge, by plot or electronic means, during the entire dredging cycle including dredging area and disposal area. Dredge location accuracy shall meet the requirements of the latest version of COE EM 1110-1-1003. A copy of the EM can be downloaded from the following web site: <http://www.usace.army.mil/inet/usace-docs/eng-manuals/em.htm>. The recording system shall be capable of capturing data at variable intervals but with a frequency of not less than every 60 seconds. All data shall be time correlated to a 24 hour clock and the recording system shall include a method of daily evaluation of the data collected. Data shall be furnished to the Contracting Officer for each day's operation on a daily basis. A written plan of the method the Contractor intends to use in order to satisfy these requirements shall be included with the Contractor's Quality Control Plan.

3.1.5.8 Sea Turtle Risk Assessment (For Hopper Dredges Only)

a. **Sea Turtle Trawling and Relocation:** A sea turtle risk assessment survey shall be conducted following the take of three sea turtles and continue until directed by the Contracting Officer. The results of each trawl shall be recorded on Sea Turtle Trawling Report appended to the end of this Section. A final report shall be prepared and submitted to the Contracting Officer prior to re-commencement of dredging summarizing the results of the survey (with all forms and including total trawling times, number of trawls and number of captures). Any turtles captured during the survey shall be measured and tagged in accordance with standard biological sampling procedures with sampling data recorded on Sea Turtle Tagging and Relocation Report appended to the end of this Section. Any captured sea turtles shall be relocated south of the work area at least 3 miles from the location recorded on the Sea Turtle Tagging and Relocation Report form.

b. **Sea Turtle Trawling Procedures:** An approved sea turtle trawling and relocation supervisor shall provide researchers and nets to capture and relocate sea turtles, shall conduct Sea Turtle Risk Assessment Survey, and shall conduct any initiated sea turtle trawling. Turtles shall be captured with trawl nets to determine their relative abundance in the channel during dredging. Methods and equipment shall be standardized including data sheets, nets, trawling direction to tide, length of station, length of tow, and number of tows per station. Data on each tow shall be recorded using Sea Turtle Trawling Report appended to end of this Section. The trawler shall be equipped with two 60-foot nets constructed from 8-inch mesh (stretch) fitted with mud rollers and flats as specified in Turtle Trawl Nets Specifications appended to the end of this Section. Paired net tows shall be made for 10 to 12 hours per day or night. Trawling shall be conducted with the tidal flow using repetitive 15-30 minute (total time) tows in the channel. Tows shall be made in the center, green and red sides of the channel such that the total width of the channel bottom is sampled. Positions at the beginning and end of each tow shall be determined from GPS Positioning equipment. Tow speed shall be recorded at the approximate midpoint of each tow. Refer to COE EM 1110-1-1003, paragraph 5.3 and Table 5-1, for acceptable GPS criteria.

c. **Water Quality and Physical Measurements:** Water temperature measurements shall be taken at the water surface each day using a laboratory thermometer. Weather conditions shall be recorded from visual observations and instruments on the trawler. Weather conditions, air temperature, wind velocity and direction, sea state-wave height, and precipitation shall be recorded on the Sea Turtle Trawling Report appended to the end of this Section. High and low tides shall be recorded.

d. **Initiation of Trawling:** Initiate trawling if three turtles are taken. The Contractor must initiate trawling and relocation activity in the dredging area within 8 hours of the occurrence of the take. Trawling shall continue until suspended by the Contracting Officer.

e. **Approved Trawling Supervisor:** Trawling shall be conducted under the supervision of a biologist approved by the NMFS. A letter of approval from NMFS shall be provided to the Contracting Officer prior to commencement of trawling.

f. **Turtle Excluder Devices:** Approval for trawling for sea turtles without Turtle Excluder Devices (TEDs) must be obtained from NMFS. Approval for capture and relocation of sea turtles must be obtained from the [Florida Fish and Wildlife Conservation Commission (FF&WCC)] [Puerto Rico Department of Natural Environmental Resources (PRDNER)]. Approvals must be submitted to the Contracting Officer prior to trawling.

g. **Report Submission:** Following completion of the project, a copy of the Contractor's log regarding sea turtles shall be forwarded to the Dr. Loren Mason, Chief, Environmental Branch and the [Area] [Resident] [Antilles] Engineer, [] [Area] [Resident] [Antilles] Office within 10 working days.

Sea Turtle Beach Nest Monitoring

a. **Sea Turtle (Work Stoppage) Window and Monitoring:** If dredging and placement of material in the beach fill area along Florida Beaches has commenced on or before March 1st, turtle monitoring and nest location shall commence on March 1st and continue concurrently with the performance of work. If dredging and placement of material on Florida Beaches has not commenced prior to March 1st, the Contractor shall commence turtle monitoring and nest location activities for a period of 65 days prior to performing any work (including movement of equipment) in the beach fill area or commence turtle monitoring March 1st whichever date is later. In such case, after turtle monitoring and nest location activities have been performed for a period of 65 days, the Contractor shall commence work in the beach fill area and continue the monitoring activities concurrently with performance of the work. In any case turtle monitoring and nest location/relocation activities are required through November 30th or until completion of the work on Florida Beaches, whichever is earlier.

b. **Daily Visual Inspection:** Turtle monitoring activities shall include performance of daily visual inspections of the beach at sunrise by a person permitted by the FF&WCC for handling sea turtle eggs. Any nests discovered shall be excavated and relocated prior to 9:00 a.m. to a nearby self-release beach location where artificial lighting and/or other disturbances shall not interfere with successful incubation, hatching nor hatchling orientation. A log of the results of turtle egg monitoring and recovery activities shall be kept and a copy submitted weekly to the Dr. Loren Mason, Chief, Environmental Branch, Jacksonville District (sample Marine Turtle Nesting Summary Report form is appended to the end of this Section).

c. **Turtle Subcontractor:** The Contractor shall have a [FF&WCC] [PRDNER] permitted subcontractor approved by the Contracting Officer to accomplish the sea turtle monitoring of this section unless he demonstrates to the satisfaction of the Contracting Officer the capability to accomplish sea turtle monitoring and recovery by obtaining a permit from the [FF&WCC] [PRDNER] to take turtles.

d. **Report Submission:** Following completion of the project, a copy of the Contractor's log regarding sea turtles shall be forwarded to the Chief, Environmental Branch and the [Area] [Resident] [Antilles] Engineer, [] [Area] [Resident] [Antilles] Office.

Beach Placement Restrictions

a. **Equipment Lighting During Sea Turtle Nesting Period May 1st to November 30th:** Direct lighting of the beach and near shore waters shall be limited to the immediate construction area and shall comply with safety requirements. Lighting on offshore or onshore equipment shall be minimized through reduction, shielding, lowering, and appropriate placement to avoid excessive illumination of the waters surface and nesting beach while meeting all Coast Guard, COE EM 385-1-1, and OSHA requirements. Light intensity of lighting plants should be reduced to the minimum standard required by OSHA for General Construction areas, in order not to misdirect sea turtles. Shields should be affixed to the light housing and be large enough to block light from all lamps from being transmitted outside the construction area. Refer to Beach Lighting Schematic appended to the end of this Section.

b. **Pipeline Placement:** Any construction pipes placed parallel to the shoreline shall be placed as far landward as possible up to the vegetated dune line.

c. **Beach Tilling:** Till the fill area between the landward edge and the seaward edge of the top of the berm with equipment operated so as to penetrate and loosen beach sand (a) to a depth of 36 inches and (b) laterally without leaving unloosened compact sand between the adjacent paths of tines or penetrating part of the equipment. (Suitable equipment is Caterpillar D9L/No. 9 Adjustable Parallelogram Multishank Ripper, or equal.) The Contractor shall be careful not to drag the beach where rock structures have been covered with less than 3 feet of sand.