Appendix D
ENVIRONMENTAL

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DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
701 SAN MARCO BOULEVARD
JACKSONVILLE, FLORIDA 32207-0019

REPLY TO
ATTENTION OF

JAN 20 2017

Planning and Policy Division
Environmental Branch

Roxanna Hinzman
Field Supervisor
South Florida Field Office
U.S. Fish and Wildlife Service
1339 20th Street
Vero Beach, Florida 32960

Dear Ms. Hinzman:

In order to comply with Section 7 of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), the U.S. Army Corps of Engineers (Corps), Jacksonville District, respectfully requests a letter of concurrence from the U.S. Fish and Wildlife Service (USFWS) on the Lake Worth Lagoon Section 1135 Continuing Authorities Program (CAP) Project.

Historic freshwater discharges into Lake Worth Lagoon sustained an ecologically appropriate range of salinity conditions and nutrient levels to facilitate the presence of healthy floral and faunal communities. As south Florida developed, the need to protect against flooding and support increased water supply for communities led to the construction of a canal network, part of the Central and Southern Florida Project (C&SF). Although the canal network is efficient at reducing flood damages and meeting water supply needs, drastic salinity changes caused by freshwater pulses and contaminated runoff have degraded the biological integrity in Lake Worth Lagoon. The objective of the Lake Worth Lagoon Project is to improve the benthic habitat and marine ecosystem conditions of the lagoon within the limited authority of the CAP 1135 Program.

Description of the Project Location and Proposed Action

The Lake Worth Lagoon Project is located in south central Florida in Palm Beach County. Restoration activities include creation of small mangrove islands by filling dredge holes, placement of a thin layer of sand on muck sediment to create seagrass habitat, and the placement of prefabricated reef modules for the creation of oyster reef habitat.

Listed Species Under USFWS Jurisdiction

Listed species which may occur in the vicinity of the proposed work and are under the jurisdiction of the USFWS include the West Indian (Florida) manatee (*Trichecus manatus latirostris*) - Endangered (CH).

Potential Effects to Listed Species and Efforts to Eliminate/Avoid Impacts

West Indian (Florida) Manatee

The Florida manatee (*Trichechus manatus latirostris*) is a subspecies of the West Indian manatee. *Trichechus manatus* has been listed as a protected mammal in Florida since 1893. Federal law, specifically the Marine Mammal Protection Act of 1972 (MMPA) and the 1973 ESA protects manatees. Florida provided further protection in 1978 by passing the Florida Marine Sanctuary Act, designating the state as a manatee sanctuary and providing signage and speed zones in Florida's waterways.

Critical habitat is defined under the ESA as specific areas within and/or outside a geographical area that are occupied by a species at the time of listing, that contain physical or biological features essential to the conservation of the species and therefore require special management considerations or protection for the benefit of the species. All of Lake Worth Lagoon is designated as critical habitat for the manatee under the 1976 ESA (50 CFR 17.95(a)). Although no specific primary constituent elements were included in the initial critical habitat designation, habitat requirements currently present in Lake Worth Lagoon to sustain manatees' essential life history functions likely include:

- Shallow, secluded water areas for resting, mating, and calving
- Submerged, emergent, and floating vegetation for foraging
- Freshwater source for drinking (natural or artificial sources)
- Unobstructed transiting corridors to warm-water refugia due to manatees' sensitivity to low water temperatures

During the winter months when temperatures drop, manatees will migrate to warmer waters, including the Florida Power and Light Riviera Power plant outflows, which is located north of the project area. During the spring months when the water warms, manatees return to the counties to the north and south to forage and reproduce.

Creation of mangrove islands and sea grass and oyster reef habitat will occur within manatee critical habitat; however, the conversion of subtidal habitat to mangrove islands and seagrass and oyster reef habitat will result in increased foraging habitat. The shallower depths may also be used for resting, mating, and calving. Applicable

standard protective measures will be taken during in-water construction activities to ensure the safety of manatees in the project vicinity (see Attachment 1).

Effect Determination

The Corps determination is that the proposed action may affect but is not likely to adversely affect the West Indian (Florida) manatee.

The Corps respectfully requests that USFWS provide a letter of concurrence within 30 days of the receipt of this letter. If you have any questions, or need additional information, please contact Kristen Scheler by email Kristen.L.Scheler@usace.army.mil or telephone 904-232-2918. Thank you for your assistance.

Sincerely,

Gina Paduano Ralph, Ph.D.
Chief, Environmental Branch
Planning and Policy Division

Enclosure

Lake Worth Lagoon 1135 Continuing Authorities Program (CAP) Project

ATTACHMENT 1:

MANATEE STANDARD CONDITIONS FOR IN-WATER WORK (2011)

STANDARD MANATEE CONDITIONS FOR IN-WATER WORK
2011

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.

b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.

d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.

e. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or Vero Beach (1-772-562-3909) for south Florida, and to FWC at ImperiledSpecies@myFWC.com

f. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed by the permittee upon completion of the project. Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads *Caution: Boaters* must be posted. A second sign measuring at least 8 ½" by 11" explaining the requirements for "Idle Speed/No Wake" and the shut down of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. These signs can be viewed at MyFWC.com/manatee. Questions concerning these signs can be sent to the email address listed above.

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
701 SAN MARCO BOULEVARD
JACKSONVILLE, FLORIDA 32207-0019

REPLY TO
ATTENTION OF

JAN 20 2017

Planning and Policy Division
Environmental Branch

Mr. David Bernhart
Assistant Regional Administrator
Protected Resources Division
National Marine Fisheries Service
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701

Dear Mr. Bernhart:

In order to comply with Section 7 of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), the U.S. Army Corps of Engineers (Corps), Jacksonville District, respectfully requests a letter of concurrence from the National Marine Fisheries Service (NMFS) on the Lake Worth Lagoon Section 1135 Continuing Authorities Program (CAP) project. The proposed work is an ecosystem restoration project located in south central Florida in Palm Beach County. Restoration includes the creation of approximately 11 acres of small mangrove islands by filling dredge holes, placement of a thin layer of sand on muck sediment to create approximately 38 acres of seagrass habitat, and the placement of prefabricated reef modules for the creation of approximately 1 acre of oyster reef habitat.

Included with this letter is additional information describing the proposed action, the action area, listed species and/or designated critical habitat (DCH) that may be affected by the action, and an analysis of the potential routes of effect on any listed species or DCH. The Corps has determined that the proposed project may affect, but is not likely to adversely affect, the following federally-listed species:

- Green sea turtle;
- Leatherback sea turtle;
- Loggerhead sea turtle;
- Hawksbill sea turtle;
- Smalltooth sawfish;
- Johnson's seagrass.

The Corps is requesting concurrence with our determinations pursuant to Section 7 of the ESA of 1973, as amended (16 U.S.C. § 1536), and the consultation procedures at

50 C.F.R. Part 402. The Corps appreciates your cooperation in completing this informal Section 7 consultation by concurring with the Corps' effect determination(s) within 30 days of the receipt of this letter. If NMFS disagrees with the Corps' effect determination(s) and requests formal Section 7 consultation, please contact the below referenced contact to discuss suggested modifications to the action to avoid potential adverse effects and NMFS' additional information needs. The Corps will continue to coordinate with NMFS office via email to provide the requested information and, if warranted, a revised effects determination. If you have any questions, or need additional information, please contact Kristen Scheler at (904) 232-2918 or email Kristen.L.Scheler@usace.army.mil. Thank you for your assistance.

Sincerely,

Gina Paduano Ralph, Ph.D.
Chief, Environmental Branch
Planning and Policy Division

Enclosure

Informal Section 7 Consultation for
Lake Worth Lagoon Section 1135 Continuing Authorities Program (CAP) project

In order to comply with Section 7 of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), the U.S. Army Corps of Engineers (Corps), Jacksonville District, respectfully requests a letter of concurrence from the National Marine Fisheries Service (NMFS) on the Lake Worth Lagoon section 1135 Continuing Authorities Program (CAP) project. The proposed work is an ecosystem restoration project located in south central Florida in Palm Beach County. Restoration includes the creation of approximately 11 acres of small mangrove islands by filling dredge holes, placement of a thin layer of sand on muck sediment to create approximately 38 acres of seagrass habitat, and the placement of prefabricated reef modules for the creation of approximately 1 acre of oyster reef habitat.

The Corps has determined that the proposed project may affect but is not likely to adversely affect federally-listed species, as described in Table 1, and is therefore requesting concurrence with our determinations pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. § 1536), and the consultation procedures at 50 C.F.R. Part 402.

Pursuant to our request for informal consultation, the Corps is providing the following information:

- A description of the action to be considered;
- A description of the action area;
- A description of any listed species or designated critical habitat (DCH) that may be affected by the action; and
- An analysis of the potential routes of effect on any listed species or DCH.

1. PROPOSED ACTION

a. Description of the proposed action:

The proposed action is to raise the existing bathymetry to the intertidal range and cover the existing muck material with clean sand. The project site is referred to as Bonefish Cove and is located in south Lake Worth Lagoon (see Figure 1). The goal of this alternative is to create three upland islands for mangrove habitat that will be protected with rip rap and internment oyster reefs in the form of 2’ x 3’ pre-fabricated reef modules scattered around the islands. Fill material to be used for the project will be excavated and transported from Peanut Island Dredged Material Management Area (DMMA) – the same sediment source used for creating the Snook Islands and Grassy Flats. Peanut Island is 11.8 miles away from the Bonefish Cove site.

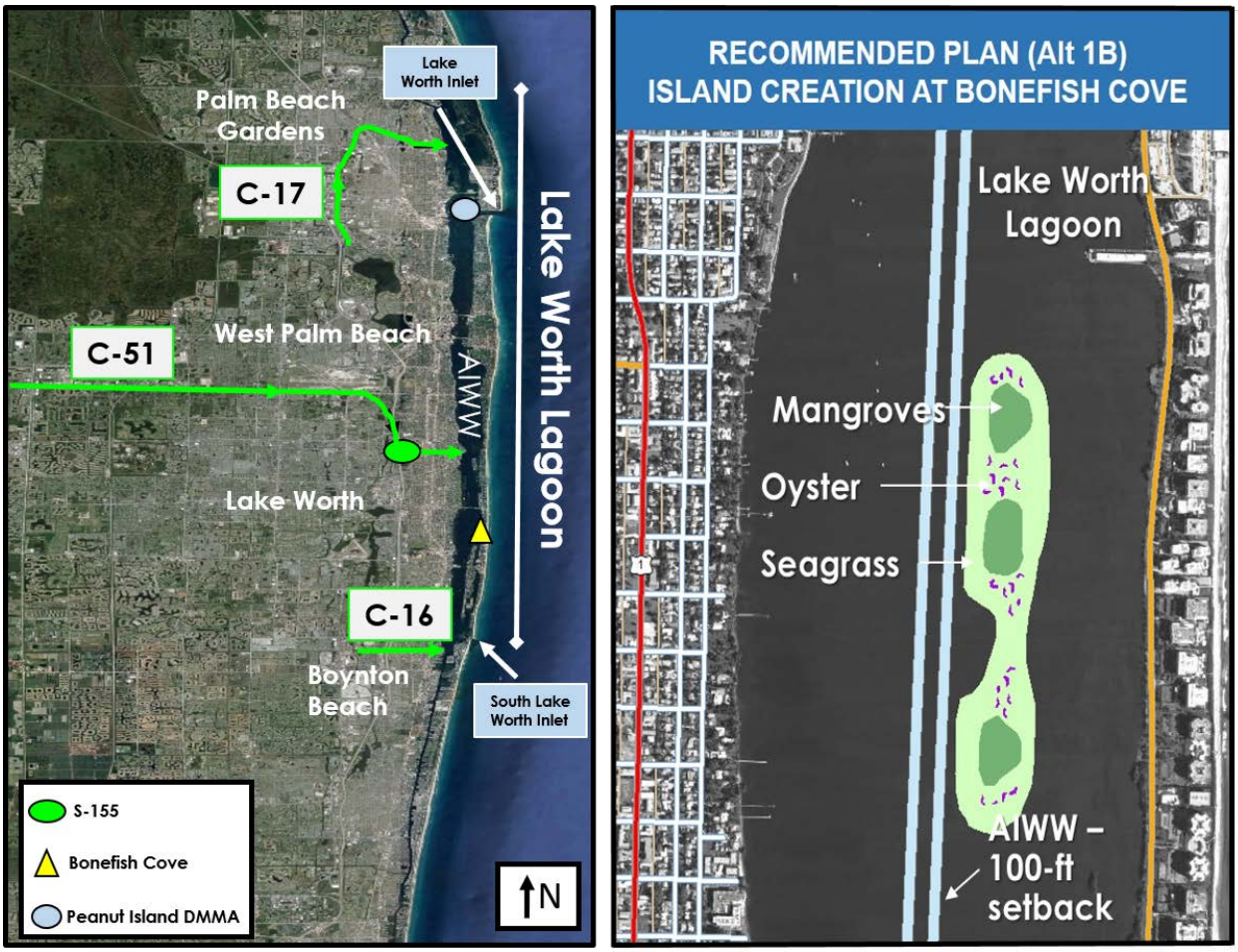

Figure 1. Action area and project location

The construction effort is tentatively scheduled to start in 2019 and take approximately 18 months to complete. Activities will consist of excavating approximately 345,000 cubic yards of fill material from Peanut Island via excavator and heavy earth movers to the Bonefish Cove site via barge to create three different substrate levels. The base or bed of the island will be raised to - 5.5 feet North American Vertical Datum of 1988 (NAVD88), which will be achieved on a 12.5% slope (1 foot vertical to 8 feet horizontal) from existing bathymetry and offset from the Intracoastal Waterway (IWW) right-of-way. The interior base of the island which is where the 2 feet by 3 feet pre-fabricated reef modules will be placed will be elevated to - 3.5 feet NAVD88 on a 4% slope (1 foot vertical to 25 feet horizontal), approximately one foot below mean low water (MLW), or - 2.5 feet NAVD88. To complete the island creation project, three mangrove islands will be established to - 0.5 feet NAVD88 on a 17% slope (1 foot vertical to 6 feet horizontal) (see Figure 2). In addition, the project would include the installation of riprap for shoreline protection and island stabilization. Riprap sizing is assumed to be similar to the type constructed at the Snook Islands and Grassy Flats projects (2 to 3 feet' limestone boulders). The post-construction features will include the creation of red mangrove habitat and installation of pre-fabricated reef modules for oyster reefs. Seagrass will not be planted because it is

anticipated the elevated substrates would provide enough benefit for natural seagrass recruitment.

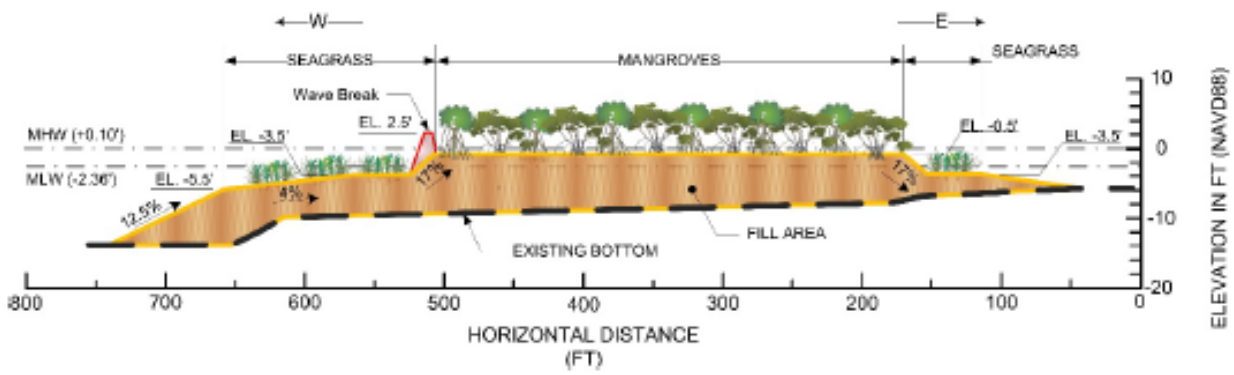

Figure 2. Project island creation cross section

b. Description of the project purpose:

Historic freshwater discharges into Lake Worth Lagoon sustained an ecologically appropriate range of salinity conditions and nutrient levels to facilitate the presence of healthy floral and faunal communities. As south Florida developed, the need to protect against flooding and support increased water supply for communities led to the construction of a canal network, part of the Central and Southern Florida Project. Although the canal network is efficient at reducing flood damages and meeting water supply needs, drastic salinity changes caused by freshwater pulses and contaminated runoff have degraded the biological integrity in Lake Worth Lagoon. The objective of the Lake Worth Lagoon Project is to improve the benthic habitat and marine ecosystem conditions of the lagoon within the limited authority of the CAP 1135 Program.

c. Description of minimization measures:

Applicable standard protective measures will be taken during in-water construction activities to ensure the safety of sea turtles in the project vicinity. These measures are recommended by NMFS and are described in the 2006 Sea Turtle and Smalltooth Sawfish Construction Conditions (see Attachment 1).

2. ACTION AREA

Pursuant to 50 C.F.R. § 402.02, the term *action area* is defined as "all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action." Accordingly, the action area typically includes the affected jurisdictional waters and other areas affected by the authorized work or structures within a reasonable distance.

For the purposes of this consultation, the action area for the project is Lake Worth Lagoon. Since sediment for the island creation will be sourced from Peanut Island DMMA, transit will occur between Peanut Island DMMA in north Lake Worth Lagoon and the Bonefish Cove project site in south Lake Worth Lagoon. Placement of fill material for the island

creation will create a temporary sediment plume. Best Management Practices (BMPs) and methods to manage placement of the capping/fill material will ensure minimized displacement of the muck sediment and controlled turbidity. Final details for BMPs and methods will be determined during the permitting and contracting process. The contractor will be given criteria to determine and achieve acceptable means and methods.

Lake Worth Lagoon is approximately 21 miles long and up to one mile wide. The lagoon runs parallel to the coast and is separated from the Atlantic Ocean by two barrier islands, Singer Island and Palm Beach Island. Although once a freshwater body, construction of the Lake Worth and South Lake Worth permanent inlets introduced mixing of fresh and salt waters at the northern and southern ends of the Lagoon. Depths typically range from 1 foot to 10 feet, though depths are much greater near the Port of Palm Beach and in locations where isolated holes are present from previous dredging activities (Lake Worth Lagoon Initiative, 2013). Natural sediment in Lake Worth Lagoon is comprised primarily of sand or shell fragments (Sea Diversified, Inc., 2010). However, deposition of fine-grained silt and clay-enriched organic "muck" sediments of greater than 1 foot in depth have been observed in over 42 locations in Lake Worth Lagoon (Lake Worth Lagoon Initiative, 2013). No corals, coral reefs, or hardbottoms are currently present in the project area. Over 250 species of fish have been documented in Lake Worth Lagoon (Palm Beach County Department of Environmental Resources Management, 2015). Seagrasses are present within the action area but not currently present in the project footprint. As of 2013, approximately 1,592 acres of seagrass beds were identified within Lake Worth Lagoon, a decrease from 1,688 acres identified in 2007 (Orlando et al., 2016). Multiple species of seagrass have been found in the Lagoon, including the threatened Johnson's seagrass (*Halophila johnsonii*). Other species of seagrasses present may include manatee grass (*Syringodium filiforme*), shoal grass (*Halodule wrightii*), paddle grass (*Halophila decipiens*), and turtle grass (*Thalassia testudinum*).

3. AFFECTED SPECIES/HABITAT

Project activities have the potential to affect the listed species as shown in Table 1 below. Table 2 provides the species use of the action area.

Table 1: Species in the action area

Species	ESA Listing Status	Listing Rule/Date	Most Recent recovery plan date	USACE Effect Determination (Species)
Green sea turtle[1]	T	81 FR 20057/ April 6, 2016	October 1991	MANLAA
Leatherback sea turtle	E	35 FR 8491/ June 2, 1970	April 1992	MANLAA
Loggerhead sea turtle[2]	T	76 FR 58868/ September 22, 2011	January 2009	MANLAA
Hawksbill sea turtle	E	35 FR 8491/ June 2, 1970	December 1993	MANLAA
Smalltooth sawfish[3]	E	68 FR 15674/ April 1, 2003	January 2009	MANLAA
Johnson's seagrass	T	63 FR 49035/ September 14, 1998	October 2002	NLAA

Table 2: Species use of the Action Area

Species	Species Use of the Action Area and/or DCH Description
Green sea turtle	Foraging and transit, no DCH in action area
Leatherback sea turtle	Foraging and transit, no DCH in action area
Loggerhead sea turtle	Foraging and transit, no DCH in action area
Hawksbill sea turtle	Foraging and transit, no DCH in action area
Smalltooth sawfish	Rarely reported in SE Florida, foraging and transit
Johnson's seagrass	Present in action area, not present in project area DCH present in action area, no DCH present in project footprint

Sea Turtles

Within Lake Worth Lagoon, multiple species of turtles have been observed including the green sea turtle (*Chelonia mydas*), the loggerhead (*Caretta caretta*), the leatherback (*Dermochelys coriacea*), the hawksbill (*Eretmochelys imbricata*), and the Kemp's Ridley (*Lepidochelys kempii*). The lagoon is connected to nesting beaches and serves as an important developmental habitat for juvenile green sea turtles year round, which feed almost entirely on seagrasses. Because of their diet, green sea turtles concentrate in areas of healthy submerged aquatic vegetation where salinity levels are more constant. The green sea turtle population in Lake Worth Lagoon have a moderate prevalence of Fibropapillomatosis, which has been reported as stable or slightly increasing within the population (Palm Beach County Department of Environmental Resources Management, 2012). Other sea turtle species may use the lagoon for transit and foraging. There is no sea turtle DCH located in the action area, and since no sea grasses are currently located

[1] North Atlantic and South Atlantic DPS
[2] Northwest Atlantic Ocean DPS
[3] U.S. DPS

in the project area, project activity is not anticipated to impact sea turtle foraging. Sea turtle usage of the site may be temporarily interrupted due to potential avoidance of construction activities. These species are highly mobile and can easily avoid the area, therefore, impacts are not anticipated to be significant. The project may beneficially affect sea turtles. Creation of seagrass habitat will increase the foraging habitat available to sea turtles in the lagoon. Applicable standard protective measures will be taken during in-water construction activities to ensure the safety of any sea turtles in the project vicinity. These measures are recommended by NMFS and are described in the 2006 Sea Turtle and Smalltooth Sawfish Construction Conditions (see Attachment 1).

Smalltooth sawfish

Smalltooth sawfish (*Pristis pectinata*) were once common in Florida as detailed by the "Smalltooth Sawfish Recovery Plan" (NMFS, 2009) and are rarely reported in southeast Florida. Their core range extends along the Everglades coast from the Ten Thousand Islands to Florida Bay, with moderate occurrences in the Florida Keys and at the mouth of the Caloosahatchee River. There is no smalltooth sawfish DCH located in the action area, and since sawfish are rarely encountered outside of the above listed areas (Simpfendorfer 2006), no adverse impacts to this species are anticipated. The project may beneficially affect smalltooth sawfish. Improved habitat in the lagoon could result in increased prey production and shelter for juveniles among the mangrove roots. Applicable standard protective measures will be taken during in-water construction activities to ensure the safety of any smalltooth sawfish in the project vicinity. These measures are recommended by NMFS and are described in the 2006 Sea Turtle and Smalltooth Sawfish Construction Conditions (see Attachment 1).

Johnson's seagrass

Johnson's seagrass (*Halophila johnsonii*), the only listed threatened marine plant species under the ESA, is found within Lake Worth Lagoon. Though Johnson's seagrass is sensitive to turbidity, dissolved organic matter, and temperature, it is especially vulnerable to salinity fluctuations. Salinities of 30 parts per thousand (ppt) are required for optimal growth, however, Johnson's seagrass is more tolerant of gradual salinity decreases and can survive for several weeks at salinities between 15-20 ppt. Data collected between 2010 to 2016 indicates there is an inverse relationship between freshwater discharge events and salinity levels in central Lake Worth Lagoon, with low salinity events (<10 ppt) occurring on an almost annual basis. No seagrasses or DCH is present in the project area, however, there are two sites of Johnson's seagrass DCH located in the action area (see Figures 3 and 4). DCH Site 1 is located approximately 6.5 miles from Peanut Island DMMA and 5 miles from the Bonefish Cove project site. DCH Site 2 is located approximately 3 miles from the Bonefish Cove project site and approximately 15 miles from Peanut Island DMMA.

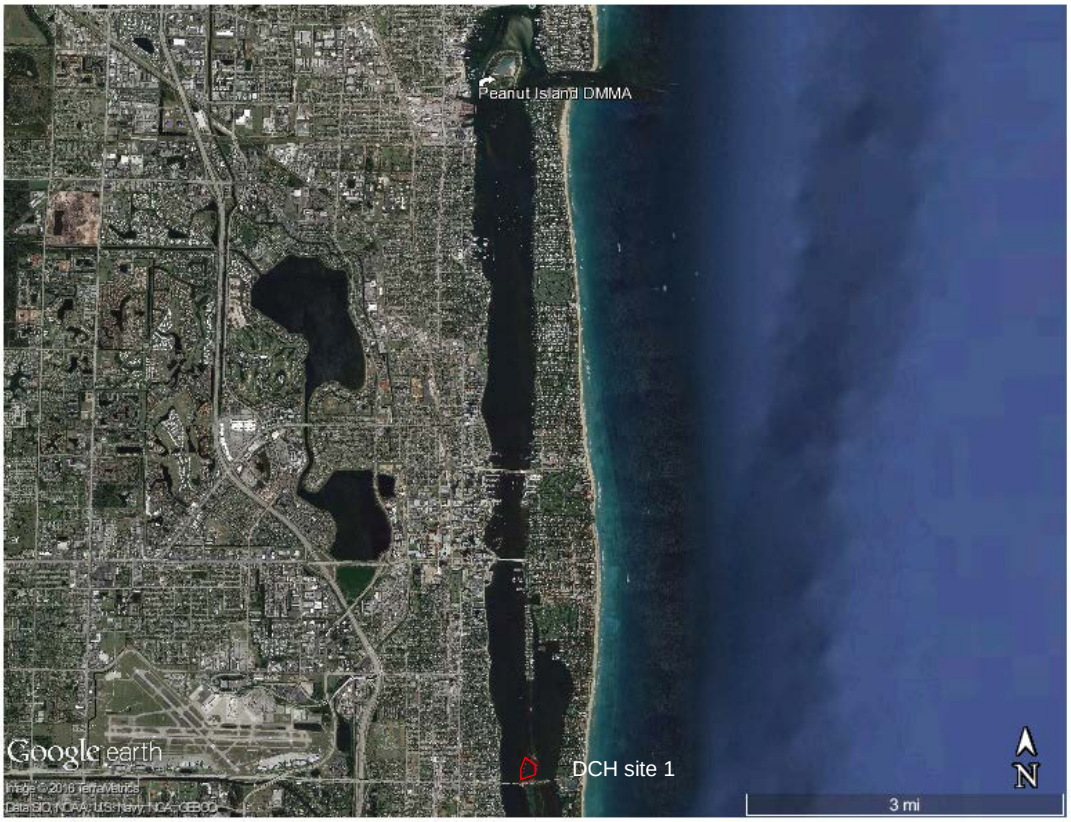

Figure 3. Johnson's seagrass DCH in Lake Worth Lagoon (north)

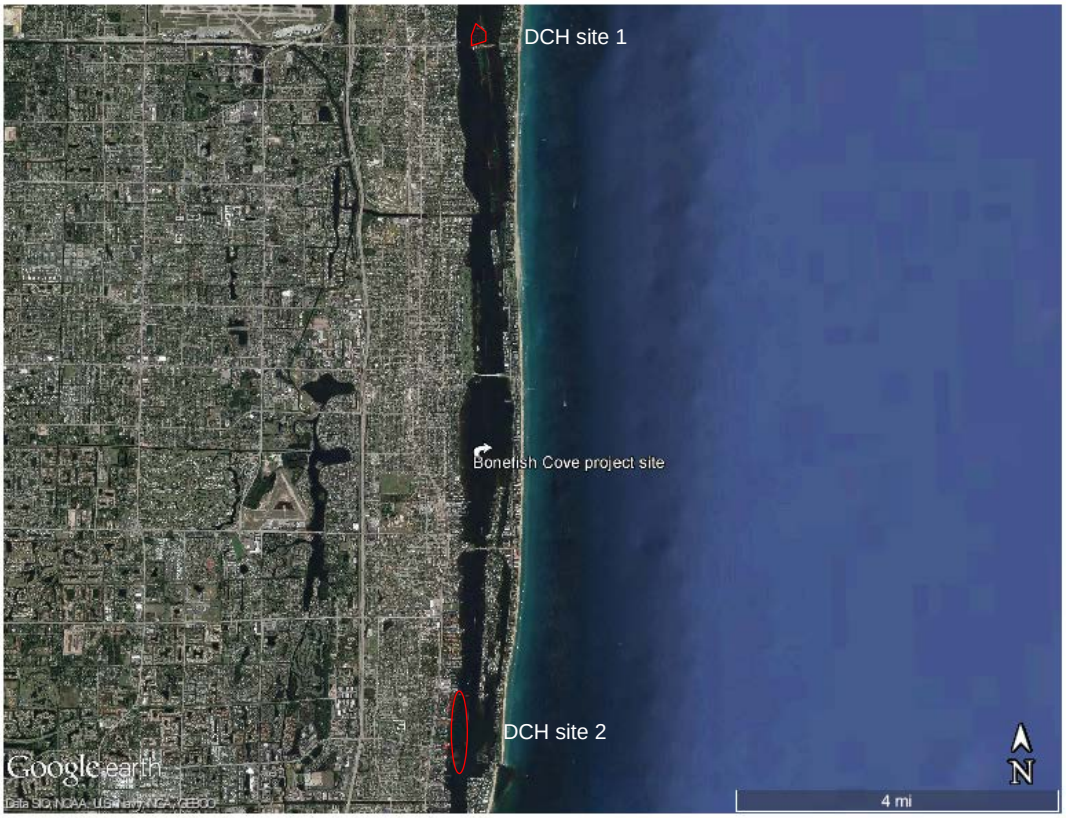

Figure 4. Johnson's seagrass DCH in Lake Worth Lagoon (south)

Placement of fill material may affect, but is not likely to adversely affect Johnson's seagrass within the action area. BMPs and methods to manage placement of the capping/fill material will ensure minimized displacement of the muck sediment and controlled turbidity. Final details for BMPs and methods will be determined during the permitting and contracting process. The contractor will be given criteria to determine and achieve acceptable means and methods. The project may beneficially affect Johnson's seagrass. Placement of fill material to create mangrove islands and viable seagrass habitat could result in natural recruitment of Johnson's seagrass to this area of the lagoon.

4. ROUTE(S) OF EFFECT TO SPECIES:
A temporary sediment plume will occur as a result of overboard placement of fill material to create the mangrove islands. Impacts will be temporary, lasting only as long as construction takes place. BMPs and methods to manage placement of the capping/fill material will ensure minimized displacement of the muck sediment and controlled turbidity. Conversion of the subtidal footprint will create suitable substrate that will encourage natural recruitment of Johnson's seagrass. Seagrass habitat will increase the foraging areas available to sea turtles

5. ROUTES OF EFFECT TO CRITICAL HABITAT
The project is not located in DCH. Although there is Johnson's seagrass DCH located in Lake Worth Lagoon, no potential routes of effect are anticipated to impact the DCH.

6. DETERMINATION:
The Corps has concluded the project may affect, but is not likely to adversely affect listed species in Table 1 and will not affect any DCH. This analysis was prepared based on the best scientific and commercial data available.

Literature Cited

Lake Worth Lagoon Initiative, “Lake Worth Lagoon Management Plan,” *Updated version of the Lake Worth Lagoon Management Plan,* 2013.

National Marine Fisheries Services (NMFS). (2009). Recovery Plan for Smalltooth Sawfish (*Pristis pectinata*). Prepared by the Smalltooth Sawfish Recovery Team for the NMFS, Silver Spring, Maryland.

Orlando, B., Anderson, E., & Yarbro, L. (2016). “Seagrass Integrated Mapping and Monitoring Program Mapping and Monitoring Report No. 2.”

Palm Beach County Department of Environmental Resources Management. (2013). “2013 Lake Worth Lagoon Seagrass Habitat Map.”

Palm Beach County Department of Environmental Resources Management, “Assessment of Marine Turtles in the Lake Worth Lagoon-Phase III,” *Report on work accomplished by Inwater Research Group,* 2012.

Sea Diversified, Inc., “Muck/Sediment Thickness Study Lake Worth Lagoon, Palm Beach County, Florida,” 2010.

Simpfendorfer, C.A. (2006). Movement and habitat use of smalltooth sawfish. Final report. Mote Marine Laboratory Technical Report 1070. NOAA Purchase Order WC133F-04-SE-1543. January 2006.

Lake Worth Lagoon 1135 Continuing Authorities Program (CAP) Project

ATTACHMENT 1:

SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701

SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS

The permittee shall comply with the following protected species construction conditions:

a. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.

b. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.

c. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.

d. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.

e. If a sea turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a sea turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.

f. Any collision with and/or injury to a sea turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.

g. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

Revised: March 23, 2006
O:\forms\Sea Turtle and Smalltooth Sawfish Construction Conditions.doc

Appendix D - Attachment 1:
404(b)(1) Evaluation

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Appendix B – Section 404(b)(1) Evaluation

I. PROJECT DESCRIPTION

a. Location. Lake Worth Lagoon (LWL) is located on the Atlantic Coast of Florida, within Palm Beach County as described in Section 1.3 of the LWL Integrated Feasibility Report and Environmental Assessment.

b. General Description. The plan consists of constructing a series of three upland islands for mangrove habitat at the Bonefish Cove project site that will be protected with riprap. Creation of the mangrove islands will also provide for shallow seagrass recruitment areas and oyster reefs. The construction effort will consist of transporting approximately 345,000 cubic yards of fill material from Peanut Island Dredged Material Management Area (DMMA) to the Bonefish Cove project site to create three different substrate levels. The base or bed of the island will be raised to - 5.5 feet NAVD88, which will be achieved on a 1:8 slope. The interior base of the island will be elevated to - 3.5 feet NAVD88 on a 1:25 slope, approximately one foot below mean low water (MLW), or -2.5 feet NAVD88. To complete the island creation, three mangrove islands will be established to -0.5 feet NAVD88 on a 1:6 slope. The project also includes the installation of riprap at the toe for shoreline protection and island stabilization. The post-construction features will include planting of mangroves on the constructed islands and installation of Bay Balls for oyster reefs on the interior base. Due to the elevated substrates, natural recruitment of seagrasses is anticipated.

c. Authority and Purpose. See section 1.1 of the associated project report. This will enhance benthic environment, create nursery area for fish, crustaceans and shell fish.

d. General Description of Dredged Material

(1) General Characteristics of Material: The project material is comprised of mainly sand, with some silt and rock material. Material is low in fines and is being obtained from the Peanut Island DMMA.

(2) Quantity of Material: It is estimated that 345,000 cubic yards of material will be removed from the DMMA and placed in the project site.

(3) Source of Material: Material from Peanut Island DMMA.

e. Description of the Proposed Discharge Site(s)

(1) Location. Dredged material from Peanut Island DMMA will be placed in the Bonefish Cove project site.

(2) Size. Approximately 50 acre eco-island chain.

(3) Type of Site. Intertidal/sub-tidal area.

(4) Type(s) of Habitat. Lagoon placement area is heavily impacted by runoff sediments, which has covered the sandy substrate with high organic mucky sediments. Borrow holes previously dredged for borrow material will be sites for fill placement as well. Existing conditions are not suitable for oyster habitat or seagrass/mangrove recruitment.

(5) Timing and Duration of Discharge. The exact timing of fill placement operations is not known, as the means and methods are not defined.

f. Description of fill placement method. Exact method to be determined during design and industry day with potential bidders to best manage displacement of muck in an economically sound manner.

II. Factual Determinations

a. Physical Substrate Determinations

(1) Substrate Elevation and Slope: The base or bed of the island will be raised to - 5.5 feet NAVD88, which will be achieved on a 1:8 slope. The interior base of the island will be elevated to - 3.5 feet NAVD88 on a 1:25 slope, approximately one foot below mean low water (MLW), or - 2.5 feet NAVD88. To complete the island creation, three mangrove islands will be established to -0.5 feet NAVD88 on a 1:6 slope. The project also includes the installation of riprap at the toe for shoreline protection and island stabilization.

(2) Sediment Type. The material to be placed in the project area will be material from the peanut island DMMA. This material consists primarily of sand with low fines content with some clay silt and rocky material.

(3) Dredged Material Movement: Material will settle and remain within boundaries of upland site or be moved to downdrift beaches by wave action if placed in nearshore or beach placement.

(4) Physical Effects on Benthos: Some benthic organisms that are not mobile may be may be covered by the fill material. Recolonization soon after project completion is expected to replace those organisms that do not survive project construction. It is anticipated that no long-term adverse impacts will occur. It is expected the capping of the high organic content mucky sediments will provide improved habitat for benthic organisms and reduce reflux of nutrients into the water column.

(5) Other Effects: Not applicable.

(6) Actions Taken to Minimize Impacts: Best Management Practices (BMPs) and methods to manage placement of the capping/fill material will need to ensure displacement of the mucky high organic content sediments is minimized and turbidity is controlled. Methods are being coordinated with the resource agencies. Final details for controlling muck displacement and turbidity will be determined during the permitting and contracting process. Contractor will be given criteria to achieve and contractor will determine means and methods.

b. Water Circulation. Fluctuation and Salinity Determinations

(1) Water column: During nearshore placement operations, turbidity will increase temporarily in the water column adjacent to the project. The increased turbidity will be short-term; therefore nearshore placement will have no long-term or significant impacts, if any, on salinity, water chemistry, clarity, color, odor, taste, dissolved gas levels, nutrients or eutrophication.

(2) Current Patterns and Circulation: Currents in the LWL are influenced primarily by tides moving through two inlets, Lake Worth Inlet and South Lake Worth (Boynton) Inlet which connect the lagoon to the Atlantic Ocean. The project will have no significant effect on existing current patterns, current flow, velocity, stratification, or the hydrologic regime in the area.

(3) Normal Water Level Fluctuations: LWL water level is influenced by episodic freshwater flows and tides. This project will have no significant effect on existing water level fluctuations.

(4) Salinity Gradients: Salinity is that of oceanic water. Dredged material placement will not affect normal tide fluctuations or salinity.

(5) Actions That Will Be Taken to Minimize Impacts: BMPs and other benthic protection measures have been coordinated with the resource agencies to minimize impacts.

c. Suspended Particulate/Turbidity Determinations

(1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Placement Site: There may be a temporary increase in turbidity levels in the project area along the placement site during discharge. Turbidity will be short-term and localized and no significant adverse impacts are expected. State water quality standards for turbidity outside an allowable mixing zone would not be exceeded.

(2) Effects (degree and duration) on Chemical and Physical Properties of the Water Column: The lagoon, at this location, is characterized by mucky/high organic content sediments. There would be little, if any, adverse effects to chemical and physical properties of the water as a result of placing low fines content dredged material in the project area.

(a) Light Penetration: Some decrease in light penetration may occur in the immediate vicinity of the project area. This effect will be temporary, limited to the immediate area of construction, and will have no adverse impact on the environment.

(b) Dissolved Oxygen: It is likely that the capping of the high organic content muck with the capping material will reduce biological oxygen demand.

(c) Toxic Metals and Organics: No toxic metals or organics are expected to be released by the project. Some organics from the mucky/high organic content sediment will be brought temporarily into the water column in the immediate project area during capping material placement, but that will be limited by construction methods.

(d) Pathogens: No pathogens are expected to be released by the project.

(e) Aesthetics: The aesthetic quality of the water in the immediate area of the project will be reduced during construction due to increased turbidity. This will be a short-term and localized condition. The placement of the muck capping material will likely improve the aesthetic and habitat area quality of the project area.

(f) Others as Appropriate: None.

(3) Effects on Biota

(a) Primary Production, Photosynthesis: Primary productivity will be temporarily decreased during capping material placement where a temporarily increased level of suspended particulates will occur.

(b) Suspension/Filter Feeders: An increase in turbidity could adversely impact burrowing invertebrate filter feeders within and adjacent to the immediate construction area. It is not expected that a short-term, temporary increase in turbidity will have any long-term negative impact on these highly fecund organisms.

(c) Sight Feeders: No significant impacts on these organisms are expected as the majority of sight feeders are highly motile and can move outside the project area.

(4) Actions taken to Minimize Impacts: BMPs and other benthic protection measures have been coordinated with the resource agencies to minimize impacts.

d. Contaminant Determinations: The material that will be disposed will not introduce, relocate, or increase contaminants at the area. The material would be clean low fine material sand with some clays and rocky materials. This capping material has been used for two other environmental restoration projects. The Florida Department of

Environmental Protection (FDEP), the Environmental Protection Agency (EPA) delegated authority for water quality, will review the local sponsor's application and issue a permit for this activity. It is expected that the past history of the fill source will provide sufficient reasonable assurance to the FDEP, but FDEP makes the final determination as to what provides reasonable assurance.

e. Aquatic Ecosystem and Organism Determinations: The material that will be placed in the project area consist of sand with low fines content, with some clays and rocky material that will be used to cap high organic content mucky sediments. Capping of this urban/agricultural runoff material is expected to enhance water quality and the aquatic ecosystem habitat.

(1) Effects on Plankton: No adverse impacts on autotrophic or heterotrophic during fill placement due to elevated turbidity. Long term, the turbidity and biological oxygen demand resulting from the capping of the mucky/high organic content sediments is expected to be reduced which will should not negatively impact plankton productivity.

(2) Effects on Benthos: The material will bury some benthic organisms. Recolonization is expected to occur within a year after construction activities cease. No adverse long-term impacts to non-motile or motile benthic invertebrates are anticipated.

(3) Effects on Nekton: No adverse impacts to nektonic species are anticipated.

(4) Effects on Aquatic Food Web: No adverse long-term impact to any trophic group in the food web is anticipated. Mangrove forests contribute to the overall health of the state's southern coastal zone. This ecosystem traps and cycles various organic materials, chemical elements, and important nutrients. Mangrove roots act not only as physical traps but provide attachment surfaces for various marine organisms. Many of these attached organisms filter water through their bodies and, in turn, trap and cycle nutrients. Mangroves provide protected nursery areas for fishes, crustaceans, and shellfish.

(5) Effects on Special Aquatic Sites: There are no hardground or coral reef communities located in the immediate project area that would be impacted by placement activities. Section 2.4 of the project's report offers a more detailed discussion on impacts.

(6) Threatened and Endangered Species: Appropriate measures to avoid, minimize, and mitigate for impacts to listed species are currently being coordinated with the US Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS).

(7) Other Wildlife: No adverse impacts to small foraging mammals, reptiles, or wading birds, or wildlife in general are expected. Many animals find shelter

either in the roots or branches of mangroves, which will be planted as part of the project. Mangrove branches are rookeries, or nesting areas, for coastal birds such as brown pelicans and roseate spoonbills

(8) Actions to Minimize Impacts: BMPs along with terms and conditions associated with Endangered Species Act (ESA) Biological Opinions will be followed.

f. Proposed Placement Site Determinations

(1) Mixing Zone Determination: Clean fill material, consisting primarily of sand with low fines with some clays and rocky material would be placed in the project area. This will not cause unacceptable changes in the mixing zone water quality requirements as specified by the State of Florida's Water Quality Certification permit procedures. No adverse impacts related to depth, current velocity, direction and variability, degree of turbulence, stratification, or ambient concentrations of constituents are expected from implementation of the project.

(2) Determination of Compliance with Applicable Water Quality Standards: Because of the inert nature of the material to be to be disposed, Class III water quality standards will not be violated.

(3) Potential Effects on Human Use Characteristic

(a) Municipal and Private Water Supply: No municipal or private water supplies will be impacted by the implementation of the project.

(b) Recreational and Commercial Fisheries: Fishing in the immediate construction area will be prohibited during construction. Otherwise, recreational and commercial fisheries will not be impacted by the implementation of the project. Based on two other restoration projects using the same fill material to cap the high organic content muck/sediment, recreational game fishing will be enhanced. Mangroves provide protected nursery areas for fishes, crustaceans, and shellfish. They also provide food for a multitude of marine species such as snook, snapper, tarpon, jack, sheepshead, red drum, oyster, and shrimp.

(c) Water Related Recreation: Water related recreation in the immediate vicinity of construction will be prohibited during construction activities. This will be a short-term impact.

(d) Aesthetics: The existing environmental setting will not be adversely impacted. Construction activities will cause a temporary increase in noise and air pollution caused by equipment as well as some temporary increase in turbidity. These impacts are not expected to adversely affect the aesthetic resources over the long term and once construction ends, conditions will return to pre-project

levels.

(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves: No such designated sites are located within the project area.

g. Determination of Cumulative Effects on the Aquatic Ecosystem: There will be no cumulative impacts that result in a major impairment in water quality of the existing aquatic ecosystem resulting from the placement of material at the project site. Creation of seagrass beds and mangrove forest will benefit the aquatic ecosystem.

h. Determination of Secondary Effects on the Aquatic Ecosystem: There will be no negative secondary impacts on the aquatic ecosystem as a result of the fill placement or creation of seagrass bed habitat and mangrove forests.

III. Findings of Compliance or Non-Compliance with the Restrictions on Discharge

a. Adaptation of the Section 404(b)(l) Guidelines to this Evaluation: No significant adaptations of the guidelines were made relative to this evaluation.

b. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge Site Which Would Have Less Adverse Impact on the Aquatic Ecosystem: No practicable alternative exists which meets the study objectives that does not involve discharge of fill into waters of the United States. Further, no less environmentally damaging practical alternatives to the proposed actions exist. It is expected that the placement of this fill will improve aquatic habitat by capping high organic content sediment resulting from uncontrolled runoff from urban and agricultural areas. Creation of the mangrove and seagrass habitat will provide an enhanced habitat for juvenile fish and crustaceans. In addition, the impacts of using other sources on cultural resources, protected species, and other environmental factors would likely be equal to or greater than the impacts of the proposed action. The no action alternative would maintain the present condition of the poor quality benthic habitat created by the runoff of high organic content sediments which capped the previously existing sandy bottom, would also maintain the low productivity deep hole created by borrow material dredging nor would it allow the shoreline stabilization afford by mangrove recruitment.

c. Compliance with Applicable State Water Quality Standards: After consideration of placement site dilution and dispersion, the discharge of dredged materials will not cause or contribute to, violations of any applicable State water quality standards for Class III waters.

d. Compliance with Applicable Toxic Effluent Standard or Prohibition: Under Section 307 Of the Clean Water Act: The discharge operation will not violate the Toxic Effluent Standards of Section 307 of the Clean Water Act.

e. Compliance with Endangered Species Act of 1973: The placement of dredged

material will not jeopardize the continued existence of any species listed as threatened or endangered or result in the likelihood of destruction or adverse modification of any critical habitat as specified by the ESA of 1973, as amended. Standard conditions for monitoring and relocating turtle nests would be employed.

f. Compliance with Specified Protection Measures for Marine Sanctuaries Designated by the Marine Protection, Research, and Sanctuaries Act of 1972: No marine sanctuaries are located within the project area.

g. Evaluation of Extent of Degradation of the Waters of the United States: The placement of dredged material will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreational and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic species and other wildlife will not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic, and economic values will not occur.

h. Appropriate and Practicable Steps Taken to Minimize Potential Adverse Impacts of the Discharge on the Aquatic Ecosystem: Appropriate steps have been taken to minimize the adverse environmental impact of the proposed action. The material proposed as beach has low silt content, therefore, turbidity due to silt will be low when discharging. Turbidity will be monitored so that if levels exceed State water quality standards of 29 nephelometric turbidity units (NTUs) above background, the contractor will be required to cease work until conditions return to normal. In the vicinity of reef and other hard grounds, measures would be taken to minimize sediment deposition on sensitive organisms.

i. On the basis of the guidelines, the proposed alternative is specified as complying with the requirements of these guidelines.

Appendix D - Attachment 2:
Coastal Zone Management Act (CZMA)
Federal Consistency Determination (FCD)

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FLORIDA COASTAL ZONE MANAGEMENT PROGRAM
FEDERAL CONSISTENCY EVALUATION PROCEDURES

LAKE WORTH LAGOON, CONTINUTING AUTHORITIES PROGRAM (CAP) SECTION 1135 PROJECT

1. Chapter 161, Beach and Shore Preservation. The intent of the coastal construction permit program established by this chapter is to regulate construction projects located seaward of the line of mean high water and which might have an effect on natural shoreline processes.

Response: The proposed plans and information will be submitted to the State in compliance with this chapter.

2. Chapters 186 and 187, State and Regional Planning. These chapters establish the State Comprehensive Plan which sets goals that articulate a strategic vision of the State's future. Its purpose is to define in a broad sense, goals, and policies that provide decision-makers directions for the future and provide long-range guidance for an orderly social, economic and physical growth.

Response: The proposed project shall be coordinated with various Federal, State and local agencies during the planning process. The project meets the primary goal of the State Comprehensive Plan through preservation and protection of the shorefront development and infrastructure.

3. Chapter 252, Disaster Preparation, Response and Mitigation. This chapter creates a state emergency management agency, with the authority to provide for the common defense; to protect the public peace, health and safety; and to preserve the lives and property of the people of Florida.

Response: The proposed project will not impact the public peace, health and safety. Therefore, this project would be consistent with the efforts of Division of Emergency Management.

4. Chapter 253, State Lands. This chapter governs the management of submerged state lands and resources within state lands. This includes archeological and historical resources; water resources; fish and wildlife resources; beaches and dunes; submerged grass beds and other benthic communities; swamps, marshes and other wetlands; mineral resources; unique natural features; submerged lands; spoil islands; and artificial reefs.

Response: The proposed project shall be coordinated with various Federal, State and local agencies during the planning process. All proposed work would avoid or minimize impacts to resources within submerged state lands. Appropriate protective measures shall be

implemented where necessary. The proposed project would comply with the intent of this chapter.

5. Chapters 253, 259, 260, and 375, Land Acquisition. This chapter authorizes the state to acquire land to protect environmentally sensitive areas.

Response: No land acquisition is proposed in this project.

6. Chapter 258, State Parks and Aquatic Preserves. This chapter authorizes the state to manage state parks and preserves. Consistency with this statute would include consideration of projects that would directly or indirectly adversely impact park property, natural resources, park programs, management or operations.

Response: There are no state parks or preserves that occur within or along the project area.

7. Chapter 267, Historic Preservation. This chapter establishes the procedures for implementing the Florida Historic Resources Act responsibilities.

Response: No significant impacts to historical properties are expected from construction of the proposed project based upon the results of site investigations and this coordination.

8. Chapter 288, Economic Development and Tourism. This chapter directs the state to provide guidance and promotion of beneficial development through encouraging economic diversification and promoting tourism.

Response: The proposed work would not affect tourism. Therefore, the project is consistent with the goals of this chapter.

9. Chapters 334 and 339, Public Transportation. This chapter authorizes the planning and development of a safe balanced and efficient transportation system.

Response: No public transportation systems would be impacted by this project.

10. Chapter 370, Saltwater Living Resources. This chapter directs the state to preserve, manage and protect the marine, crustacean, shell and anadromous fishery resources in state waters; to protect and enhance the marine and estuarine environment; to regulate fishermen and vessels of the state engaged in the taking of such resources within or without state waters; to issue licenses for the taking and processing products of fisheries; to secure and maintain statistical records of the catch of each such species; and, to conduct scientific, economic, and other studies and research.

Response: The proposed project is expected to have temporary or minimal impacts to saltwater living resources during construction. The proposed project will have positive long term impacts to saltwater living resources due to the creation of seagrass, oyster, and mangrove habitat and improved water quality from the capping of muck sediments via the creation of the mangrove islands. Appropriate projection measures shall be implemented where necessary.

11. Chapter 372, Living Land and Freshwater Resources. This chapter establishes the Game and Freshwater Fish Commission and directs it to manage freshwater aquatic life and wild animal life and their habitat to perpetuate a diversity of species with densities and distributions which provide sustained ecological, recreational, scientific, educational, aesthetic, and economic benefits.

Response: The project is expected to have no significant effect on freshwater aquatic life or wild animal life.

12. Chapter 373, Water Resources. This chapter provides the authority to regulate the withdrawal, diversion, storage, and consumption of water.

Response: This project does not involve water resources as described by this chapter.

13. Chapter 376, Pollutant Spill Prevention and Control. This chapter regulates the transfer, storage, and transportation of pollutants and the cleanup of pollutant discharges.

Response: The contract specifications will prohibit the contractor from dumping oil, fuel, or hazardous wastes in the work area and will require that the contractor adopt safe and sanitary measures for the disposal of solid wastes. A spill prevention plan will be required.

14. Chapter 377, Oil and Gas Exploration and Production. This chapter authorizes the regulation of all phases of exploration, drilling, and production of oil, gas, and other petroleum products.

Response: This project does not involve the exploration, drilling or production of gas, oil or petroleum product and therefore, this chapter does not apply.

15. Chapter 380, Environmental Land and Water Management. This chapter establishes criteria and procedures to assure that local land development decisions consider the regional impact nature of proposed large-scale development.

Response: The proposed project may have positive long term regional impacts due to the creation of seagrass, oyster, and mangrove habitat and improved water quality from the capping of muck sediments via the creation of the mangrove islands. The project is consistent with the goals of this chapter.

16. Chapter 388, Arthropod Control. This chapter provides for a comprehensive approach for abatement or suppression of mosquitoes and other pest arthropods within the state.

Response: The project will not further the propagation of mosquitoes or other pest arthropods.

17. Chapter 403, Environmental Control. This chapter authorizes the regulation of pollution of the air and waters of the state by the Florida Department of Environmental Regulation (now a part of the Florida Department of Environmental Protection).

Response: Environmental protection measures will be implemented to ensure that no lasting adverse effects on water quality, air quality, or other environmental resources will occur. Coordination with the Florida Department of Environmental Protection shall occur prior to construction. The project complies with the intent of this chapter.

18. Chapter 582, Soil and Water Conservation. This chapter establishes policy for the conservation of the state soil and water through the Department of Agriculture. Land use policies will be evaluated in terms of their tendency to cause or contribute to soil erosion or to conserve, develop, and utilize soil and water resources both onsite or in adjoining properties affected by the project. Particular attention will be given to projects on or near agricultural lands.

Response: The proposed project is not expected to occur near or on agricultural lands; therefore, this chapter does not apply.

Appendix D – Attachment 3:

Lake Worth Lagoon (LWL) 1135 Continuing Authorities Program (CAP) Project

Distribution List

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