

DRAFT  
NATURAL RESOURCES EVALUATION

Florida Department of Transportation

District 1

SR 684 (Cortez Bridge and Approaches) PD&E Study

from SR 789 (Gulf Drive) to 123<sup>rd</sup> Street West

Manatee County, Florida

Financial Management Number: 430204-1

ETDM Number: 13568

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. §327 and a Memorandum of Understanding (MOU) dated December 14, 2016 and executed by the Federal Highway Administration and FDOT.

July, 2017

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# Executive Summary

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The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study for roadway and bridge improvement alternatives along State Road (SR) 684 (Cortez Road) from SR 789 (Gulf Drive) to 123<sup>rd</sup> Street West, a distance of 0.912 mile (mi) in Manatee County, Florida.

The existing Cortez Bridge was constructed in 1956 to replace the original 1921 wooden bridge connecting Anna Maria Island with the mainland in Manatee County. This bridge is one of three bridge facilities that provide vehicular access over Anna Maria Island/Gulf Intracoastal Waterway (GICW) to and from Anna Maria Island. The PD&E Study will evaluate alternatives that will address the problem of the deteriorating SR 684 (Cortez Road), which is a designated evacuation route.

The purpose of the PD&E Study is to provide documented environmental and engineering analyses to assist the FDOT Office of Environmental Management (OEM), the lead agency, the lead federal agency, in reaching a decision on the type, location and conceptual design of the necessary improvements, in order to accommodate future traffic demand in a safe and efficient manner. The PD&E Study also satisfies the requirements of the National Environmental Policy Act (NEPA) and other related state and federal environmental laws and regulations, and qualifies the project for federal-aid funding of future development phases of the project.

Routine bridge inspections have identified functional, safety, and structural problems associated with the age of the existing bridge, including concrete delaminations, cracks, spalls, and other deficiencies. The Cortez Bridge has been rated Functionally Obsolete and Structurally Deficient; however, the bridge is not rated Scour Critical. The moveable spans contain fracture critical elements, meaning that failure of those elements would result in substantial collapse of the bridge. Improvement alternatives considered for this facility include rehabilitation and replacement of the current bridge. The development of a new corridor would result in significant social and environmental impacts, and would not address the problem of the deteriorating SR 684 Bridge. Therefore, developing a new corridor or improving a parallel roadway is not an option for this project.

Bridge improvement alternatives evaluated in the PD&E Study included a No-Build (Repair) Alternative, a Rehabilitation Alternative, and Replacement Alternatives. The No-Build (Repair) Alternative involves the continued routine maintenance and minor repairs of the bridge to keep it operating in a safe condition for a comparatively short period of time relative to other alternatives (i.e. an additional ten years after the recent ten-year repair, or until 2034). Repairs could consist of fixing spalled or cracked concrete, replacement of bearing pads, electrical and mechanical repairs, and other repairs to lighting, curbs, navigation fenders, bridge tender house, structural pile jackets, pavement striping, etc. These short-term repairs will not bring the bridge up to current design

standards or avoid the need to post weight limit restrictions or other constraints (speed) on the bridge.

The Rehabilitation Alternative included substantial repairs that are expected to extend the service life for a significant period of time (i.e. 25 years after the recent ten-year repair, or until 2049). This included all of the minor repairs listed above, plus bringing the bridge up to current standards as much as possible, to avoid posting weight limits on the bridge, by replacing all the beams and the entire deck. Examples included replacement of mechanical and electrical systems, crutch bents, pile jackets, widening to accommodate wider lanes or shoulders and bike lanes, and replacement of the traffic railings with modern traffic barriers. Rehabilitation is expected to extend the service life by 25 years.

Three general bridge replacement alternatives were evaluated for this PD&E Study:

- **Low-Level Bascule:** This concept includes building a new bascule (draw) bridge with a minimum vertical navigational clearance of 21 feet (ft) above mean high water (MHW) at the fenders when the bascule leaves are lowered. This meets the established vertical guide clearance set by the United States Coast Guard (USCG).
- **Mid-Level Bascule:** This concept includes a replacement bascule bridge with a navigation clearance of 35 to 45 ft above mhw at the fenders. Based on data provided by the bridge tender at the Cortez Bridge and allowing for tidal fluctuations, a height of 45-ft would allow over 50 percent of the waterway users that currently require the bridge to open to pass under the bridge without an opening. A height of 35-ft would allow one third of the waterway users to pass under the bridge without an opening.
- **High-Level Fixed-Span:** This concept includes a high-level fixed-span replacement bridge over the existing GICW navigation channel. The vertical navigational clearance will be 65 ft. Based on data provided by the bridge tender and allowing for tidal fluctuations, this height would allow approximately 98 percent of boats that currently require the existing bridge to open to safely navigate under the proposed structure.

Since this project is not intended to increase capacity, only two-lane typical sections were considered. The proposed two-lane undivided bridge typical section includes two 12-ft travel lanes and two 10-ft shoulders which can accommodate bicyclists and disabled vehicles. In addition, 10-ft sidewalks were evaluated on each side of the bridge, separated from the shoulder by a concrete barrier wall. A 4.5-ft high pedestrian/bicycle railing will be provided on the outside of the sidewalks. The design speed for all proposed typical sections is 40 miles per hour (mph), maintaining the existing posted speed of 35 mph.

The bridge replacement alternatives that were evaluated are listed here:

- Low-Level Bascule Bridge, North Alignment
- Low-Level Bascule Bridge, South Alignment
- Mid-Level Bascule Bridge, North Alignment
- Mid-Level Bascule Bridge, South Alignment
- High-Level Fixed Bridge, North Alignment
- High-Level Fixed Bridge, South Alignment

However, the two Build Alternatives are the replacement of the existing low-level drawbridge with a new drawbridge providing approximately 35-ft of vertical navigational clearance (Mid-Level) and the 65-ft (High-Level) fixed bridge alternative, both on the northern alignment. The sidewalks will be 10-ft. These two alternatives, along with the No-Build (Repair) Alternative, will be carried forward for further consideration at a Public Hearing.

This Natural Resources Evaluation (NRE) is conducted as part of the overall PD&E Study. The purpose of the NRE is to summarize the potential impacts to wetlands, federal- and state-listed species and their habitats, and essential fish habitat. Identification of measures to avoid, minimize and mitigate for any potential impacts is also discussed. This Draft NRE documents the results of geographic information system (GIS) data reviews, field reviews, coordination with regulatory agencies including comments received through the Efficient Transportation Decision Making (ETDM) process, and aerial interpretation for potential impacts to the resources listed above. Coordination was conducted with federal and state agencies throughout the study process.

### **Protected Species and Habitat**

Animals and plants evaluated herein are protected under the following state and federal acts:

- Federal Endangered Species Act of 1973, as amended (ESA)
- State threatened and endangered species regulations (Ch. 379.2291, Florida Statutes and Chapter 68A-27, Florida Administrative Code)
- Preservation of Native Flora of Florida (Ch. 5B-40 Florida Administrative Code)
- Federal Migratory Bird Treaty Act of 1918, as amended
- Bald and Golden Eagle Protection Act
- Federal Marine Mammal Protection Act of 1972, as amended

Database reviews were conducted to identify potential habitat for protected species and critical habitat found within and near the study area bounded by S.R. 789 (Gulf Drive) to 123<sup>rd</sup> Street West and 200 ft from the centerline of the existing bridge to the north and south. Field evaluations of the study area were conducted on June 24-28, 2013 by environmental scientists familiar with Florida natural communities and protected species.

Based on this evaluation, 23 state and federally-protected species were identified that may be affected by the proposed project. The following list presents those species that may be affected by the proposed project: golden leather fern (*Acrostichum aureum*), Florida golden aster (*Chrysopsis floridana*), aboriginal prickly apple (*Harrisia aboriginum*), Sanibel love grass (*Eragrostis pectinacea* var. *tracyi*), roseate spoonbill (*Platalea ajaja*), little blue heron (*Egretta caerulea*), tricolored heron (*Egretta tricolor*), reddish egret (*Egretta rufescens*), piping plover (*Charadrius melodus*), American oystercatcher (*Haematopus palliatus*), red knot (*Calidris canutus rufa*), bald eagle (*Haliaeetus leucocephalus*), wood stork (*Mycteria Americana*), Gulf sturgeon (*Acipenser oxyrinchus desotoi*), smalltooth sawfish (*Pristis pectinate*), West Indian manatee (*Trichechus manatus*), eastern indigo snake (*Drymarchon corais couperi*), gopher tortoise (*Gopherus polyphemus*), loggerhead turtle (*Caretta caretta*), green turtle (*Chelonia mydas*), Kemp's Ridley turtle (*Lepidochelys kempii*), leatherback turtle (*Dermochelys coriacea*), and Hawksbill turtle (*Eretmochelys imbricate*).

Potential impacts to protected species were evaluated for all alternatives. The No-Build Alternative and the Rehabilitation Alternative would not result in direct impacts. All six Build Alternatives would result in permanent unavoidable impacts to protected species foraging areas.

A finding of "no effect" was assigned for the golden leather fern, Florida golden aster, aboriginal prickly pear, Sanibel love grass, and gopher tortoise. A finding of "may affect, not likely to adversely affect" was assigned for the roseate spoonbill, little blue heron, tri-colored heron, reddish egret, piping plover, American oystercatcher, red knot, bald eagle, wood stork, Gulf sturgeon, smalltooth sawfish, West Indian manatee, eastern indigo snake, Atlantic loggerhead turtle, green turtle, the leatherback turtle, the hawksbill turtle, and Kemp's Ridley turtle.

Based upon previous assessments, ongoing coordination with regulatory agencies, and the measures provided by the FDOT, it has been determined that the proposed project "may affect, not likely to adversely affect" or jeopardize the existence of any threatened or endangered species, even though they are known or expected to occur in the study area. The project will not affect United State Fish and Wildlife Service (USFWS)-designated Critical Habitat for any species as none occurs within or adjacent to the project area.

## **Wetlands**

Upland and wetland habitats in the study area were identified through field reviews and classified using the FDOT's Florida Land Use, Cover and Forms Classification System (FLUCFCS). Portions of three wetlands, three other surface waters (OSW), four seagrass beds, two areas of live-bottom, oyster clumps, and non-vegetated bottom were identified within the study area.

Wetland habitat identified within the study area includes mangrove swamp and salt tern habitat. Other surface waters consist of three drainage ditches. Seagrass habitat identified includes mixed

beds of shoal grass, manatee grass, and turtle grass. A variety of epifauna were observed in the live bottom communities, including corals, soft corals, fleshy macroalgae, and sponges. Oyster clumps included small aggregations of American oyster. Non-vegetated bottom comprised the remaining area of open water under the bridge alignments.

The No-Build Alternative and Rehabilitation Alternative would not directly impact wetlands, seagrass areas, surface waters, or essential fish habitat (EFH). The two Build Alternatives (35-ft Bascule Bridge North Alignment and the 65-ft Fixed Bridge North Alignment) indicate no impacts to mangrove wetlands associated with both the eastern and western shorelines of Anna Maria Sound, as well as adjacent to the eastern terminus of the project corridor. There is no OSW impact anticipated with the 35-ft Bascule Bridge North Alignment alternative. There are 0.02 ac. of impacts to OSWs anticipated for the 65-ft Fixed Bridge North Alignment alternative. Both Build Alternatives would impact 0.01 acre of seagrass. Each of the six bridge replacement alternatives are discussed in detail in the Section 2 of this document.

Potential direct wetland and seagrass impact areas were scored under the Uniform Mitigation Assessment Method (UMAM) (Chapter 62-345 Florida Administrative Code) to determine the functional loss that each alternative would incur. The wetlands within the study area have been impacted by the surrounding landscape and adjacent land uses including proximity to SR 684. The wetland areas also have experienced habitat fragmentation due to surrounding development. The mangrove wetlands received a score of 0.4 (Wetland 2) and 0.3 (Wetland 3) functional units per acre, indicating that these wetlands provide about 30-40% of the ecological functions compared to a natural undisturbed mangrove system. The seagrass beds were estimated at a UMAM value of 0.87, or approximately 87% of the functional value of undisturbed natural seagrass beds. No UMAM evaluation was conducted for the OSWs, as the impacts are not likely to require mitigation. Live bottom impacts were not evaluated through UMAM, as these impacts are typically avoided or offset through in-kind measures rather than assessed through UMAM.

In addition to providing an assessment of their current conditions, UMAM also requires an assessment of the wetland and seagrass habitat under their future, post-construction, conditions. For the purposes of this report, it is assumed that all impacts to wetlands will result in the loss of 100% of functional value within the footprint of the study area. For seagrasses, the impact will be a partial decline in abundance due to shading, which is estimated to result in a “with-shading” value of 0.5, for a loss of 0.37 functional value per acre. The loss per acre is then multiplied by the acres of impact to determine the total UMAM functional units of loss.

The PD&E Study originally included other alternatives; however, the 35-ft vertical navigational clearance (Mid-Level) and the 65-ft (High-Level) fixed bridge alternatives, both on the northern alignment), are the only two Build Alternatives being recommended for future analysis. These two Build Alternatives will result in UMAM functional loss of 0.004 units of seagrass function and no direct loss of mangrove function.

Unavoidable impacts to wetlands, other surface waters, seagrass and EFH will require mitigation.

### **Essential Fish Habitat**

Within the proposed corridor area, six habitats qualify as EFH based on National Oceanic and Atmospheric Administration (NOAA) *Essential Fish Habitat: A Marine Fish Habitat Conservation Mandate for Federal Agencies, Gulf of Mexico Region* (revised 2010). The EFH identified within the project area includes estuarine emergent wetlands, mangrove wetlands, estuarine water column, submerged aquatic vegetation (seagrass), mud/sand/shell/rock substrates (non-vegetated bottom), and live bottom. The six types of EFH that were identified within the project area provide foraging areas and shelter for a variety of species.

If the No Build Alternative is selected, there will be no impacts to EFH. Construction of the Build Alternatives (new bridge) will likely result in permanent direct impacts to the EFH habitats from installation of the bridge structure and piers/pilings. Permanent direct impacts to managed species will occur in the form of habitat loss associated with the proposed bridge replacement.

Permanent indirect impacts to estuarine water column EFH resulting from construction of one of the Build Alternatives would include additional structure within the water column. Permanent indirect impacts to seagrass and live bottom EFH could result from shading impacts from the proposed bridge. It should be noted that, if a new bridge is constructed, removal of the existing bridge structure would also eliminate the existing shading properties of that structure. Temporary indirect impacts to EFH resulting from construction of the Build Alternatives would include increased turbidity within the estuarine water column resulting from construction activities.

# Section 1.0

## Introduction

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The FDOT is conducting a PD&E Study for roadway and bridge improvement alternatives along SR 684 (Cortez Road) from SR 789 (Gulf Drive) to 123rd Street West in Manatee County, Florida. The Project Location Map (**Figure 1-1**) illustrates the location and limits of the Study.

### 1.1 Project Description

The PD&E Study limits encompass the portion of SR 684 (Cortez Road) from SR 789 (Gulf Drive) at milepost (MP) 0.000 within the City of Bradenton Beach on Anna Maria Island to 123<sup>rd</sup> Street West at MP 0.912 within Cortez Village, a distance of approximately 0.9 miles (mi). The project is located within Sections 03 and 04, Township 34 South, Range 16 East, within the Bradenton Beach United States Geological Survey (USGS) 7.5-minute (1:24,000) quad map, and the USGS “Sarasota” 15-minute by 30-minute (1:100,000) quad map. The existing Cortez Bridge was constructed in 1956 to replace the original 1921 wooden bridge connecting Anna Maria Island with the mainland in Manatee County. The Cortez Bridge is a 2,617-ft seven-inch-long undivided two-lane low-level bascule (drawbridge) structure (Bridge Number 130006) that spans the Gulf Intracoastal Waterway (GICW), a marked federal navigational channel which generally runs north/south through Sarasota Bay and Anna Maria Sound between the mainland and the barrier islands. The existing fixed spans are 37-ft 5-inches wide, while the drawbridge span is 36-ft 4-inches wide. SR 684 (Cortez Road) is not part of the National Highway System or the Florida Strategic Intermodal System (SIS); however, the Intracoastal Waterway within the PD&E Study area is on the SIS. In addition, both SR 684 (Cortez Road) and SR 789 (Gulf Drive) are designated evacuation routes by the Florida State Emergency Response Team (SERT). SR 789 (Gulf Drive) from the Longboat Key Bridge to 5<sup>th</sup> Avenue in Holmes Beach is also designated as the Bradenton Beach Scenic Highway.

SR 684 (Cortez Road) is an east-west urban principal arterial that provides one of three vehicular access routes to Anna Maria Island. SR 789 (Gulf Drive) is classified as an urban collector. SR 684 (Cortez Road) is constrained to two lanes from SR 789 (Gulf Drive) to east of Cortez Bridge by the Manatee County Comprehensive Plan and the Sarasota/Manatee Metropolitan Planning Organization (MPO) Year 2040 Long Range Transportation Plan (LRTP).

Land use along SR 684 (Cortez Road) west of the bridge is generally commercial (marina) and residential, with the Bradenton Beach Police Station located adjacent to SR 684 (Cortez Road). There are no access points between SR 789 (Gulf Drive) and the bridge. Access to these adjacent properties is provided by local streets. Land use along SR 684 (Cortez Road) east of the bridge use is commercial and residential, with side street and driveway connection points. The Access Classification is Access Class 7, which is typically found in urbanized areas where existing land

Figure 1-1: Project Location Map



**SR 684 (Cortez Bridge and Approaches) PD&E Study**  
From SR 789 (Gulf Drive) to 123rd Street West  
Manatee County, Florida  
FPID: 430204-1-22-01

**PROJECT LOCATION MAP**

use and roadway sections are built out to the maximum feasible intensity and where significant land use changes or roadway widening will be limited.

Cortez Village is located just east of the bridge. The Cortez Historic District, which encompasses the historic portion of the community located south of SR 684 (Cortez Road), is listed on the National Register of Historic Places (NRHP).

Bridge improvement alternatives to be evaluated in this PD&E Study include a No-Build (Repair) Alternative, a Rehabilitation Alternative, and Replacement Alternatives. The No-Build (Repair) Alternative involves the continued routine maintenance and minor repairs of the bridge to keep it operating in a safe condition for a comparatively short period of time relative to other alternatives (i.e. an additional ten years after the recent ten-year repair, or until 2034). Repairs could consist of fixing spalled or cracked concrete, replacement of bearing pads, electrical and mechanical repairs, and other repairs to lighting, curbs, navigation fenders, bridge tender house, structural pile jackets, pavement striping, etc. These short-term repairs will not bring the bridge up to current design standards or avoid the need to post weight limit restrictions or other constraints (speed) on the bridge.

The Rehabilitation Alternative includes substantial repairs that are expected to extend the service life for a significant period of time (i.e. 25 years after the recent ten-year repair, or until 2049). This includes all of the minor repairs listed above, plus bringing the bridge up to current standards as much as possible, to avoid posting weight limits on the bridge, by replacing all the beams and the entire deck. Examples could include replacement of mechanical and electrical systems, crutch bents, pile jackets, widening to accommodate wider lanes or shoulders and bike lanes, and replacement of the traffic railings with modern traffic barriers. Rehabilitation is expected to extend the service life by 25 years.

Initially, bridge replacement alternatives included two-lane low-level and mid-level draw (bascule) bridge and a high-level fixed bridge constructed along the same corridor. The bridge replacement alternatives have a 75-year service life.

After the initial two-lane bridge replacement alternatives were evaluated and presented at an Alternatives Public Workshop, Manatee County requested a dedicated transit lane be evaluated exclusively for buses. In addition, a reversible general use lane alternative was evaluated. However, since the analysis of transit and reversible lanes revealed minimal benefit with high cost, the transit and reversible lane alternatives were dropped from further consideration. Subsequently, an updated typical section was evaluated, as described later in this report.

## **1.2 Purpose**

The purpose of the PD&E Study is to provide documented environmental and engineering analyses to assist the FDOT Office of Environmental Management (OEM), the lead agency, in reaching a decision on the type, location and conceptual design of the necessary improvements, in order to

address the structural and functional deficiencies of the existing bridge while accommodating future traffic demand in a safe and efficient manner. The PD&E Study also satisfies the requirements of the National Environmental Policy Act (NEPA) and other related state and federal environmental laws and regulations, and qualifies the project for federal-aid funding of future development phases of the project.

### **1.3 Purpose of Report**

This Draft NRE is one of several documents that were prepared as part of the PD&E Study. This report documents the proposed project's wetlands and protected species involvement. Pursuant to Presidential Executive Order 11990 entitled Protection of Wetlands, (May 24, 1977) the US Department of Transportation (USDOT) has developed a policy, Preservation of the Nation's Wetlands (USDOT Order 5660.1A), dated August 24, 1978, which requires all federally-funded highway projects to protect wetlands to the fullest extent possible. In accordance with this policy, as well as *Part 2, Chapter 9 – Wetlands and Other Surface Waters* of the FDOT PD&E Manual, the project alternatives and No-Build alternative were assessed to determine potential impacts to wetland and other surface waters associated with the construction of each alternative.

This report also documents existing wildlife resources and habitat types found within the project area for potential occurrences of federal- and state-listed protected plant and animal species and their suitable habitat in accordance with *Part 2, Chapter 16 – Protected Species and Habitat* of the FDOT PD&E Manual and the Endangered Species Act of 1973, as amended (ESA). Potential impacts to protected species and habitats that may support these species are also addressed in this report.

An EFH Assessment is also included as part of this report in accordance with *Part 2, Chapter 17 – Essential Fish Habitat* of the FDOT PD&E Manual and the requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) as amended through October 11, 1996 and reauthorized in 2007, to assess waters and substrate necessary to fish for spawning, breeding, feeding, and development to maturity.

# Section 2.0

## Alternatives Considered

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SR 684 (Cortez Road) is one of three bridge facilities that provide vehicular access to and from Anna Maria Island. The development of a new corridor would result in significant social and environmental impacts and would not address the problem of the deteriorating SR 684 Bridge, which is a designated hurricane evacuation route. Therefore, developing a new corridor or improving a parallel roadway is not an option for this project. Rehabilitation or replacement of the current bridge within the existing corridor provides for the most feasible solution.

### 2.1 No-Build (Repair) Alternative

The No-Build (Repair) Alternative consists of continuing the normal maintenance and minor repairs of the existing bridge in its current configuration while keeping the bridge operating in a safe condition and maintaining the existing typical sections. Repairs include installing cathodic protection pile jackets, repairing the concrete (sealing cracks, patching spalls, etc.) in the piles, pile caps, deck, beams, and traffic railing, repairing the fender system, repairing the bascule span operational machinery, upgrading the bascule span electrical systems, and repairing the bascule span steel in order to extend the service life 10 years. The No-Build Alternative also includes the full replacement of the superstructure on six of the fixed spans, including the beams, deck, and traffic railing, and the installation of 10 crutch bents.

The No-Build (Repair) Alternative requires closure of the bridge for approximately nine weeks to make the repairs. At the end of the 10-year period, an extensive rehabilitation or replacement of the bridge would be required. The No-Build Alternative does not require stormwater management facilities (SMFs) since it does not alter the existing roadway or add additional capacity. Therefore, no treatment of the runoff will occur. The existing bridge will remain in its current configuration and no additional travel lanes are proposed. The brush curbs will remain in place. Curbs of this type are known to launch errant vehicles, causing them to go over or through the bridge rail. The bridge rails are not designed for an airborne vehicle. In addition, the No-Build alternative may not prevent the need to place weight restrictions on the bridge, meaning that heavy trucks could be restricted.

The estimated total capital cost of the No-Build (Repair) Alternative, including the fixed and movable repairs, is \$8,162,792. Annual maintenance costs are estimated at \$50,000 to include normal minor repairs.

The No-Build (Repair) Alternative will remain under consideration throughout the alternatives analysis and evaluation process.

## 2.2 Transportation Systems Management Alternative

The Transportation System Management (TSM) Alternative consists of low cost capital improvements that maximize the efficiency of the existing system. TSM improvements include, but are not limited to, improved traffic signals and intersection geometries, sidewalks, bicycle facilities, signal timing, transit improvements and improved access features. While these improvements may provide additional capacity and access control, the purpose of this project is to address the structural condition of the existing bridge. Therefore, the TSM Alternative does not meet the purpose and need of the project. However, the TSM Alternative could be implemented on an interim basis for some segments of the facility until the Preferred Alternative, either the Rehabilitation Alternative or a bridge replacement alternative, could be fully constructed.

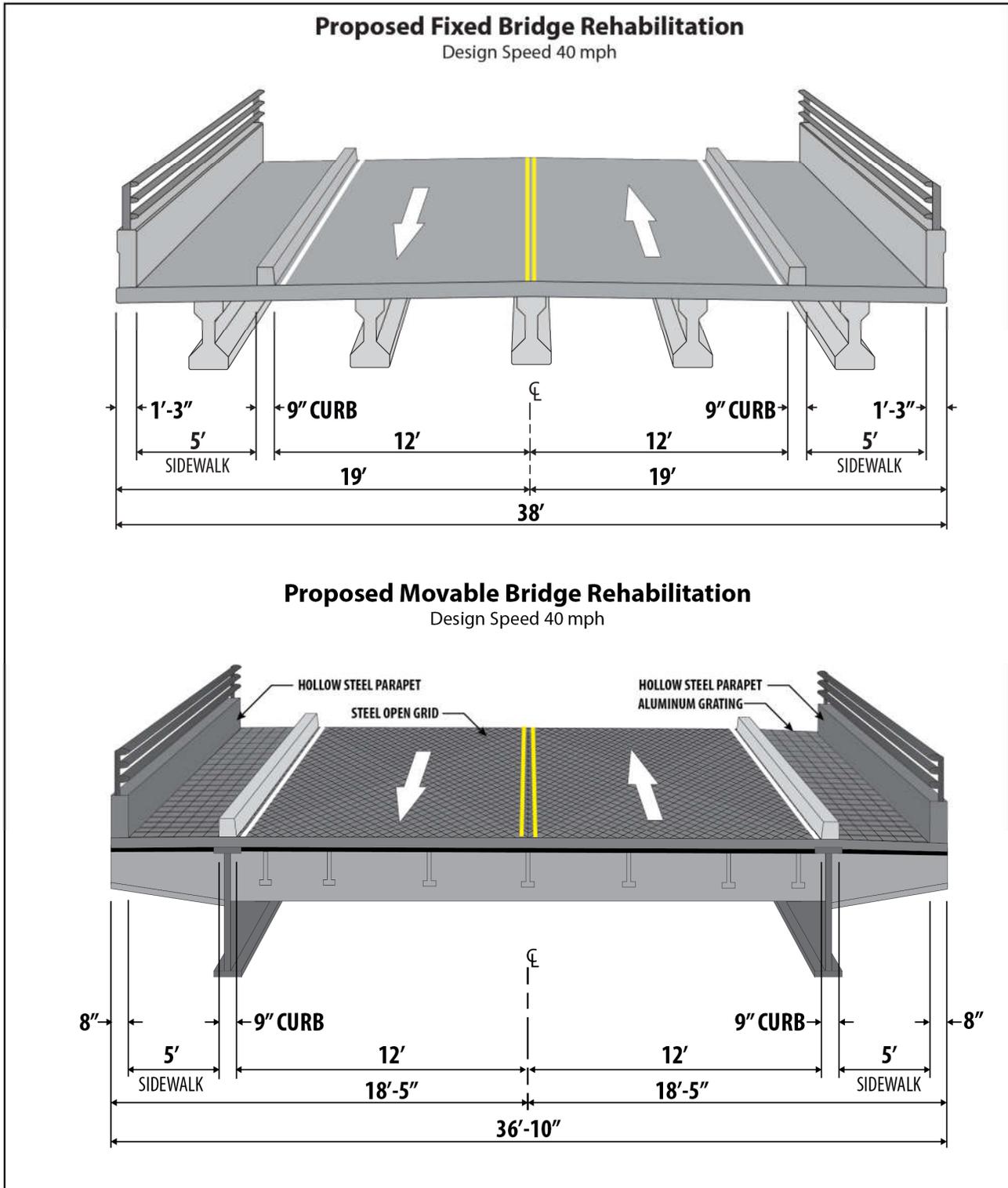
## 2.3 Multi-Modal Alternatives

While the multi-modal and transit alternatives also have the potential to improve traffic operations along the corridor, these alternatives fail to fulfill the need to address the structural condition of the existing bridge. Planned projects to add transit systems and sidewalks and shoulders for bicycles will not eliminate the need for improvements to the bridge. While multi-modal features are integral parts of the Build Alternative in the form of roadway lanes, sidewalks, shoulders, and bike lanes, the multi-modal alternative fails to fulfill the purpose and need for the project. Therefore, multi-modal/transit alternatives were not considered as stand-alone solutions for the existing bridge deficiencies.

## 2.4 Rehabilitation Alternative

The Rehabilitation Alternative provides the necessary rehabilitation and repair of the existing bridge to keep it operating in a safe condition and extends the service life by an additional 25 years. The bridge's existing design speed of 40 miles per hour (mph) and posted speed of 35 mph will remain unchanged by this alternative. This alternative includes repairing the concrete, replacing all the concrete beams and the entire deck, installing cathodic protection pile jackets, installing 10 crutch bents, replacing the fender system, replacing the electrical and mechanical systems, repairing and painting the bascule span steel, and other repairs to extend the service life by 25 years and avoid the need to post the bridge for weight restrictions. In addition, the existing 9 inch (in) high brush curbs and non-crash tested bridge railings will be replaced. A 32-in vertical shape traffic barrier with an aluminum bicycle bullet railing will be constructed at the back of sidewalk as shown in **Figure 2-1**. In order to replace the superstructure, a temporary bridge will be constructed, avoiding the need for extended bridge closure and detours. Replacement of the bridge would be required at the end of the 25-year period.

**Figure 2-1: Proposed Rehabilitation Typical Sections**



## 2.5 Bridge Replacement Alternatives

The USCG establishes minimum navigational guide clearances for the GICW at this location. They are a 21-ft vertical clearance for a new drawbridge and a 65-ft vertical clearance for a new fixed bridge. The horizontal guide clearance for all bridge replacements is 90 ft perpendicular between fenders. However, FDOT is considering a 100-ft wide channel, which is a 10-ft increase over the existing condition.

Three general bridge replacement alternatives were evaluated for this PD&E Study:

- **Low-Level Bascule:** This concept includes building a new bascule (draw) bridge with a minimum vertical navigational clearance of 21 ft above mean high water (MHW) at the fenders when the bascule leaves are lowered. This meets the established vertical guide clearance set by the USCG.
- **Mid-Level Bascule:** This concept includes a replacement bascule bridge with a navigation clearance of 45 ft above MHW at the fenders. Based on data provided by the bridge tender at the Cortez Bridge and allowing for tidal fluctuations, this height would allow over 50 percent of the waterway users that currently require the bridge to open to pass without an opening.
- **High-Level Fixed-Span:** This concept includes a high-level fixed-span replacement bridge over the existing GICW navigation channel. The vertical navigational clearance will be 65 ft above MHW. Based on data provided by the bridge tender and allowing for tidal fluctuations, this height would allow approximately 98 percent of boats that currently require the existing bridge to open to safely navigate under the proposed structure.

### 2.5.1 Initial Proposed Bridge Typical Sections

Since this project is not intended to increase capacity, only two-lane typical sections were considered. The proposed two-lane undivided bridge typical section includes two 12-ft travel lanes and two 10-ft shoulders which can accommodate bicyclists and disabled vehicles. In addition, one 8-ft sidewalk would be included on each side of the bridge, separated from the shoulder by a concrete barrier wall. A 4.5-ft high pedestrian/bicycle railing will be provided on the outside of the 8-ft sidewalks. The initial proposed bridge typical sections are shown in **Figure 2-2** for the fixed and bascule (draw) bridge alternatives. The design speed for all proposed typical sections is 40 mph, maintaining the existing posted speed of 35 mph.

## 2.6 Proposed Bridge Replacement Alternatives

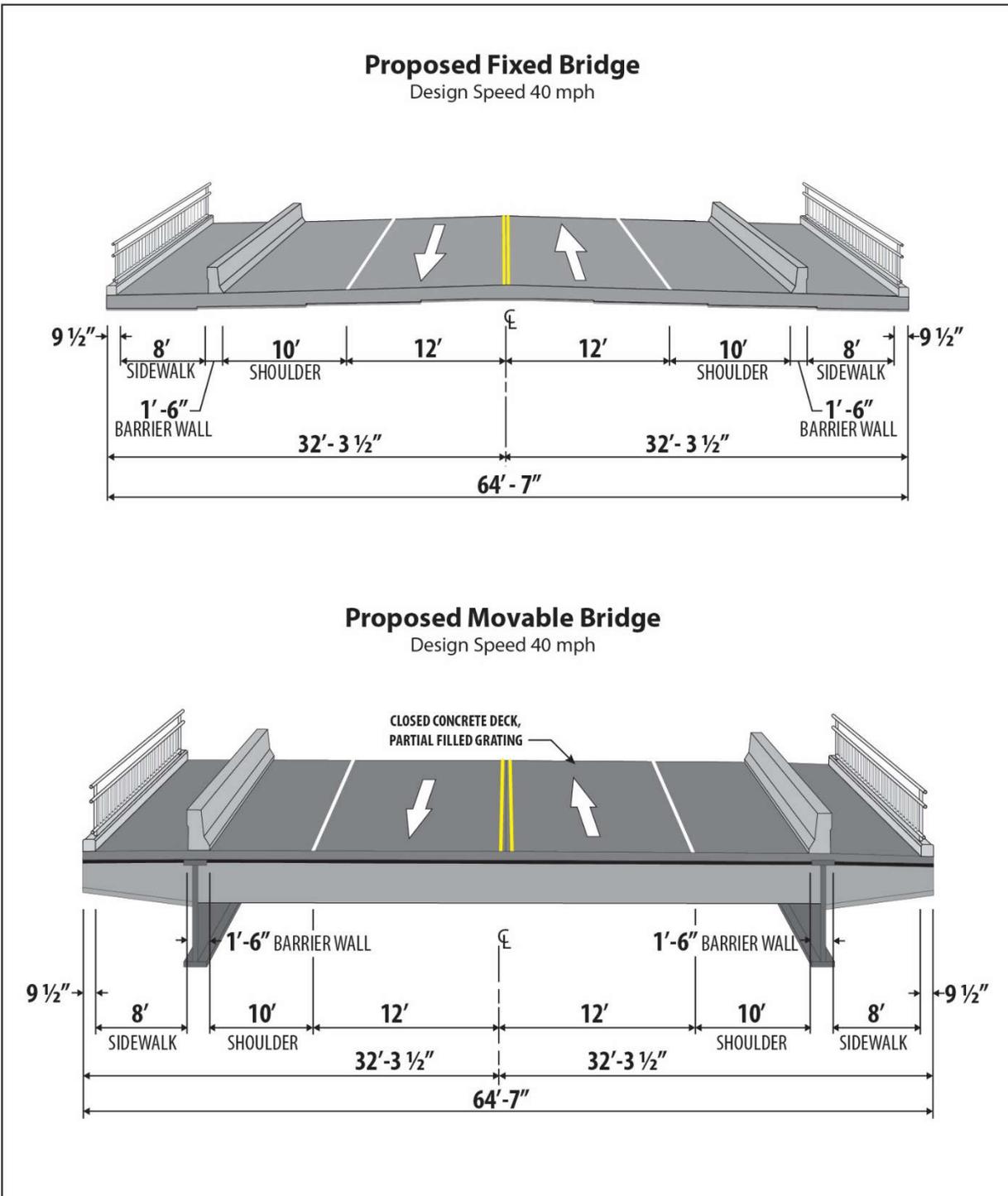
The evaluation of all bridge replacement alternatives included an evaluation of a center alignment, a north alignment, and a south alignment. A qualitative analysis was prepared for the north, center and south alignment options. Based on this analysis, the center alignment was eliminated from further consideration. The project length is not significantly different for the center, north or south alignments, however, costs, environmental impacts, maintenance of traffic (vehicular and vessel), and permitting aspects may differ.

All bridge replacement alternatives include the same proposed typical section described previously and are summarized here:

- Low-Level Bascule Bridge, North Alignment
- Low-Level Bascule Bridge, South Alignment
- Mid-Level Bascule Bridge, North Alignment
- Mid-Level Bascule Bridge, South Alignment
- High-Level Fixed Bridge, North Alignment
- High-Level Fixed Bridge, South Alignment

Environmental effects are similar for all of the bridge replacement alternatives. Considering the horizontal alignment, the south alignment will have a direct impact on the Bradenton Beach Marina submerged lands lease within the existing right-of-way (ROW). The north alignment will be closer to the Bridgeport Condominiums; however, there is no direct impact to any parcels or businesses. Therefore, because it minimizes direct impacts to adjacent properties, the north alignment was selected, and only the northern alternatives are summarized below.

**Figure 2-2: Initial Proposed Replacement Typical Sections**



**SR 684 (Cortez Bridge and Approaches) PD&E Study**  
From SR 789 (Gulf Drive) to 123rd Street West  
Manatee County, Florida  
FPID: 430204-1-22-01

Proposed Replacement Typical Sections

### **2.6.1 Low-Level Bascule Bridge, North Alignment**

The Low-level Bascule Alternative (North Alignment) would replace the existing Cortez Bridge with a new low-level bascule structure similar to the existing structure, with a 21-ft vertical navigational clearance (above MHW) when the bridge is closed. The new structure would be built 9 ft to the north of the existing structure, utilizing the proposed typical sections shown in Figure 2-2.

Both west and east of the bridge the roadway approach maintains the existing two-lane roadway configuration. The acceleration/merge lane on the west side and the center turn lane on the east side will remain. The bridge includes an 8-ft sidewalk on both sides which will transition to the existing 5-ft sidewalks along the at-grade roadway on each end.

Taking into account the MHW elevation of 1.3 ft, the proposed profile accommodates a minimum 21-ft vertical navigational clearance over the existing GICW. The fixed approaches to the bascule bridge accommodate a 6.75-ft structure depth (140-ft span length), except in the westernmost 540 ft and easternmost 360 ft of the bridge where the structure depth was reduced to 4.5 ft (90-ft span lengths). This reduced structure depth was used to decrease visual and environmental impacts by lowering the elevations of the west and east abutments which minimized the footprint of the proposed sloped abutments, while keeping the superstructure above the splash zone and wave crest elevation.

The maximum bascule span structure depth is assumed to be 10 ft. The proposed bridge will be approximately 2,670 ft in length, and will reach a maximum deck elevation of 32.7 ft in the closed position. This is a 6.5-ft increase from the existing 26.2-ft elevation at the main channel. The profile will allow for the 12-ft splash zone, wave crest, a slightly longer bascule span, and a modern, robust design. The bascule portion would consist of two bascule leaves forming a 180-ft span over a 100-ft wide navigational channel.

Statistically, based on data provided by the bridge tender at Cortez Bridge, this vertical clearance will allow approximately the same waterway users that pass under the existing bridge to pass under the replacement bridge without requiring the bridge to open.

The Low-level Bascule Alternative (North Alignment) maintains existing driveway and side road connection on the east side. As with the existing condition, the proposed bridge will not accommodate vehicular traffic under the bridge from one side of the causeway to the other. However, a sidewalk will be provided under each end of the bridge.

### **2.6.2 Mid-Level Bascule Bridge, North Alignment**

The Mid-Level Bascule Alternative (North Alignment) would replace the existing Cortez Bridge with a new mid-level bascule structure similar to the existing structure, with a 45-ft vertical navigational clearance when the bridge is closed. The new structure would be built 9 ft to the north of the existing structure, utilizing the proposed typical sections shown in Figure 2-2.

Both west and east of the bridge the roadway approach maintains the existing two-lane roadway configuration. The acceleration/merge lane on the west side and the center turn lane on the east side will remain. The bridge includes an 8-ft sidewalk on both sides which will transition to the existing sidewalks along the at-grade roadway on each end.

Taking into account the MHW elevation of 1.3 ft, the proposed profile accommodates a minimum 45-ft vertical navigational clearance over the existing GICW. The fixed approaches to the bascule bridge accommodate a 6.75-ft structure depth (140-ft span length), except in the westernmost 450 ft and easternmost 180 ft of the bridge where the structure depth was reduced to 4.5 ft (90-ft span lengths). This reduced structure depth was used to decrease visual and environmental impacts by lowering the elevations of the west and east abutments which minimized the footprint of the proposed sloped abutments, while keeping the superstructure above the splash zone and wave crest elevation. The maximum bascule span structure depth is assumed to be 10 ft. The proposed bridge will be approximately 2,705 ft in length, and will reach a maximum deck elevation of 56.6 ft in the closed position. This is a 30.5-ft increase from the existing 26.2-ft elevation at the main channel. The profile will allow for the 12-ft splash zone, wave crest, a slightly longer bascule span, and a modern, robust design. The bascule portion would consist of two bascule leaves forming a 180-ft span over a 100-ft wide navigational channel.

Based on data provided by the bridge tender at Cortez Bridge, this vertical clearance will allow over 50 percent of the waterway users that currently require the existing bridge to open to pass under the replacement bridge without requiring the bridge to open.

The Mid-Level Bascule Alternative (North Alignment) maintains existing driveway and side road connection on the east side. As with the existing condition, the proposed bridge will not accommodate vehicular traffic under the bridge from one side of the causeway to the other. However, a sidewalk will be provided under each end of the bridge.

### **2.6.3 High-Level Fixed, North Alignment**

The High-Level (65-ft) Fixed Alternative (North Alignment) proposes to replace the existing Cortez Bridge with a new high-level fixed structure providing 65 ft of vertical clearance over the GICW. The new structure would be built 9 ft to the north of the existing structure, utilizing the proposed typical section (fixed bridge portion only) shown in Figure 2-2.

Both west and east of the bridge the roadway approach maintains the existing two-lane roadway configuration. The acceleration/merge lane on the west side and the center turn lane on the east side will remain. The bridge includes an 8-ft sidewalk on both sides which will transition to the existing sidewalks along the at-grade roadway on each end.

Taking into account the MHW elevation of 1.3 ft, the proposed profile accommodates a minimum 65-ft vertical navigational clearance over the existing GICW. The fixed spans accommodate a 6.75-ft structure depth (140-ft span length), except in the westernmost 450 ft of the bridge where

the structure depth was reduced to 4.5 ft (90-ft span lengths). This reduced structure depth was used to decrease visual and environmental impacts by lowering the elevations of the west abutment which minimized the footprint of the proposed sloped abutments, while keeping the superstructure above the splash zone and wave crest elevation. The main span structure depth is assumed to be 8.5-ft, allowing a 180-ft span length. The proposed bridge will be approximately 2,965-ft in length, and will reach a maximum deck elevation of 75 ft. This is a 48.8-ft increase from the existing 26.2-ft elevation at the main channel. The profile will allow for the 12-ft splash zone, wave crest, a slightly longer bascule span, and a modern, robust design.

Based on data provided by the bridge tender at Cortez Bridge, this vertical clearance will allow approximately 98 percent of the waterway users that currently require the existing bridge to open to pass under the replacement bridge.

Since the eastern touchdown point of the high-level (65-ft) replacement bridge is east of 125<sup>th</sup> Street West, local access will be affected. The replacement bridge will pass over 127<sup>th</sup> Street West, allowing the existing local roadway to connect between the north and south sides of Cortez Road. A new roadway will be developed north of Cortez Road to connect it with 127<sup>th</sup> Street West. Central Avenue and Avenue A will no longer connect directly to Cortez Road. Access to the Restaurant, Marina, and Scuba Shack south of Cortez Road will be via 127<sup>th</sup> Street West and the new connecting roadway, as will the restaurant and marinas north of Cortez Road. Access to Cortez Road from 125<sup>th</sup> Street West and the other connections to the east will remain unchanged from the existing conditions.

## **2.7 Comparative Evaluation**

In order to evaluate the study alternatives, a qualitative and quantitative evaluation matrix shown in **Table 2-1** was prepared using criteria from a multitude of categories including socioeconomic, environmental, cultural, potential hazardous material/petroleum contamination, and costs [design, ROW, construction, and Construction Engineering and Inspection (CEI)]. The matrix data was developed utilizing raster-based aerial photography depicting the proposed concepts and ROW needs for each alternative.

## **2.8 Initial Build Alternatives**

The purpose of this project is to address the structural and functional deficiencies of the existing bridge. The No-Build (Repair) Alternative is a short-term (ten years) solution to address the deteriorating structural condition of the Cortez Bridge. It maintains the existing substandard roadway width without shoulders, and it would keep the brush curb that has been shown to be a safety hazard. It would provide no assurance that weight limits may be imposed in the future to restrict heavy vehicles. It provides no relief to vulnerability of ship impact and storm surge damages. Implementing the No-Build (Repair) Alternative would require closure of the bridge for nine weeks and a detour via Anna Maria Bridge or Ringling Bridge to maintain traffic during the

**Table 2-1: Alternatives Evaluation Matrix**

	No-Build (Repair)	Rehabilitation (1)	North Alignment			South Alignment		
			Low-Level Bascule	Mid-Level Bascule	High-Level Fixed	Low-Level Bascule	Mid-Level Bascule	High-Level Fixed
<b>Vertical Navigational Clearance above MHW at Fender when Bridge is in Closed Position:</b>	<b>17.5 ft</b>	<b>17.5 ft</b>	<b>21 ft</b>	<b>45 ft</b>	<b>65 ft</b>	<b>21 ft</b>	<b>45 ft</b>	<b>65 ft</b>
<b>Life of Alternative (years)</b>	<b>10</b>	<b>25</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>75</b>
<b>Right-of-Way Impacts</b>								
Parcels Impacted	0	0	0	0	4	0	0	3
Relocations	0	0	0	0	0	0	0	0
Additional Submerged Lands (ac)	0	0	0.21	0.21	0.21	0.23	0.23	0.23
<b>Natural, Environmental and Physical Resource Involvement</b>								
Species/Habitat (Potential Impacts)	None	None	Low	Low	Low	Low	Low	Low
Potential Contamination Sites (high/medium risk)	0/0	0/0	0/1	0/1	0/1	0/1	0/1	0/1
Wetlands (ac) (landward)	0	0	0.00	0.00	0.00	0.02	0.02	0.01
Seagrasses (ac) (submerged)	0	0	0.01	0.01	0.01	0.04	0.04	0.04
Archaeological and Historic Sites	0	0	0	0	0	0	0	0
Potential Noise Sensitive Sites	0	0	17	17	21	12	12	12
Potential Section 4(f) Sites (Paddling Trails)	2	2	2	2	2	2	2	2
Projected 2036 Average Travel Delay (EB/WB) (sec/veh)	58.2/37.0	58.2/37.0	58.2/37.0	37.8/24.0	0/0	58.2/37.0	37.8/27.0	0/0
Bridge Closure Required (days)	63	0	0	0	0	0	0	0
<b>Estimated Utility Impacts</b>								
Bright House Networks Manatee	None	None	Impacted	Impacted	Impacted	None	None	None
Florida Power and Light	None	None	Impacted	Impacted	Impacted	Minor	Minor	Minor
Verizon Florida, Inc.	None	Minor	Impacted	Impacted	Impacted	Impacted	Impacted	Impacted
Manatee Co. Transportation Dept.	None	None	Impacted	Impacted	Impacted	Impacted	Impacted	Impacted
Manatee Co. Utility Operations	None	Minor	Impacted	Impacted	Impacted	None	None	None
TECO – Peoples Gas – Sarasota	None	None	None	None	None	None	None	None
<b>Estimated Capital Costs (2014 Dollars)</b>								
Design (10% of Total Construction)	\$811,279	\$3,012,596	\$7,778,916	\$8,022,264	\$4,859,712	\$7,781,424	\$8,024,773	\$4,857,233
Roadway Right-of-Way	\$0	\$0	\$16,000	\$16,000	\$2,748,000	\$16,000	\$16,000	\$2,675,000
Wetland and Seagrass Mitigation (2)	\$0	\$0	\$107,572	\$107,572	\$107,572	\$178,261	\$178,261	\$177,001
Roadway Construction	\$0	\$330,830	\$1,695,886	\$1,695,886	\$2,653,975	\$1,720,973	\$1,720,973	\$2,629,187
Bridge Construction	\$8,112,792	\$29,795,130	\$76,093,270	\$78,526,755	\$45,943,146	\$76,093,270	\$78,526,755	\$45,943,146
CEI (10% of Total Construction)	\$811,279	\$3,012,596	\$7,778,916	\$8,022,264	\$4,859,712	\$7,781,424	\$8,024,773	\$4,857,233
<b>Total Cost</b>	<b>\$9,735,350</b>	<b>\$36,151,152</b>	<b>\$93,470,559</b>	<b>\$96,390,741</b>	<b>\$61,172,117</b>	<b>\$93,571,352</b>	<b>\$96,491,534</b>	<b>\$61,138,800</b>

(1) Includes Temporary Bridge (\$14,620,800). Does not include maintenance and operating costs

(2) Wetland and seagrass mitigation includes additional mitigation for Essential Fish Habitat, and assumes seagrass mitigation construction for this project and Anna Maria Island Bridge

construction period. In the past, bridge closure has resulted in controversy as traffic congestion increases, potentially affecting emergency response times, and the business community suffers. Although the No-Build (Repair) Alternative does not meet the Purpose and Need to address the functional deficiencies and is not a long-term solution to address the structural deficiencies for the project, it will remain under consideration throughout the alternative analysis and evaluation process.

The Rehabilitation Alternative is a longer-term (25 years) solution than the No-Build (Repair) Alternative. It would strengthen the bridge such that weight limits will not be imposed during the 25-year life of this alternative to restrict heavy vehicles allowable under current regulations. Rehabilitation includes full replacement of the approach span superstructure, including all the concrete beams and the concrete deck, thereby resolving the serviceability concern with the original beam design's limitations.

However, this alternative maintains the existing substandard bridge configuration with no shoulders (see Figure 2-1) and keeps the presence of the brush curb that has been shown to be a safety hazard. The Rehabilitation Alternative provides no relief to vulnerability of ship impact since the old piles will remain. The Rehabilitation Alternative also provides no relief from storm surge damage, since the profile would not change, leaving the superstructure below the wave crest elevation. The rehabilitation is an investment in a new, yet substandard superstructure, supported by an old, functionally obsolete, and deteriorated substructure that will continue to deteriorate due to the extremely corrosive environment. Some of the repairs done in the past have been ineffective as evidenced by the fact that corrosion continues to deteriorate the steel and concrete, thus requiring new repairs. No methodology exists to precisely predict how long repairs to an old structure will last, adding uncertainty to the estimated costs and projected reliability of the facility. The temporary bridge required for maintenance of traffic is estimated to cost \$14.6 million, and will be removed after the new bridge is constructed; therefore, it does not add to the reliability of the facility after the rehabilitation project. The width of the rehabilitated deck will require a design exception since it does not meet AASHTO criteria requiring a minimum bridge width equaling the approach lanes plus eight ft.

The substandard typical section will also require design variations for substandard shoulder width, the use of brush curb, and locating the bridge railing at the back of the sidewalk, behind the brush curb. Rehabilitation does not provide any improvement in levels of service or reductions in traffic delays. Overall public opinion has not demonstrated overwhelming support for the Rehabilitation Alternative. Finally, the Rehabilitation Alternative does not meet the purpose and need to address the functional deficiencies since it maintains the existing substandard bridge width. **For these reasons, and considering the other advantages and disadvantages, the Rehabilitation Alternative has been eliminated from further consideration.**

In terms of financial investment, the four best investment alternatives, listed in order of estimated life-cycle cost, lowest to highest, are:

1. Immediate replacement with a high-level (65-ft) fixed bridge
2. No-Build (Repair) followed by replacement with a high-level (65-ft) fixed bridge
3. Immediate replacement with a low-level drawbridge
4. Immediate replacement with mid-level drawbridge

In terms of bridge height, there has been a common voice from the Cortez Village community representatives that a high-level (65-ft) fixed bridge would destroy the character of the village and the local preference is for a low-level drawbridge. In addition, since the Anna Maria Bridge is planned for replacement with a fixed span, another fixed-span bridge at Cortez would create an area where boats taller than 65 ft could not traverse. A drawbridge at Cortez would allow tall boats, currently moored south of SR 64 (Manatee Avenue/Anna Maria Bridge) and north of SR 684 (Cortez Road), to travel the Intracoastal Waterway to the south and west to the Gulf of Mexico via Longboat Pass or New Pass.

Public outreach for this PD&E study and a prior PD&E Study revealed vocal opposition to a high-level (65-ft) fixed bridge from the Cortez Village community leaders and some elected officials. A drawbridge similar to the existing bridge is perceived as a more fitting alternative for the historic Cortez fishing village. Although the cost of the high-level (65-ft) fixed bridge is the lowest of all the alternatives, both initially (\$30 million less expensive) and over the 75-year life of the bridge, the potential visual impacts are viewed by some as unacceptable. The access changes at the east touchdown point of the high-level (65-ft) fixed alternative would require ROW acquisition and other access changes that are not required with the drawbridge alternatives. The connection from Central Avenue will no longer be possible with a high-level (65-ft) fixed bridge, and 127th Street will need to be relocated to the north. Access to the Tide Tables restaurant will be via 127th Street West under the high-level (65-ft) fixed bridge. In addition, as stated previously, since the SR 64 (Manatee Avenue/Anna Maria Bridge) bridge is already identified for replacement with a high-level fixed bridge with 65 ft of vertical navigational clearance, another fixed bridge at SR 684 (Cortez Road) would create an area along the GICW within Anna Maria Sound where sailboats with masts in excess of 65 ft cannot traverse. Of the bridge replacement alternatives, the high-level (65-ft) fixed bridge has garnered the most support overall throughout the study, most likely due to the reduced delay and lowest cost. **Therefore, for the above-mentioned reasons, the high-level (65-ft) fixed bridge will be carried forward for further evaluation.**

A common theme from those who live on Anna Maria Island or use the bridge to commute is that some relief from travel delay is needed. While the low-level drawbridge does not provide any significant reduction in delay, the mid-level drawbridge has a 45 ft vertical navigation clearance that is expected to reduce openings by 50% compared to the existing condition.

However, for the mid-level drawbridge the profile grade (5.5%) on the east side of the channel exceeds five percent in order to touch down at 127th Street West. This does not meet Americans

with Disabilities Act (ADA) design criteria, unless flat landings are provided intermittently along the sidewalk. Providing landings within the sidewalk creates discontinuities in the walking surface, complicates construction and increases costs. A flatter grade at five percent or less would simplify construction, be more accessible and “comfortable” for pedestrians and bicyclists, and it would not increase cost.

A new 35-ft bascule alternative was developed as a compromise to address the above noted concerns with the mid-level drawbridge and still address travel delays, a drawbridge with 4.5% maximum grades will result in approximately 35 ft of vertical clearance under the bridge. By doubling the existing vertical clearance, it will allow more than one third of the boats, that currently require the bridge to open, to pass underneath; meaning that openings are expected to be reduced by up to one third. Travel delays would be reduced, yet the bridge height would be lower than the 45 ft drawbridge alternative. The 4.5% percent grade would comply with ADA without requiring sidewalk plateaus (flat landings), and be easily accessible to fishermen, pedestrians and bicyclists. For comparison, this is less than the five percent grade on the Ringling Bridge. The touchdown points on both sides of the bridge are the same as the low- and mid-level alternatives, thereby maintaining the intersection with 127th Street West. Taking into account the MHW elevation of 1.3 ft and an estimated bascule span structure depth of 10 ft., the proposed profile accommodates a minimum 35-ft vertical navigational clearance over the GICW. The fixed approaches to the bascule bridge accommodate a 6-ft structure depth (140 ft span length). The proposed bridge will be approximately 2,693 ft in length and will reach a maximum deck elevation of 46.4 ft at the center of the navigation channel. This is a 20.2-ft increase from the existing 26.2 ft deck elevation.

This compromise profile will allow for the low member of the superstructure to clear the 12-ft splash zone and the wave crest elevation. It will provide for a bascule span slightly longer than the existing, and a modern, robust bridge design. The drawbridge portion would consist of two bascule leaves (i.e. a double-leaf bascule) forming a 170-ft span over a 100-ft wide navigational channel. In summary, the compromise drawbridge alternative incorporates the best features of the low- and mid-level drawbridge alternatives. It provides a profile that touches down at the same locations as the other drawbridge alternatives, maintains sidewalk grades of less than five percent, and yet raises the vertical clearance at the channel to reduce the number of bridge openings by up to a third compared to existing conditions.

**Since the 21-ft bascule alternative provides no benefits to traffic from reduced openings, or to vessels from an increased navigational clearance, it was dropped from consideration.**

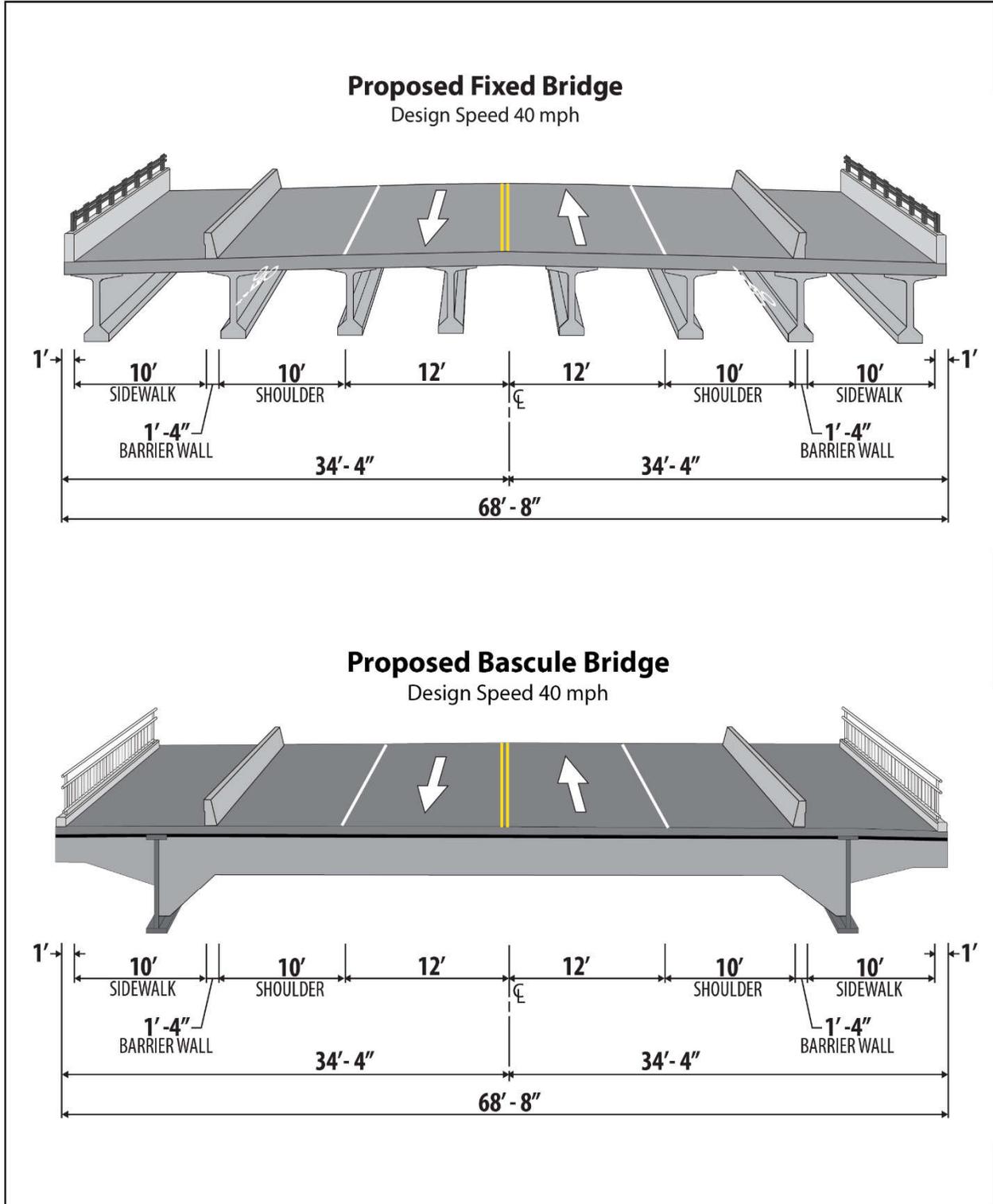
**Therefore, the two Build Alternatives are the replacement of the existing low-level drawbridge with a new drawbridge providing approximately 35 ft of vertical navigational clearance and the 65-ft fixed bridge alternative, both on the northern alignment. These two alternatives, along with the No-Build (Repair) Alternative, will be carried forward for further consideration at a Public Hearing.**

## 2.9 Refined Two-Lane Bridge Typical Section

Upon completion of the bus lane evaluation, the study team presented a status update to the Manatee County Board of County Commissioners (BOCC) at their June 7, 2016 meeting. The presentation included the conclusion that the benefits of the bus lanes did not justify the additional cost. Part of the discussion included the desire for ample amenities to accommodate bicycle and pedestrians for both transportation and recreation. A concern was whether the 8-ft sidewalks are wide enough, given the high pedestrian and bicycle usage on the SR 789 (Ringling Causeway Bridge). Furthermore, both the existing Ringling Bridge and the proposed SR 64 (Anna Maria Island Bridge) have two 10-ft sidewalks. A new typical section was evaluated which included two 10 ft sidewalks and two 7-ft buffered bike lanes in addition to the 10-ft shoulders and 12-ft lanes. This typical section was evaluated and displayed for public review at a Public Workshop in August 2016. However, the width was determined to be excessive since it exceeds normal design standards and has not been constructed before in Florida. This concept was dropped from further consideration.

Therefore, a new bridge typical section was developed as shown in **Figure 2-3**. This is similar to the original two-lane typical section, except the sidewalk widths were increased from 8 ft to 10 ft., for an overall bridge width of 68-ft 8-inches. The 10-ft sidewalks are consistent with the Ringling Bridge and proposed SR 64 Anna Maria Bridge and offers generous opportunities for bicycle and pedestrian use. The 10-ft width also satisfies a request from Manatee County (email October 10, 2015) for 10-ft sidewalks. This typical section will apply to the 35-ft bascule and 65-ft fixed bridge alternatives. The Evaluation Matrix for the refined two-lane bridges with 10-ft shoulders and 10-ft sidewalks is found in **Table 2-2**. **The alternatives evaluated in Table 2-2 will be carried forward as the Build Alternatives for consideration at a Public Hearing.**

**Figure 2-3: Proposed Build Alternative Typical Section**



**SR 684 (Cortez Bridge and Approaches) PD&E Study**  
From SR 789 (Gulf Drive) to 123rd Street West  
Manatee County, Florida  
FPID: 430204-1-22-01

Proposed Typical Sections

**Table 2-2: Proposed Build Alternatives Evaluation Matrix**

EVALUATION FACTORS Updated Two-Lane Alternatives	No-Build (Repair) (Note 1)	Northern Alignment	
		35-ft Bascule	65-ft Fixed
Vertical/Horizontal Navigational Clearance above MHW at Fender when Bridge is in Closed Position	17.5' / 90'	35' / 100'	65' / 100'
Maximum Deck Elevation (difference)	26'-2"	46'-5" (20'-3")	75'-0" (48'-10")
Life of Alternative (years)	10	75	75
Bridge Closure and Detour During Construction	9 weeks	N/A	N/A
<b>Right-of-Way Impacts</b>			
Parcels Impacted	0	0	4
Relocations (B/R = Business/Residential)	0	0/0	0/0
Right-of-way Acquisition (ac)	0	0.0	1.18
Additional Submerged Lands (ac)	0	0.96	0.96
<b>Natural, Environmental and Physical Resource Involvement</b>			
Species/Habitat (Potential Impacts)	None	Low	Low
Potential Contamination Sites (high/medium) (Note 3)	0/0	0/5	0/5
Wetlands (ac) (landward)	0	0.00	0.00
Seagrasses (ac) (submerged)	0	0.01	0.01
Live Bottom (ac) (submerged)	0	0.89	0.89
Archaeological and Historic Sites	0	0	0
Potential Noise Sensitive Sites	0	17	21
Potential Section 4(f) Sites (Paddling trails)	2	2	2
<b>Estimated Utility Impacts (North Alignment)</b>			
Bright House Networks Manatee	None	Impacted	Impacted
Florida Power & Light	None	Impacted	Impacted
Verizon Florida Inc.	None	Impacted	Impacted
Manatee Co. Transportation Dept.	None	Impacted	Impacted
Manatee Co. Utility Operations	None	Impacted	Impacted
TECO-Peoples Gas-Sarasota	None	None	None
<b>Estimated Capital Costs (2016 Dollars)</b>			
Design (10% of Total Construction)	\$892,825	\$7,890,584	\$5,675,217
Roadway Right-of-Way	\$0	\$16,000	\$2,748,000
Wetland & Seagrass Mitigation (Note 2)	\$0	\$933	\$933
Roadway Construction	\$289,211	\$1,483,783	\$2,921,063
Bridge Construction	\$8,639,037	\$77,422,055	\$53,831,104
CEI (10% of Total Construction)	\$892,825	\$7,890,584	\$5,675,217
<b>Total Cost (not including SMF Right-of-Way)</b>	<b>\$10,713,898</b>	<b>\$94,703,939</b>	<b>\$70,851,533</b>
Stormwater Management Facility Right-of-Way	\$0	Varies \$256,000 - \$8,585,000	Varies \$256,000 - \$8,854,000

**Notes:**

(1): Repairs include replacement of all concrete beams, deck and traffic railing on six spans; installing cathodic protection pile jackets, repairing the concrete (sealing cracks, patching spalls, etc.) in the piles, pile caps, deck, beams, and traffic railing; repairing the fender system; repairing the bascule span operational machinery; upgrading the bascule span electrical systems; paint; and repairing the bascule span aluminum and steel in order to extend the service life 10 years. Costs do not include annual maintenance and operating costs.

(2) Wetland and seagrass mitigation calculated at \$115,131/acre per Sect. 373.4173 (3)(e) F.S.

(3) Not including SMF sites

# Section 3.0

## Existing Conditions

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### 3.1 Existing Land Use

Upland and wetland habitats in the study area were identified through field reviews and classified using the FDOT’s Florida Land Use, Cover and Forms Classification System (FLUCFCS). The project corridor is located within an urbanized setting, with most urbanization concentrated at both the west and eastern ends of the project. Within the study area, identified land uses include: Residential, High Density (FLUCFCS 130), Commercial and Services (FLUCFCS 140), Recreational (FLUCFCS 180), Open Land (FLUCFCS 190), and Roads and Highways (FLUCFCS 814). **Table 3-1** presents the land uses identified within the study area.

**Table 3-1: Existing Land Uses (FLUCFCS) within 200 feet of the Project Area and Within Proposed SMF Alternatives**

FLUCFCS	FLUCFCS Description	NWI Code	NWI Description	Estimated Acreage
<b>Urban Land Use</b>				
130	Residential, High Density	N/A	N/A	1.36
140	Commercial and Services	N/A	N/A	0.18
180	Recreational	N/A	N/A	0.09
190	Open Land (Urban)	N/A	N/A	0.36
814	Roads & Highways	N/A	N/A	1.59
<b>Upland Land Use</b>				
420	Upland Hardwood Forests	N/A	N/A	3.24
<b>Wetlands and Surface Waters</b>				
510	Streams and Waterways (other surface waters)	R2UBHx	Riverine, unconsolidated bottom, permanently flooded, excavated	0.55
540	Bays & Estuaries	E1OW	Estuarine, Subtidal, Open Water	23.50
612	Mangrove Swamps	E2SS3/ E2FO	Estuarine, Intertidal Scrub Shrub, Broad-Leaved Evergreen/ Estuarine, Intertidal, Forested	0.012
651	Tidal Flats	E2FL	Estuarine, Intertidal, Flats	0.0001
<b>Marine Habitat</b>				
911	Seagrass	E2AB2	Estuarine, Intertidal, Aquatic Bed, Aquatic Moss	0.91

One type of upland land use occurs within the study area, which consisted of Upland Hardwood Forests (FLUCFCS 420). Four wetland and surface water habitat types occur within the study area. Surface waters identified include Streams and Waterways (FLUCFCS 510) and Bays and Estuaries (FLUCFCS 540). Wetland habitats include Mangrove Swamps (FLUCFCS 612) and Tidal Flats (FLUCFCS 651). Seagrass beds (FLUCFCS 911) were also identified within the study area.

## **3.2 Methodology**

### **3.2.1 Wetlands and Essential Fish Habitat**

Wetland and marine habitats were evaluated within a study area bounded by SR 789 (Gulf Drive) to the west, 123<sup>rd</sup> Street West to the east, and 200 feet from the centerline of the existing bridge to the north and south. In addition to field surveys, a variety of resources were reviewed including Natural Resources Conservation Service (NRCS) soil database for Manatee County, USGS Topographic Quadrangle Maps, Southwest Florida Water Management District (SWFWMD) Land Use Maps, USFWS National Wetlands Inventory (NWI) database, and aerial photography.

General field surveys of the study area were conducted on June 24-28, 2013 by environmental scientists familiar with Florida wetland communities. The purpose of the field investigation was to locate and verify wetland areas identified during the database review, as well as to estimate boundaries of wetland areas not identified by the available literature. Pedestrian and snorkeling surveys were conducted within the study area.

### **3.2.2 Protected Species and Habitat**

Data collection consisted of literature review of existing sources for information useful in identifying the occurrence or potential occurrence of wildlife species listed as threatened, endangered or species of special concern (collectively recognized as protected species), as defined by the USFWS and/or the Florida Fish and Wildlife Conservation Commission (FFWCC). In addition, the presence of designated critical habitat and/or vegetative communities and land uses with the potential to support listed species was evaluated. The literature review included, but was not limited to, the following sources: Natural Resources Conservation Service (NRCS/formerly known as the Soil Conservation Service) Soil Survey of Manatee County, Florida (1984), U.S. Geological Survey Topographic Quadrangle Maps, FFWCC Bald Eagle and Waterbird Colony databases, Florida Natural Areas Inventory (FNAI) Manatee County Tracking List, previous studies available, and false-color infrared and true color aerial photography of the project corridor. Additional resources, such as the FNAI Biodiversity Matrix and the FNAI Field Guides to the Rare Plants and Rare Animals of Florida, were used to evaluate habitat and vegetative community requirements for those species potentially occurring within the proposed project corridor.

General field surveys of the study area were conducted on June 24-28, 2013 by environmental scientists familiar with Florida natural communities and protected species. The purpose of the field surveys was to locate and verify natural areas and potential protected species habitat identified

during the database review as well as to estimate boundaries of habitats not identified during literature reviews.

### **3.3 Wetlands and Surface Water Communities**

Four wetland and surface water habitat types occur within the study area. Surface waters identified include Streams and Waterways (FLUCFCS 510) and Bays and Estuaries (FLUCFCS 540). Wetland habitats include Mangrove Swamps (FLUCFCS 612) and Tidal Flats (FLUCFCS 651).

#### **3.3.1 Streams and Waterways (FLUCFCS 510)**

The stream and waterways designation has been given to upland-cut roadside ditches. These areas are further classified as other surface waters (OSW). Vegetation observed within ditches included black mangrove (*Avicennia germinans*), buttonwood (*Cephalanthus occidentalis*), white mangrove (*Laguncularia racemosa*), coinwort (*Centella asiatica*), bermudagrass (*Cynodon dactylon*), saltgrass (*Distichlis spicata*), glasswort (*Salicornia* sp.), Australian pine (*Casuarina equisetifolia*), and bahiagrass (*Paspalum notatum*). Three areas, OSW 1, OSW 2, and OSW 3, have been identified under the streams and waterways designation. These OSWs are located east of the Cortez Boulevard Bridge within the project ROW and are considered roadside ditches and swales. The three OSWs currently function as drainage and conveyance for the surrounding areas run-off and roadway sheet flow. These OSWs are artificially excavated linear features and are therefore not considered SWFWMD jurisdictional wetlands. However, OSW 1 and OSW 2 are United States Army Corps of Engineers (USACE) jurisdictional Waters of the U.S. due to hydrologic connection with Anna Maria Sound and Sarasota Bay which are subject to the ebb and flow of the tide and susceptible to use in interstate or foreign commerce.

#### **3.3.2 Bays and Estuaries (FLUCFCS 540)**

This designation has been given to Sarasota Bay, which connects to Anna Maria Sound. Sarasota Bay comprises approximately 23.4 acres within the study area. The Sarasota Bay Estuary system is considered an Outstanding Florida Water (OFW) as defined by the State under Chapter 62-302.700 FAC. Sarasota Bay consists of man-made open channels for boats and shallow coastal waters.

#### **3.3.3 Mangrove Swamps (FLUCFCS 612)**

Mangrove swamps are primarily located along the shoreline within the study area. These wetland areas are coastal hardwood communities established in the intertidal and subtidal zones. In addition to black mangrove, red mangrove (*Rhizophora mangle*), and white mangrove, vegetation includes seagrape (*Coccoloba uvifera*) and buttonwood. Two areas, WL 2, and WL 3, have been identified under the mangrove swamp designation. The referenced wetlands may provide foraging or nesting habitat for state and federally-protected wading bird species.

#### **3.3.4 Tidal Flat (FLUCFCS 651)**

Wetland WL1 is an isolated saltern habitat located along the south side of the Cortez Boulevard project corridor. The primary portion of this wetland is dominated by low growth herbaceous

saltern species including, sea oxeye (*Borrichia frutescens*), glasswort, and salt grass. This wetland is located adjacent to a drainage system associated with OSW 1 and is tidally influenced via hydrologic connection. Wetland 1 may provide nesting and limited foraging habitat for wading birds.

### **3.4 Marine Communities**

Three types of marine habitats were identified within the study area, seagrass beds (FLUCFCS 911), estuarine water column (FLUCFCS 540), and live bottom (FLUCFCS 540).

#### **3.4.1 Seagrass Beds (FLUCFCS 911)**

Seagrass beds are communities found in the marine environment. The beds are comprised of flowering plants that provide important habitat for marine fauna. The three seagrass species identified within the study area are shoal grass (*Halodule wrightii*), manatee grass (*Syringodium filiforme*), and turtle grass (*Thalassia testudinum*). A total of 4 seagrass beds were identified within the study area. Seagrass beds located within the project corridor may provide foraging habitat for the West Indian manatee (*Trichechus manatus*), smalltooth sawfish (*Pristis pectinata*), and marine sea turtle species.

#### **3.4.2 Estuarine Water Column (FLUCFCS 540)**

The estuarine water column is the avenue by which nutrients and migrating organisms are transported between river systems and the ocean. This environment is productive yet stressful to many organisms, due to variable temperature and salinity. Many species that spawn in marine waters enter the estuarine water column during their larval life stages, where they utilize the abundant food, suitable substrate, and shelter from predators.

The GICW runs north/south through the project area. The GICW is an estuarine connection between Anna Maria Sound to the north and Sarasota Bay to the south and contains a channel that has been dredged for navigation. In the vicinity of Cortez Bridge, the depths in Anna Maria Sound and Sarasota Bay are shallow ( $\leq 5$  ft) and the depths within the navigation channel are up to 12 ft. Anna Maria Sound and Sarasota Bay are heavily utilized for recreation.

The estuarine water column located within the project corridor may provide foraging habitat for the West Indian manatee, smalltooth sawfish, marine sea turtle species and the larval stages of numerous anadromous species.

#### **3.4.3 Live Bottom (FLUCFCS 540)**

Live bottoms are defined as “those areas that contain biological assemblages consisting of such sessile invertebrates as sea fans, sea whips, hydroids, anemones, ascidians, sponges, bryozoans, seagrasses, or corals living upon and attached to naturally occurring hard or rocky formations with rough, broken, or smooth topography favoring the accumulation of turtles and fishes” (Gulf of Mexico Fishery Management Council, 1998). A preliminary reconnaissance of the survey area

revealed the presence of live bottom habitat in the northwest and southwest quadrants of the existing bridge. The live bottom habitat in the northwest quadrant of the bridge was patchy in nature, with the biota being mostly associated with rocks and boulders separated by sandy areas. In the southwest quadrant of the bridge, immediately adjacent to the bridge, the live bottom habitat was associated with a more consistent “pavement” type of rock structure; however, further from the bridge (between the pavement rock and the seagrass beds), the live bottom was patchy in nature. No other corals or live bottom species were encountered.

### **3.5 Future Land Use**

Land use along SR 684 (Cortez Road) west of the bridge is generally commercial (marina) and residential, with the Bradenton Beach Police Station located adjacent to SR 684 (Cortez Road). There are no access points between SR 789 (Gulf Drive) and the bridge. Access to these adjacent properties is provided by local streets. Land use along SR 684 (Cortez Road) east of the bridge use is commercial and residential, with side street and driveway connection points. No changes in land use would occur if the proposed project is to be implemented within or near the project study limits.

DRAFT

# Section 4.0

## Protected Species and Habitat

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The project study limits were assessed for the presence of suitable habitat for federal- and state-listed protected species and USFWS Critical Habitat in accordance with 50 Code of Federal Regulation (CFR) Part 402, Section 7(c) of the ESA. The study area was also evaluated for the occurrence of plant and animal species protected by the Florida Endangered and Threatened Species Act (Chapter 379.2291, Florida Statutes and Chapter 68A-27, Florida Administrative Code (FAC)) and Preservation of Native Flora of Florida (Ch. 5B-40 FAC), and *Part 2, Chapter 16 – Protected Species and Habitat* of the FDOT PD&E Manual.

### 4.1 Methodology

General pedestrian, snorkeling, and scuba surveys of the study area only produced direct observations of one state-protected species and no observations of federally-protected species. A list of the species targeted during the general surveys is presented below in **Table 4-1**. The table was developed utilizing the FNAI's Biodiversity Index, which provides a statewide database on documented, likely, and potentially occurring rare species, habitat available on site, whether the species was observed, and the ETDM programming screen summary report for this project. No federally-designated Critical Habitat for protected species occurs within the study area.

### 4.2 Agency Coordination

The FDOT understands that the USFWS, National Marine Fisheries Service (NMFS) and/or FFWCC may either request or require additional information regarding specific aspects of project design and/or construction such as pile driving and/or a project blasting plan. Given the early stage of this project (i.e., within the PD&E phase) this information is not currently available and will not be available until project design is finalized and environmental permit applications are submitted to the applicable agencies [US Army Corps of Engineers (USACE), USCG and Water Management District (WMD)/Florida Department of Environmental Protection (FDEP)].

Based on coordination with the USFWS and the NMFS to comply with Section 7 of the ESA, the FDOT will reinitiate consultation and provide all information necessary to complete consultation for the aforementioned species prior to advancing the project

**Table 4-1: Potentially Occurring Listed Plant and Wildlife Species**

Species	Common Name	State Listing (FFWCC)	Federal Listing (USFWS)	Habitat	Determination of Effect
<b>Plants*</b>					
<i>Acrostichum aureum</i>	Golden leather fern	Threatened	None	Mangrove swamp	No Effect
<i>Chrysopsis floridana</i>	Florida golden aster	Endangered	Endangered	Sand pine and oak scrub	No Effect
<i>Harrisia aboriginum</i>	Aboriginal prickly apple	Endangered	Endangered	Coastal strand vegetation and tropical coastal hammocks	No effect
<i>Eragrostis pectinacea var. tracyi</i>	Sanibel love grass	Endangered	None	Beach dunes, maritime hammocks, coastal strands, coastal grasslands	No effect
<b>Birds</b>					
<i>Platalea ajaja</i>	Roseate spoonbill	Threatened	None	Marine, estuarine, palustrine, mangroves	May affect, not likely to adversely affect
<i>Egretta caerulea</i>	Little blue heron	Threatened	None	Estuarine, lacustrine, riverine, tidal marsh, tidal swamp	May affect, not likely to adversely affect
<i>Egretta tricolor</i>	Tri-colored heron	Threatened	None	Estuarine, lacustrine, riverine, tidal marsh, tidal swamp	May affect, not likely to adversely affect
<i>Egretta rufescens</i>	Reddish egret	Threatened	None	Tidal Marsh, unconsolidated substrate, mangrove island, barren sands, mudflats, estuarine	May affect, not likely to adversely affect
<i>Charadrius melodus</i>	Piping plover	Threatened	Threatened	Open, sandy beaches and tidal mudflats and sandflats	May affect, not likely to adversely affect
<i>Haematopus palliatus</i>	American oystercatcher	Threatened	None	Beach dune, exposed marine and estuarine substrate, mudflat, beach, sandbar	May affect, not likely to adversely affect
<i>Calidris canutus rufa</i>	Red knot	Threatened	Threatened	Intertidal, marine habitats	May affect, not likely to adversely affect
<i>Haliaeetus leucocephalus**</i>	Bald eagle	None	None	Estuarine, lacustrine, riverine, tidal marsh, tidal swamp	May affect, not likely to adversely affect
<i>Mycteria americana</i>	Wood stork	Threatened	Threatened	Estuarine tidal swamps/marshes, lacustrine, seepage stream, ditches, ruderal	May affect, not likely to adversely affect
<b>Fish</b>					
<i>Acipenser oxyrinchus desotoi</i>	Gulf sturgeon	Threatened	Threatened***	Marine/Estuarine primarily spawn in freshwater rivers	May affect, not likely to adversely affect
<i>Pristis pectinata</i>	Smalltooth sawfish	Endangered	Endangered	Marine/Estuarine	May affect, not likely to adversely affect

Species	Common Name	State Listing (FFWCC)	Federal Listing (USFWS)	Habitat	Determination of Effect
<b>Mammals</b>					
<i>Trichechus manatus</i>	West Indian manatee	Threatened	Threatened	Alluvial stream, blackwater stream, spring fed stream, estuarine, marine	May affect, not likely to adversely affect
<b>Reptiles</b>					
<i>Drymarchon corais couperi</i>	Eastern indigo snake	Threatened	Threatened	Mangrove swamp, upland	May affect, not likely to adversely affect
<i>Gopherus polyphemus</i>	Gopher tortoise	Threatened	Candidate	Coastal grasslands and dune communities	No effect
<i>Caretta caretta</i>	Loggerhead turtle	Threatened	Threatened	Marine; nesting on beaches	May affect, not likely to adversely affect
<i>Chelonia mydas</i>	Green turtle	Endangered	Endangered	Marine; nesting on beaches	May affect, not likely to adversely affect
<i>Lepidochelys kempii</i>	Kemp's Ridley turtle	Endangered	Endangered	Marine; nesting on beaches	May affect, not likely to adversely affect
<i>Dermochelys coriacea</i>	Leatherback turtle	Endangered	Endangered	Marine; nesting on beaches	May affect, not likely to adversely affect
<i>Eretmochelys imbricata</i>	Hawksbill turtle	Endangered	Endangered	Marine; nesting on beaches	May affect, not likely to adversely affect

\*State listed plants are listed by the Florida Department of Agriculture and Consumer Services (FDACS)

\*\* Regulated under the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act

\*\*\* Also listed by NOAA/NMFS

USFWS = United States Fish and Wildlife Service

FFWCC = Florida Fish and Wildlife Conservation Commission

to construction. Similarly, the FDOT will coordinate further with the FFWCC during the project design phase for impacts associated with state-listed species.

### 4.3 General Corridor Survey Results

Through reviews of existing data, field evaluations, and analysis of all collected data, determinations of effect were made for the following 19 vertebrate species that are federally or state-protected and have the potential to occur in the study area: roseate spoonbill, little blue heron, tricolored heron, reddish egret, piping plover, American oystercatcher, red knot, bald eagle, wood stork, Gulf sturgeon, smalltooth sawfish, West Indian manatee, eastern indigo snake, gopher tortoise, loggerhead turtle, green turtle, Kemp's Ridley turtle, leatherback turtle, and Hawksbill turtle

Additionally, according to FNAI report data, four state and/or federally-protected plant species have the potential to occur within the proposed project area. These plant species include: Florida golden aster, aboriginal prickly pear, and Sanibel love grass and golden leather fern. No protected plant species were observed within or adjacent to the proposed project corridor during the field surveys. If any protected plant species are observed during the continued design or construction of the project, coordination with the Florida Department of Agriculture and Consumer Services (FDACS) and/or the USFWS will be initiated. The following species descriptions include effect determinations that apply to each build alternative. The no-build alternative would have no effect to each species described below.

### 4.4 Federally-Listed Species

Federally-listed species which have been identified in the vicinity of the study limits or that may have potential to occur include the Florida golden aster, aboriginal prickly pear, Sanibel love grass, golden leather fern, piping plover, red knot, bald eagle, wood stork, Gulf sturgeon, smalltooth sawfish, West Indian manatee, eastern indigo snake, loggerhead turtle, green turtle, Kemp's Ridley turtle, leatherback turtle, and Hawksbill turtle.

#### 4.4.1 Golden leather fern

The golden leather fern is listed as threatened by the FDACS. The golden leather fern is found in mangrove swamp habitat. This species was not observed during the field reviews. The project is expected to have “**no effect**” on this species.

#### 4.4.2 Florida golden aster

The Florida golden aster is a perennial herb in the aster family with a distribution limited to a few counties in west-central Florida. The Florida golden aster occurs in sand pine and oak scrub or in disturbed areas at the edges of scrub habitat. According to information from the FNAI report, this species has the potential to occur within a few miles of the study area. This species was not observed during the field reviews. The project is expected to have “**no effect**” on this species.

#### 4.4.3 Aboriginal prickly apple

The aboriginal prickly pear occurs in Florida in coastal strand vegetation (relatively low salt-tolerant shrubs and grasses), tropical coastal hammocks with trees including gumbo limbo (*Bursera simaruba*), wild lime (*Zanthoxylum fagara*), or live oak (*Quercus virginiana*). Populations are likely to be on shell mounds created by pre-European local residents, or at least on sites with shelly substrates. Plants may be quite close to the mangrove zone, but not in it. According to information from the FNAI report, this species has the potential to occur within a few miles of the study area. This species was not observed during the field reviews. The project is expected to have “**no effect**” on this species.

#### 4.4.4 Sanibel love grass

Sanibel love grass is often associated with drier, compact soils of disturbed beach dunes, maritime hammocks, coastal strands, coastal grasslands, old fields, clearings and other disturbed sites. According to information from the FNAI report, this species has the potential to occur within a few miles of the study area. This species was not observed during the field reviews. The project is expected to have “**no effect**” on this species.

#### 4.4.5 Piping plover

The piping plover is listed as threatened by both the USFWS and FFWCC. The piping plover may use coastal habitats such as tidal flats, beaches, and dunes. This species does not breed in Florida but overwinters in the state. No high-use wintering areas are known within the study area.

No piping plovers were observed during the field surveys. Winter surveys for this species will be conducted during the construction phase. Should this species be identified within the work area during surveys, construction will be suspended until the piping plover (s) has departed the work area. Therefore, the project “**may affect, not likely to adversely affect**” the piping plover.

#### 4.4.6 Red knot

The red knot is listed as a state- and federally-threatened species. This highly migratory bird species may be found seasonally using intertidal, marine habitats, especially near coastal inlets, estuaries, and bays along the east coast of the United States (including Florida) during its annual migrations between breeding grounds in the Central Canadian Arctic and wintering areas along the coast of Chile and Argentina in South America. Areas within the project are not known to provide significant foraging or staging/refuge habitat for the species, and the species has not been observed during field reviews. However, the species could occur at least rarely within or adjacent to the project limits. Should this species be identified within the work area during construction, the Contractor will be required (through contractual language and/or permit conditions) to temporarily suspend work activities until the red knot(s) has departed the applicable work area(s). Therefore, FDOT has determined that the proposed project “**may affect, not likely to adversely affect**” the red knot.

#### 4.4.7 Bald eagle

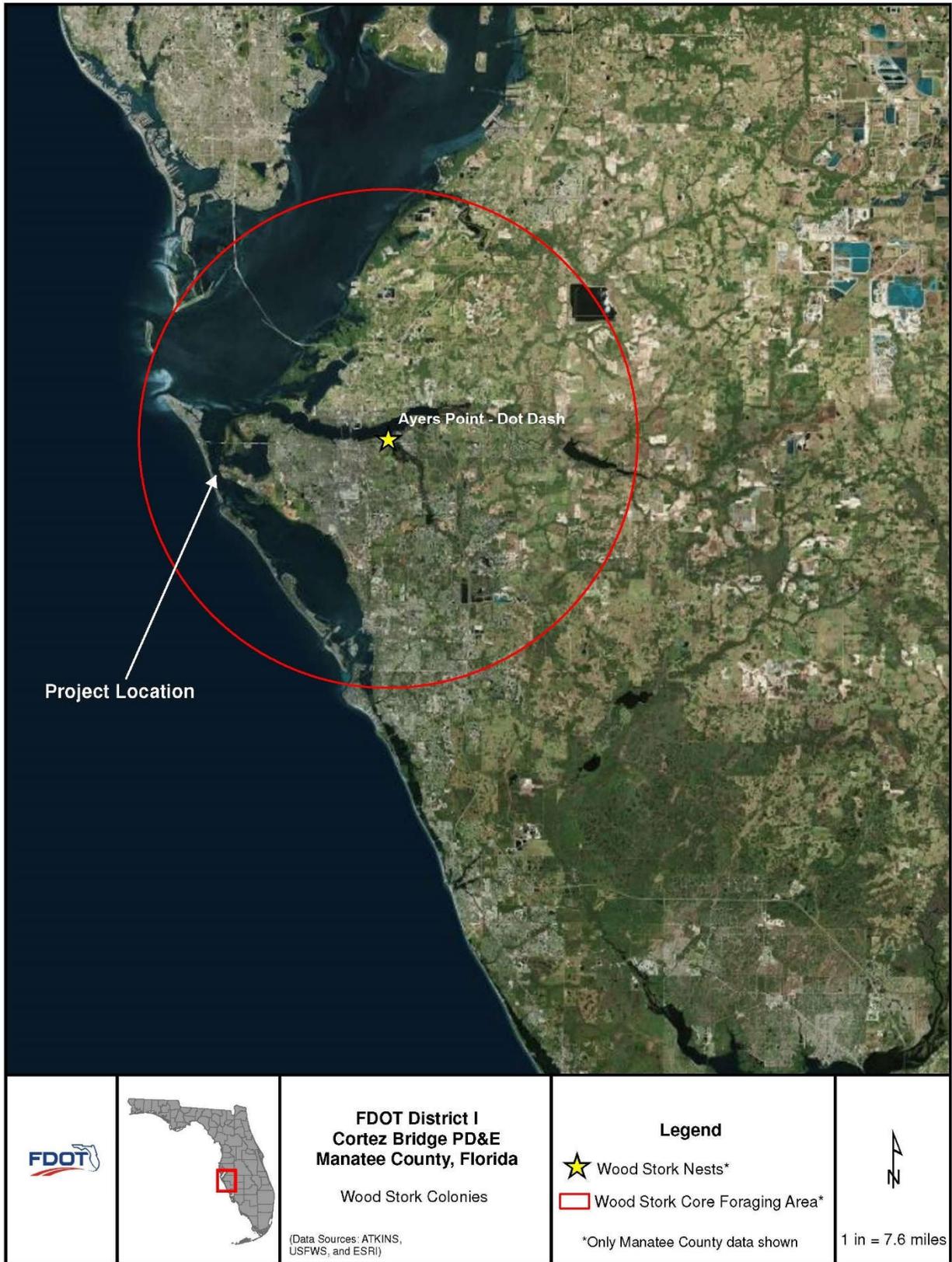
The bald eagle has been removed from federal and state protection under the ESA and the Threatened and Endangered Species Act, respectively. Protection of the bald eagle, at the federal level, is now regulated under the Bald and Golden Eagle Protection Act (BGEPA) and Migratory Bird Treaty Act (MBTA). Under BGEPA, bald eagle nests are protected through the implementation of a 660-foot zone extending outward from a nest tree. Currently the requirements do not allow construction activities within the 0 to 330-foot buffer of any active nests during the nesting season (October 1 to May 15). Construction between the 330-foot and 660-foot buffer would either occur outside of nesting season or a qualified biologist would monitor the nest if construction activity occurs during the nesting season. No bald eagle nests were identified within 660 feet of the study area. The closest documented nests (MN030 and MN033) are approximately 1.5 miles southeast and northeast, respectively, of the eastern terminus of study area.

An updated eagle nest survey will be performed during the permitting phase of the Preferred Alternative, as new nests may be established closer to the study area. If new eagle nests are identified within 660 ft of the Preferred Alternative and construction during the nesting season cannot be avoided, the FDOT will implement a monitoring program in accordance with the USFWS' 2007 *Bald Eagle Monitoring Guidelines* to assure no disturbance to the eagle. If construction activities are outside of the 660-ft protection zone, no coordination with either the USFWS or FFWCC is necessary. Due to the lack of observations during the field review, the additional surveys to be conducted throughout the permitting process, and the implementation of monitoring if new nests are established during construction, a determination of “**may affect, not likely to adversely affect**” is appropriate for the bald eagle.

#### 4.4.8 Wood stork

The wood stork is listed by both the USFWS and FFWCC as threatened. According to current USFWS data, the entire study area falls within the core foraging area (CFA) (15.6 miles) of one known wood stork nesting colony. **Figure 4-1** details the location of this wood stork nesting colony (Ayers Point – Dot Dash) in relation to the study area. Based on the USFWS compensation guidelines for the wood stork, habitat compensation is required to be within the appropriate CFA or within the service area of a USFWS-approved mitigation bank. OSWs and wetlands occurring within the project boundary were evaluated for wood stork suitable foraging habitat (SFH) under the ESA. Based on evidence of inundation (stain lines, hydrophytic vegetation, standing water), OSW 1 includes SFH. OSW 2 and OSW 3 are not considered SFH for wood storks due to the infrequency of inundation and lack of prey availability. Mitigation for wetlands is not anticipated for the build alternatives, both of which avoid new impacts to wetlands. In addition, due to *de minimis* impacts to OSWs, no mitigation is anticipated for impacts to these roadside ditches. In the event that USACE requires purchase of mitigation credit, this may be conducted via the purchase of freshwater emergent (herbaceous) wetland mitigation bank credits at Tampa Bay Mitigation Bank or through the FDOT Mitigation Program in accordance with Chapter 373.4137 F.S. Due to the *de minimis* impact to OSWs within the project corridor, a prey foraging analysis for the wood stork is not anticipated.

**Figure 4-1: Wood Stork Colony Location**



Based on the project's potential wetland impacts, the project “**may affect, not likely to adversely affect**” the wood stork or its CFA. During the project's Design phase, when more specific design information is available, the FDOT will re-evaluate wetlands affected by the project. If wetlands or other surface waters conducive to wood stork foraging will be impacted by the final design, FDOT will coordinate with the USFWS and propose measures to minimize effects to the wood stork and its colonies or propose compensation for adverse effects to the species.

#### 4.4.9 Gulf sturgeon

The Gulf sturgeon is listed as threatened by both the USFWS, NMFS, and FFWCC. This species inhabits coastal systems and generally spawns in most major coastal rivers in areas with limestone outcrops. The major threat to this species is loss of high-quality spawning areas due to damming of coastal rivers. The project is not within a known spawning area for the species. Although non-breeding animals have been observed in Sarasota Bay, the presence of the Gulf sturgeon in Anna Maria Sound and Sarasota Bay is considered infrequent. No Gulf sturgeon were observed during the field review. However, habitat suitable for use by the Gulf sturgeon occurs within the project area.

Therefore, the FDOT will utilize USFWS and NMFS' “*Gulf Sturgeon Protection Guidelines*” during bridge construction (**Appendix A**), should one of the Build Alternatives be selected. Similarly, if the contractor proposes blasting for any bridge demolition, the FDOT and their contractor will be required through contractual language and permitting requirements to submit a blasting plan (**Appendix B**) and acquire appropriate approvals from the USFWS, NMFS, and FFWCC prior to proceeding to assure that the blasting does not adversely affect this species. This blasting plan is expected to be consistent with the USFWS's “*Guidelines for the Protection of Manatees and Sea Turtles During the Use of Explosives in the Waters of the State of Florida*”. Contractor adherence to the agency-approved project blasting plan and implementation of the USFWS and NMFS' *Gulf Sturgeon Protection Guidelines* (**Appendix A**) are expected to avoid and minimize adverse impacts to the species. These measures will also be included in the NEPA document. Therefore, the project “**may affect, not likely to adversely affect**” the Gulf sturgeon.

#### 4.4.10 Smalltooth sawfish

The smalltooth sawfish, a federal and state-endangered species, inhabits shallow coastal waters. The NMFS exerts jurisdiction over this species under the ESA. Juveniles of this species are often found in shallow mud or sand banks (NMFS, 2006). Adult sawfish spend time in both shallow coastal waters and deeper waters of the continental shelf. The presence of the smalltooth sawfish in Anna Maria Sound and Sarasota Bay is considered infrequent. No smalltooth sawfish were observed during the field review. However, habitat suitable for use by the smalltooth sawfish occurs within the project area.

Therefore, the FDOT will utilize NMFS' *Sea Turtle and Smalltooth Sawfish Construction Conditions* during bridge construction (**Appendix C**) should one of the Build Alternatives be selected. If the contractor proposes blasting for the demolition of the existing bridge, the contractor

will be required through contractual language and permitting requirements to submit a blasting plan (**Appendix B**) and acquire appropriate approvals from the USFWS, NMFS, and FFWCC prior to proceeding to assure that the blasting does not adversely affect this species. This blasting plan is expected to be consistent with the USFWS's "*Guidelines for the Protection of Manatees and Sea Turtles During the Use of Explosives in the Waters of the State of Florida*". These measures will also be included in the NEPA document. With these precautions in place, the project "**may affect, not likely to adversely affect**" the smalltooth sawfish.

#### **4.4.11 West Indian manatee**

The West Indian manatee is protected as threatened by the USFWS and FFWCC. The manatee occurs in coastal waters and larger rivers in southwest Florida but was not observed during the field surveys in the study area. Critical Habitat has not been designated within the project area. However, manatees are anticipated to travel in the project vicinity.

FFWCC Standard Protection Measures for the species, adopted by the USFWS, will be implemented to assure there is no adverse effect to the manatee. Construction of the Preferred Alternative is not anticipated to negatively impact manatee habitat; however, the proposed improvements may create construction hazards, such as increased boat and barge traffic, during the construction period. These issues will be addressed during construction through the implementation of the *Standard Manatee Construction Conditions*, which includes standard protection measures (**Appendix D**). If the contractor proposes blasting for the demolition of the existing bridge, the contractor will be required through contractual language and permitting requirements to submit a blasting plan (**Appendix B**) and acquire appropriate approvals from the USFWS and FFWCC prior to proceeding to assure that the blasting does not adversely affect the manatee. This blasting plan is expected to be consistent with the USFWS's "*Guidelines for the Protection of Manatees and Sea Turtles During the Use of Explosives in the Waters of the State of Florida*". These measures will be included in the NEPA document. Through implementation of these measures, the manatee is not expected to be adversely affected by the project. Therefore, the proposed project "**may affect, not likely to adversely affect**" the manatee.

#### **4.4.12 Eastern indigo snake**

The eastern indigo snake is protected as a threatened species by the USFWS and the FFWCC. The eastern indigo snake occurs throughout most of Florida and can be found in a range of habitats including mangrove swamps.

No eastern indigo snakes were encountered during the field review. However, mangrove swamp and suitable upland habitat for the eastern indigo snake occur within the study area. Therefore, the most current version of the USFWS' *Construction Precautions for the Eastern Indigo Snake* will be implemented during construction. A copy of the protection guidelines has been provided as **Appendix E**. Based on the August 2013 Eastern Indigo Snake Programmatic Key, the project build alternatives will impact less than 25 acres of xeric habitat supporting less than 25 active and

inactive gopher tortoise burrows, along with the implementation of the construction precautions, the project “**may affect, not likely to adversely affect**” the eastern indigo snake.

#### **4.4.13 Sea turtles**

Five marine turtle species potentially occur in the project area: the Atlantic loggerhead turtle, green turtle, the leatherback turtle, the Hawksbill turtle, and the Kemp’s Ridley turtle. The USFWS and NMFS share jurisdiction of marine turtles, with NMFS having lead responsibility for the conservation and recovery of sea turtles in the marine environment and USFWS having lead responsibility for turtles on nesting beaches. These species are also state-protected. As no suitable nesting beaches are present for marine turtles in the project area, NMFS will be responsible for any issues regarding marine turtles on this project.

However, these species do have the potential to occur in the area within coastal waters. The FDOT will utilize NMFS’ *Sea Turtle and Smalltooth Sawfish Construction Conditions* during bridge construction (**Appendix C**), should one of the Build Alternatives be selected. If the contractor proposes blasting for the demolition of the existing bridge, the contractor will be required through contractual language and permitting requirements to submit a blasting plan (**Appendix B**) and acquire appropriate approvals from the USFWS, NMFS, and FFWCC prior to proceeding to assure that the blasting does not adversely affect these species. These measures will also be included in the NEPA document. With these precautions in place, the project “**may affect, not likely to adversely affect**” the loggerhead, green, leatherback, hawksbill, or Kemp’s Ridley turtles.

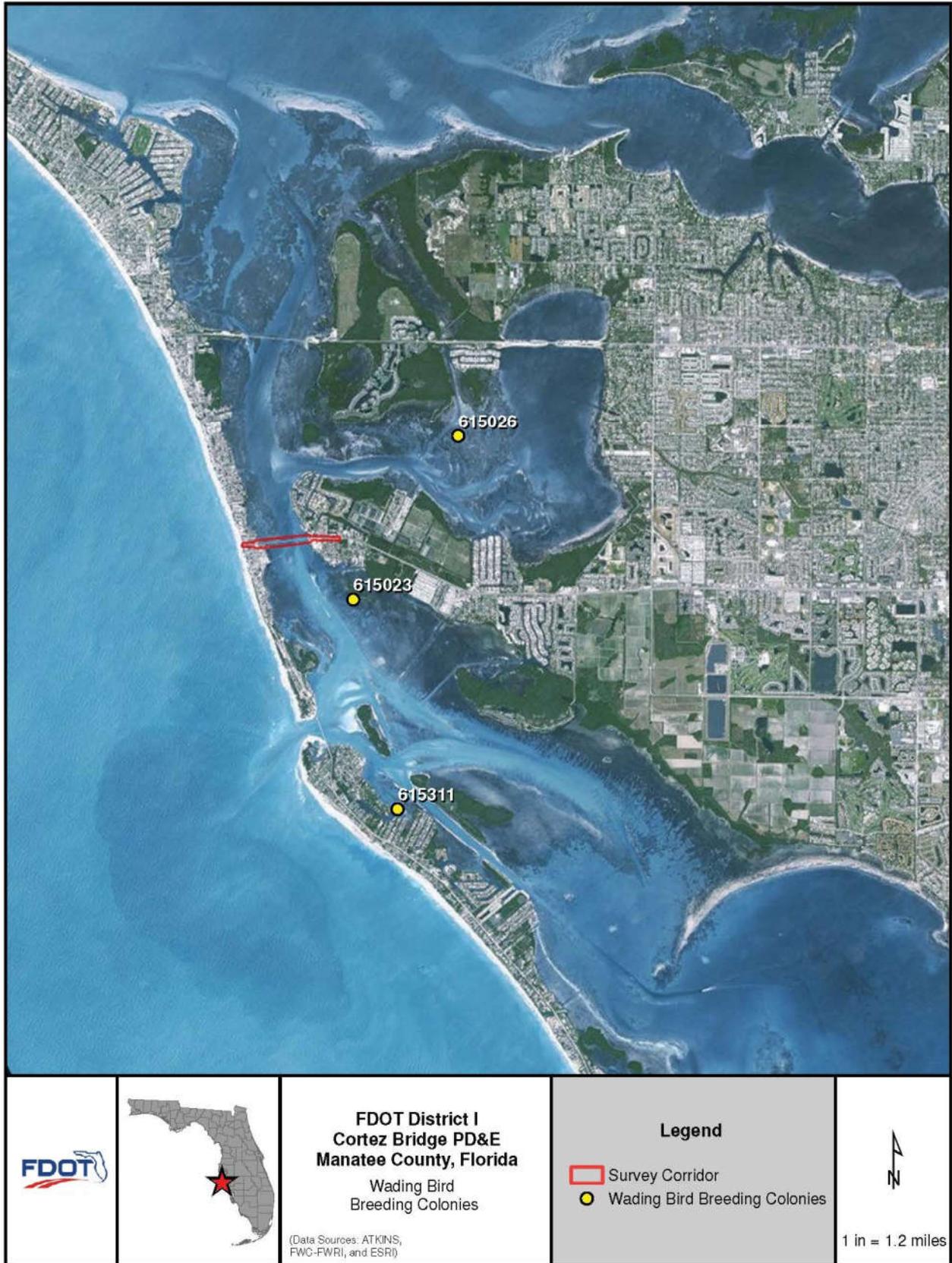
### **4.5 State-Listed Species**

State-listed species which were identified in the vicinity of the corridor or which have potential to occur are a variety of species including brown pelican, roseate spoonbill, limpkin, little blue heron, snowy egret, tricolored heron, reddish egret, white ibis, American oystercatcher, and gopher tortoise.

#### **4.5.1 Wading birds**

Five state-protected wading birds species (little blue heron, reddish egret, limpkin, roseate spoonbill, and tri-colored heron) potentially occur within the study area. These species are listed by the FFWCC as threatened. A review of the FWC Breeding Bird Atlas did not identify any known breeding colonies within the study area. Within a 5-mile radius there are three documented wading bird breeding colonies. **Figure 4-2** identifies the three nearest known breeding colonies (Atlas no. 615023, 615311, and 615026) located near the study area.

**Figure 4-2: Wading Bird Breeding Colonies**



The closest of the wading bird breeding colonies is Atlas no. 615023, which is approximately 1.5 miles south of the study area.

Wetlands and other surface waters within the study area may be used by these species for limited foraging and nesting. Typically, by providing compensation for unavoidable wetland impacts, the regulatory agencies consider impacts to these species' foraging areas offset. Therefore, the project **“may affect, not likely to adversely affect”** the state-listed wading bird species.

#### **4.5.2 American oystercatcher**

The American oystercatcher is listed by the FFWCC as threatened. This species is not listed by the USFWS. The oystercatcher uses beach, mud flat, and shell fish beds for nesting and foraging.

No American oystercatchers were observed during the field surveys. Should this species be identified within the work area during surveys, construction will be suspended until the oystercatcher(s) has departed the work area. Therefore, the project **“may affect, not likely to adversely affect”** the American oystercatcher.

#### **4.5.3 Gopher tortoise**

The gopher tortoise is listed as threatened by FFWCC and is a candidate for federal listing in Florida. The gopher tortoise occurs in a variety of upland habitats including coastal grasslands and dune communities. Disturbed habitats such as roadsides and vacant open areas often support populations of gopher tortoises. No gopher tortoises or gopher tortoise burrows were observed during the general wildlife surveys for this project. Should gopher tortoises be found on site, burrows must be avoided or tortoises must be relocated out of the construction area; relocation activities would require a relocation permit issued by FFWCC. Based on the lack of observations during the reviews conducted, the project is expected to have **“no effect”** on the gopher tortoise.

### **4.6 Critical Habitat**

The project corridor was assessed for Critical Habitat designated by Congress in 50 CFR 424. review of the USFWS's available GIS data indicates there is no Critical Habitat within the project limits or surrounding areas; therefore, the proposed bridges will have no involvement with Critical Habitat.

# Section 5.0

## Wetland and Surface Water Impacts

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### 5.1 Evaluated Alternatives

Two Build Alternatives remain under consideration for this bridge facility: the replacement of the existing low-level drawbridge with a new drawbridge providing approximately 35-ft of vertical navigational clearance and the 65-ft fixed bridge alternative, both on the northern alignment. These two alternatives, along with the No-Build (Repair) Alternative, will be carried forward for further consideration at a Public Hearing.

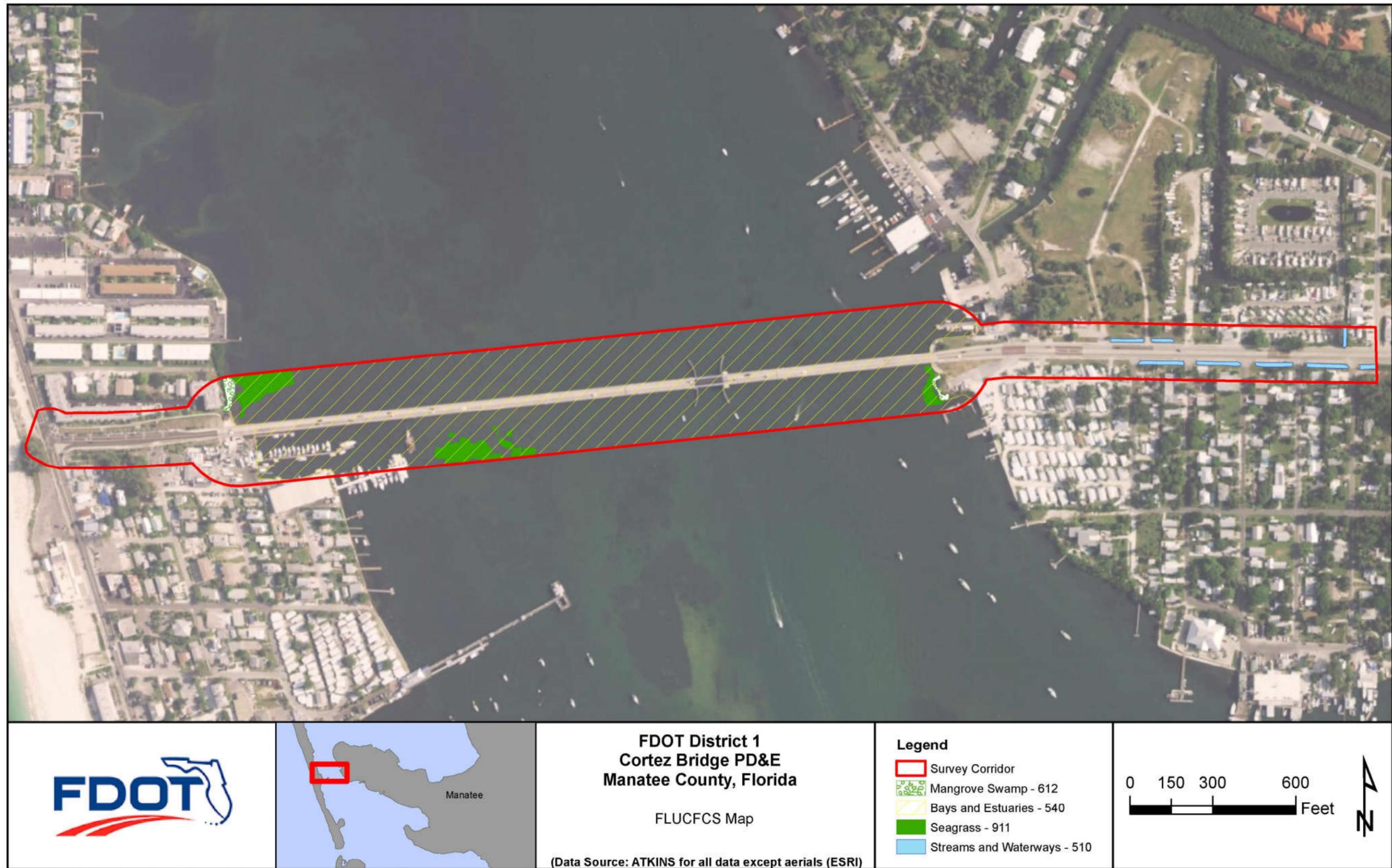
### 5.2 Methodology

This project was evaluated for impacts to wetlands in accordance with Executive Order 11990, “Protection of Wetlands”, dated May 24, 1977, Title 23, Part 777 of the CFR, and the requirements set forth in FDOT’s PD&E Manual, *Part 2, Chapter 9* (Wetlands and Other Surface Waters). In order to determine the preliminary locations and boundaries of existing wetland areas, site-specific data were collected and reviewed. Site-specific data reviewed included the following:

- US Department of Agriculture, NRCS, soil database for Manatee County (<http://websoilsurvey.nrcs.usda.gov>)
- USGS, Topographic Quadrangle Maps, 7.5 Minute Series
- SWFWMD Land Use Maps based on the FDOT FLUCFCS 2009
- USFWS NWI database (<http://www.fws.gov/wetlands/index.html>)
- USFWS Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al, 1979)
- Aerial photography

Wetland and marine habitats were evaluated within a study area bounded by SR 789 (Gulf Drive) to the west, 123<sup>rd</sup> Street West to the east, and 200 feet from the centerline of the existing bridge to the north and south. Using the above information, potential wetland, OSW and seagrass areas were identified within the study area. These areas were mapped on aerials, labeled using both the FLUCFCS classification system and corresponding NWI code, and given a unique identifier (Figures 5-1 through 5-3).

Figure 5-1: FLUCFCS Map



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Figure 5-2: Wetland and Other Surface Waters Impact (North 35-ft Bascule Bridge Alignment)



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Figure 5-3: Wetland and Other Surface Waters Impact (North High Level Fixed Alignment)



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General field surveys of the study area were conducted on June 24-28, 2013 by environmental scientists familiar with Florida wetland communities. The purpose of the field investigation was to locate and verify wetland areas identified during the database review, as well as to estimate boundaries of wetland areas not identified by the available literature. Pedestrian and snorkeling surveys were conducted within the study area.

Wetland areas within the study area were assessed using the state wetland jurisdictional methodology, as described in Chapter 62-340, Florida Administrative Code (FAC), and the USACE Wetland Delineation Manual (1987) and 2010 Regional Supplement applying the “three parameter” approach: presence of hydrophytic vegetation, hydric soils, and hydrology to estimate boundaries of wetlands. Nuisance and exotic plant infestations, shifts in historical plant communities, and any other disturbances were also noted. The boundaries of OSWs were identified at the ordinary high water level utilizing hydrobiological indicators including hydrophytic vegetation, soils, adventitious rooting, and stain lines. For OSWs that exhibited side slopes of 4:1 or steeper, the top of bank (TOB) was utilized as the upland boundary. OSWs were further evaluated for wood stork SFH pursuant to the ESA and USFWS guidance.

Summer season snorkeling surveys were conducted to map seagrass limits. These surveys consisted of demarcating the extent of seagrass beds within the study area and swimming random transects to note seagrass coverage, general health of the bed, and any utilization by wildlife. Please refer to **Figure 5-4** for seagrass maps. Visibility and access were good during the snorkeling surveys.

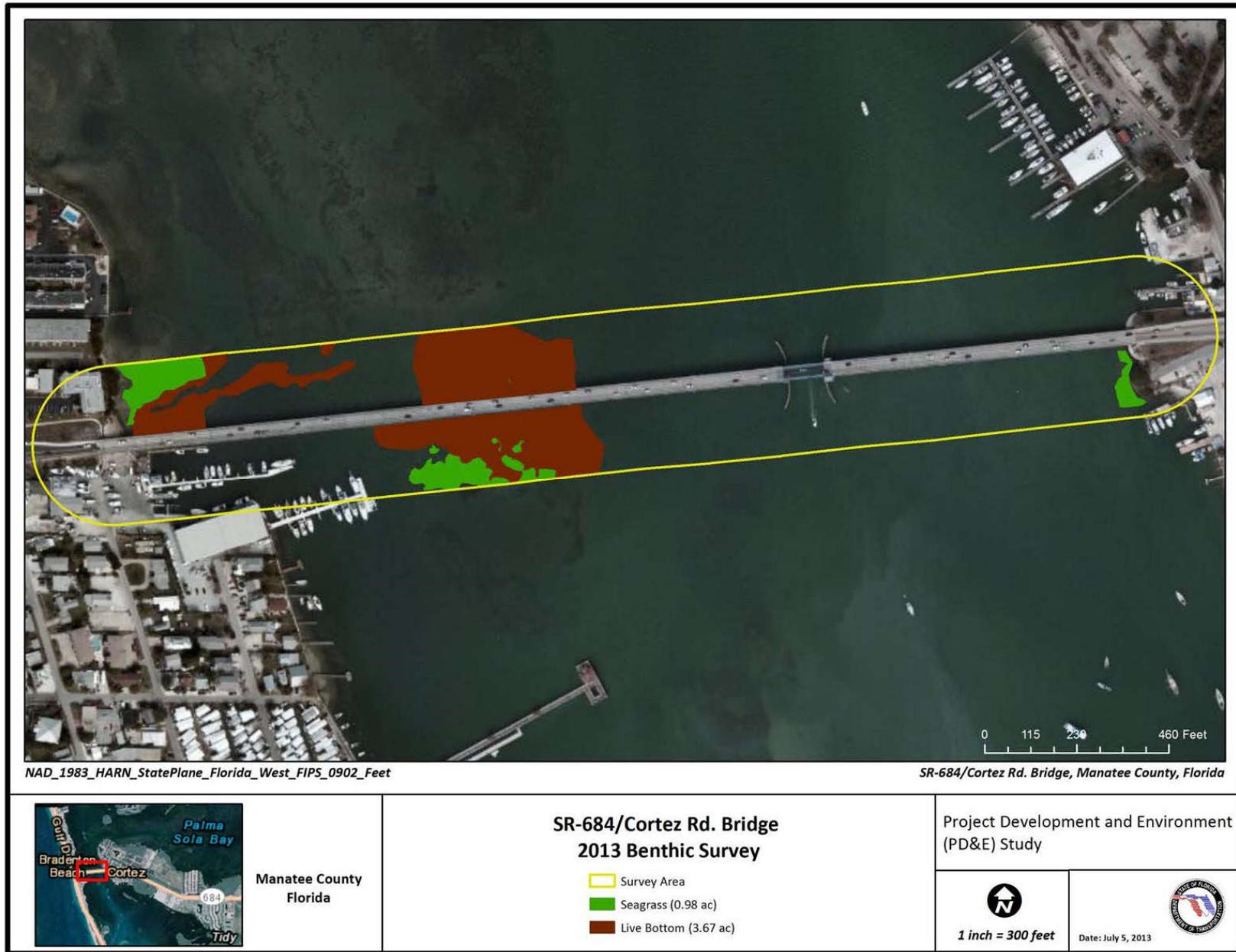
EFH was identified and evaluated in accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) of 1976 (as amended in 1996 and reauthorized in 2007), as further described in Section 6.0.

### **5.3 Impact Evaluation**

Potential direct wetland, seagrass, and surface water impacts were estimated for each of the viable alternatives considered (see Table 2-1). For the purpose of this study, it was assumed that all wetland, seagrass, and surface water habitats identified within the limits-of-construction of each of the bridge replacement alternatives would be impacted. This methodology overestimates the direct impacts to estuarine open water, because it includes all surface water habitat under the bridge, rather than just where new pilings will be installed. Direct impacts to estuarine open water will be revised during the design phase once the exact limits of construction and the location of bridge pilings are determined. Impacts from the two Build Alternatives are discussed below.

The two Build Alternatives (35-ft Bascule Bridge North Alignment and the 65-ft Fixed Bridge North Alignment) indicate no impacts to mangrove wetlands associated with both the eastern and western shorelines of Anna Maria Sound, as well as adjacent to the eastern terminus of the project corridor. There is no OSW impact anticipated with the 35-ft Bascule Bridge North.

Figure 5-4: Benthic Survey



Alignment alternative. There are 0.02 ac. of impacts to OSWs anticipated for the 65-ft Fixed Bridge North Alignment alternative. Both Build Alternatives would impact 0.01 acre of seagrass. Please refer to **Table 5-1** for impacts to wetlands and OSWs associated with the No-Build, and the two Build Alternatives. Shading impacts to seagrasses have been included in this analysis.

Wetland function was evaluated using the UMAM (62-345, F.A.C.). UMAM is the method accepted by both the SWFWMD and the USACE to determine both the amount of functional loss due to wetland impacts and the mitigation necessary to offset the loss. UMAM assesses wetland function by scoring three indicators of wetland and other surface water function: location and landscape support, water environment, and community structure. The PD&E Study originally included more than the two Build Alternatives (35-ft of vertical navigational clearance (Mid-Level) and the 65-ft (High-Level) fixed bridge alternative, both on the northern alignment), however, the two Build Alternatives are the only alternatives being recommended for future analysis. These two alternatives will result in UMAM functional loss of 0.004 units of seagrass function and no direct loss of mangrove function. Please refer to Appendix D for the UMAM data sheets.

**Table 5-1: Estimated Direct Permanent Impacts to Wetlands, Seagrass, and Surface Waters**

Alternative	Estimated Acres of Direct Wetland and Other Surface Water Impacts	Estimated Acres over Estuarine Open Water	Estimated Acres of Seagrass Impacts
No-Build	0.00	0.00	0.00
35 ft Bascule (North)	0.00	4.00	0.01
65 ft Fixed (North)	0.02	3.97	0.01

Mitigation for wetlands is not anticipated for the two Build Alternatives, both of which avoid new impacts to wetlands. In addition, due to *de minimis* impacts to OSWs, no mitigation is anticipated for impacts to these roadside ditches. In the event that USACE requires purchase of mitigation credit, this may be conducted via the purchase of freshwater emergent (herbaceous) wetland mitigation bank credits based on mitigation bank availability at that time or through the FDOT Mitigation Program in accordance with Chapter 373.4137 F.S. Seagrass mitigation alternatives to offset the 0.004 functional loss of seagrass function may include construction of a seagrass mitigation area or purchase of private mitigation credits if available at the time of permitting.

## 5.4 Coordination with Permitting Agencies

The USACE and SWFWMD regulate wetlands and surface waters within the project area. The USFWS, NMFS, US Environmental Protection Agency (USEPA), and the FFWCC review and comment on these permit applications. It is currently anticipated that the following permits will be required for this project:

**Permit**

Individual Environmental Resource Permit (ERP)  
Section 10 of the Rivers and Harbors Act  
Section 404 Clean Water Act Nationwide Permit  
National Pollutant Discharge Elimination System Permit  
U.S. Coast Guard Bridge Permit

**Issuing Agency**

SWFWMD  
USACE  
USACE  
USEPA, FDEP  
USCG

The SWFWMD requires an ERP when construction of any project results in the creation of a water management system or in impacts to waters of the state or isolated wetlands.

DRAFT

# Section 6.0

## Essential Fish Habitat

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The EFH Assessment is included as part of this report in accordance with *Part 2, Chapter 17 – Essential Fish Habitat* of the FDOT PD&E Manual and the requirements of the MSFCMA. EFH includes all types of aquatic habitat such as open waters, wetlands, seagrasses and substrate necessary to fish for spawning, breeding, feeding, and development to maturity.

### 6.1 Magnuson-Stevens Act

The MSFCMA of 1976 was amended in 1996 and reauthorized in 2007. Under the requirements of the MSFCMA, EFH Assessment consultation is required for the proposed project. Since the proposed Cortez Bridge project potentially involves impacts to EFH, this EFH Assessment was conducted under the provisions of the MSFCMA. This report section represents the FDOT's initiation of EFH consultation with NMFS.

EFH is separated into marine and estuarine habitats. The 1998 Generic Amendment for Addressing Essential Fish Habitat (NOAA 1998) defines EFH as all estuarine waters and substrates (mud, sand, shell, rock, and associated biological communities), including the sub-tidal vegetation (seagrass and algae) and adjacent intertidal vegetation (marshes and mangroves) necessary for fish spawning, breeding, feeding or growth to maturity (16 U.S.C. 1802(10)).

The MSFCMA established standards for fishery conservation and management, and created eight Regional Fishery Management Councils (FMCs) to apply those national standards in fishery management plans (FMPs). The MSFCMA, as amended, requires a FMP to be based upon the best available scientific and economic data for each commercial species (or related group of species, such as “reef fishes”) that is in need of conservation and management within each respective region. The Gulf of Mexico Fishery Management Council (GMFMC) has jurisdiction over the fisheries within the project area.

Another provision of the MSFCMA requires that the FMC identify and protect EFH for every species managed by the FMP (50 CFR 600). The MSFCMA also requires federal agencies to provide consultation on activities that may adversely affect EFH designated in the FMP. The NMFS, a service of the US Department of Commerce, NOAA, is responsible for implementing this mandate.

Project-related activities may have direct (e.g., physical disruption) or indirect (e.g., loss of prey species) effects on EFH and may be site-specific or habitat-wide. The potential effects must be evaluated individually and cumulatively. The NMFS provides comments and recommendations

to the responsible federal permitting agency. That information is considered by the permitting agency, and may be included in the recommendation as part of the permit conditions. According to 50 CFR 600.920 (e)(3), an EFH assessment must include:

- A description of the proposed action
- An analysis of the effects, including cumulative effects, of the action on EFH, the managed species and associated species by life history stage
- The federal agency's reviews regarding the effects of the action on EFH
- Proposed mitigation, if applicable

## 6.2 Existing Conditions

The GICW within the project area is an estuarine connection between Anna Maria Sound to the north and Sarasota Bay to the south (see Figure 1-1 for a Project Location Map). The closest hydrologic connections to the marine waters of the Gulf of Mexico occur approximately two miles south of the project location at Longboat Pass and approximately six miles north-northwest of the project location at the mouth of Tampa Bay. The project corridor is located in the northern portion of the SWFWMD's Southern Coastal Watershed, which extends along the southwestern shore of Florida from the mouth of Tampa Bay to the mouth of Charlotte Harbor (SWFWMD, 2000). In the project vicinity, watershed inputs (freshwater runoff) include several sources, where 59 square miles of watershed drain into 45 square miles of open water in Upper Sarasota Bay. A small area drains into Palma Sola Bay, located northeast of the project area. In addition, freshwater runoff enters Sarasota Bay from several of the sub-basins that drain into Sarasota Bay; the Bowlees Creek system; Whitaker Bayou; Hudson Bayou; other mainland coastal areas; and the barrier islands of Longboat Key, Lido Key, and Anna Maria Island. Portions of Anna Maria Island also drain to Anna Maria Sound, located north of the project area. The mouth of the Manatee River is located east-northeast of the project area and discharges large amounts of freshwater near the northern end of Anna Maria Sound/southern Tampa Bay.

Loss of natural habitat is an issue of concern for Sarasota Bay. Since 1950, intertidal wetland acreages have decreased by approximately 39 percent (SWFWMD 2000). Dredging activities (including the GICW) have degraded approximately 14 percent of the Sarasota Bay bottom (SWFWMD, 2000). In addition, a 30 percent loss in seagrass from dredge and fill activities was observed from 1950 to 1988 and substantial declines in fisheries have been observed (SWFWMD, 2000).

## 6.3 Agency Coordination

In comments on the ETDM Programming Screen Summary Report for this project, the NMFS indicated that an EFH Assessment should be submitted for the proposed project. In addition, as part of their Advance Notification correspondence, the NMFS provided a list of managed species that may need to be included in the EFH Assessment. Those species are included in **Table 6-1**,

Table 6-1: Managed Species with EFH within the Project Area

Fishery Management Plan	Species		Life Stages Potentially Occurring in the Project Area						HAPC	EFH Type(s) Utilized					
	Common Name	Scientific Name	Egg	Larvae	Post-Larvae	Juvenile	Sub-Adult	Adult		Mangroves	Estuarine Emergent Wetlands	Estuarine Water Column	Seagrass	Estuarine Non-Vegetated Bottom	Live Bottom
Penaeid Shrimp	Brown shrimp	<i>Penaeus aztecus</i>			✓	✓	✓		N/A		✓	✓	✓	✓	
	Pink shrimp	<i>Penaeus duorarum</i>			✓	✓	✓		N/A		✓	✓	✓	✓	
	White shrimp	<i>Penaeus setiferus</i>			✓	✓	✓		N/A		✓	✓	✓	✓	
Red Drum	Red drum	<i>Sciaenops ocellatus</i>			✓	✓	✓	✓	N/A	✓	✓	✓	✓	✓	✓
Reef Fish - Snappers	Mutton snapper	<i>Lutjanus analis</i>				✓	✓	✓	N/A		✓	✓	✓		✓
	Schoolmaster	<i>Lutjanus apodus</i>				✓	✓	✓	N/A		✓	✓	✓		✓
	Cubera snapper	<i>Lutjanus cyanopterus</i>				✓			N/A		✓	✓	✓		✓
	Gray snapper	<i>Lutjanus grius</i>			✓	✓	✓	✓	N/A	✓	✓	✓	✓	✓	✓
	Dog snapper	<i>Lutjanus jocu</i>				✓			N/A		✓	✓	✓		✓
	Lane snapper	<i>Lutjanus synagris</i>				✓			N/A		✓	✓	✓		✓
	Yellowtail snapper	<i>Ocyurus chrysurus</i>				✓			N/A		✓	✓	✓	✓	✓
Reef Fish - Groupers	Goliath grouper	<i>Epinephelus itjara</i>				✓			N/A		✓	✓	✓		✓
	Red grouper	<i>Epinephelus morio</i>				✓			N/A		✓	✓	✓		✓
	Black grouper	<i>Epinephelus bonaci</i>				✓			N/A		✓	✓	✓		✓
	Nassau grouper	<i>Epinephelus striatus</i>				✓			N/A		✓	✓	✓		✓
	Yellowmouth grouper	<i>Mycteroperca interstitialis</i>				✓			N/A		✓	✓	✓		✓
	Gag grouper	<i>Mycteroperca microlepis</i>				✓			N/A		✓	✓	✓		✓
	Yellowfin grouper	<i>Mycteroperca venenosa</i>				✓			N/A		✓	✓	✓		✓
Reef Fish – Wrasses	Hogfish	<i>Lachnolaimus maximus</i>				✓	✓	✓	N/A		✓	✓	✓		✓
Stone Crab	Stone crab	<i>Menippe mercenaria</i>				✓	✓	✓	N/A		✓	✓	✓		✓
	Gulf stone crab	<i>Menippe adina</i>				✓	✓	✓	N/A		✓	✓	✓		✓
Coastal Migratory Pelagics	Spanish mackerel	<i>Scomberomorus maculatus</i>				✓			N/A		✓	✓	✓		✓
Highly Migratory Species	Bull shark	<i>Carcharhinus leucas</i>				✓	✓	✓	N/A		✓	✓	✓		✓
	Lemon shark	<i>Negaprion brevirostris</i>				✓			N/A		✓	✓	✓		✓
	Bonnethead shark	<i>Sphyma tiburo</i>				✓			N/A		✓	✓	✓		✓
Coral	Corals within the Class Anthozoa	N/A	✓	✓	✓	✓	✓	✓	N/A		✓	✓	✓		✓

which contains a list of managed species that may be potentially affected by the proposed project. Impacts to those managed species have been addressed in this document.

## 6.4 Field Surveys

A benthic survey (conducted on June 24-27, 2013) was conducted to identify benthic community types present within the project area. The benthic survey area extended 200 feet north and south of the existing SR 684 centerline. A preliminary reconnaissance of the survey area revealed the presence of seagrasses, non-vegetated bottom, and live bottom within the survey area. A team of biologists documented the location of the seagrass and live bottom habitats.

The seagrass edge-of-bed was recorded as one biologist snorkeled over the seagrass edge while a second biologist followed behind with a Trimble GeoXT 6000 series handheld unit running ESRI ArcPad 10.0 (hereafter referred to as the Trimble unit). The polyline GIS data collected along the edge of seagrass was added to ArcMap 10.0. All map figures were generated in ArcMap 10.0.

To define the extent of the live bottom habitat, a combination of aerial photo interpretation and field verification were used. Aerial photographs of the project area were analyzed to identify aerial signatures of potential live bottom habitat. GIS was used to assign specific locations (points) within the potential live bottom aerial signature locations to be field verified.

In the field, a team of biologists using scuba or snorkel gear field navigated to each of the assigned points to verify the presence/absence of live bottom. Appropriate data were recorded at each point using the Trimble unit. Additionally, to further define the boundaries of the live bottom areas, the biologist team (using scuba) swam several transects parallel to the bridge to document the edges of the live bottom habitat. The team used a surface buoy to signal to a biologist on the surface who then collected the global positioning system (GPS) position of the surface buoy with the Trimble unit. The GPS data were added to ArcMap 10.0 to create a habitat map.

## 6.5 Analysis of Impacts to EFH

Project-related activities may have direct (e.g., physical disruption) or indirect (e.g., loss of prey species) effects on EFH and may be site-specific or habitat-wide.

### 6.5.1 Permanent Direct Impacts

**Table 6-2** details the estimated permanent direct impacts to EFH for each of the original project alternatives. All alternatives are shown for the potential impacts to EFH since they were originally assessed, however the No-Build and Build Alternatives (35-ft Bascule Bridge North Alignment and the 65-ft Fixed Bridge North Alignment) are the only proposed alternatives for future analysis. If the No-Build is selected, there will be no impacts to EFH. Construction of a new bridge will likely result in permanent direct impacts to the EFH habitats from installation of the bridge

structure and piers/pilings. At this time, the locations of any proposed bridge piers/pilings are unknown. Therefore, the impacts to the EFH habitats were calculated based on the entire limits of construction (project footprint).

### **6.5.2 Temporary Direct Impacts**

The method of construction for the proposed Cortez Bridge has not yet been determined. Temporary direct impacts that may occur from the proposed construction activities cannot be precisely calculated at this time. Further coordination with the agencies will take place during the design phase and prior to permitting when temporary impacts can be determined.

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**Table 6-2: Estimated Permanent Direct Impacts to EFH**

EFH Resource	FLUCCS Code and Habitat	EFH Type	Tidal Connection	No Build acres	35-ft Bascule acres	65-ft Fixed acres
Wetland WL1	651 Tidal Flats	Estuarine Emergent	Yes	0.00	0.00	0.00
Wetland WL2	612 Mangrove Swamp	Mangrove	Yes	0.00	0.00	0.00
Wetland WL3	612 Mangrove Swamp	Mangrove	Yes	0.00	0.00	0.00
OSW 1	510 Streams and Waterways	Estuarine Emergent	Yes	0.00	0.00	0.0002
OSW 2	510 Streams and Waterways	Estuarine Emergent	Yes	0.00	0.00	0.00
<b>Total Impacts to Mangrove Wetland EFH</b>				<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Total Impacts to Estuarine Emergent Wetland EFH</b>				<b>0.00</b>	<b>0.00</b>	<b>0.0002</b>
Seagrass Bed 1	911	Seagrass	Yes	0.00	0.01	0.01
Seagrass Bed (Patch) 2	911	Seagrass	Yes	0.00	0.0005	0.0005
Seagrass Bed 3	911	Seagrass	Yes	0.00	0.00	0.00
Seagrass Bed 4	911	Seagrass	Yes	0.00	0.00	0.00
<b>Total Impacts to Seagrass EFH</b>				<b>0.00</b>	<b>0.01</b>	<b>0.01</b>
Anna Maria Sound	540	Bays and Estuaries	Yes	0.00	4.00	3.90
<b>Total Impacts to Estuarine Water Column EFH</b>				<b>0.00</b>	<b>4.00</b>	<b>3.90</b>
Vegetated Bottom	540	Bays and Estuaries	Yes	0.00	3.16	3.15
<b>Total Impacts to Non-Vegetated Bottom EFH</b>				<b>0.00</b>	<b>3.16</b>	<b>3.15</b>
Live Bottom	540	Bays and Estuaries	Yes	0.00	0.83	0.83
<b>Total Impacts to Live Bottom EFH</b>				<b>0.00</b>	<b>0.83</b>	<b>0.83</b>

### 6.5.3 Permanent Indirect Impacts to EFH

Permanent indirect impacts to estuarine water column EFH resulting from construction of one of the Build Alternatives would include additional structure within the water column. Permanent indirect impacts to seagrass and live bottom EFH could result from shading impacts from the proposed bridge. It should be noted that, if a new bridge is constructed, removal of the existing bridge structure would also eliminate the existing shading properties of that structure. Permanent indirect impacts to EFH due to shading from new bridge construction will be addressed in a shading effects evaluation and documented in an addendum to the EFH Assessment during the final design and permitting phase of this project. Because the design details and method of construction for the proposed Cortez Bridge project have not yet been determined, permanent indirect impacts to EFH habitat that may occur from the proposed construction activities cannot be precisely calculated at this time.

#### **6.5.4 Temporary Indirect Impacts to EFH**

Temporary indirect impacts to EFH resulting from construction of any of the Replacement Alternatives would include increased turbidity within the estuarine water column resulting from construction activities. Thus, temporary direct impacts have been estimated by calculating all EFH impacts that could potentially occur within the existing ROW limits, which would represent the greatest expected extent of construction activities. These impacts are estimated in **Table 6-3**. The six build alternatives all have identical temporary direct impact estimates (all impacts are based on the existing ROW lines). Note that these impact estimates are likely an overestimate of the actual impacts to EFH that will occur during construction. Further coordination with the agencies will take place during the design phase and prior to permitting when temporary impacts can be accurately determined.

Increased turbidity could result in the burial of benthic species, re-suspension of potentially contaminated sediments, and physical impairment to estuarine species, such as the clogging of gills from suspended particulates resulting in suffocation or abrasion of sensitive epithelial tissue. However, the juvenile and adult life stages of the managed species are considered to be motile and highly capable of eluding adverse conditions. Turbidity will be addressed through established permit conditions, implementation of *FDOT's Standard Specifications for Road and Bridge Construction*, and other Best Management Practices to minimize impacts from construction.

#### **6.5.5 Evaluation of Cumulative Impacts to EFH**

Cumulative impacts are defined as impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts represent the incremental effects of the proposed action when added to other past, present, or reasonably foreseeable future actions, regardless of what entities or persons undertake such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a given period of time (43 CFR 56003, Nov. 29, 1978). Inclusion of other projects within this cumulative impacts analysis is based on identifying

**Table 6-3: Estimated Temporary Indirect Impacts to EFH**

EFH Resource	EFH Type	No Build	Rehab	35-ft Bascule acres	65-ft Fixed acres
Wetland WL2	Mangrove Wetland Mangrove	0	0	0.01	0.01
Wetland WL3		0	0	0.02	0.02
Wetland WL1	Estuarine Emergent	0	0	0	0
OSW 1		0	0	0.2	0.2
OSW 2		0	0	0.005	0.005
Seagrass Bed 1	Seagrass	0	0	0.02	0.02
Seagrass Bed (Patch) 2		0	0	0.001	0.001
Seagrass Bed 3		0	0	0.01	0.01
Seagrass Bed 4		0	0	0.03	0.03
Anna Maria Sound	Estuarine Water Column	0	0	11.52	11.52
Non-Vegetated Bottom	Non-Vegetated Bottom	0	0	9.54	9.54
Live Bottom	Live Bottom	0	0	1.92	1.92
OSW 3 (Non-EFH Wetland)	N/A	0	0	0.06	0.06
<b>Total Temporary Indirect Impact to EFH</b>		<b>0</b>	<b>0</b>	<b>23.28</b>	<b>23.28</b>

common attributes between impacts from other projects and potential impacts from the proposed Cortez Bridge project.

To analyze possible cumulative impacts from the proposed project, similar projects that could occur within the same estuarine system (including Anna Maria Sound to the north and Sarasota Bay to the south) were reviewed. The projects included are based on the likelihood of completion, and only “reasonably foreseeable” future actions are evaluated as part of the cumulative analysis. Therefore, based on the anticipated geographic and temporal impacts of the proposed Cortez Bridge project, other actions that were not expected to affect similar resources during the duration of effects resulting from the proposed Cortez Bridge project were excluded from further consideration.

Ongoing and/or planned projects that spanned the Anna Maria Sound and Sarasota Bay were identified from the program listings and further evaluated to determine if the proposed actions

included either new bridge construction, or replacement of an existing bridge with a wider footprint, as these actions would result in the cumulative impact of additional shading of benthic habitat within the basin. Based on the review of these planning resources, the six projects discussed below were identified that could possibly impact EFH.

**Anna Maria Bridge No. 130054 (SR 64 over Anna Maria Sound/GICW)**

The preferred alternative is the high-level fixed bridge with a 65-foot vertical clearance to be built south of the existing bridge. According to the February 2009 Draft Wetland Evaluation Report (FDOT, 2009) for the project, direct impacts to the estuarine water column, wetlands (including mangrove wetlands), seagrasses, and non-vegetated bottom will occur from the proposed Anna Maria Bridge replacement project, currently in the final design stage.

**Cortez Bridge No. 130006 (SR 684 over GICW)**

A repair/rehabilitation project has recently been completed on the Cortez Bridge to keep the bridge in safe and operable condition for the next 10 years. There were no impacts to seagrasses or mangroves in the vicinity of Cortez Bridge associated with this repair project, due to seagrass beds protected from contractor boats with a series of marker buoys. The project is the subject of this PD&E study.

**New Pass Bridge No. 170158 (SR 789 over New Pass)**

The proposed action includes protection and maintenance of the structural, mechanical, and electrical components of this bascule bridge. Based on the description of the work type, no EFH impacts are anticipated, and in-water work will include sufficient provisions to minimize any temporary impacts. Ongoing maintenance activities occur periodically.

**Little Ringling Bridge Bridge Nos. 170951/170022 (SR 789 over the Coon Key Waterway from Coon Key to Bird Key)**

The addition of a bicycle/pedestrian facility to the Little Ringling Bridge is a Transportation Alternative Program (TAP) priority project. No design details or concept plans were found. Therefore, evaluation of potential EFH impacts can only be discussed in general for this type of project. It is assumed that this type of project will not entail the placement of additional pilings. Therefore, EFH impacts would be limited to temporary conditions during construction, which will be minimized through the use of turbidity curtains and other standard measures.

**Sarasota County Scour Countermeasures at Various Locations**

FDOT records indicate that several bridges (170014, 170920, 170120, 170141, and 170060) may be funded for scour countermeasures. However, no work descriptions were found. Based on the type of project, it is assumed that work will consist of installation of one or more of the following: cathodic pile jackets, riprap, geoweb/geo-textile, and/or scour apron. As such, EFH impacts would be minor and be limited to the estuarine water column and/or non-vegetated bottom. It is assumed that any temporary construction-related impacts to EFH will be minimized through standard measures such as turbidity curtains.

### **Manatee County Scour Countermeasure at Various Locations**

No locations or work descriptions were found. Based on the type of project, it is assumed that work will consist of installation of one or more of the following: cathodic pile jackets, riprap, geoweb/geo-textile, and/or scour apron. As such, EFH impacts would be minor and be limited to the estuarine water column and/or non-vegetated bottom. It is assumed that any temporary construction-related impacts to EFH will be minimized through standard measures such as turbidity curtains.

Only the Anna Maria Bridge and Cortez Bridge projects are expected to result in potential direct impacts to EFH. Each project will be required to obtain environmental permits, and avoid and minimize impacts to EFH to the extent practicable. Those EFH impacts that cannot be avoided or minimized, such as bridge pier construction, will be mitigated if necessary. Since proposed cumulative impacts will be avoided, minimized, or mitigated, the proposed Cortez Bridge project is anticipated to have only minor cumulative effects when added to past, present, or foreseeable future projects in the area.

## **6.6 Avoidance and Minimization of Impacts to EFH**

The FDOT has determined that, if the project should proceed with one of the Build Alternatives, complete avoidance of impacts to EFH will not be possible. The nature of the potential Build alternatives (i.e., replacement of the existing bridge over the GICW) will result in unavoidable impacts to EFH.

At this point in the preliminary design phase of the proposed Cortez Bridge project, attempts to avoid and minimize impacts to EFH have not yet been fully examined. However, minimization of direct impacts to EFH has attempted by designing the proposed Build Alternatives along the northern existing ROW over the GICW. Furthermore, the 65-ft Fixed Bridge would minimize impacts to seagrass and mangrove EFH:

- Direct impacts to seagrass EFH impacts were reduced from 0.04 ac (South Alignment) to 0.01 ac (North Alignment)
- Direct impacts to mangrove EFH impacts were eliminated by selecting the North Alignment (mangrove impacts from the South Alignment were 0.01 ac)

It is anticipated that as the project continues into the design phase, FDOT will employ, to the extent practicable, design features and construction methodologies that will avoid and/or minimize impacts to EFH. Efforts will be made to avoid impacts to live bottom (i.e., corals) from the proposed project. It is anticipated that a more comprehensive assessment of the live bottom communities will be conducted during the design phase. Once the locations of the proposed bridge pilings has been determined, a comprehensive assessment of impacts to live bottom will be conducted and a plan to avoid, minimize and mitigate for impacts to live bottom will be produced.

## 6.7 Compensatory Mitigation for Impacts to EFH

Because a Preferred Alternative has yet to be selected for the project (to be determined after the Public Hearing is conducted) and design plans are not yet available, the FDOT has not yet developed a mitigation plan for the project. However, several mitigation options for impacts to EFH have been evaluated and are discussed below.

### 6.7.1 Seagrass Mitigation

Preliminary mitigation options to offset potential impacts to seagrass habitat associated with the Cortez Bridge project, as well as the Anna Maria Bridge (SR 64/Manatee Avenue), have been investigated. As described before, an estimated 0.004 seagrass UMAM credit would be required to offset the impacts from either of the two Build Alternatives. The FDOT evaluated several potential options to provide compensatory mitigation for impacts to seagrass in a *Conceptual Seagrass Mitigation Plan* (dated February 2014). This conceptual mitigation plan was developed to demonstrate that the potential construction of one of the Build Alternatives is permissible. This conceptual plan includes cost estimates and timeframes for ROW acquisition, mitigation construction, seagrass transplantation, permitting, and long-term monitoring. A discussion of permitting constraints and timeframes was also provided. Five individual “build” mitigation options were evaluated, including the restoration of substrate elevation within depressional areas (fill placement) at two locations and the creation of seagrass habitat from existing elevated areas (sand bar/spoil island sediment removal with or without seagrass transplantation) from three locations. Summed, the mitigation options would result in a total of 6.39 acres of seagrass habitat and 0.92 net functional gain units. The use of seagrass mitigation bank credits was also explored in the plan.

A meeting was held with NMFS (Dr. David Rydene) on June 14, 2013, where NMFS indicated that all the mitigation options identified appear to be viable. Dr. Rydene also indicated that a mitigation project would achieve success when the density and coverage of seagrass reaches values consistent with existing seagrass beds in the surrounding area. The success of a mitigation project would not affect the construction schedule. Dr. Rydene also indicated that, should use of mitigation bank credits be selected for the project, NMFS would prefer that a mitigation bank within the service area be used, if available. Mitigation banks outside the service area could be used at a higher ratio.

The Mangrove Point Mitigation Bank (MPMB) appears to be the most feasible mitigation bank option to offset seagrass impacts. The Mitigation Service Area (MSA) for the MPMB is proposed to be the entire estuarine component of the Tampa Bay watershed and the tidally influenced reaches of the rivers emptying into Tampa Bay. An ERP has been issued by the SWFWMD (Permit No. 43035355.002, issued 11/22/13) and the wetland mitigation bank ledger has been approved for a total of 100.5 UMAM mitigation credits, including 1.21 UMAM seagrass mitigation credits. Approval from the U.S. Army Corps of Engineers is currently pending. However, approval of the permit and release of seagrass mitigation credits is not certain. Release

of the mitigation credits for purchase is dependent upon meeting various criteria within 3-5 years. Construction of the proposed Anna Maria Bridge and Cortez Bridge projects are not anticipated to begin in less than five years; thus, the MPMB appears to be a viable option for the purchase of credits for these projects.

### **6.7.2 Live Bottom Mitigation**

The June 2013 benthic community assessment revealed the presence of live bottom habitat in the northwest and southwest quadrants of the existing Cortez Bridge study corridor. Epifauna that were observed within the live bottom communities included scleractinian corals and soft corals. Due to the patchy nature of the live bottom habitat, the live bottom areas and the associated impact acreages presented are likely an overestimation of the actual impacts that may result from the build alternatives. It is anticipated that a comprehensive assessment of the live bottom communities will be conducted (e.g., species assemblages, percent cover of corals, etc.) during the design phase, once the locations of the proposed bridge piers are determined.

During the design phase, the FDOT will avoid and minimize impacts to live bottom EFH and corals to the extent practicable. This may include relocation of corals to suitable habitat in the project vicinity prior to construction. Furthermore, silt curtains or another type of barrier will be used to reduce turbidity and sedimentation during construction. In the event that impacts to corals are unavoidable, a mitigation plan will be developed.

## **6.8 Federal Action Agency Determination**

At this point in the PD&E phase, the spatial extent of the project impact alternatives is preliminary. Thus, a determination regarding the effects of the proposed action is not available at this time. In accordance with the Memorandum of Understanding dated December 14, 2016 and executed by the Federal Highway Administration and FDOT, the OEM will serve as the lead federal agency for the purpose of the PD&E phase of this project. The OEM will coordinate with all applicable regulatory agencies to determine the proper determination of effects that the Preferred Alternative, once selected, will have on EFH. This section will be revised in the future.

# Section 7.0

## Conclusions

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### 7.1 Protected Species and Habitat

#### 7.1.1 Conclusions

Through reviews of existing data, field evaluations, and analysis of all collected data, determinations of effect were made for 19 vertebrate species that are federally or state-protected and have the potential to occur in the study area: roseate spoonbill, little blue heron, tricolored heron, reddish egret, piping plover, American oystercatcher, red knot, bald eagle, wood stork, Gulf sturgeon, smalltooth sawfish, West Indian manatee, eastern indigo snake, gopher tortoise, loggerhead turtle, green turtle, Kemp's Ridley turtle, leatherback turtle, and Hawksbill turtle

Additionally, according to FNAI report data, four state and/or federally-protected plant species have the potential to occur within the proposed project area. These plant species include: Florida golden aster, aboriginal prickly pear, Sanibel love grass and golden leather fern. No protected plant species were observed within or adjacent to the proposed project corridor during the field surveys. If any protected plant species are observed during the continued design or construction of the project, coordination with the FDACS and/or the USFWS will be initiated.

The No-Build Alternative would result in temporary impacts to the foraging habitat of some protected species to allow normal maintenance of the existing bridge. This Alternative would involve the continuation of current maintenance practice and would not involve new construction. With the use of the *Standard Manatee Construction Conditions*, *Gulf Sturgeon Protection Guidelines* and the *Sea Turtle and Smalltooth Sawfish Construction Conditions*, the No-Build Alternative “may affect, but is not likely to adversely affect” protected species potentially occurring in the project area.

Rehabilitation of the current bridge would likely increase boat and barge traffic in the study area. This increase would be attributed to additional construction and support equipment needed to perform the bridge rehabilitation. With the increase in equipment the risk of conflict with wildlife increases. Use of the *Standard Manatee Construction Conditions*, *Gulf Sturgeon Protection Guidelines* and the *Sea Turtle and Smalltooth Sawfish Construction Conditions*, will eliminate or reduce the likelihood of adverse impacts to these species during rehabilitation activities. This alternative “may affect, but is not likely to adversely affect” the above-referenced species.

The Build Alternatives would result in both unavoidable permanent and temporary impacts to habitats potentially used by protected species, and would impact seagrass habitat and mangrove

swamp. The Build Alternatives would result in the loss of potential foraging habitat for wading birds and the wood stork, and would also result in impacts to potential foraging habitat of the manatee and green sea turtle. However, all permanent impacts would be mitigated by the FDOT, pursuant to Part IV, Chapter 373, F.S. and 33 U.S.C.s. 1344, thereby offsetting the impact to that habitat.

Based on the potential impacts to foraging habitat and potential effects from construction activities, the Build Alternatives are anticipated to have the following effect determinations on the potential protected species in the project area: the brown pelican, gopher tortoise, golden leather fern, Florida golden aster, Aboriginal prickly apple, and Sanibel love grass all received a “**no effect**” determination. Species receiving a “**may affect not likely to adversely affect**” include: the Gulf sturgeon, bald eagle, little blue heron, tri-colored heron, snowy egret, white ibis, piping plover, roseate spoonbill, reddish egret, limpkin, American oystercatcher, red knot, wood stork, West Indian manatee, eastern indigo snake, smalltooth sawfish, the loggerhead turtle, green turtle, leatherback turtle, Kemp’s Ridley turtle, and hawksbill turtle.

An evaluation of the alternative roadway alignments was performed to determine secondary and cumulative impacts created by the proposed roadway. Because no additional capacity is being proposed secondary impacts, such as increased noise, pile driving, increased development, or increased traffic, from the project are not expected to be significant. Because mitigation will be required within the same drainage basin for all unavoidable impacts, cumulative impacts are not anticipated.

### **7.1.2 Implementation Measures**

To assure these species will not be adversely affected by the proposed project, the FDOT will adhere to the following:

- The FDOT will perform updated wildlife surveys for the species discussed in this report, and other wildlife species, during the project Design phase to ascertain the involvement, if any, of listed species.
- Based on coordination with the USFWS and the NMFS to comply with Section 7 of the ESA, the FDOT will reinitiate consultation and provide all information necessary to complete consultation for the aforementioned species prior to advancing the project to construction. Similarly, the FDOT will coordinate further with the FFWCC during the project design phase for impacts associated with state-listed species.
- Should gopher tortoise burrows be located within the project area, the FDOT will avoid burrows in accordance with FFWC regulations. For burrows that cannot be avoided during construction, the FDOT will apply for a gopher tortoise relocation permit from the FFWCC.

- During the Construction phase of a Build Alternative, the FDOT will conduct winter surveys of the project area for the piping plover. Should this species be identified within the work area during surveys, construction will be suspended temporarily until the piping plover departs the work area.
- Impacts to suitable foraging habitat for the federally-protected wood stork will be mitigated through the purchase of credits from a U.S. Fish and Wildlife Service-approved mitigation bank pursuant to Section 373.4137, F.S. or as otherwise agreed to by the FDOT and the appropriate regulatory agencies.
- During the Construction phase, the FDOT will implement the *Standard Specifications for Road and Bridge Construction* and other Best Management Practices to avoid adverse impacts to wetlands and water quality within the project limits to the maximum practicable extent.
- During the Construction phase, the FDOT will implement Best Management Practices to avoid and minimize adverse percussive and shockwave impacts to marine fauna to the maximum extent practicable. If demolition of the existing structure is anticipated, the FDOT will require the selected contractor to develop a blasting plan and obtain prior approval from FWC, NMFS, USFWS, and SWFWMD regarding demolition. This blasting plan is expected to be consistent with the USFWS's "*Guidelines for the Protection of Manatees and Sea Turtles During the Use of Explosives in the Waters of the State of Florida*"

### 7.13 Commitments

To assure these species will not be adversely affected by the proposed project, the FDOT will make the following commitments:

- The FDOT will implement the *Sea Turtle and Smalltooth Sawfish Construction Conditions* for protection of the five species of marine turtles (green turtle, leatherback turtle, hawksbill turtle, Kemp's Ridley turtle, loggerhead turtle) and the smalltooth sawfish potentially occurring in the area. Note that no suitable nesting beaches for the marine turtles are found in the project area and protective measures are for turtles in open water only.
- The FDOT will implement the *Gulf Sturgeon Protections Guidelines*, during the Construction phase of a Build Alternative.
- The *Standard Manatee Construction Conditions* will be implemented to assure that the West Indian manatee will not be adversely impacted by the project.
- The *Construction Precautions for the Eastern Indigo Snake* will be implemented to assure that the eastern indigo snake will not be adversely impacted by the project.
- During the project Design and Permitting phase, the FDOT will develop a seagrass protection and (if applicable) mitigation/restoration plan for the project area. This plan

will be implemented prior to or during the project Construction phase based on future coordination.

- In the event that impacts to corals are unavoidable, a mitigation plan will be developed.

Given the above implementation measures and commitments provided by the FDOT, it has been determined that the proposed project is not likely to adversely affect any threatened or endangered species or designated critical habitat.

## 7.14 Wetlands and Essential Fish Habitat

The proposed project alternatives were evaluated for impacts to wetlands in accordance with **Executive Order (EO) 11990**. Based on the type and location of project impacts, the FDOT has determined that there is no practicable alternative to the proposed construction in wetlands. The proposed project will have no significant short-term or long-term adverse impacts to wetlands. In accordance with EO 11990, the Department has undertaken all actions to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities. Nonetheless, the Department has determined that there is no practicable alternative to construction impacts occurring in wetlands. Any unavoidable impacts to wetlands will be mitigated to achieve no net loss of wetland function.

Wetland impacts which will result from the construction of this project will be mitigated pursuant to Section 373.4137, F.S. to satisfy all mitigation requirements of Part IV, Chapter 373, F.S. and 33 U.S.C. s.1344. Compensatory mitigation for this project will be completed through the use of mitigation banks and any other mitigation options that satisfy state and federal requirements.

A UMAM analysis (**Appendix F**) was performed to determine an estimate to the functional loss due to wetland and seagrass impacts from the recommended alternatives. Typically impacts to OSW do not require mitigation. For this project, the minor impact to OSWs is not anticipated to require mitigation due to the loss of less than 0.01 UMAM functional unit.

Preliminary mitigation options to offset potential impacts to seagrass habitat associated with the Cortez Bridge project, as well as the Anna Maria Bridge (SR 64/Manatee Avenue), have been investigated. The FDOT evaluated several potential options to provide compensatory mitigation for impacts to seagrass in a *Conceptual Seagrass Mitigation Plan* (dated February 2014), provided as **Appendix G** (via CD), including concepts for nearby constructed seagrass mitigation as well as the use of seagrass mitigation bank credits at the Mangrove Point Mitigation Bank if available. These mitigation options would all offset the anticipated seagrass impacts for any of the bridge alternatives.

# Section 8.0

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## **Appendices**

- Appendix A Gulf Sturgeon Protection Guidelines**
- Appendix B Blasting Plan**
- Appendix C Sea Turtle and Smalltooth Sawfish  
Construction Conditions**
- Appendix D Standard Manatee Construction Conditions**
- Appendix E Construction Precautions for the Eastern  
Indigo Snake**
- Appendix F UMAM Analysis**
- Appendix G Conceptual Seagrass Mitigation Plan**

## **Appendix A: Gulf Sturgeon Protection Guidelines**

CONSTRUCTION SPECIAL PROVISIONS  
GULF STURGEON PROTECTION GUIDELINES  
(PURSUANT TO NMFS AND USFWS)

The Gulf sturgeon (*Acipenser oxyrinchus desotoi*) is listed under the Endangered Species Act as threatened. It is managed under the joint jurisdiction of the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS). Potential habitat for the Gulf sturgeon is located within the limits of this project.

The following special provisions will be incorporated into any construction contract where involvement with sturgeon may occur:

The FDOT has coordinated with the NMFS and USFWS early in the project development stage. The following provisions are intended to avoid/ protect known spawning habitats, nursery areas, feeding areas and thermal refuges.

1. The Florida Department of Transportation (FDOT) shall advise all FDOT project personnel and Contractor personnel on the project that there are civil and criminal penalties for harming, harassing or killing sturgeon. The FDOT and the Contractor will be held responsible for any sturgeon harmed, harassed, or killed as a result of the project activity.
2. The FDOT shall provide information to all FDOT and Contract personnel for identification of sturgeon.
3. Appropriate work shift personnel will be instructed in the appearance, habits, biology, migratory patterns, and preservation of sturgeon. At least one of these trained personnel will be on site during construction activities to maintain a constant surveillance for these species, assure the cessation of activities (such as dredging, excess turbidity, and construction barge activity), which may endanger these species, and assure that uninhibited passage for the animals is provided.
4. Post signs on site warning of the presence of sturgeon, of their endangered status and federal protection, and precautions needed.
5. Turbidity from construction activity will be adequately controlled to prevent degradation of the quality and transparency of the water. When sturgeon are present, turbidity curtains of appropriate dimension will be used to restrict the animals' access to the work area. Pollution booms or turbidity curtains should use tangle resistant or hemp rope when anchoring, or employ surface anchors' to prevent entangling sturgeon. Continuous surveillance will be maintained in order to free animals which may become trapped in silt or turbidity barriers.
6. No dredging of the river bottom will be conducted for barge access.

7. Drilled shaft pile construction will be used whenever prudent and feasible as determined by FDOT.
8. Care shall be taken in lowering equipment or material below the water surface and into the stream bed. These precautions will be taken to ensure no harm occurs to any sturgeon which may enter the construction area undetected.
9. Construction debris shall not be discarded into the water.
10. If the use of explosives is necessary, the following protection measures will be employed for projects in FDOT's District 3
  - a. In riverine areas:
    - No blasting will occur in known spawning, staging, feeding, or nursery areas.
    - In-water explosive work should be avoided between the months of April to October.
    - If explosive work becomes necessary within the April to October time frame, a non-lethal "Fish Scare" charge will be detonated one minute prior to detonation of the underwater blast.
  - b. In estuarine areas:
    - No blasting will occur in known spawning, staging, feeding, or nursery areas.
    - In-water explosive work should be avoided between the months of October to April.
    - If explosive work becomes necessary within the October to April time frame, a non-lethal "Fish Scare" charge will be detonated one minute prior to detonation of the underwater blast.
  - c. In the event that a sturgeon is killed during blasting, the NMFS and the USFWS will be notified immediately.

National Marine Fisheries Service  
by email at:  
takereport.nmfsser@noaa.gov

US Fish and Wildlife Service  
1601 Balboa Ave.  
Panama City, Florida 32405  
Tel: (850) 769-0552

11. Any sturgeon carcass will be secured on site or held in a freezer until an agency representative arranges for its transport for analysis.
12. Following completion of the project, a report summarizing any involvement with sturgeon will be prepared for USFWS and NMFS.

## **Appendix B: Blasting Plan**

**DRAFT**

**Guidelines for the Protection of Marine  
Animals During the Use of Explosives  
In the Waters of the State of Florida**

**May 2006 DRAFT**

## PURPOSE

This document is intended to provide guidance for mitigation planning and consultation purposes with state and federal agencies for new projects in the southeast U.S. using explosives. Although there are many other direct and indirect affects associated with the use of activities using explosives that may affect protected species, this guidance focuses on the determination of effects and avoidance of blast effects to protected species and their habitats from underwater explosions.

Killing or harassing threatened and endangered species and destruction or adverse modification of critical habitat is prohibited under the Endangered Species Act (ESA). Similar protection from harm and harassment are offered to all marine mammals under the Marine Mammal Protection Act (MMPA). Although marine plants are listed (i.e., Johnson's seagrass) and marine invertebrates are being considered for listing under the ESA, this guidance document applies to protected species of fishes, sea turtles, marine mammals, and their habitats.

## INTRODUCTION

The Endangered Species Act provides Federal protection for the West Indian manatee (*Trichechus manatus*) and six species of sea turtles (green, *Chelonia mydas*; hawksbill, *Eretmochelys imbricata*; Kemp's ridley, *Lepidochelys kempii*; leatherback, *Dermochelys coriacea*; loggerhead, *Caretta caretta*; olive ridley, *Lepidochelys olivacea*). The Marine Mammal Protection Act provides Federal protection for manatees, dolphins and whales. Under State of Florida statutes, the Florida Manatee Sanctuary Act provides protection for the manatee and the Marine Turtle Protection Act provides protection for sea turtles. These Federal and State statutes provide the regulatory authority for required compliance with these guidelines by the blasting proponent (e.g., the person(s) who is(are) proposing works or undertakings that involve the use of explosives). The guidelines provided herein should be for the protection of manatees, whales, mammalian dolphins and sea turtles. These guidelines are intended for in-shore or near-shore projects, and do not specifically address the blasting affects associated with the decommissioning of offshore oil and gas structures in federal waters.

Federally-listed species of fish and critical habitats under the jurisdiction of NOAA Fisheries Service that occur in Florida should also be covered under these guidelines. When blasting is used as a construction/demolition method, the protective measures for marine mammals and sea turtles should also pertain to the following ESA-listed species:

- Gulf sturgeon (*Acipenser oxyrinchus desotoi*)
- Shortnose sturgeon (*Acipenser brevirostrum*)
- Smalltooth sawfish (*Pristis pectinata*)
- Johnson's seagrass

The detonation of explosives in the marine environment has in some instances caused injury and/or death to both marine mammals and sea turtles as reviewed by Ketten (1995), Lewis (1996), and Keevin and Hemen (1997). Individual scientific publications also document the potential for marine mammal (Fitch and Young 1948; Hanson 1954; Reiter 1981; Wright 1971;

Wright 1982) and sea turtle (O’Keeffe and Young 1984; Duronslet et al. 1986; Klima et al. 1988; Gitschlag and Renaud 1989; Gitschlag 1990; Gitschlag and Herczeg 1994) injury and/or death. Based on the best available scientific information describing the potential for marine mammal and sea turtle injury/death, the Florida Fish and Wildlife Conservation Commission (FWC), in cooperation with the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), has prepared these guidelines to provide information to project proponents on the conservation and protection of marine mammals and sea turtles from adverse impacts resulting from the use of confined or open-water explosives in Florida’s waters. Within the context of these guidelines, an explosive is defined as a chemical compound which, when detonated, creates a compressional wave having an almost instantaneous rise time to a very high peak pressure followed by a decay to below ambient pressure by either rapid oxidation or the breaking of high-energy chemical bonds.

### **APPLICABLE FEDERAL AND STATE LEGISLATION**

These guidelines for the protection of marine mammals and sea turtles, the application and review procedures and processes, and reporting requirements that are outlined in this document apply in the context of the State and Federal legislative authorities briefly summarized below.

#### ***The Endangered Species Act***

Section 9 (16 U.S.C. 1538) - Prohibited Acts

(a) General

- (1)...it is unlawful for any person subject to the jurisdiction of the United States to-
  - (B) take any such species within the United States or the territorial sea of the United States;
  - (C) take any such species upon the high seas;

Section 3 (16 U.S.C. 1532) - Definitions

(18) The term “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.

#### ***The Marine Mammal Protection Act***

Section 102 (16 U.S.C. 1372) - Prohibitions

(a)...it is unlawful-

(1)(A) for any person or vessel or other conveyance to take any marine mammal in waters or on lands under the jurisdiction of the United States;

Section 3 (16 U.S.C. 1362) - Definitions

(13) The term “take” means to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.

(18)(A) The term “harassment” means any act of pursuit, torment, or annoyance which-

- (i) has the potential to injure a marine mammal or marine mammal stock in the wild; or
- (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.

***The Florida Manatee Sanctuary Act***

Title XXVII, Section 370.12 – Marine animals; regulation

(2) Protection of Manatees or Sea Cows

(d)...it is unlawful for any person at any time, by any means, or in any manner intentionally or negligently to annoy, molest, harass, or disturb or attempt to molest, harass, or disturb any manatee; injure or harm or attempt to injure or harm any manatee; capture or collect or attempt to capture or collect any manatee; pursue, hunt, wound, or kill or attempt to pursue, hunt, wound, or kill any manatee, or possess, literally or constructively, any manatee or any part of any manatee.

***The Marine Turtle Protection Act***

Title XXVII, Section 370.12 – Marine animals; regulation

(1) Protection of Marine Turtles

(d)(5) Any person, firm, or corporation that illegally takes, disturbs, mutilates, destroys, causes to be destroyed, transfers, sells, offers to sell, molests, or harasses any marine turtle species, or the eggs or nest of any marine turtle species as described in this subsection, commits a third degree felony.

**GUIDELINES**

In seeking authorization to conduct underwater blasting in the State of Florida, the project proponent is responsible for providing a Blasting Plan. These guidelines are to be used to develop a site-specific Blasting Plan to be submitted to the appropriate State and Federal regulatory agencies (i.e., U.S. Fish and Wildlife Service, National Marine Fisheries Service, U.S. Coast Guard, and U.S. Army Corps of Engineers) as well as the FWC. This site-specific plan is to be submitted during the permitting process and approved before permit issuance. The permit will then reference the plan and the conservation measures within the plan will become permit conditions. Revision of the plan would require a permit modification.

**THE BLASTING PLAN**

The Blasting Plan must include the following components: (1) Blasting Design, (2) Impact Assessment, (3) Mitigation Plan, and (4) Endangered Species Watch Plan. Each of these components is described in detail below.

**1. *Blasting Design***

The project proponent shall provide a “detailed” written description of the project blasting design, which must include a diagram(s) of the blasting design. At a minimum, the following information must be included:

- a. Type of initiation system to be employed. [Is the system fully electric or completely non-electric? Are there parts of both? Is any detonation cord used?]
- b. Timing and duration of underwater blasting, the limitation to daylight shooting, and any tidal and/or seasonal restrictions.

- c. Expected type and weight of explosives to be used per shot for production shots and the maximum charge weight per interval of 25 milliseconds (preferred). Sequentially list every charges' total delay time in increasing time order. Any charge weights with less than 9-milliseconds interval are summed to find the maximum charge weight per delay.
  
- d. Blast pattern and geometry of the individual shots for a small project or of a general blast production for a large blasting program. Test program to develop from small charges to the maximum charge weight per delay interval necessary for production. The expected production charge weight per delay, spacing and burden between borings, placement of explosives within borings, stemming type and minimum length of stemming placement within the structure (note 3.e. below), and the location of the initiator within the boring. [A small project (e.g., bridge demolition) will have a limited blasting plan, perhaps completely prepared. A large program (e.g., harbor rock removal) will have a general blasting program that varies through the project. A program may be needed to scale the first charge weight per delay to the maximum charge weight per delay for the project.]
  
- e. Description of millisecond-delays that will be used if multiple charges are required.
  
- f. Detailed description of the material to be blasted (i.e., substrata characteristics, description of concrete and reinforcement, etc.) and surrounding geology (water depth, water width, sediment thickness, rock or structure being removed, etc.).
  
- g. Detailed description of control measures that will be employed to assure that hole spacing, burden, hole depth, charge placement, delay interval, the stemming minimum, and recording of the shot have met the conditions of the permit and submitted plan.

## ***2. Impact Assessment***

The project proponent shall provide a “detailed” Environmental Impact Assessment of the proposed blasting project. At a minimum, the following information must be included:

- a. The likelihood of sea turtles and marine mammals being in the blasting area. The proponent shall consult existing scientific literature and the FWC and/or other resource agencies. Pre-blast marine mammal/sea turtle surveys may be required, at the discretion of the FWC, USFWS, NMFS, or other reviewing/permitting agencies.
  
- b. A description of the marine mammal/sea turtle “exclusion zone” that will be developed and used for underwater blasting programs to provide species’ protection. The preferred minimum exclusion zone radius or range from which to protect marine mammal/sea turtles is 500 linear feet beyond the perimeter of placed blasting agents for a shot. The preferred maximum exclusion zone is a 2,000-foot radius beyond the blast perimeter for a submerged shot. An additional 500 feet should be added to the calculated radius or exclusion zone in order to adequately control animals being precluded from this area. When underwater blasting will be conducted in a very controlled manner for a protracted period of months and has acceptable project monitoring, the project proponent may apply to the FWC and other appropriate

permitting agencies for a special review of exclusion zone criteria.

Underwater explosions can be broadly categorized as either “confined” or “open-water.” Confined shots produce much less environmental damage for the same charge weight when compared to open-water shots (Nedwell and Thandavamoorthy 1992; Hempen et al. 2005). For confined shots, the pressure waves are dominantly radiated into a stiff medium (such as rock or a massive structure founded on rock) and remain in that medium. Confined shots have vertical heights of the stiff medium exposed to water (or loose sediment below water) of less than half the smaller areal (horizontal) dimension of removal. [For example, removal of a stiff medium (rock or concrete) exposed to 8 feet of the water and sand vertically for the smaller horizontal removal dimension of 20 linear feet would safely radiate most of its energy into the stiff medium. Alternatively, removal of a concrete column with 8 feet vertically surrounded by water and mud, and a horizontal diameter of less than 16 feet, would be presumed to adversely transmit most of its energy to the water. The former example is a low-impact confined blast, while the latter is an open-water blast that may have high organism impact.] Blasting in the water column, not connected to a structure, has a high transmission of pressure waves through the water column. Blast removal of some stiff-medium structures below the water surface (e.g., columns, piers, or pilings) releases its energy directly to the surrounding water column or loose sediment, which has a high transmission of pressure waves through the water column. Underwater blasting with high transmission to the water column and, thus potentially high organism impact, shall be termed open-water blasting.

The “exclusion zone”, also referred to as the “watch zone” shall be calculated using the following methods, appropriate to the type of blasting:

#### *Open Water Blasting*

The exclusion zone for open-water blasting shall be determined from the open-water shot’s maximum charge weight per delay, with an additional buffer of 500 feet. For an open-water shot’s maximum charge weight per delay of less than 0.19 pound, the exclusion-zone radius of 300 linear feet applies. The maximum charge weight per delay of a confined shot shall not exceed 57 pounds for the exclusion-zone criterion beneath the waters of the State of Florida, because the exclusion-zone radius would be greater than 2,000 linear feet. The equation for the open-water blasting exclusion-zone radius,  $EZ_{OW}$ , for maximum charge weights per delay between 0.19 to 57 pounds is:

$$EZ_{OW} \text{ (feet)} = (520 w^{1/3})(2) + 500 \text{ feet}$$

Where  $w$  is the maximum charge weight (in pounds) per delay of an individual open-water shot.

#### *Confined Blasting*

The exclusion zone for confined blasting shall be determined from the confined shot’s maximum charge weight per delay, with an additional buffer of 500 feet. For a confined shot’s maximum charge weight per delay of less than 1.5 pound, the “exclusion zone” radius of 500

linear feet applies. The maximum charge weight per delay of an open-water shot shall not exceed 450 pounds for the exclusion-zone criterion beneath the waters of the State of Florida, because the exclusion zone radius would be greater than 2,000 linear feet. The equation for the confined blasting exclusion zone radius,  $EZ_C$ , for maximum charge weights per delay between 1.5 to 450 pounds is:

$$EZ_{OW} \text{ (feet)} = (520 w^{1/3}) + 500 \text{ feet}$$

Where  $w$  is the maximum charge weight (in pounds) per delay of an individual confined shot.

c. A record of the type of underwater blasting (open-water or confined), procedures to reduce impacts, calculations of blast parameters, actual placement of explosive agents, organism exclusion zone distance calculations, and plans for observation shall be filed on-site before every shot is fired. Records for each shot of the blasting program shall be retained by the project proponent for the duration of project and made available to the FWC, USFWS, and NMFS immediately onsite or within two business days to the specified mailing address, as requested.

The following records shall be kept for each placement position or boring: (1) - the upper and lower bounds of cemented or consolidated material to be removed or blasted; (2) - the weight of blasting agents and explosives, and their upper and lower bounds; (3) - stemming material appropriate for the size of the borehole; and (4) - upper and lower bounds of the stemming placement within the cemented or consolidated material (usually rock or concrete). The record shall include the sequence of delays from the shortest to longest individual delay time with the total weight of blasting agent at that delay time. The record keeping shall provide enough detail to allow interpretation of the quality of shooting and level of compliance with the Blasting Plan.

d. A description of the monitoring program shall be implemented to record particle velocities when a blasting position is within 1,000 feet of a land-based location. Particle velocity monitoring independently confirms proper shot performance without the cost and difficulty of either pressure-wave recording or organism testing. Reports of particle velocity monitoring should be available to the FWC, USFWS, and NMFS, if requested, on the third business day following the shot.

e. Quantitative evaluation of potential marine mammal/sea turtle (i.e., manatee feeding areas, etc.) habitat that will be destroyed by the blasting project.

### ***3. Mitigation Plan***

The project proponent shall prepare a Mitigation Plan that shall include a detailed discussion of the measures employed to avoid or minimize the adverse impacts of blasting. Keevin (1998) provides a general description of mitigation techniques that may be useful to explosives engineers. The following measures shall be included in the Mitigation Plan:

- a. Blasting shall be conducted during the time when manatees, other marine mammals, and sea turtles are least likely to be in the blasting area. Proponents should consult with the FWC, USFWS, and NMFS to determine the appropriate timing.
- b. In tidal areas, the blasting proponent shall conduct blasting during the recommended tidal phase deemed appropriate for the area (i.e., slack or low-tide conditions).
- c. The volume and length of all blasting agents, detonation cord, and explosives will be limited to the minimum necessary to conduct the work in a manner that is efficient, safe for workers, and protective of aquatic and marine organisms. Initiation of explosive charges should be conducted with the minimum length of detonation cord possible or should utilize alternative initiation systems. Detonation cord has its own impact radius (injury/kill zone) along the entire length of submerged detonation cord.
- d. All shock-tubes and detonation cord or electric wires will be recovered and removed after each blast.
- e. After loading a charge in a hole, the hole will be back-filled (stemmed) with angular stemming material. The stemming material shall be uniform, crushed, angular stone. The stemming material shall be within the range of 1/20 to 1/8 of the borehole diameter being confined. The stemming shall not be acceptable if it contains more than 10% fines (smaller than 1/20 of the hole diameter). Stemming material shall be placed a minimum vertical length of three borehole diameters above the placed charge within sound rock or concrete. A standard procedure of logging the hole and placing the explosives shall be established to resolve and verify the proper placement of stemming material.
- f. If multiple charges are required, time-delays should be used to reduce the overall detonation pressures to a series of smaller explosions. Delays shall be used to effectively develop the removal while lowering the maximum charge weight per delay to as low as reasonably achievable. Delays of less than a 9-millisecond interval shall not be counted as delays. All charges within any 9-millisecond interval shall be summed to resolve the maximum charge weight per delay for a given shot.
- g. In addition to these measures, the proponent should consider additional mitigation measures including, but not limited to the following: Deployment of barriers or coffer dams in shallow water.

#### **4. *Endangered Species Watch Plan (WP)***

The project proponent shall prepare a WP using the guidance below to ensure that marine mammals and sea turtles are not in the exclusion zone during blasting events.

- a. A formal WP Coordination Meeting shall be held at least one (1) week prior to the first blasting event to review the WP, to discuss the responsibilities of all parties, and to review and approve the schedule of events. Personnel invited to the WP Coordination Meeting shall be contacted at least two (2) weeks prior to the first detonation event. Contacted invitees shall

include the Explosives Engineer, the observation team, FWC, USFWS, NMFS, U.S. Coast Guard, U.S. Army Corps of Engineers, and other interested parties. The agenda shall be coordinated with the FWC, USFWS, and NMFS prior to the meeting. The meeting shall include the latest information concerning the possible presence of manatee, other marine mammals, and sea turtles during blasting, the logistics of the detonation schedule, details of the aerial survey, the communications plan, and the responsibilities of all parties involved.

b. The WP shall include time tables for the endangered species observation periods (e.g., start times for aerial surveys, boat surveys, and land-based surveys), observer positions, and a copy of the WP log sheet and map to record manatee and/or sea turtle sightings.

c. The WP shall include a list of names and qualifications of the observers. Approval of the observers is at the discretion of the FWC, USFWS, and NMFS and will be made prior to the blasting event.

d. The watch crew shall consist of a minimum of a WP Coordinator, four land or boat-based observers, and one aerial observer. All observers shall have had previous experiences in observing/spotting marine mammals and sea turtles or be approved by the FWC, USFWS, and NMFS. The aerial observer shall have a minimum of 30 aerial hours of experience observing sea turtles and marine mammals, a large number of which was flying aerial surveys as a secondary observer during blasting events.

e. Observers shall follow the protocol established for the WP and shall conduct the watch in good faith and to the best of their ability.

f. Each observer shall be equipped with a two-way radio that will be dedicated exclusively to the watch. Observers will be equipped with a cell phone as a backup verbal communications system. Observers shall also be equipped with polarized sunglasses, binoculars, a red flag for backup visual communication, and a sighting log with a map to record sightings.

g. All blasting events shall be weather dependent. Climatic conditions must be suitable for optimal viewing. Slack water, low tide provides optimal viewing conditions. Blasting is prohibited if wind speeds are in excess of 10 knots, during periods of fog and heavy rain. The WP Coordinator shall determine if optimal observation conditions occur prior to initiation of the survey for each blast event.

h. All blasting events shall occur during daylight hours to ensure that optimal observation conditions occur.

i. A continuous aerial survey shall be conducted by helicopter or airplane, beginning one hour prior to the start of blasting. The survey route shall be designed in conjunction with the FWC, USFWS, and NMFS. After detonation, the aerial survey crew will make a complete survey of the blast area. The aerial survey crew shall continue surveillance of the survey areas for 30 minutes post-blast in case there is a need of aerial tracking of an injured sea turtle or marine mammal.

- j. The additional observers shall be located at predetermined positions around the blast site. These positions will be situated to provide maximum visibility of the exclusion zone and will be approved by the FWC, USFWS, and NMFS. The observers shall begin surveying the area one hour prior to the blast event and continue observing for one half hour after the blasting event.
- k. The perimeter of the exclusion zone shall be marked with brightly colored buoys and an added 300-foot radius perimeter around the exclusion zone shall be marked with white buoys for aerial reference.
- l. All of the observers shall be in close communication with the blaster in order to halt the blast event, if the need arises. The event shall be halted (delayed), if a marine mammal or sea turtle is spotted within 300 feet of the perimeter of the exclusion zone. If a marine mammal or sea turtle is observed swimming in the direction of the blast zone and their arrival time is projected to coincide with the blast, the blasting event shall be halted. The blasting event shall be halted immediately upon the request of any observer. The blast shall not take place until the animal(s) move out of the area under its own volition. Animals shall not be herded away or harassed into leaving. If the animal(s) is not sighted a second time, the blasting shall not resume until 30 minutes after the initial sighting.
- m. If an injured or dead marine mammal or sea turtle is sighted after the blasting event, the WP Coordinator shall contact the FWC through their Hotline at 1-888-404-FWCC, the NOAA Fisheries Service's Southeast Regional Hotline at 305-862-2850. Notification shall also be given to the FWC Imperiled Species Management Section at 850-922-4330, and the USFWS at the Jacksonville Ecological Services Office at 904-232-2580 (if the project is located in north Florida), or the Vero Beach Field Office at 772-562-3909 (if in south Florida).
- n. If there are any problems encountered during blasting, the problems shall be evaluated by the observers and explosives engineer. Logistical solutions will be presented to the FWC, USFWS, and NMFS for their approval. Corrections to the WP shall be made prior to the next blasting event.
- o. Within two (2) weeks after completion of all the blasting events, the WP Coordinator will submit a summary report to the FWC, USFWS, and NMFS. The report shall include the observer logs, provide the names of the observers and their positions during the event, the number and location of manatee, other marine mammals, and sea turtles sighted and the actions that were taken when the animals were observed. The report shall reference the appropriate permit or other authorization numbers.

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**Appendix C: 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

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**Appendix D: Standard Manatee Construction Conditions**

## 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 in Vero Beach (1-772-562-3909) for south Florida, and emailed to FWC at [ImperiledSpecies@myFWC.com](mailto: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 8½" 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 [http://www.myfwc.com/WILDLIFEHABITATS/manatee\\_sign\\_vendors.htm](http://www.myfwc.com/WILDLIFEHABITATS/manatee_sign_vendors.htm). Questions concerning these signs can be forwarded to the email address listed above.

# CAUTION: MANATEE HABITAT

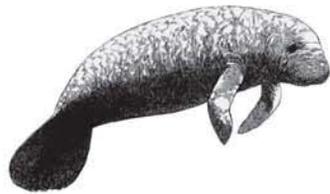
All project vessels

**IDLE SPEED / NO WAKE**

When a manatee is within 50 feet of work  
all in-water activities must

**SHUT DOWN**

Report any collision with or injury to a manatee:



**Wildlife Alert:**

**1-888-404-FWCC(3922)**

cell \*FWC or #FWC

## **APPENDIX C: Additional Conditions for In-water Activities in Manatee Habitat, March 2011**

*Note: These conditions may be subject to revision at any time. It is our intention that the most recent version of these conditions will be utilized during the evaluation of the permit application.*

Depending on the work proposed and the location, further protective measures may be required in addition to the standard manatee conditions (Appendix B). Additional information regarding: (1) dredging techniques/methods; (2) planned start and end times; (3) the amount of material to be removed; (4) the specific project location; (5) spoil disposal location; and (6) a current submerged vegetation survey (documenting the presence/absence of vegetation and the extent of any project-related impacts, if any, to submerged aquatic vegetation occurring on-site) should be provided to expedite the review process.

The additional protective measures that may be required include (but are not limited to):

- Impacts to submerged aquatic vegetation (SAV) must be avoided. If impacts have been avoided to the greatest extent practicable, impacts must be minimized (see Appendix E and Appendix F for minimizing impacts after avoidance has taken place).
- For dredging projects that do not impact SAV and involve less than 50,000 cubic yards, additional measures outlined in the 2011 Manatee Key shall be followed. For dredging projects involving more than 50,000 cubic yards, additional measures may be necessary. Areas not identified in the Key may also require special conditions.
- In-water activities may need to be conducted at times of the year when manatees are not likely to be found in the project area. In particular, activities shall not occur in or near manatee aggregation areas or important manatee areas when manatees are present.
- Dedicated manatee observers, whose sole responsibility is to watch for manatees, may be needed and must be positioned on each vessel to watch for manatees. The observer must be experienced in manatee observation techniques and assist direct dredging activity-related personnel with complying with the standard manatee conditions (Appendix B). The manatee observer must be on site during all in-water activities.
- If observers are required, but conditions (weather, heavy currents, etc.) are such that manatees cannot be seen within 50 to 100 feet, in-water activity shall not be conducted.
- In areas of high manatee use, in-water activities may not be conducted at night, particularly clamshell dredging.
- Movement of work boats and barges should be minimized at night.

**APPENDIX C: Additional Conditions for In-water Activities in Manatee Habitat, March 2011**

- All watercraft-access facilities that accommodate large vessels, particularly those 100 feet or more in length, shall provide a fendering system to reduce the probability of crushing manatees between wharves and bulkheads or between vessels moored together. Fenders, mooring buoys, or cantilevered docks must provide a minimum standoff distance of 4 feet (for fenders and buoys, under maximum compression).

**Appendix E: Construction Precautions for the Eastern  
Indigo Snake**

**STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE**  
**U.S. Fish and Wildlife Service**  
**August 12, 2013**

The eastern indigo snake protection/education plan (Plan) below has been developed by the U.S. Fish and Wildlife Service (USFWS) in Florida for use by applicants and their construction personnel. At least **30 days prior** to any clearing/land alteration activities, the applicant shall notify the appropriate USFWS Field Office via e-mail that the Plan will be implemented as described below (North Florida Field Office: [jaxregs@fws.gov](mailto:jaxregs@fws.gov); South Florida Field Office: [verobeach@fws.gov](mailto:verobeach@fws.gov); Panama City Field Office: [panamacity@fws.gov](mailto:panamacity@fws.gov)). As long as the signatory of the e-mail certifies compliance with the below Plan (including use of the attached poster and brochure), no further written confirmation or “approval” from the USFWS is needed and the applicant may move forward with the project.

If the applicant decides to use an eastern indigo snake protection/education plan other than the approved Plan below, written confirmation or “approval” from the USFWS that the plan is adequate must be obtained. At least 30 days prior to any clearing/land alteration activities, the applicant shall submit their unique plan for review and approval. The USFWS will respond via e-mail, typically within 30 days of receiving the plan, either concurring that the plan is adequate or requesting additional information. A concurrence e-mail from the appropriate USFWS Field Office will fulfill approval requirements.

The Plan materials should consist of: 1) a combination of posters and pamphlets (see **Poster Information** section below); and 2) verbal educational instructions to construction personnel by supervisory or management personnel before any clearing/land alteration activities are initiated (see **Pre-Construction Activities** and **During Construction Activities** sections below).

**POSTER INFORMATION**

Posters with the following information shall be placed at strategic locations on the construction site and along any proposed access roads (a final poster for Plan compliance, to be printed on 11” x 17” or larger paper and laminated, is attached):

**DESCRIPTION:** The eastern indigo snake is one of the largest non-venomous snakes in North America, with individuals often reaching up to 8 feet in length. They derive their name from the glossy, blue-black color of their scales above and uniformly slate blue below. Frequently, they have orange to coral reddish coloration in the throat area, yet some specimens have been reported to only have cream coloration on the throat. These snakes are not typically aggressive and will attempt to crawl away when disturbed. Though indigo snakes rarely bite, they should NOT be handled.

**SIMILAR SNAKES:** The black racer is the only other solid black snake resembling the eastern indigo snake. However, black racers have a white or cream chin, thinner bodies, and WILL BITE if handled.

**LIFE HISTORY:** The eastern indigo snake occurs in a wide variety of terrestrial habitat types throughout Florida. Although they have a preference for uplands, they also utilize some wetlands

and agricultural areas. Eastern indigo snakes will often seek shelter inside gopher tortoise burrows and other below- and above-ground refugia, such as other animal burrows, stumps, roots, and debris piles. Females may lay from 4 - 12 white eggs as early as April through June, with young hatching in late July through October.

**PROTECTION UNDER FEDERAL AND STATE LAW:** The eastern indigo snake is classified as a Threatened species by both the USFWS and the Florida Fish and Wildlife Conservation Commission. “Taking” of eastern indigo snakes is prohibited by the Endangered Species Act without a permit. “Take” is defined by the USFWS as an attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage in any such conduct. Penalties include a maximum fine of \$25,000 for civil violations and up to \$50,000 and/or imprisonment for criminal offenses, if convicted.

Only individuals currently authorized through an issued Incidental Take Statement in association with a USFWS Biological Opinion, or by a Section 10(a)(1)(A) permit issued by the USFWS, to handle an eastern indigo snake are allowed to do so.

**IF YOU SEE A LIVE EASTERN INDIGO SNAKE ON THE SITE:**

- Cease clearing activities and allow the live eastern indigo snake sufficient time to move away from the site without interference;
- Personnel must NOT attempt to touch or handle snake due to protected status.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Immediately notify supervisor or the applicant’s designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- If the snake is located in a vicinity where continuation of the clearing or construction activities will cause harm to the snake, the activities must halt until such time that a representative of the USFWS returns the call (within one day) with further guidance as to when activities may resume.

**IF YOU SEE A DEAD EASTERN INDIGO SNAKE ON THE SITE:**

- Cease clearing activities and immediately notify supervisor or the applicant’s designated agent, **and** the appropriate USFWS office, with the location information and condition of the snake.
- Take photographs of the snake, if possible, for identification and documentation purposes.
- Thoroughly soak the dead snake in water and then freeze the specimen. The appropriate wildlife agency will retrieve the dead snake.

**Telephone numbers of USFWS Florida Field Offices to be contacted if a live or dead eastern indigo snake is encountered:**

**North Florida Field Office – (904) 731-3336**  
**Panama City Field Office – (850) 769-0552**  
**South Florida Field Office – (772) 562-3909**

## **PRE-CONSTRUCTION ACTIVITIES**

1. The applicant or designated agent will post educational posters in the construction office and throughout the construction site, including any access roads. The posters must be clearly visible to all construction staff. A sample poster is attached.
2. Prior to the onset of construction activities, the applicant/designated agent will conduct a meeting with all construction staff (annually for multi-year projects) to discuss identification of the snake, its protected status, what to do if a snake is observed within the project area, and applicable penalties that may be imposed if state and/or federal regulations are violated. An educational brochure including color photographs of the snake will be given to each staff member in attendance and additional copies will be provided to the construction superintendent to make available in the onsite construction office (a final brochure for Plan compliance, to be printed double-sided on 8.5" x 11" paper and then properly folded, is attached). Photos of eastern indigo snakes may be accessed on USFWS and/or FWC websites.
3. Construction staff will be informed that in the event that an eastern indigo snake (live or dead) is observed on the project site during construction activities, all such activities are to cease until the established procedures are implemented according to the Plan, which includes notification of the appropriate USFWS Field Office. The contact information for the USFWS is provided on the referenced posters and brochures.

## **DURING CONSTRUCTION ACTIVITIES**

1. During initial site clearing activities, an onsite observer may be utilized to determine whether habitat conditions suggest a reasonable probability of an eastern indigo snake sighting (example: discovery of snake sheds, tracks, lots of refugia and cavities present in the area of clearing activities, and presence of gopher tortoises and burrows).
2. If an eastern indigo snake is discovered during gopher tortoise relocation activities (i.e. burrow excavation), the USFWS shall be contacted within one business day to obtain further guidance which may result in further project consultation.
3. Periodically during construction activities, the applicant's designated agent should visit the project area to observe the condition of the posters and Plan materials, and replace them as needed. Construction personnel should be reminded of the instructions (above) as to what is expected if any eastern indigo snakes are seen.

## **POST CONSTRUCTION ACTIVITIES**

Whether or not eastern indigo snakes are observed during construction activities, a monitoring report should be submitted to the appropriate USFWS Field Office within 60 days of project completion. The report can be sent electronically to the appropriate USFWS e-mail address listed on page one of this Plan.

## **Appendix F: UMAM Analysis**

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name SR 684 (Cortez Road) from SR 789 (Gulf Drive) to 123rd Street West (FPID Number: 430204-1)		Application Number		Assessment Area Name or Number Wetland 2 (WL 2)	
FLUCCs code 612		Further classification (optional) Mangrove Fringe		Assessment Area Size Acres	
Impact Type Direct Impact		Basin/Watershed Name/Number Tampa Bay/Coastal Areas		Affected Waterbody (Class) III	
				Special Classification (i.e. OFW, AP, other local/state/federal designation of importance)	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
Mangrove fringe located in NW quadrant of bridge, subject to routine maintenance/hedging. Densely developed upland to west (high-rise residential). Open/tidal water body to east, north and south. Storm drain discharges into the southern portion of this AA.					
Assessment area description					
mangrove dominated fringe located along northwest quadrant of bridge, mud and scattered vegetated bottom, sparse small oysterbed. Dominant vegetation includes black mangrove ( <i>Avicennia germinans</i> ), buttonwood ( <i>Conocarpus erectus</i> ), white mangrove ( <i>Laguncularia racemosa</i> ), and red mangrove ( <i>Rhizophora mangle</i> ).					
Significant Nearby Features			Uniqueness (considering the relative rarity in relation to the regional landscape.)		
High-rise residential (west), highway/bridge (south), Sarasota Bay (south), Palma Sola Bay and Manatee River (north)			Moderately rare. Mangroves generally restricted to sporadic, narrow fringe in this area, and a few isolated undeveloped parcels in this region.		
Functions			Mitigation for previous permit/other historic use		
Mangroves trap and cycle organic materials; provide important food chain resources for marine organisms; provide habitat and nursery grounds for many species; shoreline protection.			No		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)		
Roosting/foraging herons, egrets, spoonbills, sandpipers, ibises, and other wading birds. Cover/nursery for variety of marine fish species, crustaceans and shellfish. Attachment/substrate for oysters, barnacles, polychaetes.			Several species of wading birds (SSC)--intense foraging, roosting Bald eagle (NL/Managed)--occasional foraging Wood stork (T)--occasional foraging Sea turtles (E and T)--occasional swimming, foraging Piping plover (T)--foraging		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
Adjacent oyster clumps on hardbottom. Horseshoe crab swimming/foraging. Little green heron roosting/foraging.					
Additional relevant factors:					
Assessment conducted by:			Assessment date(s):		
E. Cronyn, P. Bates			6/24/13		

**PART II – Quantification of Assessment Area (impact or mitigation)**  
**(See Sections 62-345.500 and .600, F.A.C.)**

Site/Project Name SR 684 (Cortez Road) from SR 789 (Gulf Drive) to 123rd Street West (FPID Number: 430204-1)	Application Number	Assessment Area Name or Number Wetland 2 (WL 2)
Impact or Mitigation Impact	Assessment conducted by: EC, PB	Assessment date: 6/24/2013

<b>Scoring Guidance</b>
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

<b>Optimal (10)</b>	<b>Moderate(7)</b>	<b>Minimal (4)</b>	<b>Not Present (0)</b>
Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	Habitat support moderate/minimal. Uplands intensely developed. Bay open/tidal. Vegetation in vicinity of AA is altered, managed landscape dominated by non-native species. Wildlife access to AA moderate/minimal. Bridge, upland development and boat traffic. Downstream benefits to fish and wildlife minimal. Food chain/detrital support much less than historic. Minimal support from adjacent areas. Uplands intensely developed. Hydrologic impediments moderate. Bridge, navigation channel affect flows to/from AA. Downstream habitat receives minimal support from AA. Stormwater discharges into AA.	<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>3</td> <td>0</td> </tr> </table>	w/o pres or current	with	3	0
w/o pres or current	with					
3	0					
.500(6)(b) Water Environment (n/a for uplands)	Water levels and flows minimal. Bridge, channel, upland devel. alter flows. Tide levels, soil moisture levels appropriate. Flow rates, soil deposition affected by stormwater outfall discharging within AA. No evident hydrological stress on mangroves. Depth of light penetration adversely affected by stormwater discharge and nutrients in runoff into AA from adjacent uplands.	<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>5</td> <td>0</td> </tr> </table>	w/o pres or current	with	5	0
w/o pres or current	with					
5	0					
.500(6)(c) Community structure	Species composition substantially altered from historic community. Small/narrow fringe remnant from historically much larger mangrove forest. Mangrove trimming substantially alters vertical structure, bird roosting/cover, and fish habitat. Absence of prop roots limits cover for fish fry.	<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>3</td> <td>0</td> </tr> </table>	w/o pres or current	with	3	0
w/o pres or current	with					
3	0					

Score = sum of above scores/30 (if uplands, divide by 20)	
current	with
or w/o pres	
0.4	0.0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres =

Delta = [with-current]
-0.4

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name SR 684 (Cortez Road) from SR 789 (Gulf Drive) to 123rd Street West (FPID Number: 430204-1)		Application Number		Assessment Area Name or Number Wetland 3 (WL 3)	
FLUCCs code 612		Further classification (optional) Mangrove Fringe		Assessment Area Size Acres	
Impact Type Direct Impact		Basin/Watershed Name/Number Tampa Bay/Coastal Areas		Affected Waterbody (Class) III	
Special Classification (i.e. OFW, AP, other local/state/federal designation of importance)					
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
Mangrove fringe located in SE quadrant of bridge, on spoil from dredging of adjacent marina. Densely developed upland to east (commercial/retail), marina to south, and bridge to north. Open/tidal water body to west.					
Assessment area description					
mangrove dominated pocket located along southeast quadrant of bridge, mud and scattered vegetated bottom, sparse small oysterbed. Dominant vegetation includes black mangrove ( <i>Avicennia germinans</i> ), seagrass ( <i>Coccoloba uvifera</i> ), Brazilian pepper ( <i>Schinus terebinthifolius</i> ), buttonwood ( <i>Conocarpus erectus</i> ), creeping oxeeye ( <i>Sphagneticola trilobata</i> ), white mangrove ( <i>Laguncularia racemosa</i> ), and red mangrove ( <i>Rhizophora mangle</i> ).					
Significant Nearby Features Marina (south), highway/bridge (north), fill/parking area/commercial/retail (east), open bay (east)			Uniqueness (considering the relative rarity in relation to the regional landscape.) Moderately rare. Mangroves generally restricted to sporadic, narrow fringe in this area, and a few isolated undeveloped parcels in this region.		
Functions Mangroves trap and cycle organic materials; provide important food chain resources for marine organisms; provide habitat and nursery grounds for many species; shoreline protection.			Mitigation for previous permit/other historic use No		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )  Roosting/foraging herons, egrets, spoonbills, sandpipers, ibises, and other wading birds. Cover/nursery for variety of marine fish species, crustaceans and shellfish. Attachment/substrate for oysters, barnacles, polychaetes.			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)  Several species of wading birds (SSC)--intense foraging, roosting Bald eagle (NL/Managed)--occasional foraging Wood stork (T)--occasional foraging Sea turtles (E and T)--occasional swimming, foraging Piping plover (T)--foraging		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):  Brown pelican resting on piling within adjacent marina. Little blue heron foraging along shoreline adjacent to marina.					
Additional relevant factors:					
Assessment conducted by: E. Cronyn, P. Bates			Assessment date(s): 6/24/13		

**PART II – Quantification of Assessment Area (impact or mitigation)**  
**(See Sections 62-345.500 and .600, F.A.C.)**

Site/Project Name SR 684 (Cortez Road) from SR 789 (Gulf Drive) to 123rd Street West (FPID Number: 430204-1)	Application Number	Assessment Area Name or Number Wetland 3 (WL 3)
Impact or Mitigation Impact	Assessment conducted by: EC, PB	Assessment date: 6/24/2013

<b>Scoring Guidance</b>
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

<b>Optimal (10)</b>	<b>Moderate(7)</b>	<b>Minimal (4)</b>	<b>Not Present (0)</b>
Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

<p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current      with</p> <table border="1"> <tr> <td>2</td> <td>0</td> </tr> </table>	2	0	<p>Habitat support moderate/minimal. Uplands intensely developed east and north. Marina south. Bay open/tidal. No supporting vegetation in vicinity of AA, buffer non-vegetated or exotic/nuisance species. Wildlife access to AA minimal. Bridge, upland development and boat traffic. Downstream benefits to fish and wildlife minimal. Food chain/detrital support much less than reference community. Hydrology substantially altered from reference community. High intertidal. Sheetflow from parking lot/bridge. Downstream habitat receives minimal support from AA. Runoff dominated by upland impervious.</p>
2	0		
<p>.500(6)(b) Water Environment (n/a for uplands)</p> <p>w/o pres or current      with</p> <table border="1"> <tr> <td>3</td> <td>0</td> </tr> </table>	3	0	<p>Water levels and flows minimal. Bridge, parking lot, upland devel. alter flows. Tide levels, soil moisture levels not appropriate due to spoil/fill. Flow rates, soil deposition inappropriate, non-natural system. Species composition indicates less inundation than natural. Depth of light penetration adversely affected by stormwater discharge and nutrients in runoff into AA from adjacent uplands.</p>
3	0		
<p>.500(6)(c) Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current      with</p> <table border="1"> <tr> <td>3</td> <td>0</td> </tr> </table>	3	0	<p>Species composition substantially altered from historic community. Small/narrow pocket on spoil/fill. Invasive exotic species substantially reduce functions provided by structure, bird roosting/cover, and fish habitat. Absence of prop roots and short inundation limits cover for fish fry.</p>
3	0		

Score = sum of above scores/30 (if uplands, divide by 20)
current or w/o pres      with
0.3      0.0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres =

Delta = [with-current]
-0.3

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

**Uniform Mitigation Assessment Method Summary**

<b>Site/Project Name:</b>	<b>Cortez Bridge</b>	<b>Application Number:</b>		<b>Date:</b>	<b>November 11, 2013</b>
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**Impact Summary**

Assessment Area	Impact Type	Location and Landscape Support		Water Environment		Community Structure		Impact Delta	Acres	Functional Loss	
		Current	w/Impact	Current	w/Impact	Current	w/Impact				
1 North Alternative	Direct Impact	9	8	8	7	9	0	0.37	0.03	0.011	
2 South Alternative	-	-	-	8	7	9	0	0.37	0.04	0.015	
3 -	-	-	-	-	-	-	-	-	-	-	
4 -	-	-	-	-	-	-	-	-	-	-	
5 -	-	-	-	-	-	-	-	-	-	-	
6 -	-	-	-	-	-	-	-	-	-	-	
<b>TOTAL</b>										<b>0.07</b>	<b>0.026</b>

**Mitigation Summary**

Assessment Area	Mitigation Type	Location and Landscape Support		Water Environment		Community Structure		Mitigation Delta	Time Lag	Risk	PAF	RFG	Acres	Functional Gain		
		w/o Mit	w/Mit	w/o Mit	w/Impact	w/o Mit	w/Mit									
1 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
5 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
6 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<b>TOTAL</b>														<b>0.00</b>	<b>0.00</b>	<b>0.000</b>

**TOTALS**

Impacts	Acres	Mitigation - Upland	Acres	Mitigation - Wetland	Acres
Direct Impacts	0.03	Restoration	0.00	Restoration	0.00
Secondary Impacts	0.00	Enhancement	0.00	Enhancement	0.00
<b>Total Impacts</b>	<b>0.03</b>	<b>Total Upland Mitigation</b>	<b>0.00</b>	<b>Total Wetland Mitigation</b>	<b>0.00</b>

<b>Total Functional Loss</b>	<b>0.026</b>
<b>Total Functional Gain</b>	<b>0.000</b>
<b>Mitigation Deficit</b>	<b>-0.026</b>

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>FDOT DI AMB_Cortez SAV MIT</b>		Application Number		Assessment Area Name or Number <b>Cortez South Alternative</b>	
FLUCCs code <b>9110</b>		Further classification (optional)		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.04 Acres</b>					
Basin/Watershed Name/Number <b>Anna Maria Sound</b>		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>OFW, Estuary of National Significance in 1987</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p><b>Cortez Bridge is located within Anna Maria Sound. Anna Maria Sound is part of and located at the northern extreme of the Sarasota Bay National Estuary. The Sound connects Sarasota Bay with the southern portion of Tampa Bay and surrounding local water bodies (i.e., Perico Bayou). The Sound receives diurnal tidal flushing from the waters of the Gulf of Mexico. Anna Maria Sound is bordered by mixed development and stable mangrove shoreline communities primarily consisting of red mangroves.</b></p>					
Assessment area description					
<p><b>The impacted seagrass habitat is currently being evaluated through the FDOT PD&amp;E process. There are two seagrass areas on the south side of Cortez Bridge. Both of these seagrass areas are being considered as one for evaluation purposes due to similarity. This impacted seagrass community is part of a much larger and connected seagrass meadow that is comprised of mixed seagrasses (H. wrightii, S. filiforme, T. testudinum). These portions of impacted seagrass are part of larger seagrass meadows that are on the outer fringe of the complex. The western seagrass meadow is adjacent to an existing and active marina supporting multiple varieties of boats while the eastern seagrass meadow is located adjacent to the southeast touchdown of Cortez Bridge with some mangrove connectivity. The overall seagrass beds in this area are relatively stable. As part of the PD&amp;E process, one seagrass survey to map the edge of bed occurred in June of 2013.</b></p>					
Significant Nearby Features			Uniqueness (considering the relative rarity in relation to the regional landscape.)		
<b>Functioning mangrove coastal fringe and oyster bars in close proximity and existing hardbottom. Intracoastal Waterway</b>			<b>This area is not unique to the area. The Tampa Bay region to the north has experienced increased seagrass habitat over the last decade.</b>		
Functions			Mitigation for previous permit/other historic use		
<b>Providing habitat for a wide variety of fish and invertebrates. Seagrass is used by a wide range of species as feeding grounds, nurseries, and refuges from predation, providing food for various</b>			<b>None</b>		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)		
<b>Brown pelican (Pelecanus), grouper (Mycteroperca), shrimp (Penaeus), red drum (Sciaenops), spanish mackerel (Scomberomorus), porgies (Sparidae), grunts (Pomadasyidae), snappers (Lutjanidae), mojarras (Gerridae) and a variety of other fish use seagrass meadows as nursery grounds.</b>			<b>FDOT is currently evaluating ESBA related matters for this bridge section. When the review of this information is completed, this section will be updated for consistency purposes. [Refer to Anna Maria Bridge ESBA for currently available information</b>		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
Additional relevant factors:					
<b>The preferred alternative has not been determined at this time. The UMAMs for Cortez Bridge are considered draft in nature until the PD&amp;E process is complete. This information is being generated to assimilate into the overall conceptual mitigation planning required for Anna Maria Bridge and Cortez Bridge.</b>					
Assessment conducted by:			Assessment date(s):		
<b>A. Gelber</b>			<b>10/01/13</b>		

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)**

Site/Project Name: <b>FDOT DI AMB_Cortez SAV MIT</b>	Application Number: -	Assessment Area Name or Number: <b>Cortez South Alternative</b>
Impact or Mitigation: <b>Impact</b>	Assessment Conducted by: <b>A. Gelber</b>	Assessment Date: <b>10/01/13</b>

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

		.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA. b. <b>Invasive plant species</b> in proximity to AA. c. <b>Wildlife access</b> to and from AA (proximity and barriers). d. <b>Downstream benefits</b> provided to fish and wildlife. e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA. f. <b>Hydrologic impediments and flow restrictions</b> . g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges. h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).	The surrounding habitat is of high quality No invasive species No barriers to wildlife Basin-wide benefits from SAV Reduced foraging habitat and refuge No increase in flow or hydrologic impediments from impact
		Current	With Impact	Additional Notes: This proposed impact area is an edge of a seagrass bed. It is proposed that based on the location in this seagrass meadow that further erosion or impact will not occur to this aspect for the overall ecological setting. It is currently unknown if the applicant will be dredging the seagrasses or the direct impact to resources will arise from shading.	
		9	8		

		.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows</b> . b. Reliability of <b>water level indicators</b> . c. Appropriateness of <b>soil moisture</b> . d. <b>Flow rates</b> /points of discharge. e. <b>Fire history</b> (frequency/severity). f. <b>Appropriate vegetative and/or benthic zonation</b> . g. <b>Hydrologic stress</b> on vegetation. h. <b>Use by animals</b> with hydrologic requirements. i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ). j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity). k. <b>Water quality data</b> for the type of community. l. <b>Water depth, wave energy, and currents</b> .	No disturbance Water levels will not be affected N/A N/A N/A With impact, zonation could be lost Algal blooms erupt occasionally affecting light on Reduced wildlife utilization Within the acres for impact, loss of structure NA
		Current	With Impact	Additional Notes:	
		8	7		

		.500(6)(c) Community Structure		I. Appropriate/desirable species II. Invasive/exotic plant species III. Regeneration/recruitment IV. Age, size distribution. V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). IX. Submerged vegetation (only score if present). X. Upland assessment area	
		Current	With Impact	Additional Notes:	
		9	0		

Additional Notes:

<b>Raw Score</b> = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.8666667	0.5

<b>Impact Acres</b> =	0.04
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<b>Functional Loss (FL)</b> [For Impact Assessment Areas]:	
<b>FL</b> = ID x Impact Acres =	0.015

<b>Impact Delta (ID)</b>	
Current - w/Impact	0.36666667

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

At the current time, these UMAM scores are being used for conceptual permit planning.

**Appendix G: Conceptual Seagrass Mitigation Plan**

***APPENDIX C***  
***CONCEPTUAL SEAGRASS MITIGATION PLAN***

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**Conceptual Seagrass Mitigation Plan**

**Anna Maria and Cortez Bridge  
Project Development and Environment Study**

SR 64 (Manatee Ave) Anna Maria Bridge and SR 684 (Cortez Rd)  
Manatee County, Florida

Financial Project Identification (FPID) Number: 425032-1-22-01

Prepared for:



Florida Department of Transportation  
801 N. Broadway Ave.  
Bartow, Florida 33830

February 2014

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## EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) District 1 has requested Atkins to review mitigation options to offset potential impacts to seagrass habitat associated with two projects: SR 64/Manatee Avenue over the Intracoastal Waterway and the SR 684/Cortez Road Bridge project over the Intracoastal Waterway (ICW). Based on our review of the two projects, it is anticipated that 0.7 credits (as measured by the Uniform Mitigation Assessment Method (UMAM)) will be necessary to offset the projects' seagrass impacts.

This document provides a detailed analysis for the five most-feasible individual seagrass mitigation options (MOs) identified in the earlier studies, as well as a mitigation bank alternative:

- MO #1 Linear Channel (filling and natural recruitment of seagrasses)
- MO #3A Southern Spoil Island (scrape-down and transplanting of seagrasses)
- MO #3B Northern Spoil Island (scrape-down and transplanting of seagrasses)
- MO #5 Anna Maria Bridge Sandbar (scrape-down and natural recruitment of seagrasses)
- MO #7 Large Hole South of Perico Island (filling and transplanting of seagrasses)
- Mangrove Point Mitigation Bank (purchase of seagrass credits)

The Mangrove Point Mitigation Bank (MPMB) is currently in the permitting process and is anticipated to have sufficient seagrass credits available for purchase in approximately 3-5 years, at an estimated cost of \$250,000 - \$300,000 for 1.2 UMAM credits. Due to uncertainties in the permitting process and outcome for the MPMB, the other five alternatives were reviewed, with cost and timeline estimates provided for each.

The options presented herein include a summary of all options, as well as various combinations of options in order to offset the projects' anticipated impacts. The costs range from approximately \$1.4M to offset the minimum impacts associated with these projects, to \$4.5M to complete all five non-mitigation bank options. If non-bank option(s) are selected, it is anticipated that permits will be available within two to three years, with mitigation credits available shortly thereafter (please refer to Appendix 1 for coordination with the National Marine Fisheries Service (NMFS) regarding mitigation and availability of credits).

The option(s) to be pursued by FDOT, therefore depend on considerations of both timing and cost. In the event that up-front mitigation is desired within the next 2 years, then non-mitigation bank options provide the shortest time frame and could be acquired, designed and permitted for approximately \$200,000 to \$500,000, depending on which option(s) are selected. Costs of construction, seagrass transplanting, and monitoring would be spread over an additional 5-6 years. However, in the event that mitigation is not time-sensitive within the next 3 years, then monitoring the progress of the MPMB permitting and credit-release schedule would potentially result in a lower-cost option. Information regarding the MPMB will be more certain and available as this mitigation bank proceeds through the permitting process.

An Environmental Resource Permit (ERP) has been issued by the Southwest Florida Water Management District (SWFWMD) for this bank, and the approval from the U.S. Army Corps of Engineers is currently pending.

See the four tables at the end of this Summary for a breakdown of the various options and costs. The first of these tables includes a cost breakdown of the mitigation options based on each option being conducted independently.

The cost estimates presented herein assume that each of the five options would be constructed independent of each other. If multiple mitigation options were selected for concurrent construction, there would be an overall cost savings to the project. The costs as currently presented assume that each option would require separate line items for:

- mobilization
- demobilization
- staging area preparation
- turbidity testing and quality control
- survey
- silt fence
- turbidity curtain
- finish grading

A potential 30%-50% reduction in costs may be realized by the District by completing several of the options concurrently. For example, the opportunity for beneficial reuse of the material excavated from the spoil islands to be reused in the fill areas of Option 1 or 7 would reduce the cost of importing fill from an upland source by approximately 50% and would allow the material to stay within the mitigation projects further reducing handling costs. These discounted costs are resulting from economy of scale/concurrent construction, and is predicated on the assumed availability of suitable substrate material. An estimate of construction costs assuming that all mitigation options are conducted concurrently is included in Table 8 of the following document.

Sections 1.0 through 8.0 of this document provide additional detail of the UMAM value and cost of each option, as well as design, construction, monitoring, maintenance and permitting considerations for each option. Appendices include UMAM evaluations, conceptual engineering designs, and previous agency coordination.

**Table ES 1: Total Cost of Each Mitigation Option with Overall Cost**

Mitigation Option (MO)	Recommended Mitigation Action	Acres	Net Functional Gain	Transplantation Cost <sup>1</sup>	Monitoring Cost <sup>2</sup>	ROW Acquisition Cost <sup>3</sup>	Permitting / Design Cost	Construction Cost	Total Overall Cost
MO#1 (Linear Channel)	Fill placement (natural recruitment)	1.10	0.14	N/A	\$37,400	N/A		\$568,050	
MO# 3A Southern Spoil Island	Scrape down (sediment removal with seagrass transplantation)	1.10	0.20	\$42,560 - \$54,600	\$37,400	\$18,000		\$944,948	
MO #3B Northern Spoil Island	Scrape down (sediment removal with seagrass transplantation)	1.29	0.22	\$45,600 - \$58,500	\$48,400	\$308,000	\$120,000 - \$165,000	\$818,580	
MO #5 AMB Sandbar	Scrape down (sediment removal with natural recruitment)	0.50	0.07	N/A	\$15,400	N/A		\$250,635	
MO #7 Hole South of Perico Island	Fill placement with seagrass transplantation	2.40	0.29	\$72,960 - \$93,600	\$81,400	N/A		\$977,550	
<b>Totals:</b>		<b>6.39</b>	<b>0.92</b>	<b>\$161,120 - \$206,700</b>	<b>\$220,000</b>	<b>\$326,000</b>	<b>\$120,000 - \$165,000</b>	<b>\$3,559,763</b>	<b>\$4,386,883 - \$4,457,463</b>

<sup>1</sup>Transplantation cost is based on plantings at 3 foot centers

<sup>2</sup>Estimated cost is based on total cost for all options divided into each MO based on overall acreage.

<sup>3</sup>ROW acquisition cost associated with MO #3A may increase based on continuing coordination with USACE staff in order to determine process and cost to release federal spoil easement.

**Table ES 2: Costs per Mitigation Option Combination**

Mitigation Combo Option 1:

Mitigation Option (MO)	Recommended Mitigation Action	Acres	Net Functional Gain	Transplantation Cost <sup>1</sup>	Monitoring Cost <sup>2</sup>	ROW Acquisition Cost <sup>3</sup>	Permitting / Design Cost	Construction Cost	Total Estimated Cost
MO#1 (Linear Channel)	Fill placement (natural recruitment)	1.10	0.14	N/A	\$37,400	N/A			
MO# 3A Southern Spoil Island	Scrape down (sediment removal with seagrass transplantation)	1.10	0.20	\$42,560 - \$54,600	\$37,400	\$308,000	\$84,000 - \$115,500	\$1,352,250	
MO #5 AMB Sandbar	Scrape down (sediment removal with natural recruitment)	0.50	0.07	N/A	\$15,400	N/A			
MO #7 Hole South of Perico Island	Fill placement with seagrass transplantation	2.40	0.29	\$72,960 - \$93,600	\$81,400	N/A			
<b>Totals:</b>		<b>5.10</b>	<b>0.70</b>	<b>\$115,520 - \$148,200</b>	<b>\$171,600</b>	<b>\$308,000</b>	<b>\$84,000 - \$115,500</b>	<b>\$1,352,250</b>	<b>\$2,031,370 - \$2,095,550</b>

<sup>1</sup>Transplantation cost is based on total cost for all options divided into each MO based on overall acreage.

<sup>2</sup>Estimated cost associated with MO #3A may increase based on continuing coordination with USACE staff in order to determine process and cost to release federal spoil easement.

Mitigation Combo Option 2:

Mitigation Option (MO)	Recommended Mitigation Action	Acres	Net Functional Gain	Transplantation Cost <sup>1</sup>	Monitoring Cost <sup>2</sup>	ROW Acquisition Cost <sup>3</sup>	Permitting / Design Cost	Construction Cost	Total Estimated Cost
MO#1 (Linear Channel)	Fill placement (natural recruitment)	1.10	0.14	N/A	\$37,400	N/A			
MO #3B Northern Spoil Island	Scrape down (sediment removal with seagrass transplantation)	1.30	0.22	\$45,600 - \$58,500	\$48,400	\$18,000	\$84,000 - \$115,500	\$888,421	
MO #5 AMB Sandbar	Scrape down (sediment removal with natural recruitment)	0.50	0.07	N/A	\$15,400	N/A			
MO #7 Hole South of Perico Island	Fill placement with seagrass transplantation	2.40	0.29	\$72,960 - \$93,600	\$81,400	N/A			
<b>Totals:</b>		<b>5.30</b>	<b>0.72</b>	<b>\$118,560 - \$152,100</b>	<b>\$182,600</b>	<b>\$18,000</b>	<b>\$84,000 - \$115,500</b>	<b>\$888,421</b>	<b>\$1,291,581 - \$1,356,621</b>

<sup>1</sup>Transplantation cost is based on plantings at 3 foot centers.

<sup>2</sup>Estimated cost is based on total cost for all options divided into each MO based on overall acreage.

<sup>3</sup>ROW acquisition cost associated with MO #3A may increase based on continuing coordination with USACE staff in order to determine process and cost to release federal spoil easement.

## 1.0 INTRODUCTION AND BACKGROUND

The Florida Department of Transportation (FDOT) District 1 is currently conducting a mitigation assessment in order to address potential impacts to benthic habitat that was identified during two independent Project Development and Environment (PD&E) studies. These studies consist of the Anna Maria Bridge Replacement project (FPID 424436-1-22-01) located on SR 64/Manatee Avenue over the Intracoastal Waterway (ICW) and the SR 684/Cortez Road Bridge project (FPID 430204-1-22-01) over the Intracoastal Waterway. Potential impacts to seagrasses are anticipated in association with both projects. Atkins was retained to provide a mitigation analysis and conceptual mitigation plan to address the need for compensatory mitigation for impacts to seagrasses associated with these proposed projects.

This document provides a detailed analysis for five individual seagrass mitigation options (MOs) for the Anna Maria Bridge project and Cortez Bridge projects. This conceptual mitigation plan includes conceptual design plans (including topographic and bathymetric survey results), estimates of fill placement and fill removal, preliminary functional loss/gains evaluations through Uniform Mitigation Assessment Method (UMAM), Chapter 62-345, Florida Administrative Code (FAC), a conceptual long-term monitoring plan, and a discussion of permitting recommendations, constraints, and timeframes. In addition, cost estimates for mitigation (including costs for right of way (ROW) acquisition, mitigation construction, seagrass transplantation, permitting, and long-term monitoring) are also provided.

During recent field work associated with the Cortez Bridge PD&E evaluation, hardbottom habitat was found in close proximity to the Cortez Bridge. Potential impacts to hardbottom habitat, and subsequent mitigation options are not considered as part of this evaluation, as this information will be included in detail as part of the on-going Cortez Road Bridge PD&E Study.

### **Field Assessments**

Two distinct field assessments (Summer 2011 and Summer 2013) have been conducted in association with the Anna Maria Bridge and Cortez Bridge mitigation analysis. Tasks associated with these field assessments included seagrass edge of bed mapping, mangrove mapping, and terrestrial and in-water visual assessments to evaluate potential mitigation options with the highest probability of success. All seagrass and mangrove mapping efforts were documented using a Trimble GeoXT 6000 series handheld unit running ESRI ArcPad 10. In-water visual assessments were conducted using a combination of snorkel and SCUBA equipment, as determined by depths. The detailed methods and results of the field assessments are documented in the Technical Memoranda dated September 7, 2011 and July 12, 2013, which are included in Appendix 1, along with United States Fish and Wildlife Service (USFWS) correspondence.

#### *2011 Assessment*

The Summer 2011 field assessment (June 20-22 and July 21-22, 2011) was conducted to provide an update of the original 2009 seagrass bed map along SR 64/Manatee Avenue (Anna Maria Bridge) and was completed during the PD&E study. The updated seagrass edge of bed locations

were then utilized to estimate impacts and mitigation requirements based on the PD&E Study preferred alternative (Alternative 3BS – High-Level Fixed-Bridge, Typical Section B, South Alignment) (Please refer to Figure 1). Based upon the updated 2011 seagrass survey, the estimated seagrass impact from the preferred alternative is 1.87 acres which is a slight increase over the 1.81 acres of impact identified during the original 2009 survey. Additionally, five potential seagrass MOs were identified and preliminarily evaluated during the field effort. These five MOs included MO #1 - Linear Channel, MO #2 - Dredge Hole South of Cortez Bridge, MO #3A - Southern Spoil Island, MO #3B - Northern Spoil Island, and MO #4 - Dredge Hole Northwest of Anna Maria Bridge (Table 1). Each mitigation option will be discussed in further detail below.

### *2013 Assessment*

The Summer 2013 field assessment (June 24-27, 2013) was conducted to reevaluate the five previously-identified potential seagrass MOs, as well as to conduct a preliminary evaluation of four additional potential seagrass mitigation sites to ensure functional habitat losses were properly compensated. The four additional MOs included MO #5 - Anna Maria Bridge Sandbar, MO #6 - Small Hole South of Cortez Road Bridge, MO #7 - Large Hole South of Perico Island, and MO #8 - Shrimp House/Derelict Vessel (Table 1). Each mitigation option will be discussed in further detail below. The Summer 2013 field assessment also included a benthic survey along the SR 684/Cortez Road Bridge corridor over the Intracoastal Waterway (please refer to Figure 2 for a map of seagrass beds occurring adjacent to the Cortez Road Bridge). The findings of this benthic survey will be provided in separate documents (i.e., Essential Fish Habitat Assessment and Wetland Evaluation Report) as part of the Cortez Road Bridge PD&E Study.

**Table 1: Mitigation Options Evaluated for the Anna Maria Bridge Replacement Project and the Cortez Bridge PD&E Study**

Mitigation Option (MO)	Evaluated	Priority Ranking as of July 2013
MO #1 - Linear Channel	Summer 2011, Summer 2013	High Priority – Conceptual mitigation plan developed
MO #2 - Dredge Hole South of Cortez Bridge	Summer 2011, Summer 2013	Low Priority – Discounted from further analysis
MO #3A - Southern Spoil Island	Summer 2011, Summer 2013	Medium Priority – Conceptual mitigation plan developed
MO #3B - Northern Spoil Island	Summer 2011, Summer 2013	Medium Priority – Conceptual mitigation plan developed
MO #4 - Dredge Hole Northwest of Anna Maria Bridge	Summer 2011, Summer 2013	Low Priority – Discounted from further analysis
MO #5 - Anna Maria Bridge Sandbar	Summer 2013	High Priority – Conceptual mitigation plan developed
MO #6 - Small Hole South of Cortez Road Bridge	Summer 2013	Low Priority – Discounted from further analysis
MO #7 - Large Hole South of Perico Island	Summer 2013	Medium Priority – Conceptual mitigation plan developed
MO #8 - Shrimp House/Derelict Vessel	Summer 2013	Low Priority – Discounted from further analysis

These nine individual MOs were evaluated to determine their feasibility for use as mitigation for impacts associated with both the Anna Maria and Cortez Road bridge projects. During the previous field assessments, each mitigation option was analyzed to determine the location of mangrove and upland vegetation (MOs #3A and #3B), edge of seagrass bed, and any access/depth restrictions based on constructability. Based on these collected data, each mitigation option was ranked in order of priority/feasibility (i.e., high, medium, low priority). Detailed descriptions of all nine MOs and the reasons for each priority ranking are documented in the Technical Memorandum dated July 12, 2013. The four MOs that were assigned a LOW priority ranking (MO #3 - Dredge Hole South of Cortez Bridge, MO #4 - Dredge Hole Northwest of Anna Maria Bridge, MO #6 - Small Hole South of Cortez Road Bridge, and MO #8 - Shrimp House/Derelict Vessel) were determined to be infeasible and were eliminated as potential mitigation options. The remaining five MOs are evaluated individually in Section 5.0 of this document and shown on the conceptual mitigation plans (Appendix 2).

### **Mitigation Bank Alternative**

The Mangrove Point Mitigation Bank (MPMB) is located in Tampa Bay, north of the Anna Maria Bridge and Cortez Bridge projects (please refer to Figure 3 for location map of the MPMB). As currently proposed by the mitigation banker, the Mitigation Service Area (MSA) will include both projects. The MPMB is currently in the permitting process. An Environmental Resource Permit (ERP) has been issued by the Southwest Florida Water Management District (SWFWMD) (Permit No. 43035355.002, issued 11/22/13) and the wetland mitigation bank ledger has been approved for a total of 100.5 UMAM mitigation credits, including 1.21 UMAM seagrass mitigation credits. Approval from the U.S. Army Corps of Engineers is currently pending. A copy of the SWFWMD ERP Permit is included in Appendix 3. Release of the mitigation credits for purchase is dependent upon meeting various criteria (see Special Condition 33 of the ERP permit) within 3-5 years. Thus, the 1.21 seagrass mitigation credits are anticipated to be available for purchase within 3-5 years. The MPMB option is further evaluated in Sections 2.0, 6.0 and 8.0 of this document.

## 2.0 CONCEPTUAL MITIGATION CONSIDERATIONS

### **Compensatory Mitigation Options**

The FDOT will determine the most appropriate method for mitigation of seagrass impacts from the proposed Anna Maria Bridge and Cortez Bridge projects in coordination with the applicable regulatory agencies. Options include the purchase of credits from an approved mitigation bank, creation/restoration of seagrass habitat, or a combination of the two. The Mangrove Point Mitigation Bank (MPMB) is located in Tampa Bay, north of the Anna Maria Bridge and Cortez Bridge projects. Specifically, the MPMB is a 503 acre area located west of Ruskin, north of 19<sup>th</sup> Avenue, and west of US 41 in southern Hillsborough County, Florida. The Mitigation Service Area (MSA) for the MPMB is proposed to be the entire estuarine component of the Tampa Bay watershed and the tidally influenced reaches of the rivers emptying into Tampa Bay. The MPMB is currently in the permitting process and is anticipated to have 1.2 seagrass credits available for purchase in approximately 3-5 years. Construction of the proposed Anna Maria Bridge and Cortez Bridge projects are not anticipated to begin in less than five years; thus, the MPMB appears to be a viable option for the purchase of credits for these projects.

The following paragraphs in this section describe considerations that should be taken into account when proceeding with the five MOs that involve seagrass habitat creation/restoration. Each method comes with its own degree of risk and success.

### **Establishing Appropriate Elevations**

Throughout Florida, water bodies that contain seagrasses experience variable light penetration. In the Tampa Bay region, light limitation within the water column is a primary factor in determining the depths at which seagrass beds occur. The target depth/elevation for all mechanical dredging or filling activities at a mitigation site is therefore equivalent to the depth/elevation of the seagrass beds surrounding the mitigation site. Before seagrass can colonize a mitigation site, the appropriate substrate elevation must be obtained. Methods for establishing an appropriate elevation include scrape down (sediment removal) if the elevation of the mitigation site is higher than the surrounding area and/or fill placement if the elevation is lower than the surrounding area.

#### *Scrape Down (Sediment Removal)*

At sites where the existing bottom elevation is higher than surrounding seagrass beds, sediment would be removed (scraped down) to achieve the appropriate elevations needed to achieve seagrass colonization. This is the method that would be recommended for MO #3A, #3B, and #5.

#### *Fill Placement*

Sediment placement is a restoration technique that returns the seafloor to original grade, stabilizes substrate to prevent further erosion, and prepares an area for colonization by seagrasses. This is the recommended method for MO #1 and #7. Different sediment placement techniques are available. Installation of loose fill is appropriate for placement in large excavations with a depth greater than 20 centimeters (cm) (~8 inch). Loose fill may consist of:

(1) a sediment mixture with substrate characteristics (e.g., grain size, color, organic content) similar to the surrounding area or (2) limestone pea rock (National Oceanic and Atmospheric Administration ([NOAA] and the Florida Department of Environmental Protection [FDEP] 2004). Fine sediments from the local area will eventually fill the interstitial spaces of the limestone pea rock.

At shore, loose fill is loaded onto a work barge capable of traveling in shallow water depths. The work barge navigates to the mitigation site and anchors or spuds within the site (or within an adjacent navigation channel, if possible, to minimize impacts to the surrounding area). Using snorkel or scuba gear, a minimum of one biologist and one contractor are responsible for: (1) filling the entire excavation to match surrounding grade, (2) leveling the loose fill within the site, and (3) ensuring no impacts to surrounding seagrasses during the restoration activity. All on water construction will need to adhere to best management practices to avoid or minimize turbidity which will be clearly stated in the state and federal permits. Approximately one week after completion of construction, the sediment fill elevation is measured (allowing time for settlement). If the elevation of the sediment fill is greater than 10 cm above or below the elevation of the surrounding area, sediment is added, removed, or redistributed as necessary. Any fill placement method used should not adversely impact surrounding natural resources or for the following reasons:

- All restoration activities are conducted within the boundaries of the mitigation site (including vessel anchoring/spudding) and minimal contact should be made with the surrounding area.
- Turbidity curtains, with a minimum 5-foot (ft) depth, must be securely anchored around the inside edge of the mitigation site prior to barge spudding/anchoring or fill placement operations to prevent direct or indirect impacts to surrounding seagrass beds. The turbidity curtains remain in place until turbidity levels at the mitigation site are consistent with reference sites.
- Turbidity monitoring should be conducted throughout the duration of the construction to ensure indirect impacts to the surrounding environment are negligible.

### **Natural Recruitment vs. Seagrass Transplantation**

Once the appropriate elevation and sediments have been established at the mitigation site, the next step is to establish seagrasses within the graded site. In most cases, the preferred technique for establishing seagrasses is via natural recruitment/colonization from the surrounding seagrass beds. The natural recruitment technique is less labor, time, and cost intensive. However, in certain circumstances, seagrass transplantation into a mitigation site is preferable to natural recovery in order to minimize time lag and thereby achieving greater mitigation credit.

Seagrass transplantation is an effective method used to stabilize sediments and decrease recovery time at a mitigation site (Fonseca et al. 1998). This technique involves the collection of seagrass material from a donor site and subsequent installation of that material at the mitigation site. Seagrass donor material is collected in portions known as planting units (PUs).

The PUs are obtained by selective removal of healthy seagrass with intact rhizomes from a designated donor site. The donor site is ideally located near the proposed mitigation site (to ensure minimal variation in genetic differences between resident seagrasses and transplanted seagrasses) and has similar environmental conditions (e.g., light on bottom, salinity, sediment type, tidal current speed, wave exposure, temperature) as the mitigation site (NOAA and FDEP 2004, Fonseca et al. 1998). To minimize stress to the collected seagrass, every effort should be made to plant PUs at the mitigation site within the same day as collection. Transplanting activities should also occur during the beginning of seagrass growing season (seagrass growing season from June 1-September 30) to achieve the greatest amount of establishment in the first year and, therefore, increase probability of PU survival and meeting the permitted and established success criteria for the project. If the mitigation site required fill placement, seagrass transplantation should occur  $\geq 30$  days after fill placement activities are complete. This allows the fill material to equilibrate within the specific mitigation site.

There are several factors to consider when determining whether seagrass transplantation is recommended for a given mitigation site, including size of the site, site energy, and species composition of surrounding seagrass beds. These factors are discussed below.

#### *Mitigation Site Size*

Natural recruitment is often effective for sites that are small in area (generally  $< 0.25$  acres [ac.]). However, for larger mitigation sites ( $> 0.25$  ac.), the lengthy time required for natural recruitment may prevent the project from meeting the success criteria within the designated time period. In these cases, seagrass transplantation is often recommended.

#### *Mitigation Site Energy*

In sites that experience high energy (high current velocities), seagrass transplantation is not recommended due to potential damage to transplanted PUs. Seagrass transplantation is only appropriate at low-to-moderate energy sites where the probability of losing transplants to high water velocity is low (NOAA and FDEP 2004). When using this technique, consideration should also be given to the likelihood of future damage events in the area. If the transplant site is located in a high traffic area, the seagrass transplantation effort is at risk and the probability of transplant success is low.

#### *Surrounding Seagrass Species*

Natural recruitment is often effective for sites that are surrounded by seagrass beds containing faster growing species. Shoal grass (*Halodule wrightii*) and manatee grass (*Syringodium filiforme*) are the faster growing, opportunistic species. They can serve as temporary substitutes for climax species such as turtle grass (*Thalassia testudinum*) (NOAA and FDEP 2004). Additionally, for mitigation sites that lack a surrounding seagrass bed or large sites that are surrounded by seagrass beds containing slower growing seagrass species (e.g., *Thalassia testudinum*), natural recruitment may prevent the project from meeting the success criteria within the designated time period.

### **Up-Front Mitigation vs. Post-Construction Mitigation**

The NMFS coordination letter, dated September 22, 2011 (please refer to Appendix 1), states that compensatory mitigation for unavoidable impacts to essential fish habitat should be “completed, monitored and deemed successful prior to the construction of the new bridge.” If the FDOT elects to conduct up-front mitigation (mitigation conducted prior to project construction), the appropriate donor site for the proposed Anna Maria Bridge and Cortez Bridge projects would be the proposed impact areas for those projects (please refer to Figure 1 for a map of the three Anna Maria Bridge seagrass impact areas). If up-front mitigation is not feasible, a separate donor site would need to be identified. An appropriate donor site should not be located within a high energy environment, since high current areas can initiate erosion scarps that can spread and damage the donor bed (Partiquin 1975). Turtle grass (*T. testudinum*) is typically avoided during PU collection due to its slow growth and the difficulty in collecting a sufficient number of apical meristems (undifferentiated meristematic tissue found in the rhizomes of seagrass) during harvesting efforts. In cases where turtle grass is used for donor material, larger PUs would need to be collected in order to capture a sufficient number of apical meristems. Seagrass PUs should be collected from various areas in the donor site to avoid creating a large hole in the donor bed’s standing stock and to decrease the amount of time required for the donor bed to replenish itself (NOAA and FDEP 2004). Repeated harvest from donor sites within a calendar year should be avoided (Fonseca et al. 1998). It is also important to note that should FDOT elect to conduct post-construction mitigation (which would require agency approval since the NMFS correspondence in Appendix 1 specifically requires up-front mitigation), the time lag for of the mitigation will increase due to the increase in the amount of time required for the proposed mitigation to fully offset the seagrass impacts.

### **Seagrass Transplantation Considerations**

If seagrass transplantation is required, several different seagrass transplantation methodologies may be implemented, depending on the site conditions and seagrass species used. Available methods include the use of plugging devices (device that captures seagrass along with the associated sediment), bare root, peat pots (biodegradable pots containing the seagrass PU), and staples (biodegradable staples to secure a PU).

The appropriate spacing of seagrass PU within a mitigation site is necessary for a successful project. PU spacing typically ranges from 0.5 m to 2.0 m (on center) depending on the size and condition of the damage site (Fonseca et al. 1998). For this conceptual mitigation plan, planting of PUs is proposed on 3-ft (0.914 m) centers.

Studies have shown that introduction of nitrogen and phosphorus into nutrient limited areas can stimulate seagrass growth (Kenworthy et al. 2000, Powell et al. 1989b, Powell et al. 1991, Fourqurean et al. 1995). At mitigation sites where the sediment is nutrient-limited, nutrient augmentation (via fertilizer spikes) may be needed to increase the recovery rate of seagrasses. Nutrient requirements would be dependent upon the source and nutrient profile of fill material and will be evaluated during future mitigation planning phases.

### 3.0 ESTIMATES OF REQUIRED MITIGATION

The current estimated seagrass impact for the Anna Maria Bridge Replacement project is 1.87 acres. This estimate is based upon the 2011 seagrass survey results and the preferred alternative (Alternative 3BS – High-Level Fixed-Bridge, Typical Section B, South Alignment) identified in the Project Development and Environment (PD&E) Study. The 1.87 acres (ac.) of direct impact for the Anna Maria Bridge project include impacts in three separate impact areas: SG-1 (0.24 ac.), SG-3 (0.59 ac.), and SG-4 (1.04 ac.). Please refer to Figure 1 for a map of the three Anna Maria Bridge seagrass impact areas. The Uniform Mitigation Assessment Method (UMAM) assessments (please refer to Appendix 4 for the UMAM forms and Figures 4A-E for maps showing the UMAM assessment areas) of the Anna Maria Bridge seagrass impact areas indicate that the proposed impacts would decrease the location and landscape support scores (from 9 to 8), the water environment scores (from 8 to 7), and the community structure scores (from a 9 to 0) at all three impact sites (Table 2). The proposed impacts will result in a functional loss (FL) of approximately 0.37 per acre for each of the three areas. The FL of the impacts for these three areas totals 0.69 UMAM units (0.09 units for SG-1, 0.22 units for SG-3, and 0.38 units for SG-4).

**Table 2: Impact Summaries of the Anna Maria Bridge Seagrass Impact Areas**

Assessment Area	Location & Landscape Support		Water Environment		Community Structure		Impact Delta	Acres	Functional Loss
	Current	w/ Impact	Current	w/ Impact	Current	w/ Impact			
SG-1	9	8	8	7	9	0	0.37	0.24	0.088
SG-3	9	8	8	7	9	0	0.37	0.59	0.216
SG-4	9	8	8	7	9	0	0.37	1.04	0.381
<b>TOTAL</b>								<b>1.87</b>	<b>0.69</b>

A preferred alternative has not yet been selected in the Cortez Bridge PD&E process. It is anticipated that two possible alignments will be investigated during the upcoming PD&E Study: an alignment north of the existing bridge and an alignment south of the existing bridge. Two estimates of seagrass impacts were obtained for the Cortez Bridge project (*Cortez Bridge – North Alignment* and *Cortez Bridge – South Alignment*). The seagrass impact for the potential north alignment was estimated by calculating the area of seagrass within the existing the FDOT right of way (ROW) north of the existing bridge. The seagrass impact for the potential south alignment was estimated by calculating the area of seagrass within the existing FDOT ROW south of the existing bridge. The current estimated seagrass impact for the Cortez Bridge project ranges from 0.022 – 0.042 ac., depending on the alignment selected (Table 3).

The total seagrass impact acreage for the two bridge projects ranges from 1.89 - 1.91 ac. (Table 3), depending on which alignment is selected for the Cortez Bridge project and agency approval of UMAM scores. Under either alignment, these impacts represent a functional loss and required mitigation of approximately 0.70 UMAM units. The UMAM forms are provided in Appendix 4.

**Table 3: Estimated Seagrass Impacts and Required Mitigation  
for the Anna Maria Bridge and Cortez Bridge Projects**

<b>Project</b>	<b>Estimated Seagrass Impacts (ac)</b>	<b>Functional Loss Units/ Required Mitigation</b>
Anna Maria Bridge	1.87	0.685
Cortez Bridge – North Alignment	0.022	0.011
Cortez Bridge – South Alignment	0.042	0.015
<b>Total (with south alignment)</b>	<b>1.89 – 1.91</b>	<b>0.70</b>

#### 4.0 CONCEPTUAL MITIGATION PLAN FOR INDIVIDUAL MITIGATION OPTIONS

The five feasible mitigation options (MOs) are listed in Table 4, along with the recommended mitigation action for each MO. These five MOs are described in detail below. Please refer to Appendix 2: Sheet C-001 for a project layout showing the location of all six MOs relative to the Anna Maria Bridge and Cortez Bridge crossings. Each seagrass MO was evaluated using the Uniform Mitigation Assessment Method (UMAM). The UMAM Forms are provided in Appendix 4.

**Table 4: Recommended Mitigation Actions for the Six Feasible Mitigation Options Evaluated for the Anna Maria Bridge Replacement Project and the Cortez Bridge PD&E Study**

Mitigation Option (MO)	Recommended Mitigation Action
MO #1 - Linear Channel	Fill placement
MO #3A - Southern Spoil Island	Scrape down (sediment removal) with seagrass transplantation
MO #3B - Northern Spoil Island	Scrape down (sediment removal) with seagrass transplantation
MO #5 - Anna Maria Bridge Sandbar	Scrape down (sediment removal)
MO #7 - Large Hole South of Perico Island	Fill placement with seagrass transplantation

##### **MO #1 (Linear Channel)**

MO #1 consists of a linear channel that is located northwest of the existing SR 64/Anna Maria Bridge (please refer to Appendix 2: Sheet C-300). The linear channel extends in a northeast direction and terminates at the existing navigation channel. The linear channel is relatively shallow (bathymetry ranging from -4.0 to -6.0 feet [ft]) and the substrate consists of unvegetated, sandy bottom. Shoal grass (*Halodule wrightii*), turtle grass (*Thalassia testudinum*), and manatee grass (*Syringodium filiforme*) have been documented within the seagrass beds located adjacent to the north and south of the linear channel.

The conceptual mitigation plan for MO #1 includes seagrass restoration via the installation of ~5,800 cubic yards (CY) of fill within the design fill template (please refer to Appendix 2: Sheet C-300), bringing the site to a target elevation of -3.0 ft (NAVD88) to match the elevation of the surrounding seagrass beds. Seagrass transplantation is not recommended at MO #1, because natural recruitment of seagrasses from the adjacent seagrass beds is likely due to the narrow channel-like nature of the site and the faster growing seagrass species found within the adjacent beds (shoal grass and manatee grass). Augmenting this MO with planting seagrass is an option.

MO #1 would provide approximately 1.1 acres (ac.) of seagrass mitigation. The UMAM assessment (please refer to Table 5 and Appendix 4) of MO #1 indicates that the proposed restoration would increase the location and landscape support scores at the site (from an 8 to a 9), the water environment score (from a 7 to an 8), and the community structure score (from a 0 to a 9). The proposed restoration results in a mitigation delta of approximately 0.37. A conservative planning level temporal lag factor of 1.25 was assigned, as six to ten years are anticipated between the time the seagrass impacts are anticipated to occur and the time when the mitigation is anticipated to fully offset the impacts. A conservative planning level mitigation

Table 5: UMAM Summaries and Costs Associated with the Five MOs Evaluated  
**Total Cost of Each Mitigation Option and Total Overall Cost**

Mitigation Option (MO)	Recommended Mitigation Action	Acres	Net Functional Gain	Transplantation Cost <sup>1</sup>	Monitoring Cost <sup>2</sup>	ROW Acquisition Cost <sup>3</sup>	Permitting / Design Cost	Construction Cost	Total Overall Cost
MO#1 (Linear Channel)	Fill placement (natural recruitment) Scrape down (sediment removal with seagrass transplantation)	1.10	0.143	N/A	\$37,400	N/A		\$568,050	
MO# 3A Southern Spoil Island	Scrape down (sediment removal with seagrass transplantation)	1.10	0.201	\$42,560 - \$54,600	\$37,400	\$18,000		\$944,948	
MO #3B Northern Spoil Island	Scrape down (sediment removal with seagrass transplantation)	1.29	0.224	\$45,600 - \$58,500	\$48,400	\$308,000	\$120,000 - \$165,000	\$818,580	
MO #5 AMB Sandbar	Scrape down (sediment removal with natural recruitment)	0.50	0.065	N/A	\$15,400	N/A		\$250,635	
MO #7 Hole South of Perico Island	Fill placement with seagrass transplantation	2.40	0.286	\$72,960 - \$93,600	\$81,400	N/A		\$977,550	
<b>Totals:</b>		<b>6.39</b>	<b>0.919</b>	<b>\$161,120 - \$206,700</b>	<b>\$220,000</b>	<b>\$326,000</b>	<b>\$120,000 - \$165,000</b>	<b>\$3,559,763</b>	<b>\$4,386,883 - \$4,457,463</b>

<sup>1</sup>Transplantation cost is based on plantings at 3 foot centers

<sup>2</sup>Estimated cost is based on total cost for all options divided into each MO based on overall acreage.

<sup>3</sup>ROW acquisition cost associated with MO #3A may increase based on continuing coordination with USACE staff in order to determine process and cost to release federal spoil easement.

risk factor of 2.25 was assigned, which represents slightly higher than moderate risk of uncertainty that the success criteria will be achieved. The functional gain (FG) of MO #1 is estimated at 0.143.

Construction access to MO #1 would be relatively simple due to the close proximity of the navigation channel located adjacent to the eastern end of the site. The cost estimate and permitting information for MO #1 is provided in Sections 4.0 and 5.0 of this document.

### **MO #3A (Southern Spoil Island)**

MO #3A consists of a spoil island located northeast of the SR 64/Anna Maria Bridge (please refer to Appendix 2: Sheet C-300). A 1.54 ac. mangrove fringe (please refer to Appendix 2: Sheet C-301) surrounds the majority of the island and consists of red (*Rhizophora mangle*), white (*Laguncularia racemosa*), and black mangroves (*Avicennia germinans*). The waterward edge of mangroves was delineated based on aerial interpretation of the high water line. The northern and interior portions of the island consist largely of upland nuisance exotic vegetation, including Australian pine (*Casuarina* sp.) and Brazilian pepper (*Schinus terebinthifolius*). The upland at this location was documented to include 1.10 ac. The seagrass beds surrounding the island are relatively shallow (ranging from -1.0 to -3.0 ft, based on aerial analysis and bathymetric data). Shoal grass, turtle grass, and manatee grass were observed in the seagrass beds surrounding the island.

The conceptual mitigation plan for MO #3A includes the scrape down (sediment removal) of upland areas located in the northern and interior portions of the island to create a seagrass lagoon within the island. The scrape down would include the removal of ~9,510 CY of fill within the design fill template (please refer to Appendix 2: Sheet C-301). This excavation includes a 2-ft over-excavation to allow for the placement of sediment that is appropriate for seagrass habitat. Further geotechnical analysis would provide additional clarity on the feasibility or need to over excavate at this location. If appropriate grain size sediments resided at the finished elevation, over excavation may not be required. Suitable sediment will then be installed and the site will be graded to a target elevation of -3.0 ft (NAVD88) to be consistent with the elevation of the surrounding seagrass beds. The side slope between the existing mangroves and the seagrass mitigation lagoon will be 6:1, thus creating a littoral shelf and discouraging erosion from the adjacent mangrove area.

Based on the size and position of the mitigation site, transplantation of seagrass planting units (PUs) within the seagrass mitigation lagoon at MO #3A is recommended because rapid natural recruitment of seagrasses from the adjacent seagrass beds could require a lengthy time period and might inhibit the capacity to meet the success criteria for the project. The source of donor material will likely depend on whether the FDOT conducts up-front mitigation (in which case seagrass PUs may be harvested from the bridge impact areas) or post-construction mitigation (a donor site would need to be identified). Information regarding the number of PUs and estimated cost of seagrass transplantation for MO #3A is included in Section 6.0 of this document.

MO #3A would provide approximately 1.10 ac. of seagrass mitigation. The UMAM assessment (please refer to Table 5 and Appendix 4) of MO #3A indicates that the proposed restoration would increase the location and landscape support scores at the site (from an 8 to a 9), the water environment score (from a 0 to an 8), and the community structure score (from a 0 to a 9). The proposed restoration results in a mitigation delta of approximately 0.60. A conservative planning level temporal lag factor of 1.25 was assigned, as six to ten years are anticipated between the time the seagrass impacts are anticipated to occur and the time when the mitigation is anticipated to fully offset the impacts. A conservative planning level mitigation risk factor of 2.25 was assigned, which represents slightly higher than moderate risk of uncertainty that the success criteria will be achieved. The FG of MO #3A is estimated at 0.234.

Construction access to MO #3A would require a construction barge to approach the island from the marked navigation channel into the shallow water adjacent to the existing island. It is assumed the construction barge used would be approximately 28-ft wide with a draft of approximately 3-4 ft when loaded. Based on field observations, Atkins estimated the most appropriate barge access route (please refer to Appendix 2: Sheet C-301), which minimizes impacts to existing seagrasses and mangroves. The proposed excavation for barge access will dredge this area to a bottom elevation of -4.0 ft (NAVD88) with 2:1 side slopes along the dredge channel to allow for construction barge access. This barge access route is 0.13 ac. and would require approximately 385 CY of sediment excavation which will result in 0.09 ac. of impact to seagrasses (Table 2). As discussed in Section 3.0 of this document, the proposed barge access excavation will result in a functional loss (FL) of 0.033 units. Therefore the net FG is 0.201.

Post-construction, this barge access channel will serve as a flushing channel, allowing water to enter/exit the seagrass mitigation lagoon. The cost estimate and permitting information for MO #3A is provided in Sections 6.0 and 7.0 of this document.

### **MO #3B (Northern Spoil Island)**

MO #3B consists of a spoil island located north-northeast of the SR 64/Anna Maria Bridge (please refer to Appendix 2: Sheet C-300). A 1.24 ac. mangrove fringe (please refer to Appendix 2: Sheet C-302) is located on the eastern portion of the island and consists of white and black mangroves. The waterward edge of mangroves was delineated based on aerial interpretation and field evaluation of the high water line. The western portion of the island consists primarily of exotic vegetation, including Australian pine, Brazilian pepper, and carrotwood (*Cupaniopsis anacardioides*). The upland vegetation was documented to include 1.29 ac. The seagrass beds surrounding the island are relatively shallow (ranging from approximately -1.0 to -5.0 ft (NAVD88), based on aerial analysis and bathymetric data). Shoal grass and manatee grass were observed in the seagrass beds surrounding the island.

The conceptual mitigation plan for MO #3B includes the scrape down (sediment removal) of upland areas located in the western portion of the island to create seagrass habitat. The scrape down would include the removal of ~13,280 CY of fill within the design fill template (please refer to Appendix 2: Sheet C-302). This excavation is proposed to include a 2-ft over-excavation

to allow for the placement of sediment that is appropriate for seagrass habitat. Suitable sediment will then be installed and the site will be graded to a target elevation of -3.0 ft (NAVD88) to be consistent with the elevation of the surrounding seagrass beds. The side slope between the existing mangroves and the seagrass mitigation site will be 6:1, thus creating a littoral shelf and discouraging erosion from the adjacent mangrove area.

Based on the size of the mitigation site, transplantation of seagrass PUs within the seagrass mitigation site at MO #3B is recommended because rapid natural recruitment of seagrasses from the adjacent seagrass beds could require a lengthy time period and might inhibit the capacity to meet the success criteria for the project. The source of donor material will likely depend on whether FDOT conducts up-front mitigation (in which case seagrass PUs may be harvested from the bridge impact areas) or post-construction mitigation (a donor site would need to be identified). Information regarding the number of PUs and estimated cost of seagrass transplantation for MO #3B is included in Section 6.0 of this document.

MO #3B would provide approximately 1.29 ac. of seagrass mitigation. The UMAM assessment (please refer to Table 5 and Appendix 4) of MO #3B indicates that the proposed restoration would increase the location and landscape support scores at the site (from an 8 to a 9), the water environment score (from a 0 to an 8), and the community structure score (from a 0 to a 9). The proposed restoration results in a mitigation delta of approximately 0.60. A conservative planning level temporal lag factor of 1.25 was assigned, as six to ten years are anticipated between the time the seagrass impacts are anticipated to occur and the time when the mitigation is anticipated to fully offset the impacts. A conservative planning level mitigation risk factor of 2.25 was assigned, which represents slightly higher than moderate risk of uncertainty that the the success criteria will be achieved. The FG of MO #3B is estimated at 0.275.

Construction access to MO #3B would require a construction barge to approach the island from the marked navigation channel into the shallow water adjacent to the existing island. It is assumed the construction barge used would be approximately 28-ft wide with a draft of approximately 3-4 ft when loaded. Based on field observations, Atkins estimated the most appropriate barge access route (please refer to Appendix 2: Sheet C-302), which minimizes impacts to existing seagrasses and mangroves. The proposed excavation for barge access will dredge this area to a bottom elevation of -4.0 ft (NAVD88) with 2:1 side slopes along the dredge channel to allow for construction barge access. This barge access route is 0.15 ac. and would require approximately 535 CY of sediment excavation which will result in 0.14 ac. of impact to seagrasses (Table 2). As discussed in Section 3.0 of this document, the proposed barge access excavation will result in a FL of 0.051 units. Therefore, net FG is 0.224.

Post-construction, this barge access channel will serve as a flushing channel, allowing water to enter/exit the seagrass mitigation site. The cost estimate and permitting information for MO #3B is provided in Sections 6.0 and 7.0 of this document.

**MO #5 (Anna Maria Bridge Sandbar)**

MO #5 consists of a linear sandbar that abuts the southeast corner of the existing SR 64/Anna Maria Bridge and extends south from the seawall approximately 350 ft (please refer to Appendix 2: Sheet C-300). The sandbar is shallow (the majority of the sandbar is shallower than -2.0 ft) and the substrate consists of unvegetated, sandy bottom. The sandbar does not appear to be a naturally occurring feature and is likely associated with sediment runoff from the adjacent uplands over the seawall (please refer to Appendix 2: Sheet C-303). The surrounding seagrass bed was comprised primarily of continuous shoal grass. This feature has existed since the early 1990s and review of historic aerials indicates that loss of seagrass in the area has increased.

The conceptual mitigation plan for MO #5 includes the scrape down (sediment removal) of the linear sandbar to create seagrass habitat. The scrape down would include the removal of ~1,660 CY of fill within the design fill template (please refer to Appendix 2: Sheet C-303). This excavation includes a 2-ft over-excavation to allow for the placement of sediment that is appropriate for seagrass habitat. Suitable sediment will then be installed and the site will be graded to a target elevation of -2.5 ft (NAVD88) to match the elevation of the surrounding seagrass beds. Seagrass transplantation is not recommended at MO #5, as the rapid natural recruitment of seagrasses from the adjacent seagrass beds is anticipated due to the narrow, small nature of the site and the faster growing seagrass species (shoal grass) found within the adjacent beds.

Construction access to MO #5 would be relatively simple due to the upland area and seawall located adjacent to the northeast corner of the mitigation site. Based on the shallow depths at the mitigation site and presence of seagrass beds adjacent to the west, south, and east of the sandbar, it is recommended that construction equipment access the site from land or from the sandbar itself, which would avoid seagrass impacts during construction.

MO #5 would provide approximately 0.5 ac. of seagrass mitigation. The UMAM assessment (please refer to Table 5 and Appendix 4) of MO #5 indicates that the proposed restoration would increase the location and landscape support scores at the site (from an 8 to a 9), the water environment score (from a 7 to an 8), and the community structure score (from a 0 to a 9). The proposed restoration results in a mitigation delta of approximately 0.37. A conservative planning level temporal lag factor of 1.25 was assigned, as six to ten years are anticipated between the time the seagrass impacts are anticipated to occur and the time when the mitigation is anticipated to fully offset the impacts. A conservative planning level mitigation risk factor of 2.25 was assigned, which represents slightly higher than moderate risk of uncertainty that the the success criteria will be achieved. The FG of MO #5 is estimated at 0.065.

It is important to note that MO #5 will not be viable over the long term unless the sedimentation issue that has created the existing sandbar is resolved prior to mitigation construction. The existing sandbar appears to be associated with sediment runoff from the adjacent uplands. Improvements must be made to remove the source of this runoff, as any

mitigation conducted would simply be buried under additional sediment during future runoff events. An investigation regarding the source of the runoff (and proposed improvements to remove the runoff) should be conducted if MO #5 is selected. The cost estimate and permitting information for MO #5 is provided in Sections 4.0 and 5.0 of this document.

### **MO #7 (Large Hole South of Perico Island)**

MO #7 consists of a large hole located south of the Perico Island, approximately half-way between the SR 64/Anna Maria Bridge and the SR 684/Cortez Road Bridge (please refer to Appendix 2: Sheet C-300). The hole reaches depths of -6.0 ft (NAVD88) and it is surrounded by intact seagrass beds. The substrate within the hole consists of unvegetated, sandy bottom. Turtle grass was documented within the surrounding seagrass bed.

The conceptual mitigation plan for MO #7 includes the installation of ~11,800 CY of fill within the design fill template (please refer to Appendix 2: Sheet C-304), bringing the site to a target elevation of -3.0 ft (NAVD88) to match the elevation of the surrounding seagrass beds. Based on the size of the mitigation site and the slow-growing seagrasses (turtle grass) surrounding the site, transplantation of seagrass PUs within the seagrass mitigation site at MO #7 is recommended. Natural recruitment of seagrasses from the adjacent seagrass beds could require a lengthy time period and might inhibit the capacity to meet the success criteria for the project. The source of donor material will likely depend on whether the FDOT conducts up-front mitigation (in which case seagrass PUs may be harvested from the bridge impact areas) or post-construction mitigation (a donor site would need to be identified). Information regarding the number of PUs and estimated cost of seagrass transplantation for MO #7 is included in Section 6.0 of this document.

Construction access to MO #7 would require the navigation of a construction barge (assumed 40-ft barge with a draft of 4 ft) from the navigation channel located south of MO #7 to the mitigation site. Based on field observations, Atkins estimated the most appropriate barge access route (please refer to Appendix 2: Sheet C-304), which minimizes impacts to the existing seagrass bed surrounding the mitigation site. The barge would navigate through the deeper water located around the periphery of the site into the shallow water adjacent to the west of the site. The barge access route is 0.4 ac. A small amount of excavation is required to bring the shallow portions of the barge access route (located immediately adjacent to the mitigation site) down to a target elevation of -4.0 ft (NAVD88) to allow for barge access. To accommodate the barge access channel, approximately 80 CY of sediment would need to be excavated from a 0.07 ac. area. This excavation will result in 0.07 ac. of impact to seagrasses (Table 2). As discussed in Section 3.0 of this document, the proposed barge access excavation will result in a FL of 0.026 units.

MO #7 would provide approximately 2.4 ac. of seagrass mitigation. The UMAM assessment (please refer to Table 5 and Appendix 4) of MO #7 indicates that the proposed restoration would increase the location and landscape support scores at the site (from an 8 to a 9), the water environment score (from a 7 to an 8), and the community structure score (from a 0 to a 9). The proposed restoration results in a mitigation delta of approximately 0.37. A conservative

planning level temporal lag factor of 1.25 was assigned, as six to ten years are anticipated between the time the seagrass impacts are anticipated to occur and the time when the mitigation is anticipated to fully offset the impacts. A conservative planning level mitigation risk factor of 2.25 was assigned, which represents slightly higher than moderate risk of uncertainty that the success criteria will be achieved. The FG of MO #7 is estimated at 0.312. The net FG is 0.286.

Post-construction, this barge access channel will be returned to grade (-3.0 ft) and seagrasses should naturally recruit to the restored site. The cost estimate and permitting information for MO #7 is provided in Sections 6.0 and 7.0 of this document.

## 5.0 CONCEPTUAL LONG-TERM MONITORING PLAN

Post-construction monitoring is typically conducted to: (1) determine if mitigation projects are meeting success criteria, (2) assess the potential need for corrective action or supplemental mitigation, and (3) advise future mitigation planning efforts.

### **Monitoring Schedule**

Mitigation sites are typically monitored for a period of five years (Uhrin et al. 2011); however, the schedule of monitoring events often depends upon the type of seagrass mitigation undertaken. With the exception of seagrass transplantation projects, monitoring events typically occur at six-month intervals for the first two years and one-year intervals for an additional three years (i.e., monitoring events at 0, 6, 12, 18, 24, 36, 48, and 60 months). The baseline (0-month) monitoring event is conducted at construction completion and should occur within seagrass growing season (June 1 to September 30), if possible. This ensures that the maximum possible seagrass coverage is being represented at the mitigation site during a majority of the monitoring events. Two monitoring events (6-month and 18-month) could potentially occur during the dormant season but could still be informative in terms of overall mitigation success. In the case of seagrass transplantation projects, monitoring events typically occur quarterly for the first year and biannually for an additional four years (i.e., monitoring events at 0, 3, 6, 9, 12, 18, 24, 30, 36, 42, 48, 54, and 60 months; Fonseca et al. 1998).

### **Methodology**

During each monitoring event, qualified marine biologists conduct the monitoring activities at the mitigation site(s) to ensure success criteria are being met. Monitoring tasks include the evaluation of seagrass within mitigation sites in comparison to adjacent reference areas (seagrass community located in the area surrounding the mitigation site). This includes sampling approximately 1% of each mitigation site using 1-m<sup>2</sup> quadrats and the Braun Blanquet (B-B) visual assessment technique. Note that the number of quadrats randomly conducted within each mitigation site should equal the number of quadrats randomly distributed around each mitigation site to capture the heterogeneity of the reference seagrass community (Uhrin et al. 2009). Prior to beginning each monitoring event, sampling locations within the mitigation site and surrounding reference areas are randomly predetermined (using ArcGIS or a similar software program) and loaded into a survey-grade Differential Global Positioning System (DGPS) unit. A team of two or more biologists navigate to each sampling location using the DGPS unit. At each sampling location, a 1-m<sup>2</sup> quadrat is temporarily placed on the substrate and B-B cover data are collected for each individual seagrass species, as well as total seagrass cover (Table 6).

**Table 6: B-B Values and Definitions**

B-B Score	SAV Cover
0	absence
0.1	single individual ramet (less than 5% cover)
0.5	few individual ramets (less than 5% cover)
1	many individual ramets (less than 5% cover)
2	5-25% cover
3	25-50% cover
4	50-75% cover
5	75-100% cover

To determine the percent coverage for each seagrass species and the total seagrass cover, the B-B scores will be converted to percentages (using range midpoints) and averaged over all of the quadrats assessed within each mitigation site or at reference sites. Differences between the mitigation site and the surrounding reference area help determine the overall success of the mitigation project. Photographs will also be collected at mitigation and reference site sampling locations for archival purposes.

If mitigation options (MOs) are selected that require fill placement (e.g., MO #1, MO #7), additional monitoring tasks will be conducted. Biologists will record sediment elevation relative to the elevation of adjacent natural areas. Sediment elevation can be measured electronically with a depth sounder or manually using transect tapes.

If mitigation options are selected that require seagrass transplantation, additional monitoring tasks will be conducted. Monitoring tasks include measurements of planting unit (PU) survival and shoot density (Fonseca et al. 1998, Farrer 2010). At this stage of the conceptual mitigation planning process, detailed seagrass monitoring plans can be further refined. This future planning effort would revolve around developing a statistically significant use of a variety of tools such as quadrats, transects, randomly generated Global Positioning System (GPS) points, sediment subsidence monitoring stations, underwater photography, or a combination of all of these techniques.

If the FDOT does not conduct up-front mitigation, the seagrass donor site will also need to be monitored. Prior to any seagrass collection effort, the donor site should be quantitatively assessed for the percent coverage of seagrasses using the B-B method. The same quantitative assessment also occurs during each monitoring event. Differences between pre-harvest seagrass coverage and seagrass coverage calculated during each monitoring event will determine the natural recovery rate at the donor site. If a plugging device is used to collect donor material, biologists may also revisit a small subset of the plugging locations in the donor site during each monitoring event and perform a qualitative assessment describing sediment and seagrass recruitment into the plugging location. Table 7 lists the mitigation action and corresponding monitoring methods recommended for each of the MOs.

**Table 7: Mitigation Action and Monitoring Methods Recommended for Each MO**

Mitigation Sites	Recommended Mitigation Action	Monitoring Methods
MO #1 - Linear Channel	Fill placement	B-B visual assessment Sediment Elevation
MO #3A - Southern Spoil Island	Scrape down (sediment removal) with seagrass transplantation	B-B visual assessment PU survival and shoot density Donor site monitoring (if needed)
MO #3B - Northern Spoil Island	Scrape down (sediment removal) with seagrass transplantation	B-B visual assessment PU survival and shoot density Donor site monitoring (if needed)
MO #5 - Anna Maria Bridge Sandbar	Scrape down (sediment removal)	B-B visual assessment
MO #7 - Large Hole South of Perico Island	Fill placement with seagrass transplantation	B-B visual assessment Sediment Elevation PU survival and shoot density Donor site monitoring (if needed)

**Mitigation Success Criteria**

The desired endpoint of seagrass mitigation is to obtain seagrass percent coverage values within the mitigation site that are equivalent to values within the reference sites. The following success criteria should be met at the end of a five-year monitoring period:

- Mitigation area should contain a minimum of 80% of the seagrass species composition and density of the surrounding area.
- No net erosion (greater than 10 cm) in filled areas.

A PU survival rate of 75% or better must also be met after the first year. If less than 75% PU survival, corrective action in the form of remedial action should be taken during the next available planting period.

**Reporting**

Monitoring reports will be prepared by project biologists within 45 days of each monitoring event. The monitoring reports include the following:

- Project background and description including a brief description of the mitigation site and the mitigation action conducted
- Mitigation success criteria
- Technical approach, including detailed description of monitoring methods
- Monitoring results
- Discussion including (1) comparisons between the mitigation site and surrounding reference areas, (2) comparison of current monitoring data with previous monitoring events (i.e., progress over time), and (3) comparison of monitoring results to project success criteria
- Any recommendations or corrective actions taken at a mitigation site

## 6.0 CONCEPTUAL COST ESTIMATES

### Mitigation Bank Credit Purchase

The Florida Department of Transportation (FDOT) may decide to purchase credits from an approved mitigation bank (i.e., the Mangrove Point Mitigation Bank [MPMB]). Based upon review of the draft state permit application for the MPMB, along with preliminary research, it is estimated that 1.2 seagrass credits will be available at MPMB in the future at an estimated cost of **\$250,000 - \$300,000**.

### ROW Acquisition

Right of way (ROW) acquisition is required for one of the five seagrass mitigation options (MOs): MO# 3A (Southern Spoil Island). The estimated cost for ROW acquisition is as follows:

- MO #3A (73,095 ft<sup>2</sup>, under private ownership) - **\$308,000**

It should be noted that the included costs are estimates and not based on an appraisal.

### Mitigation Construction

The construction cost estimate for all five seagrass MOs (not including ROW acquisition) is provided in Table 8 below. This cost estimate was calculated based on discussions with local marine contractors in the southwest Florida area and is provided as a combined estimate for construction of all the identified mitigation options. Conversations with the contractors indicated that it would not be realistic to provide cost estimates for each individual MO due to the need to construct a combination of the mitigation options concurrently, and to utilize the fill material from one option for another. Following FDOT review of the mitigation plan and the identification of the preferred combination, the cost for that suite of options can be calculated. It is estimated that the construction would take approximately nine months to complete.

**Table 8: Cost Estimate for Construction of All Five MOs Mitigation Construction**

Item	Units*	Quantity	Unit Cost	Total Cost
Mobilization	LS	1	\$71,269	\$71,269
Demobilization	LS	1	\$71,269	\$71,269
Temporary Spoil Site/Staging Area/Site Prep	LS	1	\$10,000	\$10,000
Turbidity Testing and Quality Control	LS	1	\$25,000	\$25,000
Temporary Maintenance of Traffic	LS	1	\$5,000	\$5,000
Excavate Spoil Island and Fill Channel/Holes	CY	17,600	\$30	\$5228,000
Remove Excess Fill That Cannot Be Used Onsite (Truck offsite)	CY	6,850	\$45	\$308,250
Survey/Stakeout/As-built	LS	1	\$50,000	\$50,000
Finish Grade Disturbed Areas	LS	1	\$5,000	\$5,000
Staked Silt Fence	LF	1,500	\$2	\$3,000
Floating Turbidity Curtain	LF	2,000	\$8	\$16,000
<b>Sub-Total</b>				<b>\$1,092,788</b>
Contingency (5%)				\$54,639
<b>Total</b>				<b>\$1,147,427</b>

\*LS = Lump Sum , CY = cubic yards

It should be noted that the fill estimates for MO #1 and MO #7 were increased by 30% in order to account for compaction of sediments and construction-associated sediment loss. Also, because the nature of the subsurface sediments for MO #3A, #3B, and #5 are unknown, the cost estimate for these three MOs includes a 2-foot (ft) over-excavation to allow for the placement of sediment that is appropriate for seagrass habitat. Further analysis (i.e., geotechnical assessment, engineering, etc.) would be required to determine if the over-excavation is required for successful mitigation. Costs may be reduced if it is determined that the over-excavation is not required. The cost of engineering and geotechnical assessment are included in the overall permit and design costs included in the executive summary tables and section 6.0 of the document.

It is also important to note that the costs provided are considered an estimate based on communication with contractors, vendors, results of recent project bids, Atkins cost estimators, etc. The actual cost to complete the project may vary based on, but not limited to, time lag, inflation, fuel prices, contractor's workload, material availability, potential restrictions on construction/installation methods, modifications to the Plans and Specifications, permit conditions, etc.

### **Seagrass Transplantation**

Seagrass transplantation is recommended for three of the five seagrass MOs, including MO# 3A (Southern Spoil Island), MO #3B (Northern Spoil Island), and MO #7 (Large Hole South of Perico Island). Based on the size and condition of the mitigation site, 3-foot centers are proposed for the planting unit (PU) spacing (please refer to Figure 5). The number of PUs required at each site calculated at 3,800-3,900 PUs per acre (based on planting lines with 3-ft centers and a distance of 2.6 ft between respective PUs). Based on communication with experienced

contractors, a cost of \$8.00-\$10.00 per PU was used. A cost estimate was developed for each of these MOs representing a cost range, dependent on the number of PUs required and the cost per PU (Table 9). The cost for transplantation at all three MOs, should it be required, is estimated to be \$161,120 - \$206,700.

**Table 9: Cost Estimates for Seagrass Transplantation, Assuming Planting on 3-foot Centers**

Mitigation Sites	Mitigation Site Size	No. Planting Units Required	Estimated Transplantation Cost
MO #3A - Southern Spoil Island	1.1 acres	5,320 - 5,460	\$42,560 - \$54,600
MO #3B - Northern Spoil Island	1.3 acres	5,700 - 5,850	\$45,600 - \$58,500
MO #7 - Large Hole South of Perico Island	2.4 acres	9,120 - 9,360	\$72,960 - \$93,600
<b>Total</b>	<b>5.3 acres</b>	<b>20,140 - 20,670</b>	<b>\$161,120 - \$206,700</b>

It should be noted that the cost estimates are also based on using seagrass donor material from the seagrass impact areas associated with the Anna Maria Bridge and Cortez Bridge projects. If the FDOT elects to conduct post-construction mitigation, the seagrass donor material will need to come from a different source, which may increase the cost of transplantation.

### **Permitting**

The conceptual mitigation plan developed in this document represents a portion of the overall permitting process. From the current stage of conceptual planning, the cost estimate for the remaining work required to take the document to permit level (approximately 60% design) would be an estimated \$120,000. To bring the current document to construction level detail (100% design) would be approximately \$165,000. This estimate includes tasks that may need to be completed, such as:

#### *Permit Level Design (approximately 60%)*

- Application preparation and filing fees (including Sections A, C, E, and G of the “Joint Application for Environmental Resource Permit/Authorization to Use State Owned Submerged Lands/Federal Dredge and Fill Permit”, Form 547.27/ERP),
- Agency coordination (pre-application meetings, finalizing functional assessments per Uniform Mitigation Assessment Method (UMAM), Request for Additional Information [RAIs], etc.),
- Efforts associated with land-acquisition investigations,
- Geotechnical investigations,
- Detailed flushing channel design for MO #3A and/or MO #3B,
- Defined construction methodologies of installation and construction, including methods for moving equipment to the worksite,
- Sediment grain-size analysis, and
- Sediment organic content analysis
- Refine areal extents of impact for permit application
- Cut cross sections and refine cut/fill volumes
- Create drawing sets, 2 sets 8.5 x 11 black & white and 22 x 34 black and white

- Including survey information
- Geotechnical data/Soils
- Seagrass survey
- Proposed construction area
- Ingress and egress routes, corridors
- Staging areas, final disposal locations
- Best management practices (silt fence and turbidity barriers)
- Client review of options
- Atkins revision of options/meeting comments
- Signed and sealed 5 sets 8.5 x 11 and 22 x 34 B&W drawings for permit

#### *Construction Level Design (100%)*

- Include permit alterations/conditions
- Cost estimate
- Client review of plans
- Atkins revision drawings/meeting comments
- Technical Specification
- Bid sheet with quantity takeoffs
- Engineer's estimate
- Client review of plans, specs & bid docs
- Atkins revision of plans & docs/meeting comments

Please refer to Section 7.0 of this document for a discussion on the permitting constraints that are associated with the proposed conceptual mitigation plan.

#### **Long-Term Monitoring**

The cost estimate associated with the long-term monitoring for all five seagrass MOs is approximately \$20,000 per monitoring event. Monitoring is typically required for 5 years (60 months) and will require between eight and thirteen separate events depending on whether seagrass is simply allowed to naturally recruit into the mitigation area, or transplantation is utilized. Therefore, based on an average of 11 monitoring events, the estimated total cost of long-term monitoring for the project is approximately \$220,000. This estimate was generated based on Atkins' previous experience on seagrass mitigation projects of this type. Each monitoring event includes monitoring multiple parameters at multiple sites, including reference sites. Please refer to Section 4.0 of this document which details the monitoring event schedule. It is also important to note that this is the typical timeframe for long-term monitoring for similar mitigation projects; however, due to certain inherent risks involved with any seagrass mitigation project (i.e., hurricanes and other weather related phenomena that may occur during or after construction and may cause damage to the mitigation area), the time frame to demonstrate success to the agencies may be longer.

## 7.0 PERMITTING DISCUSSION

The overall timeframe for permitting is anticipated to be on the order of 24-36 months from the current stage of conceptual planning. Further refinement of this conceptual mitigation plan will be required prior to preparing final plans of the various alternatives.

The permitting component of the overall mitigation project will revolve around the state and federal permit application processes. Both state and federal agencies are typically consistent in the following areas:

- Evaluation of sites using the Uniform Mitigation Assessment Method (UMAM) process
- Avoiding impacts to threatened and endangered (T&E) species during construction and inclusion of standard protection measures in the construction plans
- Inclusion of water quality protection measures

The State provides clearing house reviews with all interested state agencies, such as Florida Department of Environmental Protection (FDEP)/Southwest Florida Water Management (SWFWMD), Florida Fish and Wildlife Conservation Commission (FWC), State Historic Preservation Officer (SHPO). The federal process will coordinate with such branches as the National Marine Fisheries Service (NMFS), including the Protected Resources Division (PRD) and the Habitat Conservation Division (HCD).

If a Biological Opinion (BO) is deemed to be necessary for potential impacts to T&E species, additional time and effort will be required. The preparation of the BO by the agencies, including legal review, is estimated to take between six and eight months with the result being Reasonable and Prudent Measures (RPMs) to be implemented on the project.

### **Federal Spoil Easement Release**

The MO #3B island (96,864 ft<sup>2</sup>) is under the ownership of the Board of Trustees of the Internal Improvement Trust Fund (TIITF) for the purpose of dredge spoil disposal (perpetual easement no. 22922). However, recent information provided by the FDEP Division of State Lands has revealed that this spoil island is also encumbered by a perpetual easement to the U.S. Government for the purposes of spoil disposal (Spoil Area M-16). Atkins investigated the process required to obtain release of a federal spoil easement. According to Mr. Mark Bennett with the USACE's Jacksonville District Management and Disposal Branch, the following process should be followed to obtain release of the federal spoil easement on MO#3B:

- FDOT should send a letter to Ms. Bertha A. Miller, Realty Specialist for the USACE Jacksonville District. The letter should include a description of the intent/purpose of the project, a map of the proposed project site, and construction plans (a 30% plans set would be adequate). Ms. Miller's current contact information is as follows:

Bertha A. Miller, Realty Specialist  
U.S. Army Corps of Engineers  
Jacksonville District  
Real Estate Division  
P.O. Box 4970  
Jacksonville, FL 32232-0019  
Telephone: (904) 232-3727  
Email: [bertha.a.miller@usace.army.mil](mailto:bertha.a.miller@usace.army.mil)

- Ms. Miller will route the letter to the appropriate USACE staff to determine whether the easement can be surplus (i.e., whether USACE foresees any need for the project site for future spoil disposal use).
- If the USACE determines that the project site can be surplus, FDOT will submit a formal application to the USACE. The application would include the application form, a fee to compensate USACE for administrative time/effort, and payment for the appraised value of the easement. The total cost of the easement acquisition is not available at this time; however, it is likely to be substantially less than the cost of purchasing privately-owned land (e.g., MO# 3A, for which ROW acquisition costs are described above).
- The entire USACE review process can be expected require up to six months.
- This process is separate from, and in addition to, the USACE regulatory permit application (Section 404/Dredge-and-Fill)

### **Sovereign Submerged Lands**

A letter of consent authorizing activities in sovereign submerged lands will be necessary for MO #1, #3B, #5 and #7. No fee or payment for the letter of consent or for the severance of sovereign submerged lands is necessary, due to the use by a public agency for a public purpose.

Additionally, the FDEP is investigating additional seagrass mitigation options, including those that may be available through the FDEP Coastal and Aquatic Managed Areas (CAMA) office.

## 8.0 SUMMARY

The primary goal of this effort was to provide a conceptual mitigation plan for anticipated seagrass impacts associated with the Anna Marina Bridge and Cortez Bridge projects. The scope of the conceptual mitigation plan included providing cost estimates and timeframes for right of way (ROW) acquisition, mitigation construction, seagrass transplantation, permitting, and long-term monitoring. A discussion of permitting constraints and timeframes is also provided.

### *Anticipated Seagrass Impacts*

The current estimated seagrass impact for the Anna Maria Bridge Replacement project is 1.87 acres (ac.) (based upon the 2011 seagrass survey results and Alternative 3BS – High-Level Fixed-Bridge, Typical Section B, South Alignment). A preferred alternative has not yet been selected in the Cortez Bridge PD&E process; however, seagrass impact estimates range from 0.022 – 0.042 ac., depending on the alignment selected. The total seagrass impact acreage for the two bridge projects ranges from 1.89 - 1.91 ac., depending on which alignment is selected for the Cortez Bridge project. The current functional loss estimate for both projects (as well as the seagrass impacts associated with the barge access routes for MO #3A, #3B, and #7) is 0.810 Uniform Mitigation Assessment Method (UMAM) units.

### *Mitigation Options*

Five individual mitigation options (MOs) were considered in this conceptual mitigation plan. Table 10 below summarizes the proposed mitigation action at each of the five MOs, along with their size, the estimated UMAM functional gain from the proposed mitigation, and estimates of fill placement/excavation at each MO.

The net UMAM gain estimate from the various proposed mitigation options considered in this conceptual plan is 0.919. This is based on a time-lag of up to 10 years (1.25 time-lag factor) and moderately high risk (2.25 risk factor), which results in a mitigation:impact acreage ratio of approximately 3:1. This assumes that seagrass mitigation will be conducted concurrently with construction. Should the FDOT envision conducting the mitigation in advance of the project, the time-lag and risk factors in the UMAM scoring will be affected and thus potentially reduce the mitigation requirements to a 2:1 acreage ratio. This would reduce overall forecasted costs defined in this document. These acreage ratios are consistent with NMFS guidance (see email correspondence from FDOT dated October 19, 2011 in Appendix 1). A conceptual plan utilizing all five of the above mitigation options would result in an excess functional gain of 0.219 units; therefore, not all the proposed mitigation options would be necessary to satisfy the total mitigation needs of the projects. However, excess mitigation credit could possibly (pending approval from the agencies) be used to offset impacts associated with future FDOT projects.

Table 10 Summary of Information for the Five Seagrass MOs Evaluated

Mitigation Option (MO)	Recommended Mitigation Action	Sediment Estimates for Fill Placement (Cubic Yards)	Sediment Estimates for Fill Excavation (Cubic Yards)	Acres	UMAM Functional Gain	UMAM Functional Loss	Net UMAM Functional Gain
MO #1 Linear Channel	Fill placement	5,800 CY	None	1.10	0.143	0	0.143
MO #3A Southern Spoil Island	Scrape down (sediment removal) with seagrass transplantation	None	Scrape down - 9,510 CY Barge Access - 385 CY <b>Total 9,895 CY</b>	1.10	0.234	0.033	0.201
MO #3B Northern Spoil Island	Scrape down (sediment removal) with seagrass transplantation	None	Scrape down - 13,280 CY Barge Access - 535 CY <b>Total 13,815 CY</b>	1.29	0.275	0.051	0.224
MO #5 AMB Sandbar	Scrape down (sediment removal)	None	Scrape down - 1,600 CY	0.50	0.065	0	0.065
MO #7 Large Hole south of Perico Island	Fill placement with seagrass transplantation	11,800 CY	Barge Access - 80 CY	2.40	0.312	0.026	0.286
<b>Total</b>	N/A	<b>17,600 CY</b>	<b>25,390 CY</b>	<b>6.39</b>	<b>1.029</b>	<b>0.110</b>	<b>0.919</b>

Table 11 summarizes the cost estimates and estimated timeframes for the various components of the conceptual mitigation plan. In total, the total cost estimate for land acquisition, construction, permitting, and long-term monitoring ranges from \$1,954,547 - \$2,045,127.

**Table 11: Cost Estimates and Timeframes  
for the Components of the Conceptual Mitigation Plan**

Item	Cost Estimate	Estimated Timeframe
<b>ROW Acquisition</b>	<b>\$326,000<sup>1</sup></b> (\$18,000 for MO #3B + \$308,000 for MO #3A)	TBD
<b>Mitigation Construction</b>	<b>\$1,147,427</b>	9 months
<b>Seagrass Transplantation</b>	<b>\$161,120 - \$206,700</b>	up to 2 months
<b>Permitting/Engineering</b>	<b>\$100,000 - \$145,000<sup>2</sup></b>	12-18 months
<b>Long-Term Monitoring</b>	<b>\$220,000<sup>3</sup></b>	60 months
<b>Total Cost</b>	<b>\$1,954,547 - \$2,045,127</b>	N/A

<sup>1</sup>Note that the potential for acquisition of the land associated with MO #3B is currently under investigation. This cost is an estimate based on information provided by FDOT.

<sup>2</sup>The cost range for permitting includes estimate for environmental/engineering effort to take current document to permit level and separately to construction level.

<sup>3</sup>This estimate is based on 11 separate monitoring events at \$20,000 per event.

Alternatively, or in concurrence with this mitigation plan, FDOT may decide to purchase credits from an approved mitigation bank (i.e., the Mangrove Point Mitigation Bank [MPMB]). From preliminary discussions with the mitigation bank representative and review of the SWFWMD permit with the State, it is estimated that 1.2 seagrass credits will be available at MPMB in the future at an estimated cost of \$250,000 - \$300,000 for all 1.2 credits. However, the total overall mitigation credit need for the projects is 0.70, which would be approximately \$175,000.

In conclusion, based on the amount of mitigation developed in this conceptual plan and pending the outcome of the preliminary agency discussions on the UMAMs that are provided as part of this package, the FDOT has the option of developing a robust mitigation plan to address unforeseen circumstances during bridge construction to apply additional credits, potentially apply excess seagrass credits to other FDOT local projects, or eliminate certain options highlighted in this plan to reduce costs. For instance, with the excess of mitigation (0.219 functional gain units) based on the conceptual UMAM, there is the potential to eliminate MO #3A from the mitigation plan, which has substantial costs for land acquisition and construction. This conceptual mitigation plan will be further refined in the future, as FDOT proceeds with project planning.

## 9.0 REFERENCES

- Farrer, A.A. 2010. *N-Control* seagrass restoration monitoring report, monitoring events 2003-2008. Florida Keys National Marine Sanctuary, Monroe County, Florida. Marine Sanctuaries Conservation Series ONMS-10-06. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, Silver Spring, MD. 32 pp.
- Fonseca, M.S., W.J. Kenworthy, and G.W. Thayer. 1998. Guidelines for the conservation and restoration of seagrasses in the United States and adjacent waters. NOAA Coastal Ocean Program Decision Analysis Series No. 12. NOAA Coastal Ocean Office, Silver Spring, MD. 242 pp.
- Fourqurean, J.W., G.V.N. Powell, W.J. Kenworthy, and J.C. Zieman. 1995. The effects of long-term manipulation of nutrient supply on competition between the seagrasses *Thalassia testudinum* and *Halodule wrightii* in Florida Bay. *Oikos* 72(3): 349-358.
- Kenworthy, W.J., M.S. Fonseca, P.W. Whitfield, K.K. Hammerstrom, and Schwartzchild. 2000. A comparison of two methods for enhancing the recovery of seagrasses into propeller scars: mechanical injection of a nutrient and growth hormone solution vs. defecation by roosting seabirds. Final report submitted to the Florida Keys Environmental Restoration Trust Fund. 41pp
- National Oceanic and Atmospheric Administration (NOAA) and Florida Department of Environmental Protection (NOAA and FDEP). 2004. Final programmatic environmental impact statement for seagrass restoration in the Florida Keys National Marine Sanctuary. 100 pp.
- Patriquin, D.G. 1975. "Migration" of blowouts in seagrass beds at Barbados and Carriacou, West Indies and its ecological and geological applications. *Aquatic Botany* 1:163-189.
- Powell, G.V.N., W.J. Kenworthy, and J.W. Fourqurean. 1989. Experimental evidence for nutrient limitation of seagrass growth in a tropical estuary with restricted circulation. *Bulletin of Marine Science* 44: 324-340.
- Uhrin, A. V., M. S. Fonseca, and W. J. Kenworthy. 2009. Preliminary Comparison of Natural Versus Model-Predicted Recovery of Vessel-Generated Seagrass Injuries in Florida Keys National Marine Sanctuary. Marine Sanctuaries Conservation Series NMSP-09-03. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, Silver Spring, MD. 20 pp.
- Uhrin, A.V., W.J. Kenworthy, and M.S. Fonseca. 2011. Understanding uncertainty in seagrass injury recovery: an information-theoretic approach. *Ecological Applications* 21(4): 1365-137

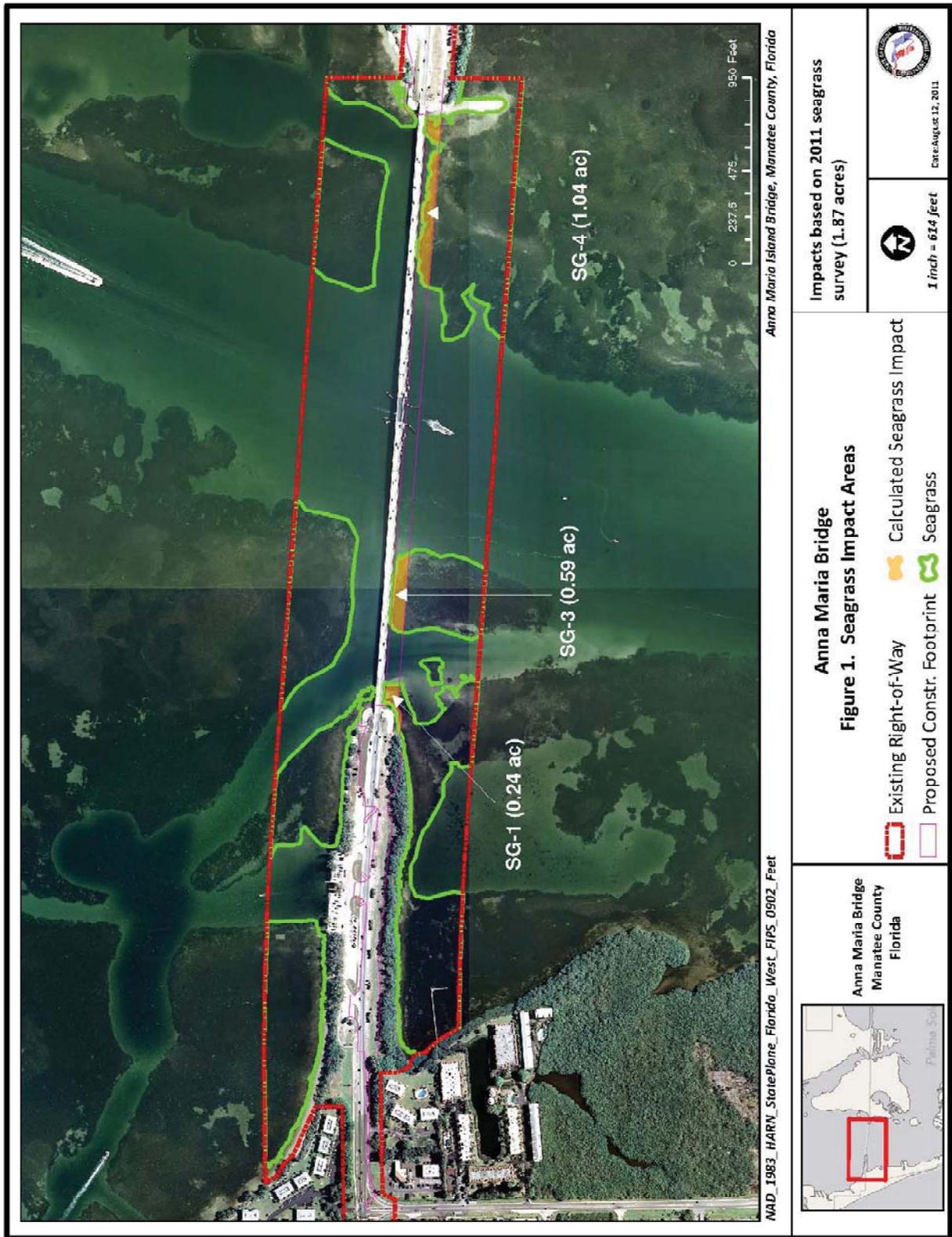


Figure 1: Anna Maria Bridge Seagrass Impact Map

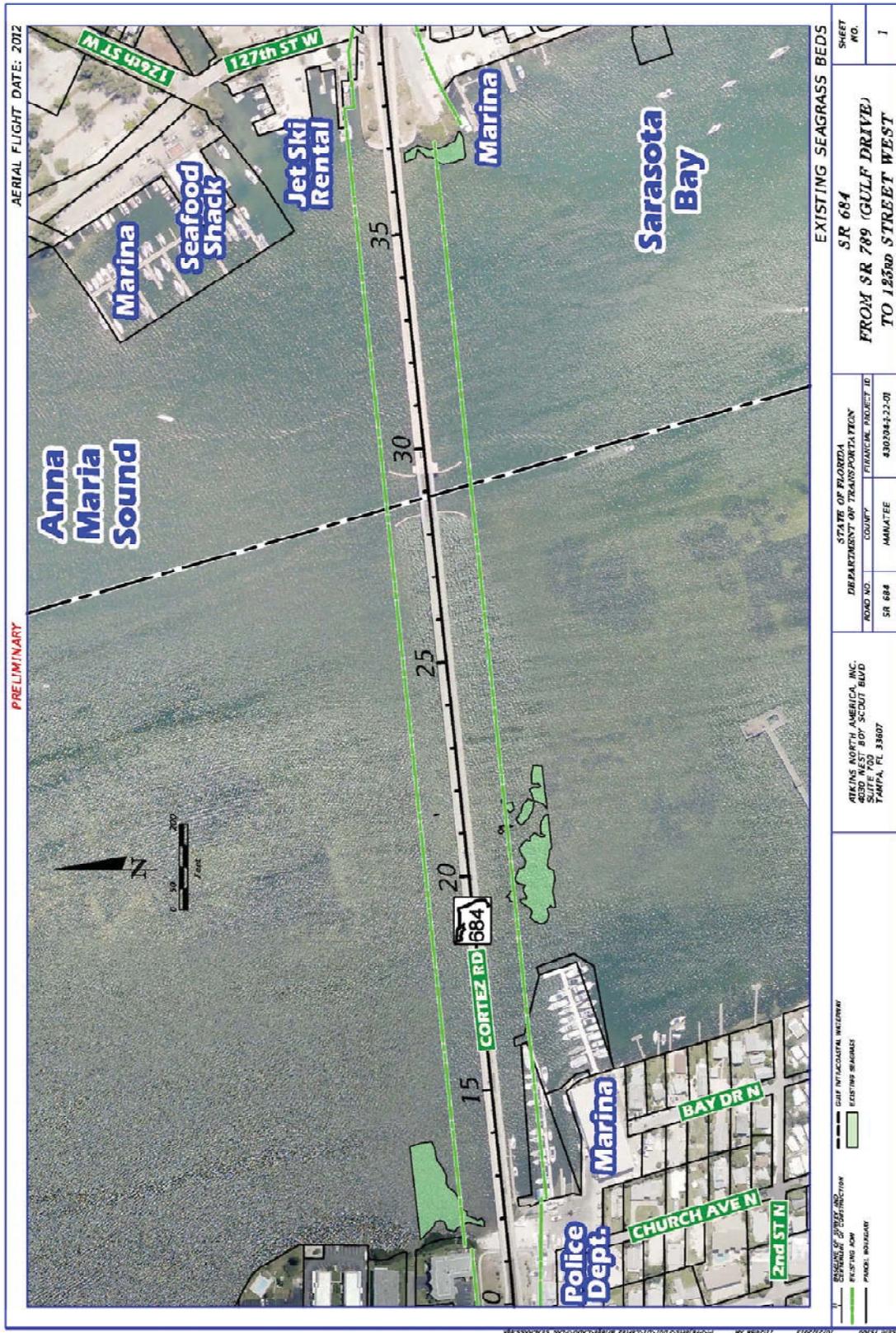


Figure 2: Cortez Road Bridge Potential Seagrass Impact Map

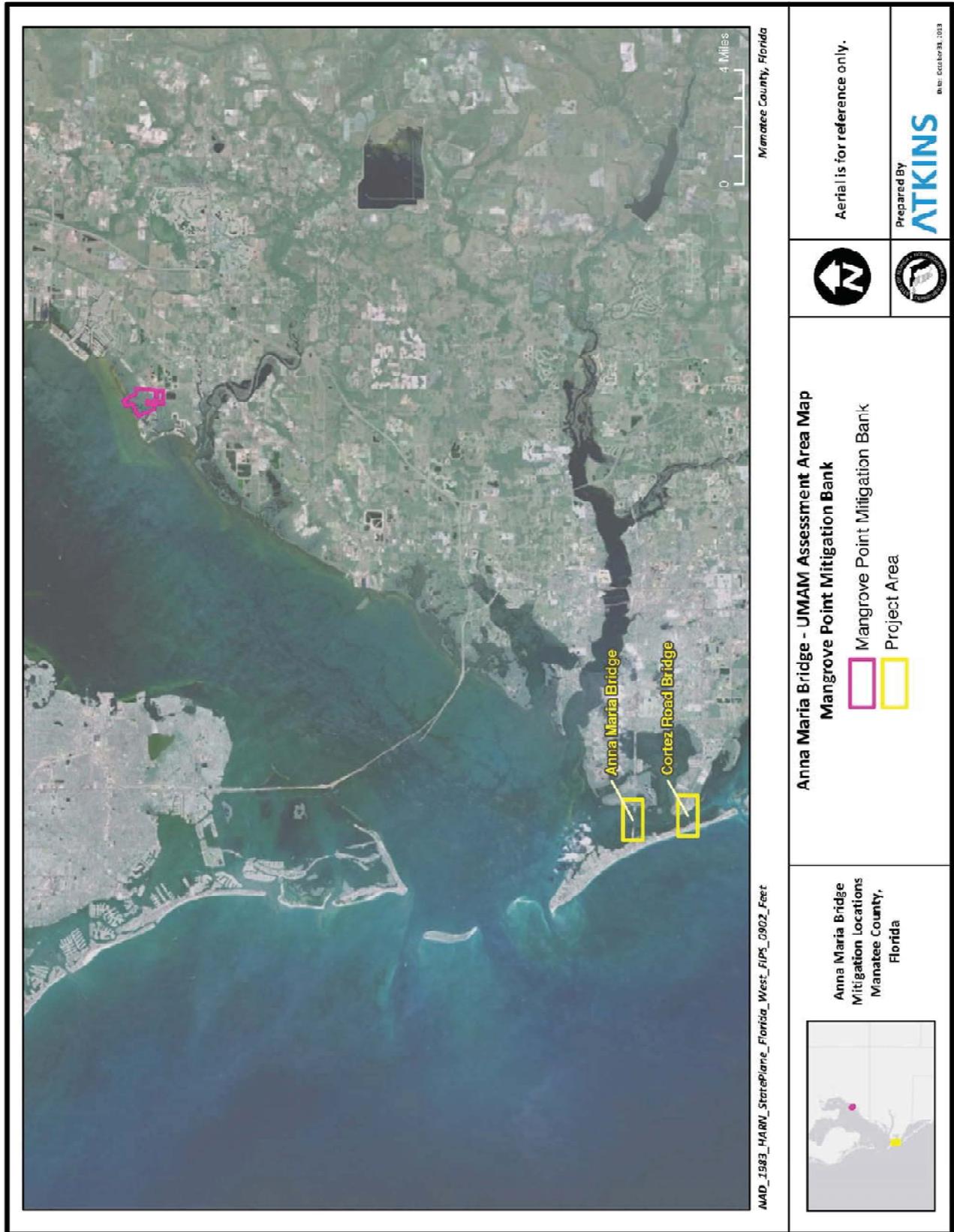


Figure 3: Mangrove Point Mitigation Bank Map



Figure 4a: UMAM Assessment Areas Map – Option 1

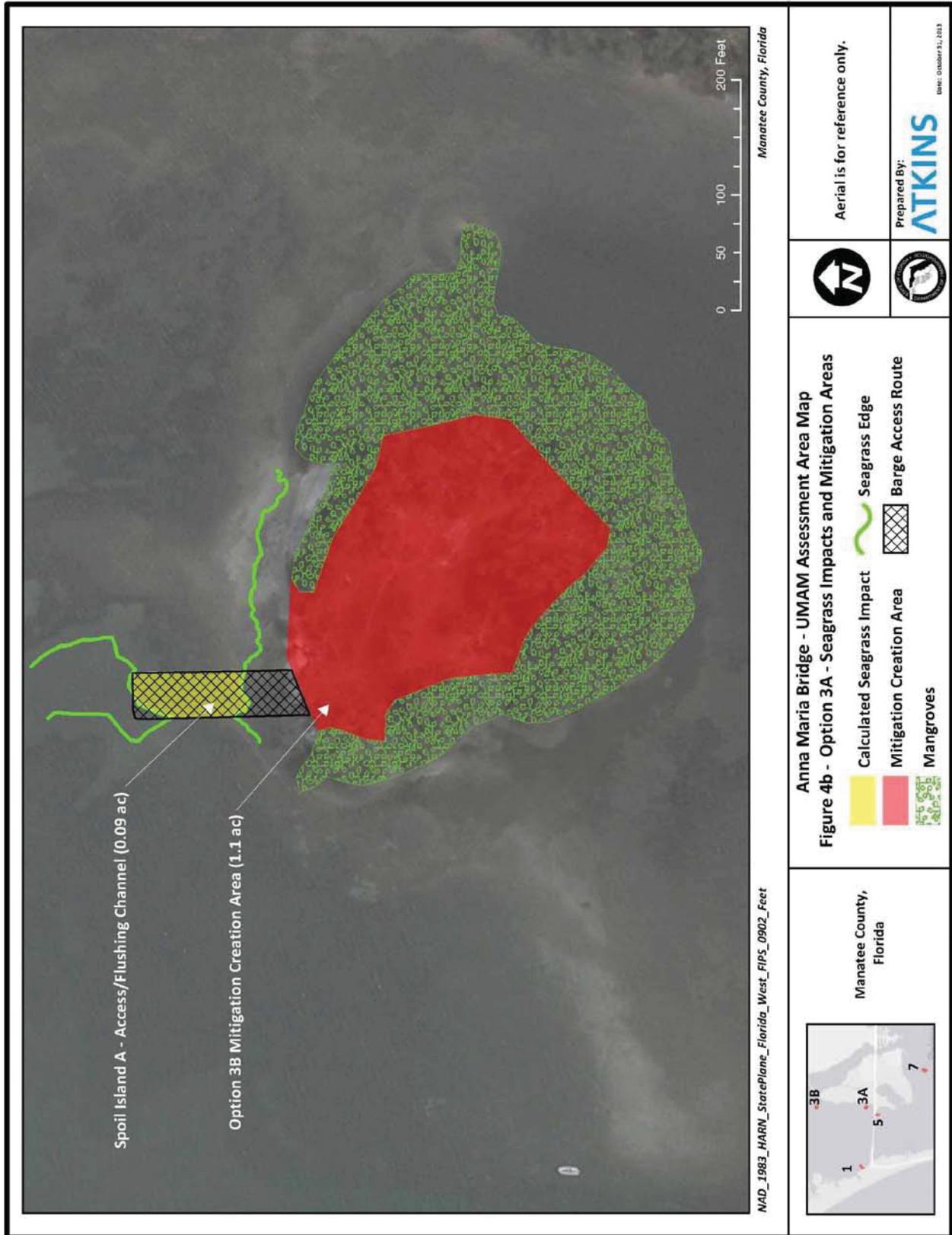


Figure 4b: UMAM Assessment Areas Map – Option 3A

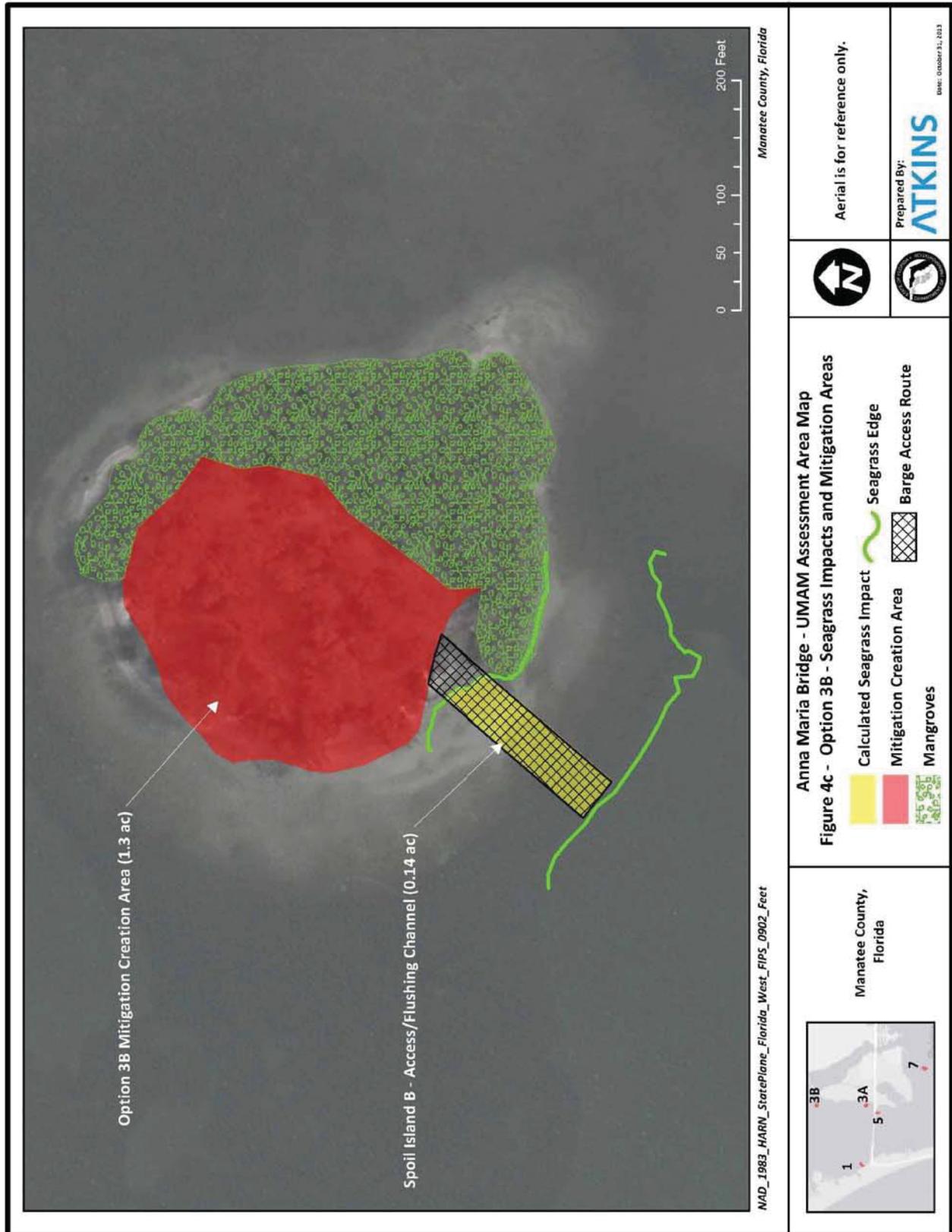


Figure 4c: UMAM Assessment Areas Map – Option 3B



Figure 4d: UMAM Assessment Areas Map – Option 5

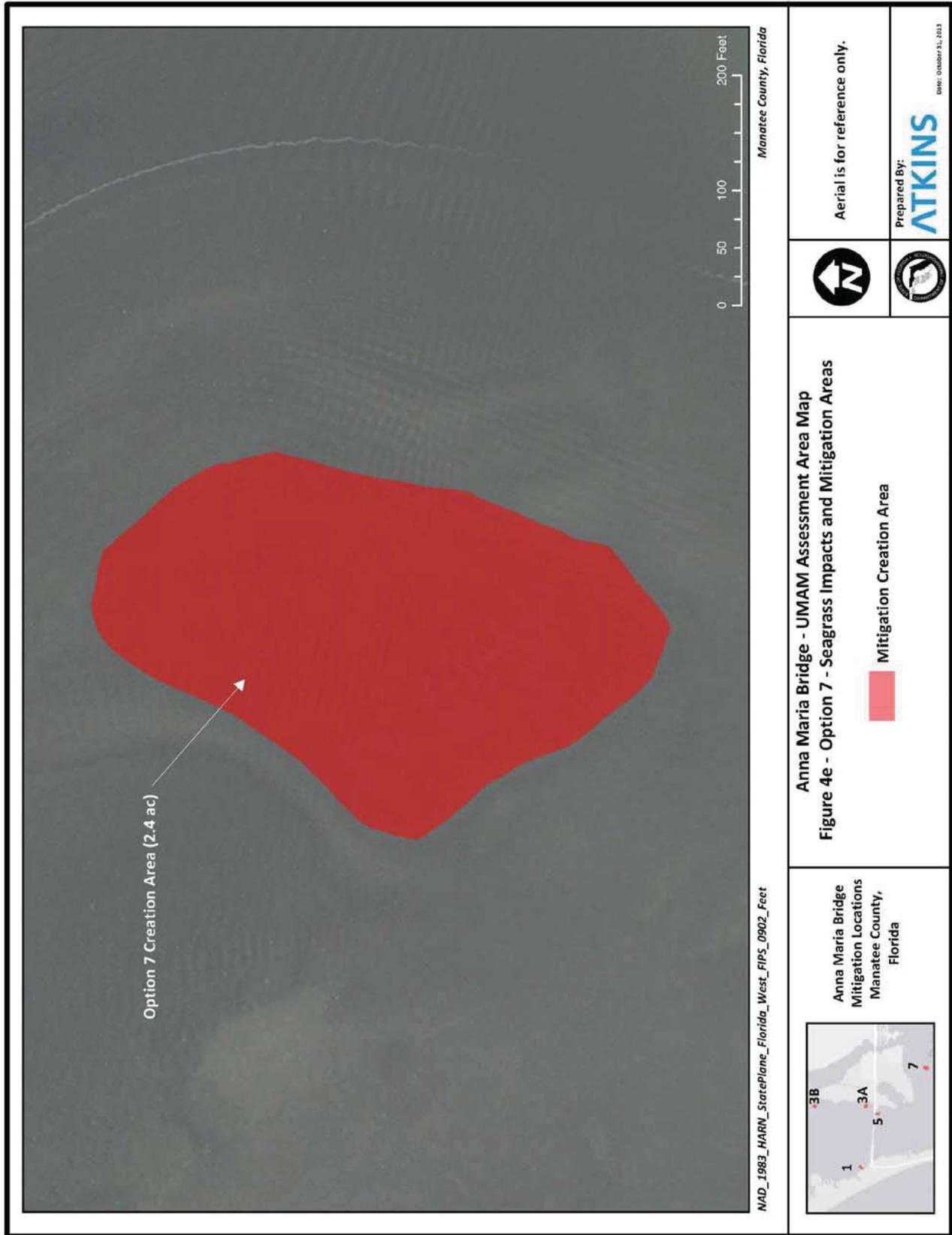


Figure 4e: UMAM Assessment Areas Map – Option 7

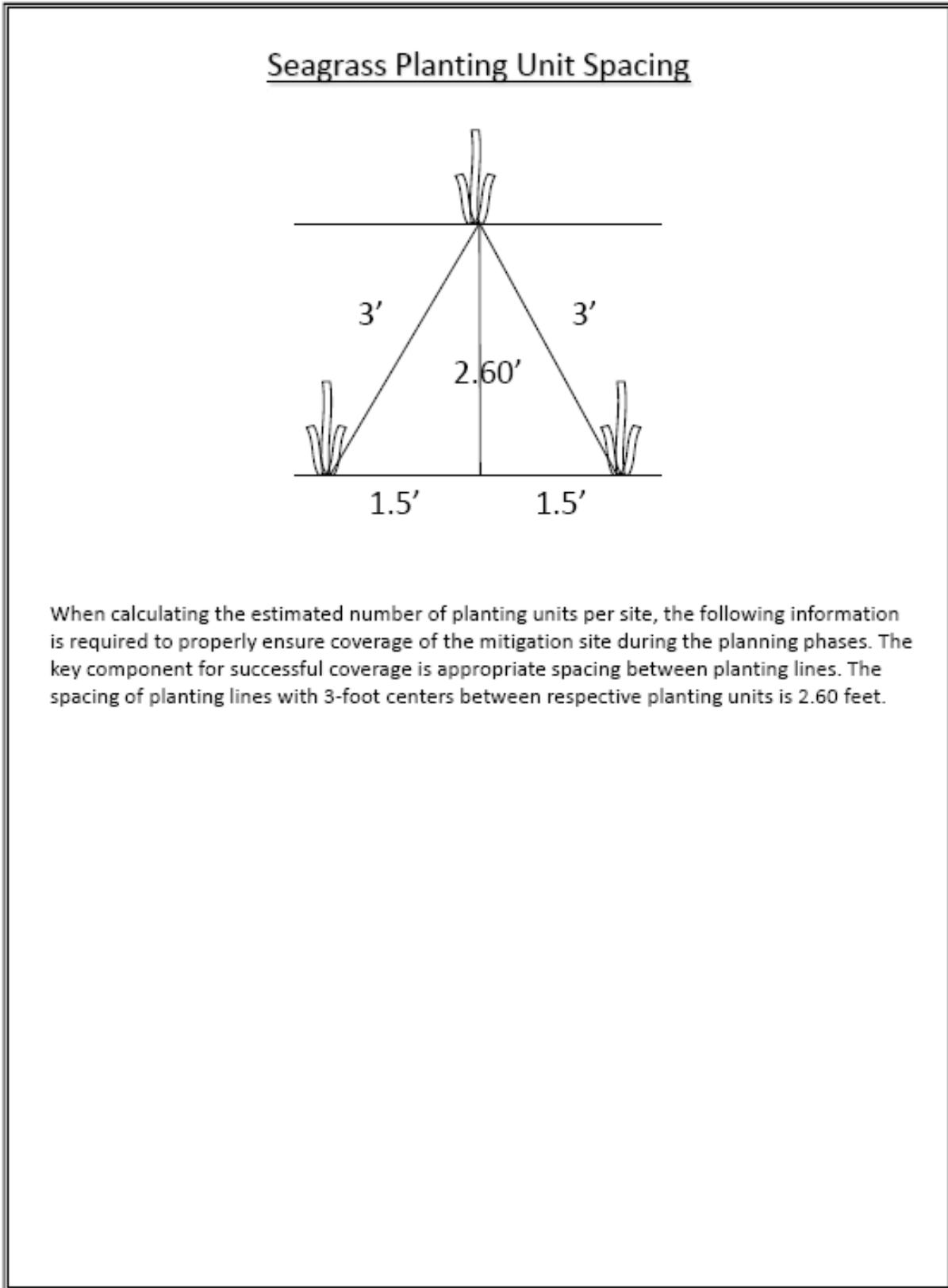


Figure 5: Seagrass Planting Unit Spacing

## APPENDICES

## **Appendix 1**

### **NMFS AGENCY COORDINATION / COMMENT LETTER / GUIDANCE EMAIL**

Southeast Regional Office  
263 13<sup>th</sup> Avenue South  
St. Petersburg, Florida 33701-5505  
(727) 824-5317; FAX 824-5300  
<http://sero.nmfs.noaa.gov>

September 22, 2011 F/SER46:DR/mt

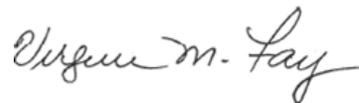
Commander (dpb)  
USCG Seventh District  
Brickell Plaza Federal Building  
909 Southeast First Avenue  
Miami, Florida 33131-3050

Dear Commander:

NOAA's National Marine Fisheries Service (NMFS) has reviewed the Florida Department of Transportation's (FDOT) letter dated September 14, 2011, and the accompanying document regarding seagrass losses associated with the proposed replacement of the SR 64 Anna Maria Island Bridge (see United States Coast Guard Public Notice 09-09) in Manatee County, Florida. The FDOT document provided the results of a 2011 seagrass survey, updated estimates of impacts to seagrasses, and outlined five potential compensatory mitigation options for offsetting seagrass losses.

The updated seagrass impact estimate indicates that the preferred bridge replacement alternative would result in the loss of 1.87 acres of seagrass. NMFS considers this a significant loss of an important trust resource (along with its ecological functions). NMFS first choice is always avoidance, followed by minimization, and finally compensatory mitigation for unavoidable impacts to essential fish habitat. However, under certain conditions, the project may be permissible, although this would require that sufficient compensatory mitigation for seagrass losses be completed, monitored, and deemed successful prior to the construction of the new bridge. The FDOT document demonstrates that potential opportunities for this type of compensatory mitigation exist in the vicinity of the bridge project.

If you have questions regarding our views on this project, please contact Dr. Dave Rydene in our St. Petersburg, Florida office. Dr. Rydene may be reached at the letterhead address or by telephone at (727) 824-5379.



Virginia M. Fay  
Acting Assistant Regional Administrator  
Habitat Conservation Division

cc:

F/SER4

F/SER46 - Rydene

cc: email

FDOT (Elizabeth Serdynski)

EPA (Madolyn Dominy)

FL DEP (Lauren Milligan)

FL FWCC (FWCC Conservation Planning Services)

USFWS (Jane Monaghan)

SWFWMD (C. Lynn Miller)



## *Florida Department of Transportation*

RICK SCOTT  
GOVERNOR

801 North Broadway Avenue  
Bartow, Florida 33830

ANANTH PRASAD, P.E.  
SECRETARY

September 14, 2011

Dr. David Rydene  
Fishery Biologist  
National Marine Fisheries Service  
Habitat Conservation Division  
263 13th Avenue South  
St. Petersburg, Florida 33701

**RE: Anna Maria Bridge  
S.R. 64 (Manatee Avenue) from S.R. 789 (East Bay Drive) to Perico Bay Boulevard  
FPID: 424436-1-21-01  
2011 Seagrass Survey, Updated Seagrass Impact Calculation,  
and Seagrass Mitigation Options**

Dear Dr. Rydene:

The Florida Department of Transportation (FDOT) District 1 conducted a Project Development and Environment Study (PD&E) for the replacement of the Anna Maria Island Bridge on State Road (S.R.) 64 (Manatee Avenue) crossing the Gulf Intracoastal Waterway. The PD&E study limits were S.R. 64 (Manatee Avenue) from west of S. R. 789 (East Bay Drive) to east of Perico Bay Boulevard in Manatee County, Florida. As part of the PD&E Study an Environmental Assessment was completed and signed by the U.S. Coast Guard (USCG) on August 25, 2010. In order to complete the NEPA documentation and issue the Finding of No Significant Impact (FONSI), the USCG has asked that additional coordination and a written response be received from the NMFS that the Recommended Preferred Alternative appears to be permissible.

In order to facilitate this coordination and provide additional information, the FDOT has completed a recent seagrass survey which mapped the locations of the seagrass beds within the project's proposed right-of-way. Details regarding the field effort and maps of the seagrass bed locations are provided in the Seagrass Technical Memorandum (attached). The results of the 2011 seagrass survey indicate that the seagrass beds within the project area are found in the same approximate location and orientation as documented during the 2009 seagrass survey completed during the PD&E Study. Based upon the recent survey, the estimated seagrass impact from the Recommended Preferred Alternative is 1.87 acres, which is an increase from the 1.81 acres of impact identified during the 2009 survey.

FDOT has also identified five potential seagrass mitigation options to compensate for the 1.87 acres of seagrass impact from the proposed project. The five potential mitigation options total more than

Dr. David Rydene  
National Marine Fisheries Service  
September 14, 2011  
Page 2 of 2

16 acres of potential seagrass compensatory mitigation. The options include the restoration of three previously dredged areas (Mitigation Options #1, #2, and #4) and two creation projects that would create seagrass habitat from spoil islands (Mitigation Options #3A and #3B). The attached Seagrass Technical Memorandum and Mitigation Site Matrix provide a description of each mitigation site, a prioritization ranking for each option, and associated explanation for the ranking. Based upon this information, the FDOT is hereby requesting your written response indicating that the project as proposed appears to be permissible.

If you have any questions, please contact me at [Elizabeth.serdynski@dot.state.fl.us](mailto:Elizabeth.serdynski@dot.state.fl.us) or 863.519.2805. Thank you for your assistance with this request.

Sincerely,



Elizabeth Serdynski  
Environmental Project Manager  
Florida Department of Transportation  
801 North Broadway Avenue  
Bartow, Florida 33830

Attachments

Cc: Chris Piazza - FDOT  
Mark Schulz - FDOT  
Marlon Bizerra - FDOT  
Brent Setchell - FDOT  
Jim Wilt - FDOT  
Kim Warren - Atkins

# Technical Memorandum

September 07, 2011

RE: Anna Maria Bridge  
SR 64 (Manatee Avenue) at Intracoastal Waterway  
Seagrass Maps and Seagrass Mitigation Options  
Financial Project ID: 424436-1-21-01

On June 20-22, 2011 and July 21-22, 2011, Atkins biologists conducted a field effort for the proposed Anna Maria Bridge project located on SR-64/Manatee Avenue over the Intracoastal Waterway. The field effort included the location of seagrass edge of bed with a Trimble GeoXT handheld GPS unit within the FDOT right of way to provide an update of the original 2009 seagrass map developed for the project. The updated seagrass edge of bed locations were also used to understand current implications of impacts based on the PD&E Study preferred alternative (Alternative 3B5 – High-Level Fixed-Bridge, Typical Section B, South Alignment). In addition, potential seagrass mitigation site options were identified and evaluated for the proposed project.

Completion of the updated 2011 seagrass map (Figure 1) indicates that the seagrass beds within the project area are found in the same approximate location and orientation as documented during the 2009 seagrass survey completed during the PD&E Study. Based upon the 2011 seagrass survey, the estimated seagrass impact from the preferred alternative is 1.87 acres, which is an increase from the 1.81 acres of impact identified during the 2009 survey.

To identify potential seagrass mitigation site options for the proposed project, Atkins staff reviewed aerial photographs of the project vicinity and contacted appropriate stakeholders (i.e., representatives of the Sarasota Bay Estuary Program and review of the Tampa Bay Estuary Program objectives). Atkins staff was able to identify five potential seagrass mitigation site options for the proposed project (see Figure 2). During the field operations, additional information was collected on the five potential mitigation sites during the June and July 2011 field efforts. The field data were collected through visual surveys of the spoil islands, as well as in-water snorkeling and SCUBA diving of the dredge holes/channel under evaluation. The mitigation options were ranked in order of priority (high, medium, low) based upon the information collected. The following paragraphs provide a description of each mitigation option, as well as the reasons for the assigned priority ranking. It is important to note that the priority rankings are based only on the field information gathered. No detailed assessments or cost analyses have been conducted at this time. The attached Mitigation Site Matrix provides the following information in an abbreviated table format.

## Mitigation Option #1 (Linear Channel)

Mitigation Option #1 consists of a linear channel that is located northwest of the existing bridge (Figure 3). The channel extends in a northeast direction, beginning approximately 25 feet from the shore and terminating at the navigation channel. Atkins biologists swam the entire channel area. The channel was relatively shallow (estimated at 6 feet) and the substrate consisted of unvegetated, sandy bottom. Sparse sprigs of shoal grass (*Halodule wrightii*) were observed between the shore and the western

edge of the channel. The seagrass beds located north and south of the channel contained shoal grass, turtle grass (*Thalassia testudinum*), and manatee grass (*Syringodium filiforme*).

Mitigation Option #1 would provide approximately 0.92 acres of seagrass mitigation. The relatively shallow depths of this channel make this a good mitigation site, as a lesser quantity of fill would be required to obtain the necessary elevation to establish seagrass (i.e., an elevation that would emulate the surrounding existing beds). The narrow channel-like nature of this site would, in theory, lend to a high potential for a more rapid, natural colonization of fill placed in the site from the adjacent grass beds, thus increasing the likelihood of success. Furthermore, this mitigation site allows for easy access of construction equipment via the existing navigation channel on the east side of the site. The Sarasota Bay Estuary Program provided a verbal approval of this potential mitigation option. For these reasons, Mitigation Option #1 was assigned a **HIGH** priority ranking as a mitigation site.

#### Mitigation Option #2 (Dredge Hole South of Cortez Bridge)

Mitigation Option #2 consists of a previously dredged hole located southwest of the Cortez Bridge (Figure 4). This site has a shape that resembles a mushroom, with a large lobe at the northern end and a narrower neck towards the south. To assess the substrate, Atkins biologists conducted five linear directional swims through the site using SCUBA equipment and compass (Figure 4). The northern lobe of the site is occupied by a deep dredge pit. There is a sandy/silty shelf around the edge, which slopes down into a deep pit (estimated at 12 feet deep). Light within the pit is extremely limited and sediments at the bottom of the pit are black, barren, and anoxic.

The southern portion of the site (narrow neck) is occupied by shallower, sandy areas of varied depths. Artificial reef structures having no biological encrustations were noted in the central portion of the site, along the eastern edge towards the top of the neck. In addition, corals (*Siderastrea radians* and *Oculina diffusa*) were observed in two locations: 1) on large pieces of debris located within the central portion of site near the eastern boundary and 2) on exposed hardbottom areas in the central portion of the site near the western boundary. All sediments within the limits of this mitigation option were barren of SAV. The seagrass beds surrounding the dredged channel contained *T. testudinum* and *H. wrightii*.

Mitigation Option #2 would provide approximately 10.48 acres of seagrass mitigation which does not exclude the precise area of the artificial reef. The exact acreage of the mitigation capacity would need to be re-evaluated to identify the extent of the artificial reef. Several factors make this site less suitable for seagrass mitigation. First, the deeper depths of this site would require a substantially higher quantity of fill to obtain the necessary elevation to establish seagrass in the site. Partial filling of this site would require detailed engineering to ensure proper containment and prevent loss of fill placed. In addition, the site contains both artificial reef modules and existing corals. It should be noted that the Sarasota Bay Estuary Program provided a verbal approval of this potential mitigation option, as long as the existing artificial reef structures are not impacted. Access to this site is limited due to the surrounding seagrass beds and the shallow depths at the southern end of the site. Furthermore, there may be potential water quality concerns during construction at this site (controlling turbidity during fill placement would be a substantial challenge). For these reasons, Mitigation Option #2 was assigned a **LOW** priority ranking as a mitigation site.

Mitigation Option #3A (Southern Spoil Island)

Mitigation Option #3A consists of a spoil island located northeast of Anna Maria Bridge (Figure 5). This spoil island contains a fringe of red (*Rhizophora mangle*), white (*Laguncularia racemosa*), and black mangroves (*Avicennia germinans*) along ~75% of the shoreline. The interior of the island and the northern portion of the island consist of uplands with exotic vegetation, including Australian pine (*Casuarina* sp.) and Brazilian pepper (*Schinus terebinthifolius*).

Mitigation Option #3A would provide approximately 0.98 acres of seagrass mitigation. Creation of a mitigation site by scraping down the elevation of this spoil island would allow for the control of both the energy and turbidity at the site during the construction activities, which in turn, could reduce construction costs, project timelines, and permitting requirements. In addition, this site could potentially be used as a location for mangrove mitigation, if required for the project. However, access to this site is limited due to the surrounding seagrass beds and shallow depths. The site is currently under private ownership (owner listed as David K. Deitrich). For these reasons, Mitigation Option #3A was assigned a **MEDIUM** priority ranking as a mitigation site.

Mitigation Option #3B (Northern Spoil Island)

Mitigation Option #3B consists of a spoil island located north-northeast of Anna Maria Bridge (Figure 6). This spoil island contains a fringe of white and black mangroves along ~65% of the shoreline. The western portion of the island consists of uplands with exotic vegetation, including Australian pine, Brazilian pepper, and carrotwood (*Cupaniopsis anacardioides*).

Mitigation Option #3B would provide approximately 1.11 acres of seagrass mitigation. Similar to Mitigation Option #3A, creation of a mitigation site from this spoil island would allow for control of both the energy and turbidity at the site during the construction activities. Also, this site could potentially be used as a location for mangrove mitigation, if needed. While seagrass beds surround this spoil island, it is slightly more accessible due to greater surrounding water depths. The current ownership of this site is unknown. For these reasons, Mitigation Option #3B was assigned a **MEDIUM** priority ranking as a mitigation site.

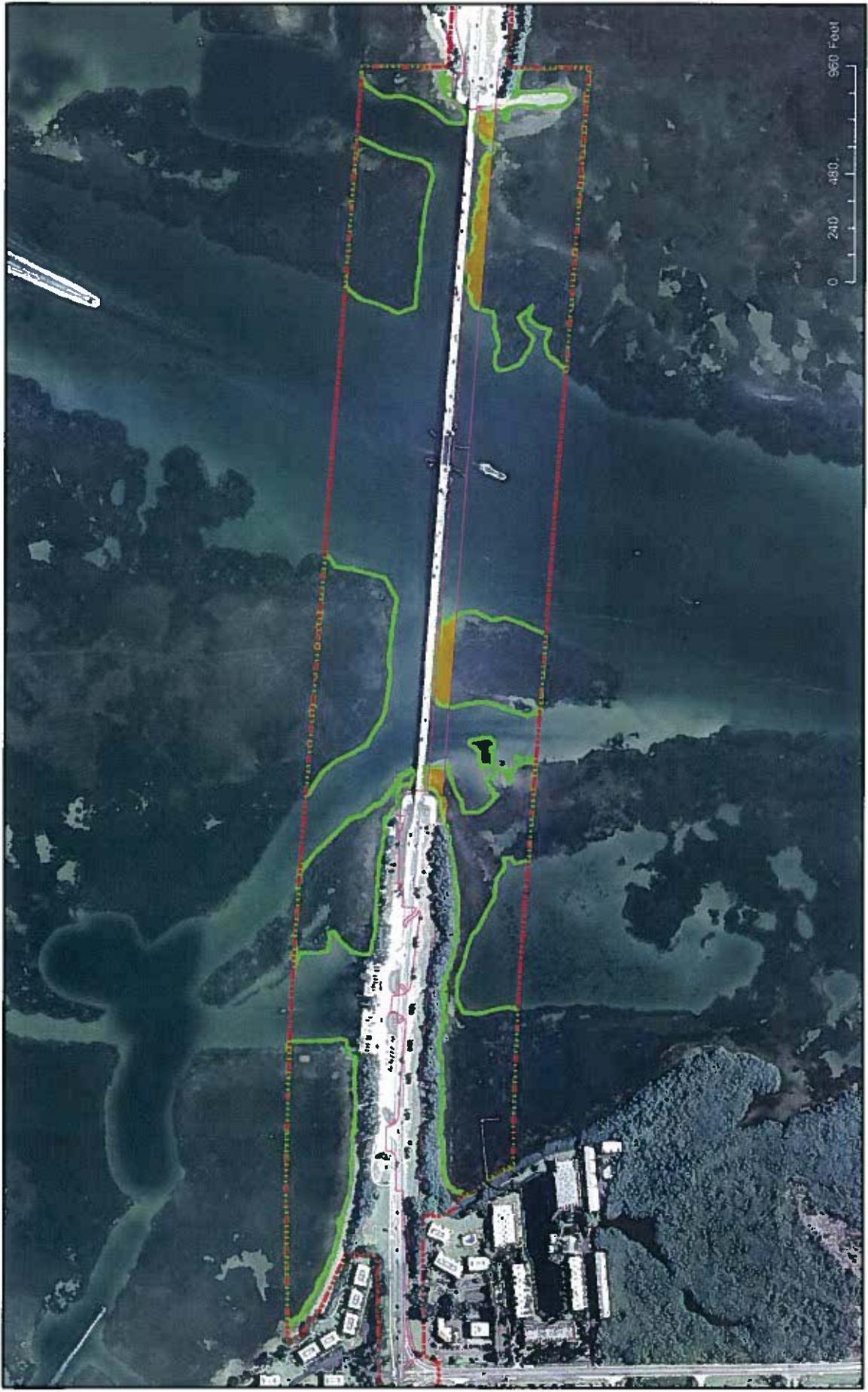
Mitigation Option #4 (Dredge Hole Northwest of Anna Maria Bridge)

Mitigation Option #4 consists of a previously dredged hole located northwest of the Anna Maria Bridge (Figure 7). The southwestern portion of this site is open directly to the navigation channel. To assess the substrate, Atkins biologists conducted three directional swims through the site using SCUBA equipment and a compass (Figure 7). The central and southern portions of the site have a steep, barren slope into a deep pit (estimated at 18 feet deep). Light within the pit is extremely limited and sediments at the bottom of the pit are black, barren, and anoxic. The northernmost portion of the site is occupied by a shallower (estimated at 6 ft deep) area of barren sediment. The seagrass beds surrounding this site contain turtle grass, shoal grass, and manatee grass.

Mitigation Option #4 would provide approximately 3.31 acres of seagrass mitigation. While this site presents easy access for construction equipment via the navigation channel that abuts the site, the substantial depth of this dredge hole would require a considerably greater quantity of fill to obtain the necessary elevation to establish seagrass in this site. Furthermore, there may be potential water quality concerns during construction at this site (controlling turbidity during fill placement would be a

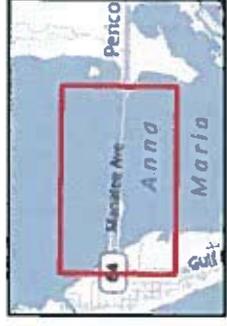
FPID# 424436-1-21-01  
Anna Maria Bridge  
Seagrass Mapping and Seagrass Mitigation Options

substantial challenge due to the amount of fill and the proximity of the navigation channel). For these reasons, Mitigation Option #4 was assigned a LOW priority ranking as a mitigation site.



NAD\_1983\_HARN\_StatePlane\_Florida\_West\_FIPS\_0902\_Feet

Anna Maria Island Bridge, Manatee County, Florida



Anna Maria Bridge  
Manatee County  
Florida

-  Existing Right-of-Way
-  Proposed Constr. Footprint
-  Calculated Seagrass Impact
-  Seagrass

Anna Maria Bridge  
Figure 1. 2011 Seagrass Map

Impacts based on 2011 seagrass survey (1.87 acres)



1 Inch = 614 feet



Date: August 12, 2011

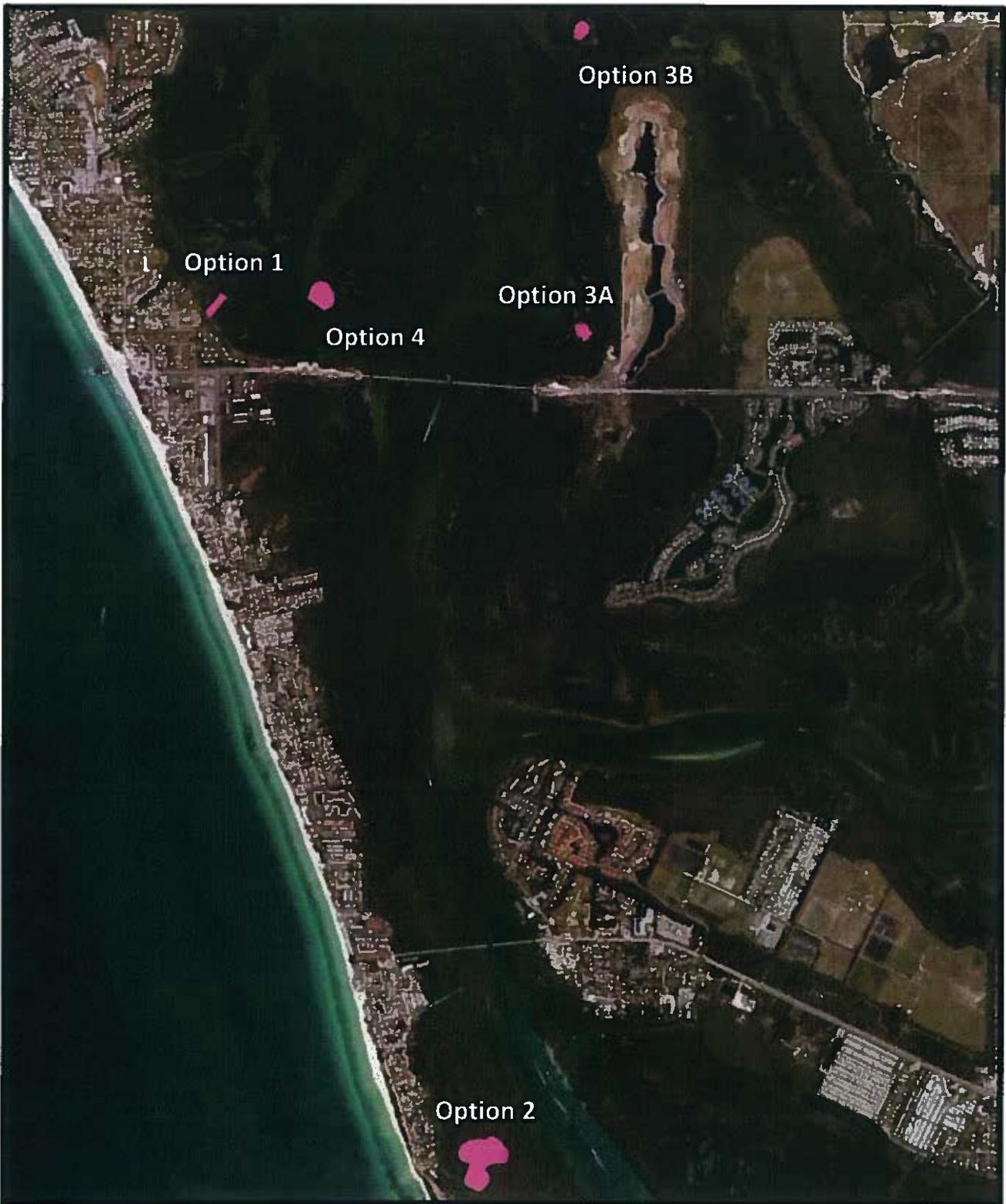
## Anna Maria Bridge Potential Seagrass Mitigation Site Matrix

2009 WER Seagrass Impact Estimate: 1.81 ac

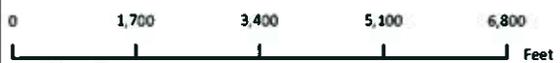
2011 Seagrass Impact Estimate: 1.87 ac

Mitigation Option	Current Site Description	Mitigation Acreage Estimate	Priority Ranking*	Reasons for Priority Ranking
Option #1 Linear Channel	Linear dredged channel. Channel currently contains no vegetation from 30 ft offshore to the navigation channel. A small patch of <i>H. wrightii</i> was observed 25 ft from shore. The seagrass beds surrounding the dredged channel contain <i>T. testudinum</i> , <i>H. wrightii</i> , and <i>S. filiforme</i> .	0.92 ac	High	<p><b>PROS</b></p> <ul style="list-style-type: none"> <li>Shallow depth of channel (less fill would be required).</li> <li>Easy access for construction equipment via the navigation channel.</li> <li>Verbal approval from Sarasota Bay Estuary Program</li> </ul> <p><b>CONS</b></p> <ul style="list-style-type: none"> <li>N/A</li> </ul>
Option #2 Dredge Hole South of Cortez Bridge	The northern half of the site is occupied by a deep dredge pit. A sandy/silty sediment shell slopes down into a deep pit (~12 ft deep). Light within the pit is extremely limited and sediments at bottom of pit are black, barren, and anoxic.  The southern half of the site is occupied by shallower, sandy area of varied depths. Artificial reef structures (with no biological encrustations) were noted in the central portion of the site, along the eastern boundary. Corals ( <i>Sclerastrea nodosus</i> and <i>Oculina diffusa</i> ) were observed on large pieces of debris (central portion of site near the eastern boundary) and on exposed hardbottom areas (central portion of the site near the western boundary). All sediments within the limits of this site were barren of SAV. The seagrass beds surrounding the dredged channel contain <i>T. testudinum</i> and <i>H. wrightii</i> .	10.48 ac	Low	<p><b>PROS</b></p> <ul style="list-style-type: none"> <li>Verbal approval from Sarasota Bay Estuary Program, as long as the existing artificial reef structures are not impacted.</li> </ul> <p><b>CONS</b></p> <ul style="list-style-type: none"> <li>Depth of dredge hole would require substantial quantities of fill.</li> <li>Corals and artificial reef were observed within the site.</li> <li>Access to site is limited due to surrounding seagrass beds and shallow depths at the southern end of site.</li> <li>Potential water quality concerns during construction.</li> </ul>
Option #3A Southern Spoil Island	Island contains a fringe of red, white, and black mangroves along ~75% of the shoreline. Interior and northern portion of the island consist of uplands with exotic vegetation, including Australian pine and Brazilian pepper.	0.98 ac	Medium	<p><b>PROS</b></p> <ul style="list-style-type: none"> <li>Ability to control energy and turbidity during construction [reduced construction costs, timelines, and permitting]</li> <li>Potential for use as a mangrove mitigation site.</li> </ul> <p><b>CONS</b></p> <ul style="list-style-type: none"> <li>Access to site is limited due to surrounding seagrass beds.</li> <li>Potential ownership concerns (currently under private ownership - David K. Deitrich)</li> </ul>
Option #3B Northern Spoil Island	Island contains a fringe of white and black mangroves along ~65% of the shoreline. Western portion of the island consist of uplands with exotic vegetation, including Australian pine, Brazilian pepper, and carrotwood.	1.11 ac	Medium	<p><b>PROS</b></p> <ul style="list-style-type: none"> <li>Deeper water access is available</li> <li>Ability to control energy and turbidity during construction (reduced construction costs, timelines, and permitting)</li> <li>Potential for use as a mangrove mitigation site.</li> </ul> <p><b>CONS</b></p> <ul style="list-style-type: none"> <li>People were observed utilizing the island for camping and recreation.</li> <li>Property ownership unknown</li> </ul>
Option #4 Dredge Hole NW of Anna Maria Bridge	The central and southern portions of the site have a steep, barren slope into a deep pit (~18 ft deep). Light within the pit is extremely limited and sediments at bottom of pit are black, barren, and anoxic. The northernmost portion of the site is occupied by a shallower (~6 ft deep) area of barren sediment. The seagrass beds surrounding the dredged channel contain <i>T. testudinum</i> , <i>H. wrightii</i> and <i>S. filiforme</i> .	3.31 ac	Low	<p><b>PROS</b></p> <ul style="list-style-type: none"> <li>Site has easy access for construction equipment via the navigation channel</li> </ul> <p><b>CONS</b></p> <ul style="list-style-type: none"> <li>Depth of dredge hole would require substantial quantities of fill.</li> <li>Potential water quality concerns during construction</li> </ul>

\*Potential mitigation sites were ranked in order of priority from high to low based upon the reasons provided in the "Reasons for Priority Ranking" column. Priority rankings are based on field observations only and no cost analysis has been conducted at this time.



**Anna Maria Bridge**  
**Figure 2. Potential Seagrass Mitigation Site Options**



Date: August 12, 2011





NAD\_1983\_HARN\_StatePlane\_Florida\_West\_FIPS\_0902\_Feet

Manatee County, Florida



Anna Maria Bridge  
Manatee County  
Florida

**Figure 3. Potential Seagrass Mitigation Option #1**

 Potential Mitigation Option

Mitigation Area:  
**0.92 Acres**



1 inch = 125 feet



Date: August 16, 2011



NAD\_1983\_HARN\_StatePlane\_Florida\_West\_FIPS\_0502\_Feet

Manatee County, Florida



Anna Maria Bridge  
Manatee County  
Florida

**Figure 4. Potential Seagrass Mitigation Option #2**

 Potential Mitigation Option  
 Transect Location

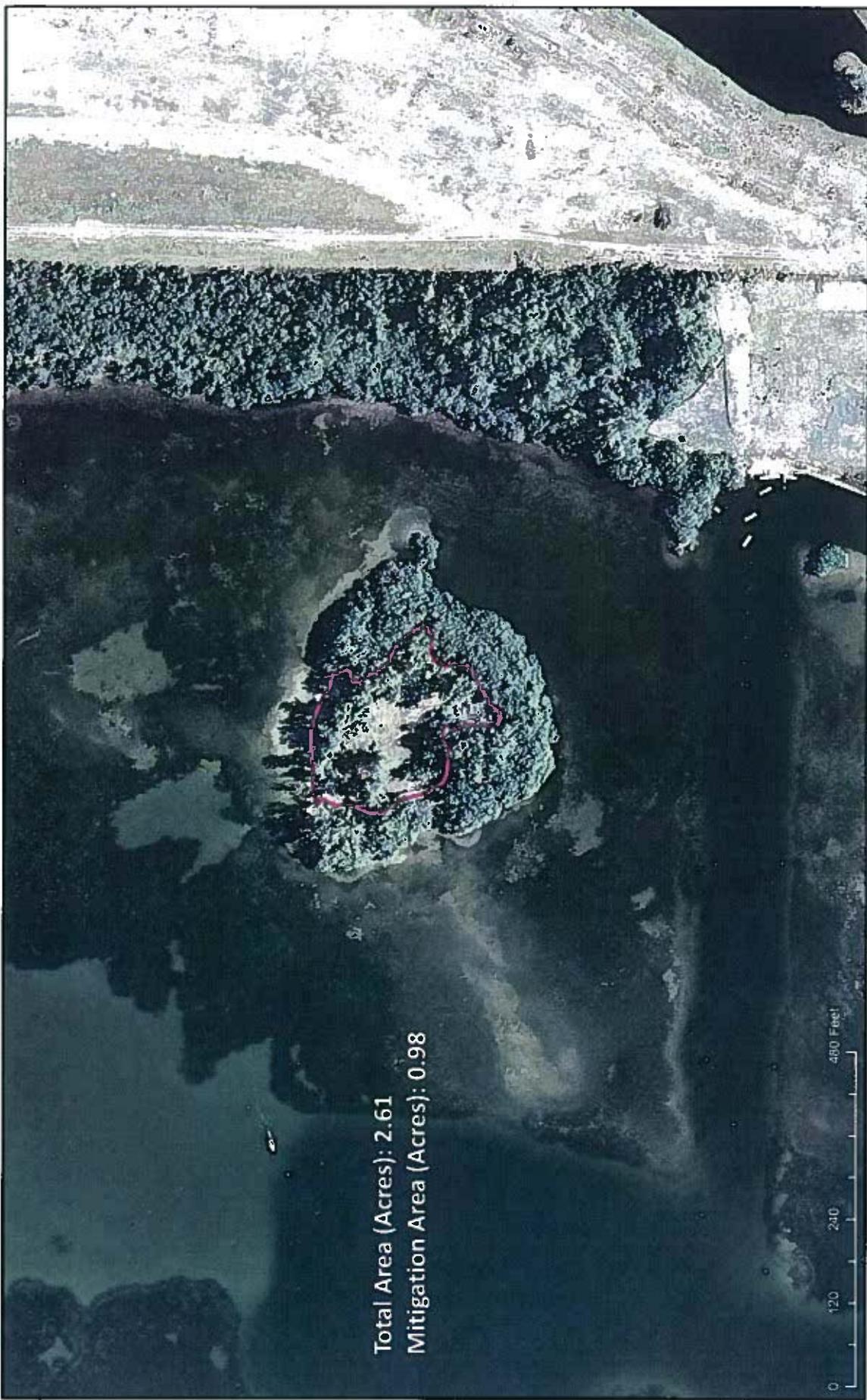
**Mitigation Area:**  
10.48 Acres



1 inch = 213 feet

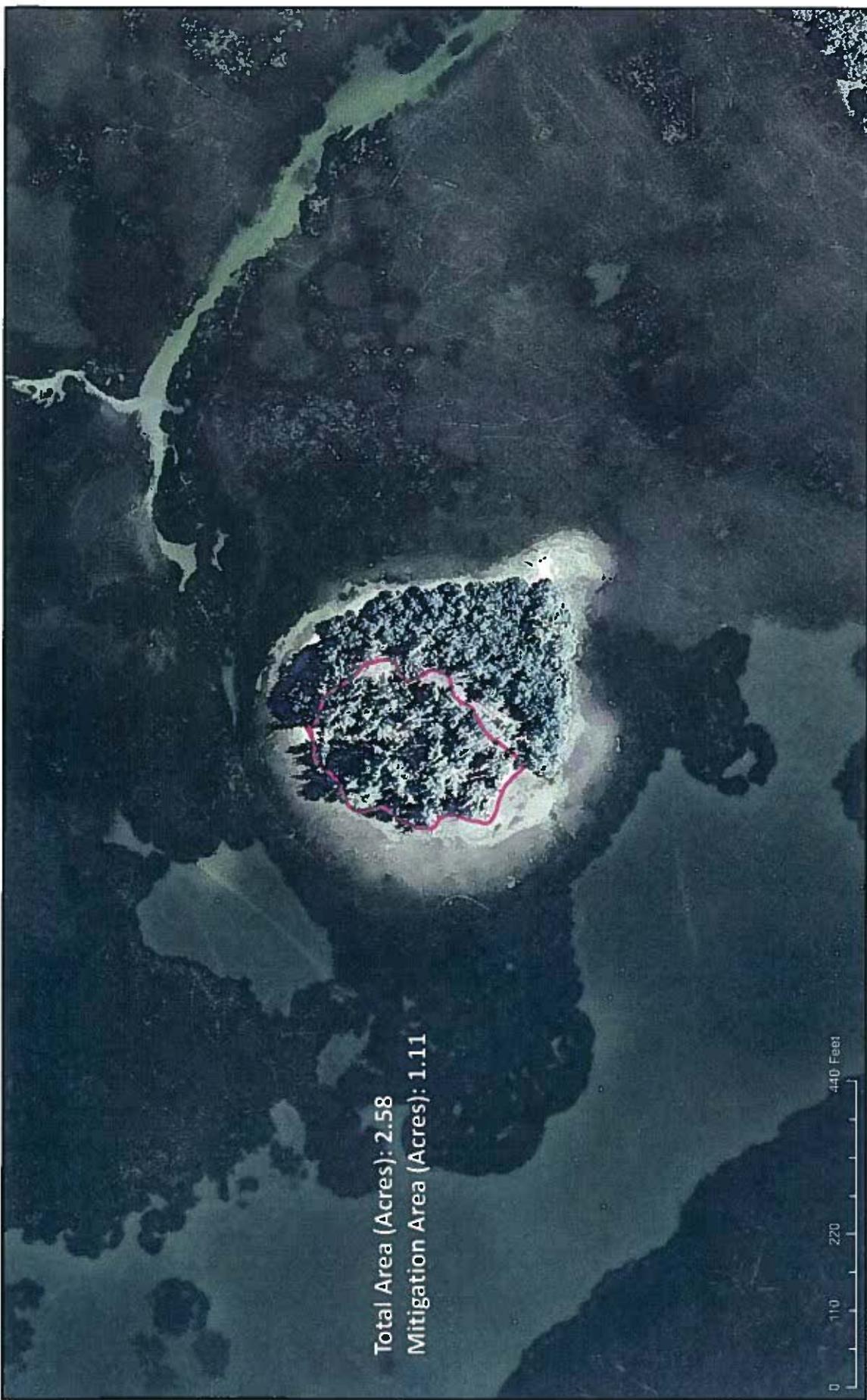


Date: August 16, 2011



Manatee County, Florida

<p>Mitigation Area: 0.98 acres</p> <p>Parcel Owned By Deitrich, David K</p>	 <p>1 inch = 200 feet</p>  <p>Date: August 16, 2011</p>
<p><b>Anna Maria Bridge</b> <b>Potential Seagrass Mitigation Option #3A</b></p> <p> Potential Mitigation Option</p>	<p>Anna Maria Bridge Manatee County Florida</p> 



NAD\_1983\_HARN\_StatePlane\_Florida\_West\_FIPS\_0902\_Feet Manatee County, Florida

Mitigation Area:  
1.11 acres

No Property Ownership

 1 inch = 200 feet

 Date: August 16, 2011

**Anna Maria Bridge**  
**Figure 6. Potential Seagrass Mitigation Option #3B**  
 Potential Mitigation Option

Anna Maria Bridge  
Manatee County  
Florida





NAD\_1983\_HARN\_StatePlane\_Florida\_West\_FIPS\_0902\_Feet

Manatee County, Florida



Anna Maria Bridge  
Manatee County  
Florida

**Figure 7. Potential Seagrass Mitigation Option #4**

Mitigation Area:  
3.31 Acres

Potential Mitigation Option  
Transect Location



1 inch = 113 feet



Date: August 16, 2011

## Warren, Kimberly D

---

**From:** Serdynski, Elizabeth [Elizabeth.Serdynski@dot.state.fl.us]  
**Sent:** Wednesday, October 19, 2011 2:45 PM  
**To:** Sands, Jon; Bizerra, Marlon; Schulz, Mark; Piazza, Chris; Setchell, Brent; Wilt, Jim; Mills, Nicole  
**Cc:** Serdynski, Elizabeth; Williams, Bryan; Warren, Kimberly D  
**Subject:** FW: SR 64 Anna Maria Island Bridge seagrass mitigation options  
**Attachments:** David\_Rydene.vcf

Based on further coordination with NMFS below, sea grass mitigation can be done concurrently with the project.

If done concurrently it would increase the required ratio (i.e. 3:1 versus 2:1).

Mitigation done concurrently or ahead of time would both require monitoring and a contingency plan.

Thanks.

Elizabeth Serdynski  
Environmental Project Manager  
Florida Department of Transportation  
801 N. Broadway Ave.  
Bartow, Florida 33830  
863.519.2805  
[Elizabeth.serdynski@dot.state.fl.us](mailto:Elizabeth.serdynski@dot.state.fl.us)

-----Original Message-----

**From:** David Rydene [mailto:David.Rydene@noaa.gov]  
**Sent:** Monday, October 17, 2011 12:41 PM  
**To:** Serdynski, Elizabeth  
**Subject:** SR 64 Anna Maria Island Bridge seagrass mitigation options

Hi Elizabeth,

Sorry to take so long to get back to you on this, but I was traveling and then my supervisor was traveling. I finally spoke to my supervisor today in regards to compensatory mitigation for seagrass losses due to the replacement of the SR 64 Anna Maria Island Bridge at some point in the future. If the mitigation was done concurrently with the bridge construction you would be looking at a 3:1 mitigation ratio because of the uncertainty, loss of ecological function due to time lag, etc. If the mitigation was done ahead of construction and deemed successful it would be more like a 2:1ratio. In either case, there would be something on the order of 5 years of monitoring to determine if the project was successful (i.e. met some success benchmark). In addition, a contingency plan would have to be in place in the event that the initial mitigation failed.

-Dave

--  
David Rydene, Ph.D.  
Fishery Biologist  
National Marine Fisheries Service  
Habitat Conservation Division  
263 13th Avenue South  
St. Petersburg, FL 33701  
Office (727) 824-5379

Cell (727) 512-6782  
Fax (727) 824-5300

---

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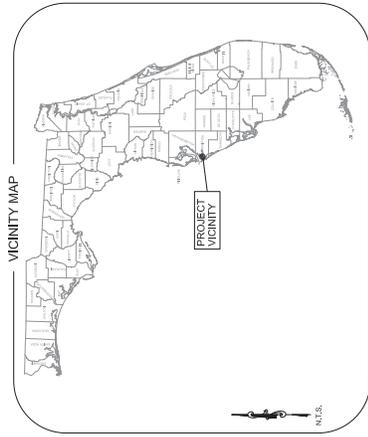
## **Appendix 2**

# **CONCEPTUAL MITIGATION PLAN DRAWINGS**

# ANNA MARIA AND CORTEZ BRIDGE SEAGRASS UPDATE, PHASE II

## CONCEPTUAL MITIGATION PLAN

### MANATEE COUNTY, FLORIDA



VICINITY MAP



LOCATION MAP

SHEET TITLE	INDEX OF DRAWINGS	SHEET NUMBERS
COVER		C-000
PROJECT LAYOUT - DRAWING INDEX		C-001
PLAN VIEW SURVEY AND DESIGN		C-300 TO C-304
OPTION #1 LINEAR CHANNEL		C-300
OPTION #3A SOUTHERN SPOIL ISLAND		C-301
OPTION #3B NORTHERN SPOIL ISLAND		C-302
OPTION #5 ANNA MARIA BRIDGE SANDBAR		C-303
OPTION #7 LARGE HOLE SOUTH OF PERICO ISLAND		C-304
CROSS SECTIONS		C-400 TO C-609
NEAR CHANNEL		C-400 TO C-409
SOUTHERN SPOIL ISLAND		C-402 TO C-403
NORTHERN SPOIL ISLAND		C-404 TO C-605
ANNA MARIA BRIDGE SANDBAR		C-406 TO C-607
LARGE HOLE SOUTH OF PERICO ISLAND		C-608 TO C-609



#### CLIENT

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BARTOW, FLORIDA  
(863) 519-2300

#### ENGINEER OF RECORD

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(800) 477-7275

#### SURVEYOR

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TAMPA, FLORIDA 33607  
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NOVEMBER 2013

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CONSTRUCTION NEEDS. WE'VE GOT YOU COVERED.

#### GENERAL NOTES

1. THE PURPOSE OF THIS PROJECT IS TO IDENTIFY POTENTIAL MITIGATION AREA LOCATIONS AS A RESULT OF A BRIDGE REPLACEMENT. ALL QUANTITIES ARE APPROXIMATE AND BASED UPON AVAILABLE SURVEY. THE ESTIMATED QUANTITIES SHOULD BE VERIFIED PRIOR TO CONSTRUCTION.
2. TOPOGRAPHIC AND BATHYMETRIC DATA HAVE BEEN PROVIDED BY ATKINS N.A. AND WAS COLLECTED IN AUGUST 2013. SURVEY INFORMATION DEPICTED WITHIN THIS PLAN SET REPRESENT THE EXISTING CONDITIONS AT THE TIME OF THE SURVEY.
3. GRID COORDINATES ARE IN FEET, AND ARE REFERENCED TO THE FLORIDA STATE PLANE COORDINATE SYSTEM, WEST ZONE, NORTH AMERICAN DATUM OF 1983 (NAD 83).
4. ELEVATIONS SHOWN WITHIN THIS PLAN SET ARE IN FEET, AND ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
5. AERIAL PHOTOGRAPHS ARE FOR REFERENCE ONLY AND WERE OBTAIN FROM FOOT, COLLECTED IN 2011.

THESE PLANS ARE ORIGINALLY PLOTTED AT 22"x34". ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. A HALF SCALE IS SHOWN SO THE PLANS MAY PRINT AT 11"x17".

PROJECT LOCATION  
THE MITIGATION AREAS ARE APPROXIMATELY LOCATED IN ANNA MARIA AND BRADENTON BEACH, FL ALONG THE INTRACOASTAL WATERWAY (ICW) ADJACENT TO ANNA MARIA SOUND, TAMPA BAY, PERICO BAY, AND PALMA SOLA BAY.

#### CONTROL TABLE

MONUMENT	NORTHINGS	EASTINGS	ELEV	STAMPING
AG1981	1140935.30	428915.79	13.46	J 254 1985
AG2006	1160518.57	428794.97	4.27	11/06 GIS 03

PERMANENT REFERENCE STATION COORDINATES AND ELEVATIONS:

STATION	NORTHINGS	EASTINGS	ELEV
PRS2552248893	1089743.397	572347.387	44.398
PRS5771958541	1033891.112	474447.750	24.654

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PREPARED BY

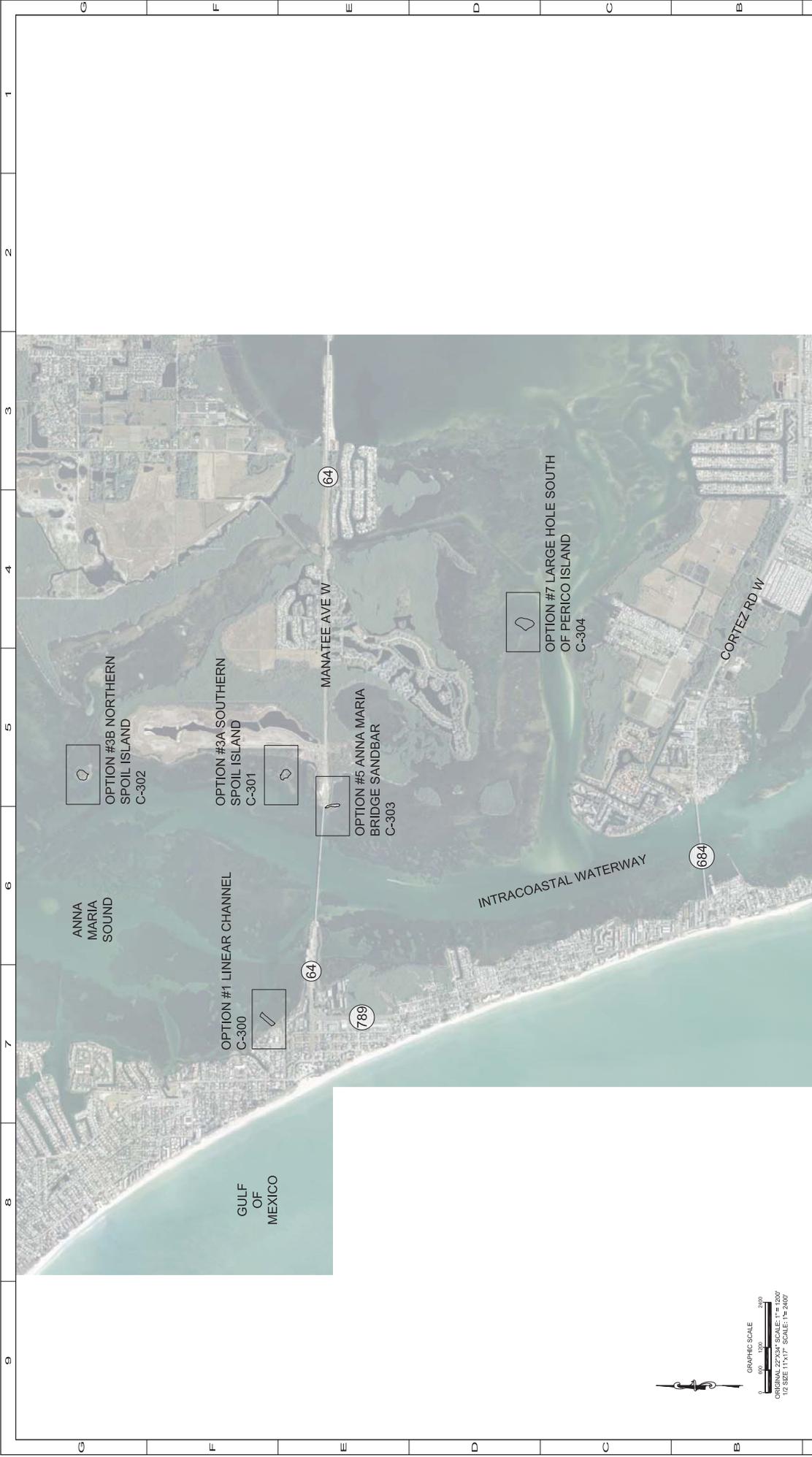
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FAX (813) 636-6953

PROJECT NUMBER: 100036102

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ENGINEER OF RECORD: BRYAN D. FLYNN  
FLORIDA P.E. #70586

DATE:



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 WWW.ATKINSGLOBAL.COM

JOB NO.: 100035102  
 DRAWING: MSS  
 REVISIONS: BDP  
 DATE: 08/20/13  
 APPROVED: BDP  
 SHEET NO.: C-001

CLIENT: **FDOT - DISTRICT 1**  
 801 N. BROADWAY AVE.  
 BARTOW, FLORIDA 33830

PROJECT: **ANNA MARIA AND CORTEZ BRIDGE SEAGRASS UPDATE, PHASE II**

TITLE: **PROJECT LAYOUT - DRAWING INDEX**

ENGINEER OF RECORD:  
 BRYAN D. FLINN - FL P.E. #71866

DATE: \_\_\_\_\_

ORIGINAL ISSUED DATE: \_\_\_\_\_

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 DEPARTMENT OF TRANSPORTATION

GRAPHIC SCALE  
 0 800 1300 2400  
 ORIGINAL SCALE: 1"=400'  
 1/2" SIZE: 1"=1600'

CONCEPTUAL MITIGATION PLAN

ANNA MARIA AND CORTEZ BRIDGE SEAGRASS UPDATE, PHASE II

PROJECT LAYOUT - DRAWING INDEX

ENGINEER OF RECORD:  
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NOTES:  
 1. ELEVATIONS ARE IN FEET NAVD88  
 2. AERIAL IS FOR REFERENCE ONLY

- LEGEND:**
- DESIGN CUT TEMPLATE
  - MEAN LOWER LOW WATER (-1.6' NAVD88)
  - MAJOR CONTOUR
  - MINOR CONTOUR
  - EXISTING NUISANCE AND EXOTIC VEGETATION
  - EXISTING MANGROVES
  - POTENTIAL BARGE ACCESS ROUTE AND FLUSHING CHANNEL
  - EDGE OF EXISTING SEAGRASS

POTENTIAL 40' BARGE ACCESS ROUTE AND FLUSHING CHANNEL EXCAVATED TO -4.0', 385 CY OF EXCAVATION, 2:1 SIDE SLOPE CUT, (0.13 ACRES)

EDGE OF EXISTING SEAGRASS

DESIGN CUT TEMPLATE TO -3.0' = 9,510 CY OF EXCAVATION  
 6:1 SIDE SLOPE CUT, (1.1 ACRES)  
 SEE SHEETS C-602 TO C-603 FOR CROSS SECTIONS

EDGE OF EXISTING SEAGRASS

EXISTING MANGROVES

MLLW (-1.6' NAVD88)

MLLW (-1.6' NAVD88)

EXISTING NUISANCE AND EXOTIC VEGETATION

MLLW (-1.6' NAVD88)



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PROJECT:  
 ANNA MARIA AND CORTEZ BRIDGE SEAGRASS UPDATE, PHASE II

TITLE:  
 PLAN VIEW - SURVEY & DESIGN OPTION 3A - SOUTHERN SPOIL ISLAND

DATE:  
 05/03/2016

ORIGINAL ISSUED DATE:  
 05/03/2016

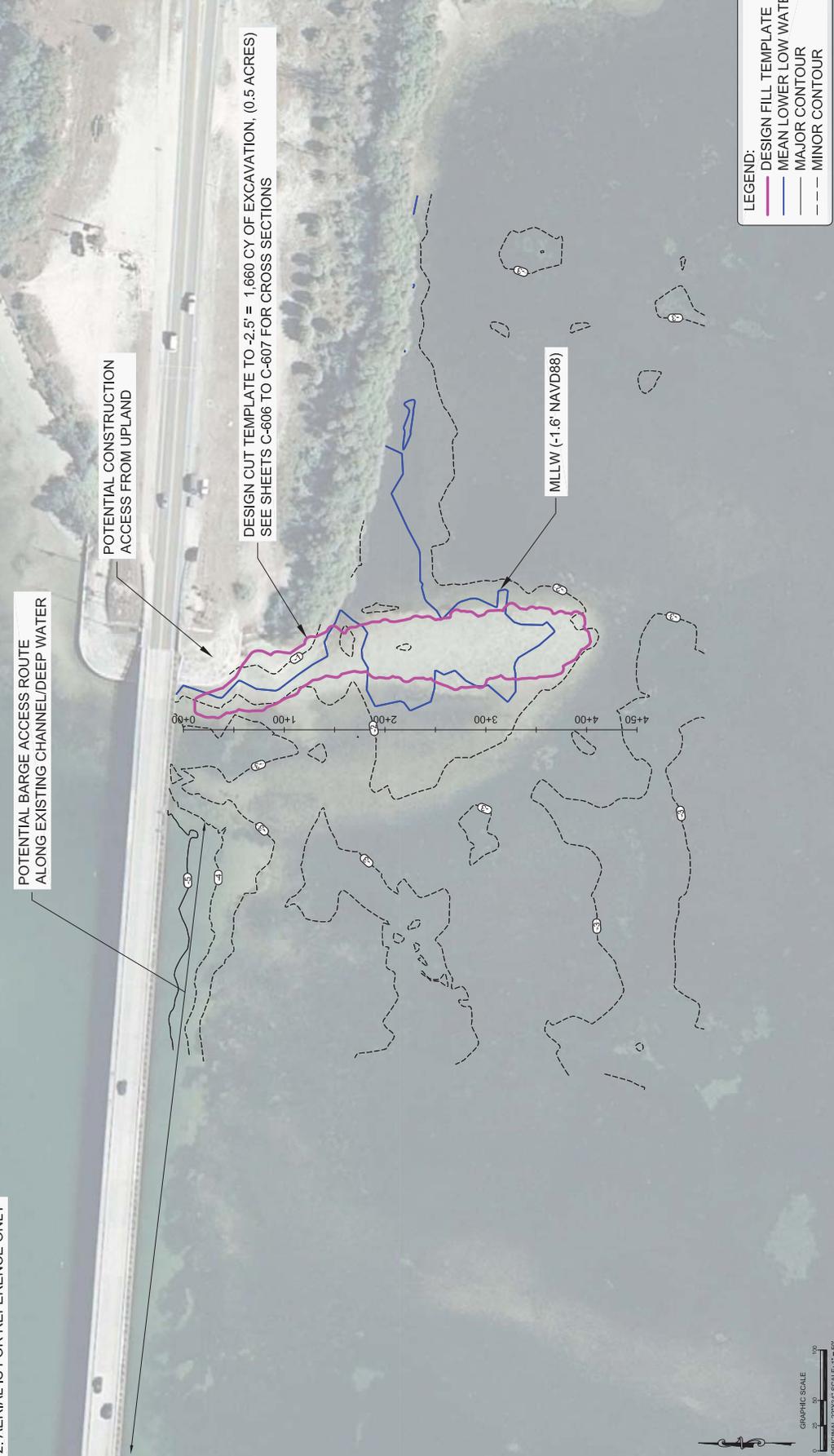
CONCEPTUAL MITIGATION PLAN

**ATKINS**  
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 FT. LAUDERDALE, FL 33304  
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 WWW.ATKINSGLOBAL.COM

JOB NO.:	10028102
DRAWING:	MSS
DESIGNER:	BDP
CHECKER:	ELP
APPROVER:	BDP
SHEET NO.:	C-301



NOTES:  
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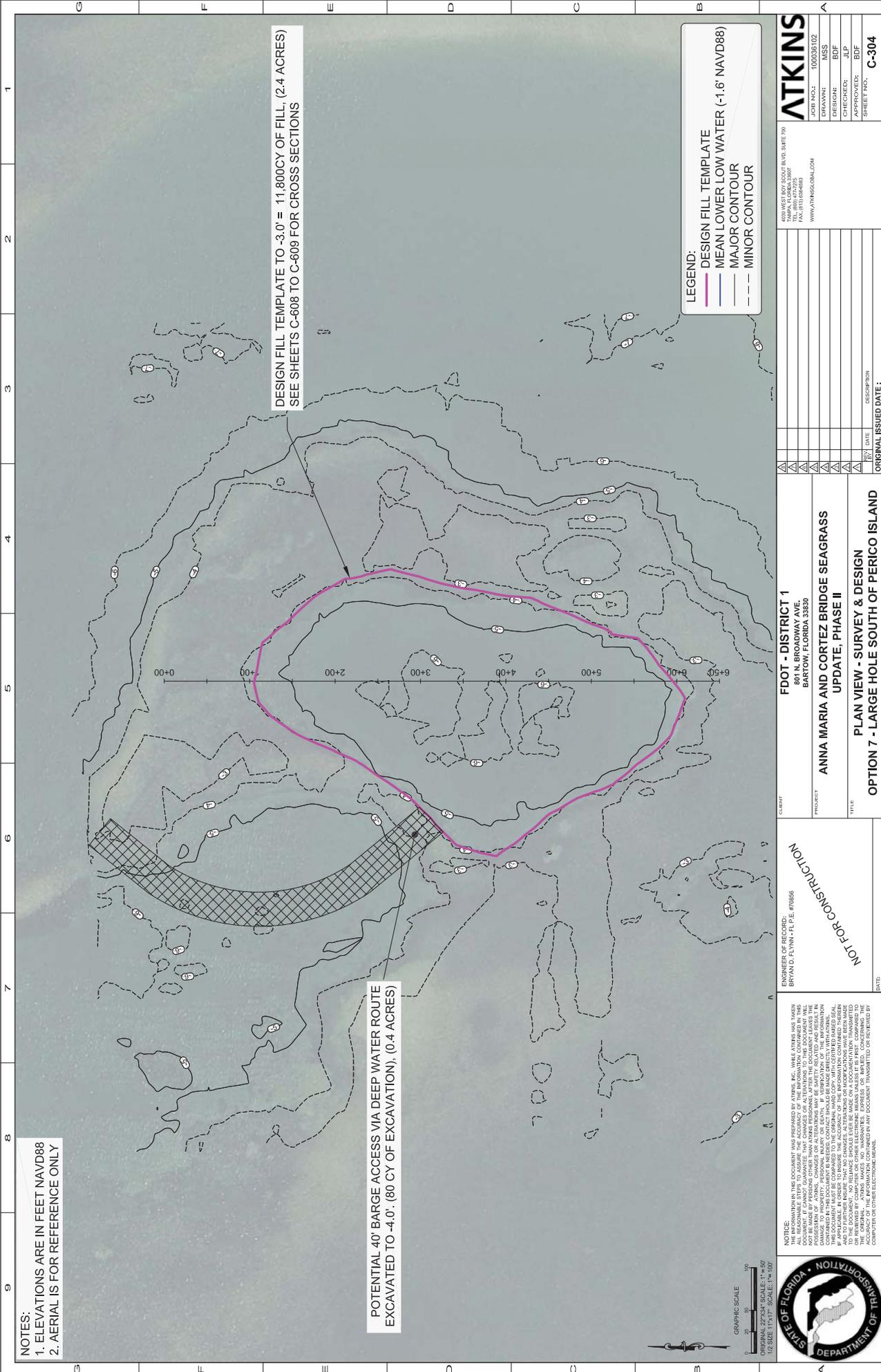


LEGEND:  
 — DESIGN FILL TEMPLATE  
 — MEAN LOWER LOW WATER (-1.6' NAVD88)  
 - - - MAJOR CONTOUR  
 - - - MINOR CONTOUR

		100 WEST BAY STREET SUITE 500 MIAMI, FL 33130 TEL: (305) 477-2225 WWW.ATKINS.COM	
JOB NO.: 100038102 DRAWING: MSS REVISION: BDF DESIGNED: BDF APPROVED: BDF SHEET NO.: C-303		ORIGINAL ISSUED DATE: 3	
CLIENT: <b>FDOT - DISTRICT 1</b> 801 N. BROADWAY AVE. BARTOW, FLORIDA 33830		PROJECT: <b>ANNA MARIA AND CORTEZ BRIDGE SEAGRASS          UPDATE, PHASE II</b>	
ENGINEER OF RECORD: BRYAN D. FLINN - F.L.P.E. #19866		TITLE: <b>PLAN VIEW - SURVEY &amp; DESIGN          OPTION 5 - ANNA MARIA BRIDGE SANDBAR</b>	
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NOTES:  
 1. ELEVATIONS ARE IN FEET NAVD88  
 2. AERIAL IS FOR REFERENCE ONLY



DESIGN FILL TEMPLATE TO -3.0' = 11,800CY OF FILL, (2.4 ACRES)  
 SEE SHEETS C-608 TO C-609 FOR CROSS SECTIONS

POTENTIAL 40' BARGE ACCESS VIA DEEP WATER ROUTE  
 EXCAVATED TO -4.0'. (80 CY OF EXCAVATION), (0.4 ACRES)

LEGEND:  
 — DESIGN FILL TEMPLATE  
 — MEAN LOWER LOW WATER (-1.6' NAVD88)  
 — MAJOR CONTOUR  
 - - - MINOR CONTOUR



NOTICE: THE INFORMATION CONTAINED HEREIN IS PRESENTED AS IS, WITH NO WARRANTIES, EXPRESS OR IMPLIED, MADE BY THE ENGINEER OF RECORD. THE INFORMATION IS TO BE USED FOR THE PROJECT AND FOR THE PURPOSES SPECIFIED IN THE CONTRACT DOCUMENTS. THE ENGINEER OF RECORD DOES NOT WARRANT THE ACCURACY OF THE INFORMATION CONTAINED IN THIS DOCUMENT. ANY CHANGES OR ALTERATIONS TO THIS DOCUMENT WILL BE THE RESPONSIBILITY OF THE USER. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE USER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES.

ENGINEER OF RECORD:  
 BRYAN D. WAIN - P.E. #17866

NOT FOR CONSTRUCTION

DATE:

CLIENT:  
 FDOT - DISTRICT 1  
 801 N. BROADWAY AVE.  
 BARTOW, FLORIDA 33830

PROJECT:  
 ANNA MARIA AND CORTEZ BRIDGE SEAGRASS  
 UPDATE, PHASE II

TITLE:  
 PLAN VIEW - SURVEY & DESIGN  
 OPTION 7 - LARGE HOLE SOUTH OF PERICO ISLAND

REVISIONS:

NO.	DATE	DESCRIPTION
1		ISSUE FOR PERMITS

ORIGINAL ISSUED DATE: 3

ATKINS  
 100 WEST BAY STREET SUITE 1900  
 MIAMI, FLORIDA 33131  
 TEL: (305) 477-2225  
 WWW.ATKINS.COM

JOB NO.: 100038102  
 DRAWING: MSS  
 REVISIONS: BDF  
 APPROVED: BDF  
 STREET NO.: C-304

CONCEPTUAL MITIGATION PLAN





















## **Appendix 3**

# **MANGROVE POINT MITIGATION BANK SWFWMD ERP PERMIT**



# Southwest Florida Water Management District

2379 Broad Street, Brooksville, Florida 34604-6899  
(352) 796-7211 or 1-800-423-1476 (FL only)  
SUNCOM 628-4150 TDD only 1-800-231-6103 (FL only)  
On the Internet at: [WaterMatters.org](http://WaterMatters.org)

An Equal  
Opportunity  
Employer

**Bartow Service Office**  
170 Century Boulevard  
Bartow, Florida 33830-7700  
(863) 534-1448 or  
1-800-492-7862 (FL only)

**Sarasota Service Office**  
6750 Fruitville Road  
Sarasota, Florida 34240-9711  
(941) 377-3722 or  
1-800-320-3503 (FL only)

**Tampa Service Office**  
7601 Highway 301 North  
Tampa, Florida 33637-6759  
(813) 985-7481 or  
1-800-836-0797 (FL only)

November 22, 2013

Mangrove Point Mitigation Bank, LLC  
Attn: H. Collins Forman, Jr.  
1323 Southeast 3rd Avenue  
Fort Lauderdale, FL 33316

Subject: **Notice of Intended Agency Action  
ERP Individual Construction**

Project Name: Mangrove Point Mitigation Bank  
App ID/Permit No: 662221 / 43035355.002  
County: HILLSBOROUGH  
Sec/Twp/Rge: S36/T31S/R18E, S31/T31S/R19E, S25/T31S/R18E

Dear Permittee(s):

Your Environmental Resource Permit has been approved contingent upon no objection to the District's action being received by the District within the time frames described in the enclosed Notice of Rights.

Approved construction plans are part of the permit, and construction must be in accordance with these plans. These drawings are available for viewing or downloading through the District's Application and Permit Search Tools located at [www.WaterMatters.org/permits](http://www.WaterMatters.org/permits).

The District's action in this matter only becomes closed to future legal challenges from members of the public if such persons have been properly notified of the District's action and no person objects to the District's action within the prescribed period of time following the notification. The District does not publish notices of intended agency action. If you wish to limit the time within which a person who does not receive actual written notice from the District may request an administrative hearing regarding this action, you are strongly encouraged to publish, at your own expense, a notice of intended agency action in the legal advertisement section of a newspaper of general circulation in the county or counties where the activity will occur. Publishing notice of intended agency action will close the window for filing a petition for hearing. Legal requirements and instructions for publishing notice of intended agency action, as well as a noticing form that can be used is available from the District's website at [www.WaterMatters.org/permits/noticing](http://www.WaterMatters.org/permits/noticing). If you publish notice of intended agency action, a copy of the affidavit of publishing provided by the newspaper should be sent to the District's Tampa Service Office, for retention in the File of Record for this agency action.

If you have questions, please contact Richard Alt, at the Tampa Service Office, extension 2045. For assistance with environmental concerns, please contact Bonnie Irving, extension 4428.

Sincerely,

Michelle K. Hopkins, P.E.  
Bureau Chief  
Environmental Resource Permit Bureau  
Regulation Division

Enclosures:   Approved Permit w/Conditions Attached  
                  [Statement of Completion](#)  
                  Notice of Authorization to Commence Construction  
                  Notice of Rights  
cc:             GreenSource Environmental Professionals, Inc.  
                  U. S. Army Corps of Engineers  
                  Alan Rayl, P.E., Rayl Engineering & Surveying, LLC

## **Appendix 4**

### **UMAM FORMS**

**Uniform Mitigation Assessment Method Summary**

<b>Site/Project Name:</b> Anna Maria Bridge Preferred Alt 3BS	<b>Application Number:</b> November 11, 2013	<b>Date:</b> November 11, 2013
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**Impact Summary**

Assessment Area	Impact Type	Location and Landscape Support		Water Environment		Community Structure		Impact Delta	Acres	Functional Loss	
		Current	w/Impact	Current	w/Impact	Current	w/Impact				
1 AMB SG-1 (Southwest)	Direct Impact	9	8	8	7	9	0	0.37	0.24	0.088	
2 AMB SG-3 (South Central)	Direct Impact	9	8	8	7	9	0	0.37	0.59	0.216	
3 AMB SG-4 (Southeast)	Direct Impact	9	8	8	7	9	0	0.37	1.04	0.381	
4 -	-	-	-	-	-	-	-	-	-	-	
5 -	-	-	-	-	-	-	-	-	-	-	
6 -	-	-	-	-	-	-	-	-	-	-	
<b>TOTAL</b>										<b>1.87</b>	<b>0.685</b>

**Mitigation Summary**

Assessment Area	Mitigation Type	Location and Landscape Support		Water Environment		Community Structure		Mitigation Delta	Time Lag	Risk	PAF	RFG	Acres	Functional Gain		
		w/o Mit	w/Mit	w/o Mit	w/Mit	w/o Mit	w/Mit									
1 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
5 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
6 -	-	-	-	-	-	-	-	-	-	0.00	-	-	-	-		
<b>TOTAL</b>														<b>0.00</b>	<b>0.00</b>	<b>0.000</b>

**TOTALS**

Impacts	Acres	Mitigation - Upland	Acres	Mitigation - Wetland	Acres
Direct Impacts	1.87	Restoration	0.00	Creation	0.00
Secondary Impacts	0.00	Enhancement	0.00	Restoration	0.00
<b>Total Impacts</b>	<b>1.87</b>	<b>Total Upland Mitigation</b>	<b>0.00</b>	<b>Total Wetland Mitigation</b>	<b>0.00</b>

<b>Total Functional Loss</b>	<b>0.685</b>
<b>Total Functional Gain</b>	<b>0.000</b>
<b>Mitigation Deficit</b>	<b>-0.685</b>

**Uniform Mitigation Assessment Method Summary**

<b>Site/Project Name:</b>	<b>Cortez Bridge</b>	<b>Application Number:</b>		<b>Date:</b>	<b>November 11, 2013</b>
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**Impact Summary**

Assessment Area	Impact Type	Location and Landscape Support		Water Environment		Community Structure		Impact Delta	Acres	Functional Loss	
		Current	w/Impact	Current	w/Impact	Current	w/Impact				
1 North Alternative	Direct Impact	9	8	8	7	9	0	0.37	0.03	0.011	
2 South Alternative	-	-	-	8	7	9	0	0.37	0.04	0.015	
3 -	-	-	-	-	-	-	-	-	-	-	
4 -	-	-	-	-	-	-	-	-	-	-	
5 -	-	-	-	-	-	-	-	-	-	-	
6 -	-	-	-	-	-	-	-	-	-	-	
<b>TOTAL</b>										<b>0.07</b>	<b>0.026</b>

**Mitigation Summary**

Assessment Area	Mitigation Type	Location and Landscape Support		Water Environment		Community Structure		Mitigation Delta	Time Lag	Risk	PAF	RFG	Acres	Functional Gain		
		w/o Mit	w/Mit	w/o Mit	w/Impact	w/o Mit	w/Mit									
1 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
2 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
3 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
4 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
5 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
6 -	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
<b>TOTAL</b>														<b>0.00</b>	<b>0.00</b>	<b>0.000</b>

**TOTALS**

Impacts	Acres	Mitigation - Upland	Acres	Mitigation - Wetland	Acres
Direct Impacts	0.03	Restoration	0.00	Restoration	0.00
Secondary Impacts	0.00	Enhancement	0.00	Enhancement	0.00
<b>Total Impacts</b>	<b>0.03</b>	<b>Total Upland Mitigation</b>	<b>0.00</b>	<b>Total Wetland Mitigation</b>	<b>0.00</b>

<b>Total Functional Loss</b>	<b>0.026</b>
<b>Total Functional Gain</b>	<b>0.000</b>
<b>Mitigation Deficit</b>	<b>-0.026</b>

Uniform Mitigation Assessment Method Summary

Site/Project Name:	<b>Mitigation Options</b>	Application Number:		Date:	<b>November 12, 2013</b>
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**Impact Summary**

Assessment Area	Impact Type	Location and Landscape Support		Water Environment		Community Structure		Impact Delta	Acres	Functional Loss	
		Current	w/Impact	Current	w/Impact	Current	w/Impact				
1	-	-	-	-	-	-	-	-	-	-	
2	-	-	-	-	-	-	-	-	-	-	
3	-	-	-	-	-	-	-	-	-	-	
4	Spoil Island A - Access	9	8	8	7	9	0	0.37	0.09	0.033	
5	Spoil Island B - Access	9	8	8	7	9	0	0.37	0.14	0.051	
6	Option 7 - Barge Access	9	8	8	7	9	0	0.37	0.07	0.026	
<b>TOTAL</b>										<b>0.30</b>	<b>0.110</b>

**Mitigation Summary**

Assessment Area	Mitigation Type	Location and Landscape Support		Water Environment		Community Structure		Mitigation Delta	Time Lag	Risk	PAF	RFG	Acres	Functional Gain
		w/o Mit	w/Mit	w/o Mit	w/Mit	w/o Mit	w/Mit							
1	Option 1 Restoration	8	9	7	8	0	9	0.37	1.25	2.25	n/a	0.130	1.10	0.143
2	Option 3A Creation	8	9	0	8	0	9	0.60	1.25	2.25	n/a	0.213	1.10	0.234
3	Option 3B Creation	8	9	0	8	0	9	0.60	1.25	2.25	n/a	0.213	1.29	0.275
4	Option 5 Restoration	8	9	7	8	0	9	0.37	1.25	2.25	n/a	0.130	0.50	0.065
5	Option 7 Creation	8	9	7	8	0	9	0.37	1.25	2.25	n/a	0.130	2.40	0.312
6	Option 9	-	-	-	-	-	-	-	-	0.00	-	-	-	-
<b>TOTAL</b>													<b>6.39</b>	<b>1.029</b>

**TOTALS**

Impacts	Acres	Mitigation - Upland	Acres	Mitigation - Wetland	Acres
Direct Impacts	0.23	Restoration	0.00	Restoration	1.00
Secondary Impacts	0.00	Enhancement	0.00	Enhancement	0.00
		Preservation	0.00	Preservation	0.00
<b>Total Impacts</b>	<b>0.23</b>	<b>Total Upland Mitigation</b>	<b>0.00</b>	<b>Total Wetland Mitigation</b>	<b>6.39</b>

<b>Total Functional Loss</b>	<b>0.110</b>
<b>Total Functional Gain</b>	<b>1.029</b>
<b>Excess Mitigation</b>	<b>0.919</b>

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>FDOT DI AMB_Cortez SAV MIT</b>		Application Number		Assessment Area Name or Number <b>AMB SG-1 (Southwest)</b>	
FLUCCs code <b>9110</b>		Further classification (optional)		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.24 Acres</b>		Basin/Watershed Name/Number <b>Anna Maria Sound</b>		Affected Waterbody (Class) <b>OFW, Estuary of National Significance in 1987</b>	
Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)					
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p><b>Anna Maria Bridge is located within Anna Maria Sound. Anna Maria Sound is part of and located at the northern extreme of the Sarasota Bay National Estuary. The Sound connects Sarasota Bay with the southern portion of Tampa Bay and surrounding local water bodies (i.e., Perico Bayou). The Sound receives diurnal tidal flushing from the waters of the Gulf of Mexico. Anna Maria Sound is bordered by mixed development and stable mangrove shoreline communities primarily consisting of red mangroves.</b></p>					
Assessment area description					
<p><b>The location of this impacted seagrass habitat was evaluated during the FDOT PD&amp;E process. This impacted seagrass community is part of a much larger and connected seagrass meadow that is comprised of mixed seagrasses (H. wrightii, S. filiforme, T. testudinum). This portion of the larger seagrass meadow is at the outer fringe of the complex and adjacent to the existing seawall that stabilizes the upland touchdown area of the Anna Maria Bridge. The overall seagrass beds in this area are relatively stable. There have been two edge of bed surveys of this seagrass bed that occurred over multiple years. The results of this survey revealed very minimal change in overall aerial coverage of seagrass. The seagrass community is relatively stable.</b></p>					
Significant Nearby Features			Uniqueness (considering the relative rarity in relation to the regional landscape.)		
<b>Functioning mangrove coastal fringe and oyster bars in close proximity. Intracoastal Waterway</b>			<b>Seagrass meadows are abundant in this basin and not unique to the Anna Maria Sound area.</b>		
Functions			Mitigation for previous permit/other historic use		
<b>Providing habitat for a wide variety of fish and invertebrates. Seagrass is used by a wide range of species as feeding grounds, nurseries, and refuges from predation, providing food for various organisms both</b>			<b>None</b>		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)		
<b>Brown pelican (Pelecanus), grouper (Mycteroperca), shrimp (Penaeus), red drum (Sciaenops), spanish mackerel (Scomberomorus), porgies (Sparidae), grunts (Pomadasyidae), snappers (Lutjanidae), mojarras (Gerridae) and a variety of other fish use seagrass meadows as nursery grounds.</b>			<b>Based on the Draft ESBA prepared for the project, 23 state and federally listed species were indentified and reviewed for potential impact based on each alternative. Of the 23 species, 8 species are marine dependent. Bald eagle (Haliaeetus), gulf sturgeon (Acipenser), smalltooth sawfish (Pristis), west Indian Manatee (Trichechus), Loggerhead (Caretta), Leatherback (Dermochelys), Hawksbill (Eretmochelys), Kemp's Ridley (Lepidochelys)</b>		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
<b>Variety of wading birds foraging in near by shallower seagrass shorelines, mullet, variety of crabs including commercially important blue crabs. Most potential fish species vacate the areas when biologists are conducting field surveys. Ospreys were seen flying over waters of the project area.</b>					
Additional relevant factors:					
<b>This information is being generated to assimilate into the overall conceptual mitigation planning required for Anna Maria Bridge and Cortez Bridge.</b>					
Assessment conducted by:			Assessment date(s):		
<b>A. Gelber</b>			<b>10/01/13</b>		

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)**

Site/Project Name: <b>FDOT DI AMB_Cortez SAV MIT</b>	Application Number: -	Assessment Area Name or Number: <b>AMB SG-1 (Southwest)</b>
Impact or Mitigation: <b>Impact</b>	Assessment Conducted by: <b>A. Gelber</b>	Assessment Date: <b>10/01/13</b>

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

.500(6)(a) Location and Landscape Support	a. Quality and quantity of <b>habitat support</b> outside of AA.	The surrounding habitat is of high quality
	b. <b>Invasive plant species</b> in proximity to AA.	No invasive species
	c. <b>Wildlife access</b> to and from AA (proximity and barriers).	No barriers to wildlife
	d. <b>Downstream benefits</b> provided to fish and wildlife.	Basin-wide benefits from SAV
	e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.	Reduced foraging habitat and refuge
	f. <b>Hydrologic impediments and flow restrictions</b> .	No increase in flow or hydrologic impediments from impact
<b>Current</b>	g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.	
	h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).	
<b>9</b>	<b>With Impact</b>	<b>8</b>
Additional Notes: This proposed impact area is an edge of a seagrass bed. It is proposed that based on the location in this seagrass meadow that further erosion or impact will not occur to this aspect for the overall ecological setting. It is currently unknown if the applicant will be dredging the seagrasses or the direct impact to resources will arise from shading.		

.500(6)(b) Water Environment (n/a for uplands)	a. Appropriateness of <b>water levels and flows</b> .	No disturbance
	b. Reliability of <b>water level indicators</b> .	Water levels will not be affected
	c. Appropriateness of <b>soil moisture</b> .	N/A
	d. <b>Flow rates</b> /points of discharge.	N/A
	e. <b>Fire history</b> (frequency/severity).	N/A
	f. <b>Appropriate vegetative and/or benthic zonation</b> .	With impact, zonation could be lost
	g. <b>Hydrologic stress</b> on vegetation.	From time to time, algal blooms erupt
	h. <b>Use by animals</b> with hydrologic requirements.	Reduced wildlife utilization
	i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).	Within the acres for impact, loss of structure
	j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity).	NA
	k. <b>Water quality data</b> for the type of community.	
<b>Current</b>	<b>With Impact</b>	
<b>8</b>	<b>7</b>	
Additional Notes: It is currently unknown if the applicant will be dredging the seagrasses or the direct impact to resources will arise from shading.		

.500(6)(c) Community Structure	I. Appropriate/desirable species	
	II. Invasive/exotic plant species	
	III. Regeneration/recruitment	
	IV. Age, size distribution.	
	V. Snags, dens, cavity, etc.	
	VI. Plants' condition.	
	VII. Land management practices.	
	VIII. Topographic features (refugia, channels, hummocks).	
	IX. Submerged vegetation (only score if present).	
	X. Upland assessment area	
<b>Current</b>	<b>With Impact</b>	
<b>9</b>	<b>0</b>	
Additional Notes: It is currently perceived that both of these structure elements will be impacted from either direct removal of shading from the new project.		

Additional Notes:

<b>Raw Score</b> = Sum of above scores/30 (if uplands, divide by 20)	
<b>Current</b>	<b>With Impact</b>
0.8666667	0.5

<b>Impact Acres</b> =	0.24
-----------------------	------

<b>Functional Loss (FL)</b> [For Impact Assessment Areas]:	
<b>FL</b> = ID x Impact Acres =	0.088

At the current time, these UMAM scores are being used for conceptual permit planning.

<b>Impact Delta (ID)</b>	
Current - w/Impact	0.36666667

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>FDOT DI AMB_Cortez SAV MIT</b>		Application Number		Assessment Area Name or Number <b>AMB SG-3 (South Central)</b>	
FLUCCs code <b>9110</b>		Further classification (optional)		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.59 Acres</b>		Basin/Watershed Name/Number <b>Anna Maria Sound</b>		Affected Waterbody (Class)	
				Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>OFW, Estuary of National Significance in 1987</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p><b>Anna Maria Bridge is located within Anna Maria Sound. Anna Maria Sound is part of and located at the northern extreme of the Sarasota Bay National Estuary. The Sound connects Sarasota Bay with the southern portion of Tampa Bay and surrounding local water bodies (i.e., Perico Bayou). The Sound receives diurnal tidal flushing from the waters of the Gulf of Mexico. Anna Maria Sound is bordered by mixed development and stable mangrove shoreline communities primarily consisting of red mangroves.</b></p>					
Assessment area description					
<p><b>The location of this impacted seagrass habitat was evaluated during the FDOT PD&amp;E process. This impacted seagrass community is part of a much larger and connected seagrass meadow that is comprised of mixed seagrasses (H. wrightii, S. filiforme, T. testudinum). There have been two edge of bed surveys of this seagrass bed that occurred over multiple years. The results of this survey revealed very minimal change in overall aerial coverage of seagrass. The seagrass community is relatively stable.</b></p>					
Significant Nearby Features			Uniqueness (considering the relative rarity in relation to the regional landscape.)		
<b>Functioning mangrove coastal fringe and oyster bars in close proximity. Intracoastal Waterway</b>			<b>Seagrass meadows are abundant in this basin and not unique to the Anna Maria Sound area.</b>		
Functions			Mitigation for previous permit/other historic use		
<b>Providing habitat for a wide variety of fish and invertebrates. Seagrass is used by a wide range of species as feeding grounds, nurseries, and refuges from predation, providing food for various</b>					
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)		
<b>Brown pelican (Pelecanus), grouper (Mycteroperca), shrimp (Penaeus), red drum (Sciaenops), spanish mackerel (Scomberomorus), porgies (Sparidae), grunts (Pomadasyidae), snappers (Lutjanidae), mojarras (Gerridae) and a variety of other fish use seagrass meadows as nursery grounds.</b>			<b>Based on the Draft ESBA prepared for the project, 23 state and federally listed species were identified and reviewed for potential impact based on each alternative. Of the 23 species, 8 species are marine dependent. Bald eagle (Haliaeetus), gulf sturgeon (Acipenser), smalltooth sawfish (Pristis), west Indian Manatee (Trichechus), Loggerhead (Caretta), Leatherback (Dermochelys), Hawksbill (Eretmochelys), Kemp's Ridley (Lepidochelys)</b>		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
<b>Variety of wading birds foraging in near by shallower seagrass shorelines, mullet, variety of crabs including commercially important blue crabs. Most potential fish species vacate the areas when biologists are conducting field surveys. Ospreys were seen flying over waters of the project area.</b>					
Additional relevant factors:					
<b>This information is being generated to assimilate into the overall conceptual mitigation planning required for Anna Maria Bridge and Cortez Bridge.</b>					
Assessment conducted by: <b>A. Gelber</b>			Assessment date(s): <b>10/01/13</b>		

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)**

Site/Project Name: <b>FDOT DI AMB_Cortez SAV MIT</b>	Application Number: -	Assessment Area Name or Number: <b>AMB SG-3 (South Central)</b>
Impact or Mitigation: <b>Impact</b>	Assessment Conducted by: <b>A. Gelber</b>	Assessment Date: <b>10/01/13</b>

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA. b. <b>Invasive plant species</b> in proximity to AA. c. <b>Wildlife access</b> to and from AA (proximity and barriers). d. <b>Downstream benefits</b> provided to fish and wildlife. e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA. f. <b>Hydrologic impediments and flow restrictions</b> . g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges. h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).	The surrounding habitat is of high quality No invasive species No barriers to wildlife Basin-wide benefits from SAV Reduced foraging habitat and refuge No increase in flow or hydrologic impediments from impact
Current	With Impact	Additional Notes: This proposed impact area is an edge of a seagrass bed. It is proposed that based on the location in this seagrass meadow that further erosion or impact will not occur to this aspect for the overall ecological setting. It is currently unknown if the applicant will be dredging the seagrasses or the direct impact to resources will arise from shading.	
9	8		

.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows</b> . b. Reliability of <b>water level indicators</b> . c. Appropriateness of <b>soil moisture</b> . d. <b>Flow rates</b> /points of discharge. e. <b>Fire history</b> (frequency/severity). f. <b>Appropriate vegetative and/or benthic zonation</b> . g. <b>Hydrologic stress</b> on vegetation. h. <b>Use by animals</b> with hydrologic requirements. i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ). j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity). k. <b>Water quality data</b> for the type of community. l. <b>Water depth, wave energy, and currents</b> .	No disturbance Water levels will not be affected N/A N/A N/A With impact, zonation could be lost From time to time, algal blooms erupt Reduced wildlife utilization Within the acres for impact, loss of structure NA
Current	With Impact	Additional Notes: It is currently unknown if the applicant will be dredging the seagrasses or the direct impact to resources will arise from shading.	
8	7		

.500(6)(c) Community Structure		I. Appropriate/desirable species II. Invasive/exotic plant species III. Regeneration/recruitment IV. Age, size distribution. V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). IX. Submerged vegetation (only score if present). X. Upland assessment area	The complete structure of the SAV community is expected and planned to be completely impacted from construction.
Current	With Impact	Additional Notes: It is currently perceived that both of these structure elements will be impacted from either direct removal of shading from the new project.	
9	0		

<b>Raw Score</b> = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.8666667	0.5

<b>Impact Acres</b> =	0.59
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<b>Functional Loss (FL)</b> [For Impact Assessment Areas]:	
<b>FL</b> = ID x Impact Acres =	0.216

<b>Impact Delta (ID)</b>	
Current - w/Impact	0.36666667

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:  
  
At the current time, these UMAM scores are being used for conceptual permit planning.

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>FDOT DI AMB_Cortez SAV MIT</b>		Application Number		Assessment Area Name or Number <b>AMB SG-4 (Southeast)</b>	
FLUCCs code <b>9110</b>		Further classification (optional)		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>1.04 Acres</b>					
Basin/Watershed Name/Number <b>Anna Maria Sound</b>		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>OFW, Estuary of National Significance in 1987</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p><b>Anna Maria Bridge is located within Anna Maria Sound. Anna Maria Sound is part of and located at the northern extreme of the Sarasota Bay National Estuary. The Sound connects Sarasota Bay with the southern portion of Tampa Bay and surrounding local water bodies (i.e., Perico Bayou). The Sound receives diurnal tidal flushing from the waters of the Gulf of Mexico. Anna Maria Sound is bordered by mixed development and stable mangrove shoreline communities primarily consisting of red mangroves.</b></p>					
Assessment area description					
<p><b>The location of this impacted seagrass was evaluated during the FDOT PD&amp;E process. This impacted seagrass community is part of a much larger and connected seagrass meadow that is comprised of mixed seagrasses (H. wrightii, S. filiforme, T. testudinum). This portion of the larger seagrass meadow is at the outer fringe of the complex and adjacent to the existing seawall that stabilizes the upland touchdown area of the Anna Maria Bridge. The overall seagrass beds in this area are relatively stable. There have been two edge of bed surveys of this seagrass bed that occurred over multiple years. The results of this survey revealed very minimal change in overall aerial coverage of seagrass. The seagrass community is relatively stable.</b></p>					
Significant Nearby Features			Uniqueness (considering the relative rarity in relation to the regional landscape.)		
<b>Functioning mangrove coastal fringe and oyster bars in close proximity. Intracoastal Waterway</b>			<b>Seagrass meadows are abundant in this basin and not unique to the Anna Maria Sound area.</b>		
Functions			Mitigation for previous permit/other historic use		
<b>Providing habitat for a wide variety of fish and invertebrates. Seagrass is used by a wide range of species as feeding grounds, nurseries, and refuges from predation, providing food for various</b>					
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)		
<b>Brown pelican (Pelecanus), grouper (Mycteroperca), shrimp (Penaeus), red drum (Sciaenops), spanish mackerel (Scomberomorus), porgies (Sparidae), grunts (Pomadasyidae), snappers (Lutjanidae), mojarras (Gerridae) and a variety of other fish use seagrass meadows as nursery grounds.</b>			<b>Based on the Draft ESBA prepared for the project, 23 state and federally listed species were identified and reviewed for potential impact based on each alternative. Of the 23 species, 8 species are marine dependent. Bald eagle (Haliaeetus), gulf sturgeon (Acipenser), smalltooth sawfish (Pristis), west Indian Manatee (Trichechus), Loggerhead (Caretta), Leatherback (Dermochelys), Hawksbill (Eretmochelys), Kemp's Ridley (Lepidochelys)</b>		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
<b>Variety of wading birds foraging in near by shallower seagrass shorelines, mullet, variety of crabs including commercially important blue crabs. Most potential fish species vacate the areas when biologists are conducting field surveys. Ospreys were seen flying over waters of the project area.</b>					
Additional relevant factors:					
<b>This information is being generated to assimilate into the overall conceptual mitigation planning required for Anna Maria Bridge and Cortez Bridge.</b>					
Assessment conducted by: <b>A. Gelber</b>			Assessment date(s): <b>10/01/13</b>		

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)**

Site/Project Name: <b>FDOT DI AMB_Cortez SAV MIT</b>	Application Number: -	Assessment Area Name or Number: <b>AMB SG-4 (Southeast)</b>
Impact or Mitigation: <b>Impact</b>	Assessment Conducted by: <b>A. Gelber</b>	Assessment Date: <b>10/01/13</b>

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA. b. <b>Invasive plant species</b> in proximity to AA. c. <b>Wildlife access</b> to and from AA (proximity and barriers). d. <b>Downstream benefits</b> provided to fish and wildlife. e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA. f. <b>Hydrologic impediments and flow restrictions</b> . g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges. h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).	The surrounding habitat is of high quality No invasive species No barriers to wildlife Basin-wide benefits from SAV Reduced foraging habitat and refuge No increase in flow or hydrologic impediments from impact
<b>Current</b>	<b>With Impact</b>	Additional Notes: This proposed impact area is an edge of a seagrass bed. It is proposed that based on the location in this seagrass meadow that further erosion or impact will not occur to this aspect for the overall ecological setting. It is currently unknown if the applicant will be dredging the seagrasses or the direct impact to resources will arise from shading.	
<b>9</b>	<b>8</b>		

.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows</b> . b. Reliability of <b>water level indicators</b> . c. Appropriateness of <b>soil moisture</b> . d. <b>Flow rates</b> /points of discharge. e. <b>Fire history</b> (frequency/severity). f. <b>Appropriate vegetative and/or benthic zonation</b> . g. <b>Hydrologic stress</b> on vegetation. h. <b>Use by animals</b> with hydrologic requirements. i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ). j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity). k. <b>Water quality data</b> for the type of community. l. <b>Water depth, wave energy, and currents</b> .	No disturbance Water levels will not be affected N/A N/A N/A With impact, zonation could be lost From time to time, algal blooms erupt Reduced wildlife utilization Within the acres for impact, loss of structure NA
<b>Current</b>	<b>With Impact</b>	Additional Notes: It is currently unknown if the applicant will be dredging the seagrasses or the direct impact to resources will arise from shading.	
<b>8</b>	<b>7</b>		

.500(6)(c) Community Structure		I. Appropriate/desirable species II. Invasive/exotic plant species III. Regeneration/recruitment IV. Age, size distribution. V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). IX. Submerged vegetation (only score if present). X. Upland assessment area	The complete structure of the SAV community is expected and planned to be completely impacted from construction.
<b>Current</b>	<b>With Impact</b>	Additional Notes: It is currently perceived that both of these structure elements will be impacted from either direct removal of shading from the new project.	
<b>9</b>	<b>0</b>		

Additional Notes:

<b>Raw Score</b> = Sum of above scores/30 (if uplands, divide by 20)	
<b>Current</b>	<b>With Impact</b>
0.8666667	0.5

<b>Impact Acres =</b>	1.04
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<b>Functional Loss (FL)</b> [For Impact Assessment Areas]:	
<b>FL = ID x Impact Acres =</b>	0.381

<b>Impact Delta (ID)</b>	
<b>Current - w/Impact</b>	0.36666667

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

At the current time, these UMAM scores are being used for conceptual permit planning.

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>FDOT DI AMB_Cortez SAV MIT</b>		Application Number	Assessment Area Name or Number <b>Spoil Island A- Access/Flushing Channel</b>	
FLUCCs code <b>9110</b>	Further classification (optional)		Impact Type <b>Direct Impact</b>	Assessment Area Size <b>0.09 Acres</b>
Basin/Watershed Name/Number <b>Anna Maria Sound</b>	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>OFW, Estuary of National Significance in 1987</b>		
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands  <b>Spoil Island A is located within Anna Maria Sound. Anna Maria Sound is part of and located at the northern extreme of the Sarasota Bay National Estuary. The Sound connects Sarasota Bay with the southern portion of Tampa Bay and surrounding local water bodies (i.e., Perico Bayou). The Sound receives diurnal tidal flushing from the waters of the Gulf of Mexico. Anna Maria Sound is bordered by mixed development and stable mangrove shoreline communities primarily consisting of red mangroves.</b>				
Assessment area description  <b>The seagrass habitat and associated substrate is proposed for deepening to create barge access to the primary mitigation on the spoil island. This area will also serve as a flushing channel for the primary restoration area. This impacted seagrass community is part of a much larger and connected seagrass meadow that is comprised of mixed seagrasses (H. wrightii, S. filiforme, T. testudinum). The overall seagrass beds in this area are relatively stable.</b>				
Significant Nearby Features <b>Functioning mangrove coastal fringe and oyster bars in close proximity. Intracoastal Waterway</b>		Uniqueness (considering the relative rarity in relation to the regional landscape.) <b>Seagrass meadows are abundant in this basin and not unique to the Anna Maria Sound area.</b>		
Functions <b>Providing habitat for a wide variety of fish and invertebrates. Seagrass is used by a wide range of species as feeding grounds, nurseries, and refuges from predation, providing food for various</b>		Mitigation for previous permit/other historic use		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )  <b>Brown pelican (Pelecanus), grouper (Mycteroperca), shrimp (Penaeus), red drum (Sciaenops), spanish mackerel (Scomberomorus), porgies (Sparidae), grunts (Pomadasyidae), snappers (Lutjanidae), mojarras (Gerridae) and a variety of other fish use seagrass meadows as nursery grounds.</b>		Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)  <b>Based on the Draft ESBA prepared for Anna Maria Bridge, 23 state and federally listed species were identified and reviewed for potential impact based on each alternative. Of the 23 species, 8 species are marine dependent. Bald eagle (Haliaeetus), gulf sturgeon (Acipenser), smalltooth sawfish (Pristis), west Indian Manatee (Trichechus), Loggerhead (Caretta), Leatherback (Dermochelys), Hawksbill (Eretmochelys), Kemp's Ridley (Lepidochelys)</b>		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):  <b>Variety of wading birds foraging in near by shallower seagrass shorelines, mullet, variety of crabs including commercially important blue crabs. Most potential fish species vacate the areas when biologists are conducting field surveys. Ospreys were seen flying over waters of the project area.</b>				
Additional relevant factors:  <b>This information is being generated to assimilate into the overall conceptual mitigation planning required for Anna Maria Bridge and Cortez Bridge.</b>				
Assessment conducted by: <b>A. Gelber</b>		Assessment date(s): <b>10/01/13</b>		

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)**

Site/Project Name: <b>FDOT DI AMB_Cortez SAV MIT</b>	Application Number: -	Assessment Area Name or Number: <b>Spoil Island A- Access/Flushing Channel</b>
Impact or Mitigation: <b>Impact</b>	Assessment Conducted by: <b>A. Gelber</b>	Assessment Date: <b>10/01/13</b>

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA. b. <b>Invasive plant species</b> in proximity to AA. c. <b>Wildlife access</b> to and from AA (proximity and barriers). d. <b>Downstream benefits</b> provided to fish and wildlife. e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA. f. <b>Hydrologic impediments and flow restrictions</b> . g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges. h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).	The surrounding habitat is of high quality No invasive species No barriers to wildlife Basin-wide benefits from SAV Reduced foraging habitat and refuge No increase in flow or hydrologic impediments from impact
Current	With Impact	Additional Notes: Depending on the final mitigation plan, this area could be regraded thus affecting the final disposition of the disruption of ecological services. This area could also serve to provide proper flushing and thus more positively benefit this mitigation site in its ability to achieve success criteria.	
9	8		

.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows</b> . b. Reliability of <b>water level indicators</b> . c. Appropriateness of <b>soil moisture</b> . d. <b>Flow rates</b> /points of discharge. e. <b>Fire history</b> (frequency/severity). f. <b>Appropriate vegetative and/or benthic zonation</b> . g. <b>Hydrologic stress</b> on vegetation. h. <b>Use by animals</b> with hydrologic requirements. i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ). j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity). k. <b>Water quality data</b> for the type of community. l. <b>Water depth, wave energy, and currents</b> .	No significant alterations in water levels or flows Water levels will not be affected N/A N/A N/A Negatively affected if regrading does not occur From time to time, algal blooms erupt Reduced wildlife utilization Within the acres for impact, loss of structure NA
Current	With Impact	Additional Notes:	
8	7		

.500(6)(c) Community Structure		I. Appropriate/desirable species II. Invasive/exotic plant species III. Regeneration/recruitment IV. Age, size distribution. V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). IX. Submerged vegetation (only score if present). X. Upland assessment area	
X Vegetation 4 Benthic Both		Additional Notes: Based on the current approach, the structure elements could be impacted.	
Current	With Impact		
9	0		

Additional Notes:

<b>Raw Score</b> = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.8666667	0.5

<b>Impact Acres</b> =	0.09
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<b>Functional Loss (FL)</b> [For Impact Assessment Areas]:	
<b>FL</b> = ID x Impact Acres =	0.033

<b>Impact Delta (ID)</b>	
Current - w/Impact	0.36666667

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

At the current time, these UMAM scores are being used for conceptual permit planning. There is no final determination of sediment removal will be required. For the purposes of this planning effort, it is assumed sediment removal will be required to understand conservative approach to planning.

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>FDOT DI AMB_Cortez SAV MIT</b>		Application Number		Assessment Area Name or Number <b>Spoil Island B - Access/Flushing Channel</b>	
FLUCCs code <b>9110</b>		Further classification (optional)		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.14 Acres</b>		Basin/Watershed Name/Number <b>Anna Maria Sound</b>		Affected Waterbody (Class)	
				Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>OFW, Estuary of National Significance in 1987</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p><b>Anna Maria Bridge is located within Anna Maria Sound. Anna Maria Sound is part of and located at the northern extreme of the Sarasota Bay National Estuary. The Sound connects Sarasota Bay with the southern portion of Tampa Bay and surrounding local water bodies (i.e., Perico Bayou). The Sound receives diurnal tidal flushing from the waters of the Gulf of Mexico. Anna Maria Sound is bordered by mixed development and stable mangrove shoreline communities primarily consisting of red mangroves.</b></p>					
Assessment area description					
<p><b>The seagrass habitat and associated substrate is proposed for deepening to create barge access to the primary mitigation on the spoil island. This area will also serve as a flushing channel for the primary restoration area. This impacted seagrass community is part of a much larger and connected seagrass meadow that is comprised of mixed seagrasses (H. wrightii, S. filiforme, T. testudinum). The overall seagrass beds in this area are relatively stable.</b></p>					
Significant Nearby Features			Uniqueness (considering the relative rarity in relation to the regional landscape.)		
<b>Functioning mangrove coastal fringe and oyster bars in close proximity. Intracoastal Waterway</b>			<b>Seagrass meadows are abundant in this basin and not unique to the Anna Maria Sound area.</b>		
Functions			Mitigation for previous permit/other historic use		
<b>Providing habitat for a wide variety of fish and invertebrates. Seagrass is used by a wide range of species as feeding grounds, nurseries, and refuges from predation, providing food for various</b>					
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)		
<b>Brown pelican (Pelecanus), grouper (Mycteroperca), shrimp (Penaeus), red drum (Sciaenops), spanish mackerel (Scomberomorus), porgies (Sparidae), grunts (Pomadasyidae), snappers (Lutjanidae), mojarras (Gerridae) and a variety of other fish use seagrass meadows as nursery grounds.</b>			<b>Based on the Draft ESBA prepared for Anna Maria Bridge, 23 state and federally listed species were identified and reviewed for potential impact based on each alternative. Of the 23 species, 8 species are marine dependent. Bald eagle (Haliaeetus), gulf sturgeon (Acipenser), smalltooth sawfish (Pristis), west Indian Manatee (Trichechus), Loggerhead (Caretta), Leatherback (Dermochelys), Hawksbill (Eretmochelys), Kemp's Ridley (Lepidochelys)</b>		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
<b>Variety of wading birds foraging in near by shallower seagrass shorelines, mullet, variety of crabs including commercially important blue crabs. Most potential fish species vacate the areas when biologists are conducting field surveys. Ospreys were seen flying over waters of the project area.</b>					
Additional relevant factors:					
<b>During site visits to characterize the ecological condition at this site, recreational camping has been observed although there is no formal designation known of this area for this type of activity. This spoil island is owned by the state of Florida. This information is being generated to assimilate into the overall conceptual mitigation planning required for Anna Maria Bridge and Cortez Bridge.</b>					
Assessment conducted by: <b>A. Gelber</b>			Assessment date(s): <b>10/01/13</b>		

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)**

Site/Project Name: <b>FDOT DI AMB_Cortez SAV MIT</b>	Application Number: -	Assessment Area Name or Number: <b>Spoil Island B - Access/Flushing Channel</b>
Impact or Mitigation: <b>Impact</b>	Assessment Conducted by: <b>A. Gelber</b>	Assessment Date: <b>10/01/13</b>

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA.	The surrounding habitat is of high quality
		b. <b>Invasive plant species</b> in proximity to AA.	No invasive species
Current		c. <b>Wildlife access</b> to and from AA (proximity and barriers).	No barriers to wildlife
		d. <b>Downstream benefits</b> provided to fish and wildlife.	Basin-wide benefits from SAV
With Impact		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.	Reduced foraging habitat and refuge
		f. <b>Hydrologic impediments and flow restrictions.</b>	No increase in flow or hydrologic impediments from impact
9		g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.	
		h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).	
Additional Notes: Depending on the final mitigation plan, this area could be regraded thus affecting the final disposition of the disruption of ecological services. This area could also serve to provide proper flushing and thus more positively benefit this mitigation site in its ability to achieve success criteria.			

.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows.</b>	No significant alterations in water levels or flows
		b. Reliability of <b>water level indicators.</b>	Water levels will not be affected
Current		c. Appropriateness of <b>soil moisture.</b>	N/A
		d. <b>Flow rates</b> /points of discharge.	N/A
With Impact		e. <b>Fire history</b> (frequency/severity).	N/A
		f. <b>Appropriate vegetative and/or benthic zonation.</b>	Negatively affected if regrading does not occur
8		g. <b>Hydrologic stress</b> on vegetation.	From time to time, algal blooms erupt
		h. <b>Use by animals</b> with hydrologic requirements.	Reduced wildlife utilization
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).	Within the acres for impact, loss of structure
		j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity).	NA
		k. <b>Water quality data</b> for the type of community.	
		l. <b>Water depth, wave energy, and currents.</b>	No change from project
Additional Notes:			

.500(6)(c) Community Structure		I. Appropriate/desirable species	
		II. Invasive/exotic plant species	
Current		III. Regeneration/recruitment	
		IV. Age, size distribution.	
With Impact		V. Snags, dens, cavity, etc.	
		VI. Plants' condition.	
9		VII. Land management practices.	
		VIII. Topographic features (refugia, channels, hummocks).	
		IX. Submerged vegetation (only score if present).	
		X. Upland assessment area	
Additional Notes: Based on the current approach, the structure elements could be impacted.			

Additional Notes:

<b>Raw Score</b> = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.8666667	0.5

<b>Impact Acres</b> =	0.14
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<b>Functional Loss (FL)</b> [For Impact Assessment Areas]:	
<b>FL</b> = ID x Impact Acres =	0.051

<b>Impact Delta (ID)</b>	
Current - w/Impact	0.36666667

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

At the current time, these UMAM scores are being used for conceptual permit planning. There is no final determination of sediment removal will be required. For the purposes of this planning effort, it is assumed sediment removal will be required to understand conservative approach to planning.

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>FDOT DI AMB_Cortez SAV MIT</b>		Application Number		Assessment Area Name or Number <b>Option 7 - Barge Access</b>	
FLUCCs code		Further classification (optional)		Impact Type <b>Direct Impact</b>	Assessment Area Size <b>0.07 Acres</b>
Basin/Watershed Name/Number		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p><b>This location is at the interface between Palma Sola Bay (PSB) and Anna Maria Sound. This site is located to the south and east of Anna Maria Bridge and north of Cortez Bridge. PSB and Anna Maria Sound are part of and located at the northern extreme of the Sarasota Bay National Estuary. The Sound connects Sarasota Bay with the southern portion of Tampa Bay and surrounding local water bodies (i.e., Perico Bayou). The Sound receives diurnal tidal flushing from the waters of the Gulf of Mexico. Anna Maria Sound is bordered by mixed development and stable mangrove shoreline communities primarily consisting of red mangroves.</b></p>					
Assessment area description					
<p><b>This restoration primary location (Option 7) is surrounded on all four sides by healthy seagrass meadows. In order to access this site for seagrass restoration, there is a potential for a requirement to temporarily remove seagrass habitat based on the depths of the project area to allow for a barge to access the primary restoration target feature. The predominant seagrass species in the area is T. testudinum.</b></p>					
Significant Nearby Features		Uniqueness (considering the relative rarity in relation to the regional landscape.)			
<b>Functioning mangrove coastal fringe. Intracoastal Waterway</b>		<b>Seagrass meadows are abundant in this basin and not unique to the Anna Maria Sound area.</b>			
Functions		Mitigation for previous permit/other historic use			
<b>Providing habitat for a wide variety of fish and invertebrates. Seagrass is used by a wide range of species as feeding grounds, nurseries, and refuges from predation, providing food for various</b>					
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )		Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)			
<b>Brown pelican (Pelecanus), grouper (Mycteroperca), shrimp (Penaeus), red drum (Sciaenops), spanish mackerel (Scomberomorus), porgies (Sparidae), grunts (Pomadasyidae), snappers (Lutjanidae), mojarras (Gerridae) and a variety of other fish use seagrass meadows as nursery grounds.</b>		<b>Based on the Draft ESBA prepared for Anna Maria Bridge which is in close proximity to this area, 23 state and federally listed species were identified and reviewed for potential impact based on each alternative. Of the 23 species, 8 species are marine dependent. Bald eagle (Haliaeetus), gulf sturgeon (Acipenser), smalltooth sawfish (Pristis), west Indian Manatee (Trichechus), Loggerhead (Caretta), Leatherback (Dermochelys), Hawksbill (Eretmochelys), Kemp's Ridley (Lepidochelys)</b>			
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
Additional relevant factors:					
<b>This information is being generated to assimilate into the overall conceptual mitigation planning required for Anna Maria Bridge and Cortez Bridge.</b>					
Assessment conducted by: <b>A. Gelber</b>		Assessment date(s): <b>10/01/13</b>			

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)**

Site/Project Name: <b>FDOT DI AMB_Cortez SAV MIT</b>	Application Number: -	Assessment Area Name or Number: <b>Option 7 - Barge Access</b>
Impact or Mitigation: <b>Impact</b>	Assessment Conducted by: <b>A. Gelber</b>	Assessment Date: <b>10/01/13</b>

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA. b. <b>Invasive plant species</b> in proximity to AA. c. <b>Wildlife access</b> to and from AA (proximity and barriers). d. <b>Downstream benefits</b> provided to fish and wildlife. e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA. f. <b>Hydrologic impediments and flow restrictions</b> . g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges. h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).	The surrounding habitat is of high quality No invasive species No barriers to wildlife Basin-wide benefits from SAV Reduced foraging habitat and refuge No increase in flow or hydrologic impediments from impact
<b>Current</b>	<b>With Impact</b>	Additional Notes: Depending on the final mitigation plan, this area could be regraded thus affecting the final disposition of the disruption of ecological services. This area could also serve to provide proper flushing and thus more positively benefit this mitigation site in its ability to achieve success criteria.	
<b>9</b>	<b>8</b>		

.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows</b> . b. Reliability of <b>water level indicators</b> . c. Appropriateness of <b>soil moisture</b> . d. <b>Flow rates</b> /points of discharge. e. <b>Fire history</b> (frequency/severity). f. <b>Appropriate vegetative and/or benthic zonation</b> . g. <b>Hydrologic stress</b> on vegetation. h. <b>Use by animals</b> with hydrologic requirements. i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ). j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity). k. <b>Water quality data</b> for the type of community. l. <b>Water depth, wave energy, and currents</b> .	No significant alterations in water levels or flows Water levels will not be affected N/A N/A N/A Negatively affected if regrading does not occur From time to time, algal blooms erupt Reduced wildlife utilization Within the acres for impact, loss of structure NA
<b>Current</b>	<b>With Impact</b>	Additional Notes:	
<b>8</b>	<b>7</b>		

.500(6)(c) Community Structure		I. Appropriate/desirable species II. Invasive/exotic plant species III. Regeneration/recruitment IV. Age, size distribution. V. Snags, dens, cavity, etc. VI. Plants' condition. VII. Land management practices. VIII. Topographic features (refugia, channels, hummocks). IX. Submerged vegetation (only score if present). X. Upland assessment area	
X Vegetation 4 Benthic Both		Additional Notes: At the current planning phase, it is recognized that these seagrasses have a high community quality structure and thus have been scored accordingly.	
<b>Current</b>	<b>With Impact</b>		
<b>9</b>	<b>0</b>		

Additional Notes:

<b>Raw Score</b> = Sum of above scores/30 (if uplands, divide by 20)	
<b>Current</b>	<b>With Impact</b>
0.8666667	0.5

<b>Impact Acres</b> =	0.07
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<b>Functional Loss (FL)</b> [For Impact Assessment Areas]:	
<b>FL</b> = ID x Impact Acres =	0.026

<b>Impact Delta (ID)</b>	
Current - w/Impact	0.36666667

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

At the current time, these UMAM scores are being used for conceptual permit planning. There is no final determination of sediment removal will be required. For the purposes of this planning effort, it is assumed sediment removal will be required to understand conservative approach to planning.

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>FDOT DI AMB_Cortez SAV MIT</b>		Application Number		Assessment Area Name or Number <b>Cortez South Alternative</b>	
FLUCCs code <b>9110</b>		Further classification (optional)		Impact Type <b>Direct Impact</b>	
Assessment Area Size <b>0.04 Acres</b>					
Basin/Watershed Name/Number <b>Anna Maria Sound</b>		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>OFW, Estuary of National Significance in 1987</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					
<p><b>Cortez Bridge is located within Anna Maria Sound. Anna Maria Sound is part of and located at the northern extreme of the Sarasota Bay National Estuary. The Sound connects Sarasota Bay with the southern portion of Tampa Bay and surrounding local water bodies (i.e., Perico Bayou). The Sound receives diurnal tidal flushing from the waters of the Gulf of Mexico. Anna Maria Sound is bordered by mixed development and stable mangrove shoreline communities primarily consisting of red mangroves.</b></p>					
Assessment area description					
<p><b>The impacted seagrass habitat is currently being evaluated through the FDOT PD&amp;E process. There are two seagrass areas on the south side of Cortez Bridge. Both of these seagrass areas are being considered as one for evaluation purposes due to similarity. This impacted seagrass community is part of a much larger and connected seagrass meadow that is comprised of mixed seagrasses (H. wrightii, S. filiforme, T. testudinum). These portions of impacted seagrass are part of larger seagrass meadows that are on the outer fringe of the complex. The western seagrass meadow is adjacent to an existing and active marina supporting multiple varieties of boats while the eastern seagrass meadow is located adjacent to the southeast touchdown of Cortez Bridge with some mangrove connectivity. The overall seagrass beds in this area are relatively stable. As part of the PD&amp;E process, one seagrass survey to map the edge of bed occurred in June of 2013.</b></p>					
Significant Nearby Features			Uniqueness (considering the relative rarity in relation to the regional landscape.)		
<b>Functioning mangrove coastal fringe and oyster bars in close proximity and existing hardbottom. Intracoastal Waterway</b>			<b>This area is not unique to the area. The Tampa Bay region to the north has experienced increased seagrass habitat over the last decade.</b>		
Functions			Mitigation for previous permit/other historic use		
<b>Providing habitat for a wide variety of fish and invertebrates. Seagrass is used by a wide range of species as feeding grounds, nurseries, and refuges from predation, providing food for various</b>			<b>None</b>		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)		
<b>Brown pelican (Pelecanus), grouper (Mycteroperca), shrimp (Penaeus), red drum (Sciaenops), spanish mackerel (Scomberomorus), porgies (Sparidae), grunts (Pomadasyidae), snappers (Lutjanidae), mojarras (Gerridae) and a variety of other fish use seagrass meadows as nursery grounds.</b>			<b>FDOT is currently evaluating ESBA related matters for this bridge section. When the review of this information is completed, this section will be updated for consistency purposes. [Refer to Anna Maria Bridge ESBA for currently available information</b>		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):					
Additional relevant factors:					
<b>The preferred alternative has not been determined at this time. The UMAMs for Cortez Bridge are considered draft in nature until the PD&amp;E process is complete. This information is being generated to assimilate into the overall conceptual mitigation planning required for Anna Maria Bridge and Cortez Bridge.</b>					
Assessment conducted by:			Assessment date(s):		
<b>A. Gelber</b>			<b>10/01/13</b>		

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)**

Site/Project Name: <b>FDOT DI AMB_Cortez SAV MIT</b>	Application Number: -	Assessment Area Name or Number: <b>Cortez South Alternative</b>
Impact or Mitigation: <b>Impact</b>	Assessment Conducted by: <b>A. Gelber</b>	Assessment Date: <b>10/01/13</b>

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

.500(6)(a) Location and Landscape Support		a. Quality and quantity of <b>habitat support</b> outside of AA.	The surrounding habitat is of high quality
		b. <b>Invasive plant species</b> in proximity to AA.	No invasive species
Current		c. <b>Wildlife access</b> to and from AA (proximity and barriers).	No barriers to wildlife
		d. <b>Downstream benefits</b> provided to fish and wildlife.	Basin-wide benefits from SAV
With Impact		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.	Reduced foraging habitat and refuge
		f. <b>Hydrologic impediments and flow restrictions.</b>	No increase in flow or hydrologic impediments from impact
9		g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.	
		h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).	
Additional Notes: This proposed impact area is an edge of a seagrass bed. It is proposed that based on the location in this seagrass meadow that further erosion or impact will not occur to this aspect for the overall ecological setting. It is currently unknown if the applicant will be dredging the seagrasses or the direct impact to resources will arise from shading.			

.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of <b>water levels and flows.</b>	No disturbance
		b. Reliability of <b>water level indicators.</b>	Water levels will not be affected
Current		c. Appropriateness of <b>soil moisture.</b>	N/A
		d. <b>Flow rates</b> /points of discharge.	N/A
With Impact		e. <b>Fire history</b> (frequency/severity).	N/A
		f. <b>Appropriate vegetative and/or benthic zonation.</b>	With impact, zonation could be lost
8		g. <b>Hydrologic stress</b> on vegetation.	Algal blooms erupt occasionally affecting light on
		h. <b>Use by animals</b> with hydrologic requirements.	Reduced wildlife utilization
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).	Within the acres for impact, loss of structure
		j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity).	NA
		k. <b>Water quality data</b> for the type of community.	
		l. <b>Water depth, wave energy, and currents.</b>	
Additional Notes:			

.500(6)(c) Community Structure		I. Appropriate/desirable species	
		II. Invasive/exotic plant species	
Current		III. Regeneration/recruitment	
		IV. Age, size distribution.	
With Impact		V. Snags, dens, cavity, etc.	
		VI. Plants' condition.	
9		VII. Land management practices.	
		VIII. Topographic features (refugia, channels, hummocks).	
		IX. Submerged vegetation (only score if present).	
		X. Upland assessment area	
Additional Notes:			

<b>Raw Score</b> = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.8666667	0.5

<b>Impact Acres</b> =	0.04
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<b>Functional Loss (FL)</b> [For Impact Assessment Areas]:	
<b>FL</b> = ID x Impact Acres =	0.015

<b>Impact Delta (ID)</b>	
Current - w/Impact	0.36666667

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigation bank.

Additional Notes:  
  
At the current time, these UMAM scores are being used for conceptual permit planning.

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - MIT/PRES**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>Anna Maria Bridge Preferred Alt 3BS</b>		Application Number		Assessment Area Name or Number <b>Option 1</b>	
FLUCCs code		Further classification (optional)		Mitigation Type <b>Restoration</b>	
				Assessment Area Size <b>1.10 Acres</b>	
Basin/Watershed Name/Number <b>Anna Maria Sound</b>		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>OFW, Estuary of National Significance in 1987</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands  <b>Anna Maria Bridge is located within Anna Maria Sound. Anna Maria Sound is part of and located at the northern extreme of the Sarasota Bay National Estuary. The Sound connects Sarasota Bay with the southern portion of Tampa Bay and surrounding local water bodies (i.e., Perico Bayou). The Sound receives diurnal tidal flushing from the waters of the Gulf of Mexico. Anna Maria Sound is bordered by mixed development and stable mangrove shoreline communities primarily consisting of red mangroves.</b>					
Assessment area description  <b>This area is to the north of the Anna Maria Bridge. This area was selected after multiple project basin wide reviews of potential mitigation sites. This site maintained one of the highest success potentials due to this location being bound on the west by a mangrove shoreline and to the north and south by extensive seagrass meadows. The area appears to have been previously altered to establish a channel during prior development activities. The seagrass beds surrounding this area are comprised of T. testudinum, H. wrightii, and S. filiforme.</b>					
Significant nearby features <b>Functioning mangrove coastal fringe and oyster bars in close proximity. Intracoastal Waterway</b>			Uniqueness (considering the relative rarity in relation to the regional landscape.) <b>Unvegetated bottom is not unique to this area</b>		
Functions <b>Due to completing two benthic surveys of this location, there is no existing seagrass in the depression.</b>			Mitigation for previous permit/other historic use		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )  <b>Temporally limited utilization due to the lack of vegetated bottom in this area. Adjacent seagrass meadows would be where wildlife, vertebrate and invertebrates species would habitate.</b>			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)  <b>Due to the lack of the vegetated bottom in this defined area, there is a significantly reduced utilization of listed species in this location. In most instances, the utilization would be transient in nature.</b>		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):  <b>None observed.</b>					
Additional relevant factors:  <b>This information is being generated to assimilate into the overall mitigation planning required for Anna Maria Bridge and Cortez Bridge.</b>					
Assessment conducted by: <b>A. Gelber</b>			Assessment date(s): <b>10/1/2013</b>		

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - MITIGATION/PRESERVATION**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)**

Site/Project Name: <b>Anna Maria Bridge Preferred Alt 3BS</b>	Application Number: <b>-</b>	Assessment Area Name or Number: <b>Option 1</b>
Impact or Mitigation: <b>Mitigation</b>	Assessment Conducted by: <b>A. Gelber</b>	Assessment Date: <b>10/1/13</b>

Scoring Guidance	<b>Optimal (10)</b>	<b>Moderate(7)</b>	<b>Minimal (4)</b>	<b>Not Present (0)</b>
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

.500(6)(a) Location and Landscape Support			Current	With Mitigation
	a. Quality and quantity of <b>habitat support</b> outside of AA.		Surrounding conditions is optimal	Will increase optimal performance
	b. <b>Invasive plant species</b> in proximity to AA.		N/A	N/A
	c. <b>Wildlife access</b> to and from AA (proximity and barriers).		The lack of vegetaiton is barrier	Increased access/connection
	d. <b>Downstream benefits</b> provided to fish and wildlife.		Reduced biological production	Increase biological production
	e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Mangrove shoreline benefits AA	Mangrove shoreline benefits AA
	f. <b>Hydrologic impediments and flow restrictions</b> .		N/A	N/A
	g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.		N/A	N/A
	h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).			
	Additional Notes:			
Current	With Mitigation			
<b>8</b>	<b>9</b>			

.500(6)(b) Water Environment (leave blank for uplands)			Current	With Mitigation
	a. Appropriateness of <b>water levels and flows</b> .		Increased turbidity	Decreased turbidity
	b. Reliability of <b>water level indicators</b> .		N/A	N/A
	c. Appropriateness of <b>soil moisture</b> .		N/A	N/A
	d. <b>Flow rates</b> /points of discharge.		N/A	N/A
	e. <b>Fire history</b> (frequency/severity).		N/A	N/A
	f. <b>Appropriate vegetative and/or benthic zonation</b> .		None	Match existing
	g. <b>Hydrologic stress</b> on vegetation.		N/A	N/A
	h. <b>Use by animals</b> with hydrologic requirements.		N/A	N/A
	i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		N/A	N/A
	j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity).			
	k. <b>Water quality data</b> for the type of community.			
l. <b>Water depth, wave energy, and currents</b> .				
Additional Notes: The current condition promotes increased localized turbidity promoted by the lack of seagrass in this location. With the restoration of the topography of this feature, there could be the decrease in localized and basin turbidity.				
Current	With Mitigation			
<b>7</b>	<b>8</b>			

.500(6)(c) Community structure			Current	With Mitigation
	I. Appropriate/desirable species		None currently exist	Increased desirable habitat
	II. Invasive/exotic plant species		N/A	N/A
	III. Regeneration/recruitment			
	IV. Age, size distribution.			
	V. Snags, dens, cavity, etc.		None currently exist	
	VI. Plants' condition.		None currently exist	
	VII. Land management practices.		Stabile	No Change
	VIII. Topographic features (refugia, channels, hummocks).		Sandy unvegetated bottom	Increased refugia and habitat
	IX. Submerged vegetation (only score if present).		None currently exist	
X. Upland assessment area				
Additional Notes: This depressional feature that has been identified for restoration is a linear feature that bisects a form contiguous seagrass meadow. With the reconnection of the currently separated meadows will greatly increase community structure of the area.				
Current	With Mitigation			
<b>0</b>	<b>9</b>			

<b>Raw Score</b> = Sum of above scores/30 (if uplands, divide by 20)	
-	-
0.5	0.8666667

TEMPORAL LAG TABLE					
YEAR	T-factor	YEAR	T-factor	YEAR	T-factor
< or = 1	1	11-15	1.46	41-45	3.03
2	1.03	16-20	1.68	46-50	3.34
3	1.07	21-25	1.92	51-55	3.65
4	1.10	26-30	2.18	>55	3.91
5	1.14	31-35	2.45		
6-10	1.25	36-40	2.73		
<b>Temporal Lag Factor (TLF)</b> = (see Temporal Lag Table above)			1.25		
<b>Risk Factor (RF)</b> = (1=no risk, 2=mod risk, 3=hi risk, on 0.25 increments)			2.25		

Additional Notes:

Time lag and risk will vary if planting units are installed and prescribed in the final mitigation plan.	
<b>Relative Functional Gain (RFG)</b> = MD/(TLF x RF) =	0.130

<b>Mitigation Delta (MD)</b>	
w/Mitigation - Current	0.3666667

<b>FOR PRESERVATION ONLY:</b>	
<b>Not Applicable</b>	

<b>Mitigation Area Size</b> (acres)	1.10
<b>Functional Gain (FG)</b> (RFG x MIT AREA) (should balance with Functional Loss)	0.143

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - MIT/PRES**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>Anna Maria Bridge Preferred Alt 3BS</b>		Application Number		Assessment Area Name or Number <b>Option 3A</b>	
FLUCCs code		Further classification (optional)		Mitigation Type <b>Creation</b>	Assessment Area Size <b>1.10 Acres</b>
Basin/Watershed Name/Number <b>Anna Maria Sound</b>		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>TIFF</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands  <b>This spoil island is located within Anna Maria Sound. Anna Maria Sound is part of and located at the northern extreme of the Sarasota Bay National Estuary. The Sound connects Sarasota Bay with the southern portion of Tampa Bay and surrounding local water bodies (i.e., Perico Bayou). The Sound receives diurnal tidal flushing from the waters of the Gulf of Mexico. Anna Maria Sound is bordered by mixed development and stable mangrove shoreline communities primarily consisting of red mangroves. The spoile island contains both altered uplands as well as functioning mangrove habitat.</b>					
Assessment area description  <b>The spoil island contains an elevated sandy area that contains mainly exotic species that is surrounded on 2 sides by healthy mangrove habitat. There are wide variety of exotic species growing on the upland portion of the project area. The upland area is proposed to be dredged to the surrounding depths where seagrasses are currently flourishing.</b>					
Significant nearby features <b>Functioning mangrove coastal fringe and seagrass meadows. Intracoastal Waterway</b>			Uniqueness (considering the relative rarity in relation to the regional landscape.) <b>There is nothing unique about upland habitat in the area.</b>		
Functions <b>May provide for nesting of some species of birds. Provide a seed source for exotic vegetation in the area.</b>			Mitigation for previous permit/other historic use		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )  <b>May provide for nesting of some species of birds.</b>			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)  <b>None anticipated on the uplands portion of the spoil island.</b>		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):  <b>None observed in the upland areas. There were wading birds foraging at the waters edge on the mangrove dominated sections of shoreline on the spoil island.</b>					
Additional relevant factors:  <b>This information is being generated to assimilate into the overall mitigation planning required for Anna Maria Bridge and Cortez Bridge.</b>					
Assessment conducted by: <b>A. Gelber</b>			Assessment date(s): <b>10/1/2013</b>		

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - MITIGATION/PRESERVATION**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)**

Site/Project Name: <b>Anna Maria Bridge Preferred Alt 3BS</b>	Application Number: -	Assessment Area Name or Number: <b>Option 3A</b>
Impact or Mitigation: <b>Mitigation</b>	Assessment Conducted by: <b>A. Gelber</b>	Assessment Date: <b>10/1/13</b>

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)					
		Current	With Mitigation		
	.500(6)(a) Location and Landscape Support	a. Quality and quantity of <b>habitat support</b> outside of AA.		Surrounding conditions is optimal	Will increase support features
		b. <b>Invasive plant species.</b>		Inundated	Removed
		c. <b>Wildlife access</b> to and from AA (proximity and barriers).		No fish can access, upland	Increased access/connection
		d. <b>Downstream benefits</b> provided to fish and wildlife.		Reduced biological production	Increase biological production
		e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.		Isolated area away from land impacts	
		f. <b>Hydrologic connectivity</b> (impediments and flow restrictions).		N/A	N/A
		g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.		N/A	N/A
		h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).		Protection of wave energy	
Current	With Mitigation	Additional Notes: The spoils island currently provides no hydrologically supported vegetation, wetland or seagrass. Without the current condition, exotics will continue to be a seed source and provide minimal functional value. With the project, the uplands would be graded to appropriate elevations to support seagrass cover thus increasing the localized functions and values.			
8	9				

	.500(6)(b) Water Environment (leave blank for uplands)			Current	With Mitigation
		a. Appropriateness of <b>water levels and flows.</b>		Increased turbidity	Decreased turbidity
		b. Reliability of <b>water level indicators.</b>		N/A	
		c. Appropriateness of <b>soil moisture.</b>		N/A	
		d. <b>Flow rates</b> /points of discharge.		N/A	
		e. <b>Fire frequency/severity.</b>		N/A	
		f. <b>Type of vegetation.</b>		Exotics	Removed
		g. <b>Hydrologic stress</b> on vegetation.		N/A	
		h. <b>Use by animals</b> with hydrologic requirements.		N/A	
		i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).		Exotics	Match surrounding cond
Current	With Mitigation	j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity).			
		None, upland			
Current	With Mitigation	k. <b>Water quality data</b> for the type of community.			
		None, upland	Increase water quality		
Current	With Mitigation	l. <b>Water depth, wave energy, and currents.</b>			
		None, upland			
0	8	Additional Notes: The current condition promotes increased localized turbidity promoted by the lack of seagrass in this location. With the restoration of the topography of this feature, there could be the decrease in localized and basin turbidity.			

	.500(6)(c) Community structure  x Vegetation  Benthic  4 Both			Current	With Mitigation
		I. Appropriate/desirable species		None currently exist	Increased desirable habitat
		II. Invasive/exotic plant species		N/A	N/A
		III. Regeneration/recruitment			
		IV. Age, size distribution.			
		V. Snags, dens, cavity, etc.		None currently exist	
		VI. Plants' condition.		None currently exist	
		VII. Land management practices.		Stable	No Change
		VIII. Topographic features (refugia, channels, hummocks).		Upland exotics	Increased refugia and habitat
		IX. Submerged vegetation (only score if present).		None currently exist	
Current	With Mitigation	X. Upland assessment area			
		Exotics dominated	Exotics removed		
0	9	Additional Notes:			

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	(if uplands, divide by 20)
-	-
0.2666667	0.8666667

TEMPORAL LAG TABLE					
YEAR	T-factor	YEAR	T-factor	YEAR	T-factor
< or = 1	1	11-15	1.46	41-45	3.03
2	1.03	16-20	1.68	46-50	3.34
3	1.07	21-25	1.92	51-55	3.65
4	1.10	26-30	2.18	>55	3.91
5	1.14	31-35	2.45		
6-10	1.25	36-40	2.73		
Temporal Lag Factor (TLF) = Temporal Lag Table above		(see	1.25		
Risk Factor (RF) = [1=no risk, 2=mod risk, 3=hi risk, on 0.25 increments)		2.25			

Additional Notes:	
Time lag and risk will vary if planting units are installed and prescribed in the final mitigation plan.	
Relative Functional Gain (RFG) = MD/(TLF x RF) =	0.213

Mitigation Delta (MD)	
w/Mitigation - Current	0.6

FOR PRESERVATION ONLY:	
Not Applicable	

Mitigation Area Size (acres)	1.10
Functional Gain (FG) (RFG x MIT AREA) (should balance with Functional Loss)	0.234

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - MIT/PRES**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>Anna Maria Bridge Preferred Alt 3BS</b>		Application Number		Assessment Area Name or Number <b>Option 3B</b>	
FLUCCs code		Further classification (optional)		Mitigation Type <b>Creation</b>	Assessment Area Size <b>1.29 Acres</b>
Basin/Watershed Name/Number <b>Anna Maria Sound</b>		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>Private Land</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands  <b>This spoil island is located within Anna Maria Sound. Anna Maria Sound is part of and located at the northern extreme of the Sarasota Bay National Estuary. The Sound connects Sarasota Bay with the southern portion of Tampa Bay and surrounding local water bodies (i.e., Perico Bayou). The Sound receives diurnal tidal flushing from the waters of the Gulf of Mexico. Anna Maria Sound is bordered by mixed development and stable mangrove shoreline communities primarily consisting of red mangroves. The spoile island contains both altered uplands as well as functioning mangrove habitat.</b>					
Assessment area description  <b>The spoil island contains an elevated sandy area that contains mainly exotic species that is surrounded on 2 sides by healthy mangrove habitat. There are wide variety of exotic species growing on the upland portion of the project area. The upland area is proposed to be dredged to the surrounding depths where seagrasses are currently flourishing.</b>					
Significant nearby features <b>Functioning mangrove coastal fringe and seagrass meadows. Intracoastal Waterway</b>			Uniqueness (considering the relative rarity in relation to the regional landscape.) <b>There is nothing unique about upland habitat in the area.</b>		
Functions <b>May provide for nesting of some species of birds. Provide a seed source for exotic vegetation in the area.</b>			Mitigation for previous permit/other historic use		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )  <b>May provide for nesting of some species of birds.</b>			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)  <b>None anticipated on the uplands portion of the spoil island.</b>		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):  <b>None observed in the upland areas. There were wading birds foraging at the waters edge on the mangrove dominated sections of shoreline on the spoil island.</b>					
Additional relevant factors:  <b>Recreational camping was observed during one site visit of the spoil island. This information is being generated to assimilate into the overall mitigation planning required for Anna Maria Bridge and Cortez Bridge.</b>					
Assessment conducted by: <b>A. Gelber</b>			Assessment date(s): <b>10/1/2013</b>		

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - MITIGATION/PRESERVATION**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)**

Site/Project Name: <b>Anna Maria Bridge Preferred Alt 3BS</b>	Application Number: -	Assessment Area Name or Number: <b>Option 3B</b>
Impact or Mitigation: <b>Mitigation</b>	Assessment Conducted by: <b>A. Gelber</b>	Assessment Date: <b>10/1/13</b>

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)					
		Current	With Mitigation		
.500(6)(a) Location and Landscape Support	a. Quality and quantity of <b>habitat support</b> outside of AA.	Surrounding conditions is optimal	Will increase support features		
	b. <b>Invasive plant species.</b>	Inundated	Removed		
	c. <b>Wildlife access</b> to and from AA (proximity and barriers).	No fish can access, upland	Increased access/connection		
	d. <b>Downstream benefits</b> provided to fish and wildlife.	Reduced biological production	Increase biological production		
	e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.	Isolated area away from land impacts			
	f. <b>Hydrologic connectivity</b> (impediments and flow restrictions).	N/A	N/A		
	g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.	N/A	N/A		
	h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).	Protection of wave energy			
	Additional Notes:	The spoil island currently provides no hydrologically supported vegetation, wetland or seagrass. Without the current condition, exotics will continue to be a seed source and provide minimal functional value. With the project, the uplands would be graded to appropriate elevations to support seagrass cover thus increasing the localized functions and values.			
Current <b>8</b>	With Mitigation <b>9</b>				

.500(6)(b) Water Environment (leave blank for uplands)	a. Appropriateness of <b>water levels and flows.</b>	Current Increased turbidity	With Mitigation Decreased turbidity
	b. Reliability of <b>water level indicators.</b>	N/A	
	c. Appropriateness of <b>soil moisture.</b>	N/A	
	d. <b>Flow rates</b> /points of discharge.	N/A	
	e. <b>Fire frequency/severity.</b>	N/A	
	f. <b>Type of vegetation.</b>	Exotics	Removed
	g. <b>Hydrologic stress</b> on vegetation.	N/A	
	h. <b>Use by animals</b> with hydrologic requirements.	N/A	
	i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).	Exotics	Match surrounding cond
	j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity).	None, upland	
	k. <b>Water quality data</b> for the type of community.	None, upland	Increase water quality
Additional Notes:	The current condition promotes increased localized turbidity promoted by the lack of seagrass in this location. With the restoration of the topography of this feature, there could be the decrease in localized and basin turbidity.		
Current <b>0</b>	With Mitigation <b>8</b>		

.500(6)(c) Community structure  x Vegetation  Benthic  Both	I. Appropriate/desirable species	Current None currently exist	With Mitigation Increased desirable habitat
	II. Invasive/exotic plant species	N/A	N/A
	III. Regeneration/recruitment		
	IV. Age, size distribution.		
	V. Snags, dens, cavity, etc.	None currently exist	
	VI. Plants' condition.	None currently exist	
	VII. Land management practices.	Stable	No Change
	VIII. Topographic features (refugia, channels, hummocks).	Upland exotics	Increased refugia and habitat
	IX. Submerged vegetation (only score if present).	None currently exist	
	X. Upland assessment area	Exotics dominated	Exotics removed
Additional Notes:			
Current <b>0</b>	With Mitigation <b>9</b>		

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
-	-
0.2666667	0.8666667

TEMPORAL LAG TABLE					
YEAR	T-factor	YEAR	T-factor	YEAR	T-factor
< or = 1	1	11-15	1.46	41-45	3.03
2	1.03	16-20	1.68	46-50	3.34
3	1.07	21-25	1.92	51-55	3.65
4	1.10	26-30	2.18	>55	3.91
5	1.14	31-35	2.45		
6-10	1.25	36-40	2.73		
Temporal Lag Factor (TLF) = Temporal Lag Table above		(see	1.25		
Risk Factor (RF) = [1=no risk, 2=mod risk, 3=hi risk, on 0.25 increments)		2.25			

Additional Notes:  
  
Time lag and risk will vary if planting units are installed and prescribed in the final mitigation plan.

Relative Functional Gain (RFG) = MD/(TLF x RF) =	0.213
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Mitigation Delta (MD)	
w/Mitigation - Current	0.6

FOR PRESERVATION ONLY:	
Not Applicable	

Mitigation Area Size (acres)	1.29
Functional Gain (FG) (RFG x MIT AREA) (should balance with Functional Loss)	0.275

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - MIT/PRES**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>Anna Maria Bridge Preferred Alt 3BS</b>		Application Number		Assessment Area Name or Number <b>Option 5</b>	
FLUCCs code		Further classification (optional)		Mitigation Type <b>Restoration</b>	Assessment Area Size <b>0.50 Acres</b>
Basin/Watershed Name/Number <b>Anna Maria Sound</b>		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>OFW, Estuary of National Significance in 1987</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands  <b>This altered unvegetated bottom is located within Anna Maria Sound. Anna Maria Sound is part of and located at the northern extreme of the Sarasota Bay National Estuary. The Sound connects Sarasota Bay with the southern portion of Tampa Bay and surrounding local water bodies (i.e., Perico Bayou). The Sound receives diurnal tidal flushing from the waters of the Gulf of Mexico. Anna Maria Sound is bordered by mixed development and stable mangrove shoreline communities primarily consisting of red mangroves.</b>					
Assessment area description  <b>This location has been impacted by a single or during multiple event process of sandy material flowing from the adjacent upland during rain events. This area is currently elevated and denuded of seagrass in its current state. The adjacent areas are dominated by seagrass meadows. The lack of seagrass at this location is presumably due to desiccation of seagrass during the low tide stages. Seagrass beds adjacent to this feature contain primarily <i>H. wrightii</i>.</b>					
Significant nearby features <b>Functioning mangrove coastal fringe and oyster bars in close proximity. Intracoastal Waterway</b>			Uniqueness (considering the relative rarity in relation to the regional landscape.) <b>Not applicable</b>		
Functions <b>In the current state due to the elevation, there is minimal function.</b>			Mitigation for previous permit/other historic use		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )  <b>Minimal utilization of wildlife based on the altered, shallow state of this location.</b>			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)  <b>Due to the elevation of the location at the current time, there is not an anticipation of utilization by listed species at this time.</b>		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):  <b>None observed.</b>					
Additional relevant factors:					
Assessment conducted by: <b>A. Gelber</b>			Assessment date(s): <b>10/1/2013</b>		

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - MITIGATION/PRESERVATION**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)**

Site/Project Name: <b>Anna Maria Bridge Preferred Alt 3BS</b>	Application Number: -	Assessment Area Name or Number: <b>Option 5</b>
Impact or Mitigation: <b>Mitigation</b>	Assessment Conducted by: <b>A. Gelber</b>	Assessment Date: <b>10/1/13</b>

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)				
		Current	With Mitigation	
.500(6)(a) Location and Landscape Support	a. Quality and quantity of <b>habitat support</b> outside of AA.	Surrounded by SAV on 3 sides	increased connectivity	
	b. <b>Invasive plant species.</b>			
	c. <b>Wildlife access</b> to and from AA (proximity and barriers).	Slight barrier	Barrier removed.	
	d. <b>Downstream benefits</b> provided to fish and wildlife.			
	e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.	Reduced foraging habitat		
	f. <b>Hydrologic connectivity</b> (impediments and flow restrictions).	creates flow alterations		
	g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.			
	h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).			
Additional Notes:	This area would be slightly graded to match surrounding seagrass habitat area due to upland influences. This locations creates a barrier of fish from migrating from one area to another during low tides.			
Current	With Mitigation			
8	9			

.500(6)(b) Water Environment (leave blank for uplands)	a. Appropriateness of <b>water levels and flows.</b>	Current	With Mitigation
	b. Reliability of <b>water level indicators.</b>	Elevated area	Matching surrounding
	c. Appropriateness of <b>soil moisture.</b>		
	d. <b>Flow rates</b> /points of discharge.	Seagrass desiccation	
	e. <b>Fire frequency/severity.</b>	None	
	f. <b>Type of vegetation.</b>	Barren	Seagrass
	g. <b>Hydrologic stress</b> on vegetation.	Too shallow	none
	h. <b>Use by animals</b> with hydrologic requirements.	Wading birds	
	i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).	None	Seagrass
	j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity).	Uplands	
	k. <b>Water quality data</b> for the type of community.		
l. <b>Water depth, wave energy, and currents.</b>	Too shallow		
Additional Notes:			
Current	With Mitigation		
7	8		

.500(6)(c) Community structure  x Vegetation  Benthic  Both	I. Appropriate/desirable species	Current	With Mitigation
	II. Invasive/exotic plant species	None	Seagrass
	III. Regeneration/recruitment		
	IV. Age, size distribution.		
	V. Snags, dens, cavity, etc.		
	VI. Plants' condition.		
	VII. Land management practices.		
	VIII. Topographic features (refugia, channels, hummocks).		
	IX. Submerged vegetation (only score if present).		
	X. Upland assessment area		
Additional Notes:			
Current	With Mitigation		
0	9		

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	(if uplands, divide by 20)
-	-
0.5	0.8666667

TEMPORAL LAG TABLE					
YEAR	T-factor	YEAR	T-factor	YEAR	T-factor
< or = 1	1	11-15	1.46	41-45	3.03
2	1.03	16-20	1.68	46-50	3.34
3	1.07	21-25	1.92	51-55	3.65
4	1.10	26-30	2.18	>55	3.91
5	1.14	31-35	2.45		
6-10	1.25	36-40	2.73		
Temporal Lag Factor (TLF) = Temporal Lag Table above		(see	1.25		
Risk Factor (RF) = [1=no risk, 2=mod risk, 3=hi risk, on 0.25 increments)		2.25			

Additional Notes:  
  
Time lag and risk will vary if planting units are installed and prescribed in the final mitigation plan.

Relative Functional Gain (RFG) = MD/(TLF x RF) =	0.130
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Mitigation Delta (MD)	
w/Mitigation - Current	0.3666667

FOR PRESERVATION ONLY:	
Not Applicable	

Mitigation Area Size (acres)	0.50
Functional Gain (FG) (RFG x MIT AREA) (should balance with Functional Loss)	0.065

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - MIT/PRES**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)**

Site/Project Name <b>Anna Maria Bridge Preferred Alt 3BS</b>		Application Number		Assessment Area Name or Number <b>Option 7</b>	
FLUCCs code		Further classification (optional)		Mitigation Type <b>Creation</b>	Assessment Area Size <b>2.40 Acres</b>
Basin/Watershed Name/Number <b>Anna Maria Sound</b>		Affected Waterbody (Class)		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) <b>OFW, Estuary of National Significance in 1987</b>	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands  <b>Anna Maria Bridge is located within Anna Maria Sound. Anna Maria Sound is part of and located at the northern extreme of the Sarasota Bay National Estuary. The Sound connects Sarasota Bay with the southern portion of Tampa Bay and surrounding local water bodies (i.e., Perico Bayou). The Sound receives diurnal tidal flushing from the waters of the Gulf of Mexico. Anna Maria Sound is bordered by mixed development and stable mangrove shoreline communities primarily consisting of red mangroves.</b>					
Assessment area description  <b>This location is surrounded on all 4 sides by healthy seagrass beds that are dominated by T. testudinum. There is not apparent indication of this site being dredged during some previous development activity, but based on aerial imagery and a site visit, the 10 foot depth of the hole appears to be vastly different than other surrounding areas that possess unvegetated bottom. Through the evaluation process, there are other similar depth features that were clearly dredged during some previous development activities.</b>					
Significant nearby features  <b>Functioning mangrove coastal fringe. Intracoastal Waterway</b>			Uniqueness (considering the relative rarity in relation to the regional landscape.)  <b>Deeper than normal depressional area.</b>		
Functions  <b>In the current state due to the elevation, there is minimal function.</b>			Mitigation for previous permit/other historic use		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found )  <b>Temporally limited utilization due to the lack of vegetated bottom in this area. Adjacent seagrass meadows would be where wildlife, vertebrate and invertebrates species would habitate.</b>			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)  <b>Based on the proximity to AMB, the same listed species identified in the Endangered Species Biological Assessment should apply to this location.23 state and federally listed species were indentified and reviewed for potential impact based on each alternative. Of the 23 species, 8 species are marine dependent. Bald eagle (Haliaeetus), gulf sturgeon (Acipenser), smalltooth sawfish (Pristis), west Indian Manatee (Trichechus), Loggerhead (Caretta), Leatherback (Dermochelys), Hawksbill (Eretmochelys), Kemp's Ridley (Lepidochelys)</b>		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):  <b>None observed.</b>					
Additional relevant factors:					
Assessment conducted by: <b>A. Gelber</b>			Assessment date(s): <b>10/1/2013</b>		

**UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - MITIGATION/PRESERVATION**  
**Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)**

Site/Project Name: <b>Anna Maria Bridge Preferred Alt 3BS</b>	Application Number: -	Assessment Area Name or Number: <b>Option 7</b>
Impact or Mitigation: <b>Mitigation</b>	Assessment Conducted by: <b>A. Gelber</b>	Assessment Date: <b>10/1/13</b>

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)				
		Current		With Mitigation
.500(6)(a) Location and Landscape Support	a. Quality and quantity of <b>habitat support</b> outside of AA.	Surrounding conditions is optimal		Will increase optimal performance
	b. <b>Invasive plant species.</b>	N/A		N/A
	c. <b>Wildlife access</b> to and from AA (proximity and barriers).	The lack of vegetation is barrier		Increased access/connection
	d. <b>Downstream benefits</b> provided to fish and wildlife.	Reduced biological production		Increase biological production
	e. Adverse impacts to wildlife in AA from <b>land uses</b> outside of AA.	Mangrove shoreline benefits AA		Mangrove shoreline benefits AA
	f. <b>Hydrologic connectivity</b> (impediments and flow restrictions).	N/A		N/A
	g. <b>Dependency</b> of downstream habitats on quantity or quality of discharges.	N/A		N/A
	h. Protection of wetland functions provided by uplands ( <b>upland</b> AAs only).			
Current	With Mitigation	Additional Notes:		
8	9			

.500(6)(b) Water Environment (leave blank for uplands)	Current	With Mitigation	Current		With Mitigation	
			Increased turbidity		Decreased turbidity	
			a. Appropriateness of <b>water levels and flows.</b>	N/A		N/A
			b. Reliability of <b>water level indicators.</b>	N/A		N/A
			c. Appropriateness of <b>soil moisture.</b>	N/A		N/A
			d. <b>Flow rates</b> /points of discharge.	N/A		N/A
			e. <b>Fire frequency/severity.</b>	N/A		N/A
			f. <b>Type of vegetation.</b>	None		Match existing
			g. <b>Hydrologic stress</b> on vegetation.	N/A		N/A
			h. <b>Use by animals</b> with hydrologic requirements.	N/A		N/A
i. <b>Plant community composition</b> associated with water quality (i.e., plants tolerant of poor WQ).	N/A		N/A			
j. <b>Water quality of standing water by observation</b> (i.e., discoloration, turbidity).						
k. <b>Water quality data</b> for the type of community.						
Current	With Mitigation	Additional Notes: The current condition promotes increased localized turbidity promoted by the lack of seagrass in this location. With the restoration of the topography of this feature, there could be the decrease in localized and basin turbidity.				
7	8					

.500(6)(c) Community structure  x Vegetation  Benthic  Both	Current	With Mitigation	Current		With Mitigation
			None currently exist		Increased desirable habitat
			N/A		N/A
			None currently exist		
			None currently exist		
			Stable		No Change
			Sandy unvegetated bottom		Increased refugia and habitat
			None currently exist		
			X. Upland assessment area		
Current	With Mitigation	Additional Notes:			
0	9				

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	(if
-	-
0.5	0.86666667

TEMPORAL LAG TABLE					
YEAR	T-factor	YEAR	T-factor	YEAR	T-factor
< 1 yr = 1	1	11-15	1.46	41-45	3.03
2	1.03	16-20	1.68	46-50	3.34
3	1.07	21-25	1.92	51-55	3.65
4	1.10	26-30	2.18	>55	3.91
5	1.14	31-35	2.45		
6-10	1.25	36-40	2.73		
Temporal Lag Factor (TLF) = Temporal Lag Table above		(see	1.25		
Risk Factor (RF) = [1=no risk, 2=mod risk, 3=hi risk, on 0.25 increments)		2.25			

Additional Notes:  
  
Time lag and risk will vary if planting units are installed and prescribed in the final mitigation plan.

Relative Functional Gain (RFG) = MD/(TLF x RF) =	0.130
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Mitigation Delta (MD)	
w/Mitigation - Current	0.36666667

FOR PRESERVATION ONLY:	
Not Applicable	

Mitigation Area Size (acres)	2.40
Functional Gain (FG) (RFG x MIT AREA) (should balance with Functional Loss)	0.312

## Temporal Loss Factor "T"

## T Table Reciprocal for UMAM

**YS = 0 = Presumes compensatory mitigation starts within the same 12 month period as the impact/credit release**

**YF = Year Finish** = when the compensatory mitigation achieves the functional capacity that is described by the "with project" functional assessment score. After this year, the compensatory mitigation is expected to stay at or above the "with project" score either naturally or as the result of arrangements for perpetual management.

- (a) If the "with project" score is achieved within the same 12 month period as the impact/credit release, then  $YF = 1$ .
- (b) Otherwise,  $YF = YS +$  the number of years to reach the "with project" score (for example, if saplings are planted in the same year as the impact/credit release and the "with project" score is based on 35 years of growth, then  $YF = 0 + 35 = 35$ ; but, if the saplings are planted two years prior to impact/credit release,  $YS = -2$ , then  $YF = (-2) + 35 = 33$ ).

YS=	YF=	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
0	T=	1.0000	1.0170	1.0341	1.0518	1.0696	1.0876	1.1058	1.1238	1.1431	1.1614	1.1805	1.2000	1.2197	1.2397	1.2600

YS=	YF=	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
0	T=	1.2805	1.3013	1.3224	1.3437	1.3654	1.3873	1.4096	1.4321	1.4549	1.4780	1.5015	1.5252	1.5492	1.5736	1.5983

YS=	YF=	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
0	T=	1.6233	1.6486	1.6743	1.7002	1.7265	1.7532	1.7802	1.8075	1.8352	1.8633	1.8917	1.9282	1.9577	1.9791	2.0178

YS=	YF=	46	47	48	49	50	51	52	53	54	55
0	T=	2.0485	2.0795	2.1110	2.1322	2.1751	2.1962	2.2289	2.2619	2.2953	2.3292

**Location and Landscape Support**

<b>Parameter</b>	<b>10</b>	<b>7</b>	<b>4</b>	<b>0</b>
Quality and quantity of habitat support outside of AA	Provides entire life history for all wildlife	Optimal for most wildlife/reduced availability	Fair/minimal support for many species	No habitat or support is available
invasive plant species	Not present in proximity of AA	Minimal invasive in proximity of AA	Majority of cover invasive in proximity of AA	Plant community predominantly invasive
wildlife access to and from AA (proximity and barriers)	Access not limited by distance or barriers	Access partially limited by distances or barriers	Access substantially limited by distance/barriers	Access is precluded by distance or barriers
Downstream benefits provided to fish and wildlife (distance and barriers)	Not limited by distance or barriers	Somewhat limited by distance or barriers	Distance or barriers substantially reduce benefits	No downstream benefits provided
Adverse impacts to wildlife in AA from land uses outside of AA	No adverse impacts	Minimal adverse impacts	Significant adverse impacts	Severe adverse impacts
Hydrologic connectivity (impediments and flow restrictions)	Downstream connection not impeded or restricted	Less than optimal connection with decreased downstream benefits	Benefits greatly reduced due to impeded connection	Lack of hydrologic connectivity precludes benefits
Dependency of downstream habitats on quantity or quality of AA discharges	Habitats are critically or solely dependent on discharges	Habitats derive significant benefits from discharges	Habitats derive minimal benefits from discharges	Habitats derive negligible or no benefits from discharges
Protection of wetland functions provided by uplands (upland AAs only)	Uplands provide optimal protection	Uplands provide significant, but suboptimal, protection	Uplands provide minimal protection	Uplands provide no protection

## Water Environment

Parameter	10	7	4	0
Appropriateness of water levels and flows	Appropriate for the community type	Slightly higher or lower than appropriate	Moderately higher or lower than appropriate	Extreme deviation from what is appropriate
Reliability of water level indicators	Indicators are distinct and reliable	Indicators not as distinct/not fully consistent with expectations	Indicators not distinct/not consistent with expectations	Indicators not present or greatly inconsistent
Appropriateness of soil moisture	Appropriate for the community type	Soils drier than expected/minimal oxidation or subsidence	Strong evidence of desiccation, oxidation or subsidence	Substantial desiccation, oxidation or subsidence
Flow rates/points of discharge	Soil erosion/deposition not atypical	Minor alterations indicated by soil erosion/deposition	Soil erosion/deposition atypical, indicative of alterations	Substantial soil erosion/deposition/ alterations
Fire frequency/severity	Not atypical	Higher than expected	Much more than expected	Extreme deviation from expectations
Type of vegetation	Appropriate for the community type	Some strata inappropriate	Most strata inappropriate	All strata inappropriate
Hydrologic stress on vegetation	No signs of stress	Some stress shown in vegetation	Strong evidence of abnormal stress	Strong evidence of substantial stress
Wildlife usage	Fully meets expectations	Less than expected or more generalized	Greatly reduced for wildlife that are expected	Lacks expected wildlife/species generalized
Plant community composition	Intolerant of altered water quality/quantity	Some tolerance to altered water quality/quantity	High tolerance of poor water quality/quantity	All/most plants tolerant to significant alteration
Water quality (observed)	No degradation observed	Slight water quality degradation observed	Moderate water quality degradation observed	Significant water quality degradation observed
Water quality (data)	Indicates optimal conditions	Indicates slight deviation from normal	Indicates moderate deviation from normal	Indicates large deviation from normal
Water depths/wave energy/currents/light	Optimal for community type	Generally sufficient for community type	Not well-suited for community type	Inappropriate for community type

**Vegetation/Structure**

Parameter	10	7	4	0
Appropriate/desirable species	All/nearly all in stratum	Majority in observed stratum	Majority inappropriate or undesirable in stratum	None in stratum
Invasive/exotic plant species	Not present	Present, but minimal	Majority inappropriate or undesirable in stratum	High presence and cover
Regeneration/recruitment	Normal, natural	Near-normal/natural	Minimal	None
Age, size, distribution	Typical of system	Approximately typical, or temporary deviation	Atypical; permanent deviation; dead/dying vegetation	Much dead/dying vegetation, no typical age distribution
Snags, dens, cavity, etc.	Optimal for type of system	slightly lower or greater than normal	Not present, or abundant due to vegetative mortality	Not present, except due to death of native vegetation
Plants' condition	Good; little/no disease or damage	generally good; little disease/damage	Generally poor; chlorotic, spindly, damage	Very poor condition
Land management practices	Optimal for long-term viability	generally appropriate; some fire or hydrologic alteration	Removal or natural structure, or furrow/ditch	Removal/alteration of natural structures, and/or artificial features
Topographic features (refugia, channels, hummocks)	Present/normal for type of system	Slightly less than optimal for type of system	Reduction in extent of topographic features	Lack of normal topographic features
Submerged vegetation (only score if present)	No siltation or abnormal algal growth	Minor siltation or abnormal algal growth	Moderate siltation or algal growth	High degree of siltation, algal growth
Upland assessment areas (only score if applicable)	Optimal support for wetland/OSW	High, but less than optimal support.	Moderate habitat and life history support	little or no support for fish and wildlife of wetland/OSW

**OR**

**Benthic Communities**

Parameter	10	7	4	0
Extent, diversity of appropriate species and organisms	Optimal for type of system	Majority appropriate; #, diversity < typical	# or diversity greatly reduced from typical	Lack of appropriate species and diversity
Invasive/exotic species	Not present or nearby	Minority or community, or immediately adjacent	Majority present; or adjacent to heavy infestation	Dominant
Regeneration, recruitment, age distribution	Optimal	natural or slightly less than expected	Minimal	None evident
Species' condition, biomass	Good, typical	Generally good; little biomass reduction	Many dying or poor condition; low biomass	Much dead/dying vegetation, no typical age distribution
Structural features	Typical, no evidence of past damage	Close to typical; little evidence of past damage	Evidence of great or long-term damage	Low, non-existent structural integrity; serious damage
Topographic features (relief, stability, interstitial spaces, snags, debris)	Typical and optimal for type of system	Slight deviation from typical, less than optimal	Greatly reduced form typical; not appropriate	Lack of normal topographic features
Spawning, nesting habitat	Optimal for community type	Less than expected	Few available habitats	None present

***APPENDIX D***  
***UMAM DATA SHEETS***

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***APPENDIX E***  
***MANGROVE POINT MITIGATION BANK SWFWMD PERMIT***

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**SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT  
ENVIRONMENTAL RESOURCE  
INDIVIDUAL CONSTRUCTION  
PERMIT NO. 43035355.002**

**EXPIRATION DATE:**           **November 22, 2018**

**PERMIT ISSUE DATE:**   **November 22, 2013**

This permit is issued under the provisions of Chapter 373, Florida Statutes, (F.S.), and the Rules contained in Chapters 40D-4 and 40D-40, Florida Administrative Code, (F.A.C.). The permit authorizes the Permittee to proceed with the construction of a surface water management system in accordance with the information outlined herein and shown by the application, approved drawings, plans, specifications, and other documents, attached hereto and kept on file at the Southwest Florida Water Management District (District). Unless otherwise stated by permit specific condition, permit issuance constitutes certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341. All construction, operation and maintenance of the surface water management system authorized by this permit shall occur in compliance with Florida Statutes and Administrative Code and the conditions of this permit.

**PROJECT NAME:**                   Mangrove Point Mitigation Bank

**GRANTED TO:**                   Mangrove Point Mitigation Bank, LLC  
Attn: H. Collins Forman, Jr.  
1323 Southeast 3rd Avenue  
Fort Lauderdale, FL 33316

**OTHER PERMITTEES:**           N/A

**ABSTRACT:** This permit authorization is for the establishment of a 314.90 acre wetland mitigation bank as named above. Information regarding the wetlands and/or surface waters is stated below and on the permitted approved construction drawings for the project. The construction activities associated with this wetland mitigation bank will consist of removal of mosquito ditch blocks, re-contouring of existing tidal tributaries, removal of spoil mounds, and filling of surface waters. The wetland mitigation bank will be located in Hillsborough County along the eastern shoreline of Tampa Bay within Sections 25 and 36 of Township 31 South, Range 18 East and Section 31 of Township 31 South, Range 19 East. The wetland mitigation bank ledger has been approved for 100.50 mitigation credits. The mitigation credits were calculated using the Uniform Mitigation Assessment Method, pursuant to Chapter 62-345, F.A.C.

Attenuation has not been provided as the proposed project drains to an infinite basin and water quality treatment has not been provided as there is no increase in impervious area or pollutant loading. The project discharges to a water body that is verified as impaired for nutrients (Tampa Bay (Upper Segment) – WBID 1558C); therefore, water quality certification is waived as a condition of this permit.

**OP. & MAIN. ENTITY:**           Mangrove Point Mitigation Bank, LLC

**OTHER OP. & MAIN. ENTITY:**   N/A

**COUNTY:**                       HILLSBOROUGH

**SEC/TWP/RGE:**               S36/T31S/R18E, S31/T31S/R19E, S25/T31S/R18E

**TOTAL ACRES OWNED  
OR UNDER CONTROL:** 469.20  
**PROJECT SIZE:** 314.90 Acres  
**LAND USE:** Environmental  
**DATE APPLICATION FILED:** March 07, 2012  
**AMENDED DATE:** N/A

**I. Water Quantity/Quality**

Water Quantity/Quality Comments:

Attenuation has not been provided as the proposed project drains to an infinite basin and water quality treatment has not been provided as there is no increase in impervious area or pollutant loading.

The project discharges to a water body that is verified as impaired for nutrients (Tampa Bay (Upper Segment) – WBID 1558C); therefore, water quality certification is waived as a condition of this permit.

A mixing zone is not required.

A variance is not required.

**II. 100-Year Floodplain**

<b>Encroachment (Acre-Feet of fill)</b>	<b>Compensation (Acre-Feet of excavation)</b>	<b>Compensation Type</b>	<b>Encroachment Result* (feet)</b>
0.00	0.00	No Encroachment	N/A

100-Year Floodplain Comments:

There are no floodplain impacts associated with the project.

\*Depth of change in flood stage (level) over existing receiving water stage resulting from floodplain encroachment caused by a project that claims Minimal Impact type of compensation.

**III. Environmental Considerations**

**Wetland/Other Surface Water Information**

Wetland/Other Surface Water Name	Total Acres	Not Impacted Acres	Permanent Impacts		Temporary Impacts	
			Acres	Functional Loss*	Acres	Functional Loss*
Mangrove Ditches/Spoil Piles	56.66	0.00	0.00	0.00	56.66	0.00
Mangrove Adjacent Mangroves	67.67	67.67	0.00	0.00	0.00	0.00
Mangrove Shrub Swamp	22.04	22.04	0.00	0.00	0.00	0.00
Mangrove Shrub Swamp Altered	11.56	11.56	0.00	0.00	0.00	0.00
Saltern	47.43	47.43	0.00	0.00	0.00	0.00
Saltern Altered	41.68	23.31	0.00	0.00	18.37	0.00
Saltern Spoil Pile	5.11	5.11	0.00	0.00	0.00	0.00
Oligohaline Marsh	5.13	5.13	0.00	0.00	0.00	0.00
Oligohaline Marsh Altered	2.22	2.22	0.00	0.00	0.00	0.00
Oligohaline Marsh Dirt Road	1.92	1.92	0.00	0.00	0.00	0.00
Oligohaline Marsh Borrow Pit	1.46	1.46	0.00	0.00	0.00	0.00
Oligohaline Marsh Spoil Pile	3.62	3.62	0.00	0.00	0.00	0.00
Saltern Ponds	7.12	7.12	0.00	0.00	0.00	0.00
Tidal Pool	0.78	0.78	0.00	0.00	0.00	0.00
Clogged Tributaries	1.71	1.71	0.00	0.00	0.00	0.00
Seagrass	38.08	38.08	0.00	0.00	0.00	0.00
<b>Total:</b>	<b>314.19</b>	<b>239.16</b>	<b>0.00</b>	<b>0.00</b>	<b>75.03</b>	<b>0.00</b>

\* For impacts that do not require mitigation, their functional loss is not included.

Wetland/Other Surface Water Comments:

There are 157.93 acres of Mangrove Wetlands (FLUCCS 612), 94.22 acres of Saltern Wetlands (FLUCCS 651), 14.35 acres of Oligohaline Marsh Wetlands (FLUCCS 642), 7.90 acres of Saltern Ponds and Tidal Pool Wetlands (FLUCCS 653), 1.71 acres of Clogged Tributary Wetlands (FLUCCS 510), and 38.08 acres of Seagrass Wetlands (FLUCCS 540), located within the project area for this Environmental Resource Permit. There are 75.03 acres of temporary impacts within the project area associated with the restoration and enhancement activities of the mitigation bank. Mitigation is not required for the temporary impacts.

**Mitigation Information**

Name	Creation		Enhancement		Preservation		Restoration		Enhancement + Preservation		Other	
	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain	Acres	Functional Gain
Mangrove Ditches/Spoil Piles	0.00	0.00	56.66	25.27	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mangrove Adjacent Mangrove	0.00	0.00	67.67	8.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mangrove Shrub Swamp	0.00	0.00	22.04	4.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mangrove Shrub Swamp Altered	0.00	0.00	11.56	4.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Saltern	0.00	0.00	47.43	18.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Saltern Altered	0.00	0.00	41.68	23.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Saltern Spoil Pile	0.00	0.00	0.00	0.00	0.00	0.00	5.11	4.32	0.00	0.00	0.00	0.00
Oligohaline Marsh	0.00	0.00	5.13	1.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oligohaline Marsh Altered	0.00	0.00	2.22	1.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oligohaline Marsh Dirt Road	0.00	0.00	1.92	0.96	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oligohaline Marsh Borrow Pit	0.00	0.00	1.46	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Oligohaline Marsh Spoil Area	0.00	0.00	0.00	0.00	0.00	0.00	3.62	3.06	0.00	0.00	0.00	0.00
Saltern Ponds	0.00	0.00	7.12	1.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tidal Pool	0.00	0.00	0.78	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Clogged Tributary	0.00	0.00	1.71	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Seagrass	0.00	0.00	38.08	1.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total:</b>	<b>0.00</b>	<b>0.00</b>	<b>305.46</b>	<b>93.12</b>	<b>0.00</b>	<b>0.00</b>	<b>8.73</b>	<b>7.38</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

Mitigation Comments:

The project will result in 314.90 acres of wetland enhancement and restoration.

Upon achieving each mitigation criterion as approved in the Mitigation Credit Release Schedule and Success Criteria, the bank will receive mitigation credits not to exceed a total of 100.50 credits. The wetland mitigation credit categories include: Mangrove Forest - 33.88 Credits (Assessment Areas - Mangrove Ditches/Spoil Piles, Adjacent Mangroves); Mangrove Shrub Swamp - 9.07 Credits (Assessment Areas - Mangrove Shrub Swamp, Mangrove Shrub Swamp Altered); Saltern - 46.47 Credits (Assessment Areas - Saltern, Saltern Altered, Saltern Spoil Piles); Oligohaline Marsh - 7.32 Credits (Assessment Areas - Oligohaline Marsh, Oligohaline Marsh Altered, Oligohaline Marsh Dirt Road, Oligohaline Marsh Borrow Pit, Oligohaline Marsh Spoil Area); Tidal Pools and Ponds - 1.89 Credits (Assessment Areas - Saltern Ponds, Tidal Pool); Tidal Tributaries - 0.65 Credits (Assessment Area - Clogged Tributaries); and Seagrass - 1.21 Credits (Assessment Area - Seagrass).

Mitigation Credits will be granted to the Mangrove Point Mitigation Bank through subsequent modifications to this permit as the mitigation criteria are met. The mitigation credits were calculated using the Uniform Mitigation Assessment Method, pursuant to Chapter 62-345, F.A.C.

A conservation easement granted to the Southwest Florida Water Management District for the purpose of Mitigation is required by the Environmental Resource Permit. Land Resources Parcel Number 11-118-140 has been assigned to the conservation easement that will be granted to the Southwest Florida Water Management District.

## Specific Conditions

1. If the ownership of the project area covered by the subject permit is divided, with someone other than the Permittee becoming the owner of part of the project area, this permit shall terminate, pursuant to Rule 40D-1.6105, F.A.C. In such situations, each land owner shall obtain a permit (which may be a modification of this permit) for the land owned by that person. This condition shall not apply to the division and sale of lots or units in residential subdivisions or condominiums.
2. The Permittee shall retain the design professional registered or licensed in Florida, to conduct on-site observations of construction and assist with the as-built certification requirements of this project. The Permittee shall inform the District in writing of the name, address and phone number of the design professional so employed. This information shall be submitted prior to construction.
3. Within 30 days after completion of construction of the permitted activity, the Permittee shall submit to the Regulation Department at the District Service Office that services this permit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1, F.A.C., and signed, dated, and sealed as-built drawings. The as-built drawings shall identify any deviations from the approved construction drawings.
4. The District reserves the right, upon prior notice to the Permittee, to conduct on-site research to assess the pollutant removal efficiency of the surface water management system. The Permittee may be required to cooperate in this regard by allowing on-site access by District representatives, by allowing the installation and operation of testing and monitoring equipment, and by allowing other assistance measures as needed on site.
5. The Permittee shall monitor and maintain the wetland mitigation area(s) until the criteria set forth in the Wetland Mitigation Success Criteria Conditions(s) above are met. The Permittee shall perform corrective actions identified by the District if the District identifies a wetland mitigation deficiency.
6. The Permittee shall undertake required maintenance activities within the wetland mitigation area(s) as needed at any time between mitigation area construction and termination of monitoring, with the exception of the final year. Maintenance shall include the manual removal of all nuisance and exotic species, with sufficient frequency that their combined coverage at no time exceeds the Wetland Mitigation Success Criteria Condition(s) above. Herbicides shall not be used without the prior written approval of the District.
7. Certification of compliance with state water quality standards under Section 401 of the Clean Water Act, 33 U.S.C. 1341 is waived.
8. If limestone bedrock is encountered during construction of the surface water management system, the District must be notified and construction in the affected area shall cease.
9. The Permittee shall notify the District of any sinkhole development in the surface water management system within 48 hours of discovery and must submit a detailed sinkhole evaluation and repair plan for approval by the District within 30 days of discovery.
10. The District, upon prior notice to the Permittee, may conduct on-site inspections to assess the effectiveness of the erosion control barriers and other measures employed to prevent violations of

state water quality standards and avoid downstream impacts. Such barriers or other measures should control discharges, erosion, and sediment transport during construction and thereafter. The District will also determine any potential environmental problems that may develop as a result of leaving or removing the barriers and other measures during construction or after construction of the project has been completed. The Permittee must provide any remedial measures that are needed.

11. This permit is issued based upon the design prepared by the Permittee's consultant. If at any time it is determined by the District that the Conditions for Issuance of Permits in Rules 40D-4.301 and 40D-4.302, F.A.C., have not been met, upon written notice by the District, the Permittee shall obtain a permit modification and perform any construction necessary thereunder to correct any deficiencies in the system design or construction to meet District rule criteria. The Permittee is advised that the correction of deficiencies may require re-construction of the surface water management system.
12. The Permitted Plan Set for this project includes the set received by the District on April 26, 2013.
13. If prehistoric or historic artifacts such as pottery or ceramics, stone or shell tools or metal implements, or any other physical remains that could be associated with Native American cultures or early colonial or American settlement are encountered at any time within the project area, the permittee shall cease all activities involving subsurface disturbance in the immediate vicinity of such discoveries. The permittee shall contact the Florida Department of State, Division of Historical Resources, Compliance Review Section at (850) 245-6333, as well as the District. Project activities in the immediate vicinity shall not resume without authorization from the District after coordination with the Division of Historical Resources. In the event that unmarked human remains are encountered during permitted activities, all work that may disturb the unmarked human remains shall stop immediately and the proper authorities notified in accordance with Section 872.05, Florida Statutes.
14. Activities not specifically authorized by this permit are prohibited within the boundaries of the mitigation bank unless a permit modification is obtained for these activities. Should activities be conducted which could adversely impact fish and wildlife, the number of credits awarded to the mitigation bank shall be reduced accordingly. Conducting unauthorized activities within the boundaries of the mitigation bank which adversely impact fish and wildlife are grounds for revoking this permit and discontinuing use of any remaining mitigation credits.
15. The Permittee shall manage and maintain the Mangrove Point Mitigation Bank in perpetuity. Unless otherwise specified by permit conditions, the Permittee shall manage the mitigation bank in accordance with the document contained in the file-of-record entitled "Approved Long Term Mgmt Plan", uploaded into the District's Water Management Information System (WMIS) on November 19, 2013. Any substantial deviation from the approved Long Term Management Plan is grounds for revoking this permit unless the Environmental Resource Permitting Bureau Chief specifically approves such deviation.
16. Unless otherwise specified by permit conditions, the Permittee shall monitor the mitigation bank in accordance with the document contained in the file-of-record entitled "Approved Monitoring Plan", uploaded into WMIS on November 19, 2013. In addition to the monitoring specified in the referenced "Monitoring Plan", the Permittee shall provide a monitoring report annually in conjunction with the semi-annual cost adjustment required under Appendix 4, Section 9(k) of the ERP Basis of Review (dated September 2002). This monitoring report shall document conditions at the mitigation bank relative to the success criteria established by this permit and shall identify maintenance and management activities conducted since the preceding report was submitted.
17. Beginning April 30, 2014, and by April 30 of each subsequent year, the Permittee shall provide the

District with proof that all real estate taxes and assessments on the property comprising the Mangrove Point Mitigation Bank, as identified in this permit, have been paid. This information may be provided in the Annual Monitoring Report due in December of each year.

18. The mitigation service area for the Mangrove Point Mitigation Bank shall be the estuarine portions of the Tampa Bay, Hillsborough River, Alafia River, Little Manatee and Manatee River Watersheds as shown in accordance with the document contained in the file-of-record entitled "Approved Mitigation Service Area", and uploaded into WMIS on November 19, 2013.
19. Mitigation credits may be used upon release, except as limited by this permit condition. Use of credits shall be discontinued if, at any time, the Mangrove Point Mitigation Bank is deemed to be in noncompliance with this permit. Upon written notice from the District, mitigation credits shall again be available if the Permittee comes back into compliance as determined by the District.
20. Mitigation credits for the Mangrove Point Mitigation Bank shall be released in seven categories: (1) Mangrove Forest, (2) Mangrove Shrub Swamp, (3) Saltern, (4) Oligohaline Marsh, (5) Tidal Pools and Ponds, (6) Tidal Tributaries, and (7) Seagrass. Except as limited by this permit, use of released mitigation credits shall be accepted by the District when, based on all applicable criteria in 373.414(1)(b), Florida Statutes, and Rule 40D-4, Florida Administrative Code, those credits are appropriate and sufficient to offset specific impacts to wetlands and other surface waters and when the specific impacts can be permitted pursuant to those criteria.
21. A maximum of 100.50 credits shall be awarded to the Mangrove Point Mitigation Bank by this permit as detailed in the "Approved ERP Mitigation Credit Release Schedule" uploaded into WMIS on November 19, 2013, and upon conveyance of a conservation easement acceptable to the District, completion of all permitted construction activities, and achievement of all success criteria contained in the "Attachment\_4\_Success Criteria\_7\_24\_13" uploaded into WMIS on November 19, 2013 and permit Specific Conditions.
22. Credits shall be released for use by the mitigation bank according to the approved ERP mitigation credit release schedule uploaded into WMIS on November 19, 2013, except as limited by this permit condition.
  - a. Notwithstanding any other term or condition of this permit, or the credit release schedule, no credits will be released until a conservation easement for the mitigation bank property has been conveyed to the District free and clear of all mortgages, liens, encumbrances, leases, tenancies, security interests, covenants, conditions, restrictions, rights-of-way, easements, judgements, unrecorded leases, and other matters affecting title that are unacceptable to the District.
  - b. No credits will be released until a title insurance policy for the Mangrove Point Mitigation Bank, consistent with the terms in the Old Republic National Title Insurance Company title insurance commitment received by the District on November 4, 2013, and uploaded into WMIS on November 19, 2013, has been provided.
  - c. No credits shall be released until the financial responsibility mechanism for construction and implementation, required pursuant to Appendix 4, Section 9(d) of the ERP Basis of Review, is approved by the District and effective.
  - d. No credits shall be released until the financial responsibility mechanism for perpetual management, required pursuant to Appendix 4, Section 9(i) of the ERP Basis of Review, is approved by the District. The financial responsibility mechanism for perpetual management must be in effect prior to the withdrawal of any credits from the mitigation bank.
23. An initial mitigation credit ledger was received by the District on April 26, 2013 and uploaded into WMIS as "Approved Credit Ledger Template" on November 19, 2013. Separate mitigation credit ledgers shall be maintained for the seven categories defined in Specific Condition No. 19. The Permittee shall submit an updated credit ledger with each request for withdrawal of credits, to be in the form of a short form modification. Each submittal must include the following information:
  - a. The name, address and phone number of the permit applicant requesting to receive mitigation

credits from the mitigation bank.

b. Permit application numbers (including ERP and any related federal permit) of the impact project receiving the mitigation credits.

c. Location of the impact project receiving the mitigation credits.

24. This permit is issued based upon the design prepared by the Permittee's consultant. If at any time it is determined by the District that the Conditions for Issuance of Permits in Rules 40D-4.301 and 40D-4.302, F.A.C., have not been met, upon written notice by the District, the Permittee shall obtain a permit modification and perform any construction necessary thereunder to correct any deficiencies in the system design or construction to meet District rule criteria. The Permittee is advised that the correction of deficiencies may require re-construction of the surface water management system and/or mitigation areas.
25. The Permittee shall annually, at least 30 days prior to the anniversary date of establishment of the Trust Fund, provide to the District a statement provided by the Trustee confirming the value of the Trust Fund. Any securities in the Trust Fund shall be valued at market value as of no more than 60 days prior to the anniversary date of establishment of the Trust Fund.
26. If the Permittee intends to appoint a successor Trustee for the Trust Fund, the Permittee shall provide a DRAFT Appointment of Successor Trustee document to the District prior to finalizing the document for review and approval by the District of the successor Trustee. Once the District has approved the successor Trustee, the Permittee shall provide the District the original executed Appointment of Successor Trustee document within 30 days of execution of the document. The successor Trustee shall specify the date on which it will assume administration of the Trust Fund in writing to the District by certified mail at least 10 days before such change becomes effective.
27. The executed Subordination of Hillsborough County Encumbrances to Property Rights of the Southwest Florida Water Management District, received by the District on September 27, 2013, and uploaded into WMIS on November 19, 2013, shall be recorded in the Public Records of Hillsborough County Florida and a copy of the recorded document provided to the District prior to the release of credits.
28. **WETLAND MITIGATION SUCCESS CRITERIA MITIGATION AREA (Mangrove Forest-Assessment Areas: Mangrove Ditches/Spoil Piles, Adjacent Mangroves) (124.33 acres)**

Mitigation is expected to offset adverse impacts to wetlands and other surface waters caused by regulated activities and to achieve viable, sustainable ecological and hydrological wetland functions. Mitigation will be considered successful when the Permittee demonstrates that the conditions in the assessment area have met the success criteria below:

- a. The assessment area can reasonably be characterized as a Mangrove Forest (FLUCCS 612) as determined by the Florida Land Use and Cover and Forms Classification System (third edition; January 1999).
- b. Topography, water depth and water level fluctuation in the mitigation area are characteristic of the wetlands/surface water type specified in criterion "a."
- c. Fish Utilization shall meet the criteria specified:

Fish abundance of the mangrove forest will be not significantly different (not less than 95%) from fish abundance of the mangrove forest reference site (E.G. Simmons Park).

In the event that fish abundance increases in the with-mitigation condition, based on an annual composite cycle, but stabilizes over a period of two years at a level which is intermediate between the baseline condition and the condition at the reference site, the fish abundance data will be

scaled against the reference site to quantify partial success and award a proportional number of final credits.

d. Water Quality shall meet the criteria specified:

Dissolved oxygen (DO) in the water column at high tide will increase after restoration compared to the current condition.

e. Hydrological Regime shall meet the criteria specified:

Tidal amplitude will increase after restoration compared to the current condition .

f. Species composition of recruiting wetland vegetation is indicative of the wetland type specified in criterion "a."

g. Coverage by nuisance or exotic species does not exceed 1% percent in any assessment area within the mitigation site and 1% percent for the entire mitigation site.

h. The wetland mitigation area can be determined to be a wetland or other surface water according to Chapter 62-340, F.A.C..

29. **WETLAND MITIGATION SUCCESS CRITERIA MITIGATION AREA (Mangrove Shrub Swamp - Assessment Areas: Mangrove Shrub Swamp, Mangrove Shrub Swamp Altered) (33.60 acres)**

Mitigation is expected to offset adverse impacts to wetlands and other surface waters caused by regulated activities and to achieve viable, sustainable ecological and hydrological wetland functions. Mitigation will be considered successful when the Permittee demonstrates that the conditions in the assessment area have met the success criteria below:

a. The assessment area can reasonably be characterized as a Mangrove Shrub Swamp (FLUCCS 612) as determined by the Florida Land Use and Cover and Forms Classification System (third edition; January 1999).

b. Topography, water depth and water level fluctuation in the mitigation area are characteristic of the wetlands/surface water type specified in criterion "a."

c. Fish Utilization shall meet the criteria specified:

Fish abundance of the shrub swamp will not be significantly different (not less than 95%) from fish abundance of the shrub swamp reference site (the shrub swamp on Wolf Branch Park).

In the event that fish abundance increases in the with-mitigation condition, based on an annual composite cycle, but stabilizes over a period of two years at a level which is intermediate between the baseline condition and the condition at the reference site, the fish abundance data will be scaled against the reference site to quantify partial success and award a proportional number of final credits.

d. Water Quality shall meet the criteria specified:

Dissolved oxygen (DO) in the water column at high tide will increase after restoration compared to the current condition.

e. Hydrological Regime for shall meet the criteria specified:

Shrub Swamp Assessment Area - The residence time of standing water after restoration will increase compared to the residence time of the standing water in the current condition.

Shrub Swamp Altered Assessment Area - The residence time of standing water after restoration will decrease compared to the residence time of the standing water in the current condition.

f. Vegetative Structure and Composition shall meet the criteria specified:

The shrub vegetation shall consist of >50% white mangrove and black mangrove cover, <10 % red mangrove cover, and >1% herbaceous species cover.

g. Species composition of recruiting wetland vegetation is indicative of the wetland type specified in criterion "a."

h. Coverage by nuisance or exotic species does not exceed 1% percent at any assessment area within the mitigation site and 1% percent for the entire mitigation site.

i. The wetland mitigation area can be determined to be a wetland or other surface water according to Chapter 62-340, F.A.C.

**30. WETLAND MITIGATION SUCCESS CRITERIA MITIGATION AREA (Saltern - Assessment Areas: Saltern, Saltern Altered, Saltern Spoil Piles) (94.22 acres)**

Mitigation is expected to offset adverse impacts to wetlands and other surface waters caused by regulated activities and to achieve viable, sustainable ecological and hydrological wetland functions. Mitigation will be considered successful when the Permittee demonstrates that the conditions in the assessment area have met the success criteria below:

a. The assessment area can reasonably be characterized as a Saltern (FLUCCS 651) as determined by the Florida Land Use and Cover and Forms Classification System (third edition; January 1999).

b. Topography, water depth and water level fluctuation in the mitigation area are characteristic of the wetlands/surface water type specified in criterion "a."

c. Bird Utilization shall meet the criteria specified:

Bird abundance of the saltern will be not significantly different (not less than 95%) from bird abundance of the saltern reference site (on Wolf Branch Park).

In the event that bird abundance increases in the with-mitigation condition, based on an annual composite cycle, but stabilizes over a period of two years at a level which is intermediate between the baseline condition and the condition at the reference site, the bird abundance data will be scaled against the reference site to quantify partial success and award a proportional number of final credits.

d. Hydrological Regime for shall meet the criteria specified:

Saltern Assessment Area - The residence time of standing water after restoration will increase compared to the residence time of the standing water in the current condition.

Saltern Altered Assessment Area - The residence time of standing water after restoration will decrease compared to the residence time of the standing water in the current condition.

e. Vegetative Structure and Composition shall meet the criteria specified:

The herbaceous vegetation of the saltern shall consist of >50% bare sand cover, >10% typical saltern species cover, <10% non-saltern species cover, <10% saltern shrub species cover.

f. Species composition of recruiting wetland vegetation is indicative of the wetland type specified in criterion "a."

g. Coverage by nuisance or exotic species does not exceed 1% percent in any assessment area within the mitigation site and 1% percent for the entire mitigation site.

h. The wetland mitigation area can be determined to be a wetland or other surface water according to Chapter 62-340, F.A.C.

31. **WETLAND MITIGATION SUCCESS CRITERIA MITIGATION AREA (Oligohaline Marsh - Assessment Areas: Oligohaline Marsh, Oligohaline Marsh Altered, Oligohaline Marsh Dirt Road, Oligohaline Marsh Borrow Pit, Oligohaline Spoil Areas) (14.35 acres)**

Mitigation is expected to offset adverse impacts to wetlands and other surface waters caused by regulated activities and to achieve viable, sustainable ecological and hydrological wetland functions. Mitigation will be considered successful when the Permittee demonstrates that the conditions in the assessment area have met the success criteria below:

a. The assessment area can reasonably be characterized as an Oligohaline Marsh (FLUCCS 642) as determined by the Florida Land Use and Cover and Forms Classification System (third edition; January 1999).

b. Topography, water depth and water level fluctuation in the mitigation area are characteristic of the wetlands/surface water type specified in criterion "a."

c. Vegetative Structure and Composition shall meet the criteria specified:

The herbaceous vegetation shall consist of >80% herbaceous species cover, and <10% shrub species cover.

d. Species composition of recruiting wetland vegetation is indicative of the wetland type specified in criterion "a."

e. Coverage by nuisance or exotic species does not exceed 1% percent in any assessment area within the mitigation site and 1% percent for the entire mitigation site.

f. The wetland mitigation area can be determined to be a wetland or other surface water according to Chapter 62-340, F.A.C.

32. **WETLAND MITIGATION SUCCESS CRITERIA MITIGATION AREA (Tidal Pools and Ponds - Assessment Areas: Saltern Ponds, Tidal Pool) (7.90 acres)**

Mitigation is expected to offset adverse impacts to wetlands and other surface waters caused by regulated activities and to achieve viable, sustainable ecological and hydrological wetland functions. Mitigation will be considered successful when the Permittee demonstrates that the conditions in the assessment area have met the success criteria below:

a. The assessment area can reasonably be characterized as an Intermittent Ponds (FLUCCS 653) as determined by the Florida Land Use and Cover and Forms Classification System (third edition; January 1999).

b. Topography, water depth and water level fluctuation in the mitigation area are characteristic of the wetlands/surface water type specified in criterion "a."

c. Saltern Pond Assessment Area:

Fish Utilization shall meet the criteria specified:

Fish abundance of the saltern ponds will not be significantly different (not less than 95%) from fish abundance of the mangrove pond reference site (on E.G. Simmons Park).

In the event that fish abundance increases in the with-mitigation condition, based on an annual composite cycle, but stabilizes over a period of two years at a level which is intermediate between the baseline condition and the condition at the reference site, the fish abundance data will be scaled against the reference site to quantify partial success and award a proportional number of final credits.

Water Quality shall meet the criteria specified:

Dissolved oxygen (DO) in the water column at low tide will increase after restoration compared to the current condition.

Hydrological Regime shall meet the criteria specified:

Tidal amplitude will increase after restoration compared to the current condition .

d. Tidal Pool Assessment Area:

Bird Utilization shall meet the criteria specified:

Bird abundance of the tidal pool will not be significantly different (not less than 95%) from bird abundance of the tidal flat reference site (on Wolf Branch Park).

In the event that bird abundance increases in the with-mitigation condition, based on an annual composite cycle, but stabilizes over a period of two years at a level which is intermediate between the baseline condition and the condition at the reference site, the bird abundance data will be scaled against the reference site to quantify partial success and award a proportional number of final credits.

e. Species composition of recruiting wetland vegetation is indicative of the wetland type specified in criterion "a."

f. Coverage by nuisance or exotic species does not exceed 1% percent in any assessment area within the mitigation site and 1% percent for the entire mitigation site.

g. The wetland mitigation area can be determined to be a wetland or other surface water according to Chapter 62-340, F.A.C.

33. **WETLAND MITIGATION SUCCESS CRITERIA MITIGATION AREA (Tidal Tributaries-  
Assessment Area: Clogged Tributary) (1.71 acres)**

Mitigation is expected to offset adverse impacts to wetlands and other surface waters caused by regulated activities and to achieve viable, sustainable ecological and hydrological wetland functions. Mitigation will be considered successful when the Permittee demonstrates that the conditions in the assessment area have met the success criteria below:

a. The assessment area can reasonably be characterized as a Tidal Tributary (FLUCCS 510) as determined by the Florida Land Use and Cover and Forms Classification System (third edition; January 1999).

b. Topography, water depth and water level fluctuation in the mitigation area are characteristic of the wetlands/surface water type specified in criterion "a."

c. Fish Utilization shall meet the criteria specified:

Fish abundance of the shrub swamp will not be significantly different (not less than 95%) from fish abundance of the tidal tributary reference site (the unobstructed tributary on E.G. Simmons Park).

In the event that fish abundance increases in the with-mitigation condition, based on an annual composite cycle, but stabilizes over a period of two years at a level which is intermediate between the baseline condition and the condition at the reference site, the fish abundance data will be scaled against the reference site to quantify partial success and award a proportional number of final credits.

d. Water Quality shall meet the criteria specified:

Dissolved oxygen (DO) in the water column at low tide will increase after restoration compared to the current condition.

e. Hydrological Regime shall meet the criteria specified:

Tidal amplitude will increase after the restoration compared to the current condition .

f. The wetland mitigation area can be determined to be a wetland or other surface water according to Chapter 62-340, F.A.C.

**WETLAND MITIGATION SUCCESS CRITERIA MITIGATION AREA (Seagrass) (38.08 acres)**

Mitigation is expected to offset adverse impacts to wetlands and other surface waters caused by regulated activities and to achieve viable, sustainable ecological and hydrological wetland functions. Mitigation will be considered successful when the Permittee demonstrates that the conditions in the assessment area have met the success criteria below:

a. The assessment area can reasonably be characterized as a Seagrass (FLUCCS 911) as determined by the Florida Land Use and Cover and Forms Classification System (third edition; January 1999).

b. Mitigation activities in all upgradient habitats have been completed and final credits released.

**GENERAL CONDITIONS**

1. The general conditions attached hereto as Exhibit "A" are hereby incorporated into this permit by reference and the Permittee shall comply with them.

**Michelle K. Hopkins, P.E.**

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Authorized Signature

## EXHIBIT A

### GENERAL CONDITIONS:

1. All activities shall be implemented as set forth in the plans, specifications and performance criteria as approved by this permit. Any deviation from the permitted activity and the conditions for undertaking that activity shall constitute a violation of this permit.
2. This permit or a copy thereof, complete with all conditions, attachments, exhibits, and modifications, shall be kept at the work site of the permitted activity. The complete permit shall be available for review at the work site upon request by District staff. The permittee shall require the contractor to review the complete permit prior to commencement of the activity authorized by this permit.
3. For Standard General permits authorizing incidental site activities, the following limiting general conditions shall also apply:
  - a. If the decision to issue the associated individual permit is not final within 90 days of issuance of the incidental site activities permit, the site must be restored by the permittee within 90 days after notification by the District. Restoration must be completed by re-contouring the disturbed site to previous grades and slopes re-establishing and maintaining suitable vegetation and erosion control to provide stabilized hydraulic conditions. The period for completing restoration may be extended if requested by the permittee and determined by the District to be warranted due to adverse weather conditions or other good cause. In addition, the permittee shall institute stabilization measures for erosion and sediment control as soon as practicable, but in no case more than 7 days after notification by the District.
  - b. The incidental site activities are commenced at the permittee's own risk. The Governing Board will not consider the monetary costs associated with the incidental site activities or any potential restoration costs in making its decision to approve or deny the individual environmental resource permit application. Issuance of this permit shall not in any way be construed as commitment to issue the associated individual environmental resource permit.
4. Activities approved by this permit shall be conducted in a manner which does not cause violations of state water quality standards. The permittee shall implement best management practices for erosion and a pollution control to prevent violation of state water quality standards. Temporary erosion control shall be implemented prior to and during construction, and permanent control measures shall be completed within 7 days of any construction activity. Turbidity barriers shall be installed and maintained at all locations where the possibility of transferring suspended solids into the receiving waterbody exists due to the permitted work. Turbidity barriers shall remain in place at all locations until construction is completed and soils are stabilized and vegetation has been established. Thereafter the permittee shall be responsible for the removal of the barriers. The permittee shall correct any erosion or shoaling that causes adverse impacts to the water resources.
5. Water quality data for the water discharged from the permittee's property or into the surface waters of the state shall be submitted to the District as required by the permit. Analyses shall be performed according to procedures outlined in the current edition of Standard Methods for the Examination of Water and Wastewater by the American Public Health Association or Methods for Chemical Analyses of Water and Wastes by the U.S. Environmental Protection Agency. If water quality data are required, the permittee shall provide data as required on volumes of water discharged, including total volume discharged during the days of sampling and total monthly volume discharged from the property or into surface waters of the state.
6. District staff must be notified in advance of any proposed construction dewatering. If the dewatering activity is likely to result in offsite discharge or sediment transport into wetlands or surface waters, a written dewatering plan must either have been submitted and approved with the permit application or submitted to the District as a permit prior to the dewatering event as a permit modification. A water use permit may be required prior to any use exceeding the thresholds in Chapter 40D-2, F.A.C.
7. Stabilization measures shall be initiated for erosion and sediment control on disturbed areas as soon as

practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased.

8. Off-site discharges during construction and development shall be made only through the facilities authorized by this permit. Water discharged from the project shall be through structures having a mechanism suitable for regulating upstream stages. Stages may be subject to operating schedules satisfactory to the District.
9. The permittee shall complete construction of all aspects of the surface water management system, including wetland compensation (grading, mulching, planting), water quality treatment features, and discharge control facilities prior to beneficial occupancy or use of the development being served by this system.
10. The following shall be properly abandoned and/or removed in accordance with the applicable regulations:
  - a. Any existing wells in the path of construction shall be properly plugged and abandoned by a licensed well contractor.
  - b. Any existing septic tanks on site shall be abandoned at the beginning of construction.
  - c. Any existing fuel storage tanks and fuel pumps shall be removed at the beginning of construction.
11. All surface water management systems shall be operated to conserve water in order to maintain environmental quality and resource protection; to increase the efficiency of transport, application and use; to decrease waste; to minimize unnatural runoff from the property and to minimize dewatering of offsite property.
12. At least 48 hours prior to commencement of activity authorized by this permit, the permittee shall submit to the District a written notification of commencement indicating the actual start date and the expected completion date.
13. Each phase or independent portion of the permitted system must be completed in accordance with the permitted plans and permit conditions prior to the occupation of the site or operation of site infrastructure located within the area served by that portion or phase of the system. Each phase or independent portion of the system must be completed in accordance with the permitted plans and permit conditions prior to transfer of responsibility for operation and maintenance of that phase or portion of the system to a local government or other responsible entity.
14. Within 30 days after completion of construction of the permitted activity, the permittee shall submit a written statement of completion and certification by a registered professional engineer or other appropriate individual as authorized by law, utilizing the required Statement of Completion and Request for Transfer to Operation Entity form identified in Chapter 40D-1, F.A.C. Additionally, if deviation from the approved drawings are discovered during the certification process the certification must be accompanied by a copy of the approved permit drawings with deviations noted.
15. This permit is valid only for the specific processes, operations and designs indicated on the approved drawings or exhibits submitted in support of the permit application. Any substantial deviation from the approved drawings, exhibits, specifications or permit conditions, including construction within the total land area but outside the approved project area(s), may constitute grounds for revocation or enforcement action by the District, unless a modification has been applied for and approved. Examples of substantial deviations include excavation of ponds, ditches or sump areas deeper than shown on the approved plans.
16. The operation phase of this permit shall not become effective until the permittee has complied with the requirements of the conditions herein, the District determines the system to be in compliance with the permitted plans, and the entity approved by the District accepts responsibility for operation and maintenance of the system. The permit may not be transferred to the operation and maintenance entity approved by the District until the operation phase of the permit becomes effective. Following inspection and approval of the permitted system by the District, the permittee shall request transfer of the permit to the responsible operation and maintenance entity approved by the District, if different from the permittee. Until a transfer is approved by the District, the permittee shall be liable for compliance with the terms of the permit.

17. Should any other regulatory agency require changes to the permitted system, the District shall be notified of the changes prior to implementation so that a determination can be made whether a permit modification is required.
18. This permit does not eliminate the necessity to obtain any required federal, state, local and special District authorizations including a determination of the proposed activities' compliance with the applicable comprehensive plan prior to the start of any activity approved by this permit.
19. This permit does not convey to the permittee or create in the permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee, or convey any rights or privileges other than those specified in the permit and Chapter 40D-4 or Chapter 40D-40, F.A.C.
20. The permittee shall hold and save the District harmless from any and all damages, claims, or liabilities which may arise by reason of the activities authorized by the permit or any use of the permitted system.
21. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under section 373.421(2), F.S., provides otherwise.
22. The permittee shall notify the District in writing within 30 days of any sale, conveyance, or other transfer of ownership or control of the permitted system or the real property at which the permitted system is located. All transfers of ownership or transfers of a permit are subject to the requirements of Rule 40D-4.351, F.A.C. The permittee transferring the permit shall remain liable for any corrective actions that may be required as a result of any permit violations prior to such sale, conveyance or other transfer.
23. Upon reasonable notice to the permittee, District authorized staff with proper identification shall have permission to enter, inspect, sample and test the system to insure conformity with District rules, regulations and conditions of the permits.
24. If historical or archaeological artifacts are discovered at any time on the project site, the permittee shall immediately notify the District and the Florida Department of State, Division of Historical Resources.
25. The permittee shall immediately notify the District in writing of any previously submitted information that is later discovered to be inaccurate.

SOUTHWEST FLORIDA  
WATER MANAGEMENT DISTRICT

**NOTICE OF  
AUTHORIZATION  
TO COMMENCE CONSTRUCTION**

Mangrove Point Mitigation Bank

PROJECT NAME

Environmental

PROJECT TYPE

HILLSBOROUGH

COUNTY

S36/T31S/R18E, S31/T31S/R19E, S25/T31S/R18E

SEC(S)/TWP(S)/RGE(S)

Mangrove Point Mitigation Bank, LLC

PERMITTEE

See permit for additional permittees

APPLICATION ID/PERMIT NO: 662221 / 43035355.002

DATE ISSUED: November 22, 2013



Michelle K. Hopkins, P.E.

Issuing Authority

**THIS NOTICE SHOULD BE CONSPICUOUSLY  
DISPLAYED AT THE SITE OF THE WORK**

## Notice of Rights

### ADMINISTRATIVE HEARING

1. You or any person whose substantial interests are or may be affected by the District's intended or proposed action may request an administrative hearing on that action by filing a written petition in accordance with Sections 120.569 and 120.57, Florida Statutes (F.S.), Uniform Rules of Procedure Chapter 28-106, Florida Administrative Code (F.A.C.) and District Rule 40D-1.1010, F.A.C. Unless otherwise provided by law, a petition for administrative hearing must be filed with (received by) the District within 21 days of receipt of written notice of agency action. "Written notice" means either actual written notice, or newspaper publication of notice, that the District has taken or intends to take agency action. "Receipt of written notice" is deemed to be the fifth day after the date on which actual notice is deposited in the United States mail, if notice is mailed to you, or the date that actual notice is issued, if sent to you by electronic mail or delivered to you, or the date that notice is published in a newspaper, for those persons to whom the District does not provide actual notice.
2. Pursuant to Subsection 373.427(2)(c), F.S., for notices of intended or proposed agency action on a consolidated application for an environmental resource permit and use of sovereignty submerged lands concurrently reviewed by the District, a petition for administrative hearing must be filed with (received by) the District within 14 days of receipt of written notice.
3. Pursuant to Rule 62-532.430, F.A.C., for notices of intent to deny a well construction permit, a petition for administrative hearing must be filed with (received by) the District within 30 days of receipt of written notice of intent to deny.
4. Any person who receives written notice of an agency decision and who fails to file a written request for a hearing within 21 days of receipt or other period as required by law waives the right to request a hearing on such matters.
5. Mediation pursuant to Section 120.573, F.S., to settle an administrative dispute regarding District intended or proposed action is not available prior to the filing of a petition for hearing.
6. A request or petition for administrative hearing must comply with the requirements set forth in Chapter 28.106, F.A.C. A request or petition for a hearing must: (1) explain how the substantial interests of each person requesting the hearing will be affected by the District's intended action or proposed action, (2) state all material facts disputed by the person requesting the hearing or state that there are no material facts in dispute, and (3) otherwise comply with Rules 28-106.201 and 28-106.301, F.A.C. Chapter 28-106, F.A.C. can be viewed at [www.flrules.org](http://www.flrules.org) or at the District's website at [www.WaterMatters.org/permits/rules](http://www.WaterMatters.org/permits/rules).
7. A petition for administrative hearing is deemed filed upon receipt of the complete petition by the District Agency Clerk at the District's Tampa Service Office during normal business hours, which are 8:00 a.m. to 5:00 p.m., Monday through Friday, excluding District holidays. Filings with the District Agency Clerk may be made by mail, hand-delivery or facsimile transfer (fax). The District does not accept petitions for administrative hearing by electronic mail. Mailed filings must be addressed to, and hand-delivered filings must be delivered to, the Agency Clerk, Southwest Florida Water Management District, 7601 Highway 301 North, Tampa, FL 33637-6759. Faxed filings must be transmitted to the District Agency Clerk at (813) 987-6746. Any petition not received during normal business hours shall be filed as of 8:00 a.m. on the next business day. The District's acceptance of faxed petitions for filing is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation, available for viewing at [www.WaterMatters.org/about](http://www.WaterMatters.org/about).

## **JUDICIAL REVIEW**

1. Pursuant to Sections 120.60(3) and 120.68, F.S., a party who is adversely affected by District action may seek judicial review of the District's action. Judicial review shall be sought in the Fifth District Court of Appeal or in the appellate district where a party resides or as otherwise provided by law.
2. All proceedings shall be instituted by filing an original notice of appeal with the District Agency Clerk within 30 days after the rendition of the order being appealed, and a copy of the notice of appeal, accompanied by any filing fees prescribed by law, with the clerk of the court, in accordance with Rules 9.110 and 9.190 of the Florida Rules of Appellate Procedure (Fla. R. App. P.). Pursuant to Fla. R. App. P. 9.020(h), an order is rendered when a signed written order is filed with the clerk of the lower tribunal.

GreenSource Environmental Professionals, Inc.  
Attn: Pamela E. Harris  
3824 West San Juan Street  
Tampa, FL 33629

Mangrove Point Mitigation Bank, LLC  
Attn: H. Collins Forman, Jr.  
1323 Southeast 3rd Avenue  
Fort Lauderdale, FL 33316