Natural Resources Evaluation

Florida Department of Transportation

District 5

S.R. 401 Bridge Replacement PD&E Study

Limits of Project: From approximately 100 feet south of the S.R. 528 overpass bridges over S.R. 401 to approximately 3,550 feet north to the Charles M. Rowland Drive (Cruise Terminal Exit) gore area

Brevard County, Florida

Financial Management Number: 444787-1-22-01

ETDM Number: 14397

Date: 12/14/22

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 dated May 26, 2022 and executed by the Federal Highway Administration and FDOT.

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1.0 EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study to evaluate improvements to the State Road (S.R.) 401 bridges in Brevard County. The purpose of this study is to develop and analyze alternatives for improving the bridges to address access, future mobility, and safety needs. S.R. 401 provides a vital connection to the Port Canaveral's operations including major cruise terminals and cargo terminals. The S.R. 401 bridges serve as the primary access to Cape Canaveral Air Force Station, Naval Ordinance Test Unit, facilities for the U.S. Coast Guard, and access to Space Florida operations.

This Natural Resources Evaluation (NRE) Report is prepared in accordance with the FDOT PD&E Manual Chapters (Wetlands and Other Surface Waters, Protected Species and Habitat, and Essential Fish Habitat), all dated July 1, 2020, and other state and federal laws and requirements.

This project resulted in an effect determination of **May Affect, Not Likely to Adversely Affect** on the federally listed green sea turtle, loggerhead sea turtle, hawksbill sea turtle, leatherback sea turtle, Kemp's ridley sea turtle, west Indian manatee, giant manta ray, and smalltooth sawfish. This project resulted in an effect determination of **No Effect** on the eastern indigo snake, Atlantic salt marsh snake, piping plover, wood stork, rufa red knot, eastern black rail, Florida scrub-jay, southeastern beach mouse, Carter's mustard, and Lewton's polygala.

The project will also have **No Adverse Effect Anticipated** on the state listed reddish egret, little blue heron, tricolored heron, and roseate spoonbill. The project will have **No Effect Anticipated** on the gopher tortoise, black skimmer, American oystercatcher, and least tern.

There are 14 wetlands and 6 other surface waters (OSW) located within the project area. Due to construction impacts, it is estimated that approximately 1.18 acres of wetlands and approximately 0.09 acres of OSWs will be impacted. It is anticipated that mitigation for impacts to wetlands will be at a permitted mitigation bank. This will be finalized during final design, as currently there are no mangrove credits available from surrounding mitigation banks as of this report date.

Mangrove habitats and sand/shell bottom that are Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPC) were identified along the northwest side of S.R. 401 and underneath the bridges. Due to roadway widening, it is anticipated that approximately 0.10 acres of mangrove EFH will be impacted as well as approximately 0.09 acres of OSWs will be impacted of sand/shell bottom EFH due to bridge widening and in-water work.

2.0 PROJECT OVERVIEW

2.1 Project Description and Location

The FDOT District 5 is conducting a PD&E Study to evaluate replacement of the three existing low-level bascule bridges with a new high-level fixed span bridge over the Canaveral Barge Canal, a navigable channel, in Brevard County, Florida. The project limits begin approximately 100 feet south of the S.R. 528 overpass bridges over S.R. 401 and continue approximately 3,550 feet north to Charles M. Rowland Drive (Cruise Terminal Exit), which includes 315-foot-long barge canal bridges. In addition to S.R. 401, the project also includes eastbound and northbound ramps from S.R. 528 to S.R. 401. **Figure 2.1** depicts the Project Location Map.

The bridges provide a vital connection to Port Canaveral's operations including major cruise and cargo terminals. The bridges also serve as the primary access to Cape Canaveral Air Force Station, Naval Ordnance Test Unit, facilities for the U.S. Coast Guard, and access to Space Florida operations. The existing 354-foot single-leaf bascule bridges consists of three separate structures accommodating southbound (SB) and northbound (NB) traffic – Bridge No. 700030 (SB) (1963), Bridge No. 700031 (SB) (1963), and Bridge No. 700117 (NB) (1972). The existing bridges provide a 90-foot-wide navigational horizontal clearance and a 25-foot navigational vertical clearance above mean water level when the bridges are in the closed position. The current bridges provide two 12-foot-wide travel lanes in each direction with 2-foot-wide shoulders. There are no existing sidewalks or bicycle lanes on the existing causeway and bridge. **Figure 2.2** depicts the existing typical section.

The existing bridges have been classified as functionally obsolete. Bridge improvements will provide additional capacity to address future traffic growth resulting from strategic expansion plans for Port Canaveral and military stakeholders in the immediate area. A Vessel Survey and Navigation Study was conducted by FDOT, and completed in October 2021, to assess navigational needs from the surrounding community to assist in determining the appropriate height for the replacement of the bridges. This study is located in the project file.

2.2 Purpose and Need of the Project

The purpose of this PD&E study is to evaluate improvements to, or replacement, of the existing bascules bridges over the Canaveral Barge Canal. This project will enable the FDOT to determine whether to replace in-kind, or replace with a low, mid, or high-level bridge option.

The primary need for the project is based on system linkage, modal interrelationships, improved traffic and pedestrian flows and safety enhancements to accommodate future growth.

SR 401 Bridge Replacement PD&E Study

Project Location Map

Legend

- Impact Footprint Boundary
- Dredged Bays and Estuaries
- Bays and Estuaries
- Atlantic Ocean

2017 BasemapSource: Esri,

N

0 3,400'

Figure 2.1

Date Revised: 9/13/2022

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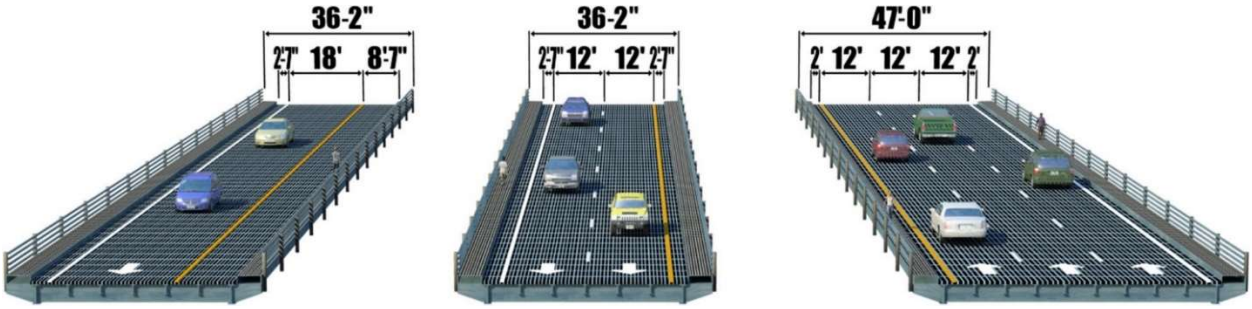
Figure 2.2 – Existing Typical Section



System Linkage

S.R. 401 is designated as a Strategic Intermodal System (SIS) connector, providing access to Cape Canaveral, a SIS Seaport. Port Canaveral's operations include major cruise terminals, cargo terminals, and substantial tanker truck traffic. Additionally, S.R. 401 is classified as a part of the State Strategic Highway Network (STRAHNET) connector by the Military Surface Deployment and Distribution Command as a connection to an ocean terminal to deploy and sustain U.S. forces on a global basis. The two southbound bridges (700030 and 700031) were constructed in 1963 and the northbound bridge (700117) was constructed in 1972. The bridges are the primary access to Cape Canaveral Air Force Station and Space Florida operations, Naval Ordinance Test Unit (NOTU), facilities for the U.S. Coast Guard, and access to Space Florida operations. The maximum weight limits of the existing bridges restrict heavy loads. The 2011 Spaceport Area Transportation Infrastructure Assessment by the Space Coast Transportation Planning Organization (TPO) identified the weight limit as an impediment to expanding port freight operations and maximizing military uses.

Modal Interrelationships

The 2019-2020 Port Directory shows that Port Canaveral accommodated approximately 4.5 million passengers and approximately 6,400,000 tons of cargo in 2018, in addition to outdoor recreation such as fishing and boating. The S.R. 401 bridges provide access to/from Port Canaveral, but do not have pedestrian nor bicycle facilities. As the second largest cruise port in the world today, Port Canaveral's 30-year Strategic Vision Plan identifies the Port's successful growth as rooted in the link between Central Florida theme parks and the cruise industry. The surface transportation at this point is via the S.R. 401 bridges.

The 2017, the FDOT S.R. 401 Bridge Alternatives Analysis Study showed 14,900 average annual daily traffic (AADT) with 13% truck traffic. The truck traffic includes fuel transport, which accounts for about 40% of the supply for Central Florida. While the Port Canaveral

30-Year Strategic Vison Plan notes that petroleum cargo may level off as the U.S. transitions to more renewable energy sources, cargo is expected to grow to more than three times the current tonnage by 2048. Today, the primary transportation options to distribute cargo is currently via truck or barge. Minimizing delays for the road and vessel usage will better position Port Canaveral to provide economic growth. The S.R. 401 bridges opening to marine vessels create traffic delays to the port and cruise terminal. Similarly, marine vessels are delayed based on operation restrictions. Traffic evaluations and a vessel survey will be conducted during the PD&E study to determine factors to reduce delays. Finally, Port Canaveral's Vision Plan considers the sector north of the S.R. 401 bridges as having more demand for growth than land available, which further adds to the importance of this distribution connectivity.

Preferred Alternative

This project will replace the existing three bascule bridges with two separate 3-lane high-level, fixed span concrete bridges located on the existing bridge alignment, in the northbound/southbound directions. This alternative will have 10-foot shoulders on either side and three 12-foot lanes in both the northbound and southbound directions. This improvement would provide a maximum 65-foot vertical clearance above mean high water (MHW) and a 90-foot horizontal clearance at the main navigational channel. The total bridge length is 3,210 feet, and the maximum grade is 6%. The existing bascule bridges are classified as functionally obsolete, and this alternative would address that issue. **Figure 2.3** depicts the proposed typical section and **Figure 2.4** shows this alternative's profile.

Figure 2.3 – Proposed Typical Section

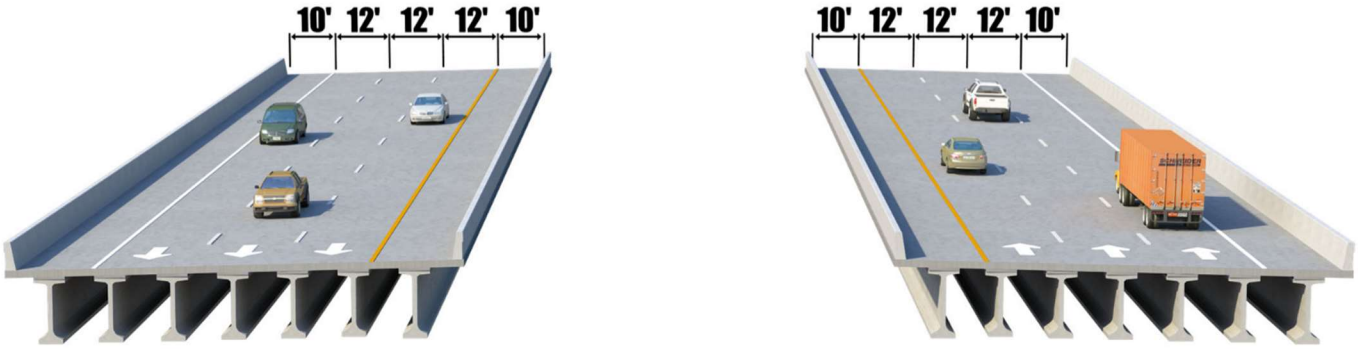
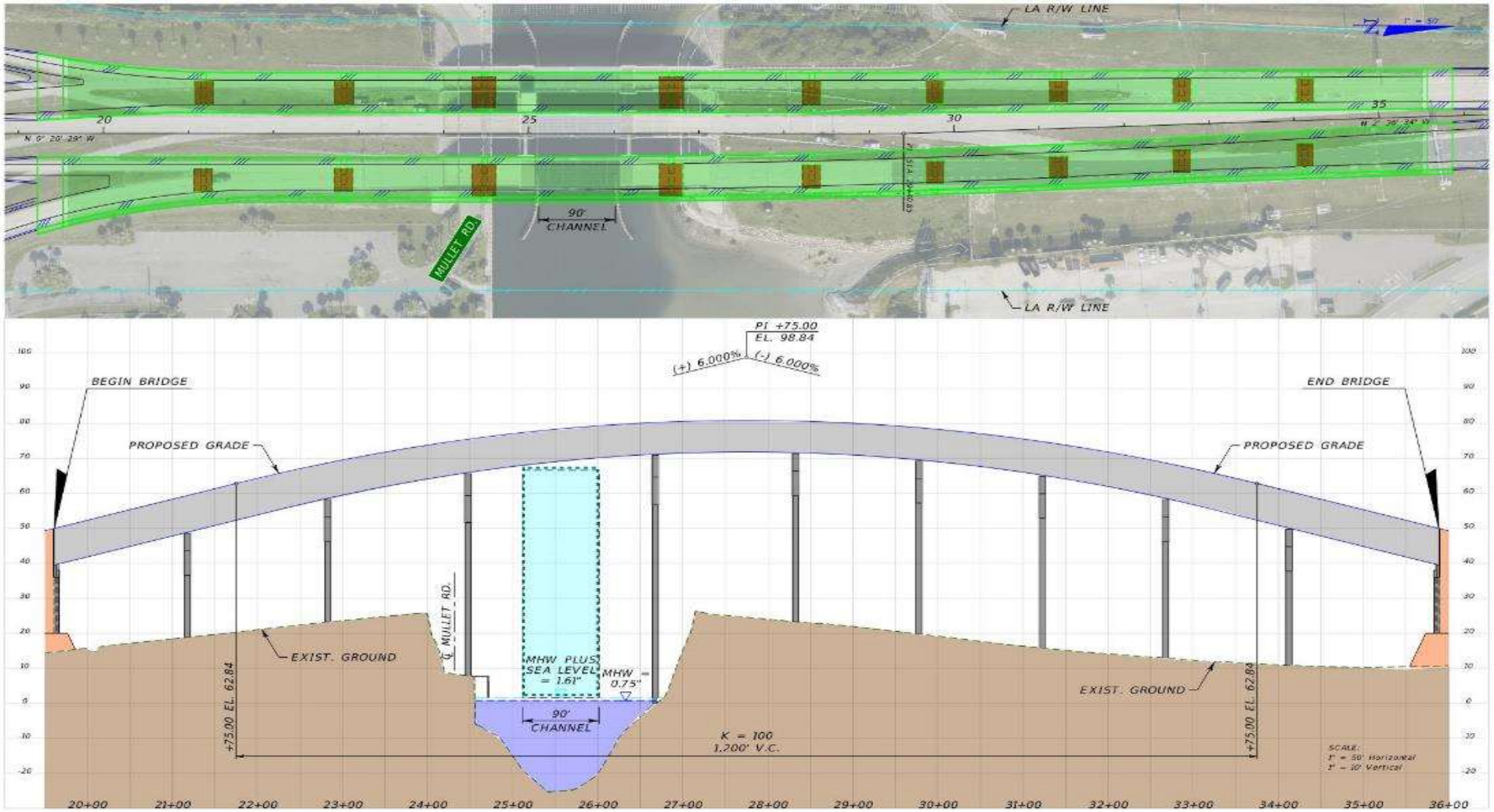


Figure 2.4 – High-Level Fixed Bridge Profile



3.0 EXISTING CONDITIONS

This project is located in eastern Brevard County within the unincorporated town of Merritt Island, approximately three miles west of the Atlantic Ocean. The project crosses the Canaveral Barge Canal, which is part of the US Army Corps of Engineers (USACE) navigable channel to the west and connects the Port to the Indian River Lagoon (IRL). The project is located entirely with the Port Canaveral boundary. To the east of the project area is the developed components of Port Canaveral including cruise ship terminals and marina and to the west is the IRL, Merritt Island Refuge, and Banana River Aquatic Preserve. **Figure 2.1** depicts these features.

3.1 Existing and Future Land Use

Existing land use within and adjacent to the project was mapped using the Land Use and Land Cover Layer from the Department of Environmental Protection (FDEP) Geographic Information System (GIS) Data Catalog. Land use includes transportation and Port facilities. Future land use for the project will continue to be transportation and Port Facilities according to the Port Strategic Vision Plan (See **Figure 3.1** below).

3.2 Soils

Based on the Natural Resources Conservation Service (NRCS) Soil Survey, mapped soil types within proximity to the proposed improvements are classified in **Table 3.1** and shown in **Figure 3.2**.

One of the six soils listed below in **Table 3.1** is classified as hydric. These soils are mainly characterized as poorly to very poorly drained muck or sandy soils. Most of the areas within and adjacent to the project area have been disturbed by infrastructure development and may not currently exhibit historic soil conditions.

3.3 Natural Features

Natural, undeveloped areas in the project area include mangrove swamps, saltwater ponds, and bays and estuaries, and are present to the south, west, and north of the project. The project is also adjacent to Avocet Lagoon, a 200+ acre wetland that provides foraging and potential nesting habitat for numerous bird species.

Figure 3.1 – Future Land Use Map

Table 3.1: Mapped Soils within 500 Feet of the Project Area	
Soil Name	**Hydric Rating**
Canaveral-Anclote complex, gently undulating	No
Canaveral-Urban land complex	No
Turnbull and Riomar soils, tidal	Yes
Quartzipsamments, smoothed	No
Water	N/A
Waters of the Atlantic Ocean	N/A

The project is located adjacent to the IRL. Other major natural features within and adjacent to the project area were mapped using the *Florida Natural Areas Inventory (FNAI) Conservation Lands GIS Data Catalog,* and the *Comprehensive Everglades Restoration Plan (CERP) GIS Data Catalog.* There are two other natural features within a quarter mile of the project area. These areas are managed for public recreation and wildlife observation and preservation. The sites are briefly discussed below and previously shown in **Figure 2.1**.

Merritt Island National Wildlife Refuge - The refuge is located to the west and north of the project. This 140,000-acre wildlife refuge utilizes the space that was initially purchased for NASA's John F. Kennedy Space Center. Today, the refuge is located on a bird migration area, the Atlantic Flyway, and supports over 500 species of wildlife. The refuge includes multiple trails, a manatee observation deck, a 3.5-mile wildlife drive, and a beach. Merritt Island National Wildlife Refuge is also an Outstanding Florida Water (OFW) and is part of the IRL.

Banana River Aquatic Preserve - The Banana River Aquatic Preserve is located to the south and west of the project. This 30,000-acre preserve is owned by FDEP and hosts a large population of manatees (300-500 individuals/day). The preserve supports the largest pelican rookery on the Atlantic coast and has nearby boat ramps for water activities. The Banana River Aquatic Preserve is also an OFW and is part of the IRL.

SR 401 Bridge Replacement PD&E Study

Soils Map

Legend

- Impact Footprint Boundary
- 9: Canaveral-Anclote complex, gently undulating
- 10: Canaveral - Urban land complex
- 52: Quartzipsamments, smoothed
- 58: Turnbull and Riomar soils, tidal
- 500 Foot Buffer

2017 BasemapSource: Esri,

N

0 790'

Figure 3.2

Date Revised: 9/13/2022

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4.0 ASSESSMENT AND METHODOLOGY

The following methodologies were used to determine what species, habitats, wetlands, OSWs, and EFH were present within/ adjacent to the project area, if any. Photographs from field surveys are included in **Appendix A**. Potential impacts from barge staging and construction noise impacts may occur but will be evaluated during the final design/permitting phase.

A combination of windshield surveys and pedestrian transects were used to conduct the field reviews for species, habitat, wetlands, and OSWs on August 17, 18, and 19, 2021 during daylight hours. Surveys were broken into four quadrants: northwest, northeast, southwest, and southeast; separated by S.R. 401 and the Canal. Follow up surveys were conducted on February 24, 2022, to review additional wetland areas and confirm vegetation present.

Surveys in the southwest quadrant, the Avocet Lagoon, were surveyed for species only and a full wetland survey was not conducted since it is located outside of the defined footprint of impact, however, fringe mangroves were observed around the lagoon. Wetlands south of the S.R. 528 interchange were previously delineated by FDOT and this information was used to determine existing features and any potential impacts. Visual surveys were conducted to confirm the presence of wetlands and dominant species at this location.

A benthic resources survey was performed underneath the S.R. 401 bridges on August 18 and 19, 2021 during daylight hours. Surveys were broken into north and south transects and were completed from west to east via SCUBA. The transects ran approximately 200 feet either direction from the centerline of the bridges and were conducted between the fender system and the riprap or wall. The purpose of this survey was to identify any benthic resources within the canal (i.e., seagrass, submerged aquatic vegetation, EFH) as well as to observe the presence of corals on the pilings and riprap (northside) and seawall (southside). Surveys were not conducted within the channel due to this being a maintained, dredged, navigational canal as well as due to safety concerns.

An additional benthic presence/absence survey for seagrass was conducted along the west side of S.R. 401 from approximately 900 feet north of the bridge to the northern end of the project. The survey was conducted via snorkeling parallel, meandering tracks and included the area from the shoreline out, approximately 50 feet. Water depth was shallow, between two to three feet. The visibility was extremely poor and was typically around one foot.

5.0 PROTECTED SPECIES AND HABITAT

This project was evaluated for impacts to wildlife and habitat resources, including protected species in accordance with *50 Code of Federal Regulations (CFR) Part 402 of*

the Endangered Species Act (ESA) of 1973, as amended, and *the FDOT PD&E Manual.* Wildlife species are protected under the ESA, the Migratory Bird Treaty Act (MBTA), and the State of Florida, pursuant to Florida Statute 379.411.

Wetland habitats exist within the project, providing potential nesting and foraging habitat for federal and state-listed species. Critical habitat for the manatee exists within the project area and the Canaveral Barge Canal also provides potential habitat and access to and from the IRL/ocean for manatees, sea turtles, giant manta ray, and smalltooth sawfish. Fringe mangrove swamps within and adjacent to the project area provide both EFH and potential suitable foraging habitat for listed species. Tidal flats and salt marshes are also present by the bridge (north side) and may also provide foraging habitat for listed bird species. The Avocet Lagoon may provide foraging and nesting habitat for listed bird species as well.

5.1 Data Collection

A preliminary desktop review was conducted prior to performing field assessments to establish baseline information. Data collection through literature review, Environmental Technical Advisory Team (ETAT) comments, agency database searches, agency coordination, and GIS analyses were performed to identify federal and state protected species occurring or potentially occurring within the project area that may be impacted by the construction of the proposed replacement bridge and improvements. Information sources and databases used for the wildlife analyses include the following:

- *ESRI and Google Earth aerial imagery*
- *FDOT's Efficient Transportation Decision Making (ETDM) Screening Summary Report Number 14397 (incorporated by reference)*
- *FDOT's ETDM Environmental Screening Tool (EST)*
- *Florida Natural Areas Inventory (FNAI) Biodiversity Matrix*
- *Florida Fish and Wildlife Conservation Commission (FWC) databases*
- *FWC Bald Eagle Nesting database*
- *FWC Waterbird Colony Locator*
- *FWC's Strategic Habitat Conservation Areas (SHCA)*
- *NMFS EFH Mapper, v3.0*
- *USFWS Environmental Conservation Online System (ECOS)*
- *USFWS Information for Planning and Consultation (IPaC)*
- *USFWS Listed Species GIS databases*
- *The Cornell Lab or Ornithology: eBird.org*

5.2 Listed Species Effect Determinations

The *FDOT ETDM Screening Summary Report, FDOT EST, US Fish and Wildlife Service's (USFWS) listed species database for Brevard County*, *FNAI, and IPaC* were reviewed to develop a project-specific protected species list. ETAT comments are addressed in Section 8.1. This list was then compared to field conditions during the field reviews to correlate the habitat of each listed species with habitat present within the project area. Per the *USFWS IPaC database*, critical habitat for manatee is present. Consultation areas are present for scrub-jay and piping plover.

5.2.1 Federally Listed Species

The potential effect on each federally listed species is summarized in **Table 5.1**. Note that species listed as federally endangered or threatened are also listed by the State of Florida as endangered or threatened. A total of 18 federally listed species were identified based on the database review (IPaC) to potentially occur in the project area. Each species, their habitat requirements, and potential for occurrence are briefly discussed in the following sections. Note the potential for occurrence is based on additional research on species habitats and field reviews.

Table 5.1: Federally Listed Species Determination of Effect

Scientific Name	Common Name	Listing Status*	Determination of Effect**	Jurisdictional Agency	Potential of Occurrence
Reptiles					
Chelonia mydas	Green sea turtle	FT	MANLAA	NMFS/ USFWS	High (swimming) None (nesting)
Caretta caretta	Loggerhead sea turtle	FT	MANLAA	NMFS/ USFWS	High (swimming) None (nesting)
Eretmochelys imbricata	Hawksbill sea turtle	FE	MANLAA	NMFS/ USFWS	Low (swimming) None (nesting)
Dermochelys coriacea	Leatherback sea turtle	FE	MANLAA	NMFS/ USFWS	Low (swimming) None (nesting)
Lepidochelys kempii	Kemp's ridley sea turtle	FE	MANLAA	NMFS/ USFWS	Moderate (swimming) None (nesting)
Drymarchon corais couperi	Eastern indigo snake	FT	NE	USFWS	None
Nerodia clarkii taeniata	Atlantic salt marsh snake	FT	NE	USFWS	Low
Birds					
Charadrius melodus	Piping plover	FT	NE	USFWS	Moderate
Calidris canutus rufa	Rufa red knot	FT	NE	USFWS	Moderate

Table 5.1: Federally Listed Species Determination of Effect					
Scientific Name	**Common Name**	**Listing Status***	**Determination of Effect****	**Jurisdictional Agency**	**Potential of Occurrence**
Mycteria americana	Wood stork	FT	NE	USFWS	High
Laterallus jamaicensis spp. Jamaicensis	Eastern black rail	FT	NE	USFWS	None
Aphelocoma coerulescens	Florida scrub-jay	FT	NE	USFWS	None
Mammals					
Trichechus manatus latirostris	West Indian (Florida) Manatee	FT	MANLAA	USFWS	High
Peromyscus polionotus niveiventris	Southeastern beach mouse	FT	NE	USFWS	None
Fish					
Manta birostris	Giant manta ray	FT	MANLAA	NMFS	Moderate
Pristis pectinata	Smalltooth sawfish	FE	MANLAA	NMFS	Moderate
Plants					
Warea carteri	Carter's mustard	FE	NE	USFWS	None
Polygala lewtonii	Lewton's polygala	FE	NE	USFWS	None

Note: *FT = Federally designated Threatened; FE* = Federally designated Endangered
** NE = No Effect; MANLAA = May Effect, Not Likely to Adversely Effect

Swimming Sea turtles

Sea turtles that have the potential to exist within the project area include the loggerhead (*Caretta caretta*), green turtle (*Chelonia mydas*), leatherback (*Dermochelys coriacea*), Kemp's ridley (*Lepidochelys kempii*), and Hawksbill (*Eretmochelys imbricata*). The green and loggerhead sea turtles are listed as Threatened and the hawksbill, leatherback, and Kemp's Ridley turtles are listed as Endangered by National Marine Fisheries Service (NMFS). These sea turtles, when swimming, are regulated by NMFS. These marine turtles are often found in the coastal waters of Florida, although leatherbacks are rarely seen in coastal waters except when hatchlings are dispersing from nesting beaches. Swimming sea turtles have the potential to exist within the project construction area. Juvenile green turtles, Kemp's Ridley, and loggerheads are known to frequent bays or inlets. Juvenile sea turtles have the potential to exist within the project study limits, where they may seek calmer waters and forage in seagrass beds. Three juvenile green turtles were observed at the S.R. 401 bridges during field surveys.

Sea Turtle and Smalltooth Sawfish Construction Conditions will be followed during construction (see **Appendix B**). Given the potential for sea turtle movement through the Canaveral Barge Canal and waterways west of Port Canaveral, in-water work, and also

the use of Sea Turtle and Smalltooth Sawfish Construction Conditions, FDOT assigned a determination of **May Affect, Not Likely to Adversely Affect** for all five swimming sea turtle species.

Nesting Sea Turtles

The green and loggerhead sea turtles are listed as Threatened and the hawksbill, leatherback, and Kemp's Ridley turtles are listed as Endangered by USFWS. These sea turtles, when nesting, are regulated by USFWS. Sea turtles generally nest on sandy beaches near the dune lines, away from areas that are disturbed by tidal influences. These five sea turtles are known to nest on the east coast of Florida. No nesting habitat exists within the project footprint for these sea turtles. The Florida Sea Turtle Nesting Beach Monitoring Program has documented sea turtle nesting and classified nesting densities on the coastal beach north of the Canaveral Barge Canal as high for green sea turtles, and medium for loggerhead and leatherback. Kemp's ridley is listed as present, and hawksbill is listed as not present. For the coastal beach south of the Canaveral Barge Canal, nesting density is classified as low for green sea turtle, low for loggerhead, and low for leatherback. Both hawksbill and Kemp's ridley are listed as not present. Due to the lack of nesting habitat within the project footprint, FDOT assigned a determination of **No Effect** for all five nesting sea turtle species.

Eastern indigo snake

The eastern indigo snake (EIS) is designated as Threatened by the USFWS. This species may inhabit a variety of natural areas including forested uplands and wetlands as well as wet and dry prairies. These snakes often inhabit gopher tortoise burrows, although no burrows were observed within the area. No habitat for the gopher tortoise exists in the study area and none were observed during field reviews. There is negligible suitable habitat for eastern indigo snake within the project footprint and none were observed during field reviews. Given the lack of potential suitable habitat, a determination of **No Effect** was assigned to this species.

Atlantic salt marsh snake

The Atlantic salt marsh snake is listed as Threatened by the USFWS. Atlantic salt marsh snakes inhabit saltmarsh tidal flats that contain grasses such as glasswort (*Salicornia*), *Spartina*, and *Juncus*, as well as scattered black mangroves. According to FWC's Atlantic Salt Marsh Snake Habitat Map, the snake is not found in Brevard County. Negligible suitable habitat exists within the project footprint or surrounding area, therefore, FDOT determined this project will have **No Effect** to the Atlantic salt marsh snake.

Piping plover

The piping plover is listed as Threatened by USFWS. This species is found on open, sandy beaches as well as tidal flats and mudflats. Piping plover are found on both the Atlantic and Gulf coasts but are more common on the Gulf coast. This project is located within the USFWS Consultation Area for the piping plover (see **Figure 5.1**), but no

USFWS Critical Habitat is identified within the project study limits. Marginal suitable habitat in the form of tidal flats adjacent to the S.R. 401 bridges surrounded by developed land and mangroves is present adjacent to the project footprint. No beach habitat is present and no direct impact to tidal flats are anticipated. Additionally, piping plover were not observed during field reviews but have been recorded in the Avocet Lagoon (see **Figure 2.1**) according to eBird. Based on the above information, FDOT determined this project will have **No Effect** to the piping plover.

Rufa red knot

The rufa red knot is listed as Threatened by the USFWS. These migratory shorebirds need to encounter favorable habitats, food, and weather conditions within narrow seasonal windows along migration stopovers between wintering and breeding areas. This species is highly dependent on feeding on horseshoe crab eggs, particularly along the northeastern Atlantic coast. Three dead horseshoe crabs were observed in the area during field surveys. Potential suitable habitat for foraging exists adjacent to the project footprint in the form of tidal flats. Tidal flats will not be impacted and rufa red knots were not observed during field reviews. Based on the above information, FDOT determined this project will have **No Effect** to the rufa red knot.

Wood stork

Wood storks are listed as Threatened by USFWS. Wood storks utilize freshwater and estuarine habitats for nesting, foraging, and roosting. Wood storks are typically colonial nesters and construct their nests in medium to tall trees located within inundated forested wetlands including cypress swamps, mixed hardwood swamps, mangroves, and sloughs. No rookeries are present within the project footprint; however, the project is within the core foraging area (CFA) (18.6-mile radius) of two wood stork colonies (see **Figure 5.2**). As defined by the USFWS, suitable foraging habitat (SFH) includes wetlands and surface waters which have areas of water that are relatively calm, uncluttered by dense thickets of aquatic vegetation, and have permanent or seasonal water depth between 2 and 15 inches. Wetlands and OSWs that meet the criteria of SFH generally include herbaceous and saltwater marshes, herbaceous ditches/swales, ponds, and riverine systems. Lagoons adjacent to the project provide SFH habitat and about 10 wood storks were observed in the Avocet Lagoon, located just west of the project during field reviews. While some wetlands will be impacted, the area that will be impacted is forested mangroves adjacent to the roadway with no standing water. Therefore, the impacted mangroves are not SFH for the wood stork and no SFH will be impacted. Temporary impacts during construction may occur (i.e., noise disturbance during construction activities). Additionally, the Wood Stork Determination Key for Central and North Peninsular Florida was reviewed for this project (see **Appendix C**). Based on the above information and the Key, the FDOT has determined the project will have **No Effect** to the wood stork.

SR 401 Bridge Replacement PD&E Study

Piping Plover and Scrub Jay Consultation Area

Legend

- Impact Footprint Boundary
- Piping Plover Consultation Area
- Scrub Jay Consultation Area

N

0 0.25 0.5 1 Miles

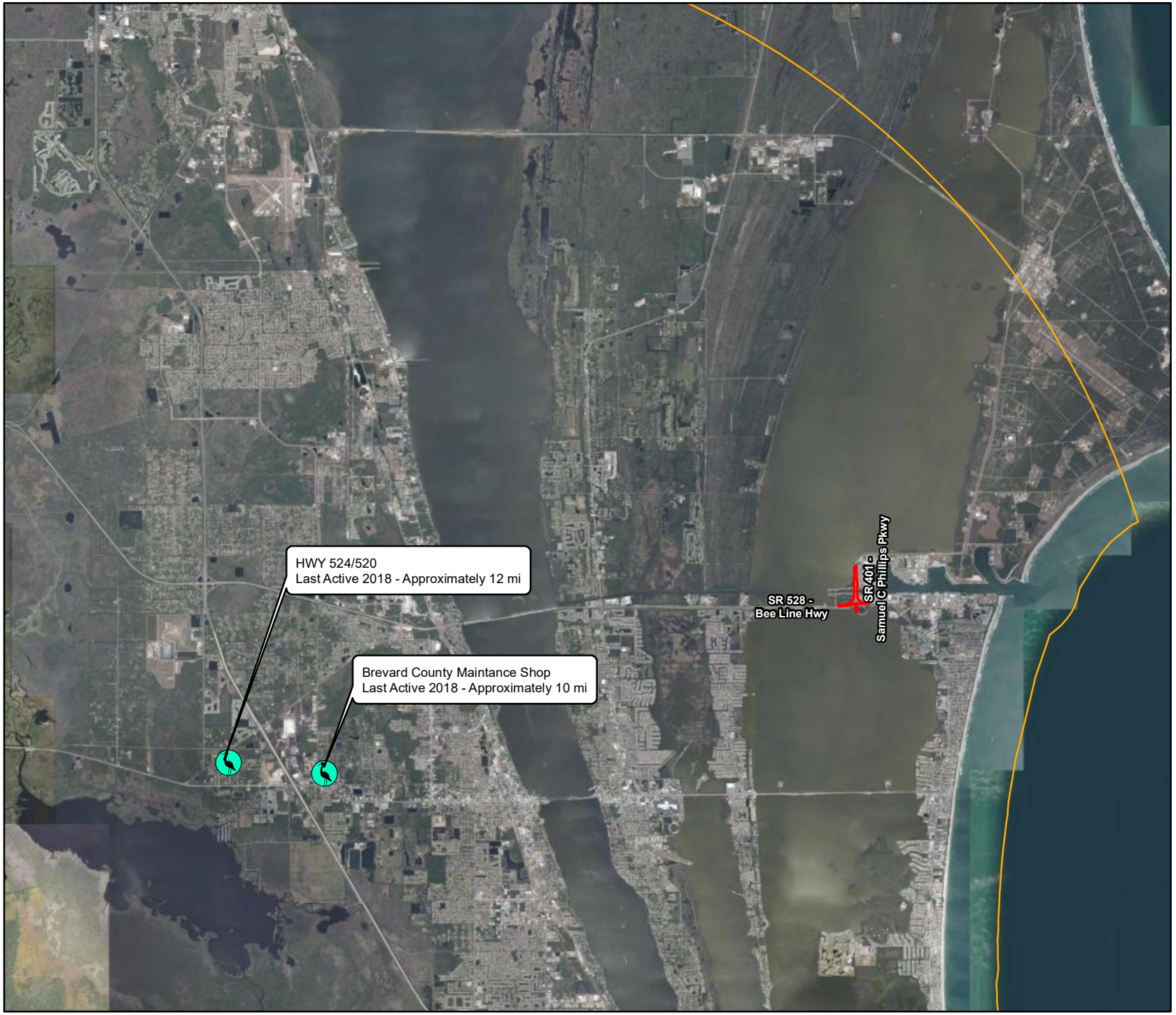
Scale 1:50,000

2017 BasemapSource: Esri,

Figure 5.1

Date Revised: 09/13/2022

FDOT



SR 401 Bridge Replacement

Wood Stork Core Foraging Area

Legend

- Active Wood Stork Colonies
- Wood Stork Core Foraging Area
- Impact Footprint Boundary

2017 BasemapSource: Esri,

N

0 10,000'

Figure 5.2

Date Revised:
09/13/2022

FDOT

Eastern black rail

The Eastern black rail is designated as Threatened by the USFWS. It is a wetland dependent bird primarily associated with herbaceous, persistent, emergent wetland plant cover and requires dense overhead cover and soils that are moist to saturated (occasionally dry) and interspersed with or adjacent to very shallow water. Specifically, this species may inhabit marshes and coastal prairies that can be tidally or non-tidally influenced, and range in salinity from salt to brackish to fresh. No marsh or coastal prairie habitat that meets the above requirements exists within the project footprint and no species were observed during field reviews. Based on the lack of potential suitability of habitat, FDOT determined the project will have **No Effect** on this species.

Florida scrub-jay

The Florida scrub-jay is listed as Threatened by the USFWS. This species inhabits sand pine, xeric oak scrub, and scrubby flatwoods. The project is within the USFWS scrub-jay consultation area (see **Figure 5.1**); however, no suitable habitat is present within the project footprint or surrounding area, and no species were observed during field visits. Therefore, FDOT determined this project will have **No Effect** on the Florida Scrub-Jay.

West Indian (Florida) Manatee

The Florida manatee is listed as Threatened by the USFWS. Florida manatees utilize coastal waters, bays, estuaries, rivers and occasionally lakes. Manatees are known to utilize the Barge Canal to move to and from the IRL/ocean although none were observed during field reviews. Discussions with the USACE Canaveral Lock staff revealed that they observe manatees traversing the canal and sometimes open the lock to allow manatees through, even though no boats are present. The USFWS Manatee Key (USFWS, 2013) was also reviewed to determine effect (see **Appendix D**). Standard manatee conditions for in-water work will be followed during construction (see **Appendix B**). Based on the key, the likelihood of the presence of manatee, and due to in-water work, FDOT has determined the project **May Affect Not Likely to Adversely Affect** the Florida manatee.

The project is located within the USFWS critical habitat for the Florida manatee (see **Figure 5.3**), and the west side of the project (IRL) is in an Important Manatee Area (IMA); designated by USFWS. Based on review of the USFWS Manatee Critical Habitat Mapper, the western S.R. 401 bridge appears to be partially located within designated manatee critical habitat. The manatee critical habitat extends westward through the Barge Canal and into the Indian River Lagoon/Banana River. Port Canaveral, to the east of the bridge, is outside the designated critical habitat. Although manatees are known to be present in the Barge Canal, as they move to/from the ocean and Indian River Lagoon, there are no seagrasses for foraging within the Barge Canal and limited other foraging resources (i.e., algae) may be available. No long-term impact to the designated critical manatee habitat will occur. Temporary, short-term impacts due to bridge construction (i.e., removal of existing bridges) are anticipated. The construction of the new bridge will result in 0.09

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West Indian Manatee Critical Habitat

Legend

- Impact Footprint Boundary
- West Indian Manatee Critical Habitat

2017 BasemapSource: Esri,

Figure 5.3

Date Revised: 09/13/2022

acres of impacts from the total area of new pilings in the water, however, the total number of pilings in the water is less. Additionally, manatee critical habitat does not appear to extend underneath the entire bridge. Due to nominal permanent impacts (0.09 acres) to critical habitat due to larger pilings and the area under the bridge providing negligible foraging habitat for the manatee, FDOT has determined the project **May Affect Not Likely to Adversely Affect** manatee critical habitat.

Southeastern beach mouse

The southeastern beach mouse is listed as Threatened by the USFWS. This species inhabits sand dunes along the Florida Atlantic coast from Volusia to Martin County. Their diet primarily consists of dune plant seeds and insects. No dunes are present within the project footprint or surrounding area and no species were observed during field reviews therefore, a determination of **No Effect** was given to the southeastern beach mouse.

Giant manta ray

The giant manta ray is listed as Threatened by NMFS. This species is pelagic and primarily inhabits near-shore waters, near coral and rocky reefs. They are also found in estuarine waters, oceanic inlets, and within bays and intercoastal waterways, all of which are found within or adjacent to the project footprint. Although they are primarily associated with deep water areas, they exhibit high plasticity in relation to the depth of water they will inhabit. NMFS has not developed Giant manta ray construction guidelines, however FDOT will apply the Sea turtle and Smalltooth Sawfish Construction Conditions (**Appendix B**) during construction which should also help minimize impacts to the manta ray. Manta rays could inhabit the Port/Barge Canal and in water work will be performed. However, since construction conditions will be followed, FDOT has determined the project **May Affect, Not Likely to Adversely Affect** the giant manta ray.

Smalltooth sawfish

The smalltooth sawfish is listed as Endangered by the NMFS. They typically inhabit shallow, tropical coastal waters and estuarine habitats such as seagrass beds, mangroves, and inshore sand bars. They can be found in sheltered bays, estuaries, and mouths of rivers, and migrate to deeper waters as they mature. Development of Florida's shallow estuarine habitat has altered or reduced the amount of habitat available as nursery areas to young smalltooth sawfish, particularly areas containing habitat fringed with vegetation such as mangroves. Moderate foraging habitat is present in the IRL in the form of mangrove estuarine habitats, therefore the smalltooth sawfish may migrate through the Barge Canal. Sea Turtle and Smalltooth Sawfish Construction Conditions will be followed during construction (see **Appendix B**). Due to the potential presence of smalltooth sawfish and use of the above construction conditions during in-water work, FDOT has determined this project **May Affect, Not Likely to Adversely Affect** smalltooth sawfish.

Carter's mustard

Carter's mustard is listed as Endangered by the USFWS. This species is a fire-dependent annual herb occurring in xeric, shrub-dominated habitat. No suitable habitat exists within or adjacent to the project therefore, a determination of **No Effect** was given to Carter's Mustard.

Lewton's polygala

Lewton's polygala is listed as Endangered by the USFWS. This species is a short-lived perennial herb found in oak scrub and high pine habitat. No suitable habitat exists within, or adjacent to, the project therefore a determination of **No Effect** was given to Lewton's Polygala.

5.2.2 State Listed Species

The potential effect on each state-only listed species is summarized in **Table 5.2**. A total of eight state only listed species were identified to potentially occur in the project area. Each species and their habitat requirements are discussed in the following sections.

Table 5.2 – State Listed Species Determination of Effect

Scientific Name	Common Name	Listing Status*	Determination of Effect	Jurisdictional Agency	Potential of Occurrence
Reptiles					
Gopherus polyphemus	Gopher tortoise	ST	**No Effect Anticipated**	FWC	None
Birds					
Rynchops niger	Black skimmer	ST	**No Effect Anticipated**	FWC	Low
Haematopus palliatus	American oystercatcher	ST	**No Effect Anticipated**	FWC	Low
Sternula antillarum	Least tern	ST	**No Effect Anticipated**	FWC	Low
Egretta rufescens	Reddish egret	ST	**No Adverse Effect Anticipated**	FWC	Moderate
Egretta caerulea	Little blue heron	ST	**No Adverse Effect Anticipated**	FWC	Moderate
Egretta tricolor	Tricolored heron	ST	**No Adverse Effect Anticipated**	FWC	Moderate
Ajaja ajaja	Roseate spoonbill	ST	**No Adverse Effect Anticipated**	FWC	Moderate

Note: ST* = State designated Threatened

Gopher Tortoise

Gopher tortoises are listed as Threatened by FWC. This species is a long-lived, terrestrial tortoise that primarily inhabit upland areas with well-drained, sandy soils. No suitable habitat exists within the project footprint or surrounding area and no gopher tortoises or burrows were observed during field visits. Therefore, a determination of **No Effect Anticipated** was assigned to this species.

State Listed Avian Species

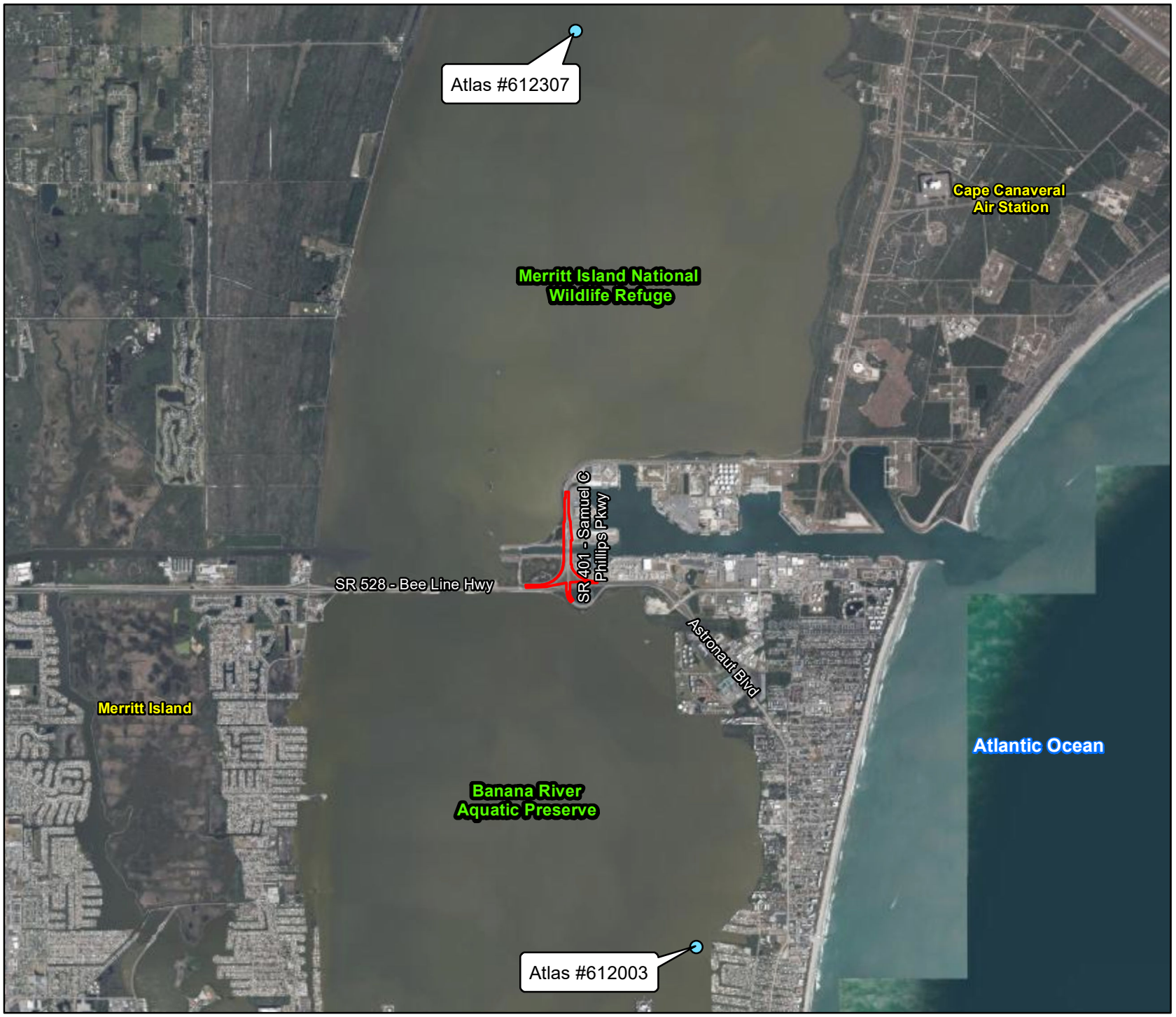
State-listed species which were identified to have potential to occur are a variety of avian species including the black skimmer (*Rynchops niger*), American oystercatcher (*Haematopus palliatus*), least tern (*Sternula antillarum*), reddish egret (*Egretta rufescens*), little blue heron (*Egretta caerulea),* tricolored heron (*Egretta tricolor*), and roseate spoonbill (*Ajaia ajaja*). These species are all state listed as Threatened. They utilize a combination of freshwater, brackish and saltwater habitats for feeding, mainly in shallow waters. Nesting occurs in a variety of habitats from freshwater forested wetlands to mangrove islands. FWC Wading Bird Rookeries mapping and data (see **Figure 5.4**) indicates that there is one wading bird rookery (Atlas #612307) located approximately 3.5 miles north of the project study limits, and another rookery (Atlas #612003) is located approximately 3.5 miles south of the project limits. The species listed as present in Atlas #612307 include great blue heron and double crested cormorant and this rookery was last active in the 1990's. A species list was not included in the data for Atlas #612003 and the rookery was inactive as of the 1990's. Additionally, least terns have been documented within Avocet Lagoon and Rodney Ketchum Park.

Wetlands that provide potential marginal foraging habitat for some of these species are present within and adjacent to the project footprint within mangrove swamps and freshwater marshes. Due to the impacts to marginal foraging habitat, a determination of **No Adverse Effect Anticipated** was given to the little blue heron, tricolor heron, roseate spoonbill, and reddish egret.

While there is presence of potential foraging habitat and previous documentation of rookeries, no potential foraging or nesting habitat is located within the project footprint or will be impacted for the black skimmer, American oystercatcher, and least tern. Therefore, a determination of **No Effect Anticipated** was assigned for the black skimmer, American oystercatcher, and least tern.

5.3 Other Protected Species

Incidental species observed throughout the project area during field reviews are listed in **Table 5.3** along with the locations observed. These species are protected by the Migratory Bird Treaty Act (MBTA). The MBTA prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by USFWS.



SR 401 Bridge Replacement PD&E Study

Wading Bird Rookeries

Legend

- Wading Bird Rookeries
- Impact Footprint Boundary

2017 BasemapSource: Esri,

N

0 4,500'

Figure 5.4

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All species mentioned in **Tables 5.1 and 5.2** above could be potentially found foraging within features such as wetlands and OSWs adjacent to the area. Approximately 1.18 acres of wetlands and 0.09 acres of OSWs will be directly impacted by the proposed improvements and mitigation options are being reviewed to offset these impacts. Therefore, this project is not anticipated to adversely affect these species.

Table 5.3 – Other Protected Species Observed

Scientific Name	Common Name	Location	Listing Status*
Birds			
Ardea alba	Great egret	Avocet Lagoon	MBTA
Ardea herodias	Great blue heron	Avocet Lagoon	MBTA
Anhinga anhinga	Anhinga	Avocet Lagoon	MBTA
Eudocimus albus	American white ibis	Avocet Lagoon	MBTA

Note: *MBTA: Migratory Bird Treaty Act

5.4 Avoidance and Minimization

Potential foraging habitat (including freshwater wetlands, mangroves, tidal flats, etc.) is located adjacent to the project area. Therefore, complete avoidance of impacts to these resources is not possible and not practical to be able to still meet the purpose and need of this project. Avoidance and minimization will continue to be incorporated as practical throughout the PD&E and Design processes. The proposed roadway improvements will use Best Management Practices (BMPs) in accordance with the current FDOT's Standard Specifications for Road and Bridge Construction. Additionally, sea turtle and smalltooth sawfish construction conditions will be followed during construction. Standard manatee conditions for in-water work will be followed during construction as well.

6.0 WETLANDS AND OTHER SURFACE WATERS

In accordance with the FDOT PD&E Manual *(July 1, 2020), Executive Order 11990, Protection of Wetlands,* as well as applicable federal and state regulatory requirements (*Section 404 of the Clean Water Act* and *Chapter 373, Florida Statute*, respectively) a wetland and OSW evaluation was conducted for the project. The objectives of this evaluation were to identify existing wetlands and OSW's, evaluate potential impacts to them, and to assess the function and value of wetlands potentially impacted by the project.

6.1 Data Collection

A desktop review was performed prior to performing the field assessments to establish baseline wetland and OSW information. The following resources were reviewed for the presence of wetlands and OSW's:

- *ESRI and Google Earth aerial imagery*
- *FDOT's Efficient Transportation Decision Making (ETDM) Screening Summary Report Number 14397 (Incorporated by Reference)*
- *FDOT's ETDM Environmental Screening Tool*
- *Florida Natural Areas Inventory (FNAI) Cooperative Land Cover Map*
- *NRCS Soil Survey for Brevard County*
- *NRCS Web Soil Survey*
- *U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Maps*
- *Florida Land Use Cover and Forms Classification (FLUCCS)*

Preliminary wetland and surface water boundaries were determined through field surveys and reviews of aerial photography (Google Earth), hydrologic connectivity, and historical boundaries of existing wetland systems. Wetlands were generally delineated utilizing the *USACE Wetland Delineation Manual, 1987: Regional Supplement to Atlantic and Gulf Coast Plain Region (Version 2.0) (USACE, 2010)*, the *FDEP Florida Wetlands Delineation Manual (FDEP, 1995), and Rule 62-340 F.A.C. Delineation of the Landward Extent of Wetlands and Surface Waters.* Each area was classified using the *Florida Land Use, Cover and Forms Classification System (FLUCCS, FDOT, 1999)*. *Arc GIS, Version 10.3.1*, was then used to create the wetland and surface water shapefiles from field, delineation, and aerial imagery data.

6.2 Existing Wetlands and Other Surface Waters

Figures 6.1a and 6.1b illustrate the location of wetlands and OSW sites, and **Table 6.1** summarizes those areas found within and adjacent to the proposed project footprint. The size, hydrologic contiguity, and vegetative structural diversity are described in this table as well as FLUCCS and NWI codes to classify the type of wetland/OSW. Several individual black and white mangroves were identified underneath and adjacent to the northern side of the S.R. 401 bridges. Photographs of wetlands and surface waters are provided in **Appendix A.**

SR 401 Bridge Replacement PD&E Study

Wetlands, Other Surface Waters and Essential Fish Habitat Map

Legend

- Impact Footprint Boundary
- Impact
- Sporatic Discontinuous Seagrass
- Black Mangrove
- Red Mangrove
- White Mangrove
- 651: Tidal Flats
- 642: Saltwater Marsh
- 510: Streams and Waterways
- 534: Stormwater Ponds
- 542: Bays and Estuaries
- 612: Mangrove Swamps

Survey Conducted By CECOS Biologists: August 17/18, 2021 and February 24, 2022

2017 BasemapSource: Esri,

0 300'

N

Scale 1:4,000

Figure 6.1a

Date Revised: 11/14/2022

FDOT

SR 401 Bridge Replacement PD&E Study

Wetlands, Other Surface Waters, and Essential Fish Habitat Map

Legend

- Impact Footprint Boundary
- Impact
- 510: Streams and Waterways
- 524: Enclosed Saltwater Ponds
- 534: Stormwater Ponds
- 612: Mangrove Swamps
- 631: Wetland Scrub
- 641: Freshwater Marsh

Survey Conducted By CECOS Biologists: August 17/18, 2021 and February 24, 2022

2017 BasemapSource: Esri,

0 360'

Scale: 1:4,837

N

Figure 6.1b

Date Revised: 09/13/2022

FDOT

Table 6.1 – Wetlands and Other Surface Waters within Project Area					
ID	**FLUCCS Code/ NWI Code**	**Approx. Area (Acres)**	**Dominant Wetland Vegetation**	**Hydric Soils (Historic)**	**Hydrologic Connection to Waters of the US**
WL-1	612 E2SS3M	3.33	Red (*Rhizophora mangle*), black (*Avicennia germinans*) & white (*Laguncularia racemosa*) mangroves, buttonwoods (*Conocarpus erectus*), pond apple *(Annona glabra)*, cabbage palm (*Sabal palmetto)*, sea oxeye daisy (*Borrichia frutescens)*	No (Cu)	Yes
WL-2	642 E2UB3	0.13	Black & white mangroves, sea oxeye daisy, sea purslane (*Sesuvium portulacastrum*), beach morning glory (*Ipomoea pes-caprae),* saltgrass (*Distichlis spicata*)	No (Cu)	Yes
WL-3	612 E2UB3	0.04	Black mangrove	No (Cu)	Yes
WL-4	651 E2UB3	0.25	Tidal mud flat- no vegetation	No (Cu)	Yes
WL-5	642 E2UB3	0.01	Beach morning glory, sea purslane	No (Cu)	Yes
WL-6	612 E2UB3	0.02	Black mangrove	No (Cu)	Yes
WL-7	651 E2UB3	0.78	Tidal flat- no vegetation	No (Cu)	Yes
WL-8	612 PSS3M	13.91	Black and white mangroves, glasswort (*Salicornia bigelovii*), saltwort (*Batis maritima*)	Yes (Tu)	Unknown – connection to IRL not found
WL-9	612 PSS1	0.66	Black mangroves, white mangroves, marsh elder (*Iva frutescens*), cabbage palm	Yes (Tu)	Unknown (connected to WL-8)
WL-10	631 PSS1	0.50	Saltbrush (*Baccharis halimifolia*), cabbage palm, coastal willow (*Salix hookeriana*)	Yes (Tu)	No
WL-11	641 PSS1	0.14	Cattail (*Typha* sp.)	No (Cu)	Yes
WL-12	612 E2SS3M	35.26	Mangrove fringe	No (Cu)	Yes
WL-13	612 PSS3	1.96	Mangrove fringe	No (Cu)	Connected to WL-14
WL- 14	612 PSS3	1.04	Mangrove fringe	No (Cu)	Connected to Banana River
OSW-1	542 E1UBL	5.22	Discontinuous, sparse seagrass (*Halodule wrightii),* culerpa *(Caulerpa prolifera), red algae*	N/A (W)	Yes
OSW-2	534 PUBHx	0.56	Stormwater pond- no vegetation	N/A (W)	Yes

Table 6.1 – Wetlands and Other Surface Waters within Project Area					
ID	**FLUCCS Code/ NWI Code**	**Approx. Area (Acres)**	**Dominant Wetland Vegetation**	**Hydric Soils (Historic)**	**Hydrologic Connection to Waters of the US**
OSW-3	510 E1UBL	N/A*	Not present	N/A (W)	Yes
OSW-4	534 PUBHx	9.63	Stormwater pond- no vegetation	N/A (W)	Yes
OSW-5	534 PUBHx	2.50	Stormwater pond- no vegetation	N/A (W)	Yes
OSW-6	524 PUSC, PUSA, PUBHx	8.74	No vegetation	N/A (W)	Unknown

FLUCCS: 510 – Streams and Waterways; 534 – Stormwater ponds; 542 – Bays and Estuaries; 524 – Enclosed saltwater ponds; 612 – Mangrove swamps; 631 – Wetland scrub; 641 – Freshwater marsh; 642 – Saltwater marsh; 651 – Tidal flats
NWI: PUBHx = Palustrine, unconsolidated bottom, excavated; E1UBLx = Estuarine, subtidal, unconsolidated bottom, excavated; E1UBL = Estuarine, subtidal, unconsolidated bottom; PUSC = Palustrine, unconsolidated shore, seasonally flooded; PUSA = Palustrine, unconsolidated shore, temporarily flooded; E2SS3M = Estuarine, intertidal, scrub-shrub wetlands; E2US3 = Estuarine, intertidal, unconsolidated shore, mud; PSS3/PSS1 = Palustrine, scrub-shrub wetland
Soils: Tu= Turnbull and Riomar soils, tidal; Ca= Canaveral-Anclote complex, gently undulating; Cu= Canaveral-Urban land complex; W = Water
Note: *Extends beyond project limits

6.2.1 Wetlands

A brief description of each of the wetland and OSW sites is provided below.

WL-1 (FLUCCS 612) – WL-1 is comprised of approximately 3.33 acres of mangrove fringe along the IRL. It is located on the west side of S.R. 401, north of the bridge. It is approximately 50 feet wide, except at the south end where the width increases to approximately 190 feet. The dominant vegetation is mangroves and therefore this wetland may provide foraging habitat for fish, birds, reptiles, and mammals.

WL-2 (FLUCCS 642) – WL-2 consists of 0.13 acres of high saltwater marsh and is located on the northwest quadrant of the S.R. 401 bridges, directly adjacent to WL-3 and WL-4. Dominant vegetation includes herbaceous plants including sea oxeye daisy (*Borrichia frutescens*), sea purslane (*Sesuvium portulacastrum*), beach morning glory (*Ipomoea pes-caprae),* saltgrass (*Distichlis spicata*) and sporadic black mangroves (*Avicennia germinans)* which may provide foraging habitat for birds, reptiles, and mammals.

WL-3 (FLUCCS 612) – WL-3 is comprised of approximately 0.04 acres of mangrove swamp with the dominant vegetation being black mangroves and is located on the northwest quadrant of the S.R. 401 bridges, directly adjacent to WL-2 and WL-4. This wetland may provide foraging habitat for birds, reptiles, and mammals.

WL-4 (FLUCCS 651) – WL-4 is an approximately 0.25-acre tidal flats along the northwest edge of the Canal, west of S.R. 401 and directly adjacent to WL-2 and WL-3 and OSW-1. During field surveys, tidal flats were observed with no vegetation as the area is covered at high tide and exposed at low tide. It is estimated that there is over a two-foot tidal exchange. This wetland may provide foraging habitat for fish, birds, reptiles, and mammals.

WL-5 (FLUCCS 642) – WL-5 is comprised of approximately 0.01 acres of saltwater marsh groundcover and is located on the northeast side of S.R. 401, directly adjacent to WL-6. This wetland is connected to the roadway swale north of this site. During field surveys, the dominant vegetation observed was beach morning glory and sea purslane. This wetland may provide minimal foraging habitat for birds, reptiles, and mammals.

WL-6 (FLUCCS 612) – WL-6 consists of approximately 0.02 acres of mangroves on the northeast side of S.R. 401, just north of the Canaveral Barge Canal. During field surveys, the dominant vegetation observed was black mangroves. This wetland may provide foraging habitat for birds, reptiles, and mammals.

WL-7 (FLUCCS 651) – WL-7 is approximately 0.78 acres of tidal flats on the northeast side of S.R. 401, just north of the Canal and adjacent to WL-5 and WL-6. Tidal flats were observed with no vegetation as the area is covered at high tide and exposed at low tide. As with WL-4, It is estimated that there is over a two-foot tidal exchange at this location. This wetland may provide foraging habitat for fish, birds, reptiles, and mammals.

WL-8 (FLUCCS 612) – WL-8 is comprised of approximately 13.91 acres of mangroves surrounding the salt ponds of the Avocet Lagoon (OSW-6) located on the southwest quadrant of the project area, south of the Canal. This wetland was not delineated during field surveys since it is outside the footprint of impact; however, mangroves were observed around Avocet Lagoon. These mangroves as well as the ponds provide suitable habitat for foraging birds such as great blue heron and wood stork, both of which were observed during the field visit. Numerous other bird species are known to be present at this site.

WL-9 (FLUCCS 612) – WL-9 consists of approximately 0.66 acres of mangrove swamp located in a swale between Mullet Road and S.R. 528. Some upland plants were observed on the northern end of WL-9 such as cabbage palm (*Sabal palmetto)*, however dominant vegetation transitioned to marsh elder, black mangroves and white mangroves (*Laguncularia racemosa)*. This site is connected to WL-8 via a culvert under Mullet Road. This site would provide limited suitable foraging habitat for listed species.

WL-10 (FLUCCS 631) – WL-10 consists of approximately 0.50 acres of wetland scrub located in a swale between Mullet Road and the S.R. 401 south bound to west bound ramp. Some upland plants were observed on the northern end of WL-10 such as cabbage palm, however dominant vegetation transitioned to coastal willow (*Salix hookeriana)* and saltbrush (*Baccharis halimifolia)*. This site would provide limited suitable foraging habitat for listed species.

WL-11 (FLUCCS 641) – WL-11 consists of approximately 0.14 acres of freshwater marsh located within the S.R. 401 existing stormwater pond. The dominant vegetation is cattail. This site provides marginal suitable foraging habitat for listed species.

WL-12 (FLUCCS 612) – WL-12 is approximately 35.26 acres of mangroves located along the Banana River Aquatic Preserve, adjacent to the S.R. 401/S.R. 528 interchange. These wetlands were delineated by FDOT for the adjacent S.R. 528 project and therefore, only confirmation of the current conditions/vegetation was noted during the field reviews. This site directly adjacent to the Banana River Aquatic Preserve, and it provides foraging habitat for fish, birds, reptiles, and mammals.

WL-13 (FLUCCS 612) – WL-13 is comprised of approximately 1.96 acres of mangrove fringe along OSW-4 (stormwater pond). This stormwater pond is part of the Cove Scallop mitigation area for a Stormwater Management System (FDEP Permit Number 05-0244902-001 and USACE Permit Number SAJ-2005-2677). It is located just south of S.R. 528 within the S.R. 401/S.R. 528 interchange. These wetlands were delineated by FDOT for the adjacent S.R. 528 project and therefore, only confirmation of the current conditions/vegetation was noted during the field reviews. This site is directly adjacent to OSW-4, and it provides foraging habitat for fish, birds, reptiles, and mammals.

WL-14 (FLUCCS 612) – WL-14 is an approximately 1.04-acre mangrove fringe along the edges of OSW-5 (stormwater pond). This stormwater pond is part of the Cove Scallop mitigation area for a Stormwater Management System (FDEP Permit Number 05-0244902-001 and USACE Permit Number SAJ-2005-2677). It is located just south of S.R. 528 within the S.R. 401/S.R. 528 interchange. These wetlands were delineated by FDOT and therefore, only confirmation of the current conditions/vegetation was noted during the field reviews. This site is directly adjacent to OSW-5, and it provides foraging habitat for fish, birds, reptiles, and mammals.

6.2.2 Other Surface Waters

OSW-1 (FLUCCS 542) – OSW-1 is the area of the IRL within approximately 50 feet of the west side of S.R. 401 and consists of approximately 5.22 acres of bays and estuaries. This area is part of the IRL and hosts a variety of species, including some listed species. Sporadic, sparse seagrass (*Halodule wrightii*), green algae (*Caulerpa prolifera*) and red algae was observed along the western side of the project and also provides habitat for fish, sea turtles and manatees.

OSW-2 (FLUCCS 534) – OSW-2 is an approximately 0.56-acre storm water pond on the northwest side of S.R. 401. This storm water pond is surrounded by mowed maintained access areas surrounding the pond with a minor littoral shelf. Limited foraging habitat for species is present except along the shoreline where wading birds were observed.

OSW-3 (FLUCCS 510) – OSW-3 includes the Canaveral Barge Canal on the west side and Port Canaveral on the east side of the bridges. It is an estuarine canal which connects the Port Canaveral/ocean with the IRL to the west. Canaveral Lock, maintained by the US Army Corps of Engineers (USACE) is located approximately 1800 feet to the west.

This is a maintained (dredged) navigational canal with depths up to 12 feet in the channel. Within the project area, submerged aquatic vegetation is not present.

OSW-4 (FLUCCS 534) – OSW-4 is an approximately 9.63-acre storm water pond and is also part of the Cove Scallop mitigation area for a Stormwater Management System (FDEP Permit Number 05-0244902-001 and USACE Permit Number SAJ-2005-2677). This OSW is located in the center of the south-bound S.R. 401 ramp, just south of A1A. An existing fringe of mangroves (WL-11) is present around this pond.

OSW-5 (FLUCCS 534) – OSW-5 is an approximately 2.50 acres stormwater pond and is also part of the Cove Scallop mitigation area for a Stormwater Management System (FDEP Permit Number 05-0244902-001 and USACE Permit Number SAJ-2005-2677). This OSW is located within the S.R. 401/S.R. 528 interchange. This area may provide suitable foraging habitat for listed species. An existing fringe of mangroves (WL-12) is present around this pond.

OSW-6 (FLUCCS 524) – OSW-6 is an approximately 8.74-acre enclosed saltwater pond located on the southwest corner of the project area. Connection to the IRL is not observed. This surface water is called Avocet Lagoon and hosts a range of foraging birds such as wood stork and great egrets, which were observed during field surveys. OSW-6 is surrounded by mangroves (WL-8) which also provides foraging habitat for wading birds.

6.3 Impacts to Wetland and Other Surface Waters

Potential impacts associated with the project were evaluated. A discussion of direct, indirect, and cumulative impacts associated with the project is summarized in the sections below. In summary, approximately 1.18 acres of wetlands and 0.09 acres of OSWs are anticipated to be impacted by the project. ETAT comments are addressed in Section 8.1.

6.3.1 Direct Impacts

For the purpose of this wetland impact assessment, impacts to wetlands and OSWs were calculated based on the project impact footprint. This is a worst-case scenario and will be refined during the design/permitting phase. Direct impacts to wetlands and OSWs are anticipated. It is estimated that a total of a total of 1.18 acres of wetlands will be directly impacted, and 0.09 acres of OSWs will be impacted. **Tables 6.2** and **6.3** summarize the impacts to wetlands and OSWs for this project.

Table 6.2 – Summary of Potential Wetland Impacts

ID	FLUCCS Code	Size (Acres)	Direct Wetland Impacts
WL-1	612	3.33	**0.10**
WL-2	642	0.13	0

WL-3	612	0.04	0
WL-4	651	0.25	0
WL-5	642	0.01	0
WL-6	612	0.02	0
WL-7	651	0.78	0
WL-8	612	13.91	0
WL-9	612	0.66	**0.44**
WL-10	631	0.50	**0.50**
WL-11	641	0.14	**0.14**
WL-12	612	35.26	0
WL-13	612	1.96	0
WL-14	612	1.04	0
Total acres of impacts			**1.18**

Table 6.3 – Summary of Potential OSW Impacts

ID	FLUCCS Code	Size (Acres)	Direct OSW Impacts (Acres)
OSW-1	542	5.22	0
OSW-2	534	0.56	0
OSW-3	510	N/A*	**0.09**
OSW-4	534	9.63	0
OSW-5	534	2.50	0
OSW-6	524	8.74	0
Total acres of impacts			**0.09**

Note: *Extends beyond project limits

6.3.2 Indirect Impacts

In accordance with State criteria, water quality will be treated prior to discharge to receiving waters including the IRL. Therefore, indirect impacts to the IRL are not anticipated. A small portion of WL-9 and WL-10 falls outside the project impact area buffer. However, it is anticipated that these remnant wetlands would not succeed. Therefore, it is anticipated that the total acreage of both WL-9 and WL-10 will be impacted.

Additionally, the existing bridges over OSW-3 have a current shading area of 0.56 acres and the shading area for the proposed bridges is approximately 0.55 acres. Therefore, negligible shading impacts are anticipated.

6.3.3 Avoidance and Minimization

Wetlands and OSWs are located directly adjacent to the project area. The new bridges will span the Canaveral Barge Canal. Therefore, complete avoidance to these resources is not possible and not practical to be able to still meet the purpose and need of this project. Measures to avoid and minimize direct impacts to wetlands within the project area has been accomplished with only 0.54 acres of direct impact to the disturbed mangrove areas, 0.50 acres of impact to a manmade swale wetland scrub, and 0.14 acres of impact to manmade freshwater marsh. Avoidance and minimization will continue to be incorporated as practical throughout the PD&E and Design processes. The proposed roadway improvements' stormwater management facilities for the preferred alternative will meet FDOT drainage criteria, Saint John's Water Management District (SJWMD) permit criteria and use BMPs in accordance with the current FDOT's Standard Specifications for Road and Bridge Construction.

6.4 Wetland Functional Assessment and Mitigation

Impacts to surface waters do not require a functional assessment as mitigation for these impacts is not anticipated. There are three mitigation banks in the project area: Webster Creek, Green Wings, and Neoverde. These banks do not sell mangrove credits and according to the DEP Mitigation Bank Service Area Map, do not serve the entire project area.

Wetland impacts that 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. Mitigation options are limited and at this time there are no mangrove credits available from surrounding mitigation banks as of this report date. The only option currently available is utilizing Section 373.4137 F.S., which provides for mitigation of FDOT wetland impacts through a regional mitigation program implemented by the St. John's River Water Management District (SJRWMD) with funding from the FDOT for specific FDOT project impacts. If the SJRWMD is unable to provide appropriate mitigation, other options will be identified during the design/permitting phase. A Uniform Mitigation Assessment Method (UMAM) analysis was conducted to determine the mitigation credits needed. A total of 0.62 mitigation credits are needed (see **Table 6.4**). UMAM forms are in **Appendix E** for reference.

Table 6.4 – Mitigation Credits			
FLUCCS Code	Description	Acres of Impact	Number of Mitigation Credits Needed
612	WL-1 Mangrove Swamps	0.10	0.067
612	WL-9 Mangrove Swamps	0.44	0.23
631	WL-10 Wetland Scrub	0.50	0.25
641	WL-11 Freshwater Marsh	0.14	0.07

6.5 Cumulative Impacts

The proposed drainage improvements will provide an anticipated incremental improvement to cumulative water quality over current conditions. Cumulative impacts associated with any future development must comply with environmental regulations and standards of water quality, as well as consider habitat requirements for applicable listed species. Therefore, the project area is not expected to contribute to additional impacts beyond the direct impacts described in Section 6.3.

6.6 Wetland Finding

The Preferred Alternative has been evaluated in accordance with Federal Executive Order 11990 “Protection of Wetlands”. Based on the above considerations, it is determined that there are no practicable measures to minimize harm to wetlands which may result from such use. Approximately 1.18 acres of wetlands and approximately 0.09 acres of OSWs will be impacted. As the project advances through subsequent phases, avoidance and minimization of wetland impacts will continue to be considered to the maximum extent practicable. Therefore, with proper mitigation, the proposed project is expected to result in no significant impacts to wetlands.

7.0 ESSENTIAL FISH HABITAT

This project was evaluated for impacts to EFH in accordance with *16 U.S.C 1801 of January 12, 2007, as amended, Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA),* and *the FDOT PD&E Manual*. EFH describes all waters and substrate necessary for fish to spawn, breed, feed, or grow to maturity. The NMFS EFH Mapper indicates EFH in the project area as well as HAPC. HAPC’s are subsets of EFH that are rare, ecologically important, susceptible to human-induced degradation, or located in an environmentally stressed area.

As required under the MSFCMA, an EFH assessment has been conducted for the project area, which falls under the South Atlantic Fishery Management Council's area of jurisdiction.

7.1 EFH Occurrences

Per the ETDM summary report ETAT comments, Essential Fish Habitat present in the project area includes mangroves, sand/shell bottom, and seagrass. Mangroves were observed on the northwest side of S.R. 401, north of the bridge, and consists of a fringe mangrove area. Mangroves are also present within the S.R. 401 and S.R. 528 interchange, south of S.R. 528. These areas may provide foraging, nursery, and refuge habitat for the numerous small juvenile fish observed during the benthic resources survey. Black and white mangroves were also observed within a narrow swale located between the westbound ramp to S.R. 528 and Mullet Road. These mangroves have no direct connection to the IRL and are only connected to Avocet Lagoon via a small culvert, and therefore are not considered EFH. Tidal flats located on the northern side of the canal on either side of the S.R. 401 bridges can also be considered EFH. Sand/shell bottom was observed in the Barge Canal/Port Canaveral underneath and near the S.R. 401 bridges. Benthic substrate was sandy muck mixed with shell hash and layers of algae. Sporadic, sparse patches of seagrass (*Halodule wrightii*) were observed in the northwest quadrant of the bridge near the fringe mangroves. Oysters were observed on the rip rap, bulkhead wall, and bridge pilings.

7.1.1 Habitat Areas of Particular Concern

Designated HAPC's are present within the project area in the form of mangrove and seagrass habitats. These HAPC's are high priority areas for conservation, management, and research and are necessary for sustainable fisheries and ecosystems.

7.1.2 Managed Species

Federally managed fisheries species potentially present in the project area may include species in the snapper-grouper complex as well as penaeid shrimp. The snapper-grouper complex includes 73 species of fish, and the penaeid shrimp complex includes three (3) species of shrimp: white shrimp (*Litopenaeus setiferus*), pink shrimp (*Farfantepenaeus duorarum*) and brown shrimp (*Farfantepenaeus aztecus*). Mangrove and seagrass habitats are associated with postlarval, juvenile, and adult gray snapper (*Lutjanus griseus*), lane snapper (*Lutjanus synagris*), and schoolmaster snapper (*Lutjanus apodus*); juvenile Atlantic goliath grouper (*Epinephelus itajara*) and mutton snapper (*Lutjanus analis*); and adult white grunt (*Haemulon plumierii*). These species are part of the snapper-grouper complex. Sand/shell bottom is identified as EFH for the penaeid shrimp for spawning and growth to maturity. Some species of the penaeid shrimp complex spawn in depths of 12 feet and greater and feed off detritus and microorganisms in baren bottoms. Penaeid shrimp and snapper-grouper complex may use tidal flats as EFH as well.

7.2 EFH Impacts

7.2.1 Direct Impacts

Approximately 0.10 acres of EFH (mangroves, WL-1) will be directly impacted as well as approximately 0.09 acres of EFH (sand/shell bottom, OSW-3) due to bridge replacement and in-water work (see **Figure 6.1a**). No impacts to seagrass EFH or tidal flats EFH are anticipated.

7.2.1.1 HAPC Impacts

Approximately 0.10 acres of mangroves, designated as HAPC, are anticipated to be directly impacted due to roadway improvements. No impacts to seagrass HAPC are anticipated.

7.2.1.2 Managed Species Impacts

Mangroves are potential habitat for species in the snapper-grouper complex. Due to bridge/roadway improvements, approximately 0.10 acres of mangrove EFH are anticipated to be impacted. Therefore, approximately 0.10 acres of habitat for the snapper-grouper complex are anticipated to be impacted. These impacts are located at the upper end of Mean High Water (MHW). Additionally, approximately 0.09 acres of potential penaeid shrimp complex habitat, sand/shell bottom, are anticipated to be impacted.

7.2.2 Indirect and Cumulative Impacts

No indirect impacts are anticipated to occur. Since seagrass was not identified underneath the bridges, shading impacts to seagrass during construction will not occur. Due to negligible impacts to marginal EFH, cumulative impacts are not anticipated.

7.2.3 Avoidance, Minimization, and Mitigation

Bridge replacement will have minimal impacts to EFH. These impacts are unavoidable and are minimized to the greatest extent possible. Additionally, stormwater runoff from the S.R. 401 bridges will be collected and treated prior to discharging into the Barge Canal which will improve water quality. The mangrove EFH that will be impacted provides little to no foraging habitat due to its location and limited connection to the IRL. Impact to sand/shell habitat is minimal with only 0.09 acres impacted. In addition, this impact occurs to a maintained canal. Temporary impacts to sand /shell will occur due to construction activities (bridge removal, use of barges, and new bridge construction). BMP's including placement of erosion control measures will be implemented throughout construction. Due to the nature of the minor EFH impacts being a total of approximately 0.19 acres and the use of BMPs, FDOT has determined that the project has **Minimal** effect on EFH. Impacts to mangrove habitat will be mitigated for (see **Section 6.4** for more detail).

8.0 Agency Coordination

8.1 ETDM ETAT Review

The project was reviewed through the FDOT's ETDM process where members of the ETDM ETAT provide input and comments; the ETDM Screening Summary Report (No. 14397) is incorporated by reference. ETAT comments were reviewed and addressed as necessary. Relevant comments are summarized below:

Wetlands and Other Surface Waters

- FDEP assigned a "Moderate" effect. FDEP stated there are over 40 acres of wetlands within the 500-foot project buffer, including 1.42 acres of seagrass and 11.77 acres of mangroves.
- NMFS assigned a "Moderate" effect. NMFS determined that impacts may occur to seagrass, mangroves, and sand/shell bottom. They stated that wetlands are generally low in quality, however, seagrasses and mangroves may be higher in quality. It was mentioned that EFH is present as well, including HAPC's (mangroves and seagrass). NMFS stated that federally managed fishery species may occur, including the snapper-grouper complex and penaeid shrimp. NMFS recommended to survey and document all EFH present and to consider shading impacts from barges as well as BMPs to avoid sedimentation runoff.
- SJWMD assigned a "Minimal" effect. SJWMD stated that two marine protected areas are present (Merritt Island National Wildlife Refuge and Banana River Aquatic Preserve). The project is located within Regulatory Basin 21 (North IRL), which has three mitigation bank options: Green Wing, Neoverde, and Webster Creek. They recommended all proposed ramps and ponds be located within the project to avoid impacts to wetlands. Wetland impacts should be identified on the plans.
- USACE assigned a "Moderate" effect. USACE mentioned that a Standard Individual Permit may be required due to the project being located within tidal waters and OFWs. There is a possibility that a Nationwide 3 and/or a Nationwide 23 could be used. USACE stated that any estuarine wetlands in the project area are jurisdictional along the existing roadway.
- U.S. Environmental Protection Agency (USEPA) assigned a "Substantial" effect. USEPA expressed their concern for contaminants entering water bodies surrounding the project area. They suggested BMPs for stormwater runoff and to take impacts to water quality under consideration.
- USFWS assigned a "Moderate" effect. USFWS stated that the project is within potential habitat for wood stork, piping plover, manatee, and sea turtles. They recommended if any habitat with the wood stork CFA is impacted, that wetlands replaced should be within the affected nesting colony CFA.

Protected Species and Habitat

- Florida Department of Agriculture and Consumer Services (FDACS) assigned a "No Involvement" to the project. FDACS stated that Carter's mustard and Lewton's polygala may occur within the project footprint. They recommended BMPs such as silt fencing.
- FWC assigned a "Moderate" effect. FWC listed the following species as having the potential to occur within the project: sea turtles, EIS, piping plover, rufa red knot, wood stork, manatee, gopher tortoise, black skimmer, American oystercatcher, least tern, reddish egret, little blue heron, tricolored heron, and roseate spoonbill. They mentioned that least terns have been documented nesting within cleared areas or temporary dredge spoil piles near the project site. They expressed concern that there is a potential for injuries to aquatic life during in-water work. FWC recommended manatee and sea turtle protection measures be implemented and to conduct construction activities outside of the nesting season.
- USFWS assigned a "Moderate" effect. USFWS mentioned that it is unlikely wood storks are foraging within the project footprint. They recommended to consider sea turtles, piping plover, and manatees within the NRE.

Water Resources

- FDEP assigned a "Moderate" effect. FDEP stated that stormwater runoff from roadways may impact adjacent wetlands and surface waters. They recommended that stormwater treatment be designed to help reduce impacts to water quality.
- SJWMD assigned a "Moderate" effect. SJWMD stated that the project is located within watersheds that may be impaired for nutrients. They mentioned that a General Permit or Individual ERP may be required. The project should be designed to provide water quality treatment for discharge to OFWs.
- USEPA assigned a "Moderate" effect. USEPA recommended BMPs and to reduce the effects of pollution runoff from construction activities as well as the effects of erosion and sedimentation.

8.2 NMFS Coordination

During the final design/permitting phase, the NMFS Vibratory Pile Driving Report Calculator will be prepared to determine potential noise impacts to marine species (sea turtles, smalltooth sawfish, giant manta ray, other fish, and marine mammals) and will be coordinated with NMFS. At this time, there is insufficient information for this to be performed and will be completed during the design phase as more detailed engineering information becomes available.

8.3 Permits Required

The environmental permits anticipated for this project are summarized below in **Table 8.1**.

Table 8.1 - Anticipated Environmental Permits

Permit Type	Issuing Agency	Comments
Bridge Permit	US Coast Guard (USCG)	A Bridge permit will be required. Initial coordination with the USCG has occurred (see USCG letter dated December 22, 2021, included in **Appendix F**)
Section 408 Authorization	US Army Corps of Engineers (USACE)	The project crosses the Canaveral Barge Canal, the segment on the west side of the bridge is under the jurisdiction of the USACE (navigational canal)
Section 404	USACE/FDEP	Wetland impacts to both tidal mangroves and freshwater wetlands are anticipated. A determination on the permitting agency is required.
Environmental Resource Permit (ERP)	SJRWMD	Required due to drainage modifications and wetland impacts.

9.0 CONCLUSIONS

Minimal, unavoidable direct and indirect impacts to wetlands and surface waters will result as part of this project. The FDOT will avoid and minimize impacts to the greatest extent practical and will continue to evaluate avoidance and minimization measures during design and permitting to the greatest extent practical. The FDOT will adhere to the permitting agencies' general and specific conditions regarding turbidity control during construction to ensure that waters remain in compliance with water quality parameters.

This project resulted in an effect determination of **May Affect, Not Likely to Adversely Affect** on the federally listed green sea turtle, loggerhead sea turtle, hawksbill sea turtle, leatherback sea turtle, Kemp's ridley sea turtle, west Indian manatee, giant manta ray, and smalltooth sawfish. This project resulted in an effect determination of **No Effect** on the eastern indigo snake, Atlantic salt marsh snake, piping plover, wood stork, rufa red knot, eastern black rail, Florida scrub-jay, southeastern beach mouse, Carter's mustard, and Lewton's polygala. The project will also have **No Effect Anticipated** on the state listed gopher tortoise (which is a candidate species for Federal listing), black skimmer, American oystercatcher, least tern, reddish egret, little blue heron, tricolored heron, and roseate spoonbill.

This project will incur approximately 1.18 total acres of direct impacts to wetlands and 0.09 acres of impacts to OSWs. Mitigation for impacts to mangroves will be completed at a later phase. This project will also incur approximately 0.10 acres of mangrove EFH as

well as approximately 0.09 acres of direct impact to sand/shell bottom EFH due to bridge widening/in-water work. Therefore, impacts to EFH are expected to be **Minimal**.

The FDOT will continue to coordinate with the regulatory and commenting agencies, and local governments during final design, construction, and permitting to seek avoidance, minimization and mitigation measures for wetlands, and protected species.

9.1 Commitments

The FDOT made the following natural resource commitments as part of this PD&E Study:

- The most recent USFWS Standard Manatee Conditions for in water-work will be adhered to during construction.
- The most recent NMFS Sea Turtle and Smalltooth Sawfish Construction Conditions for in water-work will be adhered to during construction.
- NMFS Vibratory Pile Driving Report Calculator for noise impacts during construction will be completed during the design and permitting phase.
- Coordination with NMFS will continue and consultation with NMFS will occur during the design/ permitting phase.

Appendix A | Ground-Level Photographs

Photo 1: Tidal flats in the northwest quadrant (WL-4)

Photo 2: Tidal flats adjacent to mangrove fringe in the northwest quadrant (WL-3 and WL-4)

Photo 3: Wood storks and American egrets foraging in the Avocet Lagoon (WL-8)

Photo 4: Mangrove underneath SR-401 bridges

Photo 5: Beginning of benthic survey transects, northwest quadrant, looking southeast

Photo 6: Sea floor during benthic survey under SR-401

Photo 7: Mangroves on the northern end of the project corridor, just west of SR-401 (WL-1)

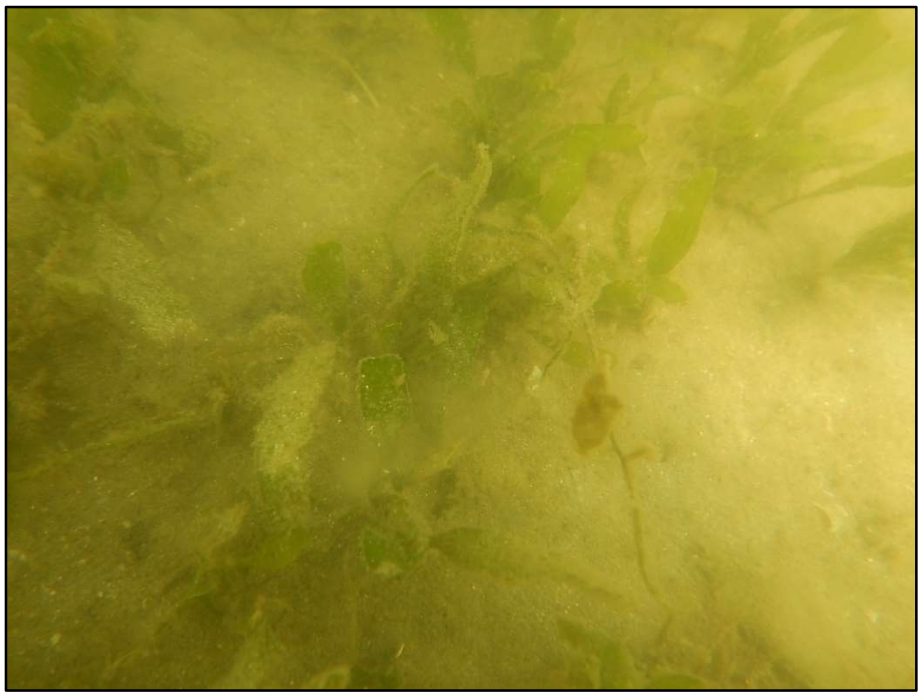

Photo 8: Sea floor during benthic surveys in the northwest quadrant of the project (west of WL-1)

Photo 9: Oysters on riprap

Photo 10: Piling with vegetation on the east end of the 401 bridges

Appendix B | Sea Turtle and Smalltooth Sawfish Construction Conditions and Standard Manatee Conditions for In-Water Work

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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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.

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. 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 | Wood Stork Key

THE CORPS OF ENGINEERS, JACKSONVILLE DISTRICT, U. S. FISH AND WILDLIFE SERVICE, JACKSONVILLE ECOLOGICAL SERVICES FIELD OFFICE AND STATE OF FLORIDA EFFECT DETERMINATION KEY FOR THE WOOD STORK IN CENTRAL AND NORTH PENINSULAR FLORIDA
September 2008

Purpose and Background

The purpose of this document is to provide a tool to improve the timing and consistency of review of Federal and State permit applications and Federal civil works projects, for potential effects of these projects on the endangered wood stork (*Mycteria americana*) within the Jacksonville Ecological Services Field Office (JAFL) geographic area of responsibility (GAR see below). The key is designed primarily for Corps Project Managers in the Regulatory and Planning Divisions and the Florida Department of Environmental Protection or its authorized designee, or Water Management Districts. The tool consists of the following dichotomous key and reference material. The key is intended to be used to evaluate permit applications and Corps' civil works projects for impacts potentially affecting wood storks or their wetland habitats. At certain steps in the key, the user is referred to graphics depicting known wood stork nesting colonies and their core foraging areas (CFA), footnotes, and other support documents. The graphics and supporting documents may be downloaded from the Corps' web page at http://www.saj.usace.army.mil/permit or at the JAFL web site at http://www.fws.gov/northflorida/WoodStorks. We intend to utilize the most recent information for both the graphics and supporting information; so should this information be updated, we will modify it accordingly. **Note: This information is provided as an aid to project review and analysis, and is not intended to substitute for a comprehensive biological assessment of potential project impacts. Such assessments are site-specific and usually generated by the project applicant or, in the case of civil works projects, by the Corps or project co-sponsor.**

Explanatory footnotes provided in the key must be closely followed whenever encountered.

Scope of the key

This key should only be used in the review of permit applications for effects determinations on wood storks within the JAFL GAR, and not for other listed species. Counties within the JAFL GAR include Alachua, Baker, Bradford, Brevard, Citrus, Clay, Columbia, Dixie, Duval, Flagler, Gilchrist, Hamilton, Hernando, Hillsborough, Lafayette, Lake, Levy, Madison, Manatee, Marion, Nassau, Orange, Pasco, Pinellas, Putnam, St. Johns, Seminole, Sumter, Suwannee, Taylor, Union, and Volusia.

The final effect determination will be based on project location and description, the potential effects to wood storks, and any measures (for example project components, special permit conditions) that avoid or minimize direct, indirect, and/or cumulative

impacts to wood storks and/or suitable wood stork foraging habitat. Projects that key to a "no effect" determination do not require additional consultation or coordination with the JAFL. Projects that key to "NLAA" also do not need further consultation; however, the JAFL staff will assist the Corps if requested, to answer questions regarding the appropriateness of mitigation options. Projects that key to a "may affect" determination equate to "likely to adversely affect" situations, and those projects should not be processed under the SPGP or any other programmatic general permit. For all "may affect" determinations, Corps Project Managers should request the JAFL to initiate formal consultation on the Wood stork.

Summary of General Wood Stork Nesting and Foraging Habitat Information

The wood stork is primarily associated with freshwater and estuarine habitats that are used for nesting, roosting, and foraging. Wood storks typically nest colonially in medium to tall trees that occur in stands located either in swamps or on islands surrounded by relatively broad expanses of open water (Ogden 1991; Rodgers et al. 1996). Successful breeding sites are those that have limited human disturbance and low exposure to land based predators. Nesting sites protected from land-based predators are characterized as those surrounded by large expanses of open water or where the nest trees are inundated at the onset of nesting and remain inundated throughout most of the breeding cycle. These colonies have water depths between 0.9 and 1.5 meters (3 and 5 feet) during the breeding season.

In addition to limited human disturbance and land-based predation, successful nesting depends on the availability of suitable foraging habitat. Such habitat generally results from a combination of average or above-average rainfall during the summer rainy season, and an absence of unusually rainy or cold weather during the winter-spring breeding season (Kahl 1964; Rodgers et al. 1987). This pattern produces widespread and prolonged flooding of summer marshes that tends to maximize production of freshwater fishes, followed by steady drying that concentrate fish during the season when storks nest (Kahl 1964). Successful nesting colonies are those that have a large number of foraging sites. To maintain a wide range of foraging opportunities, a variety of wetland habitats exhibiting short and long hydroperiods should be present. In terms of wood stork foraging, the Service (1999) describes a short hydroperiod as one where a wetland fluctuates between wet and dry in 1 to 5-month cycles, and a long hydroperiod where the wet period is greater than five consecutive months. Wood storks during the wet season generally feed in the shallow water of short-hydroperiod wetlands and in coastal habitats during low tide. During the dry season, foraging shifts to longer hydroperiod interior wetlands as they progressively dry down (though usually retaining some surface water throughout the dry season).

Because of their specialized feeding behavior, wood storks forage most effectively in shallow-water areas with highly concentrated prey. Typical foraging sites for the wood stork include freshwater marshes, depressions in cypress heads, swamp sloughs, managed impoundments, stock ponds, shallow-seasonally flooded roadside or agricultural ditches, and narrow tidal creeks or shallow tidal pools. Good foraging conditions are characterized by water that is relatively calm, open, and having water depths between 5 and 15 inches (5 and 38 cm). Preferred foraging habitat includes wetlands exhibiting a mosaic of submerged and/or emergent aquatic vegetation, and shallow, open-water areas subject to hydrologic

regimes ranging from dry to wet. The vegetative component provides nursery habitat for small fish, frogs, and other aquatic prey, and the shallow, open-water areas provide sites for concentration of the prey during daily or seasonal low water periods.

WOOD STORK KEY

Although designed primarily for use by Corps Project Managers in the Regulatory and Planning Divisions, and State Regulatory agencies or their designees, project permit applicants and co-sponsors of civil works projects may find this key and its supporting documents useful in identifying potential project impacts to wood storks, and planning how best to avoid, minimize, or compensate for any identified adverse effects.

A. Project within 2,500 feet of an active colony site[1]……*May affect*

Project more than 2,500 feet from a colony site……go to B

B. Project does not affect suitable foraging habitat[2] (SFH)…….*no effect*

Project impacts SFH[2]……go to C

C. Project impacts to SFH are less than or equal to 0.5 acre[3]…….....*NLAA*[4]

Project impacts to SFH are greater than or equal to 0.5 acre..……..go to D

D. Project impacts to SFH not within a Core Foraging Area[5] (see attached map) of a colony site, and no wood storks have been documented foraging on site…….....NLAA[4]

Project impacts to SFH are within the CFA of a colony site, or wood storks have been documented foraging on a project site outside the CFA ……..….go to E

E. Project provides SFH compensation within the Service Area of a Service-approved wetland mitigation bank or wood stork conservation bank preferably within the CFA, or consists of SFH compensation within the CFA consisting of enhancement, restoration or creation in a project phased approach that provides an amount of habitat and foraging function equivalent to that of impacted SFH (see *Wood Stork Foraging Habitat Assessment Procedure*[6] for guidance), is not contrary to the Service's *Habitat Management Guidelines For The Wood Stork In The Southeast Region* and in accordance with the CWA section 404(b)(1) guidelines……*NLAA*[4]

Project does not satisfy these elements.……....……...*May affect*

[1] An active nesting site is defined as a site currently supporting breeding pairs of wood storks, or has supported breeding wood storks at least once during the preceding 10-year period.

[2] Suitable foraging habitat (SFH) is described as any area containing patches of relatively open (< 25% aquatic vegetation), calm water, and having a permanent or seasonal water depth between 2 and 15 inches (5 to 38 cm). SFH supports and concentrates, or is capable of supporting and concentrating small fish, frogs, and other aquatic prey. Examples of SFH include, but are not limited to, freshwater marshes and stock ponds, shallow, seasonally flooded roadside or agricultural ditches, narrow tidal creeks or shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs. See above *Summary of General Wood Stork Nesting and Foraging Habitat Information*.

[3] On an individual basis, projects that impact less than 0.5 acre of SFH generally will not have a measurable effect on wood storks, although we request the Corps to require mitigation for these losses when appropriate. Wood Storks are a wide ranging species, and individually, habitat change from impacts to less than 0.5 acre of SFH is not likely to adversely affect wood storks. However, collectively they may have an effect and therefore regular monitoring and reporting of these effects are important.

[4] Upon Corps receipt of a general concurrence issued by the JAFL through the Programmatic Concurrence on this key, "NLAA" determinations for projects made pursuant to this key require no further consultation with the JAFL.

[5] The U.S. Fish and Wildlife Service (Service) has identified core foraging area (CFA) around all known wood stork nesting colonies that is important for reproductive success. In Central Florida, CFAs include suitable foraging habitat (SFH) within a 15-mile radius of the nest colony; CFAs in North Florida include SFH within a 13-mile radius of a colony. The referenced map provides locations of known colonies and their CFAs throughout Florida documented as active within the last 10 years. The Service believes loss of suitable foraging wetlands within these CFAs may reduce foraging opportunities for the wood stork.

[6]This draft document, *Wood Stork Foraging Habitat Assessment Procedure*, by Passarella and Associates, Incorporated, may serve as further guidance in ascertaining wetland foraging value to wood storks and compensating for impacts to wood stork foraging habitat.

Monitoring and Reporting Effects

For the Service to monitor cumulative effects, it is important for the Corps to monitor the number of permits and provide information to the Service regarding the number of permits issued that were determined "may affect, not likely to adversely affect." It is requested that information on date, Corps identification number, project acreage, project wetland acreage, and latitude and longitude in decimal degrees be sent to the Service quarterly.

Literature Cited

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Appendix D | Manatee Key

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960

April 25, 2013

Donald W. Kinard
Chief, Regulatory Division
U.S. Army Corps of Engineers
701 San Marco Boulevard, Room 372
Jacksonville, Florida 32207-8175

Dear Mr. Kinard:

This letter acknowledges the U.S. Fish and Wildlife Service's (Service) receipt of your April 12, 2013, letter requesting concurrence on the U.S. Army Corps of Engineers' (Corps) implementation of the revised Manatee Key and its enclosures dated April 2013. This letter represents the Service's views on the potential effects of the proposed action in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*) and the Marine Mammal Protection Act of 1972, as amended (MMPA) (16 U.S.C. 1361 *et seq.*). For future reference, we have assigned this concurrence letter to Service Consultation Code 2013-I-0151.

The Manatee Key is a tool that has been used by the Corps' Regulatory Division since 1992 to assist in making its effect determinations, as required under 50 CFR 402.14(a), on permit applications for in-water activities such as, but not limited to, maintenance dredging, the placement of fill material for shoreline stabilization, the construction or placement of other in-water structures, as well as the construction of docks, marinas, boat ramps, boat slips, dry storage or any other watercraft access structures or facilities. Your agency has determined utilization of the 2013 Manatee Key, and its enclosures, to review projects in waters accessible to the endangered West Indian manatee (*Trichechus manatus*) may affect, but is not likely to adversely affect the manatee or its designated critical habitat.

Since July 2011, the Service has worked closely with the Corps and the Florida Fish and Wildlife Conservation Commission (FWC) on revising the March 2011 version of the Manatee Key and its associated maps. Minor changes to the March 2011 Manatee Key were made to ensure consistency with the manatee programmatic consultation co-developed by the Corps and the Service in cooperation with the FWC.

For all new or expanding multi-slip facilities located in a county with a State-approved MPP in place that reach a "may affect, not likely to adversely affect" determination using the 2013 Manatee Key, the Service concurs with these determinations and no further consultation with the Service is necessary.

For all applications to construct residential dock facilities that reach a "may affect, not likely to adversely affect" determination using the 2013 Manatee Key, the Service concurs with these determinations and no further consultation with the Service is necessary. As such, the Service will not receive permit applications from the Corps for these types of facilities.

For those counties with a watercraft-related mortality rate that averages less than one dead manatee a year, we conclude take is not reasonably certain to occur as a result of new or expanding watercraft access facilities in these counties. Therefore, for multi-slip facilities proposed to be built or expanded in those counties that reach a "may affect, not likely to adversely affect" determination using the 2013 Manatee Key, the Service concurs with these effect determinations and no further consultation with the Service is necessary.

For all applications to repair or replace existing multi-slip facilities that do not provide new watercraft access and reach a "may affect, not likely to adversely affect" determination using the 2013 Manatee Key, the Service concurs with these determinations. As such, the Service will not receive permit applications from the Corps for these types of existing facilities since they were covered by the Service's March 17, 2011, consultation on the 2011 Manatee Key.

All other future applications for multi-slip facilities reaching a "may affect, not likely to adversely affect" determination using the 2013 Manatee Key will be forwarded to the Service for concurrence. The Corps agreed to forward to the Service those applications that are consistent with the Manatee Key.

All culverts 8 inches to 8 feet in diameter must be grated to prevent manatee entrapment. To effectively prevent manatee access, grates must be permanently fixed, spaced a maximum of 8 inches apart (may be less for culverts smaller than 16 inches in diameter) and may be installed diagonally, horizontally, or vertically. Culverts less than 8 inches or greater than 8 feet in diameter are exempt from this requirement. If new culverts and/or the maintenance or modification of existing culverts are grated as described above, the determination of "may affect, not likely to adversely affect" is appropriate and no further consultation with the Service is necessary.

We have examined the April 2013 version of the Manatee Key and its enclosures and agree with its structure and content. Currently, the FWC does not require implementation of the signage component of the standard construction conditions for in-water work for the State's review of the permit application. However, the Corps and the Service will require applicants to implement the signage component of the standard construction conditions for any in-water work authorized by a Department of the Army permit. Therefore, except as noted above, for all future applications reviewed with the April 2013 version of the Manatee Key in which the Corps reaches a "may affect, not likely to adversely affect" determination with respect to the manatee and/or its designated critical habitat, the Service hereby concurs with those determinations in accordance with 50 CFR 402.14(b)1. As such, the March 2011 version of the Manatee Key and its associated maps, as well as other earlier versions of the Manatee Key, are no longer applicable.

The Service does not anticipate the proposed action will result in the incidental take of manatees. Furthermore, the Service is not including an incidental take authorization for marine mammals at this time because the incidental take of marine mammals is not expected to occur and has not been authorized under section 101(a)(5) of the MMPA and/or its 1994 Amendments. Following issuance of such regulations or authorizations, the Service may reinitiate consultation to include an incidental take statement for marine mammals, if deemed appropriate.

This concurrence letter fulfills the requirements of section 7 of the Act and no further action is required. If modifications are made to the Manatee Key, if additional information involving potential effects to listed species becomes available, or if a new species is listed or new critical habitat is designated that may be affected by the project, then reinitiation of consultation may be necessary.

This concurrence letter represents the collective assessment of the April 2013 version of the Manatee Key and its enclosures from the Service's three field offices in Florida: Panama City, North Florida, and South Florida. If you have any questions or concerns about this consultation, please feel free to contact Kalani Cairns at 772-469-4240.

Sincerely yours,

Larry Williams
State Supervisor

cc: electronic copy only
Corps, Jacksonville, Florida (Stuart Santos)
Service, Atlanta, Georgia (Jack Arnold)
Service, Jacksonville, Florida (Dawn Jennings)
Service, Panama City, Florida (Don Imm)

THE CORPS OF ENGINEERS, JACKSONVILLE DISTRICT, AND THE STATE OF FLORIDA EFFECT DETERMINATION KEY FOR THE MANATEE IN FLORIDA
April 2013

Purpose and background of the key

The purpose of this document is to provide guidance to improve the review of permit applications by U.S. Army Corps of Engineers' (Corps) Project Managers in the Regulatory Division regarding the potential effects of proposed projects on the endangered West Indian manatee (*Trichechus manatus*) in Florida, and by the Florida Department of Environmental Protection or its authorized designee or Water Management District, for evaluating projects under the State Programmatic General Permit (SPGP) or any other Programmatic General Permits that the Corps may issue for administration by the above agencies. Such guidance is contained in the following dichotomous key. The key applies to permit applications for in-water activities such as, but not limited to: (1) dredging [new or maintenance dredging of not more than 50,000 cubic yards], placement of fill material for shoreline stabilization, and construction/placement of other in-water structures as well as (2) construction of docks, marinas, boat ramps and associated trailer parking spaces, boat slips, dry storage or any other watercraft access structures or facilities.

At a certain step in the key, the user is referred to graphics depicting important manatee areas or areas with inadequate protection. The maps can be downloaded from the Corps' web page at http://www.saj.usace.army.mil/Missions/Regulatory/SourceBook.aspx. We intend to utilize the most recent depiction of these areas, so should these areas be modified by statute, rule, ordinance and/or other legal mandate or authorization, we will modify the graphical depictions accordingly. These areas may be shaded or otherwise differentiated for identification on the maps.

Explanatory footnotes are provided in the key and must be closely followed whenever encountered.

Scope of the key

This key should only be used in the review of permit applications for effect determinations on manatees and should not be used for other listed species or for other aquatic resources such as Essential Fish Habitat (EFH). Corps Project Managers should ensure that consideration of the project's effects on any other listed species and/or on EFH is performed independently. This key may be used to evaluate applications for all types of State of Florida (State Programmatic General Permits, noticed general permits, standard general permits, submerged lands leases, conceptual and individual permits) and Department of the Army (standard permits, letters of permission, nationwide permits, and regional general permits) permits and authorizations. The final effect determination will be based on the project location and description; the potential effects to manatees, manatee habitat, and/or manatee critical habitat; and any measures (such as project components, standard construction precautions, or special conditions included in the authorization) to avoid or minimize effects to manatees or manatee critical habitat. Projects that key to a "may affect" determination equate to "likely to adversely affect" situations, and those projects should not be processed under the SPGP or any other programmatic general permit. For

all “may affect” determinations, Corps Project Managers shall refer to the Manatee Programmatic Biological Opinion, dated March 21, 2011, for guidance on eliminating or minimizing potential adverse effects resulting from the proposed project. If unable to resolve the adverse effects, the Corps may refer the applicant to the U.S. Fish and Wildlife Service (Service) for further assistance in attempting to revise the proposed project to a “may affect, not likely to adversely affect” level. The Service will coordinate with the Florida Fish and Wildlife Conservation Commission (FWC) and the counties, as appropriate. Projects that provide new access for watercraft and key to “may affect, not likely to adversely affect” may or may not need to be reviewed individually by the Service.

MANATEE KEY
Florida[1]
April 2013

The key is not designed to be used by the Corps' Regulatory Division for making their effect determinations for dredging projects greater than 50,000 cubic yards, the Corps' Planning Division in making their effect determinations for civil works projects or by the Corps' Regulatory Division for making their effect determinations for projects of the same relative scope as civil works projects. These types of activities must be evaluated by the Corps independently of the key.

A. Project is not located in waters accessible to manatees and does not directly or indirectly affect manatees (see Glossary).....*No effect*

Project is located in waters accessible to manatees **or** directly or indirectly affects manatees ..... B

B. Project consists of one or more of the following activities, all of which are *May affect*:

1. blasting or other detonation activity for channel deepening and/or widening, geotechnical surveys or exploration, bridge removal, movies, military shows, special events, etc.;

2. installation of structures which could restrict or act as a barrier to manatees;

3. new or changes to existing warm or fresh water discharges from industrial sites, power plants, or natural springs or artesian wells (but only if the new or proposed change in discharge requires a Corps permit to accomplish the work);

4. installation of new culverts and/or maintenance or modification of existing culverts (where the culverts are 8 inches to 8 feet in diameter, ungrated and in waters accessible, or potentially accessible, to manatees)[2];

5. mechanical dredging from a floating platform, barge or structure[3] that restricts manatee access to less than half the width of the waterway;

6. creation of new slips or change in use of existing slips, even those located in a county with a State-approved Manatee Protection Plan (MPP) in place and the number of slips is less than the MPP threshold, to accommodate docking for repeat use vessels, (*e.g.*, water taxis, tour boats, gambling boats, etc; or slips or structures that are not civil works projects, but are frequently used to moor large vessels (>100') for shipping and/or freight purposes; does not include slips used for docking at boat sales or repair facilities or loading/unloading at dry stack storage facilities and boat ramps); [Note: For projects within Bay, Dixie, Escambia, Franklin, Gilchrist, Gulf, Hernando, Jefferson, Lafayette, Monroe (south of Craig Key), Nassau, Okaloosa, Okeechobee, Santa Rosa, Suwannee, Taylor, Wakulla or Walton County, the reviewer should proceed to Couplet C.]

7. any type of in-water activity in a Warm Water Aggregation Area (WWAA) or No Entry Area (see Glossary and accompanying Maps[4]); [Note: For residential docking facilities in a Warm Water Aggregation Area that is not a Federal manatee sanctuary or No Entry Area, the reviewer should proceed to couplet C.]

8. creation or expansion of canals, basins or other artificial shoreline and/or the connection of such features to navigable waters of the U.S.; [Note: For projects proposing a single residential dock, the reviewer should proceed to couplet C; otherwise, project is a *May Affect*.]

9. installation of temporary structures (docks, buoys, etc.) utilized for special events such as boat races, boat shows, military shows, etc., but only when consultation with the U.S. Coast Guard and FWS has not occurred; [Note: See programmatic consultation with the U.S. Coast Guard on manatees dated May 10, 2010.].

Project is other than the activities listed above C

C. Project is located in an Important Manatee Area (IMA) (see Glossary and accompanying Maps[4]) ..... D

Project is not located in an Important Manatee Area (IMA) (see Glossary and accompanying Maps[4]) ..... G

D. Project includes dredging of less than 50,000 cubic yards ..... E

Project does not include dredging ..... G

E. Project is for dredging a residential dock facility or is a land-based dredging operation ..... N

Project not as above ..... F

F. Project proponent **does not elect** to follow all dredging protocols described on the maps for the respective IMA in which the project is proposed ..... *May affect*

Project proponent **elects** to follow all dredging protocols described on the maps for the respective IMA in which the project is proposed ..... G

G. Project provides new[5] access for watercraft, *e.g.*, docks or piers, marinas, boat ramps and associated trailer parking spaces, new dredging, boat lifts, pilings, floats, floating docks, floating vessel platforms, boat slips, dry storage, mooring buoys, or other watercraft access (residential boat lifts, pilings, floating docks, and floating vessel platforms installed in existing slips are not considered new access) or improvements allowing increased watercraft usage ..... H

Project does not provide new[5] access for watercraft, *e.g.*, bulkheads, seawalls, riprap, maintenance dredging, boardwalks and/or the maintenance (repair or rehabilitation) of currently serviceable watercraft access structures provided all of the following are met: (1) the number of slips is not increased; (2) the number of existing slips is not in question; and (3) the improvements do not allow increased watercraft usage ..... N

H. Project is located in the Braden River Area of Inadequate Protection (Manatee County) (see Glossary and accompanying AIP Map[4])
..... *May affect*

Project is not located in the Braden River Area of Inadequate Protection (Manatee County) (see Glossary and accompanying AIP Map[4]) I

I. Project is for a multi-slip facility (see Glossary) ..... J

Project is for a residential dock facility or is for dredging (see Glossary) ..... N

J. Project is located in a county that currently has a State-approved MPP in place (BREVARD, BROWARD, CITRUS, CLAY, COLLIER, DUVAL, INDIAN RIVER, LEE, MARTIN, MIAMI-DADE, PALM BEACH, ST. LUCIE, SARASOTA, VOLUSIA) or shares contiguous waters with a county having a State-approved MPP in place (LAKE, MARION, SEMINOLE)[6] ..... K

Project is located in a county not required to have a State-approved MPP L

K. Project has been developed or modified to be consistent with the county's State-approved MPP **and** has been verified by a FWC review (or FWS review if project is exempt from State permitting) **or** the number of slips is below the MPP threshold ..... N

Project has not been reviewed by the FWC or FWS **or** has been reviewed by the FWC or FWS **and** determined that the project is not consistent with the county's State-approved MPP ..... *May affect*

L. Project is located in one of the following counties: CHARLOTTE, DESOTO[7], FLAGLER, GLADES, HENDRY, HILLSBOROUGH, LEVY, MANATEE, MONROE[7], PASCO[7], PINELLAS ..... M

Project is located in one of the following counties: BAY, DIXIE, ESCAMBIA, FRANKLIN, GILCHRIST, GULF, HERNANDO, JEFFERSON, LAFAYETTE, MONROE (south of Craig Key), NASSAU, OKALOOSA, OKEECHOBEE, PUTNAM, SANTA ROSA, ST. JOHNS, SUWANNEE, TAYLOR, WAKULLA, WALTON ..... N

M. The number of slips does not exceed the residential dock density threshold (see Glossary) ..... N

The number of slips exceeds the residential dock density threshold (see Glossary) ..... *May affect*

N. Project impacts to submerged aquatic vegetation[8], emergent vegetation or mangrove will have beneficial, insignificant, discountable[9] or no effects on the manatee[10] ..... O

Project impacts to submerged aquatic vegetation[8], emergent vegetation or mangrove may adversely affect the manatee[10] ..... *May affect*

O. Project proponent **elects** to follow standard manatee conditions for in-water work[11] and requirements, as appropriate for the proposed activity, prescribed on the maps[4] ..... P

Project proponent **does not elect** to follow standard manatee conditions for in-water work[11] and appropriate requirements prescribed on the maps[4] ..... *May affect*

P. If project is for a new or expanding[5] multi-slip facility and is located in a county with a State-approved MPP in place **or** in Bay, Dixie, Escambia, Franklin, Gilchrist, Gulf, Hernando, Jefferson, Lafayette, Monroe (south of Craig Key), Nassau, Okaloosa, Okeechobee, Putnam, St. Johns, Santa Rosa, Suwannee, Taylor, Wakulla or Walton County, the determination of "*May affect, not likely to adversely affect*" is appropriate[12] and no further consultation with the Service is necessary.

If project is for a new or expanding[5] multi-slip facility and is located in Charlotte, Desoto, Flagler, Glades, Hendry, Hillsborough, Levy, Manatee, Monroe (north of Craig Key), Pasco, or Pinellas County, further consultation with the Service is necessary for "*May affect, not likely to adversely affect*" determinations.

If project is for repair or rehabilitation of a multi-slip facility and is located in an Important Manatee Area, further consultation with the Service is necessary for "*May affect, not likely to adversely affect*" determinations. If project is for repair or rehabilitation of a multi-slip facility and: (1) is not located in an Important Manatee Area; (2) the number of slips is not increased; (3) the number of existing slips is not in question; and (4) the improvements to the existing watercraft access structures do not allow increased watercraft usage, the determination of "*May affect, not likely to adversely affect*" is appropriate[12] and no further consultation with the Service is necessary.

If project is a residential dock facility, shoreline stabilization, or dredging, the determination of "*May affect, not likely to adversely affect*" is appropriate[12] and no further consultation with the Service is necessary. Note: For residential dock facilities located in a Warm Water Aggregation Area or in a No Entry area, seasonal restrictions may apply. See footnote 4 below for maps showing restrictions.

If project is other than repair or rehabilitation of a multi-slip facility, a new[5] multi-slip facility, residential dock facility, shoreline stabilization, or dredging, and does not provide new[5] access for watercraft or

improve an existing access to allow increased watercraft usage, the determination of "*May affect, not likely to adversely affect*" is appropriate[12] and no further consultation with the Service is necessary.

[1] On the St. Mary's River, this key is only applicable to those areas that are within the geographical limits of the State of Florida.

[2] All culverts 8 inches to 8 feet in diameter must be grated to prevent manatee entrapment. To effectively prevent manatee access, grates must be permanently fixed, spaced a maximum of 8 inches apart (may be less for culverts smaller than 16 inches in diameter) and may be installed diagonally, horizontally or vertically. For new culverts, grates must be attached prior to installation of the culverts. Culverts less than 8 inches or greater than 8 feet in diameter are exempt from this requirement. If new culverts and/or the maintenance or modification of existing culverts are grated as described above, the determination of "*May affect, not likely to adversely affect*" is appropriate[11] and no further consultation with the Service is necessary.

[3] If the project proponent agrees to follow the standard manatee conditions for in-water work as well as any special conditions appropriate for the proposed activity, further consultation with the Service is necessary for "*May affect, not likely to adversely affect*" determinations. These special conditions may include, but are not limited to, the use of dedicated observers (see Glossary for definition of dedicated observers), dredging during specific months (warm weather months vs cold weather months), dredging during daylight hours only, adjusting the number of dredging days, does not preclude or discourage manatee egress/ingress with turbidity curtains or other barriers that span the width of the waterway, etc.

[4] Areas of Inadequate Protection (AIPs), Important Manatee Areas (IMAs), Warm Water Aggregation Areas (WWAAs) and No Entry Areas are identified on these maps and defined in the Glossary for the purposes of this key. These maps can be viewed on the Corps' web page. If projects are located in a No Entry Area, special permits may be required from FWC in order to access these areas (please refer to Chapter 68C-22 F.A.C. for boundaries; maps are also available at FWC's web page).

[5] New access for watercraft is the addition or improvement of structures such as, but not limited to, docks or piers, marinas, boat ramps and associated trailer parking spaces, boat lifts, pilings, floats, floating docks, floating vessel platforms, (maintenance dredging, residential boat lifts, pilings, floating docks, and floating vessel platforms installed in existing slips are not considered new access), boat slips, dry storage, mooring buoys, new dredging, etc., that facilitates the addition of watercraft to, and/or increases watercraft usage in, waters accessible to manatees. The repair or rehabilitation of any type of currently serviceable watercraft access structure is not considered new access provided all of the following are met: (1) the number of slips is not increased; (2) the number of existing slips is not in question; and (3) the improvements to the existing watercraft access structures do not result in increased watercraft usage.

[6] Projects proposed within the St. Johns River portion of Lake, Marion, and Seminole counties and contiguous with Volusia County shall be evaluated using the Volusia County MPP.

[7] For projects proposed within the following areas: the Peace River in DeSoto County; all areas north of Craig Key in Monroe County, and the Anclote and Pithlachascotee Rivers in Pasco County, proceed to Couplet M. For all other locations in DeSoto, Monroe (south of Craig Key) and Pasco Counties, proceed to couplet N.

[8] Where the presence of the referenced vegetation is confirmed within the area affected by docks and other piling-supported minor structures and the reviewer has concluded that the impacts to SAV, marsh or mangroves would not adversely affect the manatee or its critical habitat, proceed to couplet O.

Where the presence of the referenced vegetation is confirmed within the area affected by docks and other piling-supported minor structures and the reviewer has concluded that the impacts to SAV, marsh or mangroves would adversely affect the manatee or its critical habitat, the applicant can elect to avoid/minimize impacts to that vegetation. In that instance, where impacts are unavoidable and the applicant elects to abide by or employ construction techniques that exceed the criteria in the following documents, the reviewer should conclude that the impacts to SAV, marsh or mangroves would not adversely affect the manatee or its critical habitat and proceed to couplet O.

- "Construction Guidelines in Florida for Minor Piling-Supported Structures Constructed in or over Submerged Aquatic Vegetation (SAV), Marsh or Mangrove Habitat," prepared jointly by the U.S. Army Corps of Engineers and the National Marine Fisheries Service (August 2001) [refer to the Corps' web page], and

- "Key for Construction Conditions for Docks or Other Minor Structures Constructed in or over Johnson's seagrass (*Halophila johnsonii*)," prepared jointly by the National Marine Fisheries Service and U.S. Army Corps of Engineers (October 2002), for those projects within the known range of Johnson's seagrass occurrence (Sebastian Inlet to central Biscayne Bay in the lagoon systems on the east coast of Florida) [refer to the Corps' web page],

Where the presence of the referenced vegetation is confirmed within the area affected by docks and other piling-supported minor structures and the reviewer has concluded that the impacts to SAV, marsh or mangroves would adversely affect the manatee or its critical habitat, and the applicant does not elect to follow the above Guidelines, the Corps will need to request formal consultation on the manatee with the Service as *May affect*.

For activities other than docks and other piling-supported minor structures proposed in SAV, marsh, or mangroves (*e.g.*, new dredging, placement of riprap, bulkheads, etc.), if the reviewer determines the impacts to the SAV, marsh or mangroves will not adversely affect the manatee or its critical habitat, proceed to couplet O, otherwise the Corps will need to request formal consultation on the manatee with the Service as *May affect*.

[9] See Glossary, under "is not likely to adversely affect."

[10] Federal reviewers, when making your effects determination, consider effects to manatee designated critical habitat pursuant to section 7(a)(2) of the Endangered Species Act. State reviewers, when making your effects determination, consider effects to manatee habitat within the entire State of Florida, pursuant to Chapter 370.12(2)(b) Florida Statutes.

[11] See the Corps' web page for manatee construction conditions. At this time, manatee construction precautions c and f are not required in the following Florida counties: Bay, Escambia, Franklin, Gilchrist, Gulf, Jefferson, Lafayette, Okaloosa, Santa Rosa, Suwannee, and Walton.

[12] By letter dated April 25, 2013, the Corps received the Service's concurrence with "*May affect, not likely to adversely affect*" determinations made pursuant to this key for the following activities: (1) selected non-watercraft access projects; (2) watercraft-access projects that are residential dock facilities, excluding those located in the Braden River AIP; (3) launching facilities solely for kayaks and canoes, and (4) new or expanding multi-slip facilities located in Bay, Dixie, Escambia, Franklin, Gilchrist, Gulf, Hernando, Jefferson, Lafayette, Monroe (south of Craig Key), Nassau, Okaloosa, Okeechobee, Santa Rosa, Suwannee, Taylor, Wakulla or Walton County.

Additionally, in the same letter dated April 25, 2013, the Corps received the Service's concurrence for "*May affect, not likely to adversely affect*" determinations specifically made pursuant to Couplet G of the key for the repair or rehabilitation of currently serviceable multi-slip watercraft access structures provided all of the following are met: (1) the project is not located in an IMA, (2) the number of slips is not increased; (3) the number of existing slips is not in question; and (4) the improvements to the existing watercraft access structures do not allow increased watercraft usage. Upon receipt of such a programmatic concurrence, no further consultation with the Service for these projects is required.

GLOSSARY

Areas of inadequate protection (AIP) – Areas within counties as shown on the maps where the Service has determined that measures intended to protect manatees from the reasonable certainty of watercraft-related take are inadequate. Inadequate protection may be the result of the absence of manatee or other watercraft speed zones, insufficiency of existing speed zones, deficient speed zone signage, or the absence or insufficiency of speed zone enforcement.

Boat slip – A space on land or in or over the water, other than on residential land, that is intended and/or actively used to hold a stationary watercraft or its trailer, and for which intention and/or use is confirmed by legal authorization or other documentary evidence. Examples of boat slips include, but are not limited to, docks or piers, marinas, boat ramps and associated trailer parking spaces, boat lifts, floats, floating docks, pilings, boat davits, dry storage, etc.

Critical habitat – For listed species, this consists of: (1) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of the Endangered Species Act (ESA), on which are found those physical or biological features (constituent elements) (a) essential to the conservation of the species and (b) which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of the ESA, upon a determination by the Secretary that such areas are essential for the conservation of the species. Designated critical habitats are described in 50 CFR 17 and 50 CFR 226.

Currently serviceable – Currently, serviceable means usable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects – The direct or immediate effects of the project on the species or its habitat.

Dredging – For the purposes of this key, the term dredging refers to all in-water work associated with dredging operations, including mobilization and demobilization activities that occur in water or require vessels.

Emergent vegetation – Rooted emergent vascular macrophytes such as, but not limited to, cordgrass (*Spartina alterniflora and S. patens*), needle rush (J*uncus roemerianus*), swamp sawgrass (*Cladium mariscoides*), saltwort (*Batis maritima*), saltgrass (*Distichlis spicata*), and glasswort (*Salicornia virginica*) found in coastal salt marsh-related habitats (tidal marsh, salt marsh, brackish marsh, coastal marsh, coastal wetlands, tidal wetlands).

Formal consultation – A process between the Services and a Federal agency or applicant that: (1) determines whether a proposed Federal action is likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat; (2) begins with a Federal agency's written request and submittal of a complete initiation package; and (3) concludes with the issuance of a biological opinion and incidental take statement by either of the Services. If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required (except when the Services concur, in writing, that a proposed

action "is not likely to adversely affect" listed species or designated critical habitat). [50 CFR 402.02, 50 CFR 402.14]

Important manatee areas (IMA) – Areas within certain counties where increased densities of manatees occur due to the proximity of warm water discharges, freshwater discharges, natural springs and other habitat features that are attractive to manatees. These areas are heavily utilized for feeding, transiting, mating, calving, nursing or resting as indicated by aerial survey data, mortality data and telemetry data. Some of these areas may be federally-designated sanctuaries or state-designated "seasonal no entry" zones. Maps depicting important manatee areas and any accompanying text may contain a reference to these areas and their special requirements. Projects proposed within these areas must address their special requirements.

Indirect effects – Those effects that are caused by or will result from the proposed action and are later in time, but are still reasonably certain to occur. Examples of indirect effects include, but are not limited to, changes in water flow, water temperature, water quality (*e.g.*, salinity, pH, turbidity, nutrients, chemistry), prop dredging of seagrasses, and manatee watercraft injury and mortality. Indirect effects also include watercraft access developments in waters not currently accessible to manatees, but watercraft access can, is, or may be planned to waters accessible to manatees by the addition of a boat lift or the removal of a dike or plug.

Informal consultation – A process that includes all discussions and correspondence between the Services and a Federal agency or designated non-Federal representative, prior to formal consultation, to determine whether a proposed Federal action may affect listed species or critical habitat. This process allows the Federal agency to utilize the Services' expertise to evaluate the agency's assessment of potential effects or to suggest possible modifications to the proposed action which could avoid potentially adverse effects. If a proposed Federal action may affect a listed species or designated critical habitat, formal consultation is required (except when the Services concur, in writing, that a proposed action "is not likely to adversely affect" listed species or designated critical habitat). [50 CFR 402.02, 50 CFR 402.13]

In-water activity – Any type of activity used to construct/repair/replace any type of in-water structure or fill; the act of dredging.

In-water structures – watercraft access structures – Docks or piers, marinas, boat ramps, boat slips, boat lifts, floats, floating docks, pilings (depending on use), boat davits, etc.

In-water structures – other than watercraft access structures – Bulkheads, seawalls, riprap, groins, boardwalks, pilings (depending on use), etc.

Is likely to adversely affect – The appropriate finding in a biological assessment (or conclusion during informal consultation) if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions and the effect is not: discountable, insignificant, or beneficial (see definition of "is not likely to adversely affect"). An "is likely to adversely affect" determination requires the initiation of formal consultation under section 7 of the ESA.

Is not likely to adversely affect – The appropriate conclusion when effects on listed species are expected to be discountable, insignificant, or completely beneficial. **Discountable effects** are those extremely unlikely to occur. **Insignificant effects** relate to the size of the impact and should never reach the scale where take occurs. **Beneficial effects** are contemporaneous positive effects without any adverse effects to the species. Based on best judgment, a person would not (1) be able to meaningfully measure, detect, or evaluate insignificant effects or (2) expect discountable effects to occur.

Manatee Protection Plan (MPP) – A manatee protection plan (MPP) is a comprehensive planning document that addresses the long-term protection of the Florida manatee through law enforcement, education, boat facility siting, and habitat protection initiatives. Although MPPs are primarily developed by the counties, the plans are the product of extensive coordination and cooperation between the local governments, the FWC, the Service, and other interested parties.

Manatee Protection Plan thresholds – The smallest size of a multi-slip facility addressed under the purview of a Manatee Protection Plan (MPP). For most MPPs, this threshold is five slips or more. For Brevard, Clay, Citrus, and Volusia County MPPs, this threshold is three slips or more.

Mangroves – Rooted emergent trees along a shoreline that, for the purposes of this key, include red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*) and white mangrove (*Laguncularia racemosa*).

May affect – The appropriate conclusion when a proposed action may pose <u>any</u> effects on listed species or designated critical habitat. When the Federal agency proposing the action determines that a "may affect" situation exists, then they must either request the Services to initiate formal consultation or seek written concurrence from the Services that the action "is not likely to adversely affect" listed species. For the purpose of this key, all "may affect" determinations equate to "likely to adversely affect" and Corps Project Managers should request the Service to initiate formal consultation on the manatee or designated critical habitat. **No effect** – the appropriate conclusion when the action agency determines its proposed action will not affect a listed species or designated critical habitat.

Multi-slip facility – Multi-slip facilities include commercial marinas, private multi-family docks, boat ramps and associated trailer parking spaces, dry storage facilities and any other similar structures or activities that provide access to the water for multiple (five slips or more, except in Brevard, Clay, Citrus, and Volusia counties where it is three slips or more) watercraft. In some instances, the Corps and the Service may elect to review multiple residential dock facilities as a multi-slip facility.

New access for watercraft – New dredging and the addition, expansion or improvement of structures such as, but not limited to, docks or piers, marinas, boat ramps and associated trailer parking spaces, boat lifts, pilings, floats, floating docks, floating vessel platforms, (residential boat lifts, pilings, floats, and floating vessel platforms installed in existing slips are not considered new access), boat slips, dry storage, mooring buoys, etc., that facilitates the addition of watercraft to, and/or increases watercraft usage in, waters accessible to manatees.

Observers – During dredging and other in-water operations within manatee accessible waters, the standard manatee construction conditions require all on-site project personnel to watch for manatees to ensure that those standard manatee construction conditions are met. Within important manatee areas (IMA) and under special circumstances, heightened observation is needed. **Dedicated Observers** are those having some prior experience in manatee observation, are dedicated only for this task, and must be someone other than the dredge and equipment operators/mechanics. **Approved Observers** are dedicated observers who also must be approved by the Service (if Federal permits are involved) and the FWC (if state permits are involved), prior to work commencement. Approved observers typically have significant and often project-specific observational experience. Documentation on prior experience must be submitted to these agencies for approval and must be submitted a minimum of 30 days prior to work commencement. When dedicated or approved observers are required, observers must be on site during all in-water activities, and be equipped with polarized sunglasses to aid in manatee observation. For prolonged in-water operations, multiple observers may be needed to perform observation in shifts to reduce fatigue (recommended shift length is no longer than six hours). Additional information concerning observer approval can be found at FWC's web page.

Residential boat lift – A boat lift installed on a residential dock facility.

Residential dock density ratio threshold – The residential dock density ratio threshold is used in the evaluation of multi-slip projects in some counties without a State-approved Manatee Protection Plan and is consistent with 1 boat slip per 100 linear feet of shoreline (1:100) owned by the applicant.

Residential dock facility – A residential dock facility means a private residential dock which is used for private, recreational or leisure purposes for single-family or multi-family residences designed to moor no more than four vessels (except in Brevard, Clay, Citrus, and Volusia counties which allow only two vessels). This also includes normal appurtenances such as residential boat lifts, boat shelters with open sides, stairways, walkways, mooring pilings, dolphins, etc. In some instances, the Corps and the Service may elect to review multiple residential dock facilities as a multi-slip facility.

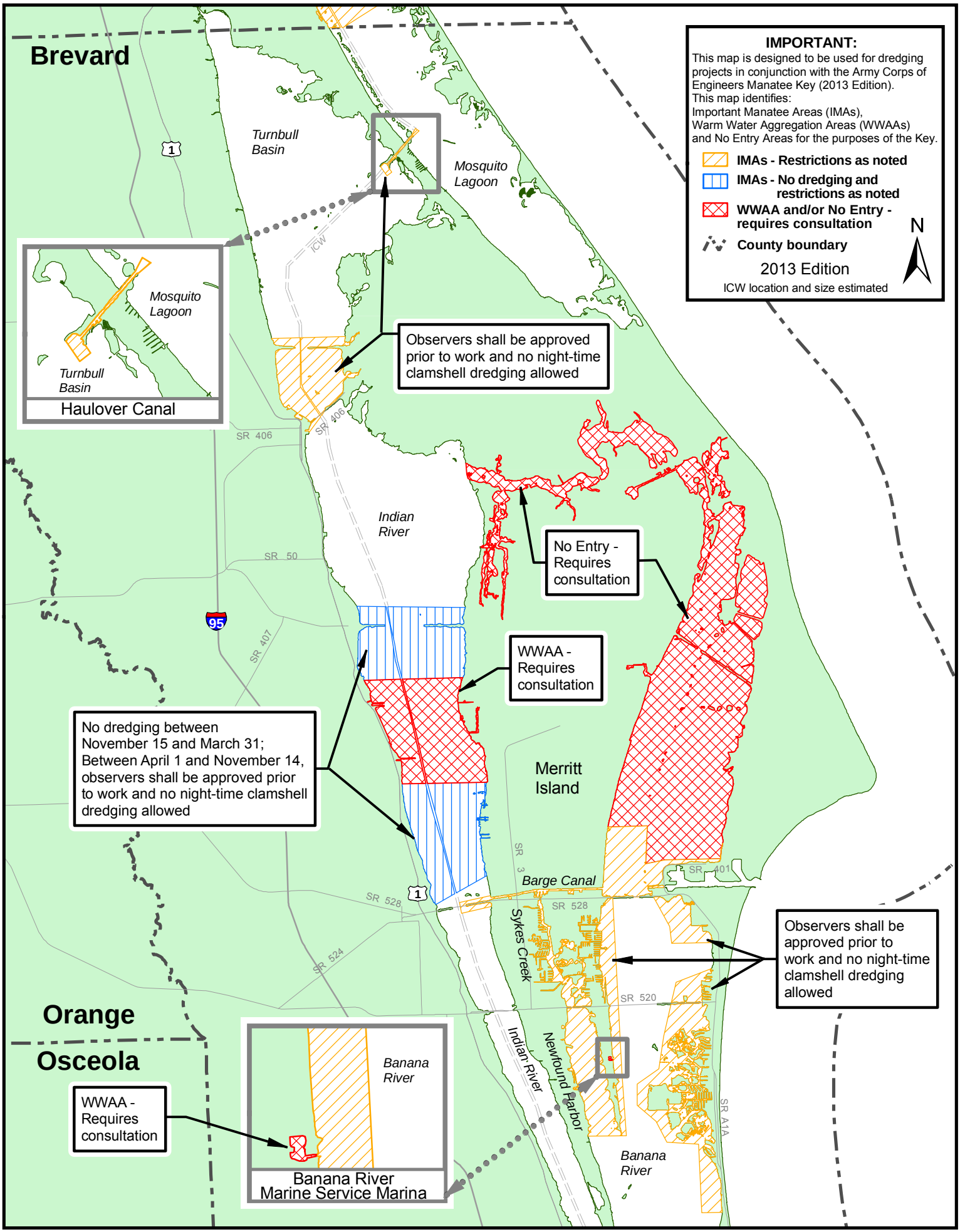
Submerged aquatic vegetation (SAV) – Rooted, submerged, aquatic plants such as, but not limited to, shoal grass (*Halodule wrightii*), paddle grass (*Halophila decipiens*), star grass (*Halophila engelmanni*), Johnson's seagrass (*Halophila johnsonii*), sago pondweed (*Potamogeton pectinatus*), clasping-leaved pondweed (*Potamogeton perfoliatus*), widgeon grass (*Ruppia maritima*), manatee grass (*Syringodium filiforme*), turtle grass (*Thalassia testudinum*), tapegrass (*Vallisneria americana*), and horned pondweed (*Zannichellia palustris*).

Warm Water Aggregation Areas (WWAAs) and **No Entry Areas** – Areas within certain counties where increased densities of manatees occur due to the proximity of artificial or natural warm water discharges or springs and are considered necessary for survival. Some of these areas may be federally-designated manatee sanctuaries or state-designated seasonal "no entry" manatee protection zones. Projects proposed within these areas may require consultation in order to offset expected adverse impacts. In addition, special permits may be required from the FWC in order to access these areas.

Watercraft access structures – Docks or piers, marinas, boat ramps and associated trailer parking spaces, boat slips, boat lifts, floats, floating docks, pilings, boat davits, dry storage, etc.

Waters accessible to manatees – Although most waters of the State of Florida are accessible to the manatee, there are some areas such as landlocked lakes that are not. There are also some weirs, salinity control structures and locks that may preclude manatees from accessing water bodies. If there is any question about accessibility, contact the Service or the FWC.

Brevard County - North



Appendix E | UMAM Forms

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR-401 PD&E		WL-1 Mangrove Swamp

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
612	NWI- E2SS3M	Impact	0.10 acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
21- Northern Indian River Lagoon (IRL)	Class II	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

This fringe mangrove wetland is located on the west side of SR 401, north of the bridge, and adjacent to the Banana River. Additional fringe mangroves are located to the north and a stormwater pond is located to the south.

Assessment area description

The dominant vegetation includes red (*Rhizophora mangle*), black (*Avicennia germinans*) & white *(Laguncularia racemosa*) mangroves. Other species include buttonwoods (*Conocarpus erectus*), pond apple (*Annona glabra*), cabbage palm (*Sabal palmetto*), sea oxeye daisy (*Borrichia frutescens*).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
The project area is adjacent to the IRL, north of the Banana River Aquatic Preserve and east of the Merritt Island National Wildlife Refuge.	Mangroves are common within the surrounding areas

Functions	Mitigation for previous permit/other historic use
Provides limited cover, refuge, roosting and foraging habitat for species. Provides water quality improvement.	N/A

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)
Various avian species including wood stork, herons and egrets, roseate spoonbill, ibis, cormorants	Wood stork (FT): could utilize for foraging, refuge Little blue heron (ST): could utilize for foraging, refuge Tri-colored heron (ST): could utilize for foraging, refuge Reddish egret (ST): could utilize for foraging, refuge Roseate spoonbill (ST): could utilize for foraging, refuge

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

Sightings: ibis, gulls, anhinga

Additional relevant factors:

None

Assessment conducted by:	Assessment date(s):
Shannon Kelley, CECOS	12/1/2022

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

Site/Project Name	Application Number	Assessment Area Name or Number
SR-401 PD&E		WL-1 Mangrove Swamp
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Shannon Kelley, CECOS	12/1/2022

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

	w/o pres or current	with	
.500(6)(a) Location and Landscape Support	6	0	The AA is located on the upper edge (i.e., around MHW) of the fringe mangrove. The fringe mangrove wetland is adjacent to the IRL to the west and a roadway and Port development to the east. The roadway limits terrestrial wildlife access. Post project fringe mangroves will remain to the north and west and the IRL (OSW) to the west will not be impacted.
.500(6)(b)Water Environment (n/a for uplands)	7	0	The AA is located adjacent to the IRL and hydrology is tidally influenced. Currently roadway runoff discharges untreated. Water quality in the IRL adjacent to the AA is turbid with poor visibility and sparse SAV present. Post project stormwater runoff will be treated to meet state water quality criteria.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	7	0	The AA is a fringe mangrove area located on the upper limits of MHW. The AA is transitioning into a area with some mangroves, cabbage palm and saltbush. The majority of plant cover is appropriate, however, since the AA is on the upper fringes of MHW and consists of a mix of dense vegetation, it may not provide optimal habitat for a mangrove system.

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.67	0

Delta = [with-current]
0.67

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

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

For impact assessment areas
FL = delta x acres = 0.67 x 0.10 = 0.067

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

Mitigation Determination Formulas
(See Section 62-345.600(3), F.A.C.)

For each impact assessment area:

(FL) Functional Loss = Impact Delta X Impact acres

For each mitigation assessment area:

(RFG) Relative Functional Gain = Mitigation Delta (adjusted for preservation, if applicable)/((t-factor)(risk))

If the acreage of mitigation proposed is known:

(FG) Functional Gain = Relative Functional Gain X Mitigation acres

(a) Mitigation Bank Credit Determination

The total potential credits for a mitigation bank is the sum of the credits for each assessment area where assessment area credits equal the RFG times the acres of the assessment area scored

Bank Assessment Areas	RFG	X	Acres	=	Credits
example					
a.a.1					
a.a.2					
total					

(b) Mitigation needed to offset impacts, when using a mitigation bank

The number of mitigation bank credits needed, when the bank or regional offsite mitigation area is assessed in accordance with this rule, is equal to the summation of the calculated functional loss for each impact assessment area.

Impact Assesment Area	FL	=	Credits needed
example			
a.a.1	0.067		0.067
a.a.2			
total			

(c) Mitigation needed to offset impacts, when not using a bank

To determine the acres of mitigation needed to offset impacts when not using a bank or a regional offsite mitigation area as mitigation, divide functional loss (FL) by relative functional gain (RFG).

	FL	/	RFG	=	Acres of Mitigation
example					
a.a.1					

If there are multiple impact assessment areas and/or multiple mitigation assessment areas to offset those impacts,or if the proposed mitigation acreage is a given, then the summation of the appropriate functional gain (FG) must be equal to or greater than the summation of respective functional losses (FL)

	example	FL	<	FG
impact	a.a.1			
	a.a.2			
	a.a.3			
mitigation	a.a.4			
	a.a.5			
summation				

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR-401 PD&E		WL-9 Mangrove Swamp

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
612	NWI- PSS1	Impact	0.44 acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
21- Northern Indian River Lagoon	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

This mangrove swamp wetland is located in a swale northwest of the SR 401 and SR 528 interchange. Mullet road is loacted to the north, SR 528 to the south, and mowed swales to the east and west. It is hydrologically connected to the Avocet Lagoon to the north.

Assessment area description

The dominant vegetation includes black (*Avicennia germinans*) & white (*Laguncularia racemosa*) mangroves, marsh elder (*Iva frutescens*), and cabbage palm (*Sabal palmetto*).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Avocet Lagoon is directly north. The IRL is located to the west, the Banana River Aquatic Preserve is located south and Merritt Island National Wildlife Refuge is located to the west and north.	Mangroves are common within the surrounding areas

Functions	Mitigation for previous permit/other historic use
Provides minimal cover, refuge, foraging, and nesting habitat. Provides water quality improvement.	N/A

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)
Herons and egrets, roseate spoonbill, ibis	Wood stork (FT): could utilize for foraging, refuge Little blue heron (ST): could utilize for foraging, refuge Tri-colored heron (ST): could utilize for foraging, refuge Reddish egret (ST): could utilize for foraging, refuge Roseate spoonbill (ST): could utilize for foraging, refuge

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

Signtings: osprey, cattle egret, seagull, boat-tailed grackle, cardinal

Additional relevant factors:

The AA is the convergence of two swales in between two roadways.

Assessment conducted by:	Assessment date(s):
Shannon Kelley, CECOS	12/1/2022

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

Site/Project Name	Application Number	Assessment Area Name or Number
SR-401 PD&E		WL-9 Mangrove Swamp
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Shannon Kelley, CECOS	11/23/2022

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

		w/o pres or current	with
.500(6)(a) Location and Landscape Support	The AA consists of white and black mangroves within a swale and is adjacent to roadways to the west, north, and south, which limits terrestrial wildlife access. The AA is connected via a culvert under Mullet Road to Avocet Lagoon to the north. Presence of mangroves in this swale is likely due to the existing connection to Avocet Lagoon which has extensive mangroves.	5	0
.500(6)(b)Water Environment (n/a for uplands)	Within the AA, hydrology is influenced by the Avocet Lagoon via culvert and stormwater runoff from the roadway. Post-project connectivity to the Avocet Lagoon may be eliminated and a majority of the swale will be impacted.	6	0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	The AA has developed based on the construction of the roadways in the area and the connection to the Avocet Lagoon. Vegetation is mostly appropriate, however, some upland and exotic vegetation is present.	5	0

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.53	0

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

For impact assessment areas
FL = delta x acres = 0.53 x 0.44 = 0.23

Delta = [with-current]
0.53

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

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

Mitigation Determination Formulas
(See Section 62-345.600(3), F.A.C.)

For each impact assessment area:

(FL) Functional Loss = Impact Delta X Impact acres

For each mitigation assessment area:

(RFG) Relative Functional Gain = Mitigation Delta (adjusted for preservation, if applicable)/((t-factor)(risk))

If the acreage of mitigation proposed is known:

(FG) Functional Gain = Relative Functional Gain X Mitigation acres

(a) Mitigation Bank Credit Determination

The total potential credits for a mitigation bank is the sum of the credits for each assessment area where assessment area credits equal the RFG times the acres of the assessment area scored

Bank Assessment Areas	RFG	X	Acres	=	Credits
example					
a.a.1					
a.a.2					
total					

(b) Mitigation needed to offset impacts, when using a mitigation bank

The number of mitigation bank credits needed, when the bank or regional offsite mitigation area is assessed in accordance with this rule, is equal to the summation of the calculated functional loss for each impact assessment area.

Impact Assesment Area	FL	=	Credits needed
example			
a.a.1	0.23		0.23
a.a.2			
total			

(c) Mitigation needed to offset impacts, when not using a bank

To determine the acres of mitigation needed to offset impacts when not using a bank or a regional offsite mitigation area as mitigation, divide functional loss (FL) by relative functional gain (RFG).

	FL	/	RFG	=	Acres of Mitigation
example					
a.a.1					

If there are multiple impact assessment areas and/or multiple mitigation assessment areas to offset those impacts,or if the proposed mitigation acreage is a given, then the summation of the appropriate functional gain (FG) must be equal to or greater than the summation of respective functional losses (FL)

	example	FL	<	FG
impact	a.a.1			
	a.a.2			
	a.a.3			
mitigation	a.a.4			
	a.a.5			
summation				

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR-401 PD&E		WL-10 wetland scrub

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
631	NWI- PSS1	Impact	0.50 acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
21- Northern Indian River Lagoon	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

This wetland scrub is located in a swale in between Mullet Road and the off-ramp of SR 401. Mowed swales surround the area and is hydrologically connected to the Avocet Lagoon to the west.

Assessment area description

The dominant vegetation is Saltbrush (*Baccharis halimifolia*), cabbage palm (*Sabal palmetto*), and coastal willow (*Salix caroliniana*).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Avocet Lagoon is located to the west across Mullet Road.	Wetland scrub is not common within the surrounding area, however it is a manmade feature.

Functions	Mitigation for previous permit/other historic use
Provides cover, refuge, foraging, and nesting habitat. Provides water quality improvement.	N/A

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)
Herons and egrets, roseate spoonbill, ibis	Little blue heron (ST): could utilize for foraging and refuge Tri-colored heron (ST): could utilize for foraging and refuge Reddish egret (ST): could utilize for foraging and refuge Roseate spoonbill (ST): could utilize for foraging and refuge

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

Sightings: none

Additional relevant factors:

None

Assessment conducted by:	Assessment date(s):
Shannon Kelley, CECOS	12/1/2022

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

Site/Project Name	Application Number	Assessment Area Name or Number
SR-401 PD&E		WL-10 wetland scrub (FLUCCS 631)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Shannon Kelley, CECOS	12/1/2022

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

Optimal (10)	Moderate (7)	Minimal (4)	Not Present (0)
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	w/o pres or current: 4	with: 0	The AA consists of manmade wetlands and is surrounded by roadways, which limits terrestrial wildlife access to and from the areas. It is located in between Mullet Road and the offramp of SR 401. The AA is an isolated drainage feature.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 5	with: 0	The AA is hydrologically isolated as it surrounded by roadways. Any water is limited by rainfall and runoff. Water level indicators appear consistent with expected hydrological conditions.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 5	with: 0	The plant cover is mostly appropriate, however, some upland vegetation is present. Plant condition is generally good.

Score = sum of above scores/30 (if uplands, divide by 20)		
current or w/o pres: 0.5	with: 0	

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

For impact assessment areas
FL = delta x acres = 0.50 x 0.50 = 0.25

Delta = [with-current]
0.5

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

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

Mitigation Determination Formulas
(See Section 62-345.600(3), F.A.C.)

For each impact assessment area:

(FL) Functional Loss = Impact Delta X Impact acres

For each mitigation assessment area:

(RFG) Relative Functional Gain = Mitigation Delta (adjusted for preservation, if applicable)/((t-factor)(risk))

If the acreage of mitigation proposed is known:

(FG) Functional Gain = Relative Functional Gain X Mitigation acres

(a) Mitigation Bank Credit Determination

The total potential credits for a mitigation bank is the sum of the credits for each assessment area where assessment area credits equal the RFG times the acres of the assessment area scored

Bank Assessment Areas	RFG	X	Acres	=	Credits
example					
a.a.1					
a.a.2					
total					

(b) Mitigation needed to offset impacts, when using a mitigation bank

The number of mitigation bank credits needed, when the bank or regional offsite mitigation area is assessed in accordance with this rule, is equal to the summation of the calculated functional loss for each impact assessment area.

Impact Assesment Area	FL	=	Credits needed
example			
a.a.1	0.25		0.25
a.a.2			
total			

(c) Mitigation needed to offset impacts, when not using a bank

To determine the acres of mitigation needed to offset impacts when not using a bank or a regional offsite mitigation area as mitigation, divide functional loss (FL) by relative functional gain (RFG).

	FL	/	RFG	=	Acres of Mitigation
example					
a.a.1					

If there are multiple impact assessment areas and/or multiple mitigation assessment areas to offset those impacts,or if the proposed mitigation acreage is a given, then the summation of the appropriate functional gain (FG) must be equal to or greater than the summation of respective functional losses (FL)

	example	FL	<	FG
impact	a.a.1			
	a.a.2			
	a.a.3			
mitigation	a.a.4			
	a.a.5			
summation				

PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
SR-401 PD&E		WL-11 freshwater marsh

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
631 & 641	NWI- PSS1	Impact	0.14 acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
21- Northern Indian River Lagoon	Class III	None

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

This freshwater marsh is located southwest of the SR 401 onramp and north of SR 528. Mowed swales surround the area, and the marsh has no hydrologic connection. Any water present is limited to rainfall.

Assessment area description

The dominant vegetation is cattail (*Typha* sp.).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Stormwater ponds are located to the south across SR 528.	Freshwater marsh is not common within the surrounding area, however it is a manmade feature.

Functions	Mitigation for previous permit/other historic use
Provides cover, refuge, foraging, and nesting habitat. Provides water quality improvement.	N/A

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)
Herons and egrets, roseate spoonbill, ibis	Little blue heron (ST): could utilize for foraging and refuge Tri-colored heron (ST): could utilize for foraging and refuge Reddish egret (ST): could utilize for foraging and refuge Roseate spoonbill (ST): could utilize for foraging and refuge

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

Sightings: none

Additional relevant factors:

None

Assessment conducted by:	Assessment date(s):
Shannon Kelley, CECOS	12/1/2022

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

Site/Project Name	Application Number	Assessment Area Name or Number
SR-401 PD&E		WL-11 freshwater marsh (FLUCCS 641)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Shannon Kelley, CECOS	12/1/2022

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

Optimal (10)	Moderate (7)	Minimal (4)	Not Present (0)
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	w/o pres or current: 4	with: 0	The AA consists of manmade wetlands and are surrounded by roadways, which limits terrestrial wildlife access to and from the areas. The AA is a drainage feature with cattail isolated by the roadway interchange and is surrounded by mowed grass.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 5	with: 0	The AA is hydrologically isolated as it surrounded by roadways. Any water is limited by rainfall and runoff. Water level indicators appear consistent with expected hydrological conditions.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 6	with: 0	The plant cover is appropriate and plant condition is good. No invasive species are present.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres: 0.5	with: 0

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

For impact assessment areas
FL = delta x acres = 0.50 x 0.14 = 0.07

Delta = [with-current]
0.5

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

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

Mitigation Determination Formulas
(See Section 62-345.600(3), F.A.C.)

For each impact assessment area:

(FL) Functional Loss = Impact Delta X Impact acres

For each mitigation assessment area:

(RFG) Relative Functional Gain = Mitigation Delta (adjusted for preservation, if applicable)/((t-factor)(risk))

If the acreage of mitigation proposed is known:

(FG) Functional Gain = Relative Functional Gain X Mitigation acres

(a) Mitigation Bank Credit Determination

The total potential credits for a mitigation bank is the sum of the credits for each assessment area where assessment area credits equal the RFG times the acres of the assessment area scored

Bank Assessment Areas	RFG	X	Acres	=	Credits
example					
a.a.1					
a.a.2					
total					

(b) Mitigation needed to offset impacts, when using a mitigation bank

The number of mitigation bank credits needed, when the bank or regional offsite mitigation area is assessed in accordance with this rule, is equal to the summation of the calculated functional loss for each impact assessment area.

Impact Assesment Area	FL	=	Credits needed
example			
a.a.1	0.07		0.07
a.a.2			
total			

(c) Mitigation needed to offset impacts, when not using a bank

To determine the acres of mitigation needed to offset impacts when not using a bank or a regional offsite mitigation area as mitigation, divide functional loss (FL) by relative functional gain (RFG).

	FL	/	RFG	=	Acres of Mitigation
example					
a.a.1					

If there are multiple impact assessment areas and/or multiple mitigation assessment areas to offset those impacts,or if the proposed mitigation acreage is a given, then the summation of the appropriate functional gain (FG) must be equal to or greater than the summation of respective functional losses (FL)

	example	FL	<	FG
impact	a.a.1			
	a.a.2			
	a.a.3			
mitigation	a.a.4			
	a.a.5			
summation				

Appendix F | USCG Letter

U.S. Department of Homeland Security
United States Coast Guard

Commander
United States Coast Guard
Seventh District

909 S. E. 1st Avenue (Rm 432)
Miami, FL 33131
Staff Symbol: (dpb)
Phone: (305) 415-6743
Fax: (305) 415-6763
Email: Andi.Maris@uscg.mil

16591/3116
December 22, 2021

Mary McGehee
Project Manager
Florida Department of Transportation – District Five
719 South Woodland Boulevard
Deland, Florida 32120
Via email: Mary.McGehee@dot.state.fl.us

Odalys Delgado, AICP
Florida Practice Lead
Planning and Project Development
7600 Corporate Center Drive, Suite 104
Miami, Florida 33126
Via email: Odalys.delgado@parsons.com

Dear Ms. McGehee and Ms. Delgado:

The Coast Guard has completed its review of the Navigation Impact Report (NIR) for the proposed SR 401 bridge replacement at Port Canaveral, Florida. In October 2021, the U.S. Coast Guard received a navigational impact report technical memorandum for the replacement of the SR 401 bridges, which cross the Canaveral Barge Canal located in Brevard County. The NIR was prepared by Bermello Ajamil & Partners on behalf of the Florida Department of Transportation (FDOT) District Five. On November 5, 2021 a meeting was held by FDOT and Parsons with the U.S. Coast Guard to discuss its findings.

Thank you for presenting a comprehensive and professional study. Based on the review of the NIR, additional data obtained, and the information presently available, we have made a preliminary clearance determination for the bridge structure associated with the proposed project. In order to meet the reasonable needs of present and prospective navigation at this location, a vertical clearance matching or exceeding the existing power transmission lines adjacent to the bridges would be required. The recommended/preferred build alternative from the Coast Guard prospective would be a bascule bridge(s) with closed vertical clearance greater than the existing bascule bridges. Increasing the closed vertical clearance of a bascule bridge would decrease the required openings which would benefit both maritime and land-based modes of transportation. The horizontal clearance for any bridge structure in this location would need to match or exceed the horizontal clearance of the navigation locks west of the bridges. To wit, a minimum vertical clearance of 85 feet above mean high water (MHW) for a fixed or vertical lift bridge; 25 feet (closed) above MHW for a swing or bascule bridge; and a minimum horizontal clearance of 90 feet.

16591/3116
December 22, 2021

A note regarding guide clearances from the U.S. Coast Guard Office of Bridge Programs' webpage: *Guide Clearances are defined as the navigational clearances established by the Coast Guard for a particular navigable water of the United States which will ordinarily receive favorable consideration under the bridge permitting process (33 CFR Chapter 1, Subchapter J - Bridges) as providing for the reasonable needs of navigation. They are not intended to be regulatory in nature or to form a legal basis for approving or denying a bridge permit application. Under the circumstances of a particular case, greater or lesser clearances for a proposed bridge may be required or approved as meeting the reasonable needs of navigation for that particular location. For example, the particular character of the waterway and topography at the proposed location may justify a departure from the clearances specified for the waterway in the list of Guide Clearances.*

Please note that this preliminary determination does not constitute an approval or final agency action. In accordance with regulation, the Coast Guard can only make a final determination after processing a complete bridge permit application.

To complete the Bridge Permit Application, please refer to the Coast Guard Bridge Permit Application Guide located at https://go.usa.gov/xRFk2 (case sensitive). If you should have any questions, please email Andi.Maris@uscg.mil. We look forward to continuing to work with you both to move this project forward.

Sincerely,

RANDALL D. OVERTON, MPA
Director, District Bridge Program
U.S. Coast Guard
By Direction

eCopy: USCG Sector Jacksonville Waterway Management: Griffin.D.Terpstra@uscg.mil