



SR 400 (I-4) Project Development and Environment (PD&E) Study
FM No.: 432100-1-22-01



Essential Fish Habitat Technical Memorandum

**Segment 4: State Road 400 (SR 400)/Interstate 4 (I-4)
from East of SR 15-600/US 17-92 (Seminole/Volusia County Line)
to ½ Mile East of SR 472**

Volusia County (79110)

May 2016



ESSENTIAL FISH HABITAT

TECHNICAL MEMORANDUM

Date: April 2016

To: FDOT District 5 through HNTB Corporation

From: Stantec Consulting Services, Inc.

Subject: PD&E Study for Interstate 4 Segment 4: from east of SR 15/600 (US 17/92) to ½ mile east of SR 472

Re: Essential Fish Habitat Assessment

Summary of Project

The Florida Department of Transportation (FDOT) is conducting an update of the PD&E studies for the extension of proposed express lanes for SR 400 (I-4) Beyond the Ultimate (BtU). The project limits in the original I-4 PD&E studies were:

- West of Memorial Boulevard (SR 546) to the Polk/Osceola County Line, (29.5 miles)
- CR 532 (Polk/Osceola County Line) to West of SR 528 Beachline Expressway (13.7 miles), and
- West of SR 528 Beachline Expressway to SR 472 (43 miles).

The corresponding environmental documents associated with these PD&E studies include: Environmental Assessment/Finding of No Significant Impact (EA/FONSI) for SR 400 (I-4) from West of Memorial Boulevard (SR 546) to the Polk/Osceola County Line [FPN 201210, (1998)] and from CR 532 (Polk/Osceola County Line) to West of SR 528 Beachline Expressway [FPN 242526 and 242483, (1999)] and Final Environmental Impact Statement (FEIS) for I-4 from SR 528 (Beachline Expressway) to SR 472 [FPN 242486, 242592 and 242703, (2002)].

The project limits of the current SR 400 (I-4) PD&E reevaluation, herein referred to as I-4 Beyond the Ultimate (BtU) PD&E Reevaluation Study, include a total of approximately 41 miles of roadway sections east and west of the 21-mile, I-4 Ultimate project. The I-4 Ultimate project consists of reconstruction to include new express lanes for the section of I-4 which extends from west of SR 435 (Kirkman Road) to east of SR 434 and is anticipated to begin construction in early 2015. The current I-4 BtU project, has been divided into the following five segments:

- Segment 1: SR 400 (I-4) from West of CR 532 (Polk/Osceola County Line) to West of SR 528 Beachline Expressway - Osceola County (92130) and Orange County (75280)
- Segment 2: SR 400 (I-4) from West of SR 528 Beachline Expressway to West of SR 435 (Kirkman Road) - Orange County (75280)
- Segment 3: SR 400 (I-4) from 1 Mile East of SR 434 to East of SR 15/600 (US 17/92) (Seminole/Volusia County Line) - Seminole County (77160)
- Segment 4: SR 400 (I-4) from East of SR 15/600 (US 17/92) (Seminole/Volusia County Line) to ½ Mile East of SR 472 - Volusia County (79110)

- Segment 5: SR 400 (I-4) from West of SR 25/US 27 to West of CR 532 (Polk/Osceola County Line) Polk County (16320)

Description of Proposed Action

FDOT is proposing to reconstruct and widen I-4 as part of the I-4 Beyond the Ultimate concept. This involves the build-out of I-4 to its ultimate condition through Central Florida, including segments in Polk, Osceola, Orange, Seminole and Volusia Counties (see **Figure 1**). The concept design proposes the addition of two new express lanes in each direction, resulting in a total of ten dedicated lanes. The project limits for the segment analyzed in this report are within an approximate ten (10) mile segment of I-4 which extends from east of US 17/92 to east of SR 472, from Milepost 0.086 to 10.227 in Volusia County (herein referred to as I-4, Segment 4). Although, the interstate is a designated east-west corridor, the alignment follows a southwest to northeast orientation through the limits of Segment 4. The study area in this section from east of US 17/92 to east of SR 472 includes the interchanges at Dirksen Drive/Debary Avenue, Saxon Boulevard and SR 472/Howland Boulevard. A new interchange with I-4 providing direct access only to the express lanes is proposed to be constructed about halfway between Saxon Boulevard and SR 472, with the Rhode Island Avenue extension. The required stormwater treatment will be provided with 43 pond sites along the corridor including recommended ponds, proposed alternative ponds, and treatment swales.



Figure 1 - Project Location Map

The proposed improvements to I-4 include widening the existing six lane divided urban interstate to a ten lane divided highway. The existing typical section for the I-4 mainline consists of three 12-foot travel lanes in each direction. The outside and inside shoulders are 12 feet wide with 10 feet paved. The median width varies from 37 feet to 375 feet and the existing right of way (ROW) varies from 300-feet to 630-feet. The typical section in the proposed condition will have three 12-foot general use travel lanes with a 10-foot inside and 12-foot outside shoulder and two 12-foot express lanes with a 4-foot inside and 10-foot outside shoulder, in each direction. A barrier wall between adjacent 10-foot shoulders will separate the express lanes from the general use lanes. Additionally, auxiliary lanes in both the eastbound and westbound directions will be provided in some areas. **Figure 2A** illustrates the proposed mainline typical section for I-4, Segment 4.

Purpose and Need

The proposed improvements to I-4 include widening the existing six lane divided urban interstate to a ten lane divided highway in order to improve traffic operations, enhance connectivity and improve mobility by providing travel choices to the motoring public. I-4 is an east-west limited access freeway which links the west and east coasts of Florida, from I-275 in Tampa to I-95 in Daytona Beach. I-4 spans across six counties in Central Florida, traversing through many cities including Lakeland, Celebration, Orlando, Altamonte Springs, Sanford and DeLand. I-4 is a critical component of Florida's Strategic Intermodal System (SIS) which links seaports, rail, airports and other intermodal facilities. This aspect of I-4's significance is evidenced through connectivity provided by major junctions with I-275, I-75, SR 429 (Daniel Webster Western Beltway), SR 417 (Central Florida Greenway), SR 528 (Beachline Expressway), Florida's Turnpike, SR 408 (Spessard Lindsay Holland East-West Expressway) and I-95.

I-4 serves as the primary corridor in the movement of people and freight between major population, employment and activity centers in the Central Florida region. When the entire Interstate was fully opened in the early 1960's, it was designed to serve intrastate and interstate travel by providing a critical link between the east and west coasts of Central Florida. Although this role continues to be a crucial transportation function of I-4, the highway also serves large volumes of local and commuter traffic with shorter trip distances. Today, the highway serves as the primary link between hotel/resort complexes and tourist attractions such as Walt Disney World, Universal Studios, Sea World, the International Drive Resort Area and downtown Orlando. Since I-4 is the only north-south limited access facility that is centrally located between the predominant employment centers and the major suburbs to the north, it has become the primary commuting corridor in the Central Florida metropolitan area.

Growth in Central Florida over the past decades has made it difficult for the transportation system to accommodate travel demand. Traffic congestion and crash incidents have resulted in major delays on the Interstate as well as other arterials surrounding the corridor. Increased congestion levels are experienced outside of the typical morning and afternoon rush-hour periods, affecting mobility levels for more hours of the day and impacting other non-commuter/non-weekday travel. The congestion on I-4 is further evidenced by the less than desirable levels of service on the Interstate as well as the crossroads.

This project is currently undergoing an analysis of the effects of the proposed roadway improvements. As part of this evaluation, it was determined by staff at the National Marine Fisheries Service (NMFS) that Lake Monroe and the St. Johns River are Essential Fish Habitat (EFH) for white shrimp. As such, a coordination meeting and site visit were conducted in September 2013 to discuss the potential impacts related to the project. The purpose of this EFH report was intended to establish a baseline level assessment of the existing marine resources within the proposed project area. This EFH Assessment is intended to satisfy consultation requirements for the NMFS and other review agencies.

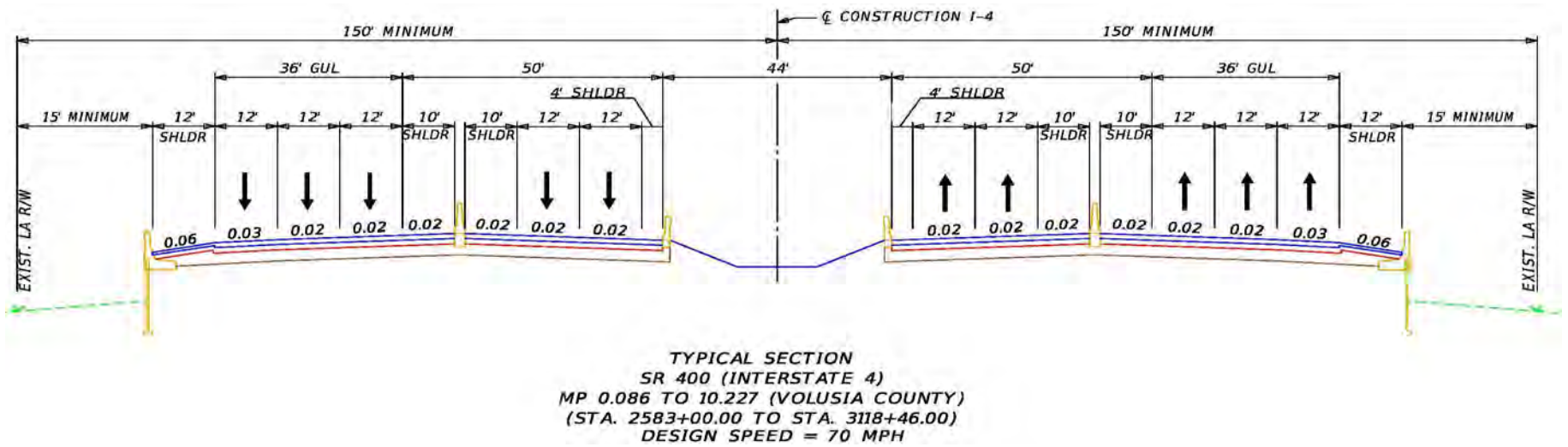


Figure 2A - I -4, Segment 4 Proposed Typical Section

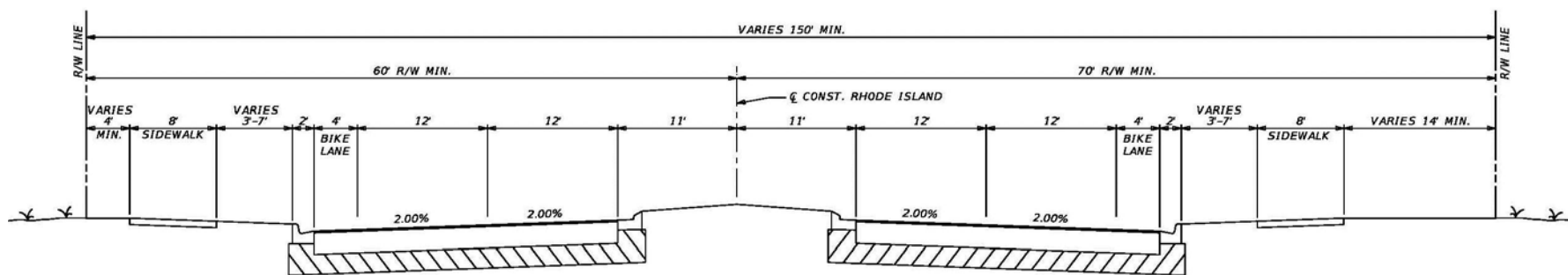
Projections of future population and employment in the region indicate that travel demand will continue to increase well into the future. The ability to accommodate the new travel patterns resulting from growth must be provided to sustain the region's economy. Without the improvements, extremely congested conditions are expected to occur for extended periods of time in both the morning and evening peak periods. Due to these congested conditions, user travel times will continue to increase, the movement of goods through the urban area will be slower, and the deliveries of goods within the urban area will be forced to other times throughout the day. The need for improvements to I-4 is illustrated by the important transportation roles I-4 serves to the Central Florida region and the State of Florida. If no improvements are made to the Interstate, a loss in mobility for the area's residents, visitors, and commuters can be expected, resulting in a severe threat to the continued viability of the economy and the quality of life.

This reevaluation involves revising the original design concept showing two (2) High Occupancy Vehicle (HOV) lanes, as recommended in the FEIS for I-4 from SR 528 (Beachline Expressway) to SR 472 (FPN 242486, 242592 and 242703, 2002), to the current proposed design of four (4) Express Lanes. The Express Lanes are tolled lanes and will extend the full length of the project. The access to/from the tolled lanes will be evaluated as part of this effort to determine if changes are needed from the previously approved concept for access to/from the HOV Lanes. The original I-4 PD&E Studies involved physical separation between the general use lanes and the HOV lanes on I-4, with demand management in the HOV lanes. The original demand management strategy was to control the use of the lanes by requiring a minimum number of occupants per vehicle to maintain an acceptable level of service (Level of Service D). This reevaluation also addresses revising the demand management tool to convert the HOV lanes to tolled express lanes. The express lanes will be separated from the general use travel lanes by two shoulders with a barrier wall in between the shoulders. A variable pricing tolling plan is proposed for the express lanes. The tolls will vary by time of day and day of week to maintain acceptable levels of service in the express lanes. The tolls will be collected electronically through existing E-Pass, SunPass and other systems currently in place in the Orlando metropolitan area. The conversion to Express Lanes will maintain the same right of way limits as documented previously and will not change the impacts to the social, natural or physical environment.

Updates to the Systems Access Modification Report (SAMR) prepared in January 2013 were completed in July 2014, and December 2014, in conjunction with this effort.

RHODE ISLAND AVENUE

An extension to Rhode Island Avenue is being proposed as part of the SR 400 (I-4) PD&E reevaluation project. The limits of improvement extend approximately 1 ¼ miles from the existing east end of Rhode Island Avenue at Veterans Memorial Parkway in Orange City to Normandy Boulevard in Deltona. The current proposed extension follows the same alignment proposed in plans that were completed by Volusia County in 2009. The County has purchased right of way for the previously proposed alignment; any additional parcels will be acquired under the I-4 Beyond the Ultimate project. The proposed typical section consists of a four-lane urban roadway divided by a 22-foot landscape median, with two 12-foot travel lanes and a 4-foot bike lane in each direction. Eight-foot wide sidewalks, which will be separated from the bike lane by a landscape buffer, will be provided on both sides of the roadway. The proposed direct connect interchange at I-4 will provide direct access from the I-4 eastbound express lanes to Rhode Island Avenue and from Rhode Island Avenue to the I-4 westbound express lanes. The Rhode Island Avenue extension and interchange improvements are intended to increase connectivity in this region by providing access between I-4 and US 17/92 (S. Volusia Avenue) to the west and Normandy Boulevard to the east. **Figure 2B** illustrates the proposed typical section for the Rhode Island Avenue extension.



TYPICAL SECTION
RHODE ISLAND AVENUE
DESIGN SPEED = 45 MPH

Figure 2B - Rhode Island Avenue, Segment 4 Proposed Typical Section

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (16 USC 1801 et seq. Public Law 104-208) reflects the Secretary of Commerce and Fishery Management Council’s authority and responsibilities for the protection of essential fishery habitat. The Act specifies that each federal agency shall consult with the Secretary with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency that may adversely affect any EFH identified under this Act. EFH is defined by the Act as “...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” Three fishery management councils - the Gulf of Mexico, South Atlantic, and U.S. Caribbean - are responsible for identifying EFH for federally managed species in the southeast United States. Also, highly migratory species, such as tunas, billfish, and sharks, are managed by NMFS and have EFH designations in these areas of the Southeast as well. Federal agencies are required to consult with NMFS when their activities, including permits and licenses they issue, may adversely affect EFH and respond to NMFS recommendations for protecting and conserving EFH. NMFS must also include measures to minimize the adverse effects of fishing gear and fishing activities on EFH as well.

The I-4 Beyond the Ultimate Project is within the South Atlantic Fishery Management Council’s (SAFMC) area of jurisdiction (**Figure 2C** below). The SAFMC designates thirteen habitats as EFH for federally managed species divided into estuarine areas and marine areas. The estuarine areas include: estuarine emergent wetlands, estuarine scrub / shrub mangroves, submerged aquatic vegetation, oyster reefs & shell banks, intertidal flats, palustrine emergent & forested wetlands, aquatic beds, and estuarine water column. Marine areas include live / hard bottoms, coral and coral reefs, artificial / manmade reefs, sargassum, and water column. These habitats are EFH because larvae and juveniles concentrate and feed extensively and shelter within these areas. Coordination with NMFS staff indicated that the St. Johns River and Lake Monroe were considered EFH habitat at the project locations.

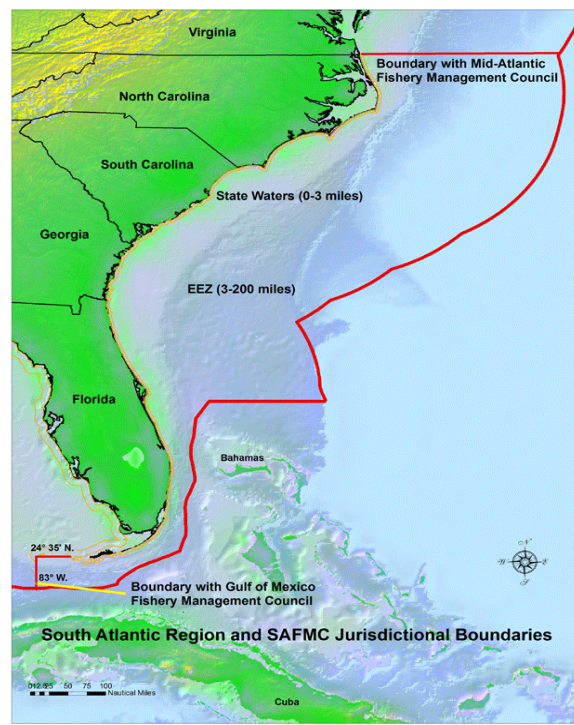


Figure 2C – SAFMC Area of Jurisdiction

Managed Fisheries and Associated Species

The Magnuson-Stevens Act required that each Fishery Management Council amend their existing Fishery Management Plans (FMPs) to identify and describe EFH for each species under management. The SAFMC has identified and described EFH for 33 representative managed species and the coral complex. The project area has been reviewed to determine if EFH for the managed species are present. The project area has also been reviewed to determine if EFH for these managed species are present. EFH and the managed species that have the potential for occurrence within the project area are summarized in Table 1. Only one of the representative managed species has a potential for occurrence in the project area. The potential occurrence determination has been made because: 1) these species utilize the EFH found within the study area, i.e., estuarine waters, at some stage in their life cycles, and 2) corresponding EFH identified and described in species management plans is found within the study area. Species were not included in the analyses if required habitat conditions were absent within the study area.

Table 1. EFH Species Occurrence

SPECIES	POTENTIAL OCCURRENCE IN PROJECT AREA	COMMENT
White shrimp (<i>Litopenaeus setiferus</i>)	Moderate	Found in estuarine areas. EFH for the Shrimp FMP is found in project area.

Habitat Areas of Particular Concern

Habitat Areas of Particular Concern (HAPC) are defined as specific subsets of EFH that provide extremely important ecological functions or are especially vulnerable to degradation. Councils may designate a specific habitat area as an HAPC based on one or more of the following reasons: importance of the ecological function provided by the habitat, extent to which the habitat is sensitive to human-induced environmental degradation, whether, and to what extent, development activities are, or will be, stressing the habitat type and rarity of the habitat type (NMFS, 2007). There are no HAPCs within or adjacent to the project site.

Delineation of Essential Fish Habitat Within the Project

As previous discussions with NMFS staff (Brandon Howard) had indicated that both Lake Monroe and the St. Johns River were considered EFH at the project location, Stantec Biologists conducted field investigations to identify those areas with direct connections to Lake Monroe and the St. Johns River in August of 2013. In order to determine if the wetlands would meet the classification of EFH, it was hypothesized that wetlands with a direct connection extending to the limits of the seasonal high water levels would be considered EFH. GPS points were taken in order to map out the limits of the EFH based upon the field identified seasonal high water marks. Historic arials were consulted to identify the lake levels and contour levels prior to construction of I-4 to further elucidate the areas classified as EFH. The limits of the EFH, which lie between the 3.5 foot and 5.0 foot contours, were then overlain on current aerial photos to be provided to NMFS staff for verification at the coordination meeting on September 16, 2013 (See Figure 3). Habitat types identified that would meet the classification of EFH included palustrine emergent & forested wetlands, submerged aquatic vegetation, and water column.

Proposed Impacts to EFH

The project proposes to expand the current six-lane configuration to the ultimate ten-lane design which will impact areas on both sides of the highway at Lake Monroe and the St. Johns River. The expansion of the travel lanes and the addition of treatment swales are anticipated to impact both EFH and non-EFH wetlands along the corridor. Wetland areas associated with Lake Monroe and the St. Johns River that are adjacent to the roadway and fall within the 3.5' and 5.0' contours as previously described are classified as EFH. Impacts were quantified by utilizing these EFH mapped layers produced during the field investigations with the proposed roadway and drainage files provided during the study. The project will impact approximately **33.36 acres** of herbaceous wetlands and **5.03 acres** of forested wetlands associated with Lake Monroe and the St. Johns River, and additional non-EFH wetlands in other areas (see **Figure 4**).

Indirect and Cumulative Effects

Potential indirect effects associated with this project could include water quality degradation from stormwater runoff or roadway spills, changes in hydrology, edge effect impacts from filling wetlands, habitat fragmentation and potential changes in wildlife utilization, increased constraints on implementing prescribed burning management plans, and creation of a conduit/corridor (roadway) for exotic/invasive species range expansion.

Appropriate construction controls and Best Management Practice (BMPs) should be implemented to ensure protection of marine resources. Construction BMPs should incorporate, but not be limited to: working within adjacent areas devoid of marine resources, instituting BMPs to reduce direct impacts to emergent marsh systems, adequate turbidity controls, continual monitoring for presence of wildlife species in the work area, and removal of all construction debris and equipment at completion of the project.

Avoidance and Minimization Measures

The project has been refined during the PD&E process to avoid and minimize impacts to wetlands where practical while still managing to achieve the goals of the project. As this project is a widening of an existing roadway, the potential for various alternative alignments is reduced. Since the area in question occurs on an existing crossing with Lake Monroe to the east and DeBary Bayou to the west, any widening is going to cause impacts. The necessity of also including stormwater management treatment further increases the potential for impacts. The design engineers have suggested utilizing the existing borrow pit adjacent to the roadway, and enlarging an existing pond site to provide as much treatment as possible. Avoiding impacts to marine resources will require implementing BMPs associated with works in waters of the state. Different seasonal conditions will relate to various species presence and water depths available for construction activities.

Proposed Mitigation

Mitigation is being proposed to offset the EFH impacts, and would involve adding connections between Lake Monroe and the wetlands west of I-4. Historic aerial photos indicate that a direct connection between the two sides existed during periods of high water near the center of the causeway, and at Padgett Creek at the northern end of the crossing where the bridge is today. The high water levels from the aeriels were identified and compared with the current conditions to identify potential areas where connections might be considered during the future expansion of I-4. As a result, the design will incorporate bridge placements in each direction at the location of the historic connection along the roadway in this area as shown on the mitigation map (See **Figure 5**).

Wetland functions will be improved with the bridge, primarily improving access and habitat, which will be more reflective of a floodplain swamp with a longer and more stable hydroperiod than currently exists. The water environment will be improved by providing a new source for flow in and out of the system. This will also allow an additional connection for aquatic species dependent on water levels. The effects will be most pronounced during dry periods, where a permanent low water connection point will be present allowing back and forth movement from Lake Monroe to the wetlands on the west side of I-4 that don't currently exist. Adding the bridge connection will allow vegetation access to water during droughts enhancing the traditional wetland species that thrived in these conditions, and improve habitat connection that may suffer during periods of reduced hydrology. FDOT will include provisions in the design for monitoring to show that tidal exchange is taking place on both side of the bridge. Based upon the UMAM functional analysis conducted (results in **Table 2** below, full UMAM sheets are **Appendix I**), the addition of the new bridge will provide more than enough benefit to the surrounding wetlands in Lake Monroe and the Debary Bayou to offset the impacts proposed by the project.

Table 2. UMAM Analysis

Herbaceous Impact	Forested Impact	Functional Loss	Improvement	Functional Gain
33.36 acres	5.03 acres	20.55	200.68 acres	24.08

Conclusion

The project team identified that the project location occurred within areas considered to be EFH by NMFS staff and delineated the wetlands that would meet this definition adjacent to the existing roadway corridor. The proposed concept design would be analyzed to calculate the approximate amount of impacts to EFH that would result from the project. A coordination meeting with NMFS staff took place on September 16, 2013 to discuss the project, potential impacts, and potential mitigation. A field visit was conducted to examine the project area and potential mitigation area. FDOT agreed that the best option for mitigation to offset potential EFH impacts would be to utilize bridges to provide additional access to the wetlands west of the existing I-4 roadway at Lake Monroe. As a result, this concept was forwarded to the project design team to include a 100 foot bridge in each direction at the designated point in the Beyond the Ultimate design. The project would be evaluated for unavoidable impacts during permitting, and the amount of compensatory mitigation required to offset these impacts would be determined at that time.

Commitment

FDOT will commit to provide monitoring upon completion of the bridges to analyze the exchange of water on both sides of the bridge.

References

- National Marine Fisheries Service, South Atlantic Region; Essential Fish Habitat: A Marine Fish Habitat Conservation Mandate for Federal Agencies. Revised September 2010
- National Marine Fisheries Service, Internet site for South Atlantic Fishery Management Council; <http://www.safmc.net/resource-library/fishery-management-plans-amendments>
- South Atlantic Fishery Management Council, October 1998. Generic Amendment Number 3 Final Habitat Plan for the South Atlantic Region: Essential Fish Habitat Requirements for Fishery Management Plans of the South Atlantic Fishery Management Council, the Shrimp Management Plan, The Red Drum Fishery Management Plan, The Snapper/Grouper Fishery Management Plan, The Coastal Migratory Pelagics Fishery Management Plan, The Golden Crab Fishery Management Plan, The Spiny Lobster Fishery Management Plan, The Coral, Coral Reefs, and Live/Hard Bottom Habitat Fishery Management Plan, The Sargassum Habitat Fishery Management Plan, and the Calico Scallop Fishery Management Plan.
- URS Greiner Woodward Clyde, Endangered Species Biological Assessment for the PD&E Study for Interstate 4, Section 2, from SR 528 to SR 472, May 2000
- 3E Consultants, Wetland Evaluation Report for the PD&E Study for Interstate 4, Beyond the Ultimate, Segment 4 from East of SR 15/600 (US 17/92) to ½ mile past SR 472, Volusia County, Florida, January 2016.

MAPS AND FIGURES

ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM: Segment 4 - Essential Fish Habitat Boundary Map
 SR 400 (I-4) from 1 miles East of SR 434 to East of SR 15/600 US 17/92 (Seminole/Volusia County Line) - Seminole County (77160)



Map Key

- I-4 Beyond the Ultimate-Segment 4 R/W (12/10/15)
- Essential Fish Habitat (3.5' to 5' Contour)

0 1,000 2,000
 Feet

2024230168

Title:
 ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM: Segment 4 - Essential Fish Habitat Boundary Map

Client/Project:
 Florida Department of Transportation- D5 SR 400 Project Development & Environment Study Segment 4: SR 400 (I-4) Et of SR 15/600 US 17/92 to 0.5 miles East of SR 472

Project Location:
 79110 Volusia County
 STA 2583+0.00 (Begin) - MP 0.086
 STA 3118+46.00 (End) - MP 10.227

Prepared by: mleonard 1/15/2016
 Technical Review by: mDrauer 1/15/2016
 Independent Review by: jMoore 1/15/2016

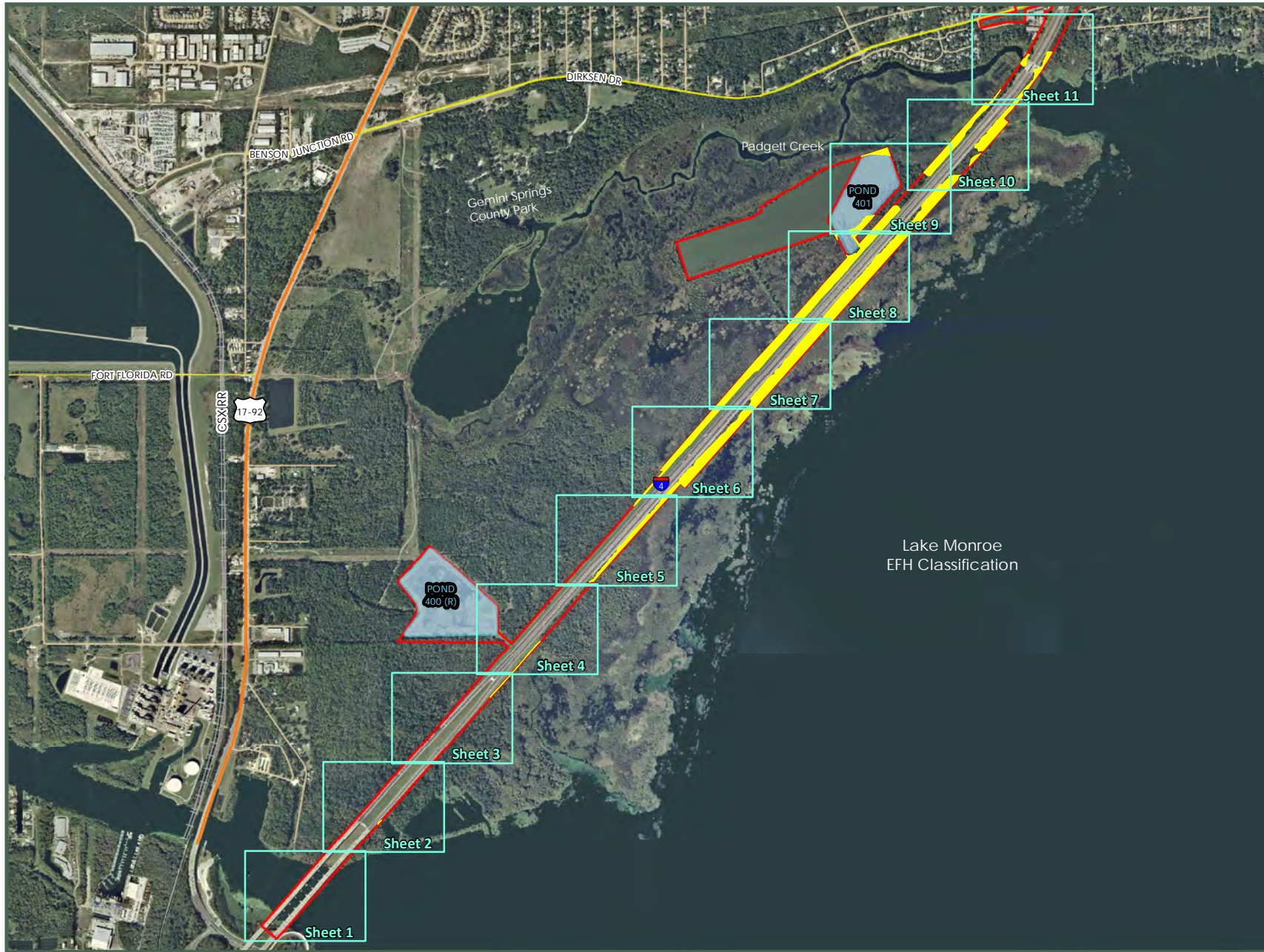
Figure 3 - Essential Fish Habitat Boundary Map

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet



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ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM: Segment 4 - EFH Wetland Impact Map
 SR 400 (I-4) from 1 miles East of SR 434 to East of SR 15/600 US 17/92 (Seminole/Volusia County Line) - Seminole County (77160)



Map Key

- I-4 Beyond the Ultimate-Segment 4 R/W (12/10/15)
- Proposed Essential Fish Habitat Impacts (38.4 ac)

0 1,000 2,000
 Feet

2024230168

Title:
 ESSENTIAL FISH HABITAT
 TECHNICAL MEMORANDUM:
 Segment 4: Wetland Impact Map

Client/Project:
 Florida Department of Transportation- D5
 SR 400 Project Development & Environment Study
 Segment 4: SR 400 (I-4) Et of SR 15/600 US 17/92 to
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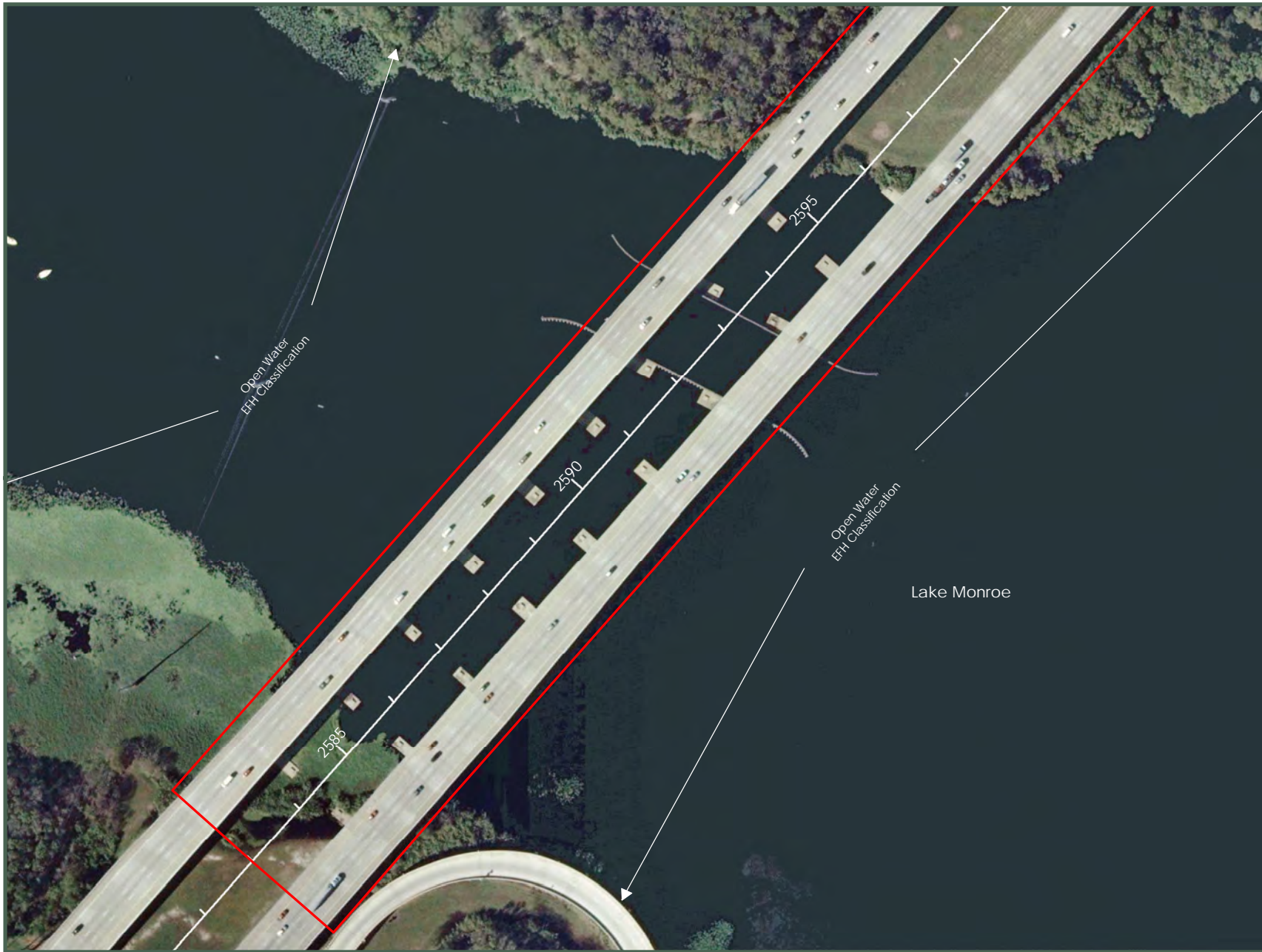
Figure 4 - Cover Sheet: EFH Wetland Impact Map

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet



1" = 2,100'

ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM: Segment 4 - EFH Wetland Impact Map
 SR 400 (I-4) from 1 miles East of SR 434 to East of SR 15/600 US 17/92 (Seminole/Volusia County Line) - Seminole County (77160)



Map Key

- I-4 Beyond the Ultimate-Segment 4 R/W (12/10/15)
- Proposed Essential Fish Habitat Impacts (38.4 ac)

0 100 200
Feet

2024230168

Title:
 ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM:
 Segment 4 - EFH Wetland Impact Map

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Prepared by: mleonard 1/15/2016
 Technical Review by: mDrauer 1/15/2016
 Independent Review by: jMoore 1/15/2016

Figure 4 - Sheet 1 of 11: EFH Wetland Impact Map

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet



1" = 200'

ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM: Segment 4 - EFH Wetland Impact Map
 SR 400 (I-4) from 1 miles East of SR 434 to East of SR 15/600 US 17/92 (Seminole/Volusia County Line) - Seminole County (77160)



Map Key

- I-4 Beyond the Ultimate-Segment 4 R/W (12/10/15)
- Proposed Essential Fish Habitat Impacts (38.4 ac)

0 100 200
 Feet

2024230168

Title:
 ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM:
 Segment 4 - EFH Wetland Impact Map

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 Segment 4: SR 400 (I-4) Et of SR 15/600 US 17/92 to 0.5 miles East of SR 472

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 STA 3118+46.00 (End) - MP 10.227

Prepared by: mleonard 1/15/2016
 Technical Review by: mDrauer 1/15/2016
 Independent Review by: jMoore 1/15/2016

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet



Figure 4 - Sheet 2 of 11: EFH Wetland Impact Map

1" = 200'

ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM: Segment 4 - EFH Wetland Impact Map
 SR 400 (I-4) from 1 miles East of SR 434 to East of SR 15/600 US 17/92 (Seminole/Volusia County Line) - Seminole County (77160)



Map Key

- I-4 Beyond the Ultimate-Segment 4 R/W (12/10/15)
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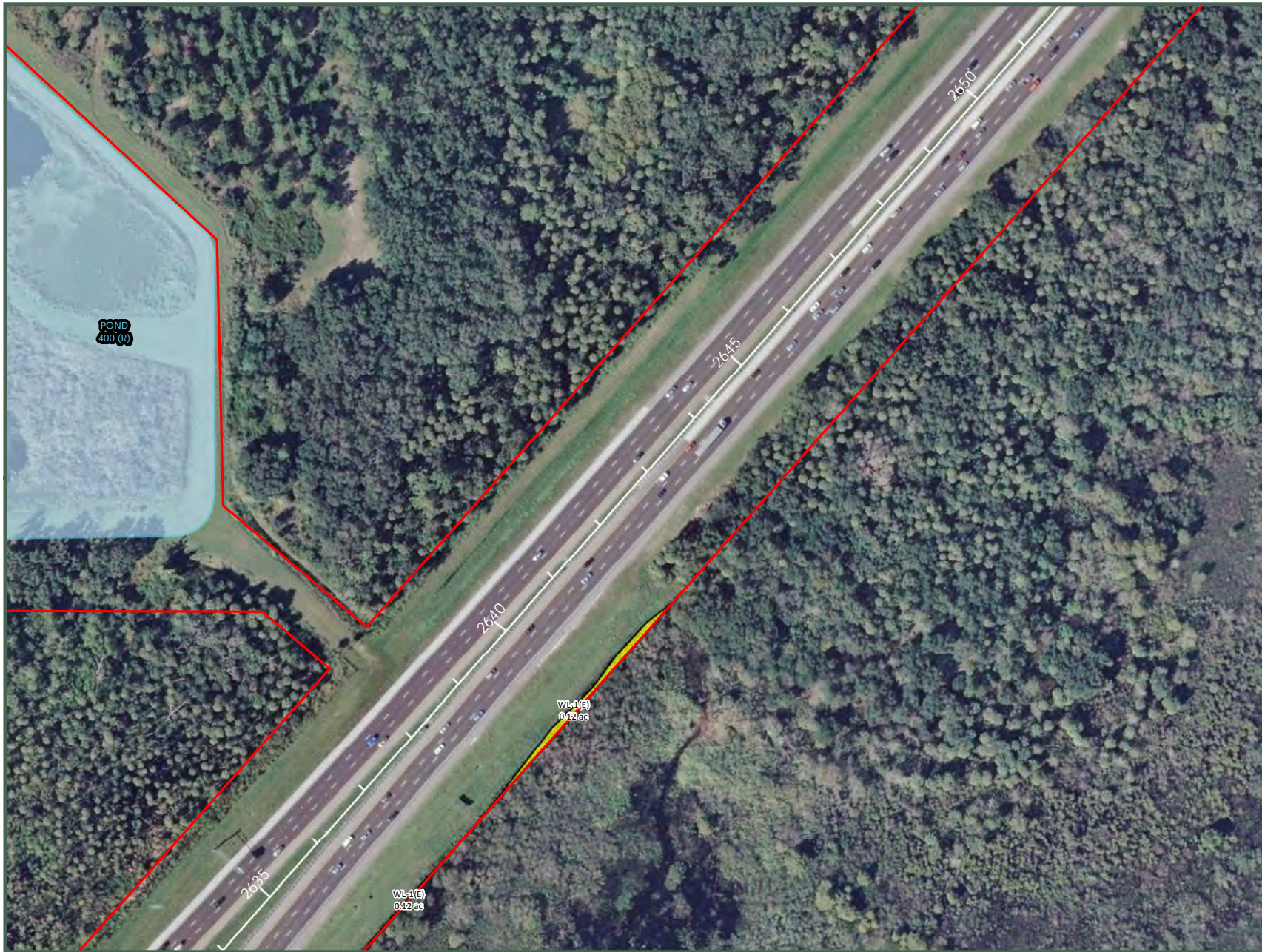
Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet



Figure 4 - Sheet 3 of 11: EFH Wetland Impact Map

1" = 200'

ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM: Segment 4 - EFH Wetland Impact Map
 SR 400 (I-4) from 1 miles East of SR 434 to East of SR 15/600 US 17/92 (Seminole/Volusia County Line) - Seminole County (77160)



Map Key

- I-4 Beyond the Ultimate-Segment 4 R/W (12/10/15)
- Proposed Essential Fish Habitat Impacts (38.4 ac)

0 100 200
 Feet

2024230168

Title:
 ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM:
 Segment 4 - EFH Wetland Impact Map

Client/Project:
 Florida Department of Transportation- D5
 SR 400 Project Development & Environment Study
 Segment 4: SR 400 (I-4) Et of SR 15/600 US 17/92 to
 0.5 miles East of SR 472

Project Location:
 79110 Volusia County
 STA 2583+0.00 (Begin) - MP 0.086
 STA 3118+46.00 (End) - MP 10.227

Prepared by: mleonard 1/15/2016
 Technical Review by: mDrauer 1/15/2016
 Independent Review by: jMoore 1/15/2016

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet



Figure 4 - Sheet 4 of 11: EFH Wetland Impact Map

1" = 200'

ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM: Segment 4 - EFH Wetland Impact Map
 SR 400 (I-4) from 1 miles East of SR 434 to East of SR 15/600 US 17/92 (Seminole/Volusia County Line) - Seminole County (77160)



Map Key

- I-4 Beyond the Ultimate-Segment 4 R/W (12/10/15)
- Proposed Essential Fish Habitat Impacts (38.4 ac)

0 100 200
 Feet

2024230168

Title:
 ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM:
 Segment 4 - EFH Wetland Impact Map

Client/Project:
 Florida Department of Transportation- D5 SR 400 Project Development & Environment Study
 Segment 4: SR 400 (I-4) Et of SR 15/600 US 17/92 to 0.5 miles East of SR 472

Project Location:
 79110 Volusia County
 STA 2583+0.00 (Begin) - MP 0.086
 STA 3118+46.00 (End) - MP 10.227

Prepared by: mleonard 1/15/2016
 Technical Review by: mDrauer 1/15/2016
 Independent Review by: jMoore 1/15/2016

Figure 4 - Sheet 5 of 11: EFH Wetland Impact Map

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet



1" = 200'

ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM: Segment 4 - EFH Wetland Impact Map
 SR 400 (I-4) from 1 miles East of SR 434 to East of SR 15/600 US 17/92 (Seminole/Volusia County Line) - Seminole County (77160)



Map Key

- I-4 Beyond the Ultimate-Segment 4 R/W (12/10/15)
- Proposed Essential Fish Habitat Impacts (38.4 ac)

0 100 200
 Feet

2024230168

Title:
 ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM:
 Segment 4 - EFH Wetland Impact Map

Client/Project:
 Florida Department of Transportation- D5
 SR 400 Project Development & Environment Study
 Segment 4: SR 400 (I-4) Et of SR 15/600 US 17/92 to 0.5 miles East of SR 472

Project Location:
 79110 Volusia County
 STA 2583+0.00 (Begin) - MP 0.086
 STA 3118+46.00 (End) - MP 10.227

Prepared by: mleonard 1/15/2016
 Technical Review by: mDrauer 1/15/2016
 Independent Review by: jMoore 1/15/2016



Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet

Figure 4 - Sheet 6 of 11: EFH Wetland Impact Map

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ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM: Segment 4 - EFH Wetland Impact Map
 SR 400 (I-4) from 1 miles East of SR 434 to East of SR 15/600 US 17/92 (Seminole/Volusia County Line) - Seminole County (77160)



Map Key

- I-4 Beyond the Ultimate-Segment 4 R/W (12/10/15)
- Proposed Essential Fish Habitat Impacts (38.4 ac)

0 100 200
Feet

2024230168

Title:
 ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM:
 Segment 4 - EFH Wetland Impact Map

Client/Project:
 Florida Department of Transportation- D5 SR 400 Project Development & Environment Study Segment 4: SR 400 (I-4) Et of SR 15/600 US 17/92 to 0.5 miles East of SR 472

Project Location:
 79110 Volusia County
 STA 2583+0.00 (Begin) - MP 0.086
 STA 3118+46.00 (End) - MP 10.227

Prepared by: mleonard 1/15/2016
 Technical Review by: mDrauer 1/15/2016
 Independent Review by: jMoore 1/15/2016

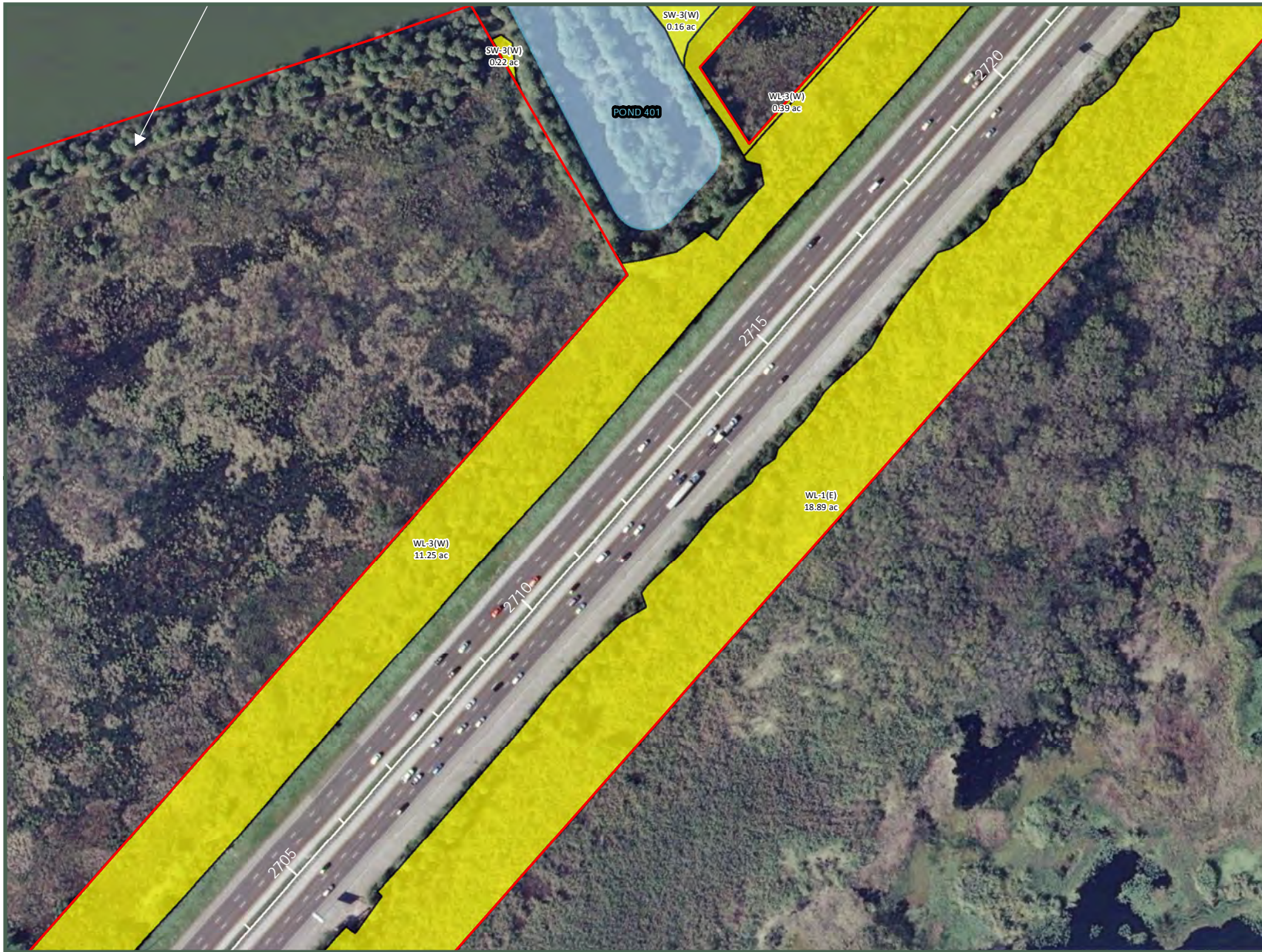
Figure 4 - Sheet 7 of 11: EFH Wetland Impact Map

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet



1" = 200'

ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM: Segment 4 - EFH Wetland Impact Map
 SR 400 (I-4) from 1 miles East of SR 434 to East of SR 15/600 US 17/92 (Seminole/Volusia County Line) - Seminole County (77160)



Map Key

- I-4 Beyond the Ultimate-Segment 4 R/W (12/10/15)
- Proposed Essential Fish Habitat Impacts (38.4 ac)

0 100 200
Feet

2024230168

Title:
 ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM:
 Segment 4 - EFH Wetland Impact Map

Client/Project:
 Florida Department of Transportation- D5
 SR 400 Project Development & Environment Study
 Segment 4: SR 400 (I-4) Et of SR 15/600 US 17/92 to 0.5 miles East of SR 472

Project Location:
 79110 Volusia County
 STA 2583+0.00 (Begin) - MP 0.086
 STA 3118+46.00 (End) - MP 10.227

Prepared by: mleonard 1/15/2016
 Technical Review by: mDrauer 1/15/2016
 Independent Review by: jMoore 1/15/2016

Figure 4 - Sheet 8 of 11: EFH Wetland Impact Map

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet



1" = 200'



Map Key

- I-4 Beyond the Ultimate-Segment 4 R/W (12/10/15)
- Proposed Essential Fish Habitat Impacts (38.4 ac)

0 100 200
Feet

2024230168

Title:
 ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM:
 Segment 4 - EFH Wetland Impact Map

Client/Project:
 Florida Department of Transportation- D5 SR 400 Project Development & Environment Study Segment 4: SR 400 (I-4) Et of SR 15/600 US 17/92 to 0.5 miles East of SR 472

Project Location:
 79110 Volusia County
 STA 2583+0.00 (Begin) - MP 0.086
 STA 3118+46.00 (End) - MP 10.227

Prepared by: mleonard 1/15/2016
 Technical Review by: mDrauer 1/15/2016
 Independent Review by: jMoore 1/15/2016

Figure 4 - Sheet 9 of 11: EFH Wetland Impact Map

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet



1" = 200'

ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM: Segment 4 - EFH Wetland Impact Map
 SR 400 (I-4) from 1 miles East of SR 434 to East of SR 15/600 US 17/92 (Seminole/Volusia County Line) - Seminole County (77160)



Map Key

- I-4 Beyond the Ultimate-Segment 4 R/W (12/10/15)
- Proposed Essential Fish Habitat Impacts (38.4 ac)

0 100 200
Feet

2024230168

Title:
 ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM:
 Segment 4 - EFH Wetland Impact Map

Client/Project:
 Florida Department of Transportation- D5 SR 400 Project Development & Environment Study Segment 4: SR 400 (I-4) Et of SR 15/600 US 17/92 to 0.5 miles East of SR 472

Project Location:
 79110 Volusia County
 STA 2583+0.00 (Begin) - MP 0.086
 STA 3118+46.00 (End) - MP 10.227

Prepared by: mleonard 1/15/2016
 Technical Review by: mDrauer 1/15/2016
 Independent Review by: jMoore 1/15/2016

Figure 4 - Sheet 10 of 11: EFH Wetland Impact Map

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet



1" = 200'

ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM: Segment 4 - EFH Wetland Impact Map
 SR 400 (I-4) from 1 miles East of SR 434 to East of SR 15/600 US 17/92 (Seminole/Volusia County Line) - Seminole County (77160)



Map Key

- I-4 Beyond the Ultimate-Segment 4 R/W (12/10/15)
- Proposed Essential Fish Habitat Impacts (38.4 ac)

0 100 200
 Feet

2024230168

Title:
 ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM:
 Segment 4 - EFH Wetland Impact Map

Client/Project:
 Florida Department of Transportation- D5
 SR 400 Project Development & Environment Study
 Segment 4: SR 400 (I-4) Et of SR 15/600 US 17/92 to
 0.5 miles East of SR 472

Project Location:
 79110 Volusia County
 STA 2583+0.00 (Begin) - MP 0.086
 STA 3118+46.00 (End) - MP 10.227

Prepared by: mleonard 1/15/2016
 Technical Review by: mDrauer 1/15/2016
 Independent Review by: jMoore 1/15/2016

Figure 4 - Sheet 11 of 11: EFH Wetland Impact Map

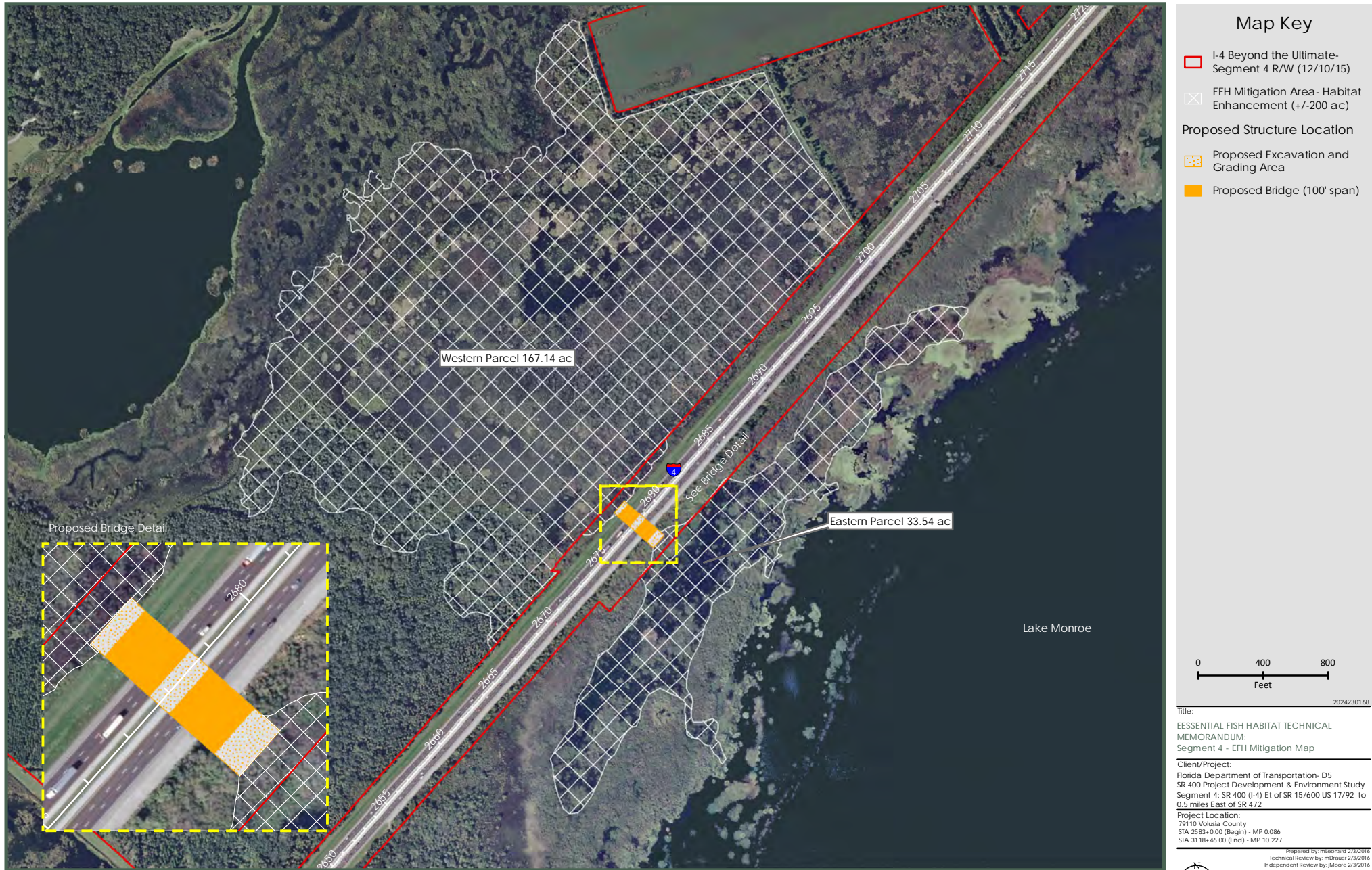
Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet



1" = 200'

ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM: Segment 4 - EFH Mitigation Map

SR 400 (I-4) from 1 miles East of SR 434 to East of SR 15/600 US 17/92 (Seminole/Volusia County Line) - Seminole County (77160)



Map Key

- I-4 Beyond the Ultimate-Segment 4 R/W (12/10/15)
- EFH Mitigation Area- Habitat Enhancement (+/-200 ac)
- Proposed Structure Location
- Proposed Excavation and Grading Area
- Proposed Bridge (100' span)

0 400 800
Feet

2024230168

Title:
ESSENTIAL FISH HABITAT TECHNICAL MEMORANDUM: Segment 4 - EFH Mitigation Map

Client/Project:
Florida Department of Transportation- D5 SR 400 Project Development & Environment Study Segment 4: SR 400 (I-4) Et of SR 15/600 US 17/92 to 0.5 miles East of SR 472

Project Location:
79110 Volusia County
STA 2583+0.00 (Begin) - MP 0.086
STA 3118+46.00 (End) - MP 10.227

Prepared by: mleonard 2/3/2016
Technical Review by: mDrauer 2/3/2016
Independent Review by: jMoore 2/3/2016

Coordinate System: NAD 1983 StatePlane Florida East FIPS 0901 Feet



Figure 5- EFH Mitigation Map

1" = 800'

APPENDIX I
UMAM ANALYSIS

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

Site/Project Name I-4 Beyond the Ultimate Segment 4		Application Number		Assessment Area Name or Number EFH	
FLUCCs code 6410/6440/6460		Further classification (optional) Herbaceous EFH		Impact or Mitigation Site? Impact	Assessment Area Size 33.36 Acres
Basin/Watershed Name/Number St. Johns River	Affected Waterbody (Class) III		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) N/A		
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands portions of the floodplain of the St. Johns River and Lake Monroe floodplains abutting I-4					
Assessment area description This area is characterized as an herbaceous or shrubby wetland. Typical plants include common reed, panicum, cutgrass, southern watergrass, pennywort, Spanish needle, redroot, soft rush, American lotus, water primrose, arrowhead, coastal plain willow, saltbush, elderberry, spikerush, knotweed, buttonbush, and dog fennel.					
Significant nearby features I-4, St. Johns River, Lake Monroe, US 17/92			Uniqueness (considering the relative rarity in relation to the regional landscape.) AA is not unique to Central Florida		
Functions Foraging, breeding, nesting and refuge habitat for wildlife. Flood attenuation, water quality improvement			Mitigation for previous permit/other historic use yes - Gemini Springs Addition (977 acres) purchased for I-4 mitigation on a previous project		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) a number of salamanders, alligator, river cooter, stinkpot, Southeastern five-lined skink, broadhead skink, snakes, yellow-crowned night-heron, wood duck, swallowtail kite, Mississippi kite, red-shouldered, hawk, woodcock, barred owl, chimney swift, hairy woodpecker, pileated woodpecker, songbirds, opossum, southeastern shrew,short-tailed shrew, beaver, wood rat, rice rat, cotton mouse, golden mouse, bear, raccoon, and bobcat, fish, shrimp.			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Wood Stork E, manatee E, wading birds (SSC), alligator		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): armadillo, raccoon, black racer, mockingbird, swallow-tailed kite, anhinga, wild turkey, great egret					
Additional relevant factors:					
Assessment conducted by: Mike Drauer			Assessment date(s): 01/01/16		

Form 62-345.900(1), F.A.C. [effective date]

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

Site/Project Name: I-4 Beyond the Ultimate Segment 4	Application Number: -	Assessment Area Name or Number: EFH
Impact or Mitigation: Impact	Assessment Conducted by: Mike Drauer	Assessment Date: 01/01/16

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	Current	With Impact	
.500(6)(a) Location and Landscape Support		a. Quality and quantity of habitat support outside of AA.					
		b. Invasive plant species.					
		c. Wildlife access to and from AA (proximity and barriers).					
		d. Downstream benefits provided to fish and wildlife.					
		e. Adverse impacts to wildlife in AA from land uses outside of AA.					
		f. Hydrologic connectivity (impediments and flow restrictions).					
		g. Dependency of downstream habitats on quantity or quality of discharges.					
		h. Protection of wetland functions provided by uplands (upland AAs only).					
Current	With Impact	Notes: Acces limited by I-4. Limited uplands (Highway, maintained ROW)				Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	
6	0						
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of water levels and flows.					
		b. Reliability of water level indicators.					
		c. Appropriateness of soil moisture.					
		d. Flow rates/points of discharge.					
		e. Fire frequency/severity.					
		f. Type of vegetation.					
		g. Hydrologic stress on vegetation.					
		h. Use by animals with hydrologic requirements.					
		i. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ).					
		j. Water quality of standing water by observation (i.e., discoloration, turbidity).					
		k. Water quality data for the type of community.					
Current	With Impact	Notes: vegetation changing to more opportunistic species, diminished water quality, hydrologic connection broken by I-4				Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	
5	0						
.500(6)(c) Community Structure		I. Appropriate/desirable species					
		II. Invasive/exotic plant species					
		III. Regeneration/recruitment					
		IV. Age, size distribution.					
		V. Snags, dens, cavity, etc.					
		VI. Plants' condition.					
		VII. Land management practices.					
		VIII. Topographic features (refugia, channels, hummocks).					
		IX. Submerged vegetation (only score if present).					
		X. Upland assessment area					
Current	With Impact	Notes: invasive species present, lack of desirable species, impact from major highway bisecting the system				Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	
5	0						

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.53	0.00

Impact Acres =	33.36
-----------------------	-------

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	17.68

Impact Delta (ID)	
Current - w/Impact	0.53

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

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

Site/Project Name I-4 Beyond the Ultimate Segment 4		Application Number		Assessment Area Name or Number EFH	
FLUCCs code 6410/6440/6460		Further classification (optional) EFH		Mitigation or Preservation? Mitigation	Assessment Area Size 200.68 Acres
Basin/Watershed Name/Number St. Johns River	Affected Waterbody (Class) III		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) N/A		
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					

portions of the floodplain of the St. Johns River and Lake Monroe floodplains abutting I-4

Assessment area description Assessment area is wetlands adjacent to I-4 on the western side known as the Debary Bayou, and the eastern side as the floodplain wetlands of Lake Monroe. The habitat is primarily herbaceous vegetation, emergent aquatic vegetation, and some shrubby wetlands. The area does not meet the characteristics of a textbook marsh and has been altered by years of influence from I-4.	
Significant nearby features St Johns River, Lake Monroe, I-4	Uniqueness (considering the relative rarity in relation to the regional landscape.) AA is not unique among central Florida
Functions Foraging, breeding, nesting and refuge habitat for wildlife. Flood attenuation, water quality improvement	Mitigation for previous permit/other historic use Gemini Springs Tract purchased for mitigation for a previous I-4 project.
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) salamanders, alligator, snakes, wading birds, songbirds, raptors, small mammals, large mammals, fish	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Wood stork, E
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): armadillo, raccoon, black racer, mockingbird, swallow-tailed kite, anhinga, wild turkey, great egret	
Additional relevant factors:	
Assessment conducted by: M Drauer	Assessment date(s): 1/1/2016

Form 62-345.900(1), F.A.C. [effective date]

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

Site/Project Name: I-4 Beyond the Ultimate Segment 4	Application Number: -	Assessment Area Name or Number: EFH
Impact or Mitigation: Mitigation	Assessment Conducted by: M Drauer	Assessment Date: 1/1/16

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

		Current	With Mitigation
.500(6)(a) Location and Landscape Support	a. Quality and quantity of habitat support outside of AA.		
	b. Invasive plant species.		
	c. Wildlife access to and from AA (proximity and barriers).		
	X		
	d. Downstream benefits provided to fish and wildlife.		
	X		
	e. Adverse impacts to wildlife in AA from land uses outside of AA.		
	f. Hydrologic connectivity (impediments and flow restrictions).		
Current	With Mitigation	g. Dependency of downstream habitats on quantity or quality of discharges.	
7	8	h. Protection of wetland functions provided by uplands (upland AAs only).	
		Notes: bridges will provide new access, hydrologic connectivity benefiting downstream, and improved habitat quality.	
		Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	

.500(6)(b)Water Environment (n/a for uplands)	a. Appropriateness of water levels and flows.		
	b. Reliability of water level indicators.		
	X		
	c. Appropriateness of soil moisture.		
	d. Flow rates/points of discharge.		
	e. Fire frequency/severity.		
	f. Type of vegetation.		
	X		
	g. Hydrologic stress on vegetation.		
	h. Use by animals with hydrologic requirements.		
i. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ).			
j. Water quality of standing water by observation (i.e., discoloration, turbidity).			
Current	With Mitigation	k. Water quality data for the type of community.	
6	8	l. Water depth, wave energy, and currents.	
		Notes: bridges will provide new connectivity and permanent source of mixing	
		Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	

.500(6)(c)Community structure x Vegetation Benthic Both	I. Appropriate/desirable species		
	II. Invasive/exotic plant species		
	III. Regeneration/recruitment		
	IV. Age, size distribution.		
	V. Snags, dens, cavity, etc.		
	VI. Plants' condition.		
	VII. Land management practices.		
	VIII. Topographic features (refugia, channels, hummocks).		
	IX. Submerged vegetation (only score if present).		
	X. Upland assessment area		
Current	With Mitigation	Notes: bridges will provide new connectivity, more suitable water levels, wetter vegetation, and better quality habitat	
6	8	Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Mitigation
0.63	0.80

YEAR	T-factor	YEAR	T-factor	YEAR	T-factor
< or = 1	1	11-15	1.46	41-45	3.03
2	1.03	16-20	1.68	46-50	3.34
3	1.07	21-25	1.92	51-55	3.65
4	1.10	26-30	2.18	>55	3.91
5	1.14	31-35	2.45		
6-10	1.25	36-40	2.73		

Temporal Lag Factor (TLF) = (see Temporal Lag Table below)	1.14
Risk Factor (RF) = [1=no risk, 2=mod risk, 3=hi risk, on 0.25 increments)	1.25

FOR PRESERVATION ONLY:	

Mitigation Delta (MD)	
w/Mitigation - Current	0.17

Relative Functional Gain (RFG) = MD/(TLF x RF) =	0.12
Mitigation Area Required (acres) = FL/RFG =	147.3

Mitigation Area Size (acres)	200.7
Functional Gain (FG) (RFG x MIT AREA) (should balance with Functional Loss)	24.08
Excess Mitigation (acres)	53.4

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

Site/Project Name I-4 Beyond the Ultimate Segment 4		Application Number		Assessment Area Name or Number EFH	
FLUCCs code 6170/6180		Further classification (optional) Mixed wetland / Willow, Elderberry, Cabbage Palm		Impact or Mitigation Site? Impact	
Assessment Area Size 5.03 Acres		Basin/Watershed Name/Number St. Johns River		Affected Waterbody (Class) III	
		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) N/A			
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands portions of the floodplain of the St. Johns River and Lake Monroe floodplains abutting I-4					
Assessment area description the system is primarily a floodplain swamp but contains a mix of trees. Dominant trees are usually buttressed hydrophytic trees such as cypress and tupelo; the understory and ground cover are generally very sparse. Some areas are exclusively willow/elder, while other just cabbage palm Other typical plants include ogeechee tupelo, water tupelo, swamp titi, wax myrtle, dahoon holly, myrtle-leaved holly, large gallberry, possumhaw, hurrah-bush, white alder, lizard's tail, leather fern, royal fern, marsh fern, soft rush, laurel greenbrier, hazel alder, hawthorn, and swamp privet.					
Significant nearby features I-4, St. Johns River, Lake Monroe, US 17/92			Uniqueness (considering the relative rarity in relation to the regional landscape.) AA is not unique to Central Florida		
Functions Foraging, breeding, nesting and refuge habitat for wildlife. Flood attenuation, water quality improvement			Mitigation for previous permit/other historic use yes - Gemini Springs Addition (977 acres) purchased for I-4 mitigation on a previous project		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) a number of salamanders, alligator, river cooter, stinkpot, Southeastern five-lined skink, broadhead skink, snakes, yellow-crowned night-heron, wood duck, swallowtail kite, Mississippi kite, red-shouldered, hawk, woodcock, barred owl, chimney swift, hairy woodpecker, pileated woodpecker, songbirds, opossum, southeastern shrew,short-tailed shrew, beaver, wood rat, rice rat, cotton mouse, golden mouse, bear, raccoon, and bobcat, fish, shrimp.			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Wood Stork E, manatee E, wading birds (SSC), alligator		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): armadillo, raccoon, black racer, mockingbird, swallow-tailed kite, anHINGA, wild turkey, great egret					
Additional relevant factors:					
Assessment conducted by: Mike Drauer			Assessment date(s): 01/01/16		

Form 62-345.900(1), F.A.C. [effective date]

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

Site/Project Name: I-4 Beyond the Ultimate Segment 4	Application Number: -	Assessment Area Name or Number: EFH
Impact or Mitigation: Impact	Assessment Conducted by: Mike Drauer	Assessment Date: 01/01/16

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	Current	With Impact	
.500(6)(a) Location and Landscape Support		a. Quality and quantity of habitat support outside of AA.					
		b. Invasive plant species.					
		c. Wildlife access to and from AA (proximity and barriers).					
		d. Downstream benefits provided to fish and wildlife.					
		e. Adverse impacts to wildlife in AA from land uses outside of AA.					
		f. Hydrologic connectivity (impediments and flow restrictions).					
		g. Dependency of downstream habitats on quantity or quality of discharges.					
		h. Protection of wetland functions provided by uplands (upland AAs only).					
Current	With Impact	Notes: Acces limited by I-4. Limited uplands (Highway, maintained ROW)				Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	
6	0						
.500(6)(b) Water Environment (n/a for uplands)		a. Appropriateness of water levels and flows.					
		b. Reliability of water level indicators.					
		c. Appropriateness of soil moisture.					
		d. Flow rates/points of discharge.					
		e. Fire frequency/severity.					
		f. Type of vegetation.					
		g. Hydrologic stress on vegetation.					
		h. Use by animals with hydrologic requirements.					
		i. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ).					
		j. Water quality of standing water by observation (i.e., discoloration, turbidity).					
		k. Water quality data for the type of community.					
Current	With Impact	Notes: vegetation changing to more opportunistic species, diminished water quality, hydrologic connection broken by I-4				Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	
5	0						
.500(6)(c) Community Structure <input checked="" type="checkbox"/> Vegetation <input type="checkbox"/> Benthic <input type="checkbox"/> Both		I. Appropriate/desirable species					
		II. Invasive/exotic plant species					
		III. Regeneration/recruitment					
		IV. Age, size distribution.					
		V. Snags, dens, cavity, etc.					
		VI. Plants' condition.					
		VII. Land management practices.					
		VIII. Topographic features (refugia, channels, hummocks).					
		IX. Submerged vegetation (only score if present).					
		X. Upland assessment area					
Current	With Impact	Notes: invasive species present, lack of true canopy in areas, lack of desirable canopy species, impact from major highway bisecting system				Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	
6	0						

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Impact
0.57	0.00

Impact Acres =	5.03
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Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	2.87

Impact Delta (ID)	
Current - w/Impact	0.57

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

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

Site/Project Name I-4 Beyond the Ultimate Segment 4		Application Number		Assessment Area Name or Number EFH	
FLUCCs code 6410/6440/6460		Further classification (optional)		Mitigation or Preservation? Mitigation	Assessment Area Size 0 Acres
Basin/Watershed Name/Number St. Johns River	Affected Waterbody (Class) III		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) N/A		
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands					

portions of the floodplain of the St. Johns River and Lake Monroe floodplains abutting I-4

Assessment area description Assessment area is wetlands adjacent to I-4 on the western side known as the Debary Bayou.	
Significant nearby features St Johns River, Lake Monroe, I-4	Uniqueness (considering the relative rarity in relation to the regional landscape.) AA is not unique among central Florida
Functions Foraging, breeding, nesting and refuge habitat for wildlife. Flood attenuation, water quality improvement	Mitigation for previous permit/other historic use Gemini Springs Tract purchased for mitigation for a previous I-4 project.
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) salamanders, alligator, snakes, wading birds, songbirds, raptors, small mammals, large mammals, fish	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Wood stork, E
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): armadillo, raccoon, black racer, mockingbird, swallow-tailed kite, anhinga, wildl turkey, great egret	
Additional relevant factors:	
Assessment conducted by: M Drauer	Assessment date(s): 1/1/2016

Form 62-345.900(1), F.A.C. [effective date]

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

Site/Project Name: I-4 Beyond the Ultimate Segment 4	Application Number: -	Assessment Area Name or Number: EFH
Impact or Mitigation: Mitigation	Assessment Conducted by: M Drauer	Assessment Date: 1/1/16

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

		Current	With Mitigation
.500(6)(a) Location and Landscape Support	a. Quality and quantity of habitat support outside of AA.		
	b. Invasive plant species.		
	c. Wildlife access to and from AA (proximity and barriers).		
	X		
	d. Downstream benefits provided to fish and wildlife.		
	X		
	e. Adverse impacts to wildlife in AA from land uses outside of AA.		
	f. Hydrologic connectivity (impediments and flow restrictions).		
Current	With Mitigation	g. Dependency of downstream habitats on quantity or quality of discharges.	
7	8	h. Protection of wetland functions provided by uplands (upland AAs only).	
		Notes: bridges will provide access, hydrologic connectivity, and improved habitat quality.	
		Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	

.500(6)(b)Water Environment (n/a for uplands)	a. Appropriateness of water levels and flows.		
	b. Reliability of water level indicators.		
	X		
	c. Appropriateness of soil moisture.		
	d. Flow rates /points of discharge.		
	e. Fire frequency /severity.		
	X		
	f. Type of vegetation.		
	g. Hydrologic stress on vegetation.		
	h. Use by animals with hydrologic requirements.		
i. Plant community composition associated with water quality (i.e., plants tolerant of poor WQ).			
j. Water quality of standing water by observation (i.e., discoloration, turbidity).			
Current	With Mitigation	k. Water quality data for the type of community.	
6	8	l. Water depth, wave energy, and currents.	
		Notes: bridges will provide connectivity, improved water quality, more appropriate water levels	
		Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	

.500(6)(c)Community structure x Vegetation Benthic Both	I. Appropriate/desirable species		
	II. Invasive/exotic plant species		
	III. Regeneration/recruitment		
	IV. Age, size distribution.		
	V. Snags, dens, cavity, etc.		
	VI. Plants' condition.		
	VII. Land management practices.		
	VIII. Topographic features (refugia, channels, hummocks).		
	IX. Submerged vegetation (only score if present).		
	X. Upland assessment area		
Current	With Mitigation	Notes: bridges will provide connectivity, more suitable water levels, wetter vegetation, and better quality habitat	
6	8	Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	With Mitigation
0.63	0.80

TEMPORAL LAG TABLE					
YEAR	T-factor	YEAR	T-factor	YEAR	T-factor
< or = 1	1	11-15	1.46	41-45	3.03
2	1.03	16-20	1.68	46-50	3.34
3	1.07	21-25	1.92	51-55	3.65
4	1.10	26-30	2.18	>55	3.91
5	1.14	31-35	2.45		
6-10	1.25	36-40	2.73		

Temporal Lag Factor (TLF) = (see Temporal Lag Table below)	1.14
Risk Factor (RF) = [1=no risk, 2=mod risk, 3=hi risk, on 0.25 increments)	1.25

FOR PRESERVATION ONLY:	

Mitigation Delta (MD)	
w/Mitigation - Current	0.17

Relative Functional Gain (RFG) = MD/(TLF x RF) =	0.12
Mitigation Area Required (acres) = FL/RFG =	23.9

Mitigation Area Size (acres)	0.0
Functional Gain (FG) (RFG x MIT AREA) (should balance with Functional Loss)	0.00
Mitigation Deficit (acres)	-23.9