NATURAL RESOURCES EVALUATION

Turnpike (SR 91) Widening Project Development and Environment (PD&E) Study

Study Limits of Project: From South of I-595 to Wiles Road

Broward County, Florida

Financial Project ID Number: 442212-1-22-01

ETDM Number: 14350

Date: March 2024

TABLE OF CONTENTS

LIST OF FIGURES

Figure **Page Number**

LIST OF TABLES

Table **Page Number**

APPENDICES

Executive Summary

The Florida Department of Transportation (FDOT), Florida's Turnpike Enterprise (Enterprise), is evaluating alternatives to widen the Florida's Turnpike Mainline from south of I-595 (milepost [MP] 53) to Wiles Road (MP 70), approximately 17 miles. The project is in Broward County, Florida.

Protected Species and Habitat

The project study area was evaluated for the presence of federal and/or state protected species and their suitable habitat in accordance with Section 7 of the Endangered Species Act (ESA) and Part 2, Chapter 16 of the PD&E Manual. The following list summarize the effect determinations that have been made for each federal- and state-managed/protected species based upon their probability ranking and the implementation measures and/or commitments to offset any potential impacts to each species and potential impacts to wetlands and other surface waters. **Section 3** includes details of the effect determinations summarized below.

The project will have no effect the following federally listed species:

- Florida panther,
- West Indian manatee,
- Southeastern beach mouse,
- Eastern black rail,
- Everglade snail kite
- American crocodile,
- Bartram's hairstreak butterfly,
- Florida leafwing butterfly,
- Miami blue butterfly and,
- Florida bonneted bat

The project may affect, but is not likely to adversely affect the following federally listed species:

- Eastern indigo snake;
- Wood stork.

The project will have no adverse effect anticipated on the following state listed species:

- Florida burrowing owl,
- Gopher tortoise,
- Wading birds including little blue heron, tricolored heron, and roseate spoonbill,
- Southeastern American kestrel, and
- Florida sandhill crane.

The project will have no effect anticipated on the following state listed species:

- Florida pine snake

The project will have no adverse effect anticipated on the following managed/protected species:

- Bald eagle,
- Osprey,
- Bats, and
- Florida black bear.

Wetlands

The wetlands and other surface waters within the project study area were overlaid with the Build Alternatives to identify areas of impacts. Anticipated wetland impacts for the Preferred Alternative is estimated at 28.61 acres.

The recommended alternative, has been evaluated in accordance with Executive Order 11990 – "Protection of Wetlands." Based upon the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. As the project advances through subsequent phases, avoidance and minimization of wetland impacts will continue to be considered to the maximum extent practicable. Therefore, through appropriate mitigation during the design and permitting phase, the proposed project is expected to result in no significant impacts to wetlands.

Essential Fish Habitat

The recommended improvements will have *no effect* on Essential Fish Habitat.

1.0 Project Overview

1.1 Project Description

The Florida Department of Transportation (FDOT), Florida's Turnpike Enterprise (Enterprise), is evaluating alternatives to widen the Florida's Turnpike Mainline from south of I-595 (milepost [mp] 53) to Wiles Road (MP 70), approximately 17 miles. The project is in Broward County, Florida and is contained within the following eleven municipalities: Coconut Creek, Davie, Deerfield Beach, Fort Lauderdale, Lauderdale Lakes, Lauderhill, Margate, North Lauderdale, Plantation, Pompano Beach and Tamarac. **Figure 1-1** Project Location Map shows the limits of the PD&E Study.

Figure 1-1 Project Location Map

1.2 Purpose & Need

The purpose of this project is to reduce congestion along Florida's Turnpike Mainline to accommodate current and future traffic volumes generated by anticipated growth and development in Broward County and adjacent counties.

The need for this project is to improve current and future peak period traffic operations and safety issues at the interchanges and throughout the corridor. According to the Broward Metropolitan Planning Organization's (MPO) Metropolitan Transportation Plan (MTP), Commitment 2045, indicate that the population of Broward County is expected to grow from 1.9 million to 2.2 million (15.7% increase) between 2018 and 2045. Employment is projected to grow by 44% through 2045. The anticipated population growth is expected to increase traffic volume which will ultimately hinder traffic operations and increase safety concerns. The proposed project will improve travel time, reliability, enhance safety, improve regional connectivity and emergency response and evacuation times.

1.3 Conceptual Alternatives

This PD&E study is evaluating the feasibility of widening Florida's Turnpike Mainline to ten lanes plus an auxiliary lane from south of I-595 (MP 53) to south of Atlantic Boulevard (MP 66) and widening to ten lanes from Atlantic Boulevard (MP 66) to Wiles Road (MP 70).

The improvements being evaluated also include milling and resurfacing, bridge construction and existing interchange improvements. The existing interchanges within the limits of the study include I-595, Sunrise Boulevard, Commercial Boulevard, Atlantic Boulevard, Coconut Creek Parkway and Sample Road. The evaluation for two potential new reliever interchanges, one at Cypress Creek Road/McNab Road and one at Oakland Park Boulevard, is also part of the PD&E Study.

1.3.1 Turnpike Mainline Widening

The mainline evaluation is divided into two segments due to the existing conditions particular to each segment. Segment 1 extends from the begin study limits south of the I-595 interchange to south of the Atlantic Boulevard interchange and Segment 2 continues north from south of Atlantic Boulevard to the end of the study at Wiles Road. A key characteristic along the corridor is the presence of the Florida Gas Transmission (FGT) facility running parallel to the northbound lanes within the Florida's Turnpike right-of-way. The horizontal distance between the northbound lanes and FGT varies across both segments. For Segment 1, the FGT single 36-inch line specified width is typically 45 feet from the edge of shoulder as shown on **Figure 1-2**. For Segment 2, portions of the existing outside shoulder encroach into FGT's specified width for the double 24-inch and 18-inch gas lines see **Figure 1-3**.

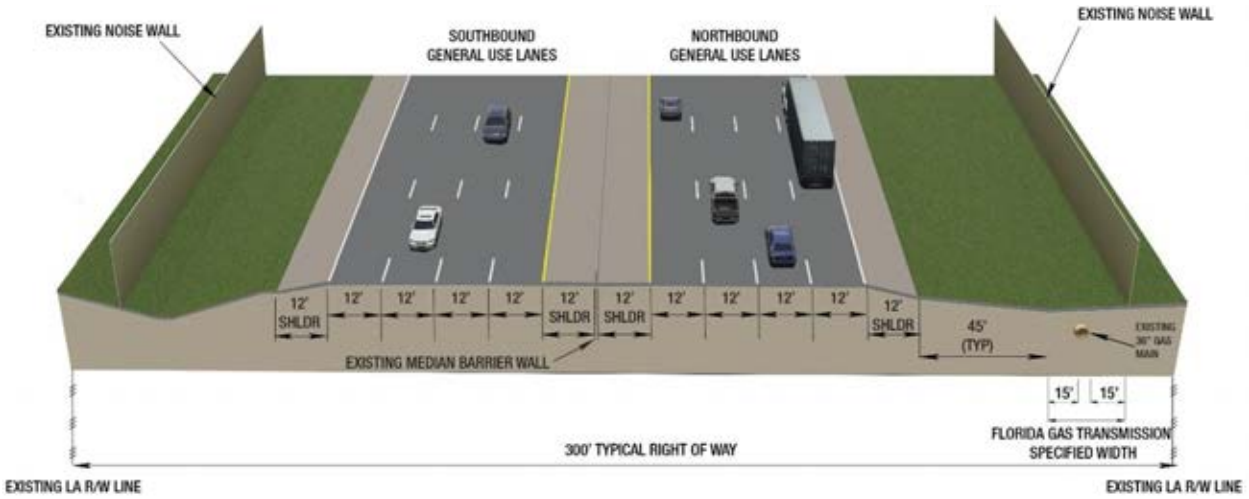

Figure 1-2 - Existing Typical Section from South of I-595 Interchange to South of Atlantic Blvd.

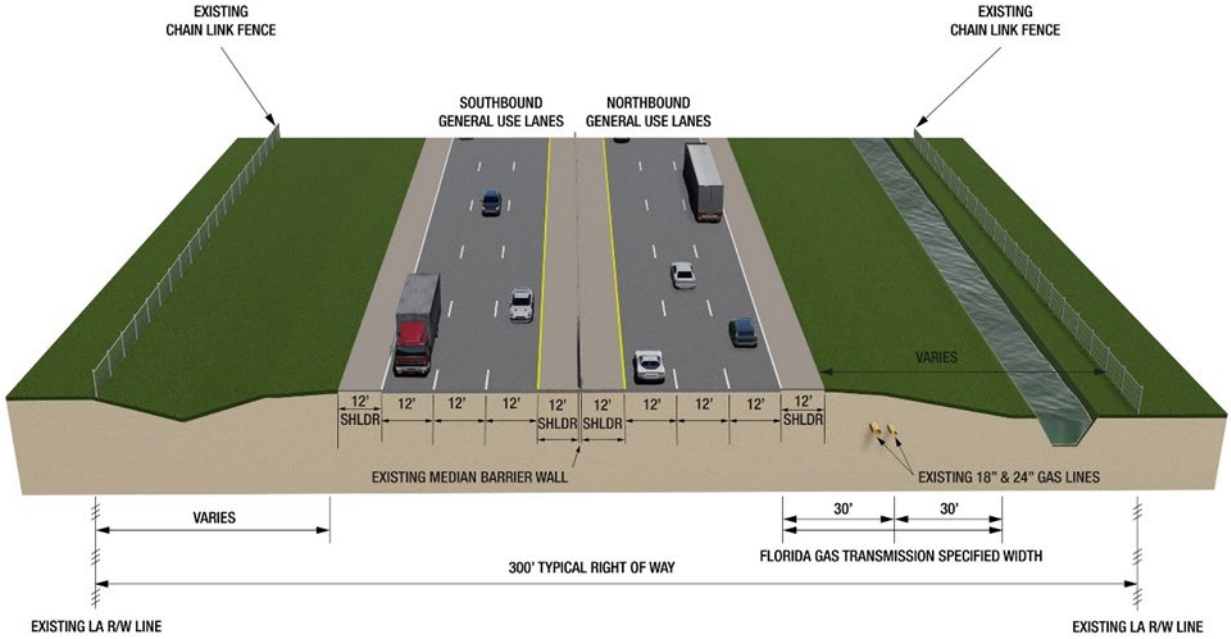

Figure 1-3 - Existing Typical Section from South of Atlantic Blvd. to Wiles Rd.

1.3.1.1 From South of I-595 to South of Atlantic Boulevard – Segment 1

This segment of Turnpike's mainline is currently an eight lanes section, four lanes in each direction, plus single or double auxiliary lanes at the three interchange locations: I-595 interchange, Sunrise Boulevard interchange and Commercial Boulevard interchange. Travel lane and auxiliary lanes are 12 feet wide with inside and outside paved shoulders 12 feet wide. There is a median barrier wall along the extends of this mainline segment. On the outside, the end treatments vary and include sections with shoulder barrier wall and guardrail.

For this segment, this PD&E study is evaluating the feasibility of center widening to accommodate ten 12-foot lanes, five lanes in each direction, plus 12- foot auxiliary lanes between interchanges by widening to the outside as shown on proposed typical section on **Figure 1-4**. The median is depressed and the two inside lanes and inside shoulder are sloped to the inside for adequate drainage of the roadway. The right-of-way impacts for this center widening build alternative are limited to a localized area located on the northwest quadrant of the intersection of Broward Boulevard and Turnpike's mainline, and result in partial right-of-way take and permanent maintenance easement. No right-of-way relocations are anticipated.

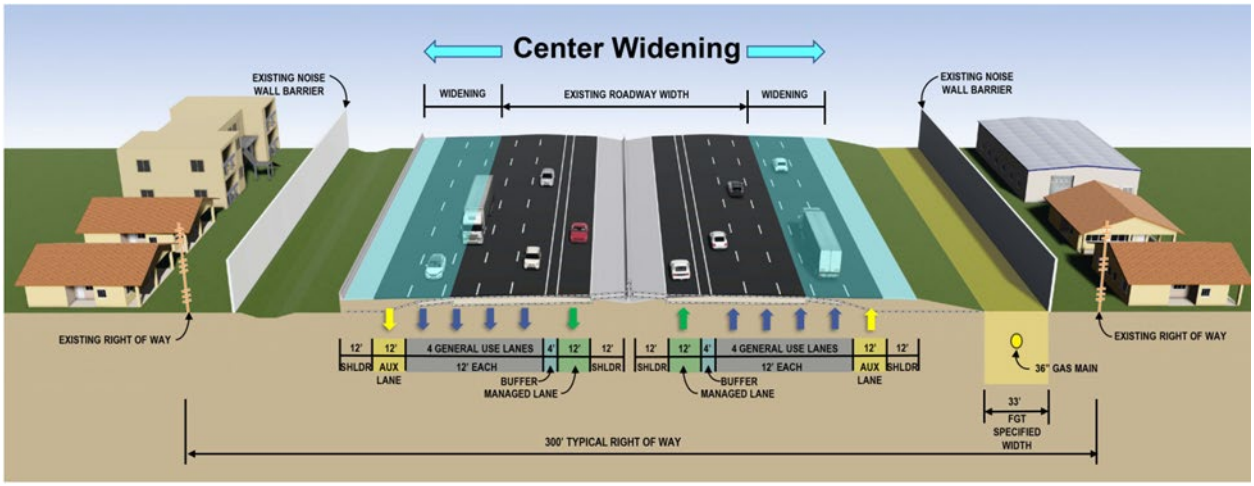

Figure 1-4 - Typical Section Segment 1

1.3.1.2 From South of Atlantic Boulevard to Wiles Road – Segment 2

The northerly segment of the study is a currently a six-lane section, with three lanes in each direction, plus an auxiliary lane at the three interchanges located within this segment: Atlantic Boulevard interchange, Coconut Creek Parkway interchange, and Sample Road Interchange. Travel Lanes and auxiliary lanes are 12 feet wide. Inside and outside paved shoulders are 12 feet wide with guardrail on the outside and barrier wall in the median.

For this segment, three mainline widening Build Alternatives were evaluated to accommodate a ten lanes section, while limiting the various impacts. Build Alternative 1 is evaluating the feasibility of widening to the west, maintaining the existing northbound lanes' edge of pavement, and shifting the Turnpike's centerline to the west as shown on the proposed typical section on **Figure 1-5**.

Build Alternative 1 improvements can be constructed within the available Turnpike's right-of-way and would avoid additional impacts to the FGT Specified Width.

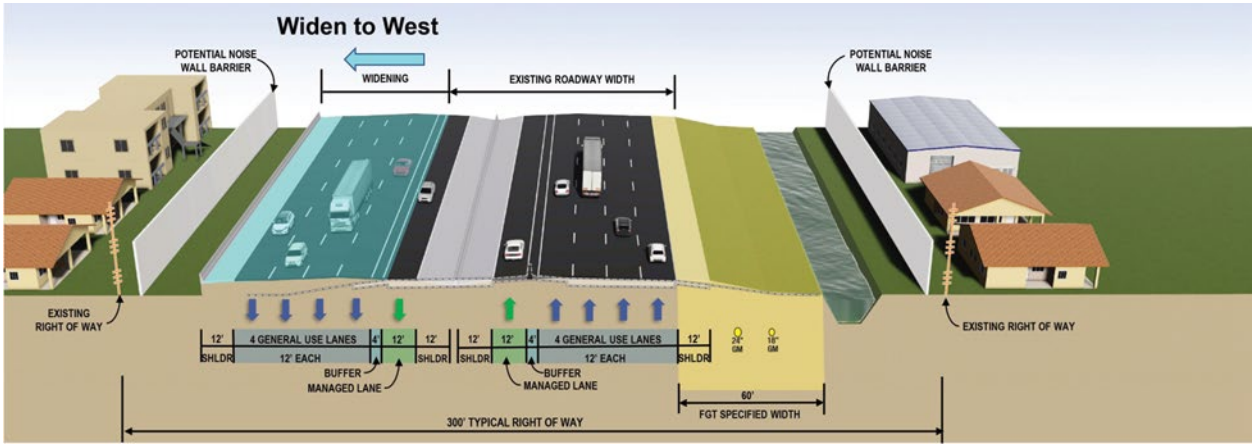

Figure 1-5 - Typical Section Segment 2 - Build Alternative 1 – Widening to the West

Build Alternative 2 is evaluating the feasibility of maintaining the Turnpike's centerline by widening to the outside as shown on **Figure 1-6**. Widening to the outside can be done with in the existing right-of-way, however, the widening of the northbound lanes to the east would further encroach FGT Specified Width triggering the need for relocation of the FGT gas lines outside of Turnpike's right-of-way potentially impacting businesses/homes adjacent to the Turnpike.

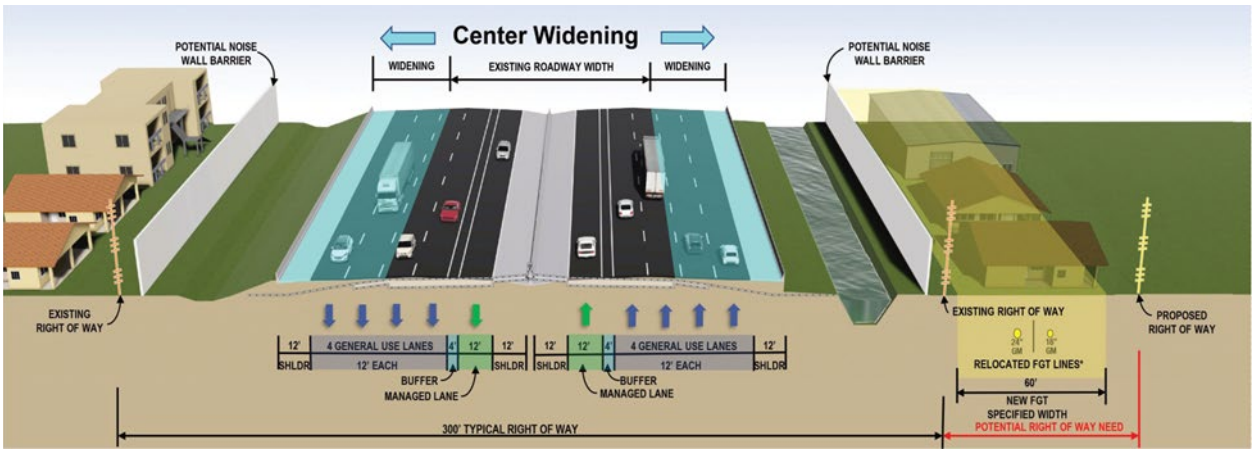

Figure 1-6 - Typical Section Segment 2 - Build Alternative 2 – Center Widening

Build Alternative 3 evaluated the impacts of shifting the centerline to the east, maintaining the southbound lanes' edge of pavement, and widening to the east as shown on **Figure 1-7**. This Build Alternative would address the concerns of the residential communities to the west of Turnpike's mainline regarding the corridor improvements moving closer to their community. Widening to the east would encroach FGT specified with and Broward County's C-3 Canal. Build Alternative 3 did not advance due to the need for right-of-way acquisition to relocate the existing FGT gas lines and the Broward County's C-3 Canal to the outside of Turnpike's existing right-of-way.

Evaluation of the anticipated impacts for all three Build Alternatives deemed Build Alternative 1 as the recommended alternative for the Segment 2 widening.

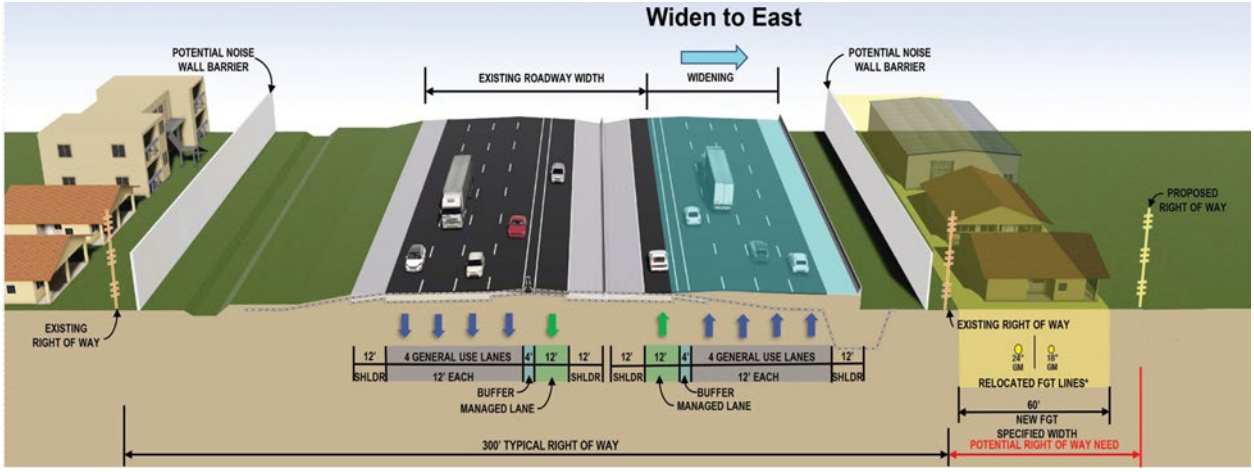

Figure 1-7 - Typical Section Segment 2 - Build Alternative 3 – Widening to the East

1.3.2 Interchange Improvements

Improvements to the six (6) existing interchanges within the study limits are being evaluated as part of this PD&E Study which include:

- I-595 (Exit 54)
- Sunrise Boulevard (Exit 58)
- Commercial Boulevard (Exit 62)
- Atlantic Boulevard (Exit 66)
- Coconut Creek Parkway (Exit 67)
- Sample Road (Exit 69)

The PD&E Study also is assessing the feasibility and impacts of two new potential interchanges at Oakland Park Boulevard (Milepost 65) and Cypress Creek Road/McNab Road (Milepost 63).

The Project Location Map on **Figure 1-8** shows the location of the existing and potential new interchanges within the study limits.

Figure 1-8 - Interchange Location Map

1.3.2.1 I-595 Interchange Modifications

Alternative 1 proposes a "practical" design to add a sixth (auxiliary) lane in the southbound direction between Sunrise Boulevard and the exit to I-595. This alternative would use reduced criteria to accommodate the additional sixth lane on the existing southbound mainline pavement/bridge. This option reduces the mainline travel/auxiliary lanes to 11 feet, except for the outside travel lane. The outside travel lane would remain at 12 feet. The first two feet were added to the outside shoulder to provide a minimum 10-foot shoulder. The remaining three feet were allocated to the inside shoulder, resulting in a five-foot-wide inside shoulder.

1.3.2.2 Sunrise Boulevard Interchange Modifications

Alternative 1 replaces the existing ramp bridge over the Turnpike mainline. The ramp bridge replacement is required due to existing substandard vertical clearance as well as horizontal clearance once the Turnpike mainline is widened. The replacement of the ramp bridge will require the relocation of the existing toll gantry for traffic entering southbound Turnpike mainline. The toll facilities will be moved to the interchange area east of the mainline. In addition, the ramps to and from the north will need to be realigned to tie into the widened Turnpike mainline. The realignment

of the ramps will create right-of-way (ROW) impacts on both sides of the mainline (six parcels on the west side and five parcels on the east side).

This alternative also widens eastbound Sunrise Boulevard between NW 47th Avenue and SR 7 to create an additional traffic lane in that segment of Sunrise Boulevard. This will help to relieve some of the weaving between the NB Turnpike mainline off-ramp to Sunrise Boulevard and NW 47th Avenue. The off-ramp from the mainline becomes a right turn only lane at NW 47th Avenue. It will also provide additional capacity for EB Sunrise Boulevard between NW 47th Avenue and SR 7. This alternative will impact the C-12 canal. The existing Turnpike mainline ramps to and from the south will remain. Also, a private bridge at NW 45th Avenue across the C-12 canal will need to be replaced.

1.3.2.3 Oakland Park Boulevard New Reliever Interchange

Alternative 1 introduces a potential new reliever interchange at Oakland Park Boulevard (OPB) to be in the vacant parcel on the north-west quadrant. The vacant parcel was formerly occupied by the Inverary Country Club South Course.

Potential improvements realign and widen OPB and replace the existing OPB bridge over Turnpike's mainline to accommodate potential mainline ultimate widening of 4 General Toll Lanes + 1 Managed Lane + 4-foot buffer (the geometry for mainline improvements is being submitted for review separately).

This full access interchange introduces a half diamond interchange just north of Oakland Park Blvd. crossing. Turnpikes mainline is shifted to the west to create space for northbound ramps while avoiding FGT Specified Width. Turnpike ramp connector ties in with the realigned segment of Rock Island Road (RIR) on the west side. RIR is realigned between OPB and South Florida Water Management District C-13 Canal to provide adequate vertical and horizontal geometry, and to accommodate anticipated traffic volumes.

This interchange alternative includes a grade-separated Displaced Left Turn (DLT) for the EB OPB to NB RIR and SB RIR to EB OPB left turn movement at the intersection of RIR with OPB. The proposed interchange ramps to-and-from the south include toll gantries. The NB off-ramp incorporates a reduced width tolling site due to the horizontal constraints by Turnpike's mainline and FGT Specified Width.

1.3.2.4 Commercial Boulevard Interchange Modifications

The existing interchange partial clover interchange configuration remains unchanged. This Alternative 1 proposes replacement of Commercial Blvd. bridge over Turnpike's mainline to accommodate the ultimate mainline widening section. Ramp improvements include an increase in curve radius for the SB loop-ramps to improve drivability and maintain a minimum design speed of 30 MPH. The NB off-ramp toll gantry recently constructed under the AET Phase 5A project (FPID 429339-1-52-0) will remain. The toll gantries at the WB to SB on-ramp and EB to SB on-ramp will be reconstructed.

1.3.2.5 Cypress Creek Road New Reliever Interchange

Alternative 1 introduces a potential new reliever interchange at Cypress Creek Rd. It is a partial cloverleaf interchange with a new intersection on the east side of Turnpike mainline for the NB

on-ramp movements that loop around the existing stormwater management pond owned by Turnpike. The SB off-ramp is a tight diamond ramp that connects to Cypress Creek Road on the west side of Turnpike mainline.

To address structural constructability issues and improve safety, a signalized SB off-ramp and WB Cypress Creek intersection is introduced. The SB to EB double left turning traffic enter the double turbo lanes (separated from the EB through lanes with traffic separators), then merges into a single lane before continuing east to the new signalized intersection, beyond the intersection the inside through lane is dropped at Hawkins Road. The SB to WB traffic will be signal controlled to eliminate traffic weaving condition with a driveway downstream. The existing six-lane Cypress Creek bridge over will be reconstructed to accommodate the mainline Widening.

1.3.2.6 Atlantic Boulevard Interchange Modifications

The proposed improvements in this Alternative were identified during the Traffic Planning analysis as modifications needed for adequate existing interchange operation based on the 2045 traffic volumes forecast:

- Two-lane NB off-ramp with a double right-turn and left-turn
- Double EB right-turn onto Turnpike's on-ramps

The proposed auxiliary lane for the two-lane NB off-ramp results in reconstruction of the existing NB toll gantry and tolling equipment near the Pompano Service Plaza. No impacts to the existing toll building are anticipated.

Additional improvement needs for adequate intersection operation in year 2045 were identified at the intersection of Atlantic Blvd. and Lyons Rd.

- Double right-turn for EB Atlantic Blvd. to SB Lyons Rd.
- Double right-turn for NB Lyons Rd. to EB Atlantic Blvd

These intersection improvements are located outside of the interchange limits and are therefore to be done by others.

1.3.2.7 Coconut Creek Parkway Interchange Modifications

Alternative 2 includes new diamond type SB on and NB off ramps from/to Coconut Creek and grade separated NB off ramp direct connection to the proposed roundabout at Blount Rd to provide a dedicated Turnpike ramp access for the Florida's Turnpike industrial park as this area serves a high level of truck traffic. This alternative was modified from the base concept with a triple left turn movement from SB Turnpike Ramp to EB Coconut Creek Blvd. Additionally, to take advantage of the removed existing SB loop onramp, the alignment of SB off-ramp was refined to a directional flyover at an optimum angle instead of a tight loop ramp. This refinement improves safety and shifts further from the existing LA R/W.

This interchange alternative was developed and comprehensively analyzed as part of the mainline widening design project from Atlantic Blvd. to Wiles Rd. (FPID 406150-1) that was carried up to 60% stage prior to being included as part of this PD&E Study for reevaluation.

This alternative was found to still be viable. Additional information is documented in the Systems Interchange Justification Report (SIJR).

1.3.2.8 Sample Road Interchange Modifications

Alternative 1 proposed the relocation of the existing SB loop ramps and removal of the ramps bridge. It introduces new diamond type SB ramps to/from Sample Rd as well as grade separated Tradewinds Park Access Rd under Sample Rd. It realigns Sample Rd and replaces the bridge over Turnpike's mainline to accommodate the proposed mainline widening.

This Sample Rd. interchange alternative was also developed and comprehensively analyzed as part of the mainline widening design project from Atlantic Blvd. to Wiles Rd. (FPID 406150-1) that was carried up to 60% stage prior to being included as part of this PD&E Study for reevaluation. This alternative was found to still be viable.

Additional information is documented in the SIJR.

2.0 Existing Environmental Conditions

This section presents a description of existing conditions within the project study area, including soil and land use cover types. **Section 3.0** presents a description of the potential impacts to federal- and state-protected species and habitats. **Section 4.0** presents a description of wetland and other surface water impacts that would result from the construction of the recommended alternative and a discussion of the mitigation options to offset these impacts.

2.1 Methodology

In addition to reviewing the ETDM Summary Report comments, a literature search of agency records was conducted, focusing on known occurrences of listed species near the project area, which includes a 500-foot buffer surrounding proposed right of way. Literature reviews were used to determine the current federal and state listed status of all protected flora and fauna species having the potential to occur in the vicinity of the project. Field investigations were conducted by environmental scientists familiar with central Florida natural communities in June 2019. These pedestrian surveys focused on the remaining natural communities within 500 feet of the existing right of way; in particular, on natural communities known to support listed plant and wildlife species.

Project biologists researched publicly accessible databases of the federal, state, and local government agencies to gather information on known sightings of listed species and important habitats in Broward County. These agencies included the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWC), Florida Natural Areas Inventory (FNAI), and South Florida Water Management District (SFWMD). Other sources of area-specific information included the Environmental Screen Tool (EST), Florida's Turnpike Enterprise, and the Florida Native Plant Society.

To assess the approximate locations and boundaries of existing wetland and upland communities within the project area, the following site-specific data was collected and reviewed:

- Aerial photographs, (scale 1" = 200') ESRI 2020 and Broward County Property Appraiser 2022;
- Florida Association of Environmental Soil Scientists, Hydric Soils of Florida Handbook, 4th ed., (Hurt et al. 2007);
- FDOT, Florida Land Use Cover, and Forms Classification System (FLUCFCS) Handbook, 3rd ed., January 1999.
- SFWMD, Florida Land Use, Cover and Forms Classification System GIS Database, (SFWMD 2016)
- U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS), Soil Survey of Broward County, Florida, 1976 and 2010;
- USDA, NRCS Web Soil Survey, (August 2022);
- U.S. Fish and Wildlife Service (USFWS), National Wetlands Inventory (NWI), Wetlands Online Mapper (August 2022); and

- USFWS, Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979).
- USFWS Information for Planning and Consultation (IPaC);
- FNAI Biodiversity Matrix Report (http://www.fnai.org/biointro.cfm);
- Florida Fish and Wildlife Conservation Commission (FWC)
  - Bald eagle (Haliaeetus leucocephalus) nest locator (1998-2022) nesting season data;
  - Wading bird rookeries locator (1999);
  - Florida scrub-jay habitat and observations (1992-1993);
- Audubon Florida Eagle Watch public nest application (2022 nesting data);
- USFWS – https://www.fws.gov/northflorida/
  - Critical Habitat for threatened and endangered species;
  - Wood stork active colonies (2010-2019) (USFWS, 2020);
  - Central Florida wood stork (*Mycteria americana*) core foraging areas (CFA) (18.6-mile radius);
  - Consultation Areas for federally listed species; and
- U.S. Army Corps of Engineers (USACE) Effect Determination Keys for the wood stork and eastern indigo snake.

For the purposes of this document, wetlands are defined in accordance with Chapter 62-340 F.A.C., Section 373.019(27), F.S., and Corps of Engineers Wetland Delineation Manual (1987) with Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region (2010).

2.2 Soils

Based on the Soil Survey of Broward County, Florida (USDA, 2010), the project study area is comprised of 21 soil types within the 500-foot right of way buffer of the project limits (project study area). **Appendix B** provides an aerial map depicting the boundaries of each soil type within the project area. According to the NRCS Web Soil Survey, two soil types reported within the project study area are classified as hydric (Lauderhill Muck and Sanibel Muck) and 19 are listed as non-hydric. Mapped hydric soils comprise approximately one percent and non-hydric soils cover 99 percent of the project study area. Open water comprises approximately 4.7 percent of the project study area.

Table 2-1 lists the soil types within the study area, their hydric ranking and the approximate acreage and percentage within the project study area.

Table 2-1- NRCS Soil Types within Project Study Area

Map Unit Symbol	Map Unit Name	Acres in Project Area	Percentage of Project Area
2	Arents-Urban land complex	29.6	0.9%
3	Arents, organic substratum- Urban land complex	7.2	0.2%
4	Basinger fine sand, 0 to 2 percent slopes	53.8	1.7%
12	Hallandale fine sand, 0 to 2 percent slopes	83.1	2.6%
13	Hallandale-Urban land complex	3.3	0.1%
14	Matlacha gravelly fine sand, limestone substratum, 0 to 2 percent slopes	114.4	3.6%
15	Immokalee fine sand, 0 to 2 percent slopes	479.8	15.0%
16	Immokalee, limestone substratum-Urban land complex	133.4	4.2%
17	Immokalee-Urban land complex	550.2	17.1%
18	Lauderhill muck, frequently ponded, 0 to 1 percent slopes	2.9	0.1%
19	Margate fine sand, occasionally ponded, 0 to 1 percent slopes	501.7	15.6%
20	Matlacha, limestone substratum-Urban land complex	362.1	11.3%
27	Plantation, ponded-Matlacha- Urban land complex, 0 to 2 percent slopes	36.9	1.2%
28	Pomello fine sand, 0 to 2 percent slopes	19.2	0.6%
29	Pompano fine sand, 0 to 2 percent slopes	54.6	1.7%
33	Sanibel muck	27.8	0.9%
36	Udorthents	43.0	1.3%
38	Udorthents, shaped	362.3	11.3%
39	Udorthents-Urban land complex	10.2	0.3%
40	Urban land, 0 to 2 percent slopes	182.2	5.7%
99	Water	151.1	4.7%
Totals for Project Area		**3,208.8**	**100.0%**

2.3 Land Use

Land uses within the project study area were evaluated utilizing GIS data from the SFWMD Land Cover Land Use data. Each land use type within the project study area has been classified using the Florida Land Use, Cover and Forms Classification System (FLUCFCS; FDOT 1999). A total of 15 upland, four (4) wetland and two (2) other surface water land use types were mapped within

the project study area. Aerial maps depicting existing land uses and habitats within the project study area are provided in **Appendix C**.

Table 2-2 provides land use and habitat types, their classifications, total acreage, and percent coverage within the project study area. Upland communities comprise 2,896.4 acres (90.3 percent) of the project study area. Developed uplands include residential development, commercial and services, industrial areas, and institutional and recreational facilities. The undeveloped uplands of the project study area consist of open land, upland forests, and disturbed land. Infrastructure within the project study area consists predominantly of transportation, communications, and utility facilities.

Wetland and other surface water communities comprise 312.54 acres (9.7 percent) of the project study area. Based on collected field data and in-house reviews, a total of 6 wetland and other surface water habitat types, including four (4) wetland and two (2) other surface water types were identified within the project study area. Other surface waters are defined as open water bodies and manmade drainage features. Wetland water habitats include mixed forested wetlands, wetland coniferous forests, and vegetated non-forested wetlands. **Appendix E** provides aerial maps depicting the location of wetland and other surface water habitats within the project study area.

FLUCFCS* Classification	Land Use Description	Acres in Project Area	Percentage of Project Area
110	Residential, Low Density	30.10	0.9%
120	Residential, Medium Density	382.38	11.9%
130	Residential High Density	654.32	20.4%
140	Commercial and Services	234.76	7.3%
150	Industrial	58.78	1.8%
160	Extractive	0.84	0.0%
170	Institutional	132.37	4.1%
180	Recreational	168.38	5.2%
190	Open Land	44.64	1.4%
310	Herbaceous (Dry Prairie)	4.80	0.1%
420	Upland Hardwood Forests	89.29	2.8%
430	Upland Mixed Forests	14.16	0.4%
510	Streams and Waterways	81.05	2.5%
530	Reservoirs	126.16	3.9%
610	Wetland Hardwood Forests	70.08	2.2%
620	Wetland Coniferous Forests	11.36	0.4%
630	Wetland Forested Mixed	17.46	0.5%
640	Vegetated Non-Forested Wetlands	6.43	0.2%
740	Disturbed Land	32.32	1.0%
810	Transportation	902.88	28.1%
820	Communications	16.92	0.5%
830	Utilities	129.41	4.0%
Total		3208.90	

*Florida Land Use, Cover and Forms Classification System, FDOT, January 1999

3.0 Protected Species Habitat

This project was evaluated for impacts to wildlife and habitat resources, including federally and state protected species. Species protections are afforded by Section 7 of the Endangered Species Act (ESA, 1973), as amended, and Chapter 68A-27, F.A.C. The project was also evaluated for plant species designated as endangered, threatened or commercially exploited in accordance with the Regulated Plant Index (5B-40.0055, F.A.C.), which is administered by the Florida Department of Agriculture and Consumer Services (FDACS), Division of Plant Industry, pursuant to Chapter 5B-40, F.A.C. Evaluations were conducted in accordance with the FDOT PD&E Manual Part 2, Chapter 16, while using information from the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWC), FDACS, Florida Natural Areas Inventory (FNAI), Natural Resources Conservation Service (NRCS), and other databases.

Initial agency comments were provided through the Efficient Transportation Decision Making (ETDM) process. The results of the programming screen review of the project (ETDM #14350) were published on August 21, 2018. Reviewing agency comments about potential effects to wildlife and habitat range from “Minimal” to “Substantial”, with most comments summarized as “Moderate” effect on the wildlife and habitats being considered.

- Moderate Effect on Wetlands and Surface Waters – U.S. Army Corps of Engineers, the Florida Department of Environmental Protection (FDEP) and the SFWMD.
- Minimal Effect on Wildlife and Habitat – U.S. Fish and Wildlife Service (USFWS) and SFWMD
- Moderate Effect on Wildlife and Habitat – Florida Fish and Wildlife Conservation Commission (FWC)

The project area does not fall within USFWS-designated critical habitat (CH) for any species. The project area does fall within the USFWS Consultation Areas (CAs) of the Florida bonneted bat (*Eumops floridanus*), West Indian manatee (*Trichechus manatus*) Everglade snail kite (*Rostrhamus sociabilis plumbeus*), Southeastern Beach Mouse (*Peromyscus polionotus niveiventris*), Eastern Black Rail (Laterallus jamaicensis), and the American Crocodile (Crocodylus acutus). The Broward County Soil Survey, recent aerial imagery (2021), SFWMD land use/land cover mapping, as well as general pedestrian surveys have been reviewed to determine habitat types occurring within and adjacent to the project corridor.

3.1 Protected Species Evaluation

3.1.1 Existing Conditions

Based on desktop research and field reviews, tables of potentially occurring protected fauna and flora were developed. Further research for protected flora was conducted to determine the flowering season and form, in order to effectively schedule field efforts. Field reviews consisted of vehicular surveys and detailed pedestrian surveys through natural areas and altered habitats with the potential to support protected species. In the absence of physical evidence of a protected

species, evaluation of the appropriate habitat was conducted to determine the likelihood of a species being present. Appropriate habitat within 500 feet of the project area was visually scanned for evidence of listed species as well as general wildlife. The primary land use along the corridor is medium/high residential, with commercial and institutional areas established throughout. Upland areas tend to be small, disturbed, and separated by development. Most of the right of way is enclosed by segments of noise walls connected by chain-link fences. Therefore, wildlife movement is very limited.

3.1.2 Remaining Habitats

Remaining natural habitats are confined to two regional Broward County parks located on the west side of the project area. Fern Forest Nature Center is located west of the Pompano Beach Service Plaza. In 1979, the land was purchased by Broward County from the Palm Aire Development Corporation. In 1985, the Fern Forest Park was opened to the public as 247.1-acre regional park.

Tradewinds Park is a 625.7-acre regional park located on the west side of the project area between Copans Road and Wiles Road. Tradewinds Park is bisected by Sample Road. South of Sample Road, the park is primarily composed of recreational athletic fields. North of Sample Road, Tradewinds Park includes horse stables as well as upland forested areas.

3.1.3 Wildlife

State and federally protected species with the potential to occur along the corridor include 19 protected animals and 6 listed plants. Federally listed species under the U.S. Fish and Wildlife Service's jurisdiction are included in the IPaC species list in **Appendix D**. Species status in **Tables 3-1** and **3-2** below include the following USFWS and FWC abbreviations: "E" for endangered or "T" for threatened. To summarize the results of desktop and field data collection efforts, each potentially occurring species was assigned a likelihood for occurrence of "none", "low", "moderate", or "high" within habitats found on or immediately adjacent to the project corridor and an indicator of suitable habitat proximity to the project area of "distant", "near R/W (right of way)", or "within R/W". Definitions of probability of species presence/habitat proximity are provided below.

Likelihood of Species Presence Within the Project Corridor

None – Species has the potential to occur in Broward County, but due to complete absence of suitable habitat, could not be naturally present within the project corridor.

Low – Species with a low likelihood of occurrence within the project corridor are defined as those species that are known to occur in Broward County or the bio-region, but preferred habitat is limited on the project corridor, or the species is rare.

Moderate - Species with a moderate likelihood for occurrence are those species known to occur in Broward or nearby counties, and for which suitable habitat is well represented on the project corridor, but no observations or positive indications exist to verify presence.

High - Species with a high likelihood for occurrence are suspected within the project corridor based on known ranges and existence of sufficient preferred habitat on the

corridor; are known to occur adjacent to the corridor; or have been previously and recently observed or documented in the vicinity.

Habitat Proximity

Distant - Appropriate habitat is more than 500 feet from the project footprint when accounting for the species' home range size and level of mobility.

Near R/W - Appropriate habitat is within 500 feet of the project footprint when accounting for the species' home range size and level of mobility.

Within R/W - Appropriate habitat occurs within the project footprint.

3.1.4 Federally Listed Species

Florida Bonneted Bat (*Eumops floridanus*)

The Florida bonneted bat (FBB) is listed as endangered by the FWC and USFWS. As shown in **Figure 3-1**, the southern portion of the project area, south of south of Commercial Blvd (SR 870) is located within the South Florida urban development boundary, which is part of the Consultation Area. The project is not within the draft Critical Habitat Area (FWS-R4-ES-2019-0106 November 22, 2022).

The Florida bonneted bat is a large, free-tailed bat with joined ears that varies in color from dark gray to brownish gray or cinnamon brown. It is listed as endangered by the USFWS. Precise roosting and foraging habitat requirements are unknown; however, the species forages in open areas and is closely associated with forested communities due to their roosting habits. The Florida bonneted bat is known to roost in artificial structures (i.e., buildings and utility poles in urban areas), natural crevices and tall mature trees with structural features for breeding and sheltering (i.e., palm fronds, tree snags, tree cavities, hollows, decay, crevices, loose bark or deformities). Foraging habitat for this species includes open areas with abundant sources of drinking water and prey. The Florida bonneted bat is active throughout the year and has an extensive breeding season. According to FNAI data, the Florida bonneted bat has not been documented within one (1) mile of the project study area.

Figure 3-1 - Florida Bonneted Bat Consultation Area

All bridges within the project corridor were inspected for individuals and signs of bats (staining and/or guano). No individuals or signs of bats were found during the field reviews and no individuals have been documented within the immediate vicinity of the project study area. No acoustic surveys were conducted during field reviews in June 2019. No visual observations of individuals were made during field reviews.

As outlined in the 2019 USFWS Florida Bonneted Bat Consultation Key in **Appendix D**, the Consultation Key cannot be used for actions proposed within the urban development boundary in Miami-Dade and Broward County because Florida bonneted bats use this area differently (roosting largely in artificial structures), and small natural foraging areas are expected to be

important. The Enterprise will reinitiate technical assistance with the USFWS during the project's design phase regarding the Florida bonneted bat. With the commitment to reinitiate technical assistance with USFWS, preliminarily, it has been determined that the proposed project will have ***No Effect (NE)*** on the Florida bonneted bat. Florida's Turnpike Enterprise held a Technical Assistance meeting with USFWS on February 9, 2023, regarding the Florida Bonneted Bat. A copy of the meeting minutes are included in **Appendix G**.

Florida Panther (*Puma concolor coryi*)

The Florida panther is a large, tan subspecies of the cougar that has black tips on the ears and tail and is listed as endangered by the USFWS. This species prefers a variety of habitats, including upland forests, prairies, wetlands, stands of saw palmetto, and swamps. The study area does not fall within the USFWS Consultation Area or the "Primary", "Secondary", or "Dispersal" zones for this species; however, the USFWS has documented the Florida panther in Broward County. Though suitable habitat exists within the isolated Broward County parks the review of FWC's panther online viewer has not documented panther telemetry or mortality within 25 miles of the project area. The nearest panther mortality occurred in 2001 on US 27 just north of the Broward-Palm Beach County line. Additionally, this species was not observed during field reviews. Since the project is not within the USFWS Consultation Area or the "Primary," "Secondary," or "Dispersal" zones, it has been determined that the proposed project will have ***No Effect (NE)*** on the Florida panther.

West Indian manatee (*Trichechus manatus*)

Manatees, listed as Federally Threatened, are herbivorous marine mammals found in marine, estuarine, and freshwater environments. Manatees have large bodies with paired flippers and a round, paddle-shaped tail. They are typically grey in color and occasionally spotted with barnacles or colored by patches of green or red algae. The muzzle is heavily whiskered and coarse, single hairs are sparsely distributed throughout the body. The manatee typically inhabits coastal waters, bays and rivers. They require warm-water refugia during cold weather and can frequently be observed in large groups gathered in the effluent of cooling facilities at such times. The manatee is wide ranging during warmer months and restricted to springs and other warm-water areas during the winter. It can be found in any coastal or estuarine waters but is most common in peninsular Florida. This species is also Federally protected under the Marine Mammal Protection Act. The South Fork of the New River (G-15 Canal), which is located just north of I-595, is a designated IDLE SPEED (November 15 through March 31)/SLOW SPEED (Remainder of year) zone by Rule 68C-22.003, F.A.C. Manatees are commonly observed in the G-15 Canal. The recommended alternative does not include any work in the G-15 Canal.

Following the Corps of Engineers, Jacksonville District, and The State of Florida Effect Determination Key for the Manatee in Florida (April 2013), (**Appendix D**) the project (A) is not located in waters accessible to manatees, it has been determined that the project will have ***No Effect (NE)*** on the manatee.

Southeastern Beach Mouse (*Peromyscus polionotus niveiventris*)

The beach mouse is listed as threatened by the USFWS due to extensive habitat loss from commercial and residential construction along the Atlantic coast. This species resides in dry,

sandy coastal habitats along the east coast of Florida. Primary habitat of the beach mouse is the sea oats zone of primary coastal dunes. The beach mouse has not been documented within one mile of the project study area, no suitable habitat is present, and none were observed during field reviews. Therefore, this species has been assigned a probability occurrence of 'none', and it has been determined that the project will have ***No Effect (NE)*** on the beach mouse.

Eastern Black Rail (*Laterallus jamaicensis*)

The federally threatened eastern black rail is a member of the family Rallidae that includes rails, coots and gallinules. The eastern black rail is a sparrow-sized, secretive marsh bird, and the smallest rail in North America. An adult eastern black rail is gray-black in coloration, with white speckled upperparts, and has a grayish crown, a chestnut-colored nape of the neck, and a short tail, as described by Cornell University in 2019. These secretive birds have red eyes, black bills and dusty pink or wine-colored legs. The eastern black rail is a wetland-dependent bird requiring dense emergent cover (i.e., vegetation) and extremely shallow water depths (typically ≤3 cm) over a portion of the wetland-upland interface to support its resource needs. In Florida, eastern black rail habitat includes impounded and unimpounded salt and brackish marshes.

Field reviews conducted in June 2019 noted no observed eastern black rail activity within the project limits, and no suitable habitat within the project limits. No natural marsh areas are located within the project limits. Due to the lack of suitable habitat, the project is anticipated to have ***No Effect (NE)*** on the eastern black rail.

Everglade Snail Kite (*Rosthhamus sociabilis*)

The everglade snail kite is listed as endangered by USFWS. Suitable habitat for this species consists of lake perimeters and freshwater marshes due to the species diet consisting largely of apple snails. The project area is located within the consultation area for the Everglade snail kite; however, the project is not within designated critical habitat for this species. The nearest Critical Habitat for the everglade snail kits is Water Conservation Area 1, which is approximately six miles to the west of the project area.

Suitable foraging habitat for the snail kite is typically a combination of low marsh with an interdigitated matrix of shallow open water, which is relatively clear and calm. Snail kites require foraging areas that are relatively clear and open in order to visually search for apple snails. Therefore, dense growth of herbaceous or woody vegetation is not conducive to efficient foraging. No snail kites, evidence of snail kites, or typical suitable habitat was observed within the project area during field visits. Surface waters within the project area are dominated by exotic/nuisance vegetation. As there is no suitable habitat within the project limits, the project will have ***No Effect (NE)*** on the everglade snail kite.

Wood Stork (*Myceteria americana*)

The project area is within the 18.6-mile Core Foraging Area (CFA) of six wood stork nesting colonies (Cypress City, Sawgrass Ford, Lox NC-4, Emerald Estates 1 and 2 Griffin, and Wakodahatchee, and Kinich). This federally listed Threatened wading bird prefers freshwater and estuarine habitats for nesting, roosting, and foraging. **Figure 3-2** shows the project area and the CFA of each of wood stork nesting colonies in the project area.

Figure 3-2 - Wood Stork Core Foraging Areas

Typical foraging sites for the wood stork include freshwater marshes and 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. Because of their specialized feeding behavior, wood storks forage most effectively in shallow-water areas (2-15 inches of water). Suitable foraging habitat is present within the project area. Therefore, the wood stork was assigned a 'moderate' probability of occurrence within the project study area. The recommended alternative would result in impacts to surface waters that may be considered suitable wood stork foraging habitat.

During the design and permitting phase, impacts to suitable wood stork foraging habitat will be replaced in-kind or mitigated through the purchase of wetland credits from a "Service-approved"

wetland mitigation bank. Based on a review of the Wood stork Effect Determination Key for South Florida dated May 18, 2010 (**Appendix D**), it has been determined that the project ***may affect, but is not likely to adversely affect (MANLAA)*** the wood stork. This determination is based on the following key sequence: A (project impacts SFH at a location greater than 0.47 mile from a colony site)> B (project impacts to SFH is greater than ½ acre) > C Project impacts SFH within CFA> D (project impacts have been avoided and minimized to the extent practicable) > E > project provides SFH compensation within the appropriate CFA.

American Crocodile (*Crocodylus acutus*)

The American crocodile is federally listed as threatened due to human activities and coastal development. American crocodiles inhabit brackish or saltwater, and can be found in ponds, coves, canals, and creeks in mangrove swamps in southern Florida; no individuals have been documented within one mile of the project study area and none were observed during the field reviews. Therefore, this species was assigned a 'low' probability of occurrence within the project study area. The proposed surface water features observed within the study area mainly consist mainly of excavated stormwater management facilities (swales, ditches and retention areas) associated with the existing roadway network. However, potential habitat does exist within close proximity to the study area (i.e., the G-15 Canal). The project area is highly urbanized and far enough north from known crocodile habitat that it is unlikely to affect crocodile nesting areas. Therefore, it has been determined that the proposed project will have ***No Effect (NE)*** on the American crocodile.

Eastern Indigo Snake (*Drymarchon couperi*)

The Eastern indigo snake, which is federally listed as Threatened, inhabits pine flatwoods, hardwood forests, moist hammocks, and areas that surround cypress swamps. This species could occur in some of the natural areas such as the Fern Forest Nature Center or Tradewinds Park adjacent to the corridor but, is often found in habitats containing gopher tortoises. The FWC Rare Snake Sightings GIS database was reviewed for Eastern indigo snake sightings. No sightings have been documented within the project area. The Enterprise will implement the Standard Protection Measures for the Eastern Indigo Snake and based on the Eastern Indigo Snake Determination of Effect Key (A>B>C>D>E "MANLAA"), it has been determined that the project ***may affect, but is not likely to adversely affect (MANLAA)*** this species (**Appendix D**).

Bartram's hairstreak butterfly (*Strymon acis bartrami*)

The Bartram's hairstreak butterfly is a federally endangered butterfly that is native to the pine rockland habitat of south Florida. Over time, their populations have declined throughout their historic range and their distribution is now extremely limited. The reasons for this decline may include destruction of pine rockland habitat, introduction of exotic plant and insect species, fire suppression or exclusion, use of insecticides for mosquito control, and collecting. At rest, this species is easy to recognize by the broad white bands with a black edge that can be seen when the wings are closed. Bartram's scrub-hairstreaks seldom fly very far from their host plant, pineland croton (Croton linearis). The project study area does not contain suitable Bartram's hairstreak butterfly habitat, this species has not been documented within one (1) mile of the Build Alternative, and none were observed during the field reviews. For these reasons, the

Bartram's hairstreak butterfly has been assigned a probability occurrence of 'none'. As such, it has been determined that the project will have ***No Effect (NE)*** on the Bartram's hairstreak butterfly.

Florida leafwing butterfly (*Anaea troglodyta floridalis*)

The federally endangered Florida leafwing is a butterfly that is native to the pine rockland habitat of south Florida. Over time, their populations have declined throughout their historic range and their distribution is now extremely limited. The reasons for this decline may include destruction of pine rockland habitat, introduction of exotic plant and insect species, fire suppression or exclusion, use of insecticides for mosquito control, and collecting. In flight, the bright orange upper wings make this species easy to spot. However, when at rest, the cryptic coloration of the lower wings makes this species look like a dead leaf, giving the Florida leafwing its common name. Florida leafwings seldom fly very far from their host plant, pineland croton (Croton linearis). The project study area does not contain suitable Florida leafwing butterfly habitat, this species has not been documented within one (1) mile of the Build Alternative, and none were observed during the field reviews. For these reasons, the Florida leafwing butterfly has been assigned a probability occurrence of 'none'. As such, it has been determined that the project ***No Effect (NE)*** on the Florida leafwing butterfly.

Miami blue butterfly (*Cyclargus (=Hemiargus) thomasi bethunebakeri*)

The federally endangered Miami blue is a butterfly that inhabits tropical hardwood hammocks, tropical pine rocklands, and beachside scrub in Florida. The State Management Plan for the Miami blue lists four (4) present threats: habitat loss and degradation; habitat fragmentation and group isolation; mortality; and invasive species. Some or all of these threats may have played a role in reducing the species' original range to its very small present range. The wings of the Miami blue butterfly are bright blue on the back with a gray underside. Recent populations of Miami blue butterflies are known to have fed primarily on three (3) plant species: balloonvine (*Cardiospermum spp.*), gray nickerbean (*Caesalpinia bonduc*), and blackbead (*Pithecellobium spp*.). These species have been the major host plants for mainland, Lower Keys, and Key West National Wildlife Refuge populations. The project study area does not contain suitable Miami blue butterfly habitat, this species has not been documented within one (1) mile of the Build Alternative, and none were observed during the field reviews. For these reasons, the Miami blue butterfly has been assigned a probability occurrence of 'none'. As such, it has been determined that the project will have ***No Effect (NE)*** on the Miami blue butterfly.

No federally listed plant species were identified during the field reviews. Since there is very limited habitat for these plant species and most of the area within the project corridor is regularly mowed and maintained by the FDOT for safety, it is unlikely that occurrences of these protected plant species will be observed within the project corridor. Therefore, ***No Effect (NE)*** to federally protected plant species are expected to occur as a result of the proposed project.

Table 3-1 - Federally Listed Species with the Potential to Occur

Species	Common Name	USFWS Status	Habitat Proximity	Potential for Occurrence	Comments
Mammals					
Eumops floridanus	Florida bonneted bat	E	Near R/W	Low	Partially within South Florida Urban Bat Area.
Trichechus manatus	West Indian manatee	T	Within R/W	None	Commonly observed within the G-15 Canal, but project does not include work in the G-15 Canal
Peromyscus polionotus niveiventris	*Southeastern beach mouse*	T	Distant	None	No Suitable Habitat
Birds					
Rostrhamus sociabilis	Everglade snail kite	E	Distant	None	Habitat preferences are edges of large lakes; no likelihood within project limits.
Mycteria americana	Wood stork	T	Near R/W	Moderate	Minimal suitable foraging habitat
Laterallus jamaicensis	Eastern black rail	T	Distant	None	No suitable habitat
Reptiles					
Crocodylus acutus	American crocodile	T	Distant	None	No suitable habitat
Drymarchon couperi	Eastern indigo snake	T	Near	Low	Minimal suitable habitat within project area

Insects					
Strymon acis bartrami	Bartram's hairstreak butterfly	E	Distant	None	No suitable habitat
Anaea troglodyta floridalis	Florida leafwing butterfly	E	Distant	None	No suitable habitat
Cyclargus (=Hemiargus) thomasi bethunebakeri)	Miami blue butterfly	E	Distant	None	No suitable habitat

Ranking: E - endangered, T – threatened

Sources:
(1) USFWS - U.S. Fish and Wildlife Service status, Official lists of Threatened and Endangered species, 50 CFR 17.11
(2) **Federally Listed Species in Broward County, Florida | https://ecos.fws.gov/ecp/report/species**
Note: *In accordance with Florida Administrative Code (FAC) Title 68A-27.0012, Procedures for Listing and Removing Species from Florida's Endangered and Threatened Species List, federally endangered or threatened species under the Endangered Species Act will be listed by the FWC by their federal designation.*

3.1.5 State listed Species

Florida Burrowing Owl (*Athene cunicularia floridana*)

The Florida burrowing owl is state-listed as Threatened and is known to inhabit open upland prairies in Florida that have very little understory vegetation. Burrowing owls may also use golf courses, airports, pastures, agriculture fields, and vacant lots. Suitable burrowing owl habitat exists within the project area. During field reviews, many iguana (*Iguana iguana*) burrows, were documented throughout the project area. No burrows were observed that appeared to be indicative of burrowing owl presence. No burrowing owls were observed during field reviews. During the design permitting phases, updated surveys for the burrowing owl will be conducted, therefore it has been determined that the project will have **no adverse effect anticipated** on the Florida burrowing owl.

Wading Birds

State-protected wading birds with potential to occur in the project area include the little blue heron (*Egretta caerulea*), tricolored heron (*Egretta tricolor*), and roseate spoonbill (*Platalea ajaja*). These birds are state-listed as Threatened and prefer shallow wet areas for foraging. No wading bird rookeries have been documented or observed within the project limits, but there are several areas that could provide suitable foraging habitat; these areas include the shallow edges of surface waters.

As suitable foraging habitat for wading birds has increased through the implementation of the proposed increase of stormwater management facilities throughout the project area, it has been determined that the proposed project will have **no adverse effect anticipated** on the little blue heron, tricolored heron, and roseate spoonbill.

Southeastern American Kestrel (*Falco sparverius paulus*)

The southeastern American kestrel, a state-listed Threatened non-migratory subspecies of kestrel, favors open pine savannahs, sandhills, dry flatwoods, prairies, fields, and pastures. None of these habitat types exist within the project limits. This species typically nests in cavities created by woodpeckers in large dead trees. No individuals were observed during field reviews, and there are no records of occurrences near the project limits. It has been determined that the proposed project will have **no adverse effect** anticipated on the southeastern American kestrel.

Florida Sandhill Crane (*Grus canadensis pratensis*)

The Florida sandhill crane is a state-listed Threatened non-migratory bird that prefers freshwater marshes, prairies, and pastures for breeding but can be found foraging in almost any habitat type. The corridor offers foraging habitat for this species. Potential nesting habitat is present beyond the existing right of way in freshwater marshes.

No sandhill crane nesting or foraging activity was observed during field reviews conducted in June 2019. During the design permitting phases, updated surveys for the sandhill crane nests will be conducted, therefore it has been determined that the project will have It has been determined that the proposed project will have **no adverse effect anticipated** on the Florida sandhill crane.

Gopher Tortoise (*Gopherus polyphemus*)

The gopher tortoise is a state-listed Threatened species. It is also a candidate species by the USFWS. Gopher tortoises prefer well-drained, sandy soils found in habitats such as longleaf pine sandhills, xeric oak hammocks, scrub, pine flatwoods, dry prairies, and coastal dunes. They are also found in a variety of disturbed habitats including pastures and urban areas. No suitable gopher tortoise habitat is found within the project limits. During the design permitting phases, updated surveys for the gopher tortoise will be conducted, therefore it has been determined that the project will have It has been determined that the proposed project will have **no effect anticipated** on the gopher tortoise.

Florida Pine Snake (*Pituophis melanoleucus mugitus*)

The Florida pine snake is a state-listed Threatened species that inhabits areas that feature well-drained sandy soils with a moderate to open canopy. No suitable habitat has been observed within the project limits. It has been determined that the proposed project will have **no effect anticipated** on the Florida pine snake.

Table 3-2 lists the state protected wildlife and plant species known to occur within Broward County that could potentially occur near the project area based on potential availability of suitable habitat and known ranges.

State Listed Plants

The project corridor has been significantly altered and is essentially built out. During the field reviews, six (6) state listed species [golden leather fern (Acrostichum aureum) (threatened), Everglades palm (Acoelorraphe wrightii) (threatened), satin-leaf (Chrysophyllum oliviforme) (threatened), Simpson's stopper (Myrcianthes fragrans) (threatened), royal palm (Roystonea elata) (endangered), West Indian mahogany (Swietenia mahogani) (threatened)] were observed as part of the planted landscaping within the project corridor. However, no naturally occurring

state listed species or natural habitat for these species was observed. Some individuals will be impacted and/or possibly relocated as a result of their current location. Although unavoidable impacts to state listed plant species may occur, statutory protection of state listed plants is not applicable if the clearing of land is performed by a public agency when acting in the performance of its obligation to provide service to the public [Preservation of native flora of Florida, Section 581.185(8)(c) FS], excerpted below:

"(8) EXEMPTIONS.—No provision of this section shall apply to:

(c) The clearing of land by a public agency or a publicly or privately owned public utility when acting in the performance of its obligation to provide service to the public."

Therefore, the FDOT recommends a determination of **No Adverse Effect Anticipated** for state listed plant species as a result of the proposed project.

Table 3-2 - State Listed Species with the Potential to Occur

Species	Common Name	FWC Status	Habitat Proximity	Potential for Occurrence	Comments
Birds					
Athene cunicularia floridana	Florida burrowing owl	T	Near	Low	No known presence nearby but could occur in open upland areas.
Egretta caerulea	Little Blue Heron	T	Within R/W	Moderate	Prefers wetlands/surface waters.
Egretta tricolor	Tricolored Heron	T	Within R/W	Moderate	Prefers wetlands/surface waters.
Falco sparverius paulus	Southeastern American kestrel	T	Near	Low	Several disturbed uplands and open areas present that could provide habitat.
Grus canadensis pratensis	Florida sandhill crane	T	Distant	Low	Foraging habitat varies among many habitat types; prefers sparse canopy or open land.
Platalea ajaja	Roseate Spoonbill	T	Within R/W	Moderate	Prefers wetlands/surface waters.
Reptiles					
*Gopherus poluphemus**	Gopher tortoise	T	Near	None	No suitable habitat within project limits
Pituophis melanoleucus mugitus	Florida pine snake	T	Distant	None	No suitable habitat within project limits

Ranking: E - endangered, T – threatened,

Sources: (1) FWC – Florida Fish and Wildlife Conservation Commission, Florida's Threatened and Endangered Species List, Updated June 2022.

http://ecos.fws.gov/tess_public/reports/species-by-current-range-county?fips=12105 accessed July 2022

http://www.fnai.org/bioticssearch.cfm accessed July 2022

Note: *In accordance with Florida Administrative Code (FAC) Title 68A-27.0012, Procedures for Listing and Removing Species from Florida's Endangered and Threatened Species List, federally endangered or threatened species under the Endangered Species Act will be listed by the FWC by their federal designation.*

3.1.6 Managed and Protected Species

Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is protected by the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA). Habitat for this species includes estuaries, lakes, and reservoirs, near which they build nests in tall trees or other structures. No bald eagle nests were documented to have been observed within 660 feet of the existing right of way. The nearest documented eagle nest, BO004, is located south of I-595, approximately 1,100 feet east of Florida's Turnpike. **Figure 3-3** shows Nest BO004, which was active during the 2022 nesting season. No additional bald eagle nests were observed during the field surveys. During the design permitting phases, updated surveys for the bald eagle will be conducted, therefore it has been determined that the project will have, the project will have ***no adverse effect anticipated*** on the bald eagle.

Figure 3-3 - Eagle Nest Location Map

Osprey

The osprey (*Pandion haliaetus*) is protected by the MBTA. Habitat for this species includes estuaries, lakes, and reservoirs, near which they build nests in trees or other structures.

No osprey were observed during field reviews conducted in June 2019. Since a permit is not required for removing inactive nests, any required nest removal can be scheduled to occur during times of non-nesting. Therefore, the project will have ***no adverse effect anticipated*** on the osprey.

Florida Black Bear

Florida black bear (*Ursus americanus floridanus*) is no longer listed as a threatened species by the FWC. While it was removed from the state list of protected species in August 2012, it is still protected through the Florida Administrative Code 68A-4.009 Florida Black Bear Conservation. While bears can be found almost anywhere in Florida, they prefer a mixture of flatwoods, swamps, scrub oak ridges, bayheads and hammock habitats, which are not located within the project limits. FWC's black bear distribution GIS data notes that no recent or historical black bear sightings have been recorded within two miles of the project limits. It has been determined that the project will have ***no adverse effect anticipated*** on the Florida black bear.

Bat Species

All bat species are protected in Florida per chapter 68A of the Florida Administrative Code. The following bat species are known to occur in the region: the Mexican free-tail (*Tadarida brasiliensis*), tri-colored (*Perimyotis subflavus*), evening (*Nycticeius humeralis*), big brown (*Eptesicus fuscus*), northern yellow (*Dasypterus intermedius*), and Rafinesque's big-eared (*Corynorhinus rafinesquii*). Bats utilize structures such as bridges as well as cavities in trees for roosting habitat. All bridges within the project area were inspected for evidence of bat utilization, and no evidence was found. Since no other suitable roosting habitat is anticipated to be disturbed by the project, the project is expected to have ***no adverse effect anticipated*** on bat species.

Table 3-3 - Managed and Protected Species with the Potential to Occur

Species	Common Name	USFWS Status	Habitat Proximity	Potential for Occurrence	Comments
Birds					
Haliaeetus leucocephalus	Bald eagle	N	Near R/W	Low	No documented nests within 660 feet of project area. New nests could occur in tall trees or structures.
Pandion haliaetus	Osprey	N	Distant	Low	No nests observed in project area
Mammals					
*Ursus americanus floridanus**	Florida black bear	N	Distant	Low	No documented occurrence in project area.
Myotis spp.	Bat species	N	Within R/W	Low	No evidence under bridges; limited other structures to provide habitat.

Ranking: N - none

Sources:

(1) USFWS - U.S. Fish and Wildlife Service status, Official lists of Threatened and Endangered species, 50 CFR 17.11
(2) FWC – Florida Fish and Wildlife Conservation Commission, Florida's Threatened and Endangered Species List, Updated June 2022.

http://ecos.fws.gov/tess_public/reports/species-by-current-range-county?fips=12105 accessed June 2022

http://www.fnai.org/bioticssearch.cfm accessed June 2022

3.1.7 Wildlife Crossings

Roads have been documented to create both direct and indirect deleterious effects to wildlife by creating a barrier to movement and fragmenting natural habitats. As a result, the FDOT has prepared wildlife crossing guidelines (2018) in coordination with the USFWS and FWC to evaluate appropriateness of the inclusion of wildlife crossings for proposed projects on the State Highway System. Evaluation criteria include: a documented science-based need for a crossing supported by the USFWS and/or FWC; wildlife species documented within and using the project area; documented roadkills of species with high conservation value or within a known area where traversing the roadway creates a potential hazard to motorists and/or wildlife; presence within a documented range of the Florida panther and/or Florida black bear; project crossing of Critical Habitat, ecological greenway, or other landscape-level habitat linkage; presence of public conservation lands or lands under perpetual conservation easement necessary to achieve successful use of a crossing feature; compatibility of future land use and development patterns; and project location within critical conservation need.

A wildlife crossing need was not identified for this project within the agency comments as part of the ETDM review. No documented black bear mortalities have been recorded within ten miles of the project area. There are no documented Florida panther mortalities in this region and the project area is well east of the Florida panther consultation area. There are no locations along the corridor where conservation lands are present on both sides of Florida's Turnpike. The wildlife crossing criteria to address larger mammals such as bear and panther are not adequately met for this project and therefore no crossings are proposed

4.0 Wetland Evaluation

Approximate wetland boundaries were identified in accordance with the State of Florida Wetlands Delineation Manual (Chapter 62-340, Florida Administrative Code [F.A.C.]), the criteria found within the U.S. Army Corps of Engineers (USACE) 1987 Corps of Engineers Wetland Delineation Manual (Y-87-1) and 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coast Plain Region (Version 2.0) (ERDC/EL TR-10-20), EO 11990, and Part 2, Chapter 9 -Wetlands and Other Surface Waters of the FDOT PD&E Manual. **Appendix E** shows the location of the wetlands evaluated within the project study area. Formal wetland boundaries were not determined as part of this study and will be completed during the design and permitting phases of this project.

4.1 Wetland and Surface Water Communities

4.1.1 Wetlands

Due to the developed nature of the project area, wetland areas within the project area were confined to two regional Broward County parks located on the west side of the project area; Fern Forest Nature Center and Tradewinds Park. All wetland habitats within the project area are discussed in the Wetlands section of this NRE report. Wetlands and surface waters within the project area are shown in **Appendix E**. **Table 4-1** provides the area of each of the wetlands and surface waters within the project area. Wetlands are classified according to the following FLUCFCS code subcategory:

- 630 – Wetland Forested Mixed

This category includes mixed wetlands forest communities in which neither hardwoods or conifers achieve a 66 percent dominance of the crown canopy composition. Common vegetation within this wetland type includes; laurel oak (Quercus laurifolia), red maple (*Acer rubrum*), bald cypress (*Taxodium distichum*), wax myrtle (*Myrica cerifera*), and Peruvian primrose willow (*Ludwigia peruviana*). Each of the six wetland areas identified in **Appendix E** consist of FLUCFCS code subcategory 630.

4.1.2 Surface Waters

There are several ditches, ponds and borrow pits within and adjacent to the project area which are discussed in the Wetlands section of this NRE report (see **Appendix E**). These surface waters can provide habitat to aquatic species such as fish, alligators, and turtles, as well as birds. Wet areas that are inundated by two to 15 inches of water could provide suitable foraging habitat for wood storks and wading birds when surface water is present. All surface waters are freshwater, and none are considered Essential Fish Habitat or provide access to any marine or estuarine species. Surface waters are classified according to the following FLUCFCS code subcategories:

- 510 – Streams and Waterways

This category includes rivers, creeks, canals and other linear water features.

- 530 – Reservoirs

Reservoirs are artificial impoundments of water. Other surface waters are defined as open water bodies and manmade drainage features.

Table 4-1 – Wetland and Other Surface Waters Within Project Limits

Map ID	Type	FLUCFCS	Acres within Project Area
Surface Waters			
1	Reservoirs	530	1.30
2	Reservoirs	530	1.16
3	Reservoirs	530	0.72
4	Streams and Waterways	510	1.33
5	Reservoirs	530	1.28
6	Reservoirs	530	9.69
7	Streams and Waterways	510	3.08
8	Streams and Waterways	510	0.42
9	Streams and Waterways	510	0.14
10	Streams and Waterways	510	0.05
11	Streams and Waterways	510	0.03
12	Streams and Waterways	510	0.07
13	Streams and Waterways	510	0.01
14	Streams and Waterways	510	0.38
15	Streams and Waterways	510	0.10
16	Streams and Waterways	510	0.02
17	Streams and Waterways	510	6.16
18	Streams and Waterways	510	0.03
19	Streams and Waterways	510	0.29
20	Streams and Waterways	510	0.02
21	Streams and Waterways	510	0.93
22	Streams and Waterways	510	0.69
23	Streams and Waterways	510	0.22
24	Reservoirs	530	1.10
25	Streams and Waterways	510	0.51
26	Reservoirs	530	2.48
27	Reservoirs	530	1.84
28	Streams and Waterways	510	0.35
29	Streams and Waterways	510	0.13
30	Streams and Waterways	510	2.27
31	Reservoirs	530	1.73
33	Streams and Waterways	510	0.19

34	Streams and Waterways	510	2.69
35	Streams and Waterways	510	1.06
36	Streams and Waterways	510	0.08
37	Streams and Waterways	510	0.32
38	Streams and Waterways	510	2.57
39	Reservoirs	530	1.54
40	Reservoirs	530	5.52
41	Reservoirs	530	1.29
42	Reservoirs	530	7.86
43	Reservoirs	530	2.85
44	Reservoirs	530	1.72
45	Streams and Waterways	510	3.51
46	Streams and Waterways	510	4.86
47	Reservoirs	530	2.52
48	Reservoirs	530	0.76
50	Streams and Waterways	510	2.68
51	Streams and Waterways	510	0.74
51	Streams and Waterways	510	0.62
53	Streams and Waterways	510	2.51
54	Streams and Waterways	510	0.03
55	Streams and Waterways	510	5.04
57	Streams and Waterways	510	3.53
58	Streams and Waterways	510	3.63
59	Reservoirs	530	3.49
60	Streams and Waterways	510	1.05
61	Reservoirs	530	0.63
62	Streams and Waterways	510	0.50
63	Streams and Waterways	510	0.14
64	Reservoirs	530	1.03
65	Reservoirs	530	2.83
66	Streams and Waterways	510	0.70
67	Streams and Waterways	510	3.88
68	Reservoirs	530	2.56
69	Streams and Waterways	510	1.40
70	Streams and Waterways	510	0.86
71	Streams and Waterways	510	0.26
72	Streams and Waterways	510	0.15
73	Streams and Waterways	510	0.28
74	Streams and Waterways	510	0.60
75	Streams and Waterways	510	0.28
76	Reservoirs	530	2.69

77	Reservoirs	530	5.49
78	Streams and Waterways	510	2.58
79	Streams and Waterways	510	1.80
80	Streams and Waterways	510	1.15
81	Streams and Waterways	510	2.63
82	Streams and Waterways	510	2.68
83	Streams and Waterways	510	1.71
84	Streams and Waterways	510	0.40
85	Streams and Waterways	510	2.21
86	Reservoirs	530	1.65
87	Streams and Waterways	510	0.23
88	Streams and Waterways	510	0.49
89	Streams and Waterways	510	0.28
90	Forested Wetland	630	9.95
91	Forested Wetland	630	1.01
92	Streams and Waterways	510	2.34
93	Streams and Waterways	510	0.74
98	Reservoirs	530	1.66
99	Streams and Waterways	510	0.63
102	Streams and Waterways	510	1.14
103	Streams and Waterways	510	1.36
104	Reservoirs	530	2.77
105	Streams and Waterways	510	1.25
106	Streams and Waterways	510	0.16
108	Streams and Waterways	510	0.31
109	Reservoirs	530	1.35
110	Reservoirs	530	1.60
111	Streams and Waterways	510	0.42
113	Streams and Waterways	510	7.78
114	Reservoirs	530	1.07
115	Reservoirs	530	2.51
116	Streams and Waterways	510	0.21
117	Streams and Waterways	510	1.51
118	Streams and Waterways	510	0.63
119	Streams and Waterways	510	1.21
120	Streams and Waterways	510	1.95
121	Streams and Waterways	510	0.36
123	Streams and Waterways	510	1.59
124	Streams and Waterways	510	0.37
125	Streams and Waterways	510	0.07
126	Reservoirs	530	0.31

127	Streams and Waterways	510	0.62
128	Streams and Waterways	510	7.58
129	Reservoirs	530	2.05
134	Reservoirs	530	1.64
135	Reservoirs	530	0.04
136	Streams and Waterways	510	0.00
137	Streams and Waterways	510	0.39
Wetlands			
91	Forested Wetland	630	1.16
93	Forested Wetland	630	23.27
94	Forested Wetland	630	4.18
95	Forested Wetland	630	1.01
96	Forested Wetland	630	3.66
97	Forested Wetland	630	4.56
130	Forested Wetland	630	0.84
Surface Waters Subtotal			**201.82**
Wetlands Total			**38.68**

4.2 Preferred Roadway Build Alternative Wetland and Other Surface Water Impacts

The wetlands and other surface waters within the project study area were overlaid with the preferred roadway and preferred pond sites to identify areas of impacts. The wetlands and other surface waters within the project study area were overlaid with the Preferred Alternative to identify areas of impacts. **Table 4-2** provides anticipated wetland and other surface water impacts for the roadway Preferred Build Alternative.

Anticipated impacts to other surface waters for the roadway Preferred Build alternative is estimated at 25.85 acres.

Anticipated forested wetland impacts for the roadway Preferred Build Alternative is estimated at 1.16 acres within Wetland Map ID 91, located within Tradewinds Park.

Table 4-2 – Wetlands and Surface Water Impacts within Preferred Roadway Build Alternative

Map ID	Type	FLUCFCS	Impacts (Acres)
9	Streams and Waterways	510	0.14
10	Streams and Waterways	510	0.05
11	Streams and Waterways	510	0.03
12	Streams and Waterways	510	0.07
13	Streams and Waterways	510	0.01
17	Streams and Waterways	510	2.41
27	Streams and Waterways	530	0.33
28	Streams and Waterways	510	0.35
29	Streams and Waterways	510	0.13
30	Streams and Waterways	510	2.27
31	Streams and Waterways	530	0.19
33	Streams and Waterways	510	0.07
35	Streams and Waterways	510	7.37
38	Streams and Waterways	510	1.92
43	Streams and Waterways	530	0.78
51	Streams and Waterways	510	0.11
51	Streams and Waterways	510	0.13
57	Streams and Waterways	510	3.53
60	Streams and Waterways	510	0.16
62	Streams and Waterways	510	0.08
63	Streams and Waterways	510	0.14
64	Reservoirs	530	0.01
65	Reservoirs	530	0.06
65	Reservoirs	530	0.38
66	Streams and Waterways	510	0.70
70	Streams and Waterways	510	0.86
73	Streams and Waterways	510	0.28
74	Streams and Waterways	510	0.11
75	Streams and Waterways	510	0.28
76	Reservoirs	530	0.03
78	Streams and Waterways	510	0.97
79	Streams and Waterways	510	1.80
80	Streams and Waterways	510	0.04
108	Streams and Waterways	510	0.31
113	Streams and Waterways	510	0.24
91	Forested Wetland	630	1.16
Stream and Waterways Subtotal			25.85
Reservoirs Subtotal			0.48
Forested Wetlands Total			1.16

4.2.1 Preferred Alternative Stormwater Treatment and Floodplain Compensation Site Wetland Impacts

Stormwater treatment is an integral feature of all proposed improvements. The proposed project will include a stormwater management system, which will be designed in compliance with applicable water quality criteria to prevent degradation of water resources and habitat quality. In addition, this project is evaluating floodplain compensation for proposed work within designated floodplains. Specific impacts to wetlands and other surface waters are included in the Location Hydraulics Report and Pond Siting Report, under separate cover.

As outlined in the Location Hydraulics Report and Pond Siting Report, pond alternatives located within the C-14 and Hillsboro Basin include preferred stormwater ponds or floodplain compensation sites which are located within wetlands. The preferred pond site alternatives in the Hillsboro basin do not include sites located within wetlands. The preferred ponds site alternatives in the C-14 basin, include five pond sites or floodplain compensation sites, which are anticipated to impact wetlands identified as Wetland 93 and Wetland 94 on maps provided in **Appendix E**. These preferred alternatives are; Pond Sites 1B, 1C, 1D, 2C, and Floodplain Compensation Site 2. These five preferred pond sites or floodplain compensation sites are anticipated to impact 27.45 acres of forested wetlands. **Table 4-3** summarizes the wetland impacts associated with the preferred stormwater treatment and floodplain compensation sites.

Table 4-3 – Wetlands and Surface Water Impacts within Preferred Stormwater Treatment and Floodplain Compensation Sites

Facility	Wetland Map ID	Area Within Wetlands (Acres)
Preferred Pond Site Alternative 1B	93	5.75
Preferred Pond Site Alternative 1C	93	7.16
Preferred Pond Site Alternative 1D	94	4.18
Preferred Pond Site Alternative 2C	93	3.11
Preferred Floodplain Compensation Alternative 2	93	7.25
Total		**27.45**

Pond Sites 1B, 1C, 2C, and Floodplain Compensation Alternative 2 are located within the Fern Forest Nature Center. The Fern Forest Nature Center is located west of the Pompano Beach Service Plaza. In 1985, the Fern Forest Nature Center was opened to the public as 247.1-acre regional park. An additional field review within Fern Forest Nature Center was conducted on June 13, 2023. Wetland 93 within Fern Forest Nature Center can be described as a mixed wetland forest including bald cypress, red maple (*Acer rubrum*), gumbo limbo (*Bursera simaruba*), pigeon plum (*Coccoloba diversifolia*), strangler fig (*Ficus sp.*), royal fern (*Osmunda regalis*), leather fern (*Rumohra adiantiformis*) and swamp fern (*Blechnum serrulatum*). Water levels appeared appropriate for this wetland system, and it was noted that nuisance and exotic species were not

observed in significant quantities within Wetland 93. Anticipated impacts to forested wetlands within the Fern Forest Nature Center are approximately 23.27 acres.

The anticipated impacts are impacting two regional parks, Tradewinds Park, and Fern Forest Nature Center. The preferred alternative is anticipated to impact forested wetlands within the regional parks, Fern Forest Nature Center is approximately 23.27 acres and Tradewinds 1.16 acres (**Table 4-4**). Since regional parks are being impacted, as part of the Broward County, FL Code of Ordinances, "Regional Parks may not be sold, transferred, or used for purposes other than as a regional park unless such action is approved by an affirmative vote of no less than sixty percent (60%) of the electors of Broward Couty voting in a referendum at either a general election or a special election." All other alternatives have been assessed to minimize impacts to the regional parks, and the selected preferred alternative was able to minimize the most impacts.

Total anticipated wetland impacts for the Preferred Alternative is estimated at 28.61 acres (1.16 + 27.45 = 28.61).

4.2.2 Avoidance and Minimization

Avoidance and minimization measures include utilizing existing roadway fill areas for bridge approaches and roadway widening, and siting stormwater treatment and floodplain compensation facilities outside of wetland areas to the extent feasible. The recommended alternative avoids impacts to tidal waters at the North Fork of the New River. Additionally, impacts were minimized by adjusting slopes where safely possible and stormwater treatment locations will avoid wetlands when practicable. Surficial runoff from additional impervious areas will be treated to prevent increased water quality degradation as a result of the proposed transportation improvements.

Due to the incorporation of stormwater treatment facilities, the proposed project will not result in the degradation of water quality in the wetlands and other surface waters of the project area. Additionally, sedimentation and erosion control measures (i.e., silt fences, turbidity barriers) will be implemented during construction to minimize soil exposure and siltation into the water column, further reducing adverse impacts to wetlands and other surface waters.

The recommended alternative will be selected based on the natural, physical, social, and right of way information. Avoidance and minimization, to the greatest extent possible, of impacts to wetlands and other surface waters will be considered in the selection of the recommended alternative. A detailed analysis of the alternatives is included in a Preliminary Engineering Report.

The recommended alternative, has been evaluated in accordance with Executive Order 11990 – "Protection of Wetlands." Based upon the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. As the project advances through subsequent phases, avoidance and minimization of wetland impacts will continue to be considered to the maximum extent practicable. Therefore, through appropriate mitigation during the design and permitting phase, the proposed project is expected to result in no significant impacts to wetlands.

4.2.3 Indirect and Cumulative Effects

Indirect Effects are reasonably foreseeable effects that occur as a result of an action but occur later in time or are removed from the action location. Indirect impacts resulting from construction of the recommended alternative include secondary wetland and natural other surface water impacts in the proposed project area. These impacts are anticipated to be minor since they are already associated with the existing roadway and interchanges. Habitats along the edge of the existing roadway and interchanges were disturbed when these areas were constructed and have since experienced constant disturbance from right of way maintenance and exposure to nuisance/exotic species. This “edge effect” will remain with the construction of the proposed project but would migrate to the new transitional area between remaining wetlands and new construction. Therefore, these disturbed edges are not expected to increase in areas where the roadway and interchanges already exist.

Cumulative Effects result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. As outlined in Section 1, this project includes the evaluation of a new interchange locations at Cypress Creek Road and Oakland Park Boulevard. These interchange areas are already currently accessible through an existing roadway network, thus no increase in development is anticipated.

The Enterprise will minimize direct and indirect impacts to all extent practicable to reduce potential contribution to the cumulative effects. Unavoidable impacts to wetland function and value will be offset at an approved mitigation bank within the service area and drainage basin of the impacts.

4.3 Uniform Mitigation Assessment Method Assessment

The Uniform Mitigation Assessment Method (UMAM) was established to fulfill the mandate of subsection 373.414(18), F.S., which requires the establishment of a uniform mitigation assessment method to determine the amount of mitigation needed to offset adverse impacts to wetlands and other surface waters and to award and deduct mitigation bank credits. Functional loss was calculated by wetland and natural other surface water habitat type for the preferred alternative using the UMAM.

Table 4-4 – UMAM Summary

Wetland Identification	Wetland Type	UMAM Score (Delta Value)	Total Impact Acreage	Functional Loss Value
91 (Tradewinds Park)	Forested	0.60	1.16	0.70
93 (Fern Forest Nature Center)	Forested	0.77	23.27	17.84
94	Forested	0.40	4.18	1.67
Total			28.61	20.21

UMAM datasheets for each impacted wetland are included in **Appendix E**. These scores are subject to agency review and revisions are anticipated during the permitting process.

4.4 Conceptual Mitigation Plan

There are no practical avoidance alternatives to the construction of the proposed project design within wetland areas. Wetland impacts will be further refined during future project phases and minimization/avoidance measures will be implemented to the extent practicable as discussed above.

Wetland impacts which will result from the construction of this project will be mitigated pursuant to Section 373.4137, F.S., to satisfy all mitigation requirements of Part IV of Chapter 373, F.S., and 33 U.S.C. §1344. Compensatory mitigation for this project will be completed through the use of mitigation banks and any other mitigation options that satisfy state and federal requirements. The proposed project will have no significant short-term or long-term adverse impacts to wetlands because any unavoidable impacts to wetlands will be mitigated to achieve no net loss of wetland function.

The project is located within the New River watershed. The Pembroke Pines Mitigation Bank (PPMB) is located within the New River watershed. Review of the USACE Regulatory In-lieu Fee and Bank Information Tracking System (RIBITS), shows that PPMP (SAJ-1993-00370) has 55.96 available palustrine (freshwater) credits available within the mitigation bank service area.

All preliminary UMAM scores, UMAM calculations, and wetland boundaries are subject to revision and approval by regulatory agencies during the permitting process. The exact amount and type of mitigation used to offset wetland impacts from the Turnpike mainline widening will be determined through coordination with the FDEP, SFWMD and USACE, based on the final design plans of this project.

4.5 Special Designations

This project does not include any areas designated as Outstanding Florida Waters, Aquatic preserves, Scenic Highways or Wild and Scenic Rivers.

5.0 Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act, as amended through October 11, 1996, requires the regional Fishery Management Councils and the Secretary of Commerce to describe and identify Essential Fish Habitat (EFH) for species under federal Fishery Management Plans. EFH is defined in the Magnuson-Stevens Act as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The term "fish" includes finfish, crabs, shrimp, and lobsters in the Gulf of Mexico region. On April 23, 1997 [62 Federal Register (FR) 19723], the National Marine Fishery Service (NMFS) issued proposed regulations containing guidelines for the description and identification of EFH in fishery management plans, adverse impacts on EFH, and actions to conserve and enhance EFH. These rules were revised and finalized on January 22, 2002 (67 FR 2343). The regulations also provide a process for NMFS to coordinate and consult with federal and state agencies on activities that may adversely affect EFH. The purpose of the rule is to assist in describing and identifying EFH, minimize adverse effects on EFH, and identify other actions to conserve and enhance EFH. The purpose of the coordination and consultation provisions is to specify procedures for adequate consultation with NMFS on activities that may adversely affect EFH.

5.1 EFH Impact Evaluation

Based on the project location, information provided in the ETDM website, and GIS-based analysis of impacts, NOAA's National Marine Fisheries Service (NMFS) has provided input in the ETDM screening (# 14350) that the project overlaps the South Fork of the North New River Canal (G-15 Canal) downstream of the salinity control structure at Sewell Lock. The NMFS noted that South Atlantic Fishery Management Council (SAFMC) has designated mangroves, sand/mud bottom and associated water column as EFH. Mangroves are also considered Habitat Area of Particular Concern (HAPC). HAPC's are subsets of EFH that are rare, particularly susceptible to human induced degradation, especially ecologically important, or located in an environmentally stressed area.

Following a meeting with NMFS staff on November 17, 2021, the NMFS inquired if a benthic survey for seagrass would be conducted, and if the project would affect mangroves. A copy of this correspondence is included in **Appendix G**.

At the Turnpike / I-595 Interchange (Exit 54), the project evaluated four viable interchange alternatives. The recommended improvement at this interchange is Alternative 4, Option E (**Figure 5-1**). Alternative 4, Option E, was later designated as Alternative 1. The preferred alternative uses a practical design approach to accommodate the additional auxiliary lane by reducing lane and shoulder widths. Lane widths and shoulder widths would not meet Florida Design Manual (FDM) standards and would require design exceptions to be approved by the FDOT State Roadway Design Engineer.

The recommended improvement at this interchange will be confined to the existing bridge limits and are not anticipated to require any work within the North New River Canal or result in a need for benthic habitat survey or evaluation of shading impacts. Therefore, Florida's Turnpike Enterprise has recommended that the project has no effect on EFH.

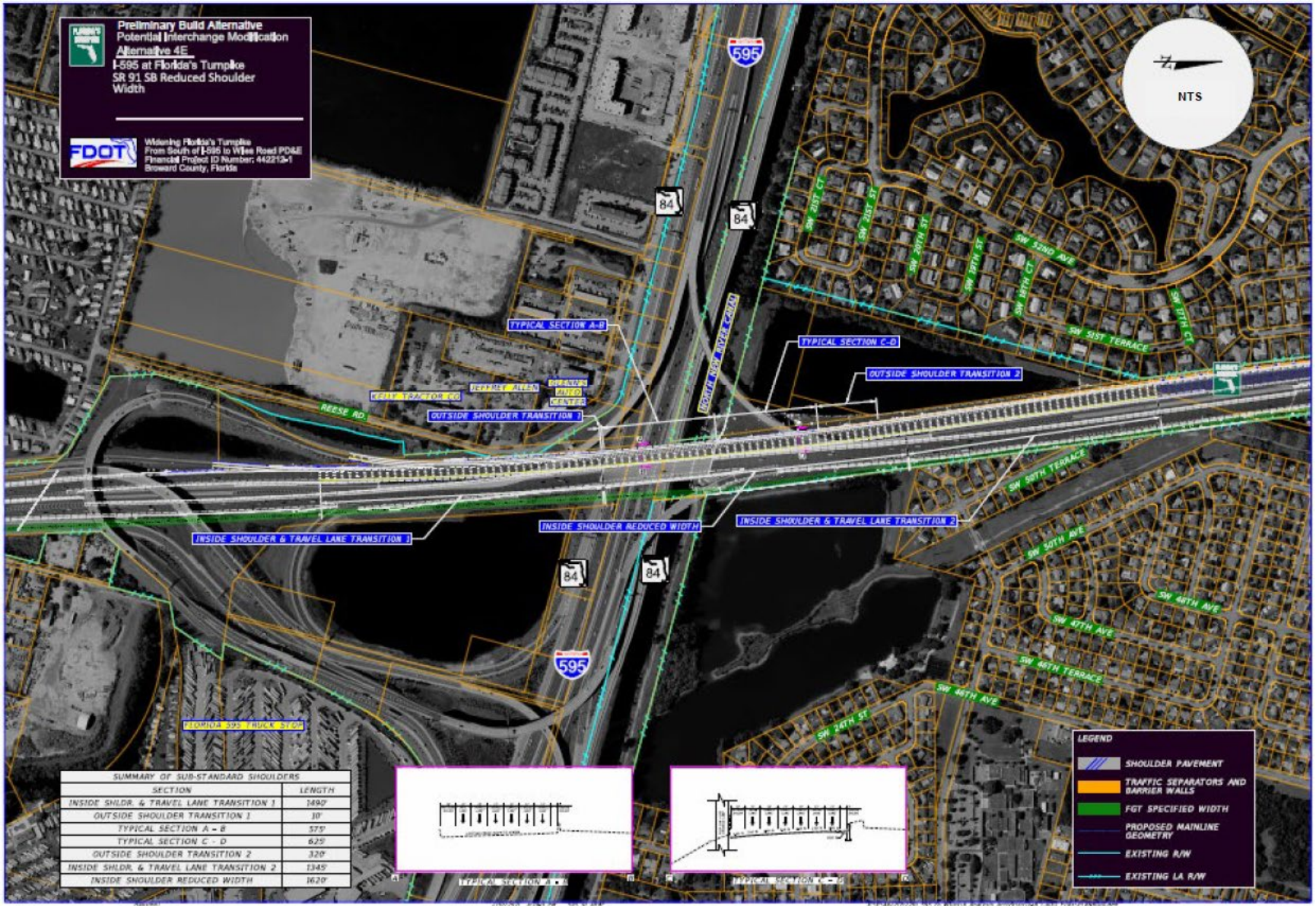

Figure 5-1 - Interchange Preliminary Build Alternative 4E

6.0 Anticipated Permits

The FDEP, USACE and SFWMD regulate impacts to wetlands within the study area. The State 404 Program, administered by FDEP, is responsible for overseeing permitting for any project proposing dredge or fill activities within state assumed waters, or "non-retained waters". The State 404 Program is a separate program from the existing ERP program, and projects within state-assumed waters require both an ERP and a State 404 Program authorization. **Figure 6-1** shows the USACE retained waters within the project area. In summary, the retained waters are the G-15 Canal, the C-12 Canal, the C-13 Canal and the C-14 Canal. Other agencies, including the USFWS, the U.S. Environmental Protection Agency (EPA), and the FWC, review and comment on wetland permit applications.

The project area also spans several federally authorized projects, such as the G-15 Canal, the C-12 Canal, the C-13 Canal and the C-14 Canal. Section 408 is the process that allows alteration to a federally authorized project. The proposed project cannot pose a risk to the public interest and will not impair the usefulness of the federally authorized project. This requirement was established in Section 14 of the Rivers and Harbors Act of 1899, codified at 33 United States Code (USC) 408 (Section 408). A Section 408 permit is anticipated for each crossing of a federally authorized project.

The federally authorized projects are managed by the SFWMD. As outlined by chapters 373, F.S., and 40E-6, F.A.C., a SFWMD Right of Way Occupancy Permit will be required for any use of lands managed by SFWMD.

Figure 6-1 - USACE Retained Waters

40 CFR Part 122 prohibits point source discharges of stormwater to waters of the U.S. without a National Pollutant Discharge Elimination System (NPDES) permit. Under the State of Florida's delegated authority to administer the NPDES program, construction sites that will result in greater than one (1) acre of disturbance must file for and obtain either coverage under an appropriate generic permit contained in Chapter 62-621, F.A.C., or an individual permit issued pursuant to Chapter 62-620, F.A.C. A major component of the NPDES permit is the development of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP identifies potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from the

site and discusses good engineering practices (i.e., best management practices) that will be used to reduce the pollutants.

No gopher tortoises have been documented within the project area. If any gopher tortoises are discovered, in accordance with the requirements of Rules 68A-25.002 and 68A-27.004 (F.A.C.), a permit for gopher tortoise capture/release activities must be secured from the FWC before initiating any relocation work. The FWC will require a 100 percent gopher tortoise survey to be conducted within 90 days of construction commencement to support the permit application. An FWC gopher tortoise relocation permit may be required if this species is documented during project surveys.

No burrowing owls have been documented within the project area. If any burrowing owls are discovered, in accordance with the requirements of Rule 68A-27 (F.A.C.), and the Migratory Bird Treaty Act, a permit for burrowing owl incidental take activities must be secured from the FWC before initiating any relocation work.

This project area spans multiple water control districts (WCD) within Broward County. Permits to modify canals or outfalls may be required from these WCDs. This project area includes the following WCDs: Tindall Hammock WCD, Old Plantation WCD, North Lauderdale WCD, Broward WCD #4, Cocomar WCD, Broward WCD #3 and Broward WCD #2. The Broward County Water Management Division is a part of Broward County government and controls the actions of the Broward WCD #4, Cocomar WCD, Broward WCD #3 and Broward WCD #2. The Broward County Commissioners serve as the WCD Board for these WCDs. **Figure 6-2** shows the approximate boundaries for each of these WCDs. The FDOT is exempt from local permits unless working within local agency right of way, or if additional water is being sent to that local agency. This WCD information is provided as reference only.

Figure 6-2 - Water Control Districts

Table 6-1 shows the anticipated permits will be required for this project:

Table 6-1 - Anticipated Permits

Permits and Approvals	Issuing Agency
Section 404 Dredge and Fill Permit (State 404 Permit)	FDEP
Section 404 Dredge and Fill Permit (Federal 404 Permit)	USACE
Section 408 Permit	USACE
Environmental Resource Permit	SFWMD
Right of Way Occupancy Permit	SFWMD
National Pollutant Discharge Elimination System	FDEP

7.0 Conclusion

7.1 Protected Species Habitat

The project study area was evaluated for the presence of federal and/or state protected species and their suitable habitat in accordance with Section 7 of the Endangered Species Act (ESA) and Part 2, Chapter 16 of the PD&E Manual. The following list summarize the effect determinations that have been made for each federal- and state-managed/protected species based upon their probability ranking and the implementation measures and/or commitments to offset any potential impacts to each species and potential impacts to wetlands and other surface waters. **Section 3** includes details of the effect determinations summarized below.

The project will have no effect the following federally listed species:

- Florida panther
- West Indian manatee
- Southeastern beach mouse
- Eastern black rail
- Everglade snail kite
- American crocodile
- Bartram's hairstreak butterfly
- Florida leafwing butterfly
- Miami blue butterfly
- Florida bonneted bat

The project may affect, but is not likely to adversely affect the following federally listed species:

- Eastern indigo snake
- Wood stork

The project will have no adverse effect anticipated on the following state listed species:

- Florida burrowing owl
- Gopher tortoise
- Wading birds including little blue heron, tricolored heron, and roseate spoonbill
- Southeastern American kestrel
- Florida sandhill crane

The project will have no effect anticipated on the following state-listed species:

- Florida pine snake

The project will have no adverse effect anticipated on the following managed/protected species:

- Bald eagle
- Osprey
- Bats
- Florida black bear

7.2 Wetland Evaluation

The wetlands and other surface waters within the project study area were overlaid with the Build Alternatives to identify areas of impacts. Anticipated wetland impacts for the Preferred Alternative is estimated at 28.61 acres.

Wetland impacts which will result from the construction of this project will be mitigated pursuant to Section 373.4137, F.S., to satisfy all mitigation requirements of Part IV of Chapter 373, F.S., and 33 U.S.C. §1344.

The recommended alternative, has been evaluated in accordance with Executive Order 11990 – "Protection of Wetlands." Based upon the above considerations, it is determined that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. As the project advances through subsequent phases, avoidance and minimization of wetland impacts will continue to be considered to the maximum extent practicable. Therefore, through appropriate mitigation during the design and permitting phase, the proposed project is expected to result in no significant impacts to wetlands.

7.3 Essential Fish Habitat

The recommended improvement at this interchange will be confined to the existing bridge limits and are not anticipated to require any work within the North New River Canal or result in a need for benthic habitat survey or evaluation of shading impacts. Therefore, Florida's Turnpike Enterprise has recommended that the project has no effect on Essential Fish Habitat.

7.4 Implementation Measures / Design Consideration

Based on the field and literature reviews outlined in this report, federal- and state-protected species have the potential to occur within the project study area. In order to assure that the proposed project will not adversely impact these species, the FDOT will adhere to the following:

- During the design permitting phases, updated surveys for the following species will be performed: gopher tortoise, burrowing owl, sandhill crane nests and eagle nests.
- If any gopher tortoise burrows are located, a permit will be obtained from the FWC.
- During the design and permitting phases of this project, the FDOT will conduct surveys to identify any osprey nests within the project area. If nest removal is deemed necessary, the Department will remove nest(s) when they are inactive (i.e., without eggs or flightless young).

7.5 Commitments

- The Enterprise will complete a wood stork suitable foraging habitat assessment during the project's Design phase to ensure that the proper amount of mitigation is procured for impacts to suitable wood stork foraging habitat in accordance with the wood stork consultation key.
- The project will implement the USFWS-approved Standard Protection Measures for the Eastern Indigo Snake (most updated version) during the proposed roadway improvements.
- The Enterprise will reinitiate technical assistance with the USFWS during the project's design phase regarding the Florida bonneted bat.

8.0 Agency Coordination

A coordination meeting with NMFS staff on November 17, 2021. A copy of the meeting materials is included in **Appendix G**.

On May 20, 2021, the Enterprise held an interagency meeting to review the project with the following agencies: South Florida Water Management District, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency. A copy of the meeting minutes and meeting materials is included in **Appendix G**.

A Technical Assistance meeting with USFWS on February 9, 2023, regarding the Florida Bonneted Bat. A copy of the meeting minutes are included in **Appendix G**.

Appendix A – Project Roll Plots

SCALE
1" = 200' HORIZ
1" = 10' VERT

Kimley-Horn and Associates, Inc.
Certificate Of Authorization No. 696
Hooi Gin Ng, P.E.
P.E. License No. 58123
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
91	BROWARD	442212-1-22-01

PLAN AND PROFILE

SHEET NO.
1

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Kimley-Horn and Associates, Inc.
Certificate Of Authorization No. 696
Hooi Gin Ng, P.E.
P.E. License No. 58123
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

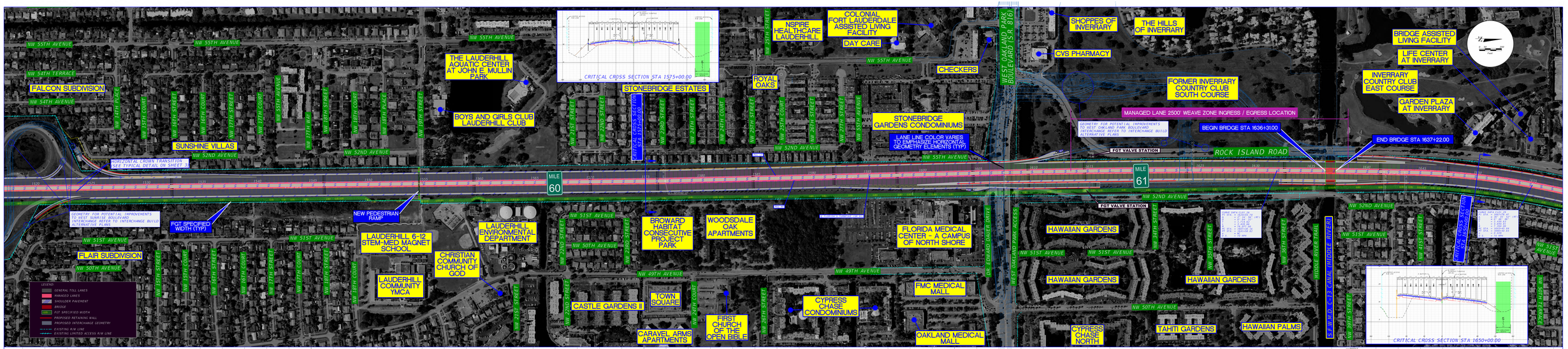
SCALE
1" = 200' HORIZ
1" = 10' VERT

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
91	BROWARD	442212-1-22-01

PLAN AND PROFILE

SHEET NO. 2



Kimley-Horn and Associates, Inc.
Certificate Of Authorization No. 696
Hooi Gin Ng, P.E.
P.E. License No. 58123
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

SCALE: 1" = 200' HORIZ
1" = 50' VERT

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
91	BROWARD	442212-1-22-01

PLAN AND PROFILE

SHEET NO. 3

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Hooi Gin Ng, P.E.
P.E. License No. 58123
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

SCALE: 1" = 200' HORIZ / 1" = 10' VERT

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
91	BROWARD	442212-1-22-01

PLAN AND PROFILE

SHEET NO. 4

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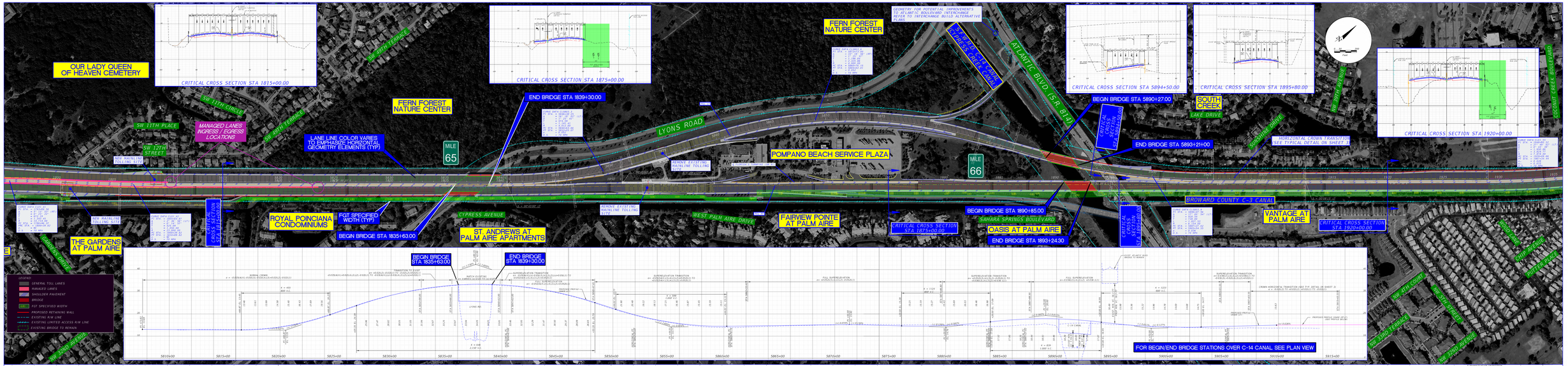

Kimley-Horn and Associates, Inc.
Certificate Of Authorization No. 696
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P.E. License No. 58123
1920 Wekiva Way, Suite 200
West Palm Beach, Florida 33411

SCALE: 1" = 200' HORIZ
1" = 10' VERT

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
91	BROWARD	442212-1-22-01

PLAN AND PROFILE

SHEET NO. 5

Kimley-Horn and Associates, Inc. Certificate Of Authorization No. 696 Hooi Gin Ng, P.E. P.E. License No. 58123 1920 Wekiva Way, Suite 200 West Palm Beach, Florida 33411	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			PLAN AND PROFILE
	ROAD NO.	COUNTY	FINANCIAL PROJECT ID	SHEET NO.
	91	BROWARD	442212-1-22-01	6

SCALE:
1" = 200' HORIZ
1" = 10' VERT

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Certificate Of Authorization No. 696
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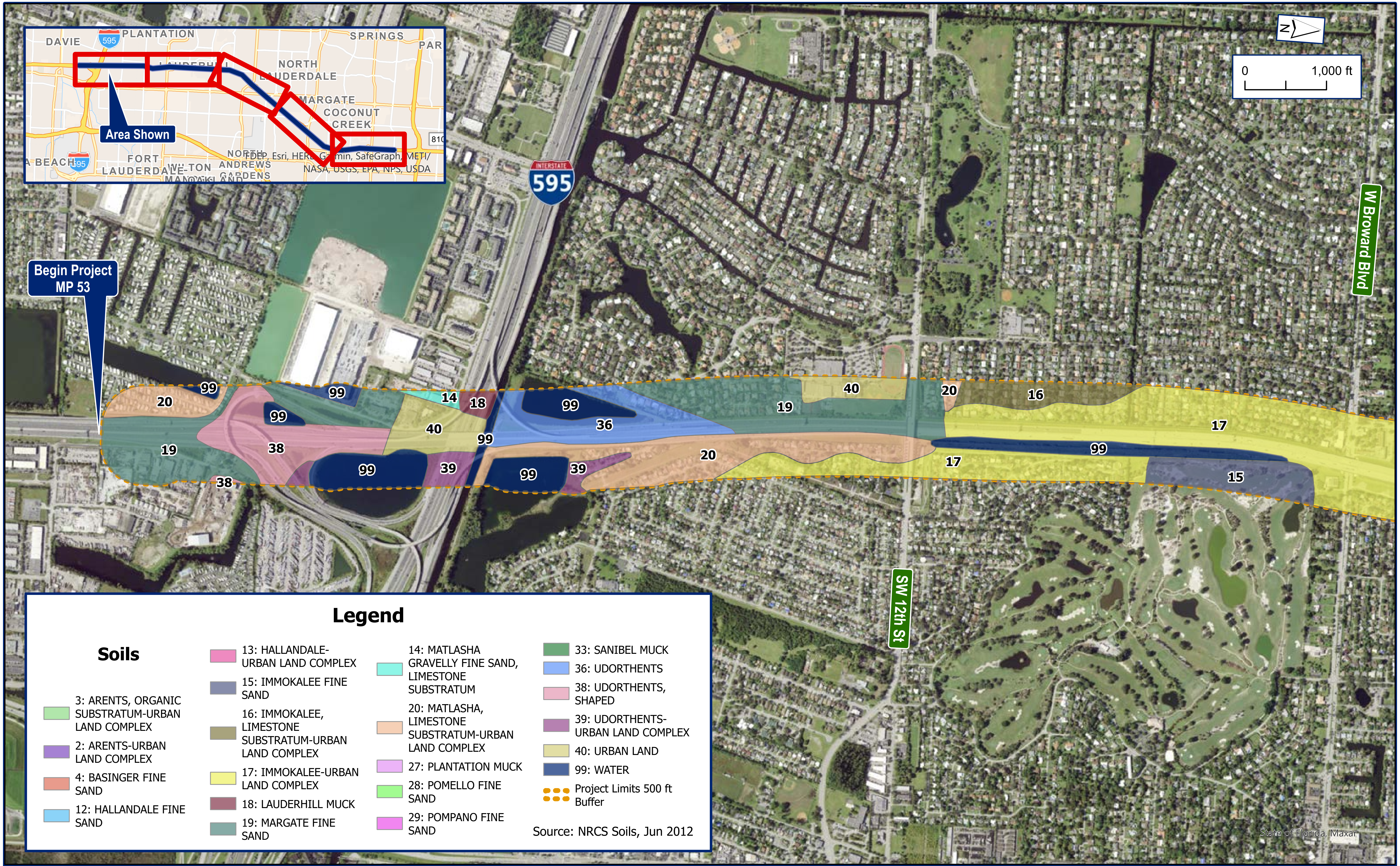
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
91	BROWARD	442212-1-22-01

PLAN AND PROFILE

SHEET NO. 7

Appendix B – Soils Maps

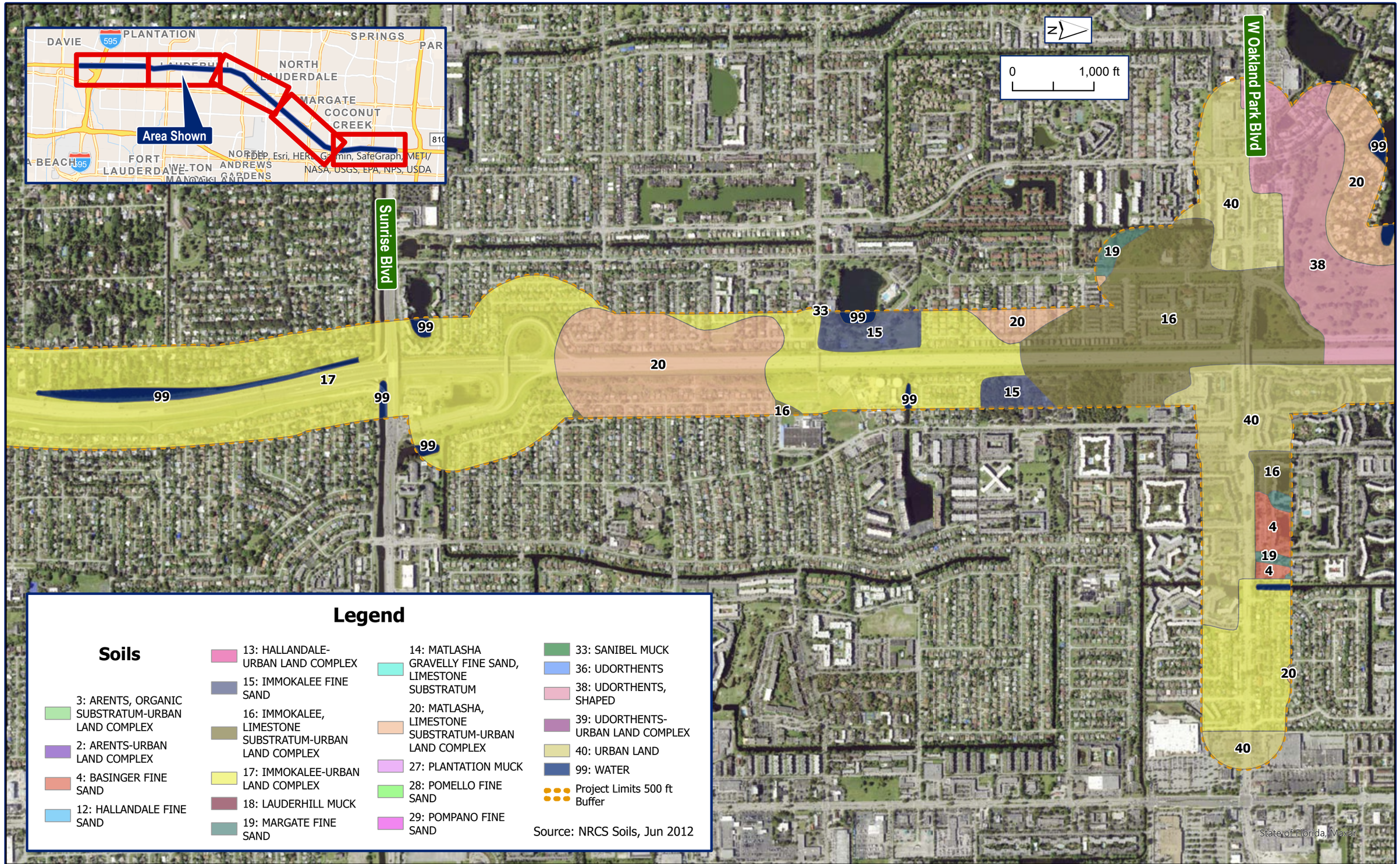


DAVIE
PLANTATION
SPRINGS
NORTH LAUDERDALE
MARGATE
COCONUT CREEK
Area Shown
FORT LAUDERDALE
FDEP, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA
0
1,000 ft
Begin Project MP 53
595
W Broward Blvd
SW 12th St
State of Florida, Maxar
Legend
Soils
3: ARENTS, ORGANIC SUBSTRATUM-URBAN LAND COMPLEX
2: ARENTS-URBAN LAND COMPLEX
4: BASINGER FINE SAND
12: HALLANDALE FINE SAND
13: HALLANDALE-URBAN LAND COMPLEX
15: IMMOKALEE FINE SAND
16: IMMOKALEE, LIMESTONE SUBSTRATUM-URBAN LAND COMPLEX
17: IMMOKALEE-URBAN LAND COMPLEX
18: LAUDERHILL MUCK
19: MARGATE FINE SAND
14: MATLASHA GRAVELLY FINE SAND, LIMESTONE SUBSTRATUM
20: MATLASHA, LIMESTONE SUBSTRATUM-URBAN LAND COMPLEX
27: PLANTATION MUCK
28: POMELLO FINE SAND
29: POMPANO FINE SAND
33: SANIBEL MUCK
36: UDORTHENTS
38: UDORTHENTS, SHAPED
39: UDORTHENTS-URBAN LAND COMPLEX
40: URBAN LAND
99: WATER
Project Limits 500 ft Buffer
Source: NRCS Soils, Jun 2012

FLORIDA'S TURNPIKE

Turnpike (SR 91) from South of I-595 to Wiles Road PD&E Study
FPID: 442212-1-22-01

Appendix B - Soils Maps


Area Shown
DAVIE
PLANTATION
SPRINGS
NORTH LAUDERDALE
MARGATE
COCONUT CREEK
FORT LAUDERDALE
595
95
Sunrise Blvd
W Oakland Park Blvd
0
1,000 ft
N
Legend
Soils
3: ARENTS, ORGANIC SUBSTRATUM-URBAN LAND COMPLEX
2: ARENTS-URBAN LAND COMPLEX
4: BASINGER FINE SAND
12: HALLANDALE FINE SAND
13: HALLANDALE-URBAN LAND COMPLEX
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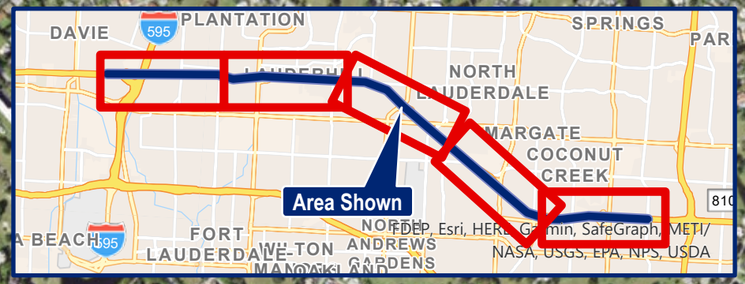
39: UDORTHENTS-URBAN LAND COMPLEX
40: URBAN LAND
99: WATER
Project Limits 500 ft Buffer
Source: NRCS Soils, Jun 2012
State of Florida, Maxar



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Soils

- 3: ARENTS, ORGANIC SUBSTRATUM-URBAN LAND COMPLEX
- 2: ARENTS-URBAN LAND COMPLEX
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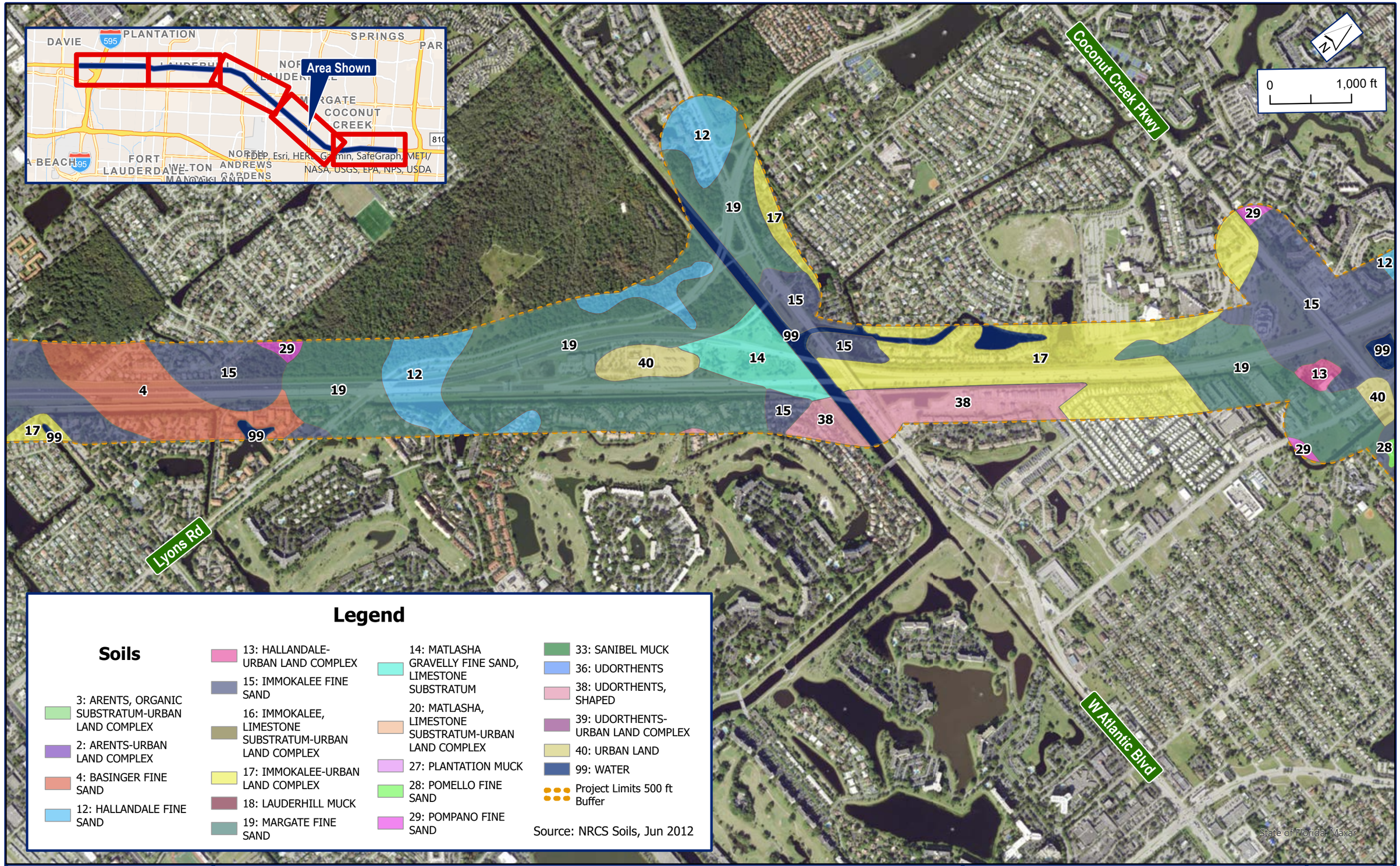
- 38: UDORTHENTS, SHAPED
- 39: UDORTHENTS-URBAN LAND COMPLEX
- 40: URBAN LAND
- 99: WATER
- Project Limits 500 ft Buffer

Source: NRCS Soils, Jun 2012



Legend

Soils

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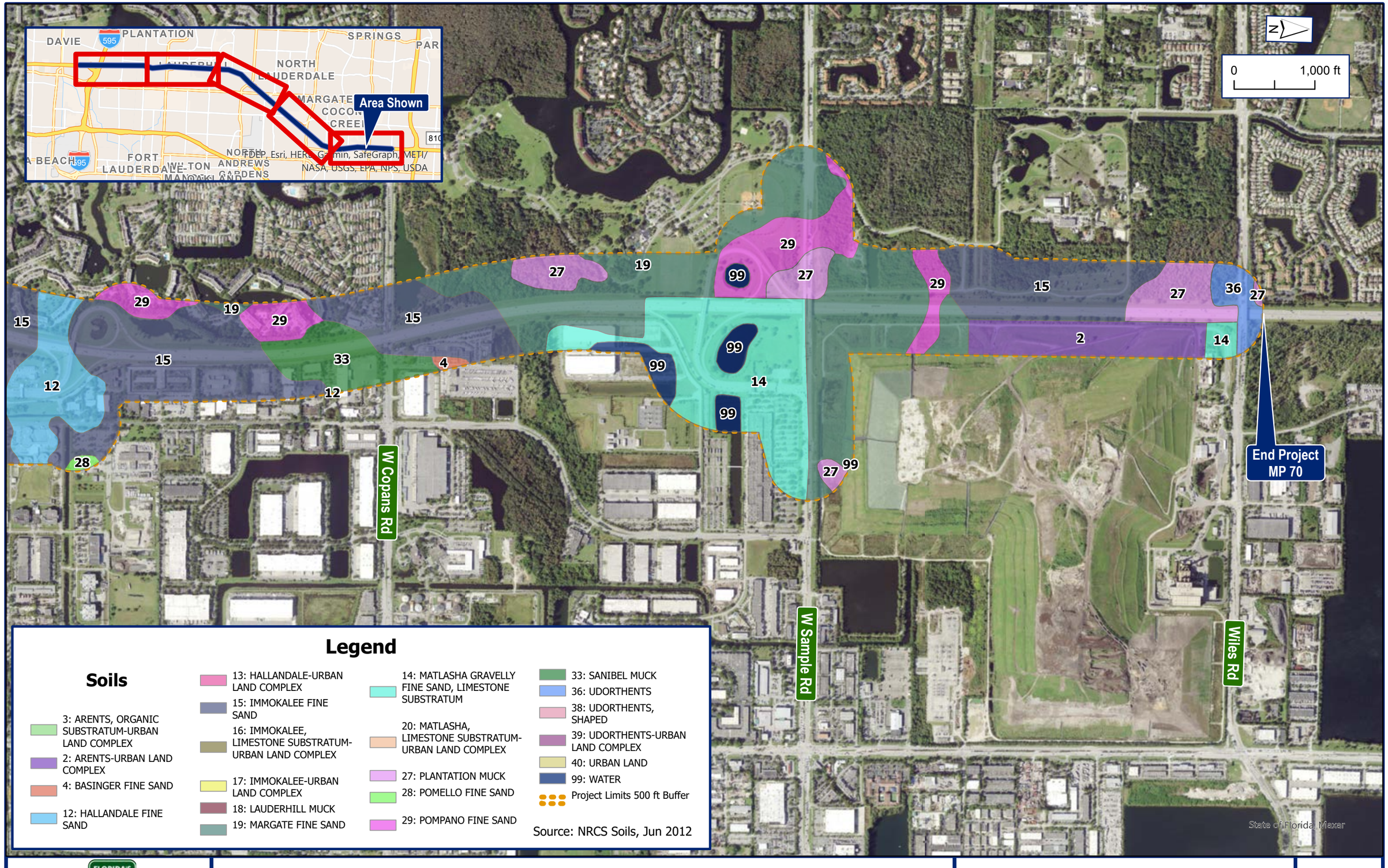
- 40: URBAN LAND
- 99: WATER
- Project Limits 500 ft Buffer

Source: NRCS Soils, Jun 2012



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Soils

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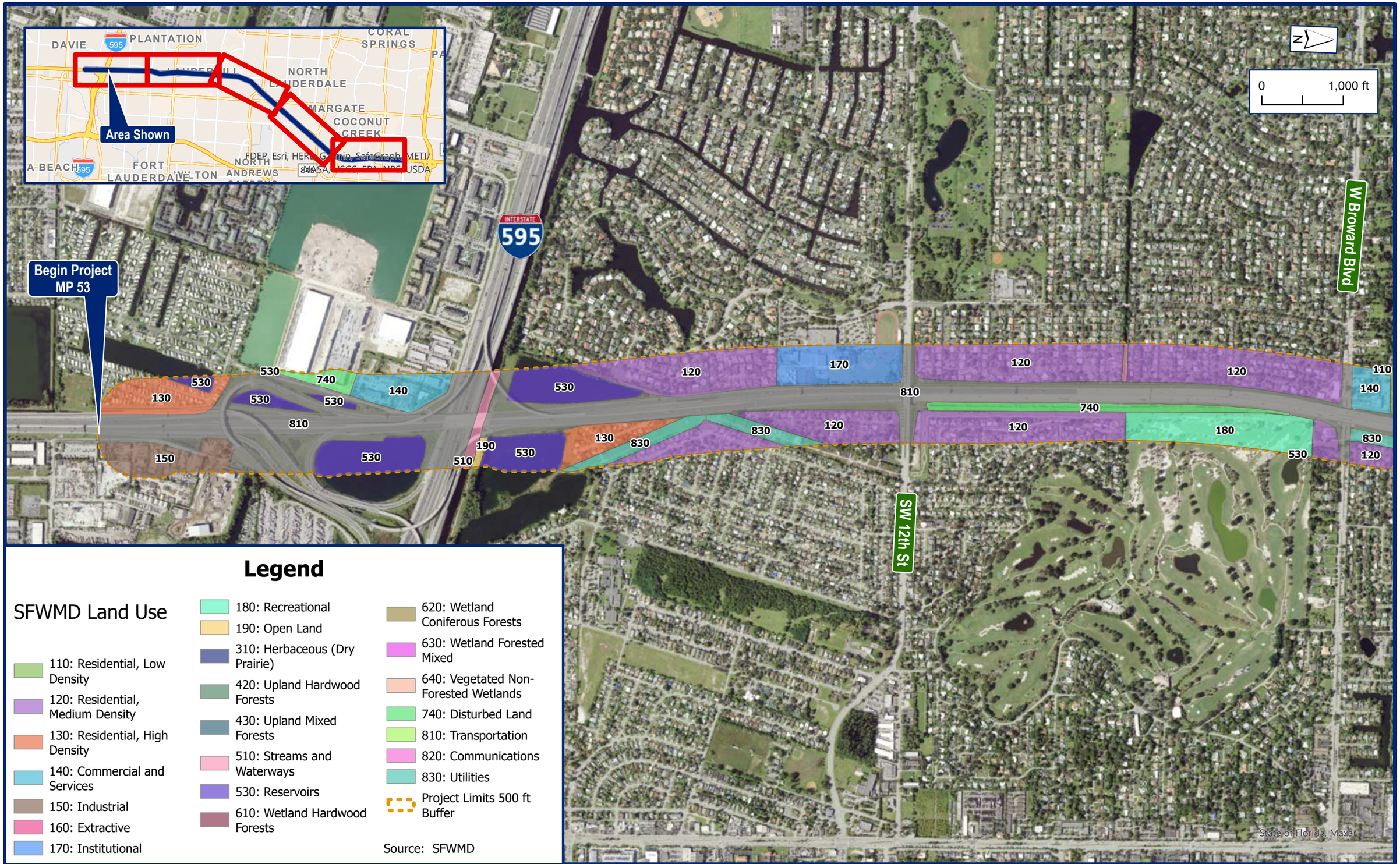
- 99: WATER
- Project Limits 500 ft Buffer

Source: NRCS Soils, Jun 2012

Appendix C – Land Use Maps

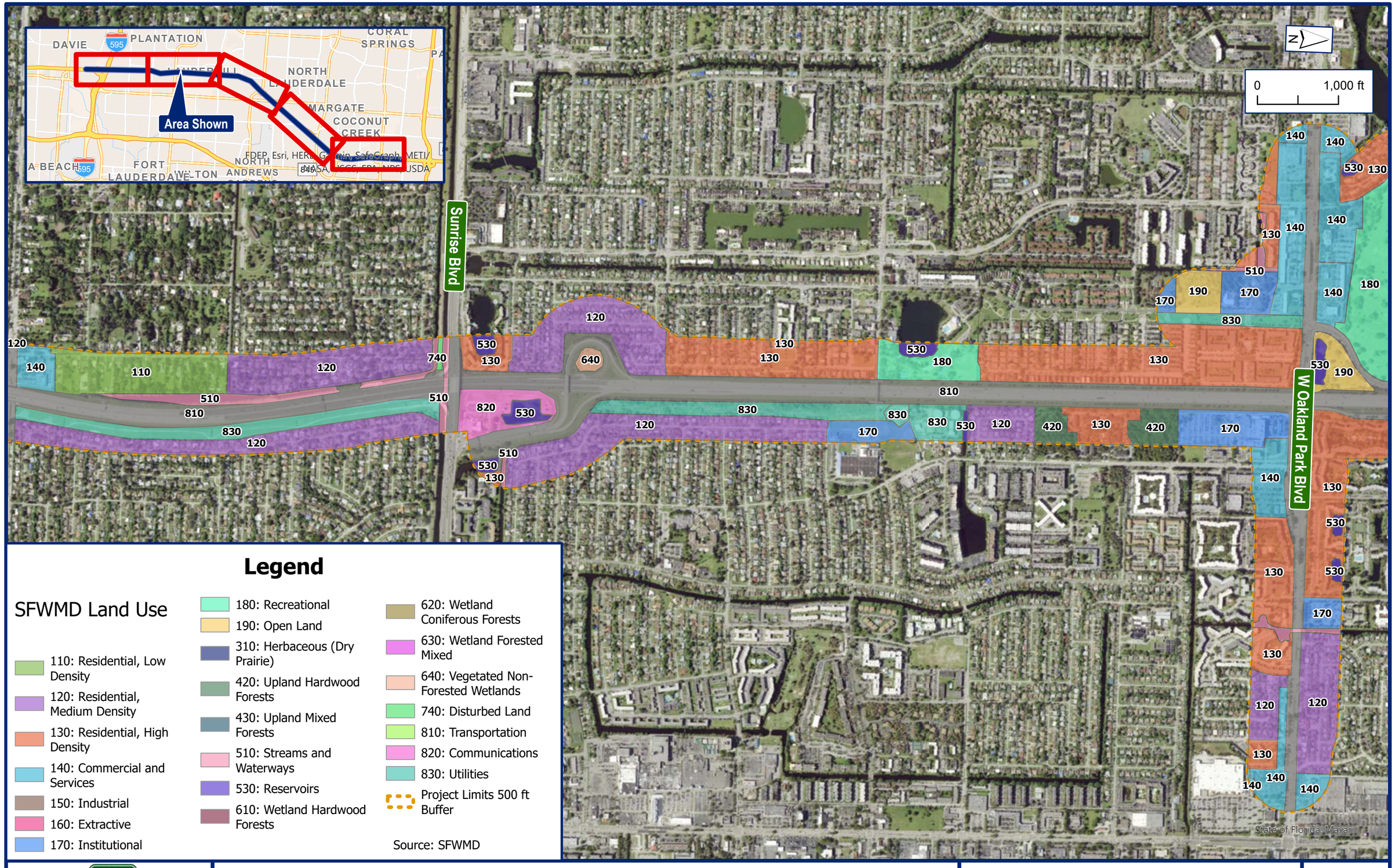


Legend

SFWMD Land Use

- 110: Residential, Low Density
- 120: Residential, Medium Density
- 130: Residential, High Density
- 140: Commercial and Services
- 150: Industrial
- 160: Extractive
- 170: Institutional
- 180: Recreational
- 190: Open Land
- 310: Herbaceous (Dry Prairie)
- 420: Upland Hardwood Forests
- 430: Upland Mixed Forests
- 510: Streams and Waterways
- 530: Reservoirs
- 610: Wetland Hardwood Forests
- 620: Wetland Coniferous Forests
- 630: Wetland Forested Mixed
- 640: Vegetated Non-Forested Wetlands
- 740: Disturbed Land
- 810: Transportation
- 820: Communications
- 830: Utilities
- Project Limits 500 ft Buffer

Source: SFWMD



Legend

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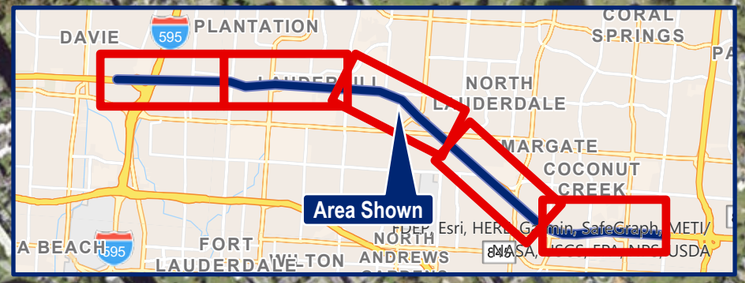
- 740: Disturbed Land
- 810: Transportation
- 820: Communications
- 830: Utilities
- Project Limits 500 ft Buffer

Source: SFWMD



Commercial Blvd

W McNab Rd

N State Rd 7

NW 62nd St

0 1,000 ft

State of Florida, Maxar

Legend

SFWMD Land Use

- 110: Residential, Low Density
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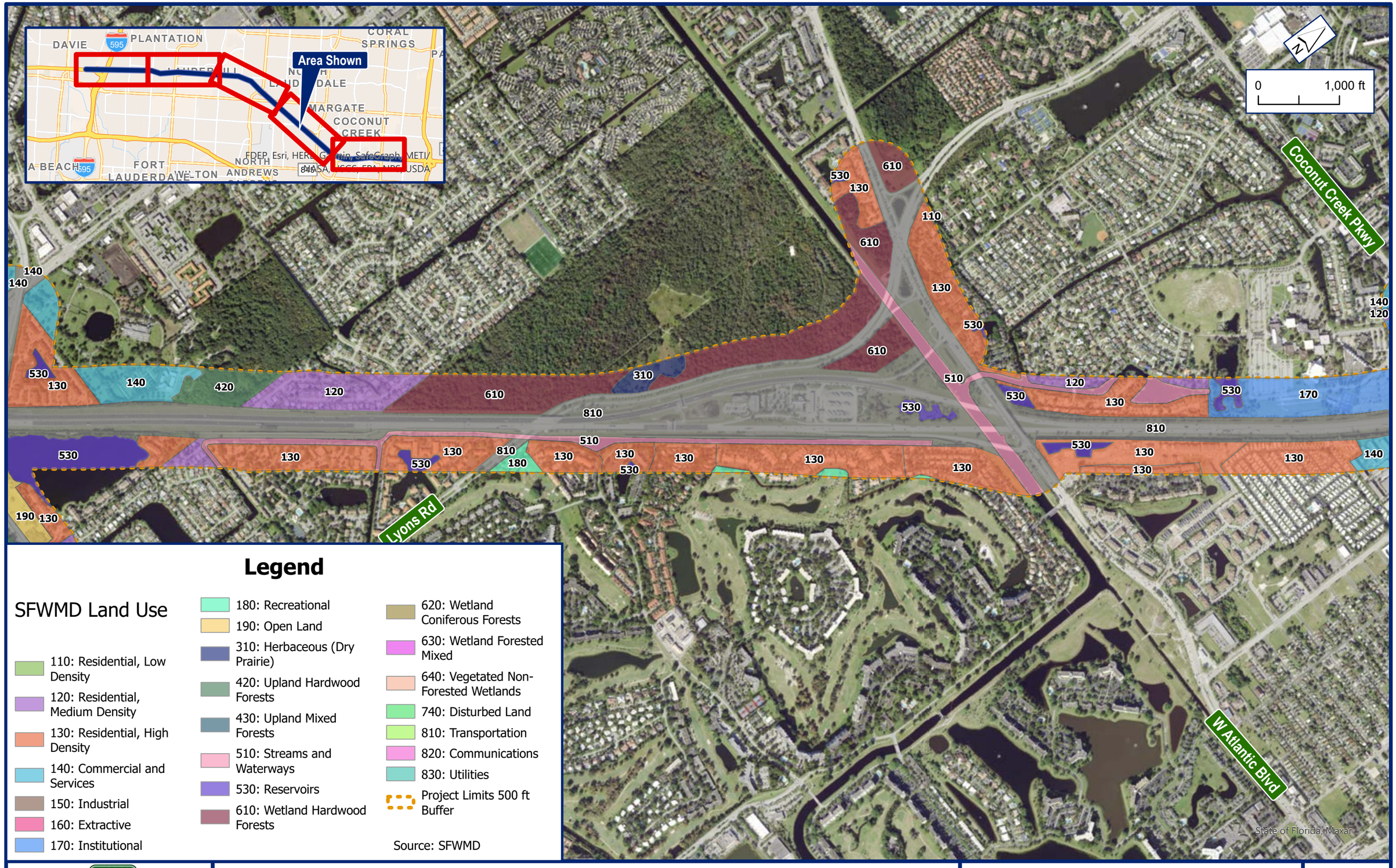
- 820: Communications
- 830: Utilities
- Project Limits 500 ft Buffer

Source: SFWMD



Legend

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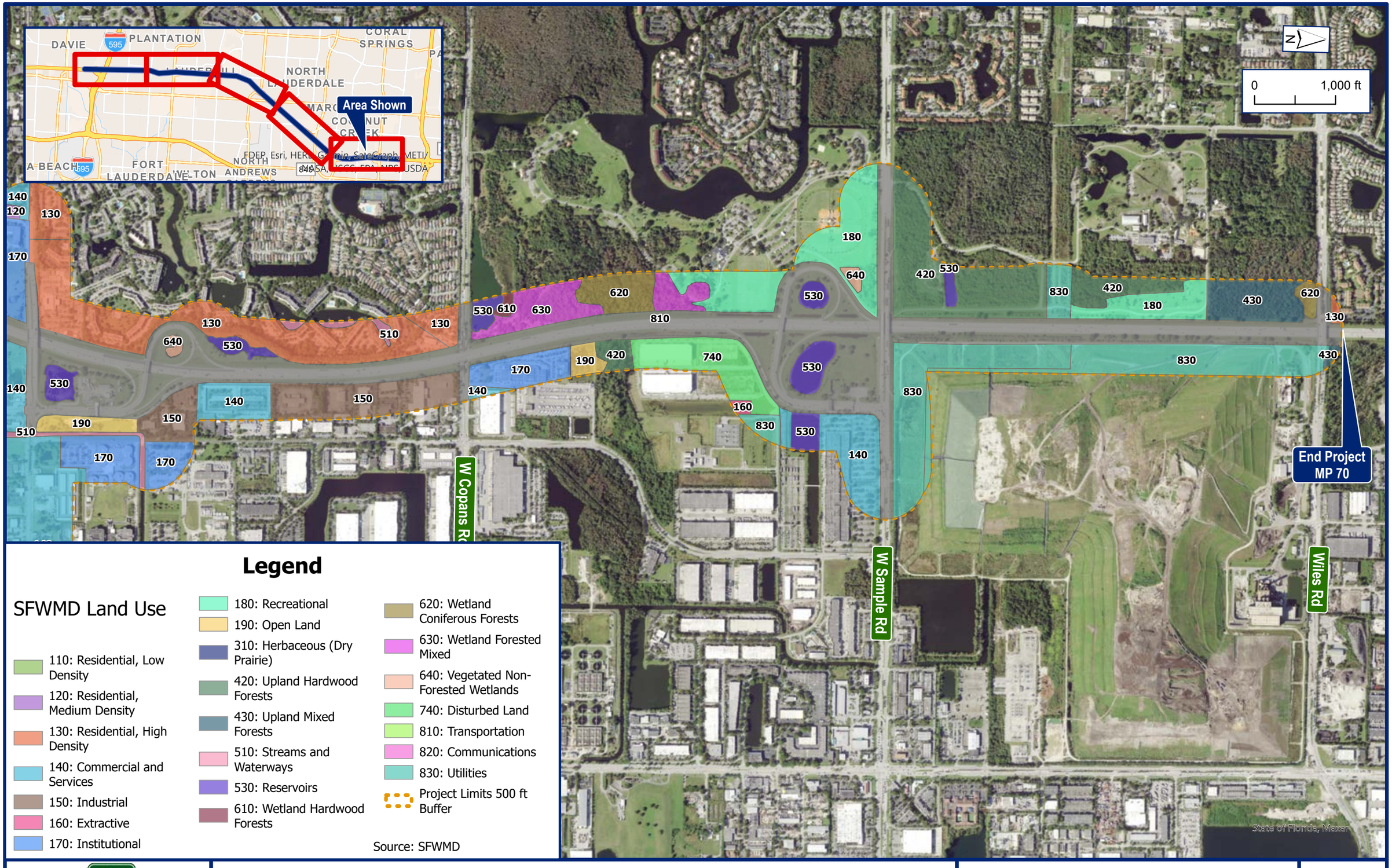
Source: SFWMD



Legend

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- Project Limits 500 ft Buffer

Source: SFWMD

Appendix D – IPaC Resource List and Species Determination Keys

IPaC **U.S. Fish & Wildlife Service**

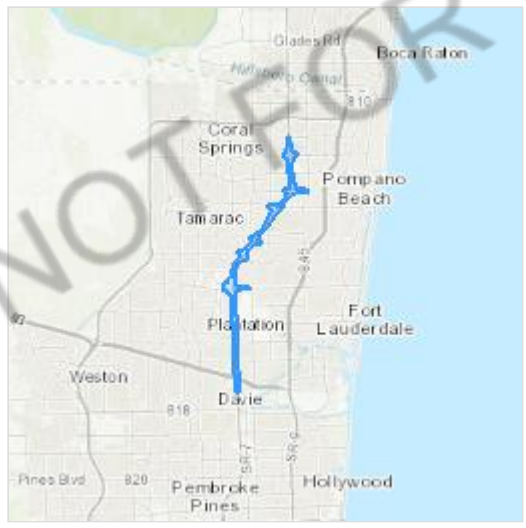
IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Broward County, Florida



Local office

Florida Ecological Services Field Office

(772) 562-3909
(772) 562-4288
fw4flesregs@fws.gov

1339 20th Street
Vero Beach, FL 32960-3559

https://www.fws.gov/office/florida-ecological-services

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Florida Bonneted Bat Eumops floridanus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8630	Endangered
Florida Panther Puma (=Felis) concolor coryi Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1763	Endangered
Puma (=mountain Lion) Puma (=Felis) concolor (all subsp. except coryi) No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6049	SAT
Southeastern Beach Mouse Peromyscus polionotus niveiventris Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/3951	Threatened
West Indian Manatee Trichechus manatus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/4469	Threatened Marine mammal

Birds

NAME	STATUS
Eastern Black Rail Laterallus jamaicensis ssp. jamaicensis Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10477	Threatened

Everglade Snail Kite Rostrhamus sociabilis plumbeus — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/7713

Wood Stork Mycteria americana — Threatened
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/8477

Reptiles

NAME	STATUS

American Alligator Alligator mississippiensis — SAT
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/776

American Crocodile Crocodylus acutus — Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/6604

Eastern Indigo Snake Drymarchon couperi — Threatened
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/646

Green Sea Turtle Chelonia mydas — Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/6199

Hawksbill Sea Turtle Eretmochelys imbricata — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/3656

Leatherback Sea Turtle Dermochelys coriacea — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/1493

Loggerhead Sea Turtle Caretta caretta — Threatened
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/1110

Insects

NAME	STATUS

Bartram's Hairstreak Butterfly Strymon acis bartrami — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/4837

Florida Leafwing Butterfly Anaea troglodyta floridalis — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/6652

Miami Blue Butterfly Cyclargus (=Hemiargus) thomasi bethunebakeri — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/3797

Monarch Butterfly Danaus plexippus — Candidate
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9743

Flowering Plants

NAME	STATUS

Beach Jacquemontia Jacquemontia reclinata — Endangered
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/1277

Tiny Polygala Polygala smallii — Endangered
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/996

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this

location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Kestrel Falco sparverius paulus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9587	Breeds Apr 1 to Aug 31
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
Black Skimmer Rynchops niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234	Breeds May 20 to Sep 15
Chimney Swift Chaetura pelagica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Great Blue Heron Ardea herodias occidentalis This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Jan 1 to Dec 31
Gull-billed Tern Gelochelidon nilotica This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9501	Breeds May 1 to Jul 31

King Rail Rallus elegans — Breeds May 1 to Sep 5
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8936

Lesser Yellowlegs Tringa flavipes — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9679

Magnificent Frigatebird Fregata magnificens — Breeds Oct 1 to Apr 30
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Painted Bunting Passerina ciris — Breeds Apr 25 to Aug 15
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Prairie Warbler Dendroica discolor — Breeds May 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Reddish Egret Egretta rufescens — Breeds Mar 1 to Sep 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/7617

Ruddy Turnstone Arenaria interpres morinella — Breeds elsewhere
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

Swallow-tailed Kite Elanoides forficatus — Breeds Mar 10 to Jun 30
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8938

White-crowned Pigeon Patagioenas leucocephala — Breeds May 1 to Sep 30
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/4047

Willet Tringa semipalmata — Breeds Apr 20 to Aug 5

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

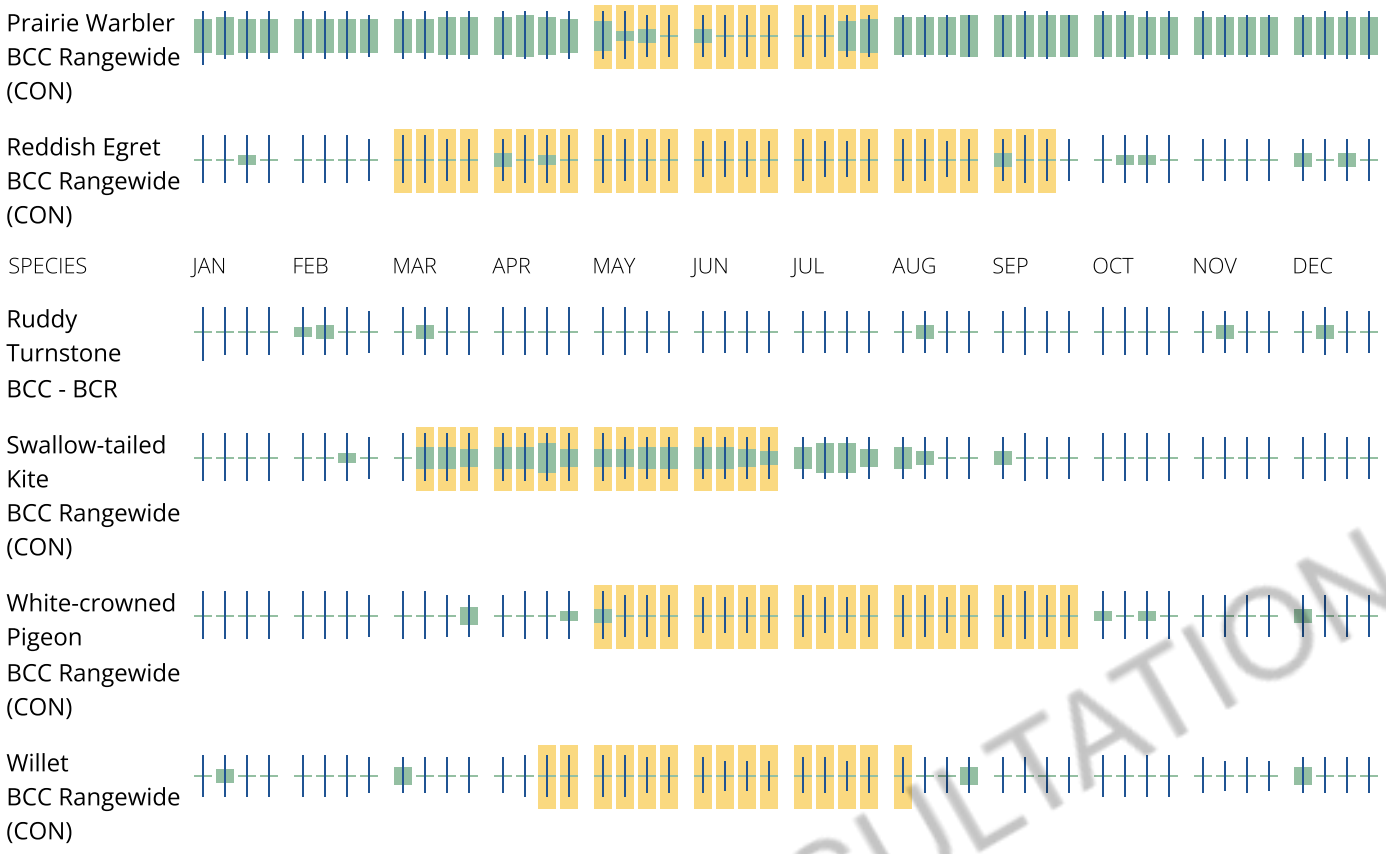
Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact

Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Marine mammals

Marine mammals are protected under the Marine Mammal Protection Act. Some are also protected under the Endangered Species Act[1] and the Convention on International Trade in Endangered Species of Wild Fauna and Flora[2].

The responsibilities for the protection, conservation, and management of marine mammals are shared by the U.S. Fish and Wildlife Service [responsible for otters, walruses, polar bears, manatees, and dugongs] and NOAA Fisheries[3] [responsible for seals, sea lions, whales, dolphins, and porpoises]. Marine mammals under the responsibility of NOAA Fisheries are **not** shown on this list; for additional information on those species please visit the Marine Mammals page of the NOAA Fisheries website.

The Marine Mammal Protection Act prohibits the take (to harass, hunt, capture, kill, or attempt to harass, hunt, capture or kill) of marine mammals and further coordination may be necessary for project evaluation. Please contact the U.S. Fish and Wildlife Service Field Office shown.

1. The Endangered Species Act (ESA) of 1973.
2. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is a treaty to ensure that international trade in plants and animals does not threaten their survival in the wild.
3. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following marine mammals under the responsibility of the U.S. Fish and Wildlife Service are potentially affected by activities in this location:

NAME

West Indian Manatee *Trichechus manatus*
https://ecos.fws.gov/ecp/species/4469

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Appendix **D**

Florida Bonneted Bat Programmatic Key 2019

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960
October 22, 2019

Shawn Zinszer
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Subject: Consultation Key for the Florida bonneted bat; 04EF2000-2014-I-0320-R001

Dear Mr. Zinszer:

This letter replaces the December 2013, Florida bonneted bat guidelines provided to the U.S. Army Corps of Engineers (Corps) to assist your agency with effect determinations within the range of the Florida bonneted bat (*Eumops floridanus*). This October 2019 revision supersedes all prior versions. The enclosed *Florida Bonneted Bat Consultation Guidelines* and incorporated *Florida Bonneted Bat Consultation Key* (Key) are provided pursuant to the U.S. Fish and Wildlife Service's (Service) authorities under the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C.1531 *et seq.*). This letter, guidelines, and Key have been assigned Service Consultation Code: 41420- 04EF2000-2014-I-0320-R001.

The purpose of the guidelines and Key is to aid the Corps (or other Federal action agency) in making appropriate effect determinations for the Florida bonneted bat under section 7 of the Act, and streamline informal consultation with the Service for the Florida bonneted bat when the proposed action is consistent with the Key. There is no requirement to use the Key. There will be cases when the use of the Key is not appropriate. These include, but are not limited to: where project specific information is outside of the scope of the Key, applicants do not wish to implement the identified survey or best management practices, or if there is new biological information about the species. In these cases, we recommend the Corps (or other Federal action agency) initiate traditional consultation pursuant to section 7 of the Act, and identify that consultation is being requested outside of the Key.

This Key uses type of habitat (*i.e*, roosting or foraging), survey results, and project size as the basis for making determinations of "may affect, but is not likely to adversely affect" (MANLAA) and "may affect, and is likely to adversely affect" (LAA). The Key is structured to focus on the type(s) of habitat that will be affected by a project. When proposed project areas provide features that could support roosting of Florida bonneted bats, it is considered roosting habitat. If evaluation of roosting habitat determines that roosting is not likely, then the area is subsequently evaluated for its value to the species as foraging habitat.

Roosting habitat

The guidelines describe the features of roosting habitat. When a project is proposed in roosting habitat, the likelihood that roosting is occurring is evaluated through surveys (*i.e.*, full acoustic or limited roost). When a roost is expected and the proposed activity will affect that roost, formal consultation is required. This is because the proposed activity is expected to take individuals through the destruction of the roost and the appropriate determination is that the project may affect, and is likely to adversely affect (LAA) the species. When roosting is expected, but all impacts to the roost can be avoided, and only foraging habitat (without roost structure) will be affected, the Service finds that it is reasonable to conclude that the proposed action is not likely to impair feeding, breeding, or sheltering. Thus, the proposed project may affect, but is not likely to affect the Florida bonneted bat (MANLAA).

The exception to this logic path is if the proposed action will affect more than 50 acres of foraging habitat in proximity to the roost. Under this scenario, we anticipate that the loss of the larger amount of foraging habitat near the roost could significantly impair feeding of young and overall breeding (*i.e.*, LAA). Consequently, these projects would require formal consultation to analyze the effect of the incidental take.

If the roost surveys demonstrate that roosting is not likely, the project is then evaluated for its effects to foraging habitat. Our evaluation of these actions is described below. The exception is for projects less than or equal to 5 acres if a limited roost survey is conducted. Limited roost surveys rely on peeping and visual surveys to determine whether roosting is likely. On these small projects, this survey strategy is believed to be more economical and is considered a reasonable effort to evaluate the potential for roosting. The Service acknowledges that this approach is less reliable in evaluating the likelihood of roosting when it is not combined with acoustic surveys. Therefore, when limited roost surveys are conducted for projects that are less than or equal to 5 acres in size and the determination is that roosting is not likely, we conclude that the proposed project may affect, but is not likely to adversely affect the species (MANLAA).

Foraging habitat

The guidelines describe the features of foraging habitat. Data informing the home range size of the Florida bonneted bats is limited. Global Positioning System (GPS) and radio-telemetry data for Florida bonneted bats documents that they move large distances and likely have large home ranges. Data from recovered GPS satellite tags on Florida bonneted bats tagged at Babcock-Webb Wildlife Management Area (BWWMA) found the maximum distance detected from a capture site was 24.2 mi (38.9 km); the greatest path length travelled in a single night was 56.3 mi (90.6 km) (Ober 2016; Webb 2018a-b). At BWWMA, researchers found that most individual locations were within one mile of the roost (point of capture) (Ober 2015). Additional data collected during the month of December documented the mean maximum distance Florida bonneted bats (n=8) with tags traveled from the roost was 9.5 mi (Webb 2018b).

The Service recognizes that the movement information comes from only one site (BWWMA and vicinity), and data are from small numbers (n ~20) of tagged individuals for only short periods of time (Webb 2018a-b). We expect that across the Florida bonneted bat's range differences in

habitat quality, prey availability, and other factors will result in variable habitat use and home range sizes between locations. Foraging distances and home range sizes in high quality habitats are expected to be smaller while foraging distances and home range sizes in low quality habitat would be expected to be larger. Regardless, we use these studies as our best available information to evaluate when changes to foraging habitat may have an effect on the species ability to feed, breed, and shelter and subsequently result in incidental take. When considering where most of the nightly activity was observed, we calculate a foraging area centered on a roost with a 1 mile radius would include approximately 2,000 acres, and a foraging area centered on a 9.5 mile radius would encompass approximately 181,000 acres, on any given night.

Given the Service's limited understanding of how the Florida bonneted bat moves throughout its home range and selects foraging areas, we choose to use 50 acres of habitat as a conservative estimate to when loss of foraging habitat may affect the fitness of an individual to the extent that it would impair feeding and breeding. Projects that would remove, destroy or convert less than 50 acres of Florida bonneted bat foraging habitat are expected to result in a loss of foraging opportunities; however, this decrease is not expected to significantly impair the ability of the individual to feed and breed. Consequently, projects impacting less than 50 acres of foraging habitat that implement the identified best management practices in the Key would be expected to avoid take, and the appropriate determination is that the project may affect, but is not likely to adversely affect the species (MANLAA).

Next, the Service incorporated the level of bat activity into our Key to evaluate when a foraging area may have greater value to the species. When surveys document high bat activity, we deduce that this area has increased value and importance to the species. Thus, when high bat activity is detected in parcels with greater than 50 acres of foraging habitat, we anticipate that the loss, destruction, or conversion of this habitat could significantly impair the ability of an individual to feed and breed (*i.e.*, LAA); thus formal consultation is warranted.

If surveys do not indicate high bat activity, we anticipate that loss of this additional foraging habitat may affect, but is not likely to adversely affect the species (MANLAA). This is because although the acreage is large, the area does not appear to be important at the landscape scale of nightly foraging. Therefore, its loss is not anticipated to significantly impair the ability of an individual to feed or breed.

The exception to this approach is for projects greater than 50 acres when they occur in potential roosting habitat that is not found to support roosting or high bat activity. Under this scenario, the Service concludes that the loss of the large acreage of suitable roosting habitat has the potential to significantly impair the ability of an individual to breed or shelter (*i.e.*, LAA) because the species is cavities for roosting are expected to be limited range wide and the project will impair these limited opportunities for roosting.

Determinations

The Corps (or other Federal action agency) may reach one of several determinations when using this Key. Regardless of the determination, when acoustic bat surveys have been conducted, the Service requests that these survey results are provided to our office to increase our knowledge of

the species and improve our consultation process. Surveys results and reports should be transmitted to the Service at FBBsurveyreport@fws.gov or mail electronic file to U.S. Fish and Wildlife Service, Attention Florida bonneted bat surveys, 1339 20th Street, Vero Beach, Florida 32960. When formal consultation is requested, survey results and reports should be submitted with the consultation request to verobeach@fws.gov.

No effect: If the use of the Key results in a determination of "no effect," no further consultation is necessary with the Service. The Service recommends that the Corps (or other Federal action agency) documents the pathway used to reach the determination in the project record and proceeds with other species analyses as warranted.

May Affect, Not Likely to Adversely Affect (MANLAA): In this Key we have identified two ways that consultation can conclude informally, MANLAA-P and MANLAA-C.

> **MANLAA-P**: If the use of the Key results in a determination of "MANLAA- P," the Service concurs with this determination based on the rationale provide above, and no further consultation is necessary for the effects of the proposed action on the Florida bonneted bat. The Service recommends that the Corps (or other Federal action agency) documents the pathway used to reach the determination in the project record and proceeds with other species analyses as warranted.
>
> **MANLAA-C**: If the use of the Key results in a determination of MANLAA-C, further consultation with the Service is required to confirm that the Key has been used properly, and the Service concurs with the evaluation of the survey results. Survey results should be submitted with the consultation request.

May Affect, Likely to Adversely Affect (LAA) - When the determination in the Key is "LAA" technical assistance with the Service and modifications to the proposed action may enable the project to be reevaluated and conclude with a MANLAA-C determination. Under other circumstance, "LAA" determinations will require formal consultation.

Working with the Fish and Wildlife Foundation of Florida, the Service has established a fund to support conservation and recovery for the Florida bonneted bat. Any project that has the potential to affect the Florida bonneted bat and/or its habitat is encouraged to make a voluntary contribution to this fund. If you would like additional information about how to make a contribution and how these monies are used to support Florida bonneted bat recovery please contact Ashleigh Blackford, Connie Cassler, or José Rivera at 772-562-3909.

This revised Key is effective immediately upon receipt by the Corps. Should circumstances change or new information become available regarding the Florida bonneted bat and/or implementation of the Key, the determinations herein may be reconsidered and this Key further revised or amended. We have established an email address to collect comments on the Key and the survey protocols at: FBBguidelines@fws.gov.

Thank you for your continued cooperation in the effort to conserve fish and wildlife resources. If you have any questions regarding this Key, please contact the South Florida Ecological Services Office at 772-562-3909.

Sincerely,

Roxanna Hinzman
Field Supervisor
South Florida Ecological Services

Enclosure

Cc: electronic only
Corps, Jacksonville, Florida (Dale Beter, Muriel Blaisdell, Ingrid Gilbert, Alisa Zarbo, Melinda Charles-Hogan, Susan Kaynor, Krista Sabin, John Fellows)

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U.S. Fish and Wildlife Service
South Florida Ecological Services Office

FLORIDA BONNETED BAT CONSULTATION GUIDELINES

October - 2019

The U.S. Fish and Wildlife Service's South Florida Ecological Services Field Office (Service) developed the Florida Bonneted Bat Consultation Guidelines (Guidelines) to assist in avoiding and minimizing potential negative effects to roosting and foraging habitat, and assessing effects to the Florida bonneted bat (*Eumops floridanus*) from proposed projects. The Consultation Key within the Guidelines assists applicants in evaluating their proposed projects and identifying the appropriate consultation paths under sections 7 and 10 of the Endangered Species Act of 1973 (Act), as amended (87 Stat. 884; 16 U.S.C. 1531 *et seq.*). These Guidelines are primarily for use in evaluating regulatory projects where development and land conversions are anticipated. These Guidelines focus on conserving roosting structures in natural and semi-natural environments. The following Consultation Area map (Figure 1 and Figure 2, Appendix A), Consultation Flowchart (Figure 3), Consultation Key, Survey Framework (Appendices B-C), and **Best Management Practices (BMPs)** (Appendix D) are based upon the best available scientific information. As more information is obtained, these Guidelines will be revised as appropriate. If you have comments, or suggestions on these Guidelines or the Survey Protocols (Appendix B and C), please email your comments to FBBguidelines@fws.gov. These comments will be reviewed and incorporated in an annual review.

Terms in **bold** are further defined in the Glossary.

Wherever possible, proposed development projects within the Consultation Area should be designed to avoid and minimize take of Florida bonneted bats and to retain their habitat. Applicants are encouraged to enter into early technical assistance/consultation with the Service so we may provide recommendations for avoiding and minimizing adverse effects. Although these Guidelines focus on the effects of a proposed action (*e.g.*, development) on natural habitat, (*i.e.*, non-urban), Appendix E also provides Best Management Practices for Land Management Projects.

If you are renovating an existing artificial structure (*e.g.*, building) within the urban environment with or without additional ground disturbing activities, these Guidelines do not apply. The Service is developing separate guidelines for consultation in these situations. Until the urban guidelines are complete, please contact the Service for additional guidance.

The final listing rule for the Florida bonneted bat (Service 2013) describes threats identified for the species. Habitat loss and degradation, as well as habitat modification, have historically affected the species. Florida bonneted bats are different from most other Florida bat species because they are reproductively active through most of the year, and their large size makes them capable of foraging long distances from their roost (Ober *et al.* 2016). Consequently, this species is vulnerable to disturbances around the roost during a greater portion of the year and considerations about foraging habitat extend further than the localized roost.

Use of Consultation Area, Flowchart, and Key

Figure 1 shows the Consultation Area for the Florida bonneted bat where this consultation guidance applies. For information on how the Consultation Area was delineated see Appendix A. The Consultation Flowchart (Figure 3) and Consultation Key direct project proponents through a series of couplets that will provide a conclusion or determination for potential effects to the Florida bonneted bat. *Please Note: If additional listed species, or candidate or proposed species, or designated or proposed critical habitat may be affected, a separate evaluation will be needed for these species/critical habitats.*

Currently, the Consultation Flowchart (Figure 3) and Consultation Key cannot be used for actions proposed within the urban development boundary in Miami-Dade and Broward County. The urban development boundary is part of the Consultation Area, but it is excluded from these Guidelines because Florida bonneted bats use this area differently (roosting largely in artificial structures), and small natural foraging areas are expected to be important. Applicants with projects in this area should contact the Service for further guidance and individual consultation.

Determinations may be either "no effect," "may affect, but is not likely to adversely affect" (**MANLAA**), or "may affect, and is likely to adversely affect" (**LAA**). An applicant's willingness and ability to alter project designs could sufficiently minimize effects to Florida bonneted bats and allow for a **MANLAA** determination for this species (informal consultation). The Service is available for early technical assistance/consultation to offer recommendations to assist in project design that will minimize effects. When take cannot be avoided, applicants and action agencies are encouraged to incorporate compensation to offset adverse effects. The Service can assist with identifying compensation options (*e.g.,* conservation on site, conservation off-site, contributions to the Service's Florida bonneted bat conservation fund, *etc*.).

Using the Key and Consultation Flowchart

- "No effect" determinations do not need Service concurrence.
- "May affect, but is not likely to adversely affect" **MANLAA**. Applicants will be expected to incorporate the appropriate BMPs to reach a **MANLAA** determination.
    - **MANLAA-P** (in blue in Consultation Flowchart) have programmatic concurrence through the transmittal letter of these Guidelines, and therefore no further consultation with the Service is necessary unless assistance is needed in interpreting survey results.
    - **MANLAA-C** (in black in Consultation Flowchart) determinations require further consultation with the Service.
- "May affect, and is likely to adversely affect" (**LAA**) determinations require consultation with the Service. Project modifications could change the **LAA** determinations in numbers 5, 8, 9, 11, 12, and 17 to **MANLAA**. When take cannot be avoided, **LAA** determinations will require a biological opinion.
- The Service requests copies of surveys used to support all determinations. If a survey is required by the Consultation Key and the final determination is "no effect" or "MANLAA-P", send the survey to FBBsurveyreport@fws.gov , or mail electronic file to U.S. Fish and Wildlife Service, Attention Florida bonneted bat surveys, 1339 20th Street, Vero Beach, Florida 32960. If a survey is required by the Consultation Key and the determination is "MANLAA-C" or "LAA", submit the survey in the consultation request.

For the purpose of making a decision at Couplet 2: If any potential roosting structure is present, then the habitat is classified as **potential roosting habitat**, and the left half of the flowchart should be followed (see Figure 3). We recognize that roosting habitat may also be used by Florida bonneted bats for foraging. If the project site only consists of **foraging habitat** (*i.e.*, no suitable roosting structures), then the right side of the flowchart should be followed beginning at step 13.

For couplets 11 and 12: **Potential roosting habitat** is considered **Florida bonneted bat foraging habitat** when a determination is made that roosting is not likely.

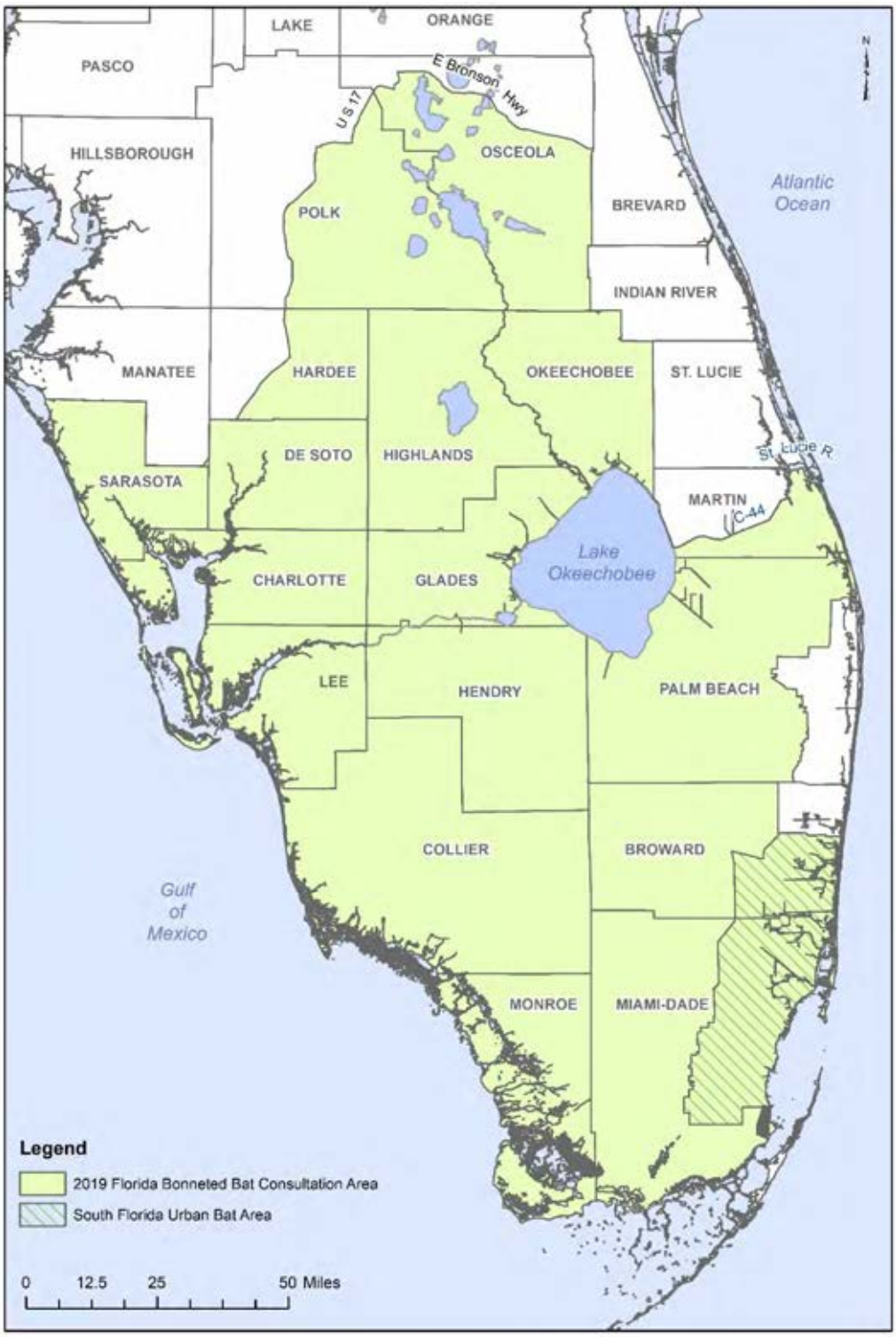

Figure 1. Florida Bonneted Bat Consultation Area. Hatched area (Figure 2) identifies the urban development boundary in Miami-Dade and Broward County. Applicants with projects in this area should contact the Service for specific guidance addressing this area and individual consultation. The Consultation Key should not be used for projects in this area.

Figure 2. Urban development boundary in Miami-Dade and Broward County. The Consultation Key should not be used for projects in this area. Applicants with projects in this South Florida Urban Bat Area should contact the Service for specific guidance addressing this area and individual consultation.

Florida Bonneted Bat Consultation Key[#]

Use the following key to evaluate potential effects to the Florida bonneted bat (FBB) from the proposed project. Refer to the Glossary as needed.

1a. Proposed project or land use change is partially or wholly within the Consultation Area (Figure 1)..... **Go to 2**
1b. Proposed project or land use change is wholly outside of the Consultation Area (Figure 1)..... **No Effect**

2a. Potential FBB roosting habitat exists within the project area..... **Go to 3**
2b. No potential FBB roosting habitat exists within the project area..... **Go to 13**

3a. Project size/footprint* ≤ 5 acres (2 hectares)..... **Conduct Limited Roost Survey (Appendix C)** then **Go to 4**
3b. Project size/footprint* > 5 acres (2 hectares)..... **Conduct Full Acoustic/Roost Surveys (Appendix B)** then **Go to 6**

4a. Results show FBB roosting is likely ..... **Go to 5**
4b. Results do not show FBB roosting is likely..... **MANLAA-P if BMPs (Appendix D) used and survey reports are submitted. Programmatic concurrence.**

5a. Project will affect roosting habitat..... **LAA[+] Further consultation with the Service required.**
5b. Project will not affect roosting habitat..... **MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.**

6a. Results show some FBB activity..... **Go to 7**
6b. Results show no FBB activity..... **No Effect**

7a. Results show FBB roosting is likely..... **Go to 8**
7b. Results do not show FBB roosting is likely..... **Go to 10**

8a. Project will not affect roosting habitat..... **Go to 9**
8b. Project will affect roosting habitat..... **LAA[+] Further consultation with the Service required.**

9a. Project will affect* > 50 acres (20 hectares) (wetlands and uplands) of foraging habitat..... **LAA[+] Further consultation with the Service required.**
9b. Project will affect* ≤ 50 acres (20 hectares) (wetlands and uplands) of foraging habitat..... **MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.**

10a. Results show high FBB activity/use..... **Go to 11**
10b. Results do not show high FBB activity/use..... **Go to 12**

11a. Project will affect* > 50 acres (20 hectares) (wetlands and uplands) of FBB habitat (roosting and/or foraging)..... **LAA[+] Further consultation with the Service required.**
11b. Project will affect* ≤ 50 acres (20 hectares) (wetlands and uplands) of FBB habitat (roosting and/or foraging)..... **MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.**

12a. Project will affect* > 50 acres (20 hectares) (wetlands and uplands) of FBB habitat..... **LAA[+] Further consultation with the Service required.**
12b. Project will affect* ≤ 50 acres (20 hectares) (wetlands and uplands) of FBB habitat..... **MANLAA-P if BMPs (Appendix D) used and survey reports are submitted. Programmatic concurrence.**

13a. FBB foraging habitat exists within the project area and foraging habitat will be affected…..……..**Go to 14**

13b. FBB foraging habitat exists within the project area and foraging habitat will not be affected **OR** no FBB foraging habitat exists within the project area…..……..**No Effect**

14a. Project size* > 50 acres (20 hectares) (wetlands and uplands) ……..…….**Go to 15**

14b. Project size* ≤ 50 acres (20 hectares) (wetlands and uplands) ……...….. **MANLAA-P if BMPs (Appendix D) used. Programmatic concurrence.**

15a. Project is within 8 miles (12.9 kilometers) of high quality potential roosting areas^……..……**Conduct Full Acoustic Survey (Appendix B) and Go to 16**

15b. Project is not within 8 miles (12.9 kilometers) of high quality potential roosting area^…….....….**MANLAA-P if BMPs (Appendix D) used. Programmatic concurrence.**

16a. Results show some FBB activity……...…….....**Go to 17**

16b. Results show no FBB activity……..…….…....**No Effect**

17a. Results show high FBB activity/use……...…...…....**LAA[+] Further consultation with the Service required.**

17b. Results do not show high FBB activity/use……..……... **MANLAA-P if BMPs (Appendix D) used and survey reports submitted. Programmatic concurrence.**

[#] If you are within the urban environment and you are renovating an existing artificial structure (with or without additional ground disturbing activities), these Guidelines do not apply. The Service is developing separate guidelines for consultation in these situations. Until the urban guidelines are complete, please contact the Service for additional guidance

*****Includes wetlands and uplands that are going to be altered along with a 250- foot (76.2- meter) buffer around these areas if the parcel is larger than the altered area.

[+]Project modifications could change the **LAA** determinations in numbers 5, 8, 9, 11, 12, and 17 to **MANLAA** determinations.

^Determining if **high quality potential roosting areas** are within 8 mi (12.9 km) of a project is intended to be a desk-top exercise looking at most recent aerial imagery, not a field exercise.

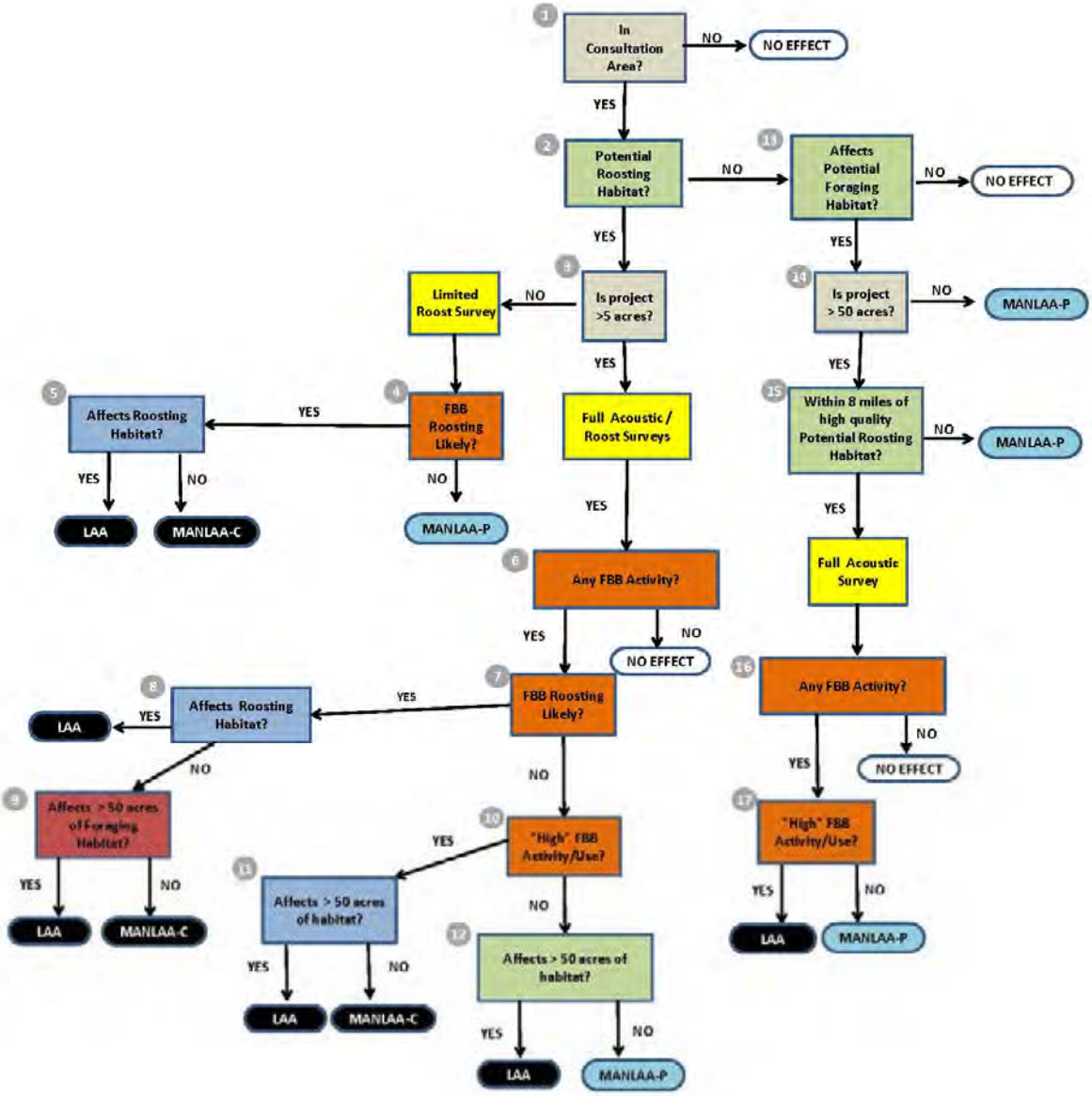

Figure 3. Florida bonneted bat Consultation Flowchart. "**No effect**" determinations do not need Service concurrence. "May affect, but not likely to adversely affect", **MANLAA-P,** in blue have programmatic concurrence through the transmittal letter of these Guidelines, and therefore no further consultation with the Service is necessary unless assistance is needed in interpreting survey results. **MANLAA-C** determinations in black require further consultation with the Service. Applicants are expected to incorporate the appropriate **BMPs** to reach a **MANLAA** determination. "May affect, and is likely to adversely affect", **LAA, (**also in black) determinations require consultation with the Service. Further consultation with the Service may identify project modifications that could change the **LAA** determinations in numbers 5, 8, 9, 11, 12, and 17 to **MANLAA** determinations. The Service requests Florida bonneted bat survey reports for all determinations.

GLOSSARY

BMPs – Best Management Practices. Recommendations for actions to conserve roosting and foraging habitat to be implemented before, during, and after proposed development, land use changes, and land management activities.

FBB Activity – Florida bonneted bat (FBB) activity is when any Florida bonneted bat calls are recorded during an acoustic survey or human observers see or hear Florida bonneted bats on a site.

FORAGING HABITAT - Comprised of relatively open (*i.e.,* uncluttered or reduced numbers of obstacles, such as fewer tree branches and leaves, in the flight environment) areas to find and catch prey, and sources of drinking water. In order to find and catch prey, Florida bonneted bats forage in areas with a reduced number of obstacles. This includes: open fresh water, permanent or seasonal freshwater wetlands, within and above wetland and upland forests, wetland and upland shrub, and agricultural lands (Bailey *et al.* 2017). In urban and residential areas drinking water, prey base, and suitable foraging can be found at golf courses, parking lots, and parks in addition to relatively small patches of natural habitat.

FULL ACOUSTIC/ROOST SURVEY - This is a comprehensive survey that will involve systematic acoustic surveys (*i.e.,* surveys conducted 30 minutes prior to sunset to 30 minutes after sunrise, over multiple consecutive nights). Depending upon acoustic results and habitat type, targeted roost searches through thorough visual inspection using a tree-top camera system or observations at emergence (*e.g.,* looking and listening for bats to come out of tree cavities around sunset) or more acoustic surveys may be necessary. See Appendix B for a full description.

HIGH FBB ACTIVITY/USE - High Florida bonneted bat (FBB) activity/use or importance of an area can be defined using several parameters (*e.g*., types of calls, numbers of calls). An area will be considered to have high FBB activity/use if **ANY** of the following are found: (a) multiple FBB feeding buzzes are detected; (b) FBB social calls are recorded; (c) large numbers of Florida bonneted bat calls (9 or more) are recorded throughout one night. Each of these parameters is considered to indicate that an area is actively used and important to FBBs, however, the Service will further evaluate the activity/use of the area within the context of the site (*i.e.,* spatial distribution of calls, site acreage, habitat on site, as well as adjacent habitat) and provide additional guidance.

HIGH QUALITY POTENTIAL ROOSTING AREAS - Sizable areas (>50 acres) [20 hectares] that contain large amounts of high-quality, natural roosting structure – (*e.g.,* predominantly native, mature trees; especially pine flatwoods or other areas with a large number of cavity trees, tree hollows, or high woodpecker activity).

LAA - May Affect, and is Likely to Adversely Affect. The appropriate conclusion 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 "may affect, but is not likely to adversely affect" (**MANLAA**)]. In the event the overall effect of the proposed action is beneficial to the listed species, but also is likely to cause some adverse effects, then the proposed action is "likely to adversely affect" the listed species. If incidental take is anticipated to occur as a result of the proposed action, an "is likely to adversely affect" (**LAA**) determination should be made. An "is likely to adversely affect" determination requires the initiation of formal section 7 consultation.

LIMITED ROOST SURVEY - This is a reduced survey that may include the following methods: acoustics, observations at emergence (*e.g.,* looking and listening for bats to come out of tree cavities around sunset), and visual inspection of trees with cavities or loose bark using tree-top cameras (or combination of these methods). Methods are fairly flexible and dependent upon composition and configuration of project site and willingness and ability of applicant and partners to conserve roosting structures on site. See also Appendix C for a full description.

MANLAA - May Affect, but is Not Likely to Adversely Affect. The appropriate conclusion when effects on listed species are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur. 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. To use these Guidelines and Consultation Key applicants must incorporate the appropriate **BMPs** (Appendix D) to reach a **MANLAA** determination.

In this Consultation Key we have identified two ways that consultation can conclude informally, **MANLAA-P and MANLAA-C**:

> **MANLAA-P**: programmatic concurrence is provided through the transmittal letter of these Guidelines, no additional consultation is required with the Service for Florida bonneted bats. All survey results must be submitted to Service.
>
> **MANLAA-C**: further consultation with the Service is required to confirm that the Consultation Key has been used properly, and the Service concurs with the evaluation of the survey results. Request for consultation must include survey results.

NO EFFECT - The appropriate conclusion when the action agency determines its proposed action will not affect listed species or designated critical habitat.

POTENTIAL ROOSTING HABITAT - Includes forest and other areas with tall, mature trees or other areas with suitable roost structures (*e.g.,* utility poles, artificial structures). Forest is defined as all types including: pine flatwoods, scrubby flatwoods, pine rocklands, royal palm hammocks, mixed or hardwood hammocks, cypress, sand pine scrub, or other forest types. (Forrest types currently include exotic forests such as melaleuca, please contact the Service for additional guidance as needed). More specifically, this includes habitat in which suitable structural features for breeding and sheltering are present. In general, roosting habitat contains one or more of the following structures: tree snags, and trees with cavities, hollows, deformities, decay, crevices, or loose bark. Structural characteristics are of primary importance.

Florida bonneted bats have been found roosting in habitat with the following structural features, but may also occur outside of these parameters:

- trees greater than 33 feet (10 meters) in height, greater than 8 inches (20 centimeters) in diameter at breast height (DBH), with cavity elevations higher than 16 feet (5 meters) above ground level (Braun de Torrez 2019);
- areas with a high incidence of large or mature live trees with various deformities (*e.g.,* large cavities, hollows, broken tops, loose bark, and other evidence of decay) (*e.g.,* pine flatwoods);
- rock crevices (*e.g.,* limestone in Miami-Dade County); and/or
- artificial structures, mimicking natural roosting conditions (*e.g.,* bat houses, utility poles, buildings), situated in natural or semi-natural habitats.

In order for a building to be considered a roosting structure, it should be a minimum of 15 feet high and contain one or more of the following features: chimneys, gaps in soffits, gaps along gutters, or other structural gaps or crevices (outward entrance approximately 1 inch (2.5 centimeters) in size or greater. Structures similar to the above (*e.g.,* bridges, culverts, minimum of 15 feet high) are expected to also provide roosting habitat, based upon the species' morphology and behavior (Keeley and Tuttle 1999). Florida bonneted bat roosts will be situated in areas with sufficient open space for these bats to fly (*e.g.,* open or semi-open canopy, canopy gaps, above the canopy, and edges which provide relatively uncluttered conditions [*i.e.,* reduced numbers of obstacles, such as fewer tree branches and leaves, in the flight environment]).

For the purpose of this Consultation Key*: Roosting habitat refers to habitat with structures that can be used for daytime and maternity roosting. Roosting at night between periods of foraging can occur in a broader range of structure types. For the purposes of this guidance we are focusing on day roosting habitat.*

ROOSTING IS LIKELY– Determining likelihood of roosting is challenging. The Service has provided the following definition for the express purpose of these Guidelines. Researchers use additional cues to assist in locating roosts. As additional indicators are identified and described we expect our Guidelines will be improved.

In this Consultation Key the Service will consider the following evidence indicative that roosting is likely nearby (*i.e.,* reasonably certain to occur) if **ANY** of the following are documented: (a) Florida bonneted bat calls are recorded within 30 minutes before sunset to 1½ hours following sunset or within 1½ hours before sunrise; (b) emergence calls are recorded; (c) human observers see (or hear) Florida bonneted bats flying from or to potential roosts; (d) human observers see and identify Florida bonneted bats within a natural roost or artificial roost; and/or (e) other bat sign (*e.g*., guano, staining, etc.) is found that is identified to be Florida bonneted bat through additional follow-up.

In addition to the aforementioned events, researchers consider roosting likely in an area when (1) large numbers of Florida bonneted bat calls are recorded throughout the night (*e.g.,* ≥ 25 files per night at a single acoustic station when 5 second file lengths are recorded); (2) large numbers of FBB calls are recorded over multiple nights (*e.g.,* an average of ≥ 20 files per night from a single detector when 5 second file lengths are recorded); or (3) social calls are recorded. Because social calls and large numbers of calls recorded over one or more nights can be indicative of high

FBB activity/use or when roosting is likely, the Service is choosing not to use these as indicators to make the determination that roosting is likely. Instead we are relying on the indicators that are only expected to occur at or very close to a roost location [(a)-(e) above].

TAKE - to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. [ESA §3(19)] Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined by the Service as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. [50 CFR §17.3].

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Appendix A. **Delineation and Justification for Consultation Area**

The Consultation Area (Figure 1) represents the general range of the species. The Consultation Area represents the area within which consideration should be given to potential effects to Florida bonneted bats from proposed projects or actions. Coordination and consultation with the Service helps to determine whether proposed actions and activities may affect listed species. This Consultation Area defines the area where proposed actions and activities may affect the Florida bonneted bat.

This area was delineated using confirmed presence data, key habitat features, reasonable flight distances and home range sizes. Where data were lacking, we used available occupancy models that predict probability of occurrence (Bailey *et al.* 2017). Below we describe how each one of these data sources was used to determine the overall Consultation Area.

Presence data: Presence data included locations for: (1) confirmed Florida bonneted bat acoustic detections; (2) known roost sites (occupied or formerly occupied; includes natural roosts, bat houses, and utility poles); (3) live Florida bonneted bats observed or found injured; (4) live Florida bonneted bats captured during research activities; and (5) Florida bonneted bats reported as dead. The Geographic Information Systems (GIS) dataset incorporates information from January 2003 to May 2019.

The vast majority of the presence data came from acoustic surveys. The species' audible, low frequency, distinct, echolocation calls are conducive for acoustic surveys. However, there are limitations in the range of detection from ultrasonic devices, and the fast, high-flying habits of this species can confound this. Overall, detection probabilities for Florida bonneted bats are generally considered to be low. For example, in one study designed to investigate the distribution and environmental associations of Florida bonneted bat, Bailey *et al.* 2017 found overall nightly detection probability was 0.29. Based on the estimated detection probabilities in that study, it would take 9 survey nights (1 detector per night) to determine with 95% certainty whether Florida bonneted bat are present at a sampling point. Positive acoustic detection data are extremely valuable. However, it is important to recognize that there are issues with false negatives due to limitations of equipment, low detection probabilities, difference in detection due to prey availability and seasonal movement over the landscape, and in some circumstances improperly conducted surveys (*i.e.,* short duration or in unsuitable weather conditions).

Key habitat features: We considered important physical and biological features with a focus on potential roosting habitat and applied key concepts of bat conservation (*i.e*., need to conserve roosting habitat, foraging habitat, and prey base). To date, all known natural Florida bonneted bat roosts (n=19 have been found in live trees and snags of the following types: slash pine, longleaf pine, royal palm, and cypress (Braun de Torrez 2018). Several of the recent roost discoveries are located in fire-maintained vegetation communities, and it appears that Florida bonneted bats are fire-adapted and can benefit from prescribed burn regimes that closely mimic historical fire patterns (Ober *et al.* 2018).

From a landscape and roosting perspective, we consider key habitat features to include forested areas and other areas with mature trees, wetlands, areas used by red-cockaded woodpeckers

(*Picoides borealis*; RCW), and fire-managed and other conservation areas. However, recent work suggests that Florida bonneted bats do not use pinelands more than other land cover types (Bailey *et al.* 2017). In fact, Bailey *et al.* 2017 detected Florida bonneted bats in all land cover types investigated in their study (e.g., agricultural, developed, upland, and wetland). For the purposes of these consultation guidelines, we are focusing on the conservation of potential roosting habitats across the species' range. However, we also recognize the need for comprehensive consideration of foraging habitats, habitat connectivity, and long-term suitability.

Flight distances and home range sizes: Like most bats, Florida bonneted bats are colonial central-place foragers that exploit distant and scattered resources (Rainho and Palmeirim 2011). Morphological characteristics (narrow wings, high wing-aspect ratio) make *Eumops* spp. well-adapted for efficient, low-cost, swift, and prolonged flight in open areas (Findley *et al*. 1972, Norberg and Rayner 1987). Other Eumops including Underwood's mastiff bat (*Eumops underwoodi*), and Greater mastiff bat or Western mastiff bat (*Eumops perotis*) are known to forage and/or travel distances ranging from 6.2 miles to 62 miles from the roost with multiple studies documenting flight distances approximately 15- 18 miles from the roost (Tibbitts *et al* 2002, Vaugh 1959 as cited in Best *et al*. 1996, Siders *et al.* 1999, Siders 2005, Vaughan 1959 as cited in Siders 2005.)

Like other *Eumops,* Florida bonneted bats are strong fliers, capable of travelling long distances (Belwood 1992). Recent Global Positioning System (GPS) and radio-telemetry data for Florida bonneted bats documents that they also move large distances and likely have large home ranges. Data from recovered GPS satellite tags on Florida bonneted bats tagged at Babcock-Webb Wildlife Management Area (WMA), found the maximum distance detected from a capture site was 24.2 mi (38.9 km); the greatest path length travelled in a single night was 56.3 mi (90.6 km) (Ober 2016; Webb 2018a-b). Additional data collected during the month of December documented the mean maximum distance of Florida bonneted bats (n=8) with tags traveled from the roost was 9.5 mi (Webb 2018b). The Service recognizes that the movement information comes from only one site (Babcock-Webb WMA and vicinity), and data are from small numbers (n=20) of tagged individuals for only short periods of time (Webb 2018a-b). We expect that across the Florida bonneted bat's range differences in habitat quality, prey availability, and other factors will result in variable habitat use and home range sizes between locations. Foraging distances and home range sizes in high quality habitats are expected to be smaller while foraging distances and home range sizes in low quality habitat would be expected to be larger. Consequently, because Babcock-Webb WMA provides high quality roosting habitat, this movement data could represent the low end of individual flight distances from a roost.

Given the species' morphology and habits (*e.g*., central-place forager) and considering available movement data from other *Eumops* and Florida bonneted bats discussed above, we opted to use 15 miles (24 km) as a reasonable estimate of the distance Florida bonneted bats would be expected to travel from a roost on any given night. For the purposes of delineating a majority of the Consultation Area, we used available confirmed presence point location data and extended out 15 miles (24 km), with modifications for habitat features (as described above). As more movement data are obtained and made available, this distance estimate may change in the future.

Occupancy model – Research by Bailey *et al.* (2017) indicates the species' range is larger than previously known. Their model performed well across a large portion of the previously known

range when considering confirmed Florid bonneted bat locations; thus it is anticipated to be useful where limited information is available for the species.

We used the model output from Bailey *et al.* (2017) to more closely examine areas where we are data-deficient (*i.e.,* areas where survey information is particularly lacking). We considered 0.27 probability of occurrence a filter for high likelihood of occurrence because 0.27 was the model output for Babcock-Webb WMA, an area where Florida bonneted bats are known to occupy and heavily use. Large portions of Sarasota, Martin, and Palm Beach counties were identified as having probability of occurrence of 0.27. The consultation area should include areas where the species has a high likelihood of occurring. Based on this reasoned approach, all of Sarasota County, portions of Martin County, and greater parts of Palm Beach County were included in the Consultation Area.

We recognize that there are areas in the northern portion of the range where the model is less successful predicting occurrence based on the known Florida bonneted bat locations (*i.e*., the model predicts low likelihood of occurrence on Avon Park Air Force range, where the species is known to roost). Consequently, the Service is proactively working with partners to conduct surveys in the areas added based on the model to confirm that inclusion of these portions of the aforementioned counties is appropriate. The Consultation Area may be adjusted based on changes in this information.

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Appendix B: Full Acoustic / Roost Survey Framework

Purpose: The purpose of this survey is to: (1) determine if Florida bonneted bats are likely to be actively roosting or using the site; (2) locate active roost(s) and avoid the loss of the structure, if possible; and, (3) avoid or minimize the take of individuals. In some cases, changes in project designs or activities can help avoid and minimize take. For example, project proponents may be able to retain suspected roosts or conserve roosting and foraging habitats. Changing the timing or nature of activities can also help reduce the losses of non-volant young or effects to pregnant or lactating females. If properly conducted, acoustic surveys are the most effective way to determine presence and assess habitat use. If the applicant is unable to follow or does not want to follow the Full Acoustic/Roost Survey framework when recommended according to the Key, the Corps (or other Action Agency) will not be able to use these Guidelines and will need to provide a biologically supported rational using the best available information for their determination in their request for consultation.

General Description: This is a *comprehensive survey effort*, and robust acoustic surveys (*i.e.,* surveys conducted 30 minutes prior to sunset to 30 minutes after sunrise, over multiple nights) are a fundamental component of the approach. Depending upon acoustic results and habitat type, it may also include: observations at emergence (*e.g.,* emergence surveys during which observers look and listen for bats to come out of roost structures around sunset), visual inspection of trees/snags (*i.e.,* those with cavities, hollows, and loose bark) and other roost structures with tree-top cameras, or follow-up targeted acoustic surveys. Methods are dependent upon composition and configuration of project site and willingness and ability of applicant and partners to conserve roosting and foraging habitats on site.

General Survey Protocol:

[Note: The Service will provide more information in separate detailed survey protocols in the near future. This will include specific information on: detector types, placement, orientation, verification of proper functioning, analysis, reporting requirements, etc.]

- Approach is intended for project sites > 5 acres (2 hectares).
- For sites containing roosting habitat, acoustic surveys should primarily focus on assessing roosting habitat within the project site that will be lost or modified (*i.e.,* areas that will not be conserved), and locations on the property within 250 feet (76.2 meters) of areas that will not be conserved. This will help avoid or minimize the loss of an active roost and individuals. Secondarily, since part of the purpose is to determine if Florida bonneted bats are using the site, acoustic devices should also be placed near open water and wetlands to maximize chances of detection and aid in assessing foraging habitat that may be lost.
- For sites that do not contain ANY roosting habitat, but do contain foraging habitat (see Figure 3 - Consultation Flowchart and Key, Step 2 [no], Step 13 [yes]), efforts should focus on assessing foraging habitat within the project site that will be lost or modified (*i.e.,* areas that will not be conserved).
- Acoustic surveys should be performed by those who are trained and experienced in setting up, operating, and maintaining acoustic equipment; and retrieving, saving,

analyzing, and interpreting data. Surveyors should have completed one or more of the available bat acoustic courses/workshops, or be able to show similar on-the-job or academic experience (Service 2018).

- Due to the variation in the quality of recordings, the influence of clutter, the changing performances of software packages over time, and other factors, manual verification is recommended (Loeb *et al.* 2015). Files that are identified to species from auto-ID programs must be visually reviewed and manually verified by experienced personnel.
- Acoustic devices should be set up to record from 30 minutes prior to sunset to 30 minutes after sunrise for multiple nights, under suitable weather conditions.
- Acoustic surveys can be conducted any time of year as long as weather conditions meet the criteria. If any of the following weather conditions exist at a survey site during acoustic sampling, note the time and duration of such conditions, and repeat the acoustic sampling effort for that night: (a) temperatures fall below 65°F (18.3°C) during the first 5 hours of survey period; (b) precipitation, including rain and/or fog, that exceeds 30 minutes or continues intermittently during the first 5 hours of the survey period; and (c) sustained wind speeds greater than 9 miles/hour (4 meters/second; 3 on Beaufort scale) for 30 minutes or more during the first 5 hours of the survey period (Service 2018). At a minimum, nightly weather conditions for survey sites should be checked using the nearest NOAA National Weather Service station and summarized in the survey reports. Although not required at this time, it has been demonstrated that conducting surveys on warm nights late in the spring can help maximize detection probabilities (Ober *et al.* 2016; Bailey *et al.* 2017).
- Acoustic devices should be calibrated and properly placed. Microphones should be directed away from surrounding vegetation, not beneath tree canopy, away from electrical wires and transmission lines, away from echo-producing surfaces, and away from external noises. Directional microphones should be aimed to sample the majority of the flight path/zone. Omnidirectional microphones should be deployed on a pole in the center of the flight path/zone and oriented horizontally. For monitoring possible roost sites, microphones should be directed to maximize likelihood of detection.
- To standardize recordings, acoustic device recordings should have a 2-second trigger window and a maximum file length of 15 seconds.
- The number of acoustic survey sites and nights needed for the assessment is dependent upon the overall acreage of suitable habitat proposed to be impacted by the action.
    - For non-linear projects, a minimum of 16 detector nights per 20 acres of suitable habitat expected to be impacted is recommended.
    - For linear projects (*e.g.,* roadways, transmission lines), a minimum of five detector nights per 0.6 mi (0.97 km) is recommended. Detectors can be moved to multiple locations within each kilometer surveyed, but must remain in a single location throughout any given night.
    - For any site, and in particular for sites > 250 acres, please contact the Service to assist in designing an appropriate approach.
- If results of acoustic surveys show **high Florida bonneted bat activity** or **Florida bonneted bat roosting likely** (*e.g.,* high activity early in the evening) (see definitions in Glossary), follow-up methods such as emergence surveys, visual inspection of the roosting structures, or follow-up acoustic surveys are recommended to locate potential roosts. Using a combination of methods may be helpful.

- For bat emergence surveys, multiple observers should be stationed at potential roosts if weather conditions (as above) are suitable. Surveyors should be quietly stationed 30 minutes before sunset so they are ready to look and listen for emerging FBBs from sunset to 1½ hours after sunset. When conducting emergence surveys it is best to orient observers so that the roost is silhouetted in the remaining daylight; facing west can help maximize the ability to notice movement of animals out of a roost structure.
- Visual inspection of trees with cavities and loose bark during the day may be helpful. Active RCW trees should not be visually inspected during the RCW breeding season (April 15 through June 15).
- Visual inspection alone is not recommended due to the potential for roosts to be too high for cameras to reach, too small for cameras to fit, or shaped in a way that contents are out of view (Braun de Torrez *et al.* 2016).
- If roosting is suspected on site, use tree-top cameras during the day to search those trees/snags or other structures that have potential roost features (*i.e.,* cavities, hollows, crevices, or other structure for permanent shelter). If unsuccessful (*e.g.,* cannot see entire contents within a given cavity, cannot reach cavity, cannot see full extent of cavity) OR occupied roosts are found with the tree-top camera within the area in which high Florida bonneted bat activity/likely Florida bonneted bats roosting were identified, we recommend emergence surveys and/or acoustics to verify occupancy and/or identify bat species.
- Provide report showing effort, methods, weather conditions, findings, and summary of acoustic data relating to Florida bonneted bats (*e.g.,* # of calls, time of calls, and station number) organized by the date on which the data were collected. Sonograms of all calls with signatures at or below 20kHz shall be included in the report. The report shall be provided to the Corps project manager assigned to the project for which the survey was conducted and to the Service via the email address **verobeach@fws.gov. Raw acoustic data should be provided to the Service for all surveys. Raw acoustic data should be provided as "all raw data" and "all raw data with signatures at or below 20kHz". Data can be submitted to the Service via flash drive, memory stick, or hard drive. Data can be submitted digitally to verobeach@fws.gov or via mail to U.S. Fish and Wildlife Service, Attn: Florida bonneted bat data manager, 1339 20th Street, Vero Beach, Florida 32960.**
- Negative surveys are valid for 1 year after completion of the survey.

If you have comments, or suggestions on this survey protocols, please email your comments to FBBguidelines@fws.gov. These comments will be reviewed and incorporated in an annual review.

Literature Cited – Appendix B

Bailey, A.M., H.K. Ober, A.R. Sovie, and R.A. McCleery. 2017. Impact of land use and climate on the distribution of the endangered Florida bonneted bat. Journal of Mammalogy. 98:1586-1593.

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Appendix C: Limited Roost Survey Framework

Purpose: The purpose of this survey is to: (1) determine if Florida bonneted bats are likely to be actively roosting within suitable structures on-site; (2) locate active roost(s) and avoid the loss of the structure, if possible; and, (3) avoid or minimize the take of individuals. In some cases, changes in project designs or activities can help avoid and minimize take. For example, applicants and partners may be able to retain the suspected roosts or conserve roosting and foraging habitats. Changing the timing of activities can also help reduce the losses of non-volant young or effects to pregnant or lactating females.

General Description: This is a *reduced survey effort* that may include the following methods: visual inspection of trees/snags (*i.e.,* those with cavities, hollows, and loose bark) and other roost structures with tree-top cameras, observations at emergence (*e.g.,* emergence surveys during which observers look and listen for bats to come out of roost structures around sunset), acoustic surveys, or a combination of these methods. Methods are fairly flexible and dependent upon composition and configuration of project site and willingness and ability of applicant and partners to conserve roosting habitat on site.

General Survey Protocol:

[Note: The Service will provide more information in separate, detailed survey protocols in the near future. This will include specific information on: detector types, placement, orientation, verification of proper functioning, analysis, reporting requirements, etc.]

- Approach is **intended only for small project sites** (*i.e.,* sites ≤ 5 acres [2 hectares]).
- Efforts should focus on assessing potential roosting structures within the project site that will be lost or modified (*i.e.,* areas that will not be conserved), or are located on the property within 250 feet (76.2 meters) of areas that will not be conserved.

Identification of potential roost structures

- This step is necessary prior to any of the methods that follow.
- Run line transects through roosting habitat close enough that all trees and snags are easily inspected. Transect spacing will vary with habitat structure and season from a maximum of 91 m (300 ft) between transects in very open pine stands to 46 m (150 ft) or less in areas with dense mid-story. Transects should be oriented north to south, to optimize cavity detectability because many RCW cavity entrances are oriented in a westerly direction (Service 2004).
- Visually inspect all trees and snags or other structures for evidence of cavities, hollows, crevices that can be used for permanent shelter. Using binoculars, examine structures for cavities, loose bark, hollows, or other crevices that are large enough for Florida bonneted bats (diameter of opening > or = to 1 inch (2.5 cm) (Braun de Torrez *et al*. 2016).
- When potential roosting structures are found, record their location in the field using a Global Positioning System (GPS) unit.

Visual Inspection of trees and snags with tree-top cameras

- Visually inspect all cavities using a video probe (peeper) and assess the cavity contents.

Active RCW trees should not be visually inspected during the RCW breeding season (April 15 through June 15).

- Visual inspection alone is valid only when the entire cavity is observed and the contents can be identified. Typically, acoustics at emergence will also be needed to definitively identify bat species, if bats are present or suspected.
- If bats are suspected, or if contents cannot be determined, or if the entire cavity cannot be observed with the video probe; follow methods for an Acoustic Survey or an Emergence Survey (below). If the Corps (or other action agency) or applicant does not wish to conduct acoustic or emergence surveys, the Corps (or other action agency) cannot use the key and must request formal consultation with the Service.
- Record tree species or type of cavity structure, tree diameter and height, cavity height, cavity orientation and cavity contents.

Emergence Surveys

- For bat emergence surveys, multiple observers should be stationed at potential roosts if weather conditions (as described below in Acoustic Surveys) are suitable.
- Surveyors should be quietly stationed 30 minutes prior to sunset so they are ready to look and listen for emerging Florida bonneted bats from sunset to 1½ hours after sunset.
- When conducting emergence surveys it is best to orient observers so that the roost is silhouetted in the remaining daylight; facing west can help maximize the ability to notice movement of animals out of a roost structure.
- Record number of bats that emerged, the time of emergence, and if bat calls were heard.

Acoustic surveys

- Acoustic surveys should be performed by those who are trained and experienced in setting up, operating, and maintaining acoustic equipment; and retrieving, saving, analyzing, and interpreting data. Surveyors should have completed one or more of the available bat acoustic courses/workshops, or be able to show similar on-the-job or academic experience (Service 2018).
- Due to the variation in the quality of recordings, the influence of clutter, and the changing performances of software packages over time, and other factors, manual verification is recommended (Loeb *et al.* 2015). Files that are identified to species from auto-ID programs must be visually reviewed and manually verified by experienced personnel.
- Acoustic devices should be set up to record from 30 minutes prior to sunset to 30 minutes after sunrise for multiple nights, under suitable weather conditions.
- Acoustic surveys can be conducted any time of year as long as weather conditions meet the criteria. If any of the following weather conditions exist at a survey site during acoustic sampling, note the time and duration of such conditions, and repeat the acoustic sampling effort for that night: (a) temperatures fall below 65°F (18.3°C) during the first 5 hours of survey period; (b) precipitation, including rain and/or fog, that exceeds 30 minutes or continues intermittently during the first 5 hours of the survey period; and (c) sustained wind speeds greater than 9 miles/hour (4 meters/second; 3 on Beaufort scale) for 30 minutes or more during the first 5 hours of the survey period (Service 2018). At a minimum, nightly weather conditions for survey sites should be checked using the nearest NOAA National Weather Service station and summarized in the survey reports. Although not required at this time, it has been demonstrated that conducting surveys on

warm nights late in the spring can help maximize detection probabilities (Ober *et al.* 2016; Bailey *et al.* 2017).

- Acoustic devices should be calibrated and properly placed. Microphones should be directed away from surrounding vegetation, not beneath tree canopy, away from electrical wires and transmission lines, away from echo-producing surfaces, and away from external noises. Directional microphones should be aimed to sample the majority of the flight path/zone. Omnidirectional microphones should be deployed on a pole in the center of the flight path/zone and oriented horizontally. For monitoring possible roost sites, microphones should be directed to maximize likelihood of detection.
- To standardize recordings, acoustic device recordings should have a 2-second trigger window and a maximum file length of 15 seconds.
- Acoustic surveys should be conducted over a minimum of four nights.
- If acoustic devices cannot be left in place for the entire night for multiple nights as above, then a combination of short acoustic surveys (from sunset and extending for 1½ hours), stationed observers for emergence surveys or visual inspection of trees/snags with tree-top cameras may be acceptable. Contact the Service for guidance under this circumstance.

Reporting

- Provide report showing effort, methods, weather conditions, findings, and summary of acoustic data relating to Florida bonneted bat by date (*e.g.*, # of calls, time of calls). Sonograms of all calls with signatures at or below 20kHz shall be included in the report. The report shall be provided to the Corps project manager assigned to the project for which the survey was conducted and to the Service via the email address **verobeach@fws.gov. Raw acoustic data should be provided to the Service for all surveys. Raw acoustic data should be provided as "all raw data" and "all raw data with signatures at or below 20kHz". Data can be submitted to the Service via flash drive, memory stick, or hard drive. Data can be submitted digitally to verobeach@fws.gov or via mail to U.S. Fish and Wildlife Service, Attn: Florida bonneted bat data manager, 1339 20th Street, Vero Beach, Florida 32960.**
- Negative surveys are valid for 1 year after completion of the survey

If you have comments, or suggestions on this survey protocols, please email your comments to FBBguidelines@fws.gov. These comments will be reviewed and incorporated in an annual review.

Literature Cited – Appendix C

Bailey, A.M., H.K. Ober, A.R. Sovie, and R.A. McCleery. 2017. Impact of land use and climate on the distribution of the endangered Florida bonneted bat. Journal of Mammalogy. 98:1586-1593.

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Appendix D: Best Management Practices (BMPs) for Development Projects

Ongoing research and monitoring will continue to increase the understanding of the Florida bonneted bat and its habitat needs and will continue to inform habitat and species management recommendations. These BMPs incorporate what is known about the species and also include recommendations that are beneficial to all bat species in Florida. These BMPs are intended to provide recommendations for improving conditions for use by Florida bonneted bats, and to help conserve Florida bonneted bats that may be foraging or roosting in an area.

The BMPs required to reach a "may affect, but is not likely to adversely affect" (MANLAA) determination vary depending on the couplet from the Consultation Key used to reach that particular MANLAA. The requirements for each couplet are provided below followed by the list of BMPs. If the applicant is unable or does not want to do the required BMPs, then the Corps (or other Action Agency) will not be able to use this Guidance and formal consultation with the Service is required.

Couplet Number for MANLAA from Consultation Key	Required BMPs
4b	BMP number 1 if more than 3 months has occurred between the survey and start of the project, and any 3 BMPs out of BMPs 4 through 13
5b	BMP number 2, and any 3 BMPs out of BMPs 3 through 13
9b	BMPs number 2 and 3, and any 4 BMPs out of BMPs 5 through 13
11b	BMPs number 1 and 4, and any 4 BMPs out of BMPs 5 through 13
12b	BMP number 1, and any 3 BMPs out of BMPs 3 through 13
14b	Any 2 BMPs out of BMPs 3 through 13
15b	Any 3 BMPs out of BMPs 3 through 13
17b	Any 4 BMPs out of BMPs 3 through 13

BMPs for development, construction, and other general activities:

1. If potential roost trees or structures need to be removed, check cavities for bats within 30 days prior to removal of trees, snags, or structures. When possible, remove structure outside of breeding season (*e.g.*, January 1 – April 15). If evidence of use by any bat species is observed, discontinue removal efforts in that area and coordinate with the Service on how to proceed.
2. When using heavy equipment, establish a 250 foot (76 m) buffer around known or suspected roosts to limit disturbance to roosting bats.
3. For every 5 acres of impact, retain a minimum of 1.0 acre of native vegetation. If upland habitat is impacted, then upland habitat with native vegetation should be retained.
4. For every 5 acres of impact, retain a minimum of 0.25 acre of native vegetation. If upland habitat is impacted, then upland habitat with native vegetation should be retained..
5. Conserve open freshwater and wetland habitats to promote foraging opportunities and avoid impacting water quality. Created/restored habitat should be designed to replace the function of native habitat.

6. Conserve and/or enhance riparian habitat. A 50-ft (15.2 m) buffer is recommended around water bodies and stream edges. In cases where artificial water bodies (*i.e.,* stormwater ponds) are created, enhance edges with native plantings especially in cases in which wetland habitat was affected.
7. Avoid or limit widespread application of insecticides (*e.g.,* mosquito control, agricultural pest control) in areas where Florida bonneted bats are known or expected to forage or roost.
8. Conserve natural vegetation to promote insect diversity, availability, and abundance. For example, retain or restore 25% of the parcel in native contiguous vegetation.
9. Retain mature trees and snags that could provide roosting habitat. These may include live trees of various sizes and dead or dying trees with cavities, hollows, crevices, and loose bark. See "Roosting Habitat" in "Background" above.
10. Protect known Florida bonneted bat roost trees, snags or structures and trees or snags that have been historically used by Florida bonneted bats for roosting, even if not currently occupied, by retaining a 250 foot (76 m) disturbance buffer around the roost tree, snag, or structure to ensure that roost sites remain suitable for use in the future.
11. Avoid and minimize the use of artificial lighting, retain natural light conditions, and install wildlife friendly lighting (*i.e*., downward facing and lowest lumens possible). Avoid permanent night-time lighting to the greatest extent practicable.
12. Incorporate engineering designs that discourage bats from using buildings or structures. If Florida bonneted bats take residence within a structure, contact the Service and Florida Fish and Wildlife Conservation Commission prior to attempting removal or when conducting maintenance activities on the structure.
13. Use or allow prescribed fire to promote foraging habitat.

Appendix E: Additional Best Management Practices (BMPs) for Land Management Projects

Ecological Land Management

The Service reviews and develops Ecological Land Management projects that use land management activities to restore and maintain native, natural communities that are beneficial to bats. These activities include prescribed fire, mechanical treatments to reduce vegetation densities, timber thinning to promote forest health, trail maintenance, and the treatment of exotic vegetation. The following BMPs provide recommendations for conserving Florida bonneted bat roosting and foraging habitat during ecological land management activities. The Service recommends incorporating these BMP into ecological land management plans.

If potential roost trees need to be removed, check cavities for bats prior to removal of trees or snags. If evidence of use by any bat species is observed, discontinue removal efforts in that area and coordinate with the Service on how to proceed.

Ecological Land Management BMPs:

- Protect potential roosting habitat during ecological land management activities, if feasible. Avoid removing trees or snags with cavities.
- Rake and/or manually clear vegetation around the base of known or suspected roost trees to remove fuel prior to prescribed burning.
- If possible, use ignition techniques such as spot fires or backing fire to limit the intensity of fire around the base of the tree or snag containing the roost. The purpose of this action is to prevent the known or suspected roost tree or snag from catching fire and also to attempt to limit the exposure of the roosting bats to heat and smoke. A 250-ft (76 m) buffer is recommended.
- If prescribed fire is being implemented to benefit Florida bonneted bats, Braun de Torrez et al. (2018) noted that fire in the dry/spring season could be most beneficial.
- When creating firebreaks or conducting fire-related mechanical treatment, mark and avoid any known or suspected bat roosts.
- When using heavy equipment, establish a buffer of 250 feet (76 m) around known roosts to limit disturbance to roosting bats.
- Establish forest management efforts to maintain tree species and size class diversity to ensure long-term supply of potential roost sites.
- For every 5 acres (2 hectares) of timber that is harvested, retain a clump of trees 1-2 acres (0.4 - 0.8 hectare) in size containing potential roost trees, especially pines and royal palms (live or dead). Additionally, large snags in open canopy should be preserved.

Literature Cited – Appendix E

Braun de Torrez, E.C., H.K. Ober, and R.A. McCleery. 2018. Activity of an Endangered Bat Increases Immediately Following Prescribed Fire. The Journal of Wildlife Management.

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.

Appendix **D**

Wood Stork Key 201**0**

United States Department of the Interior

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

May 18, 2010

Donnie Kinard
Chief, Regulatory Division
Jacksonville District Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Service Federal Activity Code: 41420-2007-FA-1494
Service Consultation Code: 41420-2007-I-0964
Subject: South Florida Programmatic Concurrence
Species: Wood Stork

Dear Mr. Kinard:

This letter addresses minor errors identified in our January 25, 2010, wood stork key and as such, supplants the previous key. The key criteria and wood stork biomass foraging assessment methodology have not been affected by these minor revisions.

The Fish and Wildlife Service's (Service) South Florida Ecological Services Office (SFESO) and the U.S. Army Corps of Engineers Jacksonville District (Corps) have been working together to streamline the consultation process for federally listed species associated with the Corps' wetland permitting program. The Service provided letters to the Corps dated March 23, 2007, and October 18, 2007, in response to a request for a multi-county programmatic concurrence with a criteria-based determination of "may affect, not likely to adversely affect" (NLAA) for the threatened eastern indigo snake (*Drymarchon corais couperi*) and the endangered wood stork (*Mycteria americana*) for projects involving freshwater wetland impacts within specified Florida counties. In our letters, we provided effect determination keys for these two federally listed species, with specific criteria for the Service to concur with a determination of NLAA.

The Service has revisited these keys recently and believes new information provides cause to revise these keys. Specifically, the new information relates to foraging efficiencies and prey base assessments for the wood stork and permitting requirements for the eastern indigo snake. This letter addresses the wood stork key and is submitted in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 *et seq.*). The eastern indigo snake key will be provided in a separate letter.

Wood stork

Habitat

The wood stork is primarily associated with freshwater and estuarine habitats that are used for nesting, roosting, and foraging. Wood storks typically construct their nests 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, 1996; Rodgers et al. 1996). Successful colonies are those that have limited human disturbance and low exposure to land-based predators. Nesting colonies 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.

Successful nesting generally involves combinations 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, which 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 sites, a variety of wetland types should be present, with both short and long hydroperiods. The Service (1999) describes a short hydroperiod as a 1 to 5-month wet/dry cycle, and a long hydroperiod as greater than 5 months. During the wet season, wood storks generally feed in the shallow water of the 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).

Wood storks occur in a wide variety of wetland habitats. Typical foraging sites for the wood stork include freshwater marshes and stock ponds, shallow, seasonally flooded roadside and agricultural ditches, narrow tidal creeks and shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs. Because of their specialized feeding behavior, wood storks forage most effectively in shallow-water areas with highly concentrated prey. Through tactolocation, or grope feeding, wood storks in south Florida feed almost exclusively on fish between 2 and 25 centimeters [cm] (1 and 10 inches) in length (Ogden et al. 1976). Good foraging conditions are characterized by water that is relatively calm, uncluttered by dense thickets of aquatic vegetation, and having a water depth between 5 and 38 cm (5 and 15 inches) deep, although wood storks may forage in other wetlands. Ideally, preferred foraging wetlands would include a mosaic of emergent and shallow open-water areas. The emergent 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 seasonal dry-down of the wetland.

Conservation Measures

The Service routinely concurs with the Corps' "may affect, not likely to adversely affect" determination for individual project effects to the wood stork when project effects are insignificant due to scope or location, or if assurances are given that wetland impacts have been avoided, minimized, and adequately compensated such that there is no net loss in foraging potential. We utilize our *Habitat Management Guidelines for the Wood Stork in the Southeast Region* (Service 1990) (Enclosure 1) (HMG) in project evaluation. The HMG is currently under review and once final will replace the enclosed HMG. There is no designated critical habitat for the wood stork.

The SFESO recognizes a 29.9 kilometer [km] (18.6-mile) core foraging area (CFA) around all known wood stork colonies in south Florida. Enclosure 2 (to be updated as necessary) provides locations of colonies and their CFAs in south Florida that have been documented as active within the last 10 years. The Service believes loss of suitable wetlands within these CFAs may reduce foraging opportunities for the wood stork. To minimize adverse effects to the wood stork, we recommend compensation be provided for impacts to foraging habitat. The compensation should consider wetland type, location, function, and value (hydrology, vegetation, prey utilization) to ensure that wetland functions lost due to the project are adequately offset. Wetlands offered as compensation should be of the same hydroperiod and located within the CFAs of the affected wood stork colonies. The Service may accept, under special circumstances, wetland compensation located outside the CFAs of the affected wood stork nesting colonies. On occasion, wetland credits purchased from a "Service Approved" mitigation bank located outside the CFAs could be acceptable to the Service, depending on location of impacted wetlands relative to the permitted service area of the bank, and whether or not the bank has wetlands having the same hydroperiod as the impacted wetland.

In an effort to reduce correspondence in effect determinations and responses, the Service is providing the Wood Stork Effect Determination Key below. If the use of this key results in a Corps determination of "no effect" for a particular project, the Service supports this determination. If the use of this Key results in a determination of NLAA, the Service concurs with this determination[1]. This Key is subject to revisitation as the Corps and Service deem necessary.

The Key is as follows:

A. Project within 0.76 km (0.47 mile)[2] of an active colony site[3] ..... "*may affect*[4]"

Project impacts Suitable Foraging Habitat (SFH)[5] at a location greater than 0.76 km (0.47 mile) from a colony site..... ....."*go to* B"

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[1] With an outcome of "no effect" or "NLAA" as outlined in this key, and the project has less than 20.2 hectares (50 acres) of wetland impacts, the requirements of section 7 of the Act are fulfilled for the wood stork and no further action is required. For projects with greater than 20.2 hectares (50 acres) of wetland impacts, written concurrence of NLAA from the Service is necessary.

[2] Within the secondary zone (the average distance from the border of a colony to the limits of the secondary zone is 0.76 km (2,500 feet, or 0.47 mi).

[3] An active colony is defined as a colony that is currently being used for nesting by wood storks or has historically over the last 10 years been used for nesting by wood storks.

[4] Consultation may be concluded informally or formally depending on project impacts.

[5] Suitable foraging habitat (SFH) includes wetlands that typically have shallow-open water areas that are relatively calm and have a permanent or seasonal water depth between 5 to 38 cm (2 to 15 inches) deep. Other shallow non-wetland water bodies are also SFH. 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, small ponds, shallow, seasonally flooded roadside or agricultural ditches, seasonally flooded pastures, narrow tidal creeks or shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs.

Project does not affect SFH……..…..*"no effect[1]".*

B. Project impact to SFH is less than 0.20 hectare (one-half acre)[6]……..……*NLAA[1]"*

Project impact to SFH is greater in scope than 0.20 hectare (one-half acre)....……*go to* C

C. Project impacts to SFH not within the CFA (29.9 km, 18.6 miles) of a colony site ……..…….…….…..……*go to* D

Project impacts to SFH within the CFA of a colony site …….…..…...…….*go to* E

D. Project impacts to SFH have been avoided and minimized to the extent practicable; compensation (Service approved mitigation bank or as provided in accordance with Mitigation Rule 33 CFR Part 332) for unavoidable impacts is proposed in accordance with the CWA section 404(b)(1) guidelines; and habitat compensation replaces the foraging value matching the hydroperiod[7] of the wetlands affected and provides foraging value similar to, or higher than, that of impacted wetlands. See Enclosure 3 for a detailed discussion of the hydroperiod foraging values, an example, and further guidance[8]…….. *NLAA[1]"*

Project not as above.……... *"may affect[4]"*

E. Project provides SFH compensation in accordance with the CWA section 404(b)(1) guidelines and is not contrary to the HMG; habitat compensation is within the appropriate CFA or within the service area of a Service-approved mitigation bank; and habitat compensation replaces foraging value, consisting of wetland enhancement or restoration matching the hydroperiod[7] of the wetlands affected, and provides foraging value similar

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[6] On an individual basis, SFH impacts to wetlands less than 0.20 hectare (one-half acre) generally will not have a measurable effect on wood storks, although we request that the Corps require mitigation for these losses when appropriate. Wood storks are a wide ranging species, and individually, habitat change from impacts to SFH less than one-half acre are 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.

[7] Several researchers (Flemming et al. 1994; Ceilley and Bortone 2000) believe that the short hydroperiod wetlands provide a more important pre-nesting foraging food source and a greater early nestling survivor value for wood storks than the foraging base (grams of fish per square meter) than long hydroperiod wetlands provide. Although the short hydroperiod wetlands may provide less fish, these prey bases historically were more extensive and met the foraging needs of the pre-nesting storks and the early-age nestlings. Nest productivity may suffer as a result of the loss of short hydroperiod wetlands. We believe that most wetland fill and excavation impacts permitted in south Florida are in short hydroperiod wetlands. Therefore, we believe that it is especially important that impacts to these short hydroperiod wetlands within CFAs are avoided, minimized, and compensated for by enhancement/restoration of short hydroperiod wetlands.

[8] For this Key, the Service requires an analysis of foraging prey base losses and enhancements from the proposed action as shown in the examples in Enclosure 3 for projects with greater than 2.02 hectares (5 acres) of wetland impacts. For projects with less than 2.02 hectares (5 acres) of wetland impacts, an individual foraging prey base analysis is not necessary although type for type wetland compensation is still a requirement of the Key.

to, or higher than, that of impacted wetlands. See Enclosure 3 for a detailed discussion of the hydroperiod foraging values, an example, and further guidance[8]..... *"NLAA[1]"*

Project does not satisfy these elements ..... *"may affect[1]"*

This Key does not apply to Comprehensive Everglades Restoration Plan projects, as they will require project-specific consultations with the Service.

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 where the effect determination was: "may affect, not likely to adversely affect." We request that the Corps send us an annual summary consisting of: project dates, Corps identification numbers, project acreages, project wetland acreages, and project locations in latitude and longitude in decimal degrees.

Thank you for your cooperation and effort in protecting federally listed species. If you have any questions, please contact Allen Webb at extension 246.

Sincerely yours,

Paul Souza
Field Supervisor
South Florida Ecological Services Office

Enclosures

cc: w/enclosures (electronic only)
Corps, Jacksonville, Florida (Stu Santos)
EPA, West Palm Beach, Florida (Richard Harvey)
FWC, Vero Beach, Florida (Joe Walsh)
Service, Jacksonville, Florida (Billy Brooks)

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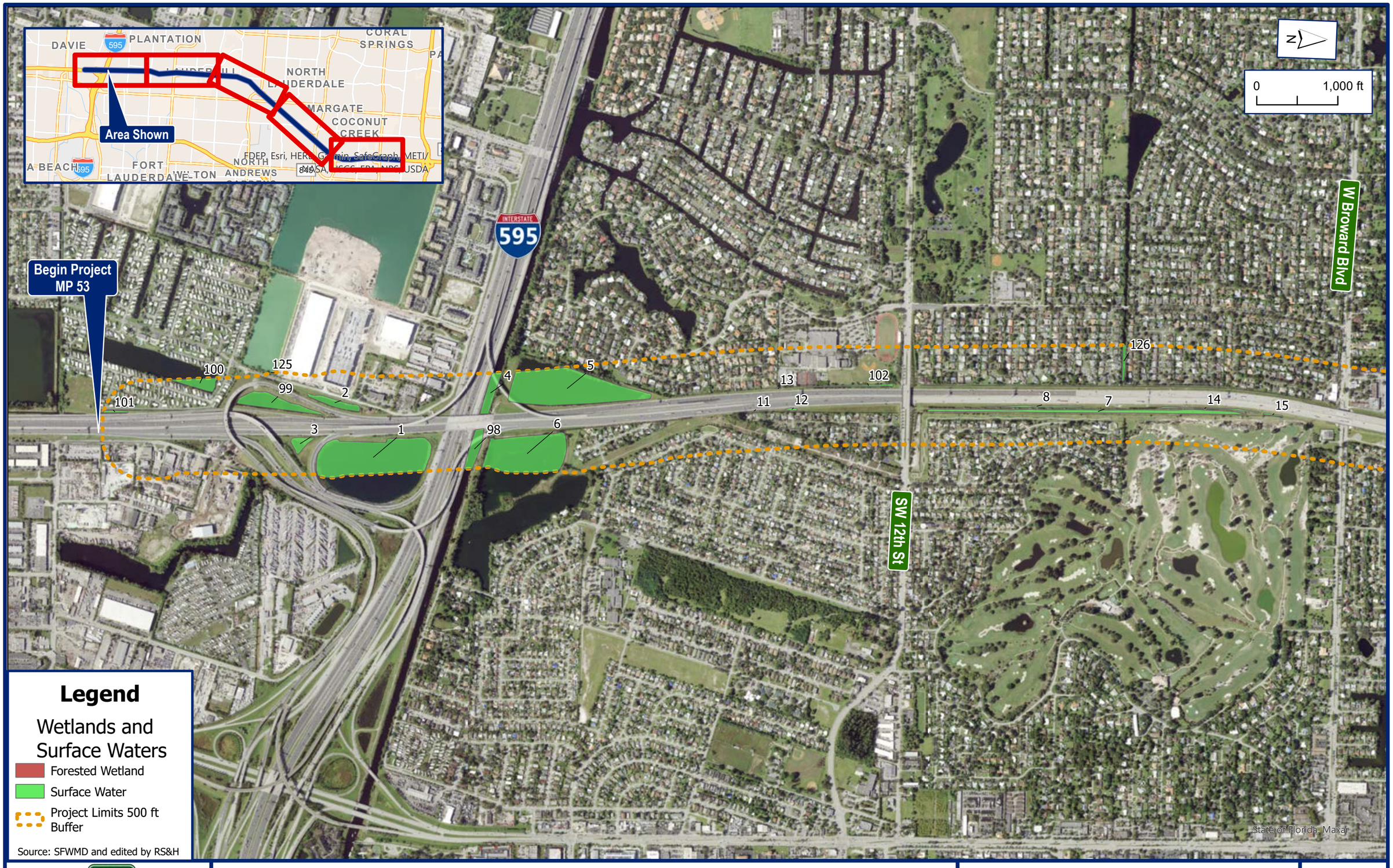
Appendix E – Wetland and Other Surface Water Maps



Legend

Wetlands and Surface Waters

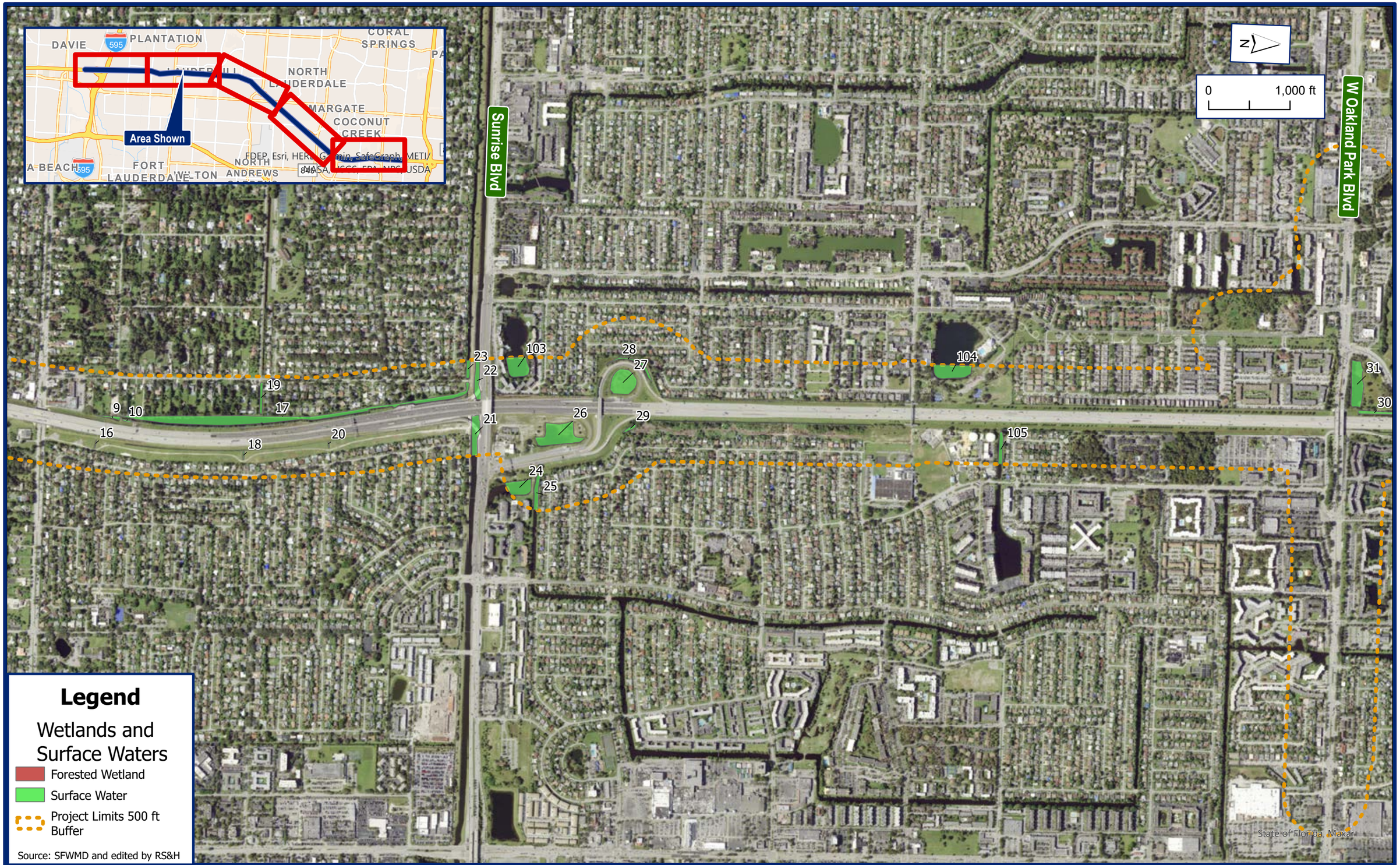
- Forested Wetland
- Surface Water
- Project Limits 500 ft Buffer

Source: SFWMD and edited by RS&H

FLORIDA'S TURNPIKE

Turnpike (SR 91) from South of I-595 to Wiles Road PD&E Study
FPID: 442212-1-22-01

APPENDIX E - WETLANDS AND SURFACE WATERS MAP



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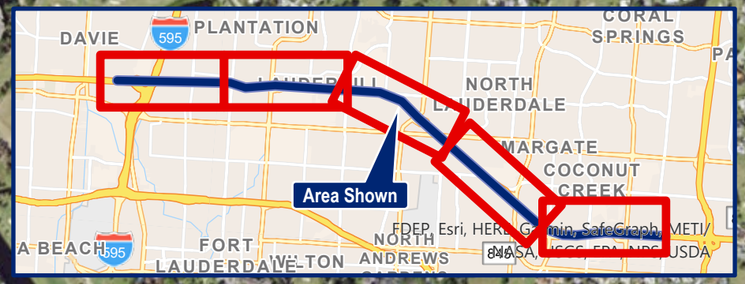
Wetlands and Surface Waters

- Forested Wetland
- Surface Water
- Project Limits 500 ft Buffer

Source: SFWMD and edited by RS&H

FLORIDA'S TURNPIKE	**Turnpike (SR 91) from South of I-595 to Wiles Road PD&E Study** **FPID: 442212-1-22-01**	**APPENDIX E - WETLANDS AND SURFACE WATERS MAP**	**Page No. 2 of 5**



Commercial Blvd

W McNab Rd

N State Rd 7

NW 62nd St

0 1,000 ft

State of Florida, Maxar

Legend

Wetlands and Surface Waters

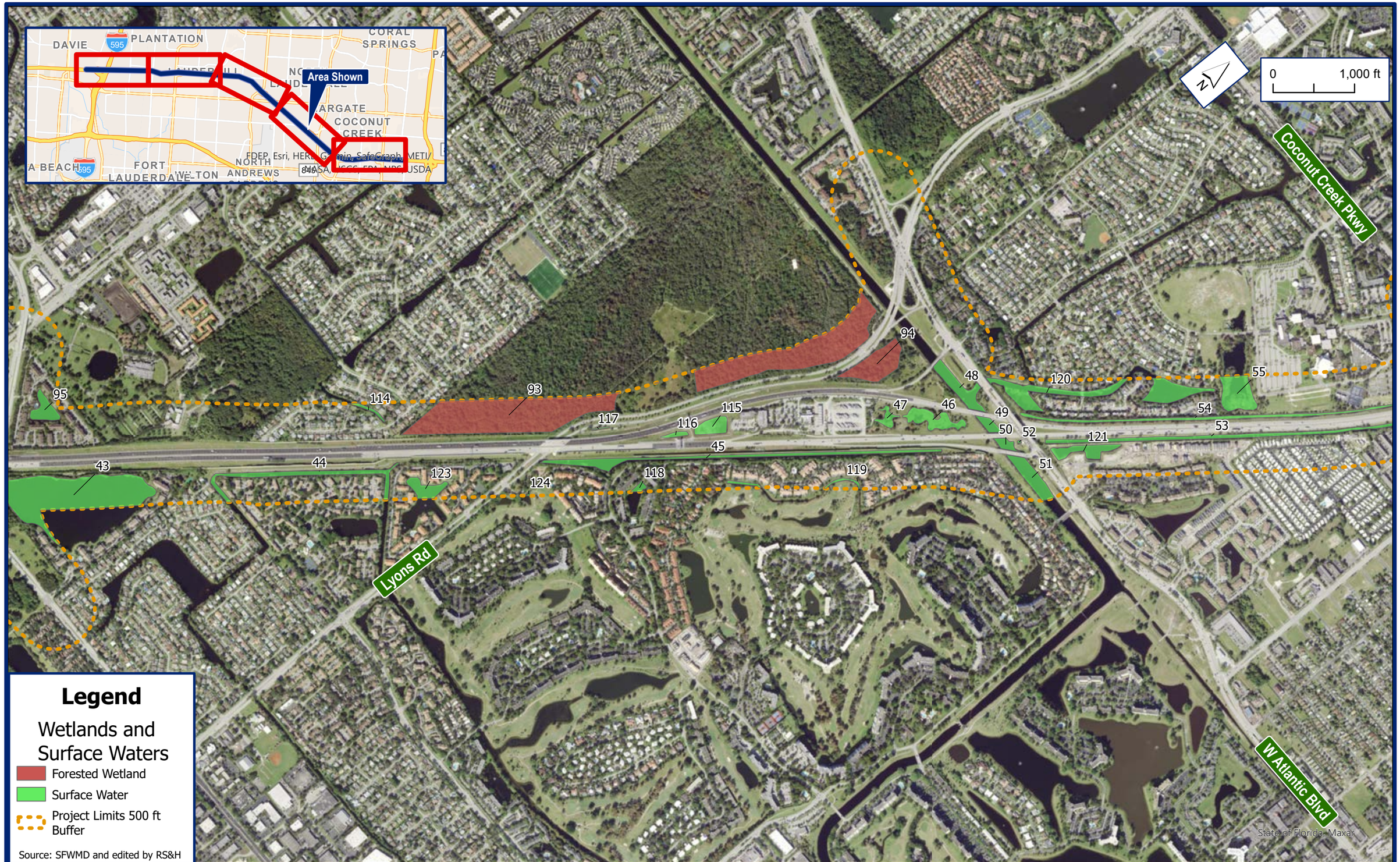
- Forested Wetland
- Surface Water
- Project Limits 500 ft Buffer

Source: SFWMD and edited by RS&H

FLORIDA'S TURNPIKE

Turnpike (SR 91) from South of I-595 to Wiles Road PD&E Study
FPID: 442212-1-22-01

APPENDIX E - WETLANDS AND SURFACE WATERS MAP



Legend

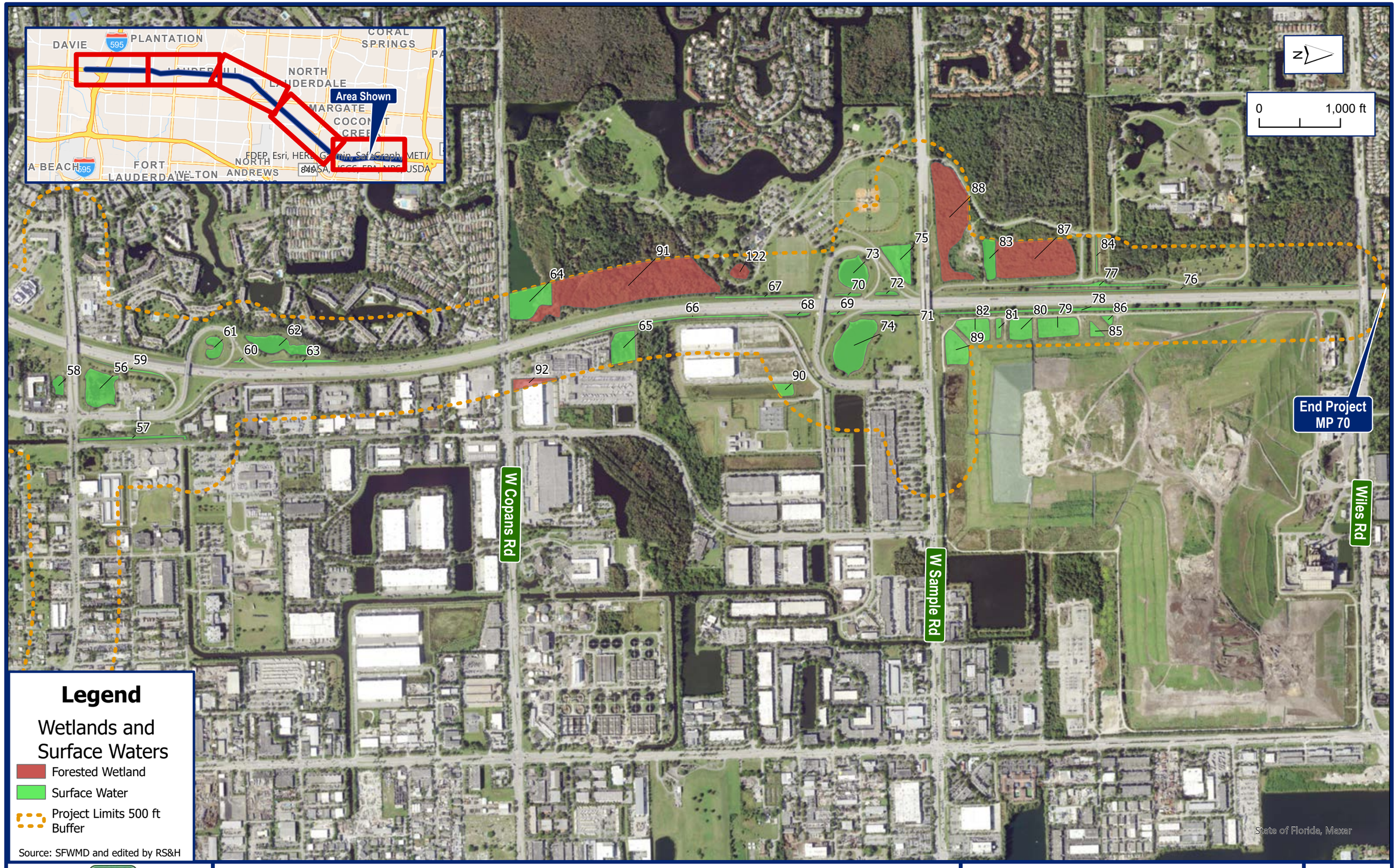
Wetlands and Surface Waters

- Forested Wetland
- Surface Water
- Project Limits 500 ft Buffer

Source: SFWMD and edited by RS&H

Turnpike (SR 91) from South of I-595 to Wiles Road PD&E Study
FPID: 442212-1-22-01

APPENDIX E - WETLANDS AND SURFACE WATERS MAP



Legend

Wetlands and Surface Waters

- Forested Wetland
- Surface Water
- Project Limits 500 ft Buffer

Source: SFWMD and edited by RS&H

FLORIDA'S TURNPIKE

Turnpike (SR 91) from South of I-595 to Wiles Road PD&E Study
FPID: 442212-1-22-01

APPENDIX E - WETLANDS AND SURFACE WATERS MAP

Appendix F – UMAM Data Sheets

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	Application Number	Assessment Area Name or Number
PD&E WIDEN TPK FROM I-595 TO WILES RD (8 TO 10 LNS) (MP 53-70) FPID 442212-1-22-01	**N/A**	**Wetland 91**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
630		**Impact**	**1.16** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
New River		**N/A**

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

Wetland 91 is located within Tradewinds Park

Assessment area description

Common vegetation within this forested wetland includes bald cypress (Taxodium distichum), red maple (Acer rubrum), brazilian pepper (Schinus terebinthifolia), primrose willow (Ludwigia peruviana), gumbo limbo (Bursera simaruba), pigeon plum (Coccoloba diversifolia), strangler fig (Ficus sp.), royal fern (Osmunda regalis), leather fern (Rumohra adiantiformis) and swamp fern (Blechnum serrulatum).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Tradewinds park	**Common**

Functions	Mitigation for previous permit/other historic use
Wildlife habitat, flood attenuation	**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)
Hawks, raccoon, rabbit, gray squirrel	**Potential foraging habitat along fringes for wood stork.**

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

None

Additional relevant factors:

This wetland receives direct stormwater runoff from the adjacent roadway.

Assessment conducted by:	Assessment date(s):
C. Dailey	**June 19, 2019 and June 23, 2023**

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:	Application Number:	Assessment Area Name or Number:
PD&E WIDEN TPK FROM I-595 TO WILES RD (8 TO 10 LNS) (MP 53-70) FPID 442212-1-22-01	**N/A**	**Wetland 91**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Impact	**C. Dailey**	**June 19, 2019 and June 23, 2023**

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 Impact
.500(6)(a) Location and Landscape Support	a. Quality and quantity **of habitat support** outside of AA.	X	
	b. **Invasive plant species.**	X	
	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).		
	Notes: Althoug most of Broward County is urbanized, assessment area is located within a regional park.	Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	
Current: 7			**With Impact: 0**

		Current	With Impact
.500(6)(b) Water Environment (n/a for uplands)	a. Appropriateness of **water levels and flows**.	x	
	b. Reliability of **water level indicators**.		
	c. Appropriateness of **soil moisture**.	X	
	d. **Flow rates**/points of discharge.		
	e. **Fire frequency**/severity.		
	f. **Type of vegetation**.		
	g. **Hydrologic stress** on vegetation.		
	h. **Use by animal**s 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.		
	l. **Water depth, wave energy, and currents**.		
	Notes: Untreated stormwater runoff from adjacent roadway and parking areas degrades water quality within assessment area. Water levels appear appropriate for wetland type and recruitment.	Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	
Current: 5			**With Impact: 0**

		Current	With Impact
.500(6)(c) Community Structure	I. Appropriate/desirable species		
	II. Invasive/exotic plant species	X	
	III. Regeneration/recruitment		
X Vegetation	IV. Age, size distribution.	x	
	V. Snags, dens, cavity, etc.		
Benthic	VI. Plants' condition.		
	VII. Land management practices.		
Both	VIII. Topographic features (refugia, channels, hummocks).		
	IX. Submerged vegetation (only score if present).		
	X. Upland assessment area		
	Notes: Assessment area experienes encroachment of nuisance and exotic species. Commuity structure exchibits approproiate recruitement. Land management of the regional park provides some reduction of exotic species along the fringes.	Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	
Current: 6			**With Impact: 0**

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	**With Impact**
0.60	0.00

Impact Acres =	1.16

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.70

Impact Delta (ID)	
Current - w/Impact	0.60

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 mitigaiton bank.

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

Site/Project Name	Application Number	Assessment Area Name or Number
PD&E WIDEN TPK FROM I-595 TO WILES RD (8 TO 10 LNS) (MP 53-70) FPID 442212-1-22-01	**N/A**	**Wetland 93**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
630		**Impact**	**23.27** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
New River		**N/A**

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

Wetland 93 is located within Fern Forest Nature Center

Assessment area description

Wetland 93 is a mixed wetland forest including bald cypress (*Taxodium distichum*), red maple (*Acer rubrum*), gumbo limbo (*Bursera simaruba*), pigeon plum (*Coccoloba diversifolia*), strangler fig (*Ficus sp*.), royal fern (*Osmunda regalis*), leather fern (*Rumohra adiantiformis*) and swamp fern (*Blechnum serrulatum*). Water levels appeared appropriate for this wetland system, and it was noted that nuisance and exotic species were not observed in significant quantities within Wetland 93

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Fern Forest Nature Center	**Common**

Functions	Mitigation for previous permit/other historic use
Wildlife habitat, flood attenuation	**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)
Hawks, raccoon, rabbit, gray squirrel	**Wood stork foraging**

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

None

Additional relevant factors:

This wetland is managed by Broward County Parks. Pedestrain traffic is managed by a boardwalk throughout the park.

Assessment conducted by:	Assessment date(s):
C. Dailey	**June 19, 2019 and June 23, 2023**

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:	Application Number:	Assessment Area Name or Number:
PD&E WIDEN TPK FROM I-595 TO WILES RD (8 TO 10 LNS) (MP 53-70) FPID 442212-1-22-01	**N/A**	**Wetland 93**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Impact	**C. Dailey**	**June 19, 2019 and June 23, 2023**

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 Impact
.500(6)(a) Location and Landscape Support	a. Quality and quantity **of habitat support** outside of AA.	X	
	b. **Invasive plant species.**	X	
	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: 7 / **With Impact: 0**	Notes: This wetland is located within a regional park. Although somewhat isolated by development in Broward County, this wetland system is exhhibiting very low quantities of nuisance and exotic species.	Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	

		Current	With Impact
.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**.	x	
	g. **Hydrologic stress** on vegetation.		
	h. **Use by animal**s 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.	X	
	l. **Water depth, wave energy, and currents**.		
Current: 8 / **With Impact: 0**	Notes: Water levels appear appropriate for wetland type and recruitment. Desireable fern species distribued throughout the Nature Center.	Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	

		Current	With Impact
.500(6)(c) Community Structure	I. Appropriate/desirable species		
	II. Invasive/exotic plant species	X	
	III. Regeneration/recruitment		
X Vegetation	IV. Age, size distribution.		
	V. Snags, dens, cavity, etc.		
_____ Benthic	VI. Plants' condition.		
	VII. Land management practices.	X	
_____ Both	VIII. Topographic features (refugia, channels, hummocks).		
	IX. Submerged vegetation (only score if present).		
	X. Upland assessment area		
Current: 8 / **With Impact: 0**	Notes: This wetland is located within regional park. Community structure is ranked very high due to the quantity of desierable species and appropriate age, size and distribution. The park is managed to minimize anthropomorphic impacts.	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 Impact**
0.77	0.00

Impact Acres =	23.27

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	17.92

Impact Delta (ID)	
Current - w/Impact	0.77

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 mitigaiton bank.

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

Site/Project Name	Application Number	Assessment Area Name or Number
PD&E WIDEN TPK FROM I-595 TO WILES RD (8 TO 10 LNS) (MP 53-70) FPID 442212-1-22-01	**N/A**	**Wetland 94**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
630		**Impact**	**4.18** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
New River		**N/A**

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

Wetland 94 is located within Turnpike right of way, near the Pompano Service Plaza and Lyons Road

Assessment area description

Common vegetation within this forested wetland includes bald cypress (*Taxodium distichum*), laurel oak (*Quercus laurifolia*), red maple (*Acer rubrum*), brazilian pepper (*Schinus terebinthifolia*), primrose willow (*Ludwigia peruviana*), strangler fig (*Ficus sp.*), leather fern (*Rumohra adiantiformis*) and swamp fern (*Blechnum serrulatum*).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Pompano Service Plaza	**Common**

Functions	Mitigation for previous permit/other historic use
Wildlife habitat, flood attenuation	**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)
Hawks, raccoon, rabbit, gray squirrel	**Potential foraging habitat along fringes for wood stork.**

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

None

Additional relevant factors:

This wetland receives direct stormwater runoff from the adjacent roadway.

Assessment conducted by:	Assessment date(s):
C. Dailey	**June 19, 2019 and June 23, 2023**

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:	Application Number:	Assessment Area Name or Number:
PD&E WIDEN TPK FROM I-595 TO WILES RD (8 TO 10 LNS) (MP 53-70) FPID 442212-1-22-01	**N/A**	**Wetland 94**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Impact	**C. Dailey**	**June 19, 2019 and June 23, 2023**

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 Impact
.500(6)(a) Location and Landscape Support	a. Quality and quantity **of habitat support** outside of AA.	X	
	b. **Invasive plant species.**	X	
	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: 4	Notes: This wetland is located within a limited access roadway. Invasive species comprise approximately 25% of aerial coverage.	Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	**With Impact: 0**

		Current	With Impact
.500(6)(b) Water Environment (n/a for uplands)	a. Appropriateness of **water levels and flows**.	X	
	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 animal**s 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.	X	
	l. **Water depth, wave energy, and currents**.		
Current: 4	Notes: Untreated stormwater runoff from adjacent roadway and parking areas degrades water quality within assessment area. Water levels appear appropriate for wetland type and recruitment.	Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	**With Impact: 0**

		Current	With Impact
.500(6)(c) Community Structure	I. Appropriate/desirable species		
	II. Invasive/exotic plant species	X	
	III. Regeneration/recruitment		
X Vegetation	IV. Age, size distribution.		
	V. Snags, dens, cavity, etc.		
_____ Benthic	VI. Plants' condition.		
	VII. Land management practices.	X	
_____ Both	VIII. Topographic features (refugia, channels, hummocks).		
	IX. Submerged vegetation (only score if present).		
	X. Upland assessment area		
Current: 4	Notes: This wetland is located within a limited access roadway. Assessment area experienes encroachment of nuisance and exotic species. Brazilian pepper and primrose willow are common wihtin assessment area.	Place an "X" in the box above next to the two (2) most important criteria used in scoring this section	**With Impact: 0**

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	**With Impact**
0.40	0.00

Impact Acres =	4.18

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	1.67

Impact Delta (ID)	
Current - w/Impact	0.40

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 mitigaiton bank.

Appendix G – Agency Correspondence

From:	Gaines, Fred
To:	Dailey, Chris; Stone, Lisa
Cc:	Stein, Philip; Zang, Douglas; Heywood, Jazlyn; Hammond, Annemarie
Subject:	FW: 442212-1 PD&E Widen Turnpike from I-595 to Wiles Rd, Broward Co.
Date:	Thursday, November 18, 2021 10:11:37 AM

Hello Lisa and Chris – please see the questions below from NMFS. I think I know the answer but would prefer your insight instead. Please provide draft responses to Turnpike.

Thanks,

Fred Gaines **PWS**

Permit Coordinator
Tel: 407.264.3689 Mob: 321.436.1126

Atkins, member of the SNC-Lavalin Group
Florida's Turnpike Milepost 263, Building 5315 | Ocoee, FL 34761-3069

From: Kurtis Gregg - NOAA Federal <kurtis.gregg@noaa.gov>
Sent: Thursday, November 18, 2021 9:22 AM
To: Gaines, Fred <Fred.Gaines@dot.state.fl.us>
Cc: Pace Wilber <pace.wilber@noaa.gov>
Subject: 442212-1 PD&E Widen Turnpike from I-595 to Wiles Rd, Broward Co.

Good morning Mr. Gaines,

My name is Kurtis Gregg. I am the new NMFS FDOT Liaison for projects on the Atlantic coast of Florida, taking over from Jen Schull after she was promoted to a new position. I have reviewed the June 1, 2021 meeting minutes and have two questions. 1) Will a benthic survey be conducted to confirm no seagrass at the project area in the North New River Canal as part of the PD&E study? and 2) Will the presence or absence of mangrove resources be documented at the North New River Canal project area as part of the PD&E study? The answers to these two questions will guide our future involvement in the project. I look forward to working with you as the project progresses from pre application through permitting and consultation (if warranted).

Respectfully,

Kurtis Gregg

--

Kurtis Gregg,
Natural Resource Specialist,
NOAA, National Marine Fisheries Service,
Southeast Regional Office,
Habitat Conservation Division
400 N. Congress Avenue, Suite 270
West Palm Beach. FL 33401

Office Phone (561) 440-3167

Florida Department of Transportation

RON DESANTIS
GOVERNOR

Florida's Turnpike Enterprise
P.O. Box 613069, Ocoee, FL 34761
407-532-3999

KEVIN J. THIBAULT, P.E.
SECRETARY

FDOT/SFWMD/USACE/USEPA Interagency Meeting

PROJECT: **Turnpike Mainline Widening PD&E Study (FPID 442212-1-22-01)**
From South of I-595 to Wiles Road MP 53 to MP 70
Broward County

MEETING DATE: May 20, 2021

MEETING TIME: 11:20 AM

LOCATION: WebEx

ATTENDEES:

Dustin Wood, PE	SFWMD	Erin Yao, PE	FTE
Jesse Markle, PE	SFWMD	Fred Gaines, PWS	FTE/Atkins
Beverly Miller	SFWMD	Jazlyn Heywood, PE	FTE/Atkins
Teri Swartz, PE	SFWMD	Lisa Stone, PE	Kimley Horn
Andrea Sanchez	SFWMD	Rob Garrigues, PE	RS&H
Wayne Blythe	SFWMD	Chris Dailey	RS&H
Cynthia Ovdenk	USACE	Gin Ng, PE	Kimley Horn
Alya Singh-White	USEPA		

Introductions

Project Description

RS&H staff described the project limits and proposed improvements through the corridor. The attached slides were used to illustrate the proposed improvements. Below is a summary of the improvements discussed:

- North New River Basin
  - New bridge structure over SFWMD North New River Canal
  - North New River is tidal and includes navigational clearances.
- C-12 Canal Basin
  - Roadway shifts to the west
  - Existing Turnpike bridge over the SFWMD C-12 Canal can accommodate improvements.
  - Sunrise Blvd, east of Florida's Turnpike – additional eastbound thru-lane. Existing canal volume to be maintained.
- C-13 Canal Basin
  - New mainline and additional local bridges over the SFWMD C-13 Canal.
  - No changes to the existing canal volume are anticipated.

    - A maintenance access will be evaluated and coordinated with SFWMD.
- C-14 Canal Basin
    - Replacement of mainline bridges and ramp bridges over the SFWMD C-14 Canal.
    - No changes to the existing canal volume are anticipated.
    - A maintenance access will be evaluated and coordinated with SFWMD.
- Atlantic Avenue to Wiles Road
    - No additional canal crossings in this section

Discussion Items

- SFWMD staff noted that WBID 3277A is a verified impaired WBID and would have to provide 150% treatment in the nutrient analysis. FTE staff noted that it is unclear how the additional treatment would benefit the removal of copper. FTE staff indicated that FDOT is continuing to work with SFWMD on this issue relative to direct discharges to impaired waterbodies, and the comment is appreciated.
- SFWMD staff provided clarification that the improvements within the C-12, C-13 and C14 Canal Right of Ways will require a USACE S408 review. The North New River Canal at the project location is not a USACE S408 resource.
- SFWMD staff noted that the ROW permit drawings and documents should have the existing SFWMD canal right of way clearly shown as "SFWMD ROW". FTE staff noted that SFWMD has provided existing ROW information, and that info will be passed along to the project team. SFWMD staff noted the following ROW Occupancy Permit numbers:
    - North New River – Permit #8098
    - C-12 – Permit # 469
    - C-13 – Permit # 448
    - C-14 – Permit # 493
- FTE staff asked if there was Comprehensive Everglades Restoration Plan (CERP) information support that SFWMD could provide, especially for the C-12, C-13 and C-14 Canals. SFWMD staff noted that and CERP information will be passed along. USACE noted that they will also provide any CERP information available to FTE.
- FTE staff asked if there was any guidance on retained waters. USACE noted that FDOT will work through the SFWMD for the S408 permits.
- RS&H staff asked if there were any ongoing projects that had any potential for joint-use stormwater. FTE noted that there will be some ongoing stakeholder meetings scheduled and joint-use will be a discussion item. SFWMD staff noted that as meetings are set, invite SFWMD staff as optional attendees.

Meeting concluded at approximately 11:57 am.

Action Items

Invite SFWMD staff to stakeholder meetings regarding joint-use stormwater opportunities.

Attachments: Detailed maps and slides

AGENDA

SFWMD COORDINATION MEETING

Widen Turnpike from I-595 to Wiles Road
FPID: 442212-1-22-01
Broward County, Florida
Contract Number C-A352

PROJECT MANAGER:	Jazlyn Heywood, PE		
DESIGN CONSULTANT:	Kimley-Horn and Associates, Inc.		
CONSULTANT PM:	Lisa Stone, PE		
SUBCONSULTANTS:	RS&H	Marlin Engineering	Wantman Group
	Tierra South Florida	Janus Research	Infinite Source Comm.
DATE:	TBD		
MEETING LOCATION:	Teleconference		

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1. **Introductions**
   - FTE
   - SFWMD
   - USACE
   - USCG
   - USFWS
   - NMFS

2. **Overall Project Information**
   - Project Need
   - General Project Description/Project Limits
   - Current PD&E Schedule/Status

3. **Proposed Design**
   - Roadway Improvements
     - Center Widening (Begin Project to C-14 Canal)
     - Centerline West Shift (C-14 Canal to Wiles)
   - North New River Canal
     - Modifications at the I-595 Interchange
   - C-12 Canal
     - Modifications at Sunrise Blvd.
     - Required Canal Typical Section
     - Anticipated Cross-sections
   - C-13 Canal
     - Bridge Modifications
     - Required Canal Typical Section
     - Anticipated Cross-sections

- C-14 Canal
    - Bridge Modifications
    - Required Canal Typical Section
    - Anticipated Cross-sections

- Stormwater Management Anticipated Design Criteria
    - Water Quality – Add any WBIDs impaired for nutrients, (direct discharge only)
    - Water Quantity – Add Wellfield map (project limits to powerpoint)
    - Floodplain Impacts and Compensation -
    - Wellfields
    - Wetlands
    - Listed Species

- Anticipated Design Permits
    - SFWMD ROW Occupancy
    - SFWMD Water Use
    - USACE 408 – C 12, C14, C14
    - USACE 404 Retained Waters
    - USCG – North New River bridge permit, lighting
    - USFWS
    - NMFS
        - Essential Fish Habitat at North New River

4. Environmental Look Around

- Regional/Joint Use Stormwater Opportunities
- Comprehensive Everglades Restoration Projects (CERP)

5. Miscellaneous Discussion

6. Action Items

Florida Department of TRANSPORTATION

FLORIDA'S TURNPIKE

PROJECT DEVELOPMENT AND ENVIRONMENT (PD&E) STUDY FOR THE WIDENING OF FLORIDA'S TURNPIKE (STATE ROAD 91) FROM SOUTH OF I-595 TO WILES ROAD

AGENCY PRE-APPLICATION MEETING

MAY 20, 2021

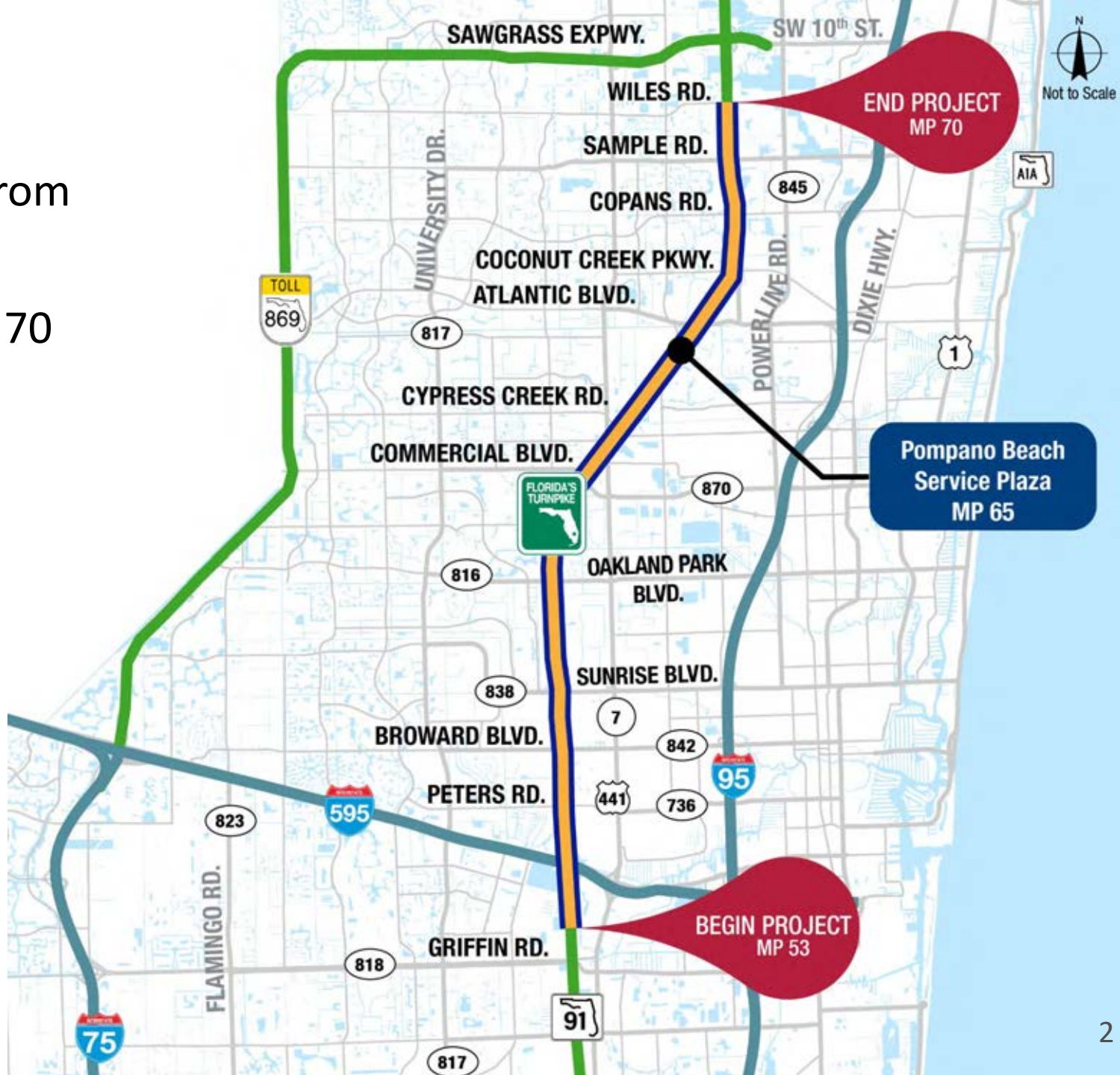
DETAILED MAPS AND EXHIBITS

Broward County, FL

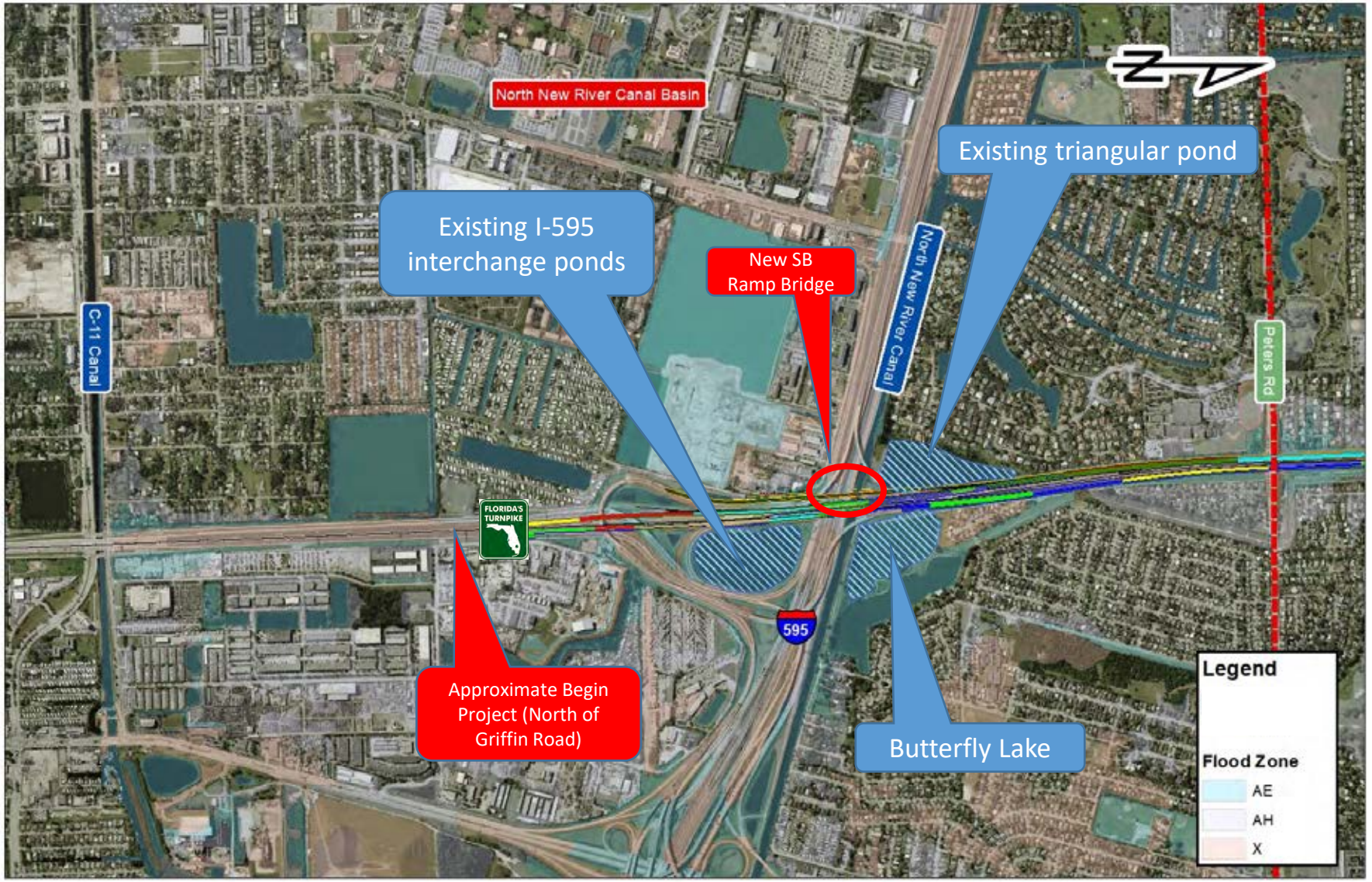
Financial Project ID Number: 442212-1-22-01

STUDY LIMITS

- Florida's Turnpike (State Road 91) from south of I-595 to Wiles Road
- Milepost (MP) 53 to Milepost (MP) 70
- Distance of approximately 17 miles

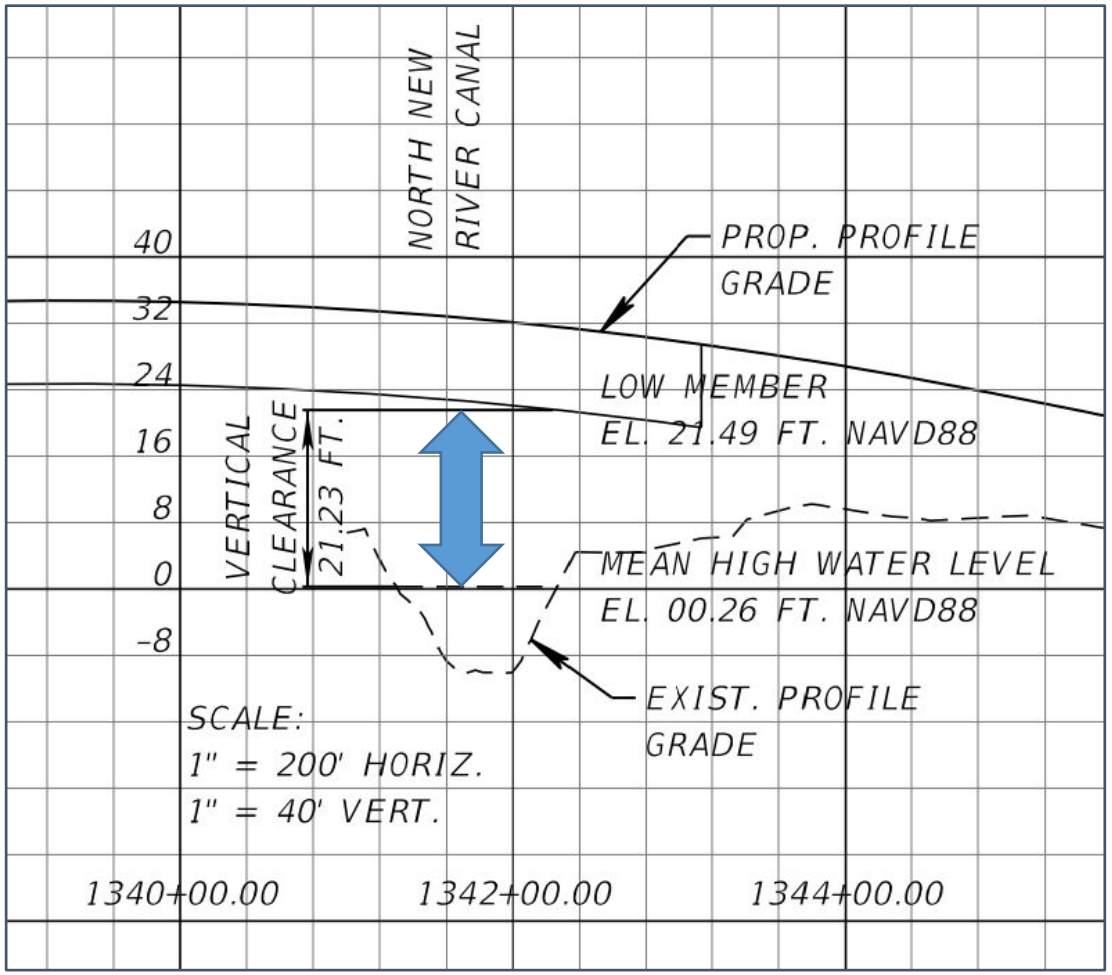


North New River Basin (Begin Project to Peters Rd.)

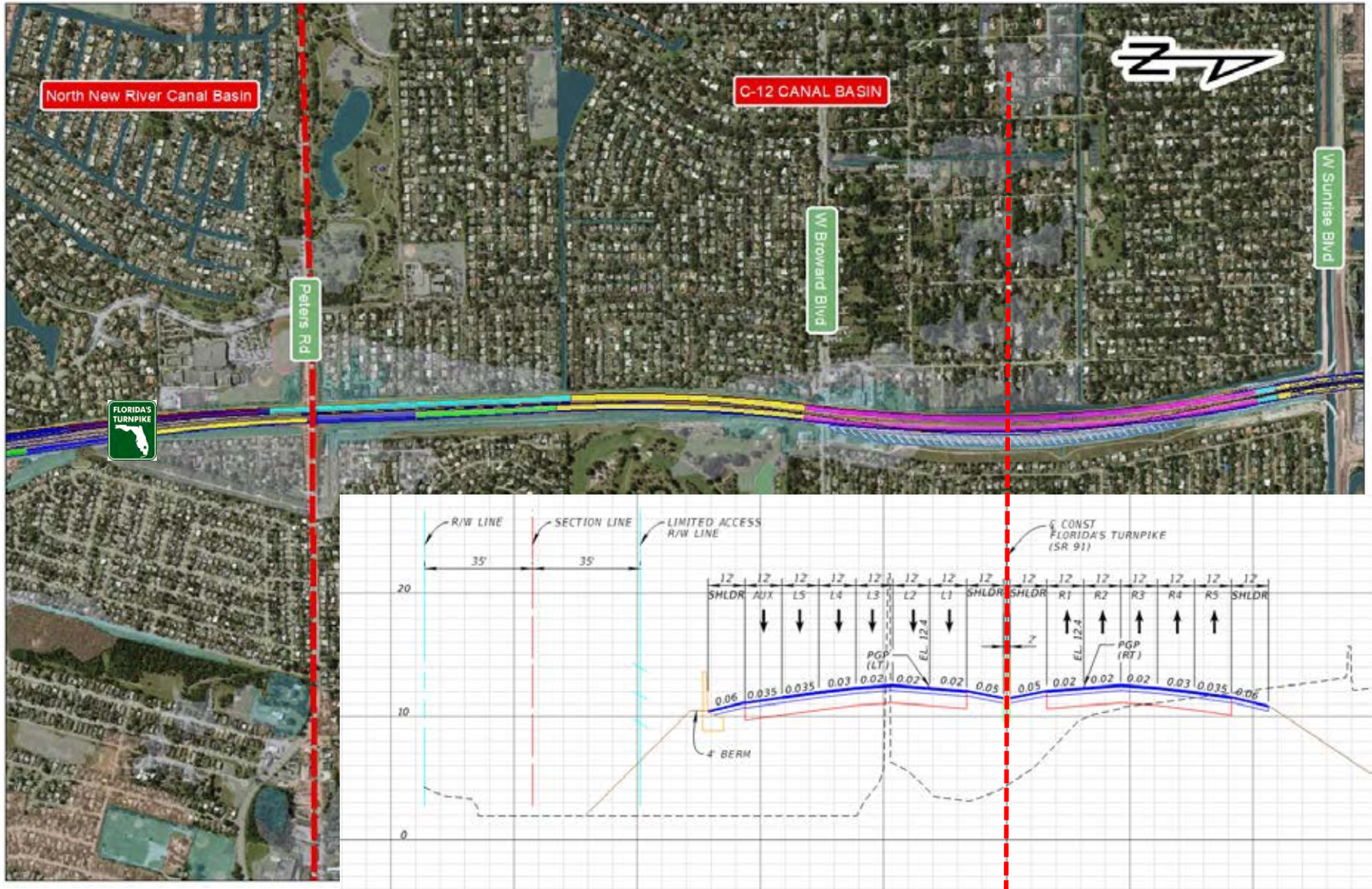


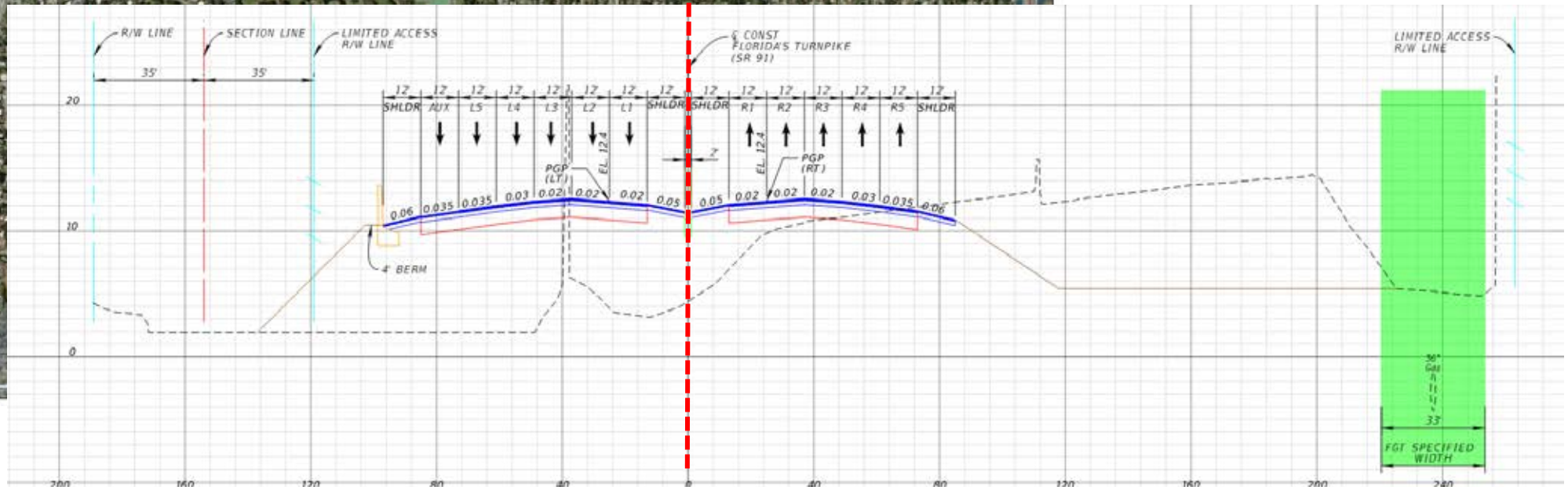
North New River Canal (Begin Project to Peters Rd)

- North New River Canal is tidally influenced
- Estimated vertical clearance is 21+’
- New bridge will match existing bridge span



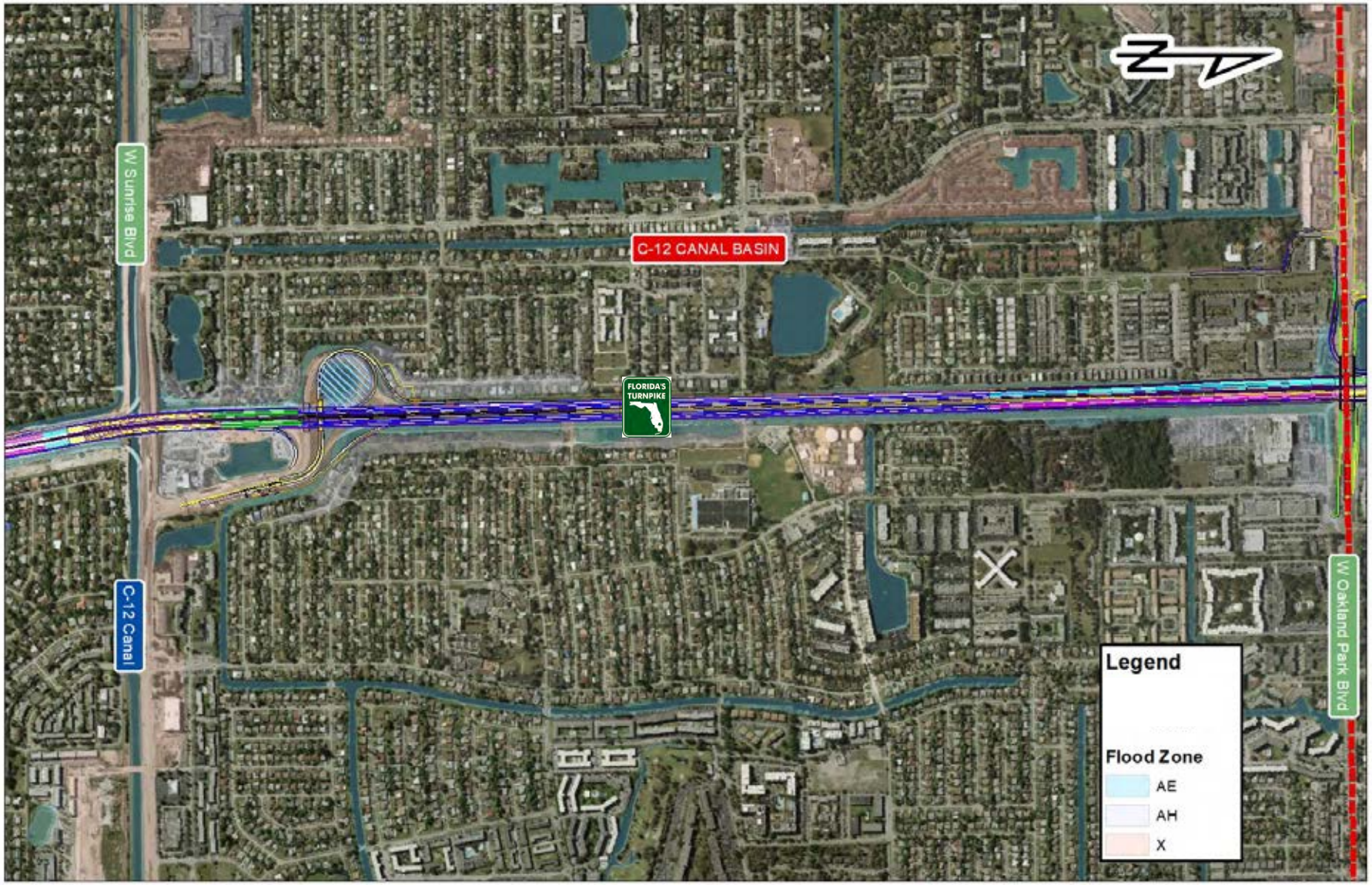
C-12 Canal Basin (Peters Rd. to Sunrise Blvd.)



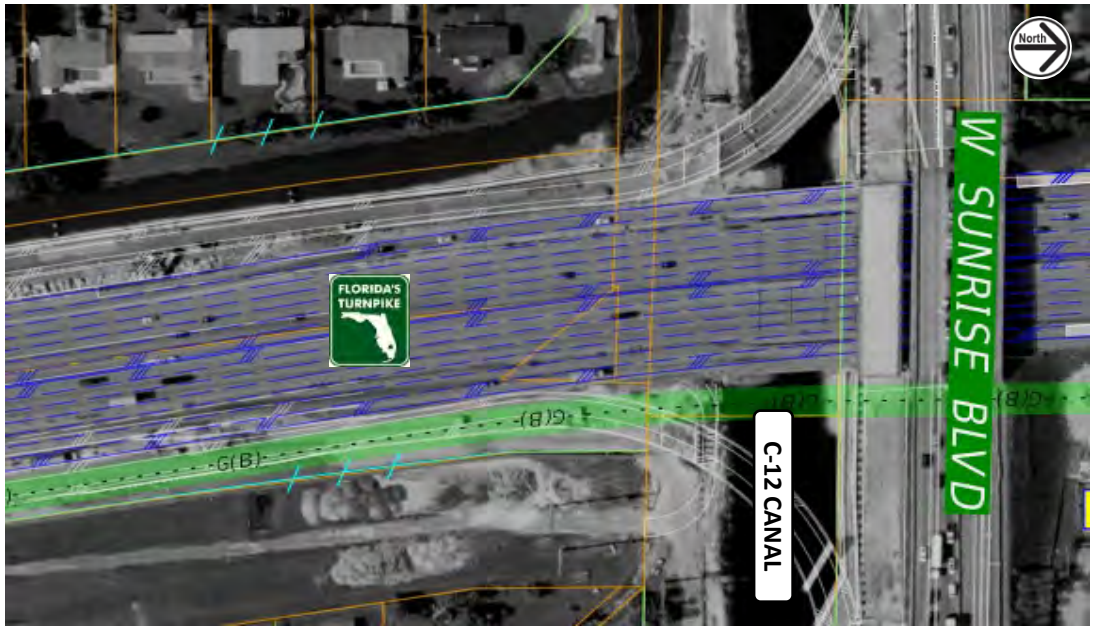


- Horizontal shift to the west
- Shared canal encroachment

C-12 Canal Basin (Sunrise Blvd. to Oakland Park Blvd.)



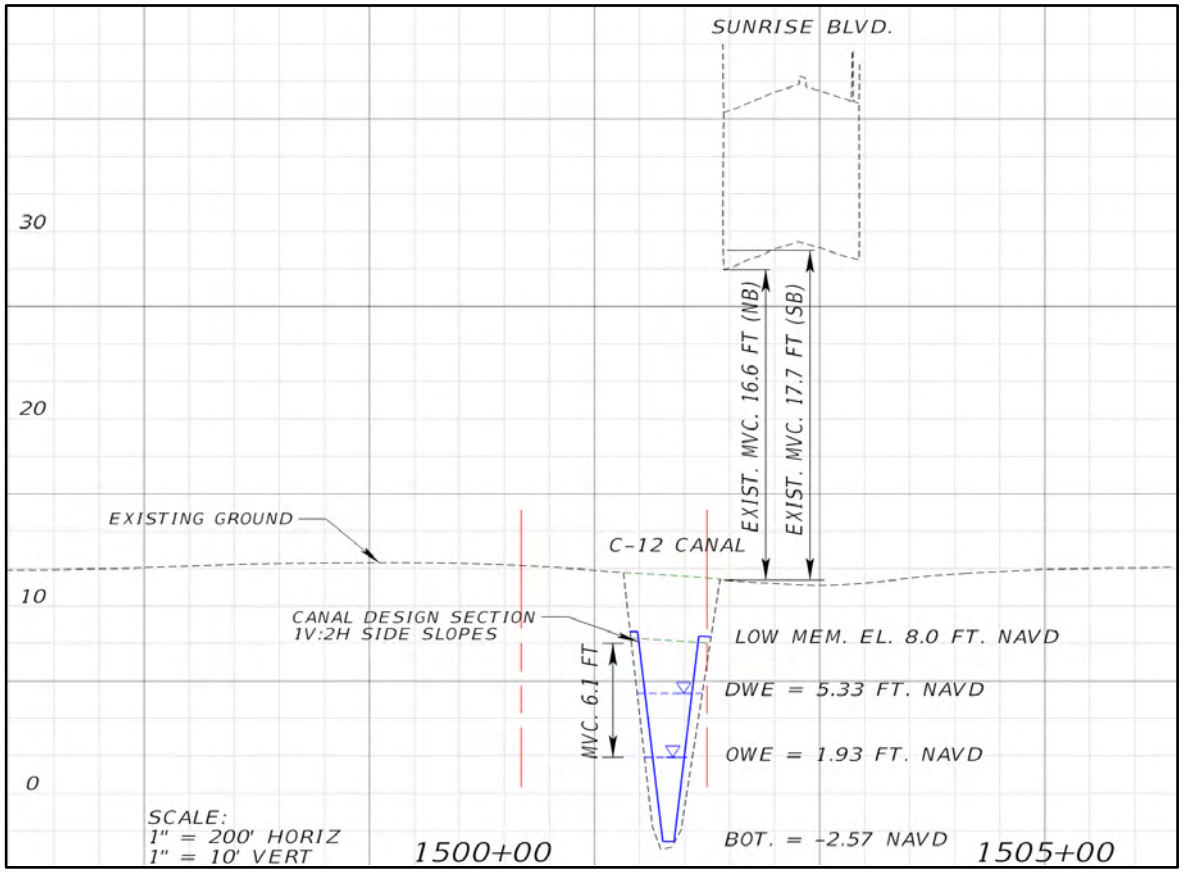
C-12 Canal Basin (Sunrise Blvd. to Oakland Park Blvd.)



Plan View

Existing Condition

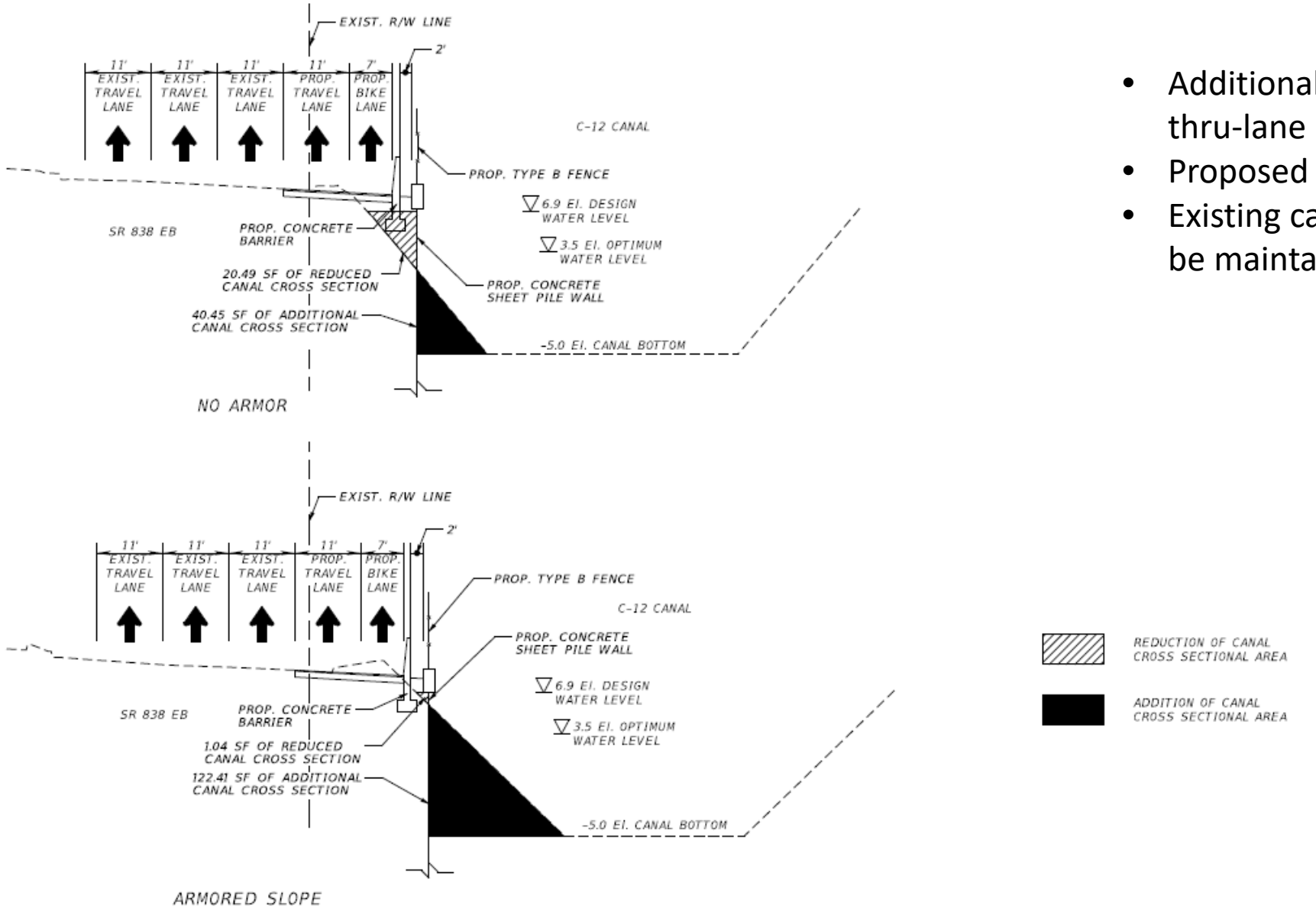
- Turnpike bridge over C-12 was constructed in 1983 and widened in 2011 and 2019.
- Existing bridge section accommodates ultimate Turnpike widening section



C-12 Canal Elevation

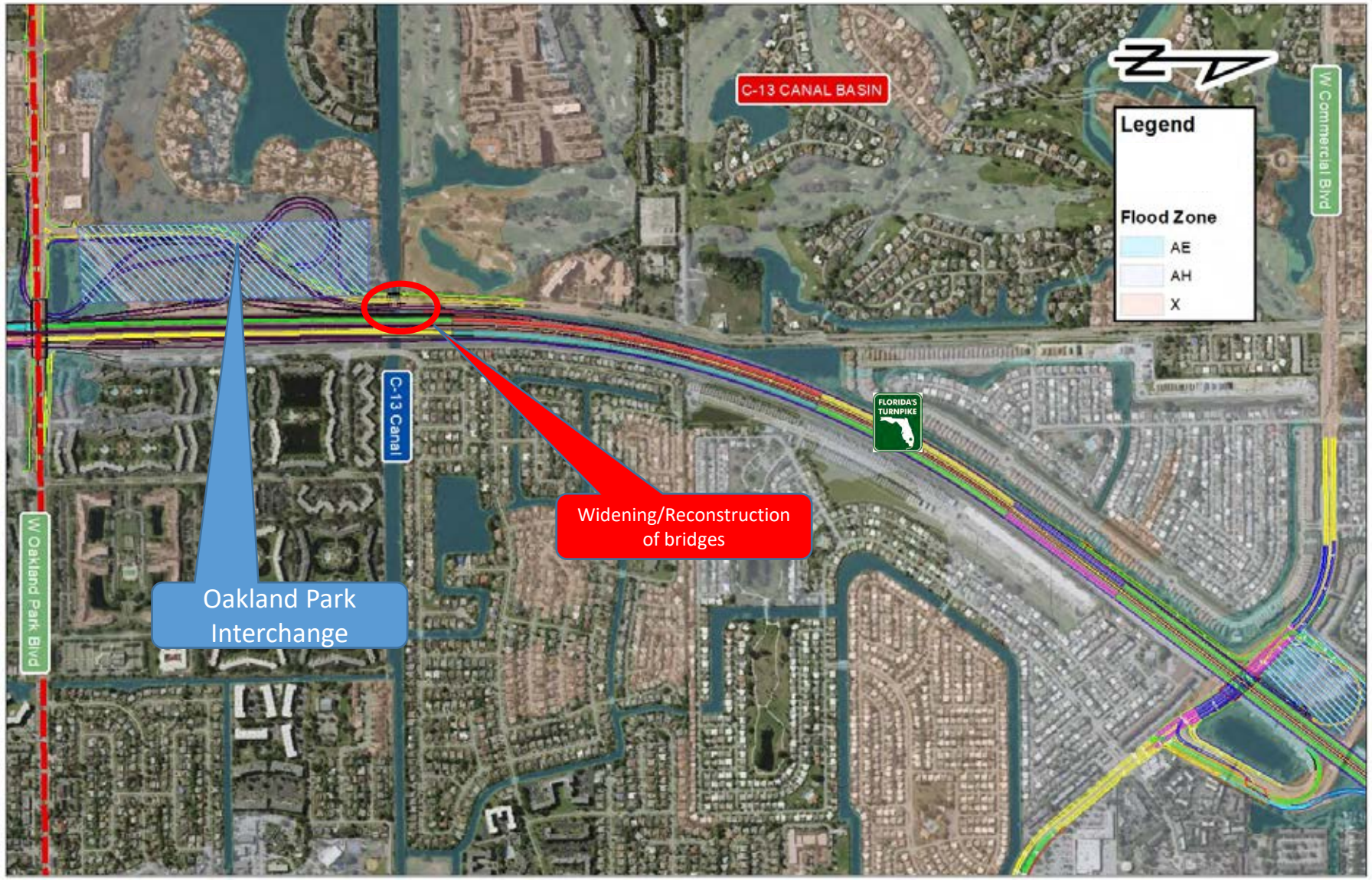
C-12 Canal Basin (SR 91 to SR 7)

C-12 Canal Basin (Sunrise Blvd. to Oakland Park Blvd.)

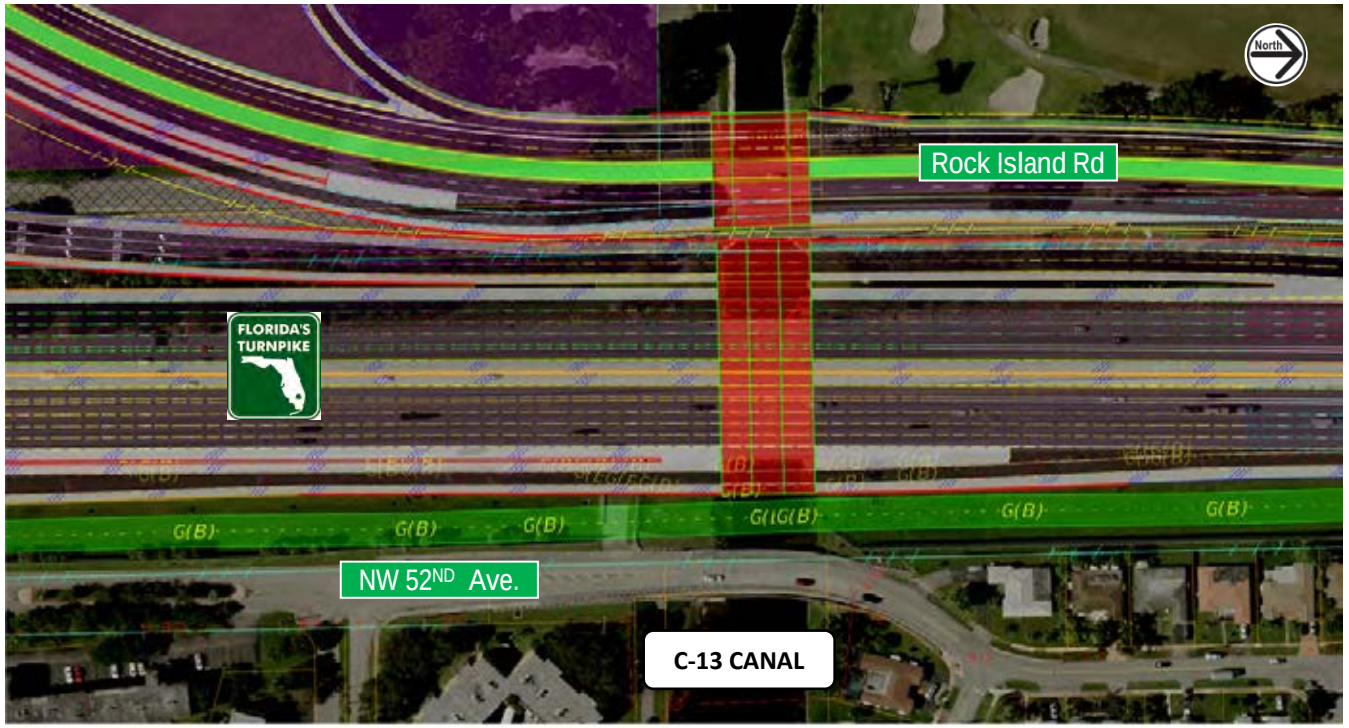


- Additional eastbound thru-lane
- Proposed bulkhead wall
- Existing canal volume will be maintained

C-13 Canal Basin (Oakland Park Blvd. to SR 7)



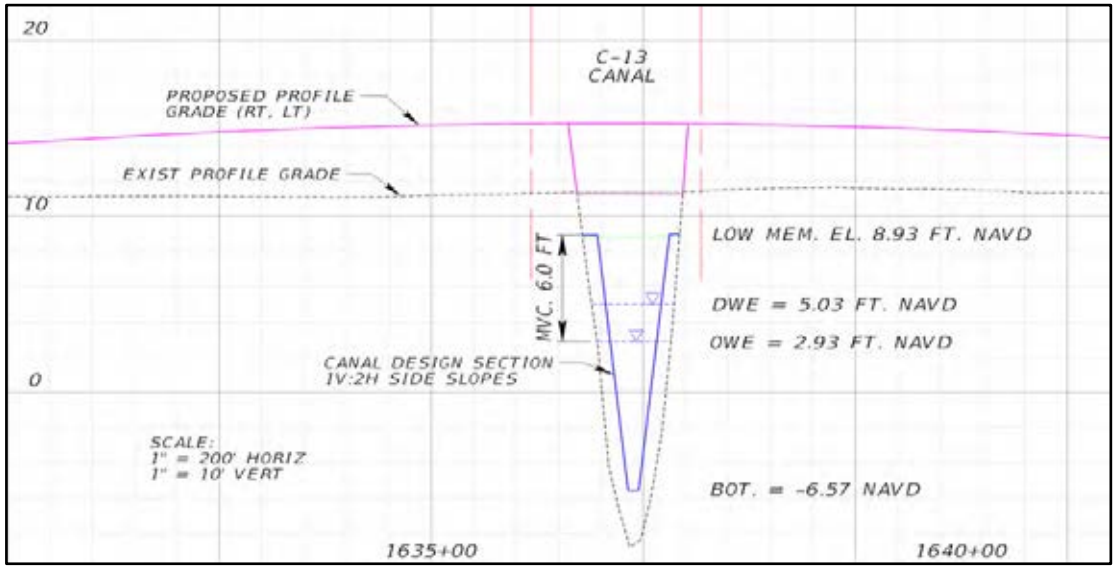
C-13 Canal Modification (Oakland Park Blvd. to SR 7)



Plan View

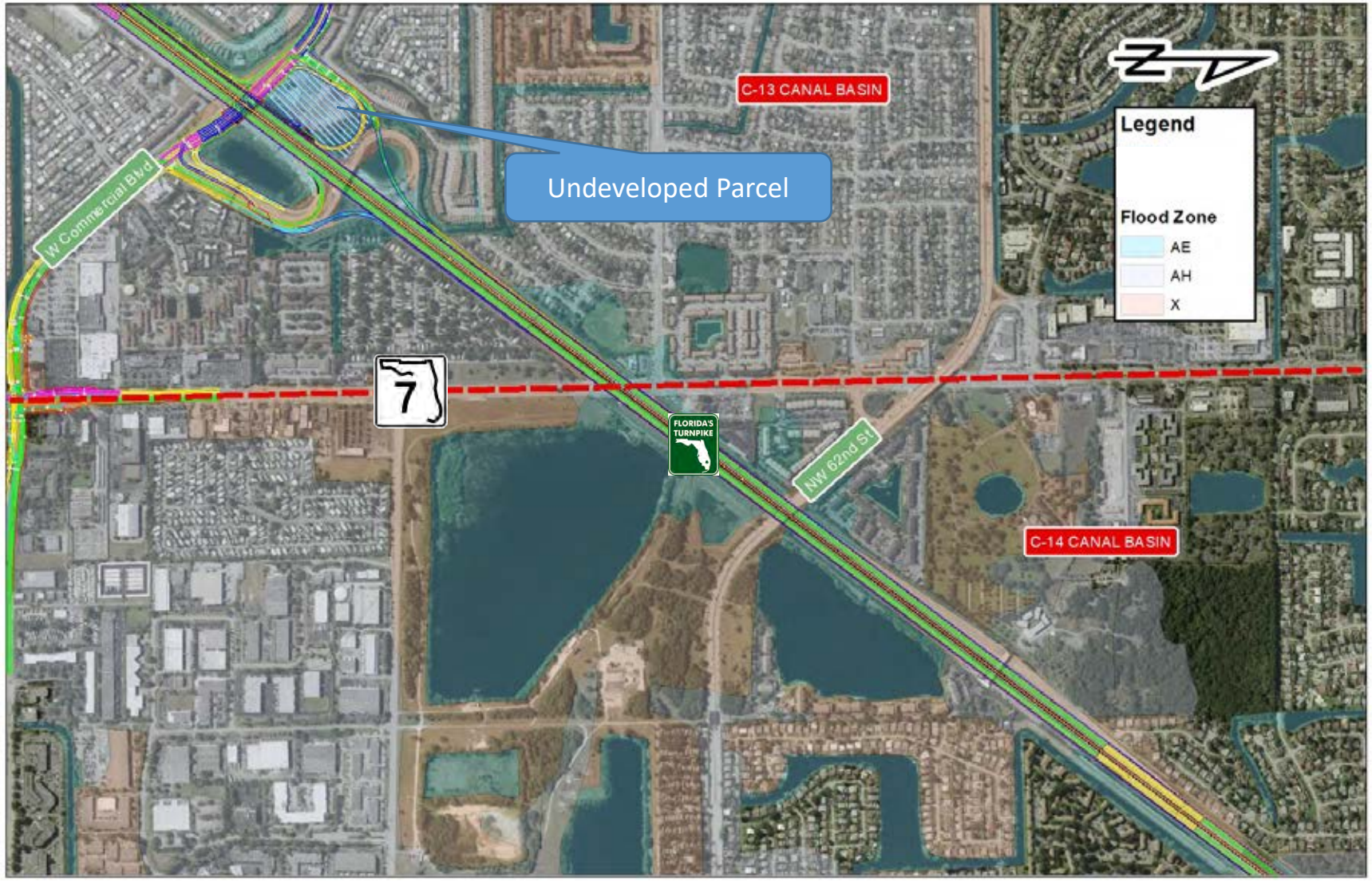
Existing Condition

- Replacement of TPK and Rock Island Bridge over C-13 Canal
- Bridge lengths to remain the same
- Canal Design Section will not be affected

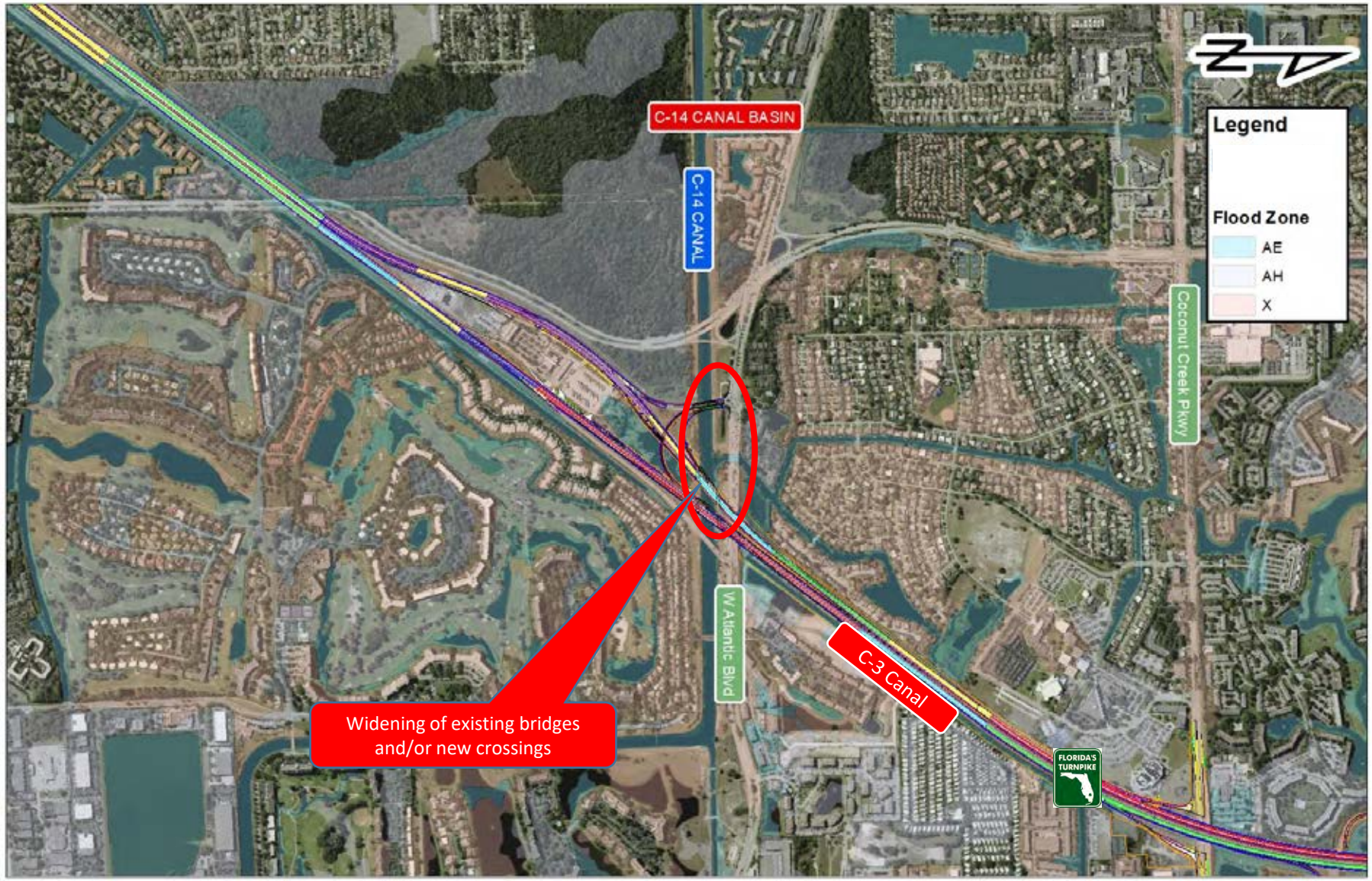


C-13 Canal Elevation

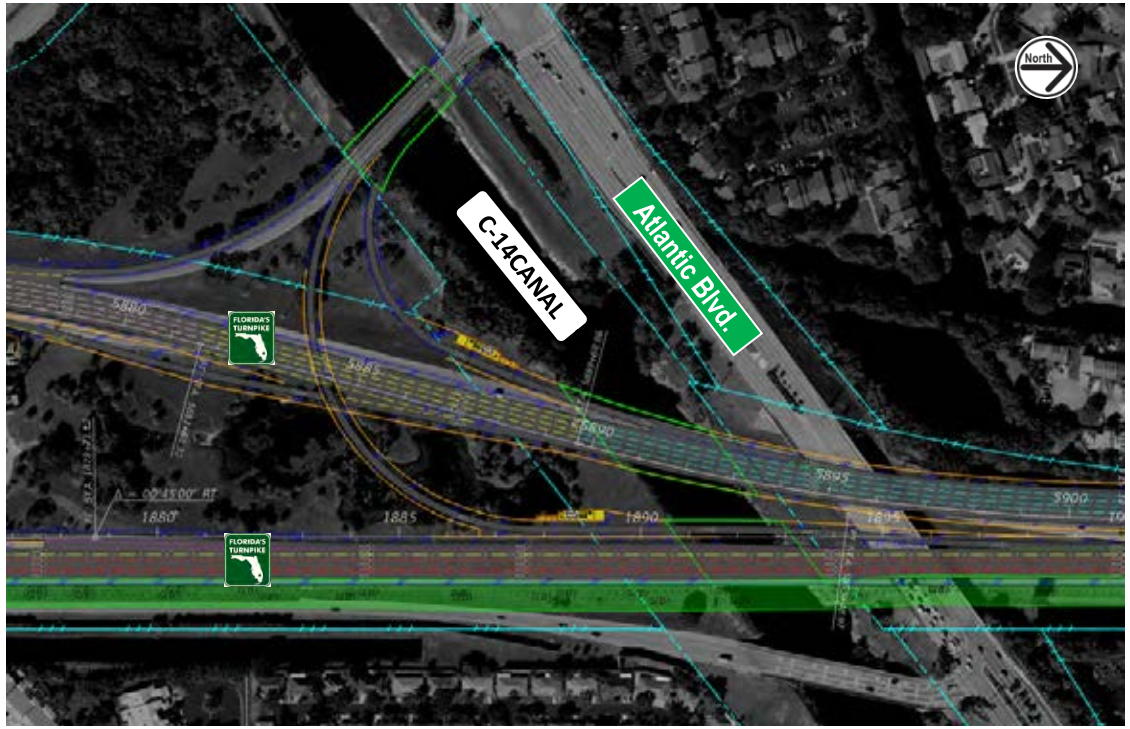
C-13/C-14 Canal Basin



C-14 Canal Basin (SR 7 to Atlantic Ave.)



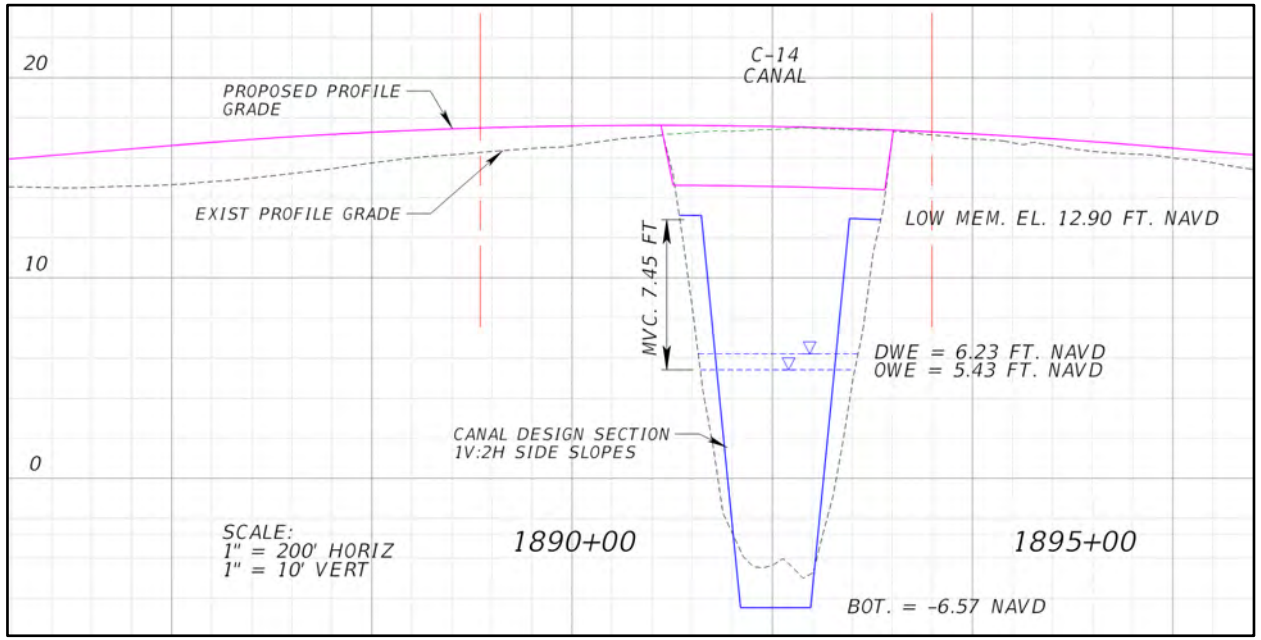
C-14 Canal Modification (SR 7 to Atlantic Ave.)



Plan View

Existing Condition

- Replacement of TPK (SB and NB) and SB on-ramp Bridge over C-14 Canal
- Bridge lengths to remain the same
- Canal Design Section will not be affected



C-14 Canal Elevation

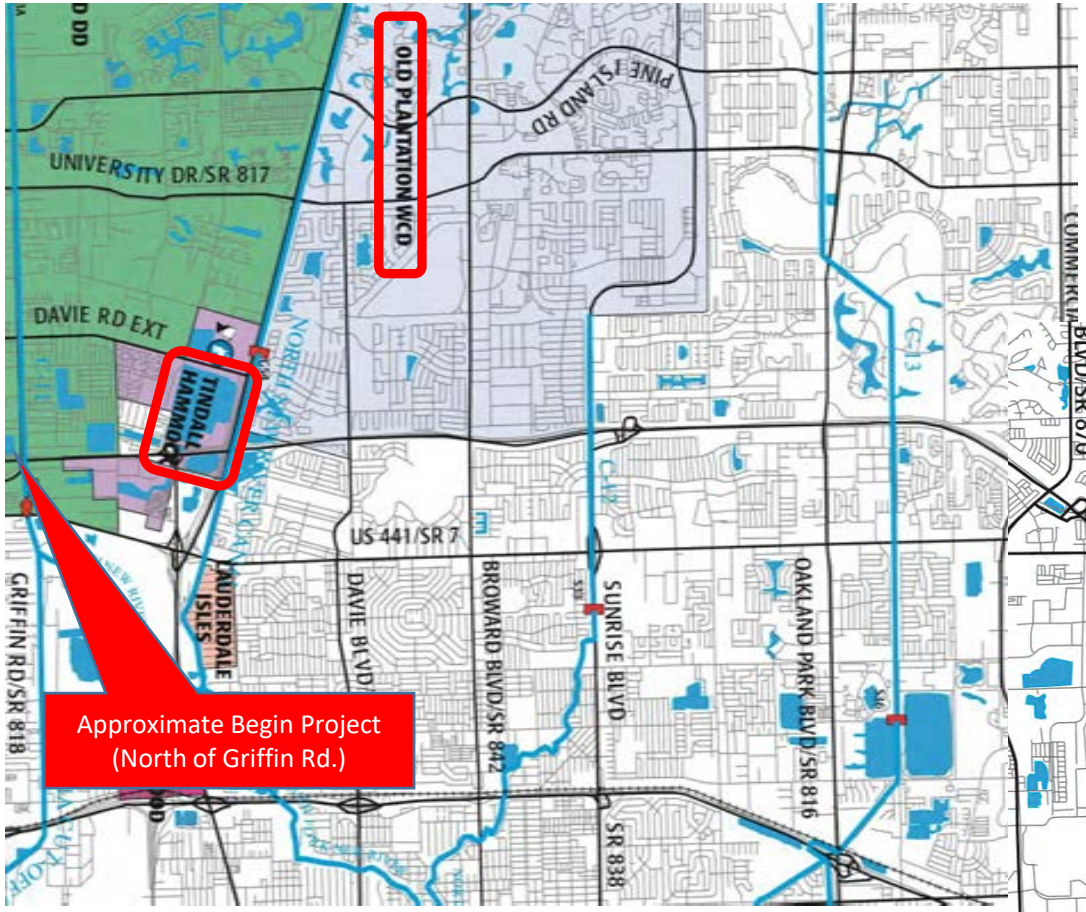
C-14 Canal Basin (Atlantic Ave. to Sample Rd.)

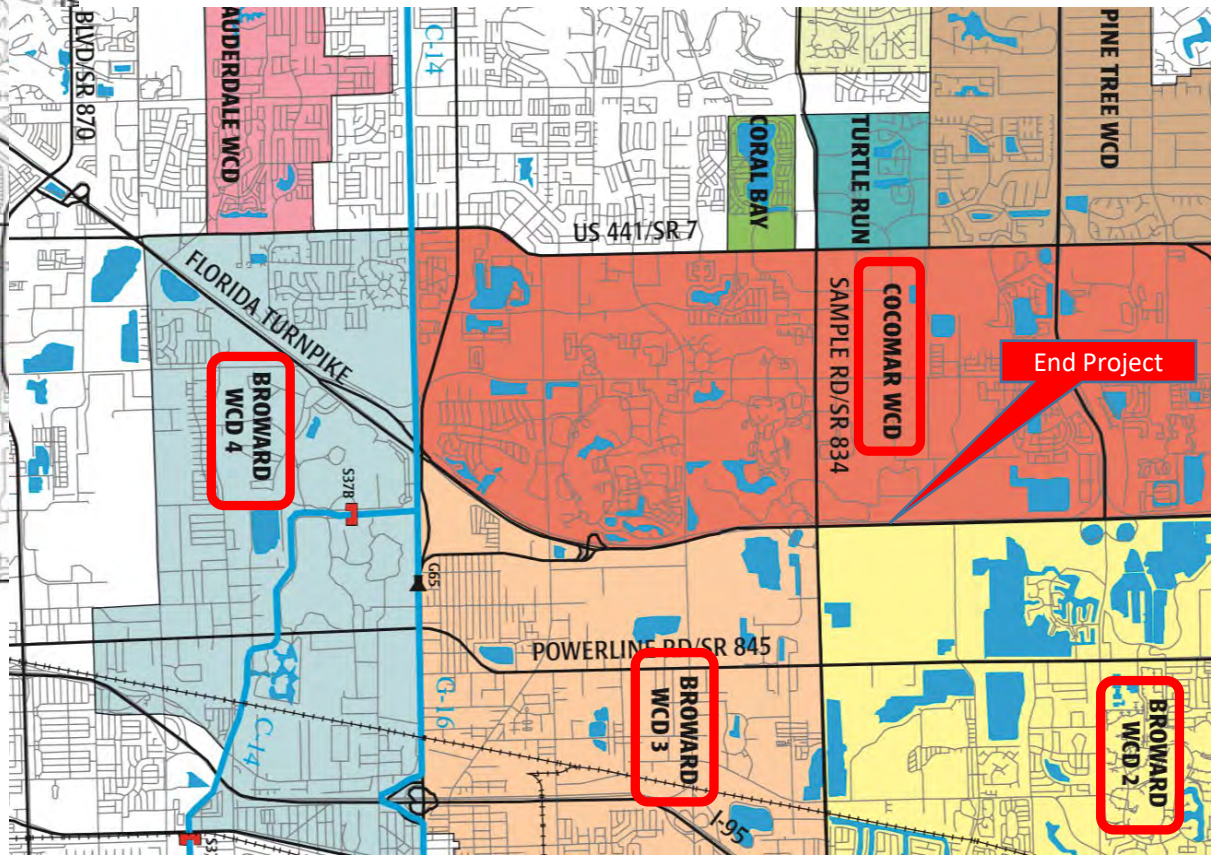
Hillsboro Canal Basin (Sample Rd. To Wiles Rd.)

Adjacent Wellfields

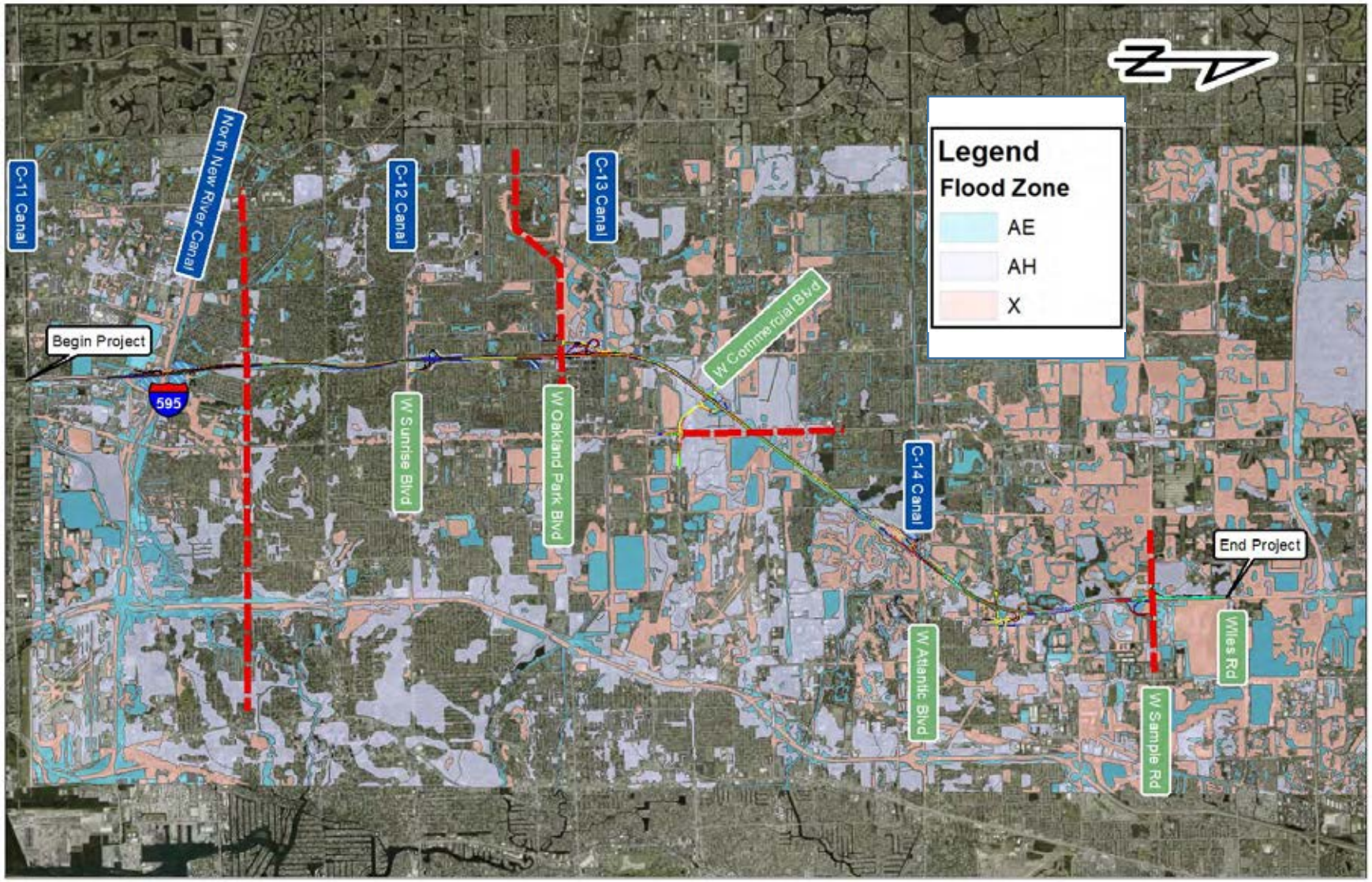
Drainage Stakeholders

- Tindall Hammack
- Old Plantation WCD
- Broward County – Entire Corridor
- Broward County (WCD 2, 3 and 4)
- C-14 Basin – SR 7 to Sample Road
- Cocomar WCD
- SFWMD – Entire Corridor



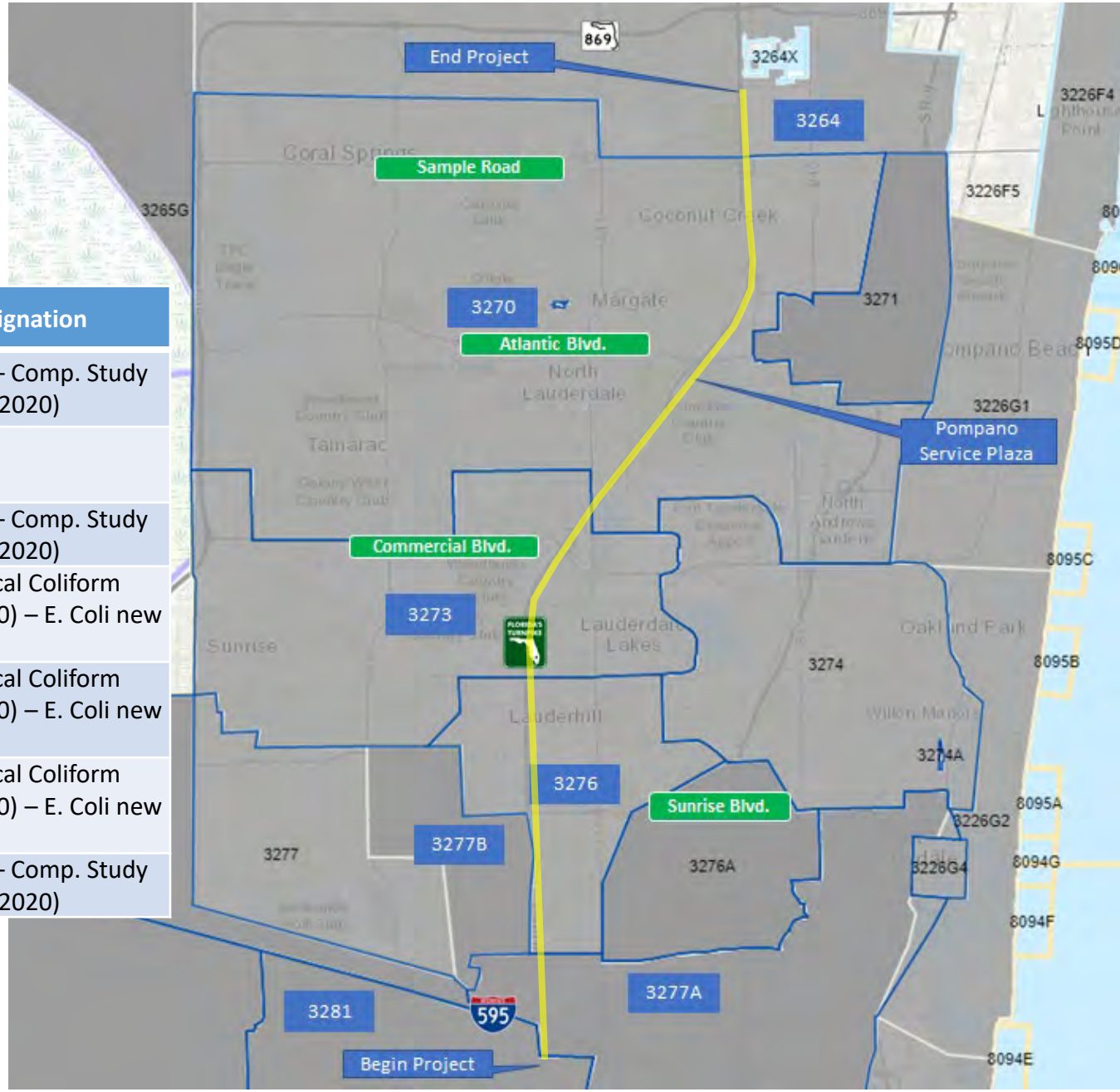


Floodplain and Location Hydraulics



Impaired Water Bodies

WBID	Outfall	Direct Discharge	Impairment	Designation
3281	C-11 Canal	No	Dissolved Oxygen	Unverified – Comp. Study List (07/02/2020)
3277A	New River Canal	Yes	Copper	Verified
3277B	Holloway Canal	No	Dissolved Oxygen	Unverified – Comp. Study List (07/02/2020)
3276	C-12 Canal	Yes	None	Delisted Fecal Coliform (06/03/2020) – E. Coli new parameter
3273	C-13 Canal	Yes	None	Delisted Fecal Coliform (06/03/2020) – E. Coli new parameter
3270	C-14 Canal	Yes	None	Delisted Fecal Coliform (06/03/2020) – E. Coli new parameter
3264	Hillsboro Canal	No	Dissolved Oxygen	Unverified – Comp. Study List (07/02/2020)



Anticipated Design Criteria

- Water Quality
  - Presumptive Only
  - Volume equal to additional impervious area plus previously permitted treatment
  - No nutrient removal based on current status of relevant WBID's
- Attenuation
  - Pre/Post peak discharge attenuation 25-year/72-hour frequency storm event
- Floodplain Encroachment
  - Compensation to demonstrate no adverse impacts

Shared Stormwater Management Opportunities

- Regional or Joint-use opportunities
- Relevant Comprehensive Everglades Restoration Projects

Anticipated Permits During Design Phase

- State SFWMD
    - ROW Occupancy
    - Water Use
    - Individual Environmental Resource Permit
- Federal
    - USACE 404 – Retained Waters
    - USACE 408 – North New River, C-12, C-13 & C-14
    - USCG Bridge (North New River)
    - NMFS – Essential Fish Habitat Coordination