Natural Resources Evaluation

Florida Department of Transportation

District 7

State Road (SR) 50 (US 98/Cortez Boulevard)
Project Development & Environment (PD&E) Study
From the Brooksville Bypass to west of Interstate 75

Hernando County, FL

Work Program Item Segment No. 430051-1

ETDM Project No. 13980

September 2019

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated December 14, 2016 and executed by FHWA and FDOT.

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Prepared for:

Florida Department of Transportation
District 7

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September 2019

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) study to evaluate alternative improvements for State Road (SR) 50 (US 98/Cortez Boulevard) from the Brooksville Bypass to west of Interstate 75 (I-75) in Hernando County (**Figure 1-1)**. The study extends to Lockhart Road on the east end of the project for a length of approximately 7.2 miles. The section along SR 50 to the east of Lockhart Road was studied as a part of a separate Federal Highway Administration (FHWA) approved PD&E study – SR 50 (Cortez Boulevard) from Lockhart Road to US 301 (SR 35/Treiman Boulevard), Work Program Item (WPI) Segment No.: 416732-2. Study objectives include: determine proposed typical sections and develop preliminary conceptual design plans for proposed improvements, while minimizing impacts to the environment; consider agency and public comments; and ensure project compliance with all applicable federal and state laws. A *Type 2 Categorical Exclusion* is being prepared as part of this study. The highway is expected to be improved from an existing, four-lane divided rural facility to a six-lane divided facility. The proposed improvements will include construction of stormwater management and floodplain compensation facilities along SR 50 to allow for proper drainage and safety. Various intersection improvements will be constructed, in addition to multimodal facilities (pedestrian, bicycle and transit accommodations).

This *Natural Resources Evaluation* (NRE) summarizes potential impacts to federal and state listed species and their habitats, wetlands, and essential fish habitat (EFH). Several protected species have the potential to exist within the project area, though the project is not likely to adversely affect any species of concern. Forested and non-forested freshwater wetlands exist along SR 50, limited to the west side of the project area where the topography is generally lower in elevation. Mitigation will be required for any impacts to wetlands through compensation pursuant to s. 373.4137, Florida Statutes (F.S.), the purchase of mitigation credits at an approved mitigation bank, or the restoration or enhancement of wetlands within the same watershed. No EFH or protected waters are present in the project limits; therefore, no impacts to EFH are anticipated.

Identification of measures to avoid, minimize and mitigate for any potential impacts is also discussed. This NRE documents the results of geographic information system (GIS) data, field reviews, coordination to date with regulatory agencies including comments received through the Efficient Transportation Decision Making (ETDM) process, and aerial interpretation for potential impacts to the resources listed above. Coordination is being conducted with federal and state agencies throughout the study process.

Protected Species and Habitat

The project area was also assessed for the presence of suitable habitat for federal and/or state listed and protected species in accordance with *50 Code of Federal Regulations (CFR) Part 402 of the Endangered Species Act (ESA) of 1973*, as amended, *Chapter 5B-40: Preservation of Native Flora of*

Florida, Florida Administrative (F.A.C.), Chapter 68A-27: Rules Relating to Endangered or Threatened Species, F.A.C. and *Part 2, Chapter 16 – Protected Species and Habitat* of the FDOT PD&E Manual.

Federal Listed Species

Desktop/agency database searches, analysis of GIS data, and field surveys were conducted in November and December of 2014, and April of 2019 in order to determine protected species and suitable habitat that exists within the project area. Based on the findings, the FDOT has determined a finding of may affect, not likely to adversely affect is anticipated for the wood stork (*Mycteria americana*) and eastern indigo snake (*Drymarchon corais couperi*). A finding of no effect is anticipated for the Florida scrub-jay (*Aphelocoma coerulescens*), and red-cockaded woodpecker (*Picoides borealis*).

State Listed Species

As mentioned above, desktop and field reviews were conducted to determine if protected species and potential suitable habitat exists within the project area. Based on the findings, the FDOT has determined no adverse effects are anticipated for the gopher tortoise (*Gopherus polyephemus*), Southeastern American kestrel (*Falco sparverius paulus*), Florida sandhill crane (*Grus canadensis pratensis*), little blue heron (*Egretta caerulea*), and tricolored heron (*Egretta tricolor*). There is no effect anticipated for the Florida burrowing owl (*Athene cunicularia*).

Protected, Non-Listed Species

These are species that are no longer listed by U.S. Fish and Wildlife Service (USFWS) or Florida Fish and Wildlife Conservation Commission (FWC), but are still afforded protection. Included species are the osprey (*Pandion haliaetus*), bald eagle (*Haliaeetus leucocephalus*), and Florida black bear (*Ursus americanus floridanus*).

Plant Species

Three state listed plant species were observed in the project area and no federal listed plant species were observed or are documented in the project area. The species observed include sand dune spurge (*Chamaesyce cumulicola*), Florida spiny-pod (*Matelea floridana*), and leafless beaked orchid (*Sacoila lanceolata var. lanceolate*). The FDOT has determined only limited areas of existing habitat for these species are anticipated to be affected by the proposed project; therefore, there is no effect anticipated to the long-term viability of these species by the proposed project.

Potential Faunal Species Effect Determination

SPECIES SCIENTIFIC NAME	SPECIES COMMON NAME	LISTING STATUS	EFFECT DETERMINATIONS
FEDERAL LISTED (USFWS)			
Mycteria americana	Wood stork	T	MANLAA
Drymarchon corais couperi	Eastern indigo snake	T	MANLAA
Aphelocoma coerulescens	Florida scrub-jay	T	No effect
Picoides borealis	Red-cockaded woodpecker	E	No effect
STATE LISTED (FWC)			
Gopherus polyephemus	Gopher tortoise	T (C)	No adverse effect anticipated
Falco sparverius paulus	Southeastern American Kestrel	T	No adverse effect anticipated
Athene cunicularia	Burrowing owl	T	No effect anticipated
Grus canadensis pratensis	Florida sandhill crane	T	No adverse effect anticipated
Egretta caerulea	Little blue heron	T	No adverse effect anticipated
Egretta tricolor	Tricolored heron	T	No adverse effect anticipated
OTHER PROTECTED			
Pandion haliaetus	Osprey[2]	--	--
Haliaeetus leucocephalus	Bald eagle[2,3]	--	--
Ursus americanus floridanus	Florida black bear[1]	--	--

USFWS=United States Fish and Wildlife Service, FWC=Florida Fish and Wildlife Commission
MANLAA=May Affect, Not Likely to Adversely Affect
T=Threatened, E=Endangered, C=Candidate (federal)
1 Protected under the *Florida Black Bear Conservation* (68A-4.009, F.A.C.)
2 Protected under the *Migratory Bird Treaty Act* (16 U.S.C. §§ 703–712)
3 Protected under the *Bald and Golden Eagles Protection Act* (16 U.S.C. 668-668c)

Potential Floral Species Effect Determinations

SPECIES SCIENTIFIC NAME	SPECIES COMMON NAME	Listing Status	EFFECT DETERMINATIONS
STATE-LISTED (FDACS)			
Chamaesyce cumulicola	Sand dune spurge	E	No effect anticipated
Matelea floridana	Florida spiny-pod	E	No effect anticipated
Sacoila lanceolata var. lanceolate	Leafless Beaked orchid	T	No effect anticipated

FDACS=Florida Department of Agriculture and Consumer Services
T=Threatened, E=Endangered

USFWS Critical Habitat

The project area was evaluated for Critical Habitat designated by Congress in 50 CFR 17. Review of the USFWS's available GIS data resulted in the identification of no Critical Habitat within the project area.

Essential Fish Habitat

This project was evaluated for EFH in accordance with *Part 2, Chapter 17 – Essential Fish Habitat* of the FDOT PD&E Manual (January 2019) and the requirements of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) of 1996. No EFH is located within the project area; therefore, there will be no involvement with EFH for this project.

Wetlands and Surface Waters

Wetlands and surface waters were classified based on the National Wetland Inventory (NWI) and the USFWS guidelines. Within the project area there are forested and non-forested wetlands mainly along the west side of the project verified by project scientists in 2015. The proposed Build Alternative would result in approximately 0.96 acre of wetland and 0.68 acre of surface water impacts based on the proposed conceptual design.

Pursuant to *Executive Order 11990* entitled *Protection of Wetlands*, (May 1977) the U.S. Department of Transportation (USDOT) has developed a policy, *Preservation of the Nation's Wetlands* (USDOT Order 5660.1A), dated August 24, 1978, which requires all federally-funded highway projects to protect wetlands to the fullest extent possible.

Wetland mitigation options will be pursuant to s. 373.4137, F.S., and may include purchase of wetland mitigation credits through an approved mitigation bank, mitigation services through the Southwest Florida Water Management District (SWFWMD) or creation, restoration or enhancement of wetlands within the project watersheds. The mitigation will satisfy the requirements of Part IV, Chapter 373, F.S. and 33 United States Code (U.S.C.) 1344.

Potential Wetland Impacts

WETLAND ID	NWI / USFWS	FLUCCS	PROJECT IMPACT ACREAGE
560+00R	PEM1F	641	0.00
563+70R	PEM1K	641/640	0.00
564+00R	PEM1Fd	641	0.00
570+00R	PFO1&6/PEM1Fd	615/641	0.00
593+70L	PEM1E	641/640	0.00
635+00L	PEM1E/L2AB3H	641/520	0.00
660+00L	PFO1&6F	615	0.21
671+50L	PFO1&6E/PSS1F	615	0.00
686+00R	PFO1&6E	615	0.19
693+70R	PEM1F/PAB3F	641	0.32
697+00L	PFO/PEM1F	615/641	0.00
719+00R	PFO6E	615	0.02
795+00R	PFO6E	615	0.22
TOTAL			**0.96**

NWI = National Wetlands Inventory

FLUCCS = Florida Land Use Cover and Forms Classification

Potential Surface Water Impacts

SURFACE WATER ID	NWI / USFWS	FLUCCS	PROJECT IMPACT ACREAGE
622+50	PUB/PUBx	510	0.03
659+80	PUBx	510	0.02
743+00L	PUBC	520	0.20
743+00R	PUBC	520	0.18
776+50R	PUBC	520	0.12
778+50L	PUBC	520	0.13
TOTAL			**0.68**

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List of Figures and Tables

Figures

Tables

SECTION 1 INTRODUCTION

1.1 PD&E STUDY PURPOSE

The objective of this Project Development and Environment (PD&E) study is to assist the Florida Department of Transportation (FDOT) in reaching a decision on the type, location, and conceptual design of the proposed improvements for widening State Road (SR) 50 (US 98/Cortez Boulevard) from the Brooksville Bypass to west of Interstate 75 (I-75) in Hernando County.

The PD&E study satisfies all applicable requirements in order for this project to qualify for federal funding of subsequent development phases (design, right of way [ROW] acquisition, and construction). This project was screened through FDOT's Efficient Transportation Decision Making (ETDM) process as Project #13980. The *Final Programming Screen Summary Report* (PSSR) was published on January 7, 2014. A *Type 2 Categorical Exclusion* will be prepared as part of this study.

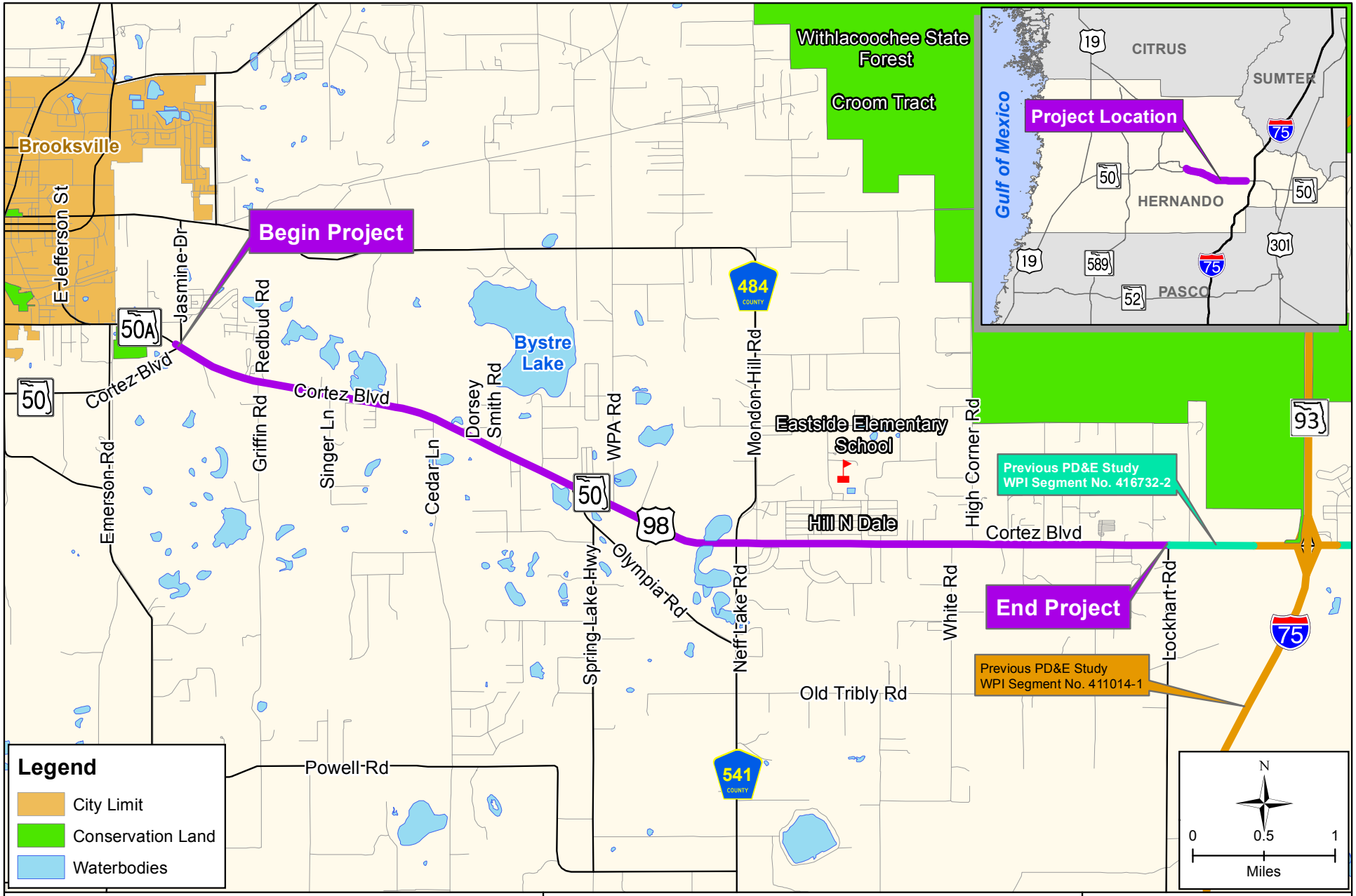
1.2 PROJECT DESCRIPTION

In order to accommodate projected traffic increases along SR 50, the FDOT is conducting a PD&E study to evaluate alternative capacity and operational improvements from the Brooksville Bypass to west of I-75 (**Figure 1-1**).

The study area extends to Lockhart Road on the east end of the project for a length of 7.2 miles. The section along SR 50 to the east of Lockhart Road was studied as a part of a separate Federal Highway Administration (FHWA) approved PD&E study (2014) – SR 50 (Cortez Boulevard) from west of I-75 to US 301 (SR 35/Treiman Boulevard), WPI Segment No.: 411014-1. Improvements for the Lockhart Road intersection were included in WPI Segment No. 416732-2. The highway is expected to be improved from an existing, four-lane divided rural facility to a six-lane divided facility. The proposed improvements will include construction of stormwater management and floodplain compensation facilities and various intersection improvements, in addition to multimodal facilities (pedestrian, bicycle and transit accommodations).

1.3 EXISTING FACILITY AND PROPOSED IMPROVEMENTS

SR 50 is currently a four-lane rural highway with 4-ft paved outside shoulders and 40 – 46-ft grassed median (**Figure 1-2**). The existing ROW is 200 feet wide. The posted speed limits vary from 45 mph to 60 mph. Major intersections within the project limits occur at Cortez Boulevard/Jasmine Drive, County Road (CR) 484/Spring Lake Highway and Lockhart Road (west of I-75). There is a short segment with existing sidewalk located near the west end of the project. There is a bridge culvert within the project limits located over the Bystream Overflow. This 53-ft bridge culvert was constructed in 1997 and has a sufficiency rating of 80 and a health index of 65.72 (inspected January 22, 2019). Expected improvements are described above in **Section 1.2**.



SR 50 (US 98) PD&E Study

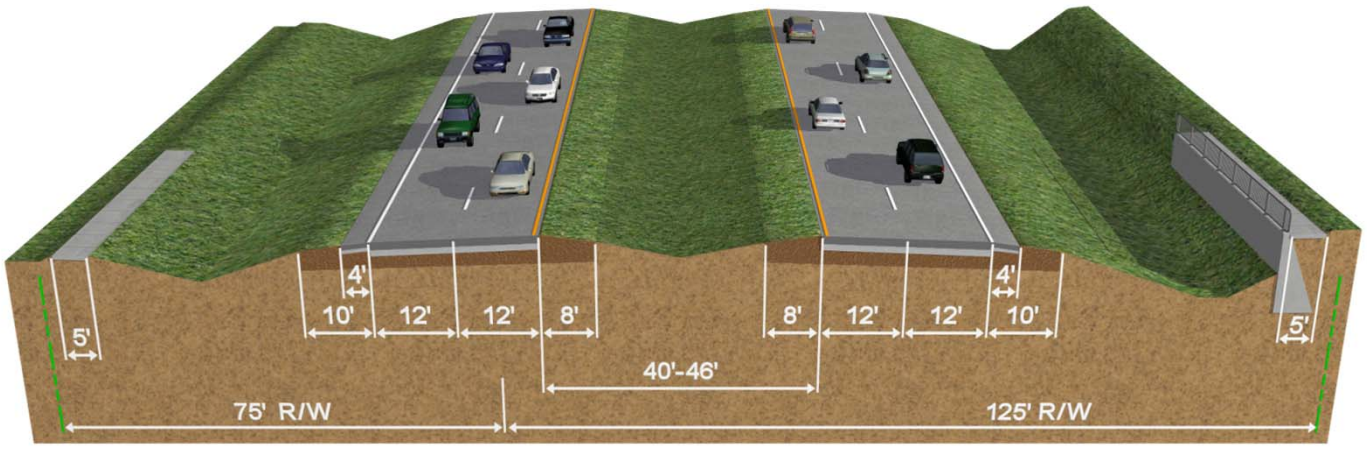
From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

Project Location and Study Area Map

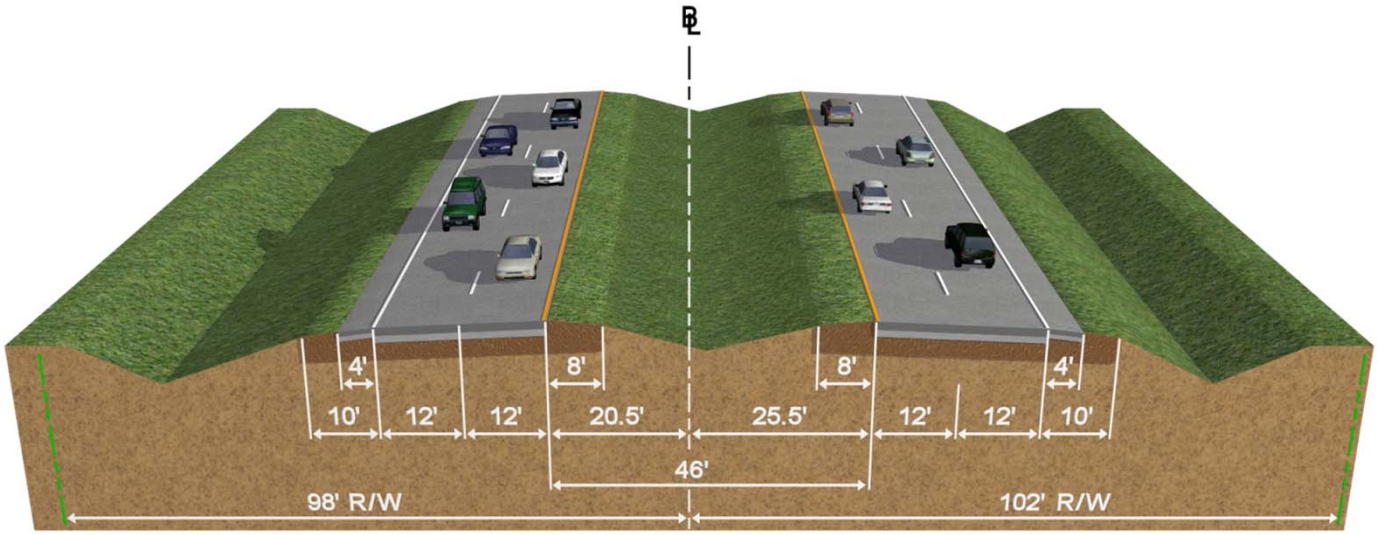
Figure 1-1

West and Center Areas



- From SR 50A/Brooksville Bypass/Cortez Blvd to Spring Lake Highway/Mondon Hill Road (4.2 miles)
- Posted Speed Varies: 45 mph to 60 mph

East Portion of Study Area



- From Spring Lake Highway/Mondon Hill Road to Lockhart Road (3.0 miles)
- Posted Speed Varies: 45 mph to 60 mph

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State Road 50 PD&E Study ***From the Brooksville Bypass (SR 50A) eastern intersection to Interstate 75*** WPI Segment No. 430051-1 Hernando County	**Existing Typical Sections**	**Figure 1-2**

Proposed typical sections include suburban and rural typical sections (**Figure 1-3**). A high-speed six-lane suburban section is proposed from the western project limits to Dorsey Smith Road (West Segment) and a rural typical section within the 200-foot existing ROW is proposed from Dorsey Smith Road to Lockhart Road. No additional ROW is anticipated for the roadway improvements with the exception of small corner clips at intersections along the corridor. Additional ROW will be needed for stormwater management facilities and floodplain compensation sites. A "No-Build" Alternative is also being evaluated.

1.4 PROJECT PURPOSE AND NEED

SR 50 is a major east-west rural principal arterial that spans central Florida from coast to coast. In Hernando County, SR 50 connects to several regionally significant corridors, including US 19, SR 589 (Suncoast Parkway), US 41, I-75, and US 301. SR 50 is also a hurricane evacuation route, a designated truck route, part of the Strategic Intermodal System (SIS) and part of the West Central Florida Metropolitan Planning Organization Chairs Coordinating Committee's (CCC) Regional Roadway Network. This segment of SR 50 connects the City of Brooksville to I-75.

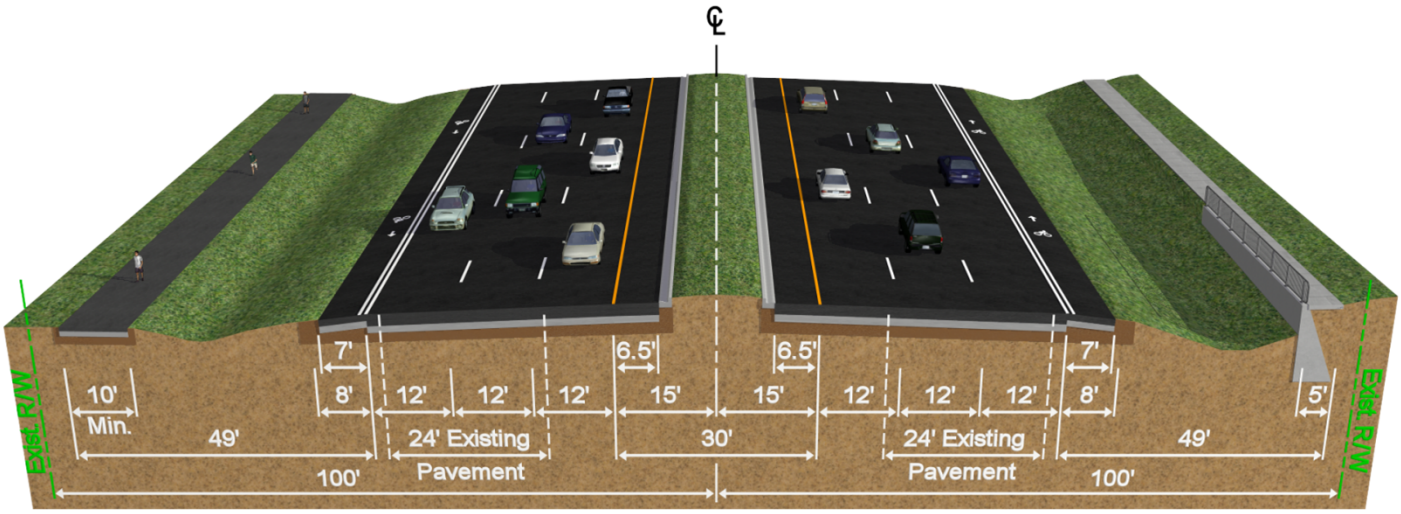
The purpose of this project is to address projected roadway congestion for SR 50 due to future growth along the project corridor and within Hernando County. Increasing roadway capacity along this segment of SR 50 will accommodate future growth, provide for enhanced emergency response times and emergency evacuation, and work in conjunction with other projects planned or underway to increase the capacity of SR 50. The existing annual average daily traffic (AADT) within the study limits varied between 18,150 and 22,700 vehicles per day (VPD) in 2014. Year 2040 AADTs based on the Tampa Bay Regional Planning Model (TBRPM Version 7.2) are predicted to range from 51,500 to 59,000 VPD. This would result in level of service (LOS) "F" at the major intersections.

Within the limits of this PD&E study, the Hernando/Citrus Metropolitan Planning Organization's 2040 Long Range Transportation Plan (LRTP) shows a need for improving SR 50 to 8 lanes, but it only shows expansion to 6 lanes in the *Cost Feasible Plan.*

A more detailed discussion of the project's purpose and need is included in the ETDM *Programming Screen Summary Report*, under ETDM project number 13980.

West Portion of Study Area: High Speed 6-Lane Suburban

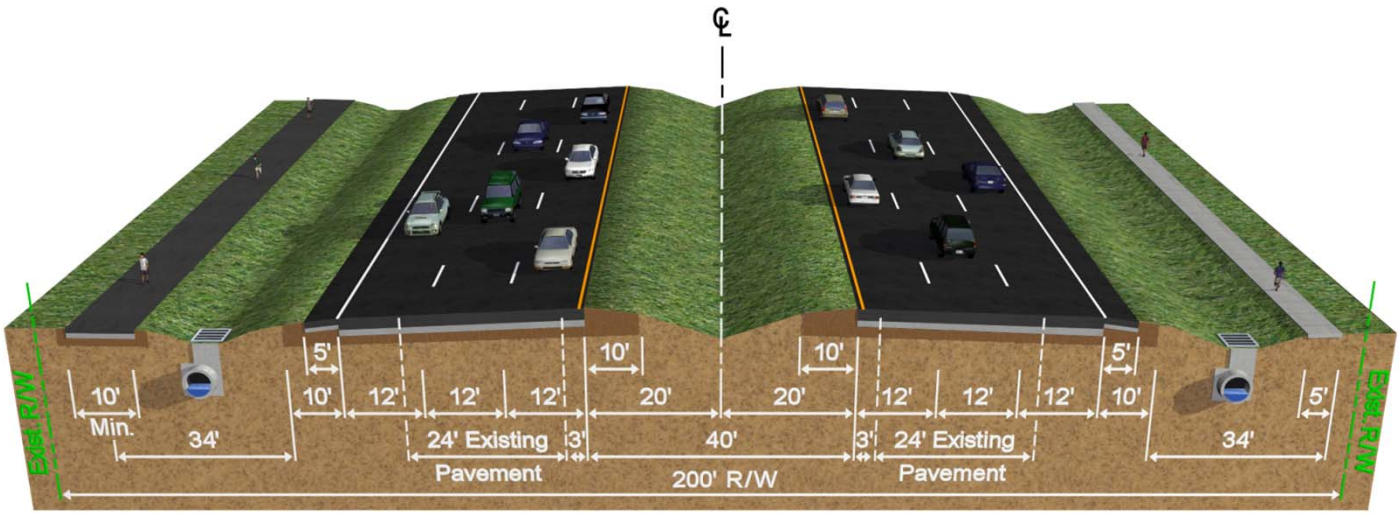
(Within 1-mile Urban Buffer Area)



- From SR 50A/Brooksville Bypass/Cortez Blvd to East of Dorsey Smith Road
- Provides 50 mph design speed

Center and East Portion of Study Area: 6-Lane Rural within ROW

(Outside 1-mile Urban Buffer Area)



- From East of Dorsey Smith Road to Lockhart Road
- Provides 65 mph design speed
- Design variation of 6 ft for border width required for each side

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State Road 50 PD&E Study ***From the Brooksville Bypass /SR 50A/ E. Jefferson Street to Interstate 75*** WPI Segment No. 430051 1 - Hernando County	**Proposed Typical Sections**	**Figure 1-3**

1.5 REPORT PURPOSE

This Natural Resources Evaluation (NRE) is one of several documents that are being prepared as part of this PD&E study. This report documents existing wildlife resources and habitat types found within the project area, and the potential for occurrences of federal and state listed protected plant and animal species and their suitable habitat, in accordance with *50 Code of Federal Regulation (CFR) Part 402 of the* Endangered *Species Act (ESA) of 1973*, as amended, *Chapters 5B-40 and 68A-27, Florida Administrative Code* (*F.A.C.)*, and *Part 2, Chapter 16 – Protected Species and Habitat* of the FDOT PD&E Manual (01/14/2019). Potential impacts to protected habitats that may support these species are also addressed in this report.

This report also documents the proposed project's wetlands and potential impacts. Pursuant to Presidential *Executive Order 11990* entitled *Protection of Wetlands*, (May 1977) the U.S. Department of Transportation (USDOT) has developed a policy, *Preservation of the Nation's Wetlands* (USDOT Order 5660.1A), dated August 24, 1978, which requires all federally-funded highway projects to protect wetlands to the fullest extent possible. In accordance with this policy, as well as *Part 2, Chapter 9 – Wetlands and other Surface Waters* of the FDOT PD&E Manual (01/14/2019) a No-Build and Build alternative were assessed to determine potential impacts to wetlands and other surface waters associated with each alternative.

Essential fish habitat (EFH) was evaluated in accordance with *Part 2, Chapter 17 – Essential Fish Habitat* of the FDOT *PD&E Manual* (June 2017). There is no EFH to address, and no further evaluation is needed.

SECTION 2 EXISTING ENVIRONMENTAL CONDITIONS

2.1 EXISTING LAND USE

Land use and vegetative cover within and adjacent to the project area was classified using the FDOT's Florida Land Use, Cover and Forms Classification System (FLUCCS). The study area, located in Hernando County, is mostly rural with some areas of development. The predominant land uses within the 300 foot buffer of the project area are transportation and cropland and pastureland, followed by hardwood conifer mixed and residential low density. The largest residential development is located east of Spring Lake Highway/Mondon Hill Road and west of Lockhart Road. FLUCCS data, aerial photographs and wetland data from the National Wetlands Inventory (NWI) were utilized to determine current land use and habitat types within the project area. The land uses and habitat types within and adjacent to the project area were subsequently ground-truthed for verification during field visits in November and December 2014 and April 2019. The land uses were identified by their FLUCCS description as well as the FLUCCS code (number that represents the type of land use). For evaluating existing land use within the project area, a 300-foot buffer was created from the center line of SR 50. Land uses along the corridor are shown in **Appendix A**. **Table 2-1** shows the land use acreages and percent cover of each identified within the project area.

2.2 EXISTING UPLAND HABITATS

Land use within the project area is primarily rural and agricultural lands with scattered low-density suburban and commercial development. Rural and agricultural lands provide habitat to many wildlife and plant species, some of which are protected. The upland communities are classified according to FLUCCS (FDOT 1999). Field reviews confirmed vegetation community types and the presence or potential for occurrence of protected plant and wildlife species. The major upland communities identified within and directly adjacent to the project area are described below. A description of federal and state protected species observed during field surveys is also included, where applicable. These protected species are discussed in greater detail in **Sections 3.4 – 3.7**.

Hardwood Conifer Mixed (FLUCCS 434)

Hardwood conifer mixed forests consist of well-developed, closed canopy forests dominated by deciduous and evergreen hardwood trees, mixed with conifer trees, on mesic soils with gently sloping terrain in areas sheltered from fire. This community type contains a diverse assemblage of deciduous and evergreen species in the canopy and mid-story, shade tolerant shrubs and sparse ground cover. Observed canopy species include pignut hickory (*Carya glabra*), sweetgum (*Liquidambar styraciflua*), southern magnolia (*Magnolia grandiflora*), laurel oak (*Quercus laurifolia*), water oak (*Quercus nigra*), southern live oak (*Quercus virginiana*), slash pine (*Pinus elliottii*), loblolly pine (*Pinus taeda*), cabbage palm (*Sabal palmetto*) and American elm (*Ulmus americana*). Observed mid-story species include highbush blueberry (*Vaccinium corymbosum*), southern arrow-wood (*Viburnum dentatum*), Walter's viburnum (*Viburnum obovatum*), wax myrtle (*Myrica cerifera*), coral

bean (*Erythrina herbacea*), American holly (*Ilex opaca*) and fringe tree (*Chionanthus virginicus*). Grasses and herbaceous species observed included woodoats (*Chasmanthium laxum var. sessiliflorum*), fourangle flatsedge (*Cyperus tetragonus*), tall nutgrass (*Scleria triglomerata*), and the state listed (endangered) Florida milkvine (*Matelea floridana*). This land use provides potential habitat for the eastern indigo snake, Florida black bear and potential nesting for the bald eagle and osprey, especially if there is nearby open surface water.

Table 2-1 Existing Land Use/Land Cover

FLUCCS	DESCRIPTION	ACREAGE (Approx. 300' from Centerline)	PERCENT COVER
110	Residential Low Density	736.8	9.0%
120	Residential Medium Density	234.6	2.9%
130	Residential High Density	217.2	2.7%
140	Commercial and Services	81.4	1.0%
150	Industrial	2.9	<0.1%
190	Open Land	86.4	1.1%
210	Cropland and Pastureland	2697.2	33.0%
240	Nurseries and Vineyards	6.6	0.1%
260	Other Open Lands (Rural)	10.6	0.1%
411	Pine Flatwoods	34.8	0.4%
412	Longleaf Pine - Xeric Oak	284.2	3.5%
434	Hardwood Conifer Mixed	814.4	10.0%
440	Tree Plantations	123.0	1.5%
520	Lakes	16.3	0.2%
530	Reservoirs	8.7	0.1%
615	Stream and Lake Swamps (Bottomland)	2.8	<0.1%
641	Freshwater Marshes	81.7	1.0%
643	Wet Prairies	31.1	0.4%
644	Emergent Aquatic Vegetation	3.3	<0.1%
740	Disturbed Land	3.3	<0.1%
810	Transportation	2702.0	33.0%
TOTAL		**8179.3**	**100.0%**

Pine Flatwoods / Longleaf Pine – Xeric Oak (FLUCCS 411/412)

These communities occur on rolling hills with deep, well-draining sands. These vegetative communities are characterized by widely spaced pine trees with sparse mid-story of deciduous oaks and diverse assemblage of groundcover species of grasses, herbs and low shrubs. Due to the proximity of a major road (SR 50) and urban development, this habitat within the project area supports a high density of hardwood oaks and shrubs resulting from fire exclusion. Observed tree species included sand pine (*Pinus clausa*), long leaf pine (*Pinus palustris*), sand live oak (*Quercus geminata*), blue jack oak (*Quercus incana*), turkey oak (*Quercus laevis*), laurel oak, myrtle oak (*Quercus myrtifolia*), water oak, and common persimmon (*Dyospyros virginiana*). Observed shrubs

include saw palmetto (*Serenoa repens*), gopher apple (*Licania michauxii*), dwarf live oak (*Quercus minima*), shiny blueberry (*Vaccinium myrsinites*) and deerberry (*Vaccinium stamineum*). Grass and herbaceous species included chalky bluestem (*Andropogon virginicus* var. *glaucus*), wire grass (*Aristida stricta* var. *beyrichiana*), lopsided Indiangrass (*Sorghastrum secundum*), pinewoods dropseed (*Sporobolus junceus*), pinweeds (*Lechea* sp.), common pricklypear (*Opuntia humifusa*) and the state listed (endangered) coastal dune sandmat (*Chamaesyce cumulicola*). These land uses provide potential habitat for the eastern indigo snake, gopher tortoise, Florida pine snake, Southeastern American kestrel, Florida black bear, and the Florida scrub-jay (if the area is fire maintained and has the appropriate vegetation types).

Cropland and Pastureland (FLUCCS 210)

This land use type includes lands that are managed for row crops or pasture production of livestock. A mix of improved and unimproved pasturelands is present within the project area and consists of areas that are dominated by Bahia grass. Land use along the SR 50 corridor primarily consists of areas of hay fields. Large areas of land adjacent to the ROW are in various stages of the crop production process. These open areas may provide foraging opportunities for avian species including white ibis and Florida sandhill crane as well as grazing for gopher tortoises.

This land use category also includes unimproved pastures (FLUCCS 212). The ruderal and unimproved pasture sites include areas where the naturally occurring vegetation was previously cleared for agriculture, pasture or other intended uses, but were not maintained resulting in abundant pioneer species. Dominant ground cover species in these areas is often Bahia grass (*Paspalum notatum*) or Pangola grass (*Digitaria eriantha*), mixed with pioneering native species such as common pricklypear, southern blackberry (*Rubus trivialis*), flattop goldenrod (*Euthamia caroliniana*) and camphorweed (*Heterotheca subaxillaris*). A moderate number of tree or shrub species include the common persimmon, laurel oak, Carolina cherry laurel (*Prunus caroliniana*), black cherry (*Prunus serotina*), and slash pine. These open areas can potentially provide foraging opportunities for avian species including white ibis and Florida sandhill crane, as well as grazing for gopher tortoises.

Other Open Lands (FLUCCS 260)

Agricultural lands with an undetermined usage falls into this category. This is not a dominant land use based on **Table 2-1**, but the maintained areas within the ROW can generally be described by this FLUCCS code, which is included as transportation (FLUCCS 810). These lands are generally dominated by Bahia grass with some areas maintaining moderate numbers of pioneer shrub species and occasional laurel oak or slash pine. These open areas can potentially provide foraging for avian species as well as grazing for gopher tortoises. Two state listed plant species were observed in the ROW, the endangered sand dune spurge (*Chamaesyce cumulicola*) and the threatened leafless beaked orchid (*Sacoila lanceolate var. lanceolata*).

Tree Plantations (FLUCCS 440)

The tree plantations are areas of planted slash pine that occur within the project area. These areas are periodically harvested for timber. They do not provide quality habitat for most species, but could be utilized by gopher tortoises and eastern indigo snakes.

2.3 EXISTING WETLAND AND SURFACE WATER HABITATS

Wetlands and jurisdictional surface waters were identified adjacent to or within the project ROW, as well as the preferred stormwater management facility (SMF) sites and floodplain compensation (FPC) locations. The majority of the wetlands are freshwater marshes and forested systems. Wetlands and surface waters that have the potential to be impacted by the proposed project improvements have been classified by the FLUCCS codes (FDOT 1999) as well as the U.S. Fish and Wildlife Service's (USFWS) *Wetlands and Deepwater Habitats Classifications*. Representative site photographs can be found in **Appendix C**, and the locations of existing wetland within the project area can be found in **Appendix D**.

Freshwater Forested Wetland (FLUCCS 615)

Palustrine Forested Deciduous (PFO1&6)

These wetland systems typically include large tree species which have a tree cover (canopy) that meet the forested criteria threshold. For the majority of the freshwater forested wetland systems within the project area, both evergreen and deciduous trees are present. Wetlands within the project area described as forested wetlands typically have a canopy including red maple (*Acer rubrum*), laurel oak (*Quercus laurifolia*), water oak (*Quercus nigra*), cabbage palms (*Sabal palmetto*), and some live oak (*Quercus virginiana*). Typical vegetation in the understory includes saltbush (*Baccharis halimifolia*), wax myrtle (*Myrica cerifera*), elderberry (*Sambuca Canadensis*) and Carolina willow (*Salix caroliniana*). There are some forested systems within the project area that have portions which are freshwater marsh and are classified as 615/641. The wetlands have been classified by the majority portion located within the project area/ROW, which is more likely to be impacted by the proposed roadway improvements. This allows for proper planning for appropriate mitigation in the future.

Freshwater Marsh (FLUCCS 641)

Palustrine Emergent Persistent (PEM1)

Freshwater marshes are vegetated herbaceous wetlands with no tree cover and minimal to no shrubs; however, many freshwater marshes can be surrounded by forested or scrub-shrub wetlands and/or uplands. Freshwater marshes are usually dominated by one or more emergent vegetation species. Vegetation identified within the freshwater marsh systems within the project limits includes cattails (*Typha* spp.), pickerelweed (*Pontedaria cordata*), rushes (*Juncus* spp.), lizard's tail (*Saururus cernuus*), duck potato (*Sagittaria latifolia*), lance-leaf arrowhead (*Sagittaria lancifolia*),

and pennywort (*Hydrocotyle* spp.). Carolina willow, ludwigia (*Ludwigia* spp.) and other similar shrub vegetation were observed within or on the edge of some of the freshwater marshes located within the project area and have been further classified as 641/640. FLUCCS code 640 is identified as Vegetated Non-Forested Wetlands.

Streams and Waterways (FLUCCS 510)

Palustrine Unconsolidated Bottom (PUB/PUBx)

These surface waters are upland cut ditches, many of which appear to be used for stormwater management or conveyance. Vegetation within these surface waters includes cattails (*Typha* spp.), ludwigia, pennywort and other typical vegetation found in roadside ditches. There are two locations (approx. STA 622+50 and 659+50) where streams/creeks pass under SR 50. These waterbodies were not identified on USGS quadrangle maps and have not been identified as named waterbodies.

Freshwater Lakes/Ponds (FLUCCS 520)

Palustrine Unconsolidated Bottom Seasonally Flooded (PUBC)

These surface waters are intermittent ponds and/or depressions within the project area. Vegetation within these surface waters is minimal, consisting of bahia grass (*Paspalum* spp.), pennywort, and dog fennel (*Eupatorium* spp.). During wet periods, many of these surface waters appear to be devoid of vegetation based on aerial review.

2.4 SOILS

The Natural Resource Conservation Service (NRCS) *Soil Survey of Hernando County* and geographic information system (GIS) data indicate that there are multiple soil types that exist within the project area. The dominant soil types and their soil map unit identification numbers are as follows: Candler fine sand, 0 to 5 percent slopes (14), Sparr fine sand, 0 to 5 percent slopes (47), Blichton loamy fine sand, 2 to 5 percent slopes (12), and Nobleton fine sand, 0 to 5 percent slopes (36). Soils within a 1,000-foot buffer from the centerline of the project limits were evaluated. Acreages and percentages of soil types within the project area can be found in **Table 2-2.** A detailed soil map can be found in **Appendix B**. A brief description of dominant soil types is provided below:

Candler fine sand, 0 to 5 percent slopes (14) – This soil is nearly level to gently sloping and excessively drained in very large to small areas on uplands. This soil has very low water capacity in the upper 48 inches and low water capacity below that depth. The water table is below a depth of 80 inches. Native vegetation consists of bluejack (*Quercus incana*), post (*Quercus stellata*) and turkey oaks (*Quercus cerris*), with scattered longleaf (*Pinus palustris*) and slash pines (*Pinus elliottii*), and a sparse understory of indiangrass (*Sorghastrum nutans*), chalky bluestem (*Andropogon capillipes*), pineland three-awn (*Aristida stricta*), panicum (*Panicum* spp.), and annual forbs.

Sparr fine sand, 0 to 5 percent slopes (47) – This soil is nearly level to gently sloping and somewhat poorly drained. It is on seasonally wet, sandy areas on uplands. In most years, the soil has a water table perched on the loamy materials for 1 to 4 months. Native vegetation consists of oaks (*Quercus* spp.), hickory (*Carya* spp.), magnolia (*Magnolia* spp.), sweetgum (*Liquidambar styraciflua*), and slash, longleaf, and loblolly pines (*Pinus taeda*).

Blichton loamy fine sand, 2 to 5 percent slopes (12) – This is a gently sloping, poorly drained soil that is commonly found in small areas on uplands. The water table is at a depth of less than 10 inches for 1 to 4 months during most years. During the dryer season, the water table drops to depths of more than 40 inches. Natural vegetation includes oaks, hickory, magnolia, sweetgum, pineland threeawn, and slash, longleaf, and loblolly pines.

Nobleton fine sand, 0 to 5 percent slopes (36) – This soil is nearly level to gently sloping, somewhat poorly drained and usually found on broad areas in uplands. This soil has a perched water table at a depth of 20 to 40 inches for 1 to 4 months during the rainy season in most years. Natural vegetation includes live (*Quercus virginiana*), laurel (*Quercus laurifolia*) and water oaks (*Quercus nigra*), slash and longleaf pines, hickory, magnolia, and sweetgum. The understory consists of wax myrtle (*Myrica cerifera*), briers, and native grasses including bluestem, pineland three-awn, toothache grass (*Ctenium aromaticum*), panicums and lopsided indiangrass.

Table 2-2 Existing Soils (NRCS)

MAP UNIT SYMBOL	DESCRIPTION	ACREAGE (Approx. 1,000' from Centerline)	PERCENTAGE
6	Arredondo fine sand, 0 to 5 percent slopes	25.8	1.4%
11	Blichton loamy fine sand, 0 to 2 percent slopes	24.1	1.3%
12	Blichton loamy fine sand, 2 to 5 percent slopes	249.8	13.6%
13	Blichton loamy fine sand, 5 to 8 percent slopes	16.2	0.9%
14	Candler fine sand, 0 to 5 percent slopes	560.3	30.5%
15	Candler fine sand, 5 to 8 percent slopes	80.3	4.4%
19	Electra variant fine sand, 0 to 5 percent slopes	16.2	0.9%
20	Flemington fine sandy loam, 0 to 2 percent slopes	7.6	0.4%
21	Flemington fine sandy loam, 2 to 5 percent slopes	89.2	4.8%
25	Floridana variant loamy fine sand	71.9	3.9%
28	Kanapaha fine sand	20.7	1.1%
29	Kendrick fine sand, 0 to 5 percent slopes	28.1	1.5%
34	Micanopy loamy fine sand, 2 to 5 percent slopes	42.6	2.3%
36	Nobleton fine sand, 0 to 5 percent slopes	228.7	12.5%
41	Pits	16.1	0.9%
47	Sparr fine sand, 0 to 5 percent slopes	251.8	13.7%
49	Tavares fine sand, 0 to 5 percent slopes	4.9	0.3%
52	Wauchula fine sand, 0 to 5 percent slopes	97.1	5.3%
99	Water	4.8	0.3%
TOTAL		**1836.2**	**100.0%**

SECTION 3 PROTECTED SPECIES AND HABITAT

The project area was assessed for the presence of suitable habitat for federal and/or state listed and protected species in accordance with *50 CFR Part 402 of the ESA of 1973*, as amended, *Chapter 5B-40: Preservation of Native Flora of Florida*, *F.A.C., Chapter 68A-27: Rules Relating to Endangered or Threatened Species, F.A.C.*, and *Part 2, Chapter 16 – Protected* Species *and Habitat* of the FDOT *PD&E Manual*.

3.1 METHODOLOGY AND ASSESSMENT

Literature reviews, agency database searches, and preliminary field reviews of potential habitat areas were conducted to identify federal and state protected species occurring or potentially occurring within the project area. The *Hernando County Soil* Survey and recent aerial photographs (2017) were reviewed to determine habitat types occurring within and adjacent to the project area. Information sources and databases utilized include the following:

- USFWS GIS Database(s)
- USFWS Information for Planning and Conservation (IPaC)
- Florida Natural Areas Inventory (FNAI) GIS Database(s)
- Florida Fish and Wildlife Conservation Commission (FWC) GIS Database(s)
- Hernando County Soil Survey
- FWC - Strategic Habitat Conservation Areas (SHCA) (1994) (10-mile radius)
- USFWS - Critical Habitat for Threatened and Endangered Species
- USFWS - Wood Stork Colony Core Foraging Areas (CFA) 2005-2017 (15-mile radius)
- ETDM Project #13980, Programming Screen Summary Report (PSSR), dated 1/7/2014
- National Wetland Inventory (NWI) GIS Data
- Southwest Florida Water Management District (SWFWMD) GIS Data

Based on the results of database searches, preliminary field reviews and review of aerial photographs and soil surveys, field survey methods for specific habitat types and lists of target species were developed. Field reviews consisted of vehicular surveys, roadside observations 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. Surveys were performed in November and December 2014, as well as April 2019. In 2014, surveys took place within the existing ROW of SR 50, with visual observations conducted on adjacent lands. In 2019, a pond-site field review and follow-up ROW review was conducted along SR 50, obtaining a more detailed analysis of potential species and habitats along the existing ROW and within the preferred SMF and FPC sites. Any observations of protected species or indicators of their presence

(i.e., vocalizations, tracks, scat, burrows, etc.) within or immediately adjacent to the study area were documented.

Based on the above methods, a list of potentially occurring protected species was developed, and each species was assigned a low, moderate or high likelihood for occurrence within habitats found within the project area. If a species or species indicator was observed during field reviews it is identified as such. **Table 3-1** lists the federal and state protected wildlife species with the potential to occur within the project area, based on potential availability of suitable habitat and known ranges. **Table 3-2** provides the same information for federal and state protected plant species. Definitions for likelihood of occurrence are provided below:

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

Moderate – Species with a moderate likelihood for occurrence are those species known to occur in Hernando County or nearby counties, and for which suitable habitat is well represented within or adjacent to the project area, but no observations or positive indications exist to verify their presence.

High – Species with a high likelihood for occurrence are suspected within and adjacent to the project area based on known ranges and existence of sufficient preferred habitat within the vicinity of the project; are known to occur adjacent to the project area; or have been previously observed or documented in the vicinity.

Table 3-1 Potentially Occurring and Observed Listed and Protected Wildlife Species

SPECIES	COMMON NAME	FWC	USFWS	HABITAT	PROBABILITY OF OCCURRENCE
REPTILES					
Drymarchon corais couperi	Eastern indigo snake	T	T	Hydric hammock, palustrine, sandhill, scrub, upland pine forest, mangrove swamp	High
Gopherus polyphemus	Gopher tortoise	T	C	Old field, sandhill, scrub, xeric hammock, ruderal, dry prairie, pine flatwood	High*
Pituophis melanoleucus mugitus	Florida pine snake	T	--	Sandhill, scrubby flatwoods, xeric hammock, pine flatwoods, ruderal	Moderate
BIRDS					
Platalea ajaja *(Ajaia ajaja)*	Roseate spoonbill	T	--	Coastal marsh, tidal ponds, sloughs, freshwater marsh, mudflats, tidal swamps	Moderate
Aphelocoma coerulescens	Florida scrub jay	T	T	scattered, often small and isolated patches of sand pine scrub, xeric oak scrub, and scrubby flatwoods	Low
Egretta caerulea	Little blue heron	T	--	Estuarine, lacustrine, riverine, tidal marsh, tidal swamp	High
Egretta tricolor	Tricolored (Louisiana) heron	T	--	Estuarine, lacustrine, riverine, tidal marsh, tidal swamp	High
Falco sparverius paulus	Southeastern American kestrel	T	--	Sandhill, mesic flatwoods, ruderal, dry prairie	High*
Grus canadensis pratensis	Florida sandhill crane	T	--	Basin marsh, depression marsh, dry prairie, marl prairie, pastures	High*
Haliaeetus leucocephalus	Bald eagle	--	--	Estuarine, lacustrine, riverine, tidal marsh, tidal swamp	High*
Mycteria americana	Wood stork	T	T	Estuarine tidal swamps/marshes, lacustrine, seepage stream, ditches, ruderal	High*

SPECIES	COMMON NAME	FWC	USFWS	HABITAT	PROBABILITY OF OCCURRENCE
Pandion haliaetus	Osprey	--	--	Open Water; areas of cypress, mangrove, pine and swamp hardwoods for nesting	High*
Picoides borealis	Red-cockaded woodpecker	E	E	Regularly burned mature pine forests	Medium
Athene cunicularia (Speotyto cunicularia)	Florida burrowing owl	T	--	Dry prairie, sandhill, pastures, golf courses, ruderal, athletic fields	Low
MAMMALS					
Ursus americanus floridanus	Florida black bear	--	--	Palustrine, terrestrial, pine flatwoods, sand pine scrub, cypress swamps	High

Legend: E=Endangered, T=Threatened, SSC= Species of Special Concern, X=not listed, C=Candidate Species

*Species observed during species field survey or field review

Table 3-2 Potentially Occurring and Observed Listed Plant Species

Scientific Name	Common Name	Federal Status	State Status	Habitat	Probability of Presence or Occurrence
Asclepias curtissii	Curtiss' Milkweed	--	E	Dry hammocks, scrub & scrubby flatwoods – endemic to FL.	Moderate
Campanula robinsiae	Brooksville Bellflower	E	E	Wet, grassy slopes and dry pond edges near Chinsegut Hill	Low
Centrosema arenicola	Sand Butterfly Pea	--	E	Long leaf pine-turkey oak sandhills & scrubby flatwoods – endemic to FL.	Moderate
Chamaesyce cumulicola	Sand Dune Spurge	--	E	Scattered in openings (natural or artificial) in scrub, sandhill & coastal dunes – endemic to FL.	High*
Garberia heterophylla	Garbaeria	--	T	long leaf pine-turkey oak sandhills, scrub, scrubby flatwoods & dry prairie – endemic to FL.	Moderate
Justicia cooleyi	Cooley's Water-willow	E	E	Mesic hardwood hammocks over limestone	Low
Lechea cernua	Nodding Pinweed (Scrub Pinweed)	--	T	In scattered opens in scrub & scrubby flatwoods – endemic to FL.	Moderate
Lechea divaricata	Dry Sand Pinweed	--	E	Scrubby flatwoods– endemic to FL.	Moderate
Matelea floridana	Florida Spiny-pod	--	E	Moist to dry upland hardwood forests and bluffs adjacent to seeps & streams. With oak, hickory, magnolia & pine associations. (GA)	High*
Nolina brittoniana	Brittons' Bear-grass	E	E	Scrubby flatwoods & sandhill– endemic to FL.	Moderate
Pteroglossaspis ecristata	Giant Orchid	--	T	Sandhill, scrub, pine flatwoods, pine rocklands & pasture.	Moderate
Sacoila lanceolata var. lanceolata	Leafless beaked orchid	--	T	Hammocks, wet flatwoods, prairies, roadsides & pasture.	High*

Legend: E = Endangered, T = Threatened, -- = not listed

*Species observed during species field survey or field review

3.2 COORDINATION WITH PERMITTING AGENCIES

Agency coordination was conducted as part of the ETDM screening and Advanced Notification review process. The ETDM screening process was used to become aware of any issues noted by the commenting agencies. ETDM coordination was conducted with USFWS, National Marine Fisheries Service (NMFS), FWC, and SWFWMD. Much of the coordination for potential species occurrence was conducted electronically utilizing databases from USFWS, FWC, SWFWMD and FNAI. A summary of the relevant agency comments during the ETDM screening is provided below:

3.2.1 U.S. Fish and Wildlife Service

The USFWS identified three potentially affected species within the project area: the wood stork (*Mycteria americana*), the eastern indigo snake (*Drymarchon corais couperi*), and the gopher tortoise (*Gopherus polyphemus*).

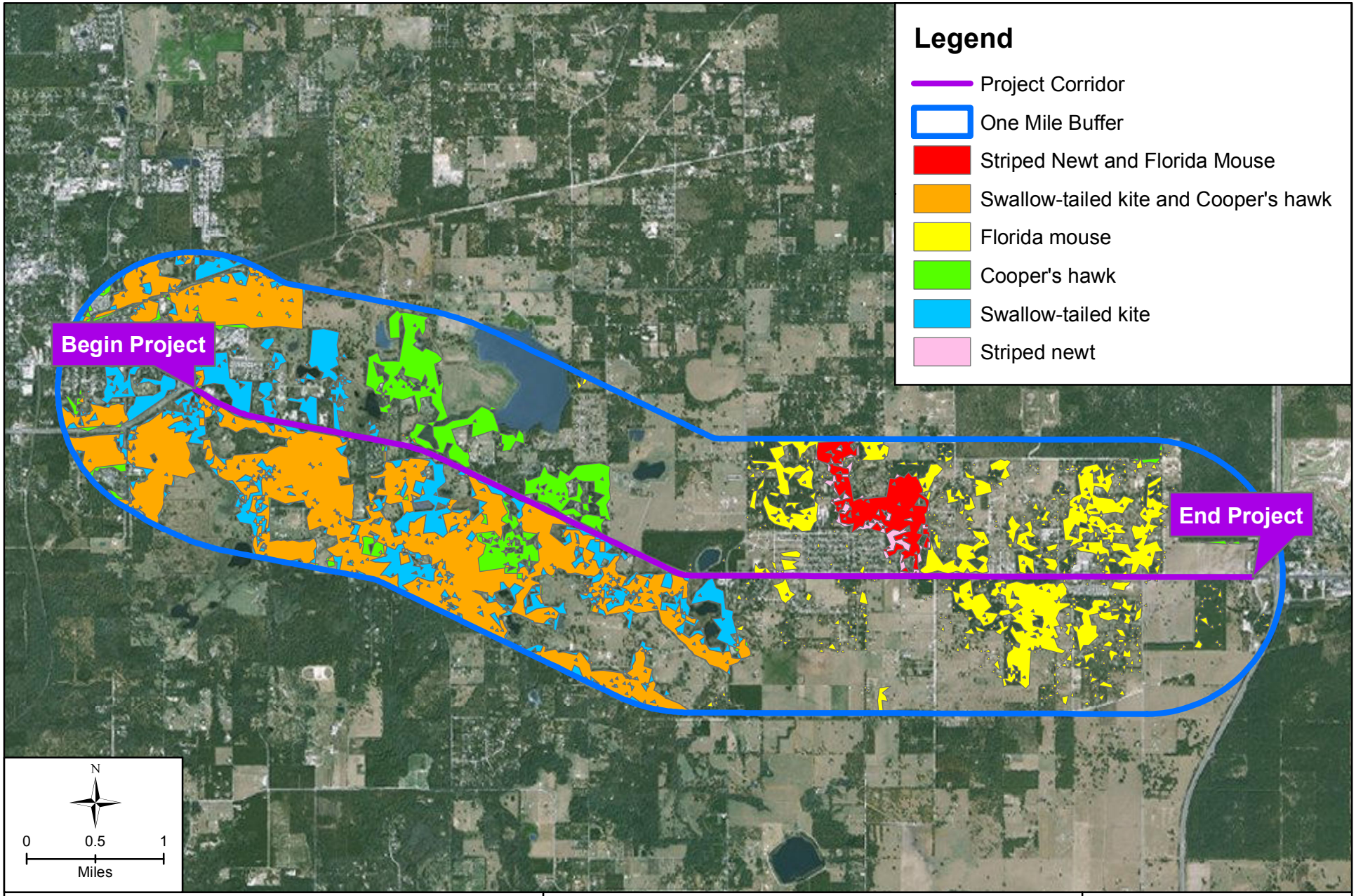
The proposed project will impact wetlands in the CFA of at least four active nesting colonies of the federally threatened wood stork. If avoidance is not feasible, minimization measures should be employed to the maximum extent practicable. The USFWS stated that mitigation for wetland impacts should replace the habitat lost as a result of the road expansion. Additionally, direct impacts to wildlife due to vehicle collisions may occur.

Agricultural and silvicultural lands provide habitat for the eastern indigo snake (federally threatened) and the gopher tortoise (currently a candidate species) along this corridor and will likely be degraded by construction. The USFWS states that implementing the current protection measures for the eastern indigo snake should reduce the risk to snakes. Additionally, gopher tortoise burrow surveys should be conducted prior to construction.

3.2.2 Florida Fish and Wildlife Conservation Commission

The FWC identified numerous federal and state endangered and threatened species as well as species of special concern that may exist within the project corridor, including: wood storks, bald eagles, and black bears. FWC notes the Croom Wildlife Management Area (part of the Withlacoochee State Forest) is located approximately one-quarter mile north of the eastern end of the project. FWC Strategic Habitat Conservation Areas (SHCA) are also documented along the corridor for the striped newt (*Notophthalmus perstriatus*), swallow-tailed kite (*Elanoides forficatus*), Florida mouse (*Podomys floridanus*), and Cooper's hawk (*Accipiter cooperii*) [**Figure 3-1**].

The FWC identified the primary wildlife issues related to this project include: potential loss of habitat due to construction of the roadway and drainage retention areas; a potential increase in roadkill; and a potential for degradation of water quality due to increased stormwater runoff. The FWC states these effects could be minimized by constructing new lanes in the existing median. The FWC also suggested measures be taken for conserving wildlife and fish habitat resources within and adjacent to the project.



SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/Jefferson Street to Interstate 75

WPI Segment No. 430051 1 - Hernando County

Strategic Habitat Conservation Areas

Source: USFWS

Figure 3-1

3.2.3 Southwest Florida Water Management District

SWFWMD states both upland and wetland dependent species' habitat may be affected by this project. They note the USFWS Ecologic Service areas for the following species intersect the corridor: Florida scrub-jay (*Aphelocoma coerulescens*), eastern indigo snake, Florida sandhill crane (*Grus canadensis pratensis*), and Florida black bear. SWFWMD commented that according to the Priority Wetland Habitat Species layer on the SWFWMD ArcMap, there are strategic habitats and conservation areas located within the 100-foot, 200-foot, and 500-foot buffer from the designated road widening project for species including the black bear, and the American alligator (*Alligator mississippiensis)*. SWFWMD stated the project has the potential to eliminate the remnants of native habitat used by listed species for breeding and foraging.

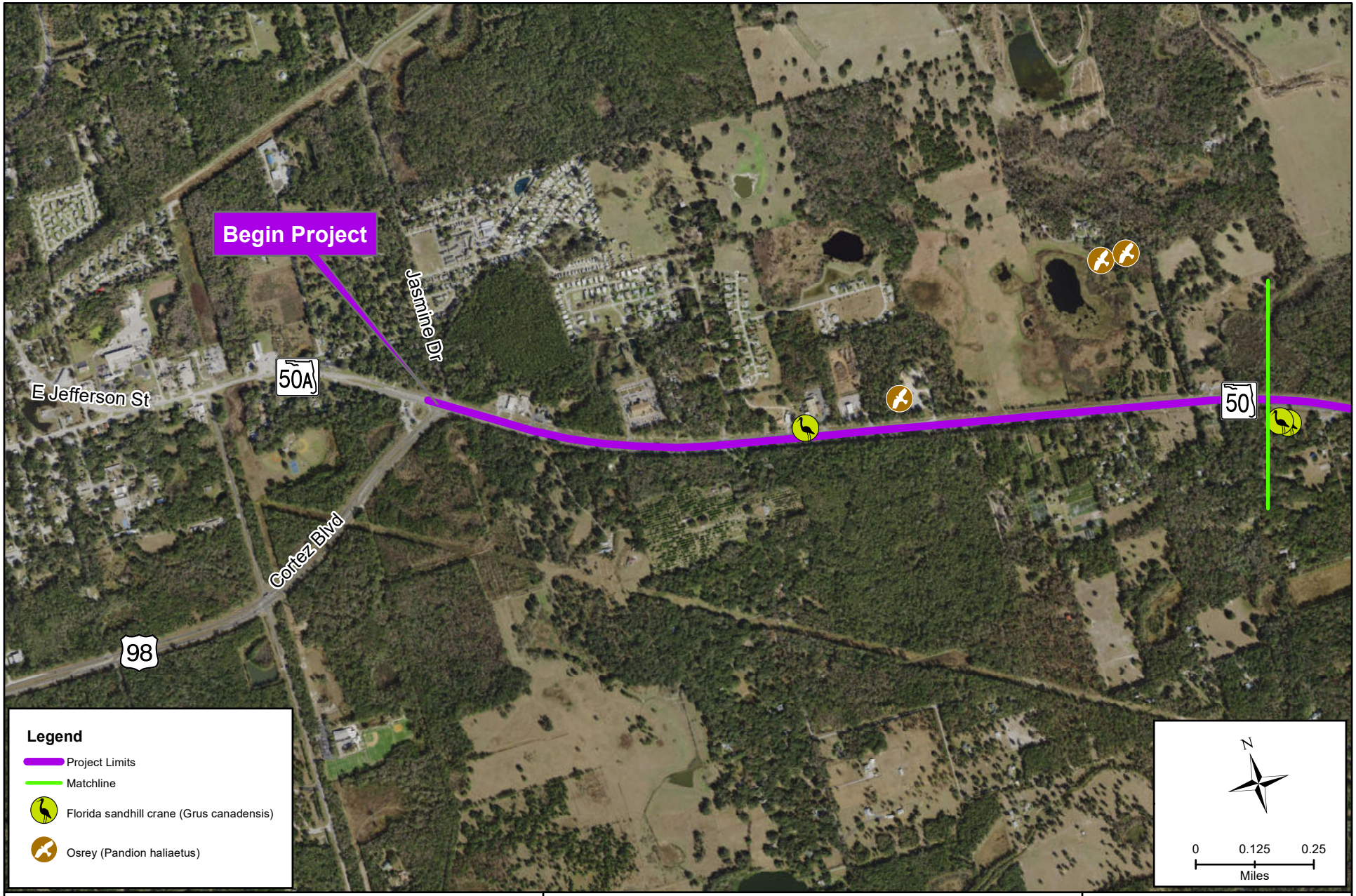
3.3 SURVEY RESULTS

Land use within the project area is primarily rural and agricultural lands with scattered low density suburban and commercial development. Rural and agricultural lands provide habitat to many wildlife and plant species, some of which are protected. Subsequently, wildlife observations were noted throughout the length of the SR 50 corridor.

During the two species field surveys conducted in November and December 2014, one federally-listed species, the wood stork, was observed flying over the project area. Three state listed species, the gopher tortoise, Florida sandhill crane, and Southeastern American kestrel were observed during field these surveys. Gopher tortoises and their burrows were observed primarily in the central and eastern areas of the project limits. Two non-listed, federally-protected faunal species, the osprey and bald eagle, and three state listed plant species were observed. No federally-listed plant species were observed. Observed protected species occurrences are depicted on **Figure 3-2,** whereas **Figure 3-3** provides recent and historic species occurrence results from the database searches, based on a one-mile radius from the project area.

During the April 2019 field review, one federal listed species, the wood stork, was observed foraging near preferred pond site SMF-4C. One state listed species, the Florida sandhill crane (two individuals), were observed during the field review foraging on the western half of the project area near preferred pond sites SMF-3A and FPC-3-4A. Potentially occupied gopher tortoise burrows were identified within and adjacent to the project area and at preferred SMF and FPC site locations, primarily in the eastern areas of the project limits; although, no individuals were observed. One non-listed, federally-protected species, the osprey, was observed flying over preferred pond sites SMF-2A and FPC-2A. No federal or state listed plant species were observed in this field review.

Descriptions are provided in the sections below for those species which have been observed within the vicinity of the project area or have high potential to occur within habitats identified within the vicinity of the project limits.



SR 50 (US 98) PD&E Study

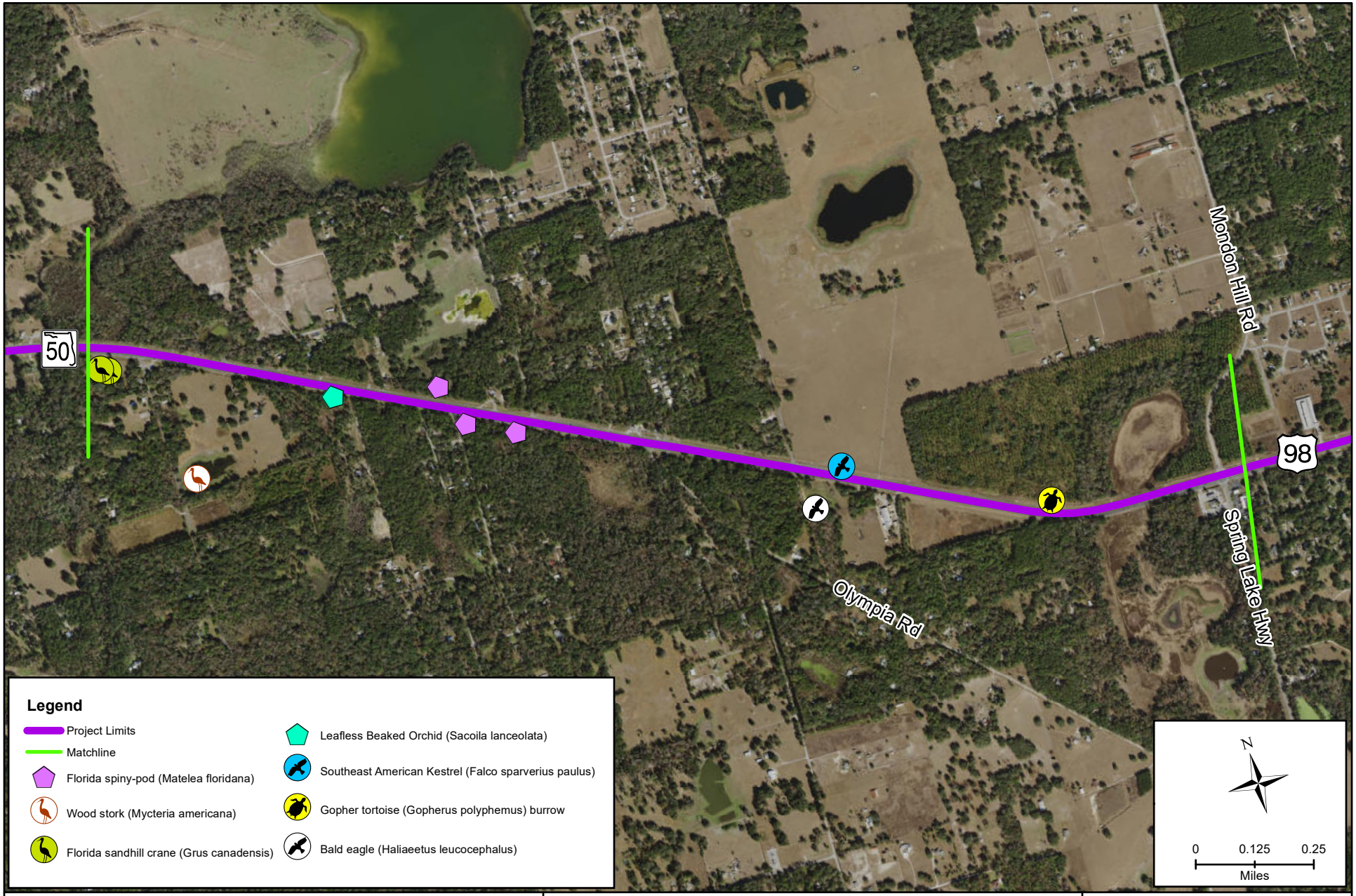
From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

Field Observations

Source: Species Field Survey 11/14/2014 & 12/12/2014; SMF Field Review 04/10/2019

Figure 3-2
Sheet 1 of 4



SR 50 (US 98) PD&E Study

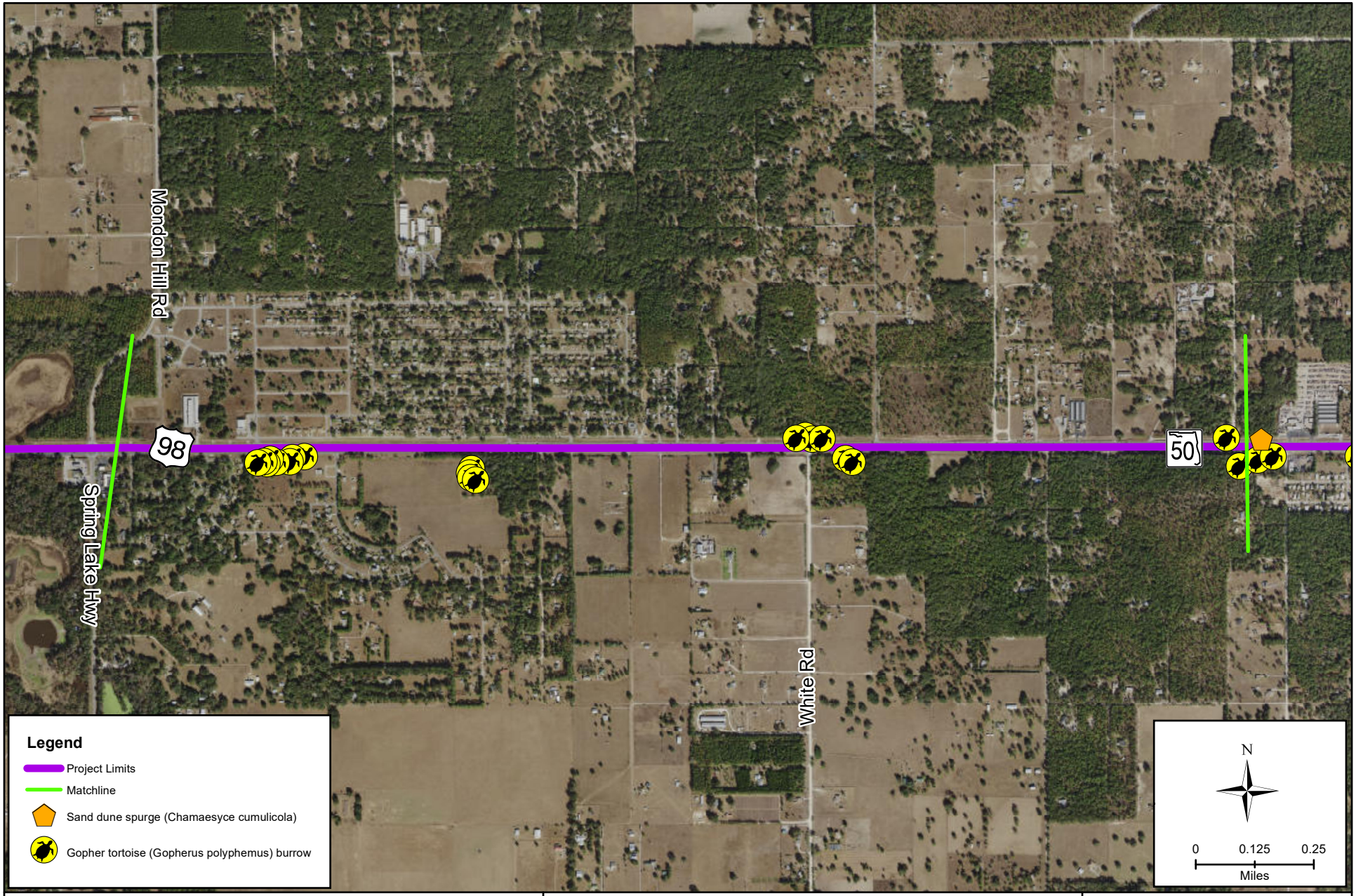
From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

Field Observations

Source: Species Field Survey 11/14/2014 & 12/12/2014; SMF Field Review 04/10/2019

Figure 3-2
Sheet 2 of 4



SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

Field Observations

Source: Species Field Survey 11/14/2014 & 12/12/2014; SMF Field Review 04/10/2019

Figure 3-2
Sheet 3 of 4

SR 50 (US 98) PD&E Study

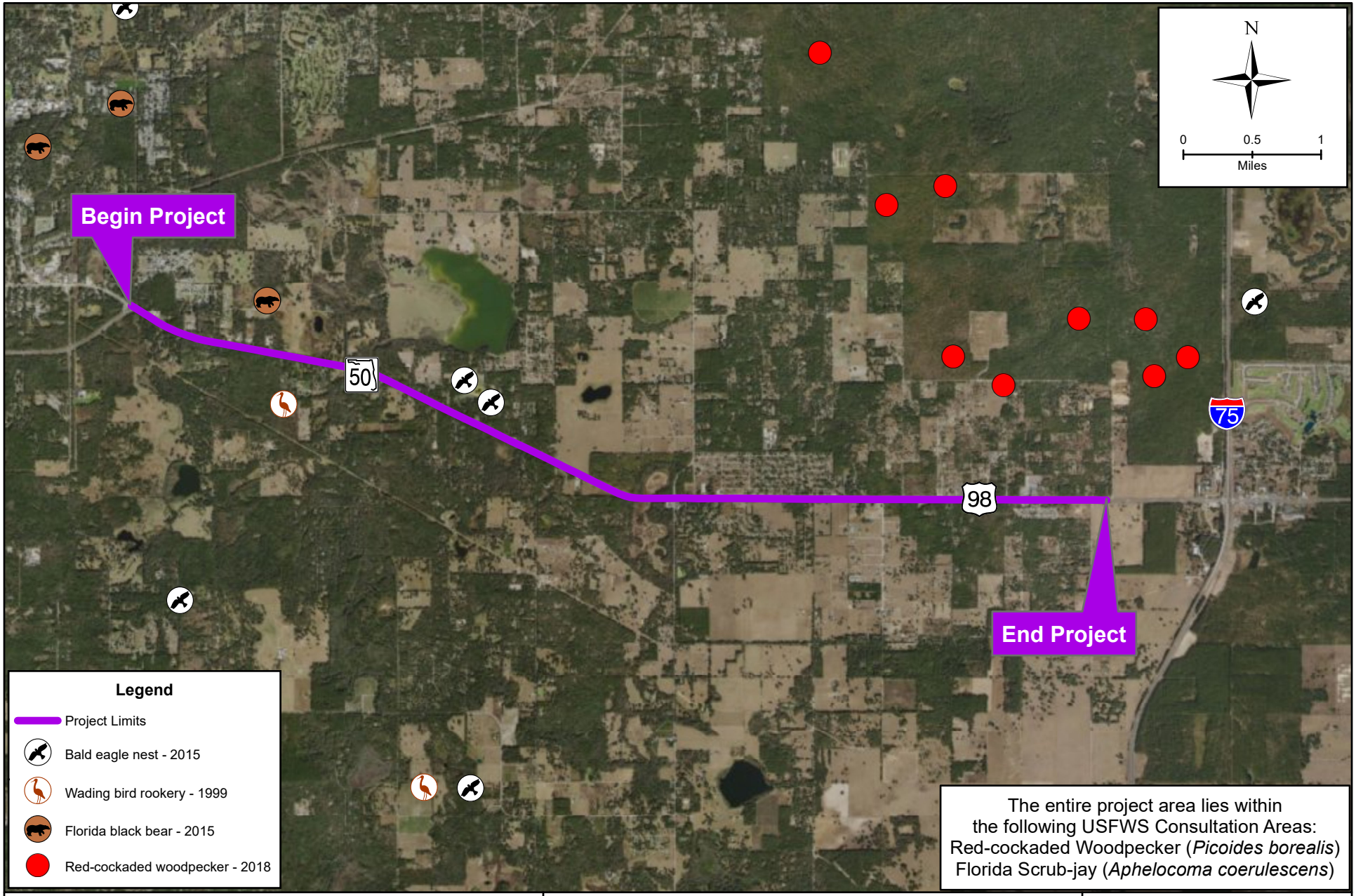
From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

Field Observations

Source: Species Field Survey 11/14/2014 & 12/12/2014; SMF Field Review 04/10/2019

Figure 3-2
Sheet 4 of 4



FDOT

SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

Potential Listed Species Occurrence Map

Source: USFWS, FWC

Figure 3-3

3.4 FEDERAL LISTED SPECIES

Federally-listed wildlife species which have been observed or determined as having a high probability for occurrence in the vicinity of the project area include the wood stork (*Mycteria americana*) and eastern indigo snake. No federally-listed plant species were observed or are documented within the project area. The effect determinations for each of the species provided below are for the Build alternative, since there would be no effect on protected species or their habitat by the No Build alternative.

3.4.1 Wood Stork

The wood stork is federally-listed as threatened. Wood storks utilize freshwater and estuarine habitats for nesting, foraging, and roosting. Wood storks typically are colonial nesters and construct their nests in medium to tall trees located within wetlands or on islands.

A pair of flying wood storks was observed during species field surveys conducted in December 2014. One individual was seen foraging south of the preferred pond site SMF-4C during the field review conducted in April 2019. The project falls within the 15-mile CFA of four wood stork rookeries (**Figure 3-4**). As defined by the USFWS, Suitable Foraging Habitat (SFH) for wood storks includes wetlands and surface waters which have areas of water that are relatively calm, uncluttered by dense thickets of aquatic vegetation, and have permanent or seasonal water depth between 2 and 15 inches. As such SFH is limited within the project area, and very little SFH exists within the existing roadside ditches and swales. No SFH was identified within the preferred SMF and FPC site locations. Unavoidable wetland impacts will be mitigated as appropriate. Impacts to other surface water features will be compensated for in the future design of the stormwater management system. As such, when applying the project specifics to the *Effect Determination Key for the Wood Stork in Central and North Peninsular Florida* (**Appendix F**) indications are that the project may affect, not likely to adversely affect this species.

3.4.2 Eastern Indigo Snake

The eastern indigo snake is federally-listed as threatened. The eastern indigo snake occurs in a wide variety of habitats, including forested uplands and wetlands as well as wet and dry prairies. The eastern indigo snake utilizes gopher tortoise burrows, holes, cavities and other refugia for protection. No individuals were observed during the field surveys; however, areas of potential suitable habitat for this species occur within and adjacent to the large majority of the project area, including the preferred SMF and FPC sites.

To assure the protection of this species during construction, when it is most likely to be affected, the FDOT will require adherence to the USFWS's *Standard Protection Measures for the Eastern Indigo Snake* be implemented (**Appendix G**). When the project proceeds to permitting and construction phases, the most current guidelines will be obtained and followed. The *Eastern Indigo Snake Programmatic Effect Determination Key* (revised July 2017) (**Appendix H**) was used for this project, and it was determined the project may affect, not likely to adversely affect the eastern indigo snake.

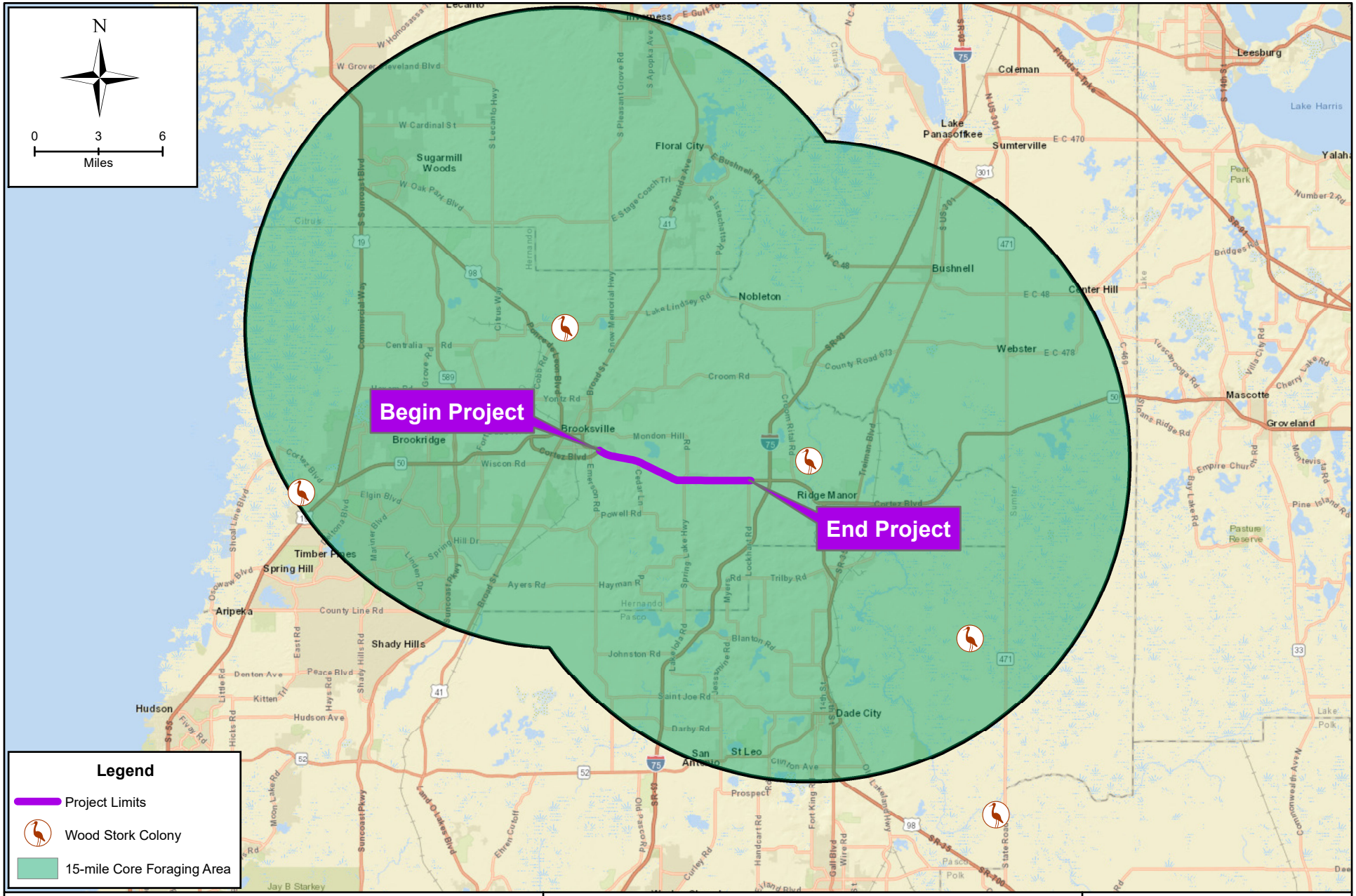
3.4.3 Florida Scrub-Jay

The Florida scrub-jay is an endemic species which is federally-listed as threatened. Scrub-jays are limited to patches of sand pine scrub, xeric oak scrub, and scrubby flatwoods occurring on well-drained, sandy ridges. The project is located within the USFWS Consultation Area for the Florida scrub-jay, but suitable habitat does not exist within or immediately adjacent to the project area, including the preferred SMF and FPC sites. Xeric habitats adjacent to the project area do not consist of the fire-maintained short scrubby oaks, open patches of sand, and limited number of tall trees required by this species; therefore, the project will have no effect on the Florida scrub-jay.

3.4.4 Red-Cockaded Woodpecker

The red-cockaded woodpecker is a federally-listed endangered species which can be found in large expanses of mature pine forest. Red-cockaded woodpeckers prefer to nest in longleaf pines, but other southern pines are acceptable. This woodpecker species is the only one which excavates cavities exclusively in living pine trees, usually over 80 years old.

The project area is located within the USFWS Consultation Area for the red-cockaded woodpecker, but suitable habitat does not exist within or immediately adjacent to the project area, including the preferred SMF and FPC sites. Xeric habitat within the project area does not consist of large expanses of fire-maintained open understory and old-growth pines required by this species, and no nest cavities were observed during field reviews; therefore, the project will have no effect on the red-cockaded woodpecker.



SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

Wood Stock Colony Core Foraging Area Map

Source: USFWS, FWC

Figure 3-4

3.5 STATE LISTED SPECIES

State listed wildlife species which have been identified as occurring or having a high probability for occurrence in the vicinity of the project area include the gopher tortoise, Southeastern American kestrel, and several species of wetland dependent birds listed below.

3.5.1 Gopher Tortoise

The gopher tortoise is state-designated threatened and is a candidate for federal listing. Preferred habitats include xeric areas with sandy soils and open canopy with low groundcover. Numerous active and potentially occupied gopher tortoise burrows are located within the project ROW on the eastern half of the project limits and within or near preferred SMF and FPC sites (**Figure 3-2**).

Comprehensive surveys for tortoises and their burrows will be conducted during the final design phase of the project per FWC guidelines. If gopher tortoise burrows are observed and cannot be avoided, a relocation permit will be obtained from the FWC and relocation will be conducted prior to construction per the FWC guidelines. Commensal species that may utilize the burrows will also be relocated if encountered. There are no adverse effects anticipated for the gopher tortoise.

3.5.2 Southeastern American Kestrel

The Southeastern American kestrel is state-designated threatened. It is a non-migratory subspecies of kestrel found in open pine savannahs, sandhills, prairies, and pastures in Florida. Kestrels nest primarily in large dead trees in cavities previously excavated or hollowed out by woodpeckers. A kestrel was observed perched on a power line in the ROW during species field surveys (**Figure 3-2**). No kestrels were observed within the preferred SMF and FPC sites, although approximatley 2,860 acres (35% of the 300-foot land use buffer) of potential habitat exist. Because of the difficulty in distinguishing the listed resident sub-species from the non-listed northern kestrel subspecies (*Falco sparverius*) which is found in Florida from September through March, it is unknown which sub-species may have been observed. Surveys would need to be conducted during the summer when the non-listed sub-species is not present to confirm presence or absence, and should take place during the final design phase of the project. If it is determined nest areas are found and could be impacted by the project, construction activities may be limited during the nesting season (mid-March – June) to minimize impacts. Further coordination would need to be conducted with FWC at that time. There were minimal dead trees with cavities located within the project area that would provide nesting habitat for the southeastern American kestrel. Additional surveys should be conducted as part of permitting and prior to construction. There are no adverse effects anticipated for the Southeastern American kestrel.

3.5.3 Burrowing Owl

The burrowing owl is listed as a threatened species by the FWC and can be found in native open prairies and cleared areas that offer short groundcover such as agricultural fields, pastures, golf courses, airports, and vacant lots throughout Florida. The owls usually dig their own burrows but are known to use armadillo or gopher tortoise burrows.

Although the burrowing owl is documented in nearby habitats, the likelihood of occurrence is low due to the limited expanses of prairies or cleared areas within the project area; therefore, there is no effect anticipated on this species.

3.5.4 Wetland Dependent Avian Species

This category includes state listed wetland dependent avian species that have a high potential to occur or were observed within the project area. These include: roseate spoonbill (*Platalea ajaja/Ajaia ajaja*), Florida sandhill crane (*Grus canadensis pratensis*), little blue heron (*Egretta caerulea*), and tricolored heron (*Egretta tricolor*). These four species are listed as threatened by the FWC.

The only wetland dependent bird observed foraging in adjacent pasture areas during species field surveys in 2014 was the Florida sandhill crane (**Figure 3-2**). Two Florida sandhill cranes were also observed foraging in an open area of preferred pond sites SMF-3A and FPC-3-4A during the field review conducted in April 2019. One mixed wading bird rookery was documented within one mile of the project area (**Figure 3-3**) in the Florida Atlas of Breeding Sites for Herons and their Allies (Atlas #611010). The colony was active in the 1970's and 1980's, but inactive during the 1990's. Little blue herons and cattle egrets (*Bubulcus ibis*) were present during both surveys when the colony was active, and great egrets (*Ardea alba*) were only present during the 1970's survey. Cattle egrets and great egrets are not listed by FWC. No rookeries for these or other species were observed during field surveys.

Wetlands and surface waters that provide foraging potential for the wetland dependent avian species include ditches/swales, ponds, and riverine systems. Unavoidable wetland impacts will be mitigated as appropriate. Impacts to other surface water features will likely be compensated for in the future design of the stormwater management system. Therefore, there are no adverse effects anticipated for these wetland dependent avian species.

3.6 PROTECTED, NON-LISTED SPECIES

This section discusses species that are no longer listed by USFWS or FWC, but are still afforded protection. Species that have the potential to exist within the project area include the osprey (*Pandion haliaetus*), bald eagle (*Haliaeetus leucocephalus*), and Florida black bear.

3.6.1 Osprey

Ospreys are afforded protection under the *Migratory Bird Treaty Act* (MBTA) (16 U.S.C.703-712) and are state protected by *Chapter 68A* of the F.A.C. Ospreys require nest sites in open surroundings for easy approach that are safe from ground predators, such as raccoons. They readily build nests on manmade structures, such as telephone poles and nest platforms designed especially for these birds.

One active osprey nest was observed on a cell phone tower, immediately adjacent to the ROW during the species field surveys in 2014 (**Figure 3-2**). Although both active and inactive osprey nests

are federally-protected, only active nests require federal permits for taking. Under state rules, only inactive osprey nests may be taken, as determined by the absence of eggs or flightless young at the nest. Typically, a replacement nesting structure located in the immediate vicinity is required to be erected.

Surveys to update locations of active osprey nest sites will be conducted during the permitting phase of the project, and permits will be acquired if impacts during construction are unavoidable. Avoidance of the nest will take place and nest structure replacement will occur if removal is required.

3.6.2 Bald Eagle

Although the bald eagle is no longer afforded protection by the ESA, protection for the species is afforded through the Migratory Birds Program per the MBTA and Bald and Golden Eagle Protection Act (BGEPA). The USFWS will still regulate activities if an active eagle nest is within 660 feet of a proposed activity. Bald eagles are also no longer listed by the FWC but monitoring may be required pursuant to the FWC Eagle Management Guidelines if construction occurs within the 660 feet.

The most recent FWC data show two bald eagle nests in the vicinity of the project area at approximately 1,250 and 1,000 feet from the center line of SR 50 (**Figure 3-3**). A perching bald eagle was observed within the vicinity of the project area during field surveys in December 2014 (**Figure 3-2**). Surveys and FWC data reviews to update locations of active bald eagle nest sites will be conducted during the permitting phase of the project, and monitoring will take place if new nests are constructed within 660 feet of proposed activities.

3.6.3 Florida Black Bear

The Florida black bear is considered an "imperiled" species by the FWC, but was removed from the State Endangered and Threatened Species List in August 23, 2012. However, the FWC's *Florida Black Bear Conservation Rule* (Rule 68A-1.004, F.A.C.) provides protections making it illegal to possess, injure, shoot, wound, trap, collect, or sell Florida black bears or their parts except as authorized by Commission rule or permit.

Black bear nuisance reports are documented within one mile of the project area (**Figure 3-3**). It is likely that black bears utilize and move through habitats within the project area, and in particular on the eastern end of the project limits, which is located south of the Croom Tract of the Withlacoochee State Forest.

3.7 STATE LISTED PLANT SPECIES

Three state listed and no federal listed plant species were observed within the project area. The observed state listed plants include the sand dune spurge, Florida spiny-pod (*Matelea floridana*), and leafless beaked orchid. State regulations do not prohibit landowners from removing or destroying listed plant species. Permits are required only when the plants are to be used or transported for commercial purposes. Descriptions are provided below for those listed plant species

which have been observed within the vicinity of the project area or have high potential to occur within habitats identified within or adjacent to the project area.

The FDOT has determined only limited areas of existing habitat for these species are anticipated to be affected by the proposed project; therefore, there is no effect anticipated on the long term viability of these species by the proposed project. Surveys should be conducted during design or prior to construction during the appropriate seasons. If protected species are located, coordination with the USFWS, FWC and/or the Florida Department of Agriculture and Consumer Services - Division of Plant Industry (FDACS–DPI) will be initiated to determine permit requirements or modifications to construction activities that may be required.

3.7.1 Sand Dune Spurge

The sand dune spurge is endemic to and listed as endangered by the State of Florida. It is known to occur in Brevard, Broward, Collier, Escambia, Hernando, Highlands, Lee, Martin, Palm Beach, Pinellas, St. Johns and Volusia Counties. It is an herbaceous annual with prostrate smooth, wiry and flexible stems radiating from a tap-root. Flowers are minute, in cup-shaped structures called cyatha about 1 mm long. Fruit is a capsule to about 1.5 mm long. Plants exude a milky sap when damaged.

These plants are restricted to the well-draining sandy soils in exposed sunny areas of coastal dunes, coastal scrub, and sandhill habitats. Plants observed during species field surveys were located within the ROW on the north side of the road on the upper slope of a maintained (mowed) embankment abutting a sandhill habitat (**Figure 3-2**).

3.7.2 Florida spiny-pod

The Florida spiny-pod is listed as endangered by the State of Florida. It is known to occur in Alachua, Bradford, Citrus, Clay, Columbia, Duval, Gadsden, Hernando, Hillsborough, Jackson, Lake, Levy, Liberty, Madison, Manatee, Orange and Polk counties. The Florida spiny-pod is an herbaceous, perennial vine with a twining habit up shrubs and small trees. Plants flower in late spring/early summer. Flowers are maroon to purplish black in color, star-shaped, 1 cm wide, and produced in an umbel of up to eight flowers from the axis of the stem and leaf stalk. Flowers open a few at a time over several weeks. The fruit is a green pod, smooth with several pointed tubercles. All parts of the Florida spiny pod exude a white, milky sap when damaged. Habitats include ravines, bluffs and hammocks with mixed pine-oak-hickory hardwood forest in sandy, well-draining soils.

Plants located during species field surveys were observed growing in two areas in xeric oak habitats within the project area (**Figure 3-2**).

3.7.3 Leafless Beaked Orchid

The leafless beaked orchid is listed as threatened by the State of Florida. This is a terrestrial, perennial herb that produces a solitary flowering spike 20 – 60 cm tall. Plants can be flowering from April to June. Flowers may number from 10 to 40 on a single, terminal spike. The fruit is a capsule

up to 2 cm long. Habitats include hardwood hammocks, pine flatwoods, old fields, road shoulders and median strips along highways with mixed pine-oak-hickory hardwoods.

Plants located during species field surveys were growing in the maintained ROW on the south side of the road (**Figure 3-2**). Plants were vegetative only, flowers or fruit were absent at time of survey.

3.8 USFWS CRITICAL HABITAT

The project area was evaluated for Critical Habitat designated by Congress in 50 CFR 17. Review of the USFWS's most current available online Critical Habitat Mapper GIS data resulted in the identification of no Critical Habitat within the project area.

3.9 AVOIDANCE AND MINIMIZATION

Improvements to SR 50 include widening the current four-lane rural facility to a six-lane divided facility. Most of the proposed improvements are within the existing ROW, which is largely devoid of appropriate habitat for listed species and would result in minimal wetland impacts. ROW clips may be needed to accommodate some of the intersection improvements. Walls may be used in some areas within the project limits to reduce the footprint and potentially reduce impacts to wetlands and habitats utilized by listed and protected species. SMF and FPC sites are evaluated in this report, and the preferred SMF and FPC sites were determined to have no impacts on wetlands and minimal to no potential impacts on listed species. Additional information on the evaluation process and site descriptions are provided in **Section 5**. Opportunities to minimize impacts to listed species and habitat will continue to be evaluated during the project design phase.

SECTION 4 WETLANDS AND SURFACE WATER IMPACTS

4.1 METHODOLOGY AND ASSESSMENT

In accordance with Executive Order 11990, *Protection of Wetlands* (May 1977), and *Part 2, Chapter 9 – Wetlands and Other Surface Waters* of the FDOT *PD&E Manual* (January 2019), the proposed project has been evaluated for potential effects to wetlands. A variety of resources including NWI maps and GIS data, Soil Survey of Hernando County, United States Geological Survey (USGS) topographical maps, and aerial photographs (2017) were utilized to identify wetlands that occur within the study area. Project scientists identified wetlands and surface waters within the project area during field reviews in November and December 2014 and April 2019. Field reviews of the study area were conducted to collect pertinent data to perform an assessment of the quality of the existing wetlands and surface waters. Wetland boundaries were identified using the U.S. Army Corps of Engineers (USACE) *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0)* and the Florida Department of Environmental Protection's (FDEP) *Delineation of the Landward Extent of Wetlands and Surface Waters* (1995) (Chapter 62-340, F.A.C).

A review of the ETDM PSSR was conducted to gather comments from participating regulatory agencies. Summaries of each of the agency's comments are provided above in **Section 3.2**. Many of the comments from the agencies include the following:

- Perform delineations and conduct functional analysis of wetlands;
- Avoidance/minimization of wetland impacts;
- Evaluation of stormwater pond sites;
- Maximum effort should be made to treat stormwater runoff from the increase in impervious surface area;
- Mitigation plans to compensate for adverse impacts to wetlands.

The ETDM PSSR indicated there are approximately 1.7 acres and 11.2 acres of lacustrine and 2.3 acres and 21.7 acres of palustrine wetlands within the 200-foot and 500-foot buffers, respectively. The ETDM PSSR provides comments from the regulatory agencies on numerous environmental categories.

The study area includes all areas within the existing FDOT ROW, a few corner clips that may be needed for the proposed improvements, and the recommend SMF and FPC sites. The areas adjacent to the existing ROW were also evaluated to document nearby wetlands and systems that extend outside the ROW. The assessment consisted of a review of wetland and upland habitats. Wetlands were classified using the FLUCCS codes (FDOT, 1999) and the USFWS's *Wetlands and Deepwater Habitats Classification* (Cowardin et al. 1979) methodology. A breakdown of wetland descriptions and classifications are shown in **Table 4-1** and surface waters in **Table 4-2**. These tables provide an overview of the wetlands and surface waters, as well as their FLUCCS and USFWS codes.

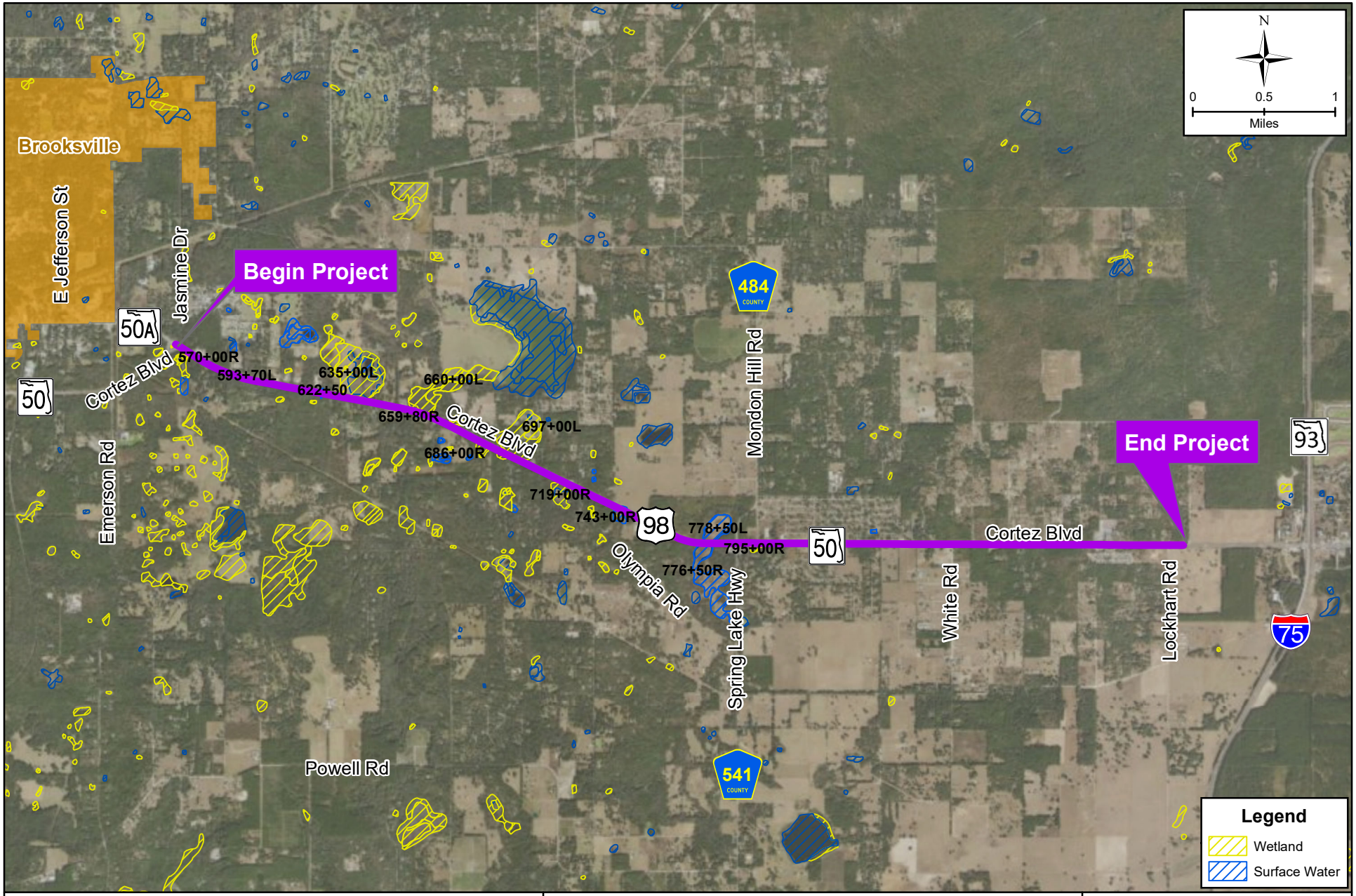
Wetlands are named according to their approximate station within the project limits. Potential wetland impacts were assessed using the *Uniform Mitigation Assessment Method* (UMAM), Chapter 62-345, F.A.C. The extents of all wetland sites identified in the field were digitized over aerial photography of the project area in order to perform measurements and acreage calculations. Representative site photographs can be found in **Appendix C**. An overview of the wetlands and surface waters within the project vicinity is provided in **Figure 4-1**, and a detailed wetland and surface water map, which includes the SMF and FPC locations, can be found in **Appendix D**.

Table 4-1 Wetland Descriptions

Wetland ID	NWI / USFWS	FLUCCS	Wetland Description
560+00R	PEM1F	641	Freshwater Emergent Wetland
563+70R	PEM1K	641/640	Freshwater Emergent Wetland
564+00R	PEM1Fd	641	Freshwater Emergent Wetland
570+00R	PFO1&6/PEM1Fd	615/641	Freshwater Forested/Emergent Wetland
593+70L	PEM1E	641/640	Freshwater Emergent Wetland
635+00L	PEM1E/L2AB3H	641/520	Freshwater Emergent Wetland/Lake
660+00L	PFO1&6F	615	Freshwater Forested/Shrub Wetland
671+50L	PFO1&6E/PSS1F	615	Freshwater Forested/Shrub Wetland
686+00R	PFO1&6E	615	Freshwater Forested Wetland
693+70R	PEM1F/PAB3F	641	Freshwater Emergent Wetland
697+00L	PFO1/PEM1F	615/641	Freshwater Forested/Emergent Wetland
719+00R	PFO6E	615	Freshwater Forested Wetland
795+00R	PFO6E	615	Freshwater Forested Wetland

Table 4-2 Surface Water Descriptions

Surface Water ID	NWI / USFWS	FLUCCS	Surface Water Description
622+50	PUB/PUBx	510	Freshwater Stream/Creek
659+80R	PUBC	510	Freshwater Stream/Creek
743+00L	PUBC	520	Freshwater Pond/Lake
743+00R	PUBC	520	Freshwater Pond/Lake
776+50R	PUBC	520	Freshwater Pond/Lake
778+50L	PUBC	520	Freshwater Pond/Lake



SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

Wetland and Surface Water Overview Map

Source: NWI

Figure 4-1

4.2 WETLAND EVALUATION AND IMPACTS

The Build and No-Build alternatives were evaluated in developing this project study. Under the No-Build alternative, no changes would be made to the existing roadway system and this alternative would have no impact on wetlands and surface waters. Below is a description of potential impacts from the Build alternative. Field reviews were conducted in November and December 2014 and April 2019 to evaluate wetland within the study area. During the field review in April 2019, SMF and FPC sites were evaluated for potential impacts to wetlands, and no wetlands or surface waters were identified within the preferred SMF and FPC sites.

4.2.1 Project Impacts

The Build alternative for the widening of SR 50 will result in 0.96 acre of wetland impact and 0.68 acre of surface water impact. Impacts were evaluated from ROW to ROW, identified corner clips to accommodate the proposed intersection improvements and side road connections, and at the preferred SMF and FPC sites. The breakdown of impacts per wetland and habitat type is shown in **Table 4-3**. Impacts will occur to wetlands 660+00L, 686+00R, 693+70R, 719+00R and 795+00R. A summary of the surface water impacts is identified in **Table 4-4**. Note that linear swales parallel to the existing roadway used for conveyance of stormwater are not included in the estimated surface water impacts and are not shown on the wetland surface water figures. Parallel swales exist along the majority of the project limits and many have ditch blocks in them to control water flows for stormwater management. Surface water impacts will need to be further evaluated during the design phase once detailed survey data is available.

4.2.2 Secondary, Cumulative and Temporary Impacts

Secondary impacts are defined as effects that are caused by and result from an activity, although they happen later in time or are further removed in distance, but are still reasonably foreseeable. Secondary impacts may be avoidable by use of appropriate best management practices (BMPs). Walls may also be evaluated in areas to avoid additional impacts. Cumulative impacts result from the total effect of the proposed project when added to other past, present, and reasonably foreseeable future projects or actions. Cumulative impacts would be avoided if mitigation is present within the same basin or watershed at the time of permitting with agencies. A cumulative impact analysis would be conducted if mitigation is not available within the same basin or watershed. Examples of secondary and cumulative impacts that could result from the SR 50 widening project include altered hydrologic regime, water quality degradation, and edge effects. These impacts will be further evaluated during future project phases based on more-detailed design and construction techniques.

Table 4-3 Wetland Impacts

WETLAND ID	NWI / USFWS	FLUCCS	PROJECT IMPACT ACREAGE
560+00R	PEM1F	641	0.00
563+70R	PEM1K	641/640	0.00
564+00R	PEM1Fd	641	0.00
570+00R	PFO1&6/PEM1Fd	615/641	0.00
593+70L	PEM1E	641/640	0.00
635+00L	PEM1E/L2AB3H	641/520	0.00
660+00L	PFO1&6F	615	0.21
671+50L	PFO1&6E/PSS1F	615	0.00
686+00R	PFO1&6E	615	0.19
693+70R	PEM1F/PAB3F	641	0.32
697+00L	PFO/PEM1F	615/641	0.00
719+00R	PFO6E	615	0.02
795+00R	PFO6E	615	0.22
TOTAL			**0.96**

NWI = National Wetlands Inventory
FLUCCS = Florida Land Use Cover and Forms Classification

Table 4-4 Surface Water Impacts

SURFACE WATER ID	NWI / USFWS	FLUCCS	PROJECT IMPACT ACREAGE
622+50	PUB/PUBx	510	0.03
659+80	PUBx	510	0.02
743+00L	PUBC	520	0.20
743+00R	PUBC	520	0.18
776+50R	PUBC	520	0.12
778+50L	PUBC	520	0.13
TOTAL			**0.68**

4.3 AVOIDANCE AND MINIMIZATION

Improvements to SR 50 include widening the current four-lane rural facility to a six-lane divided facility. Almost all of the proposed roadway improvements are within the existing ROW, which is largely devoid of wetlands and surface waters. ROW acquisition would only occur at small corner clips identified in the concept plans. The SMF and FPC sites will require additional ROW and were also evaluated in this report. As mentioned above, the preferred SMF and FPC sites would have no direct impacts to wetlands or surface waters. Pond sites located adjacent to existing wetlands have the potential to draw down wetlands, which could alter the hydrology, vegetative communities, habitat and wildlife utilization. This will be evaluated further during design.

BMPs will be implemented during construction to avoid impacts to wetlands that are not to be directly impacted by the proposed roadway improvements, as mentioned above regarding secondary impacts. Both vegetative and structural BMPs will be utilized during construction. A

Stormwater Pollution Prevention Plan (SWPPP) and an erosion and sediment control plan will be developed during the design phase of this project and implemented during construction. The erosion control devices will be designed per the FDOT *Standard Specifications for Road and Bridge Construction*. Opportunities to minimize impacts to wetlands will be evaluated during future project phases.

4.4 WETLAND FUNCTIONAL ANALYSIS

The UMAM was used to assess functions and values for the wetlands within the project area, in accordance with s. 62-345, F.A.C. The UMAM scores are based on the FLUCCS categories and not developed for individual wetlands within the project area. UMAM scores for specific wetlands will be completed during the design/permitting phase. The wetland quality ratings (delta values) are expressed numerically with numbers ranging between 0 and 1, with 1 representing an extremely high-quality wetland and 0 reflecting an extremely low-quality wetland, or an area that is no longer functioning as a wetland.

The functional loss of a wetland system is the estimated loss of function by the proposed project impacts and is calculated by multiplying the delta value by the impact acreage. Functional loss values for wetland and surface water habitat types within the project area range from 0.22 to 0.45. Functional loss values are used to determine the amount of mitigation that would be required to offset the loss of wetland and surface water function caused by the proposed project. The total functional loss value is 0.67 for wetlands and 0.39 for surface waters within the project. Mitigation is not typically required by SWFWMD for surface water impacts but the potential functional loss is included for potential impacts to suitable foraging habitat for wood storks. As stated earlier, linear ditches used for stormwater conveyance and treatment will be quantified and evaluated further during future project phases. **Table 4-5** summarizes impact acreage, delta values and functional loss for each wetland and surface water habitat. The UMAM assessments are included in **Appendix E**.

Table 4-5 Functional Loss Analysis

FLUCCS	WETLAND / SURFACE WATER DESCRIPTION	IMPACT ACREAGE	DELTA VALUES (UMAM)	FUNCTIONAL LOSS VALUES
641	Freshwater Marsh (non-forested)	0.32	0.70	0.22
615	Stream and Lake Swamps (Freshwater forested)	0.64	0.70	0.45
510/520	Surface Waters	0.68	0.57	0.39

4.5 WETLAND IMPACT MITIGATION

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.

The entire project is located within the service area of the Lake Louisa/Green Swamp Mitigation Bank. The Lake Louisa/Green Swamp Mitigation Bank consists mainly of xeric habitat restoration and bayhead enhancement, and may not be a suitable source to mitigate for the mixed forested and freshwater marsh impacts anticipated by the proposed improvements. Wetland mitigation will be pursuant to s. 373.4137, F.S., and may include purchase of wetland mitigation credits through an approved mitigation bank if the appropriate credits are available, mitigation services through SWFWMD or creation, restoration or enhancement of wetlands within the project watersheds. The mitigation will satisfy the requirements of Part IV, Chapter 373, F.S. and 33 United States Code (U.S.C.) 1344.

4.6 COORDINATION WITH PERMITTING AGENCIES

All necessary permits will be acquired prior to construction of the proposed project improvements. Coordination and/or permitting will be conducted with the following agencies during the design phase of this project:

- **U.S. Army Corps of Engineers** (USACE) – Section 404 Permit
- **Southwest Florida Water Management District** (SWFMWD) – ERP Permit
- **Florida Department of Environmental Protection** (FDEP) – NPDES Permit
- **Florida Fish and Wildlife Conservation Commission** (FWC) – Species coordination and/or permitting
- **United States Fish and Wildlife Service** (USFWS) – Species coordination and/or permitting

SECTION 5 CONCLUSIONS AND COMMITMENTS

5.1 PROTECTED SPECIES AND HABITAT

The project area was assessed for the presence of suitable habitat for federal and state listed protected species in accordance with *50 CFR Part 402 of the ESA of 1973*, as amended, *Chapter 5B-40: Preservation of Native Flora of Florida*, *F.A.C., Chapter 68A-27: Rules Relating to Endangered or Threatened Species, F.A.C.*, and *Part 2, Chapter 16 – Protected Species and Habitat* of the FDOT PD&E Manual.

Federal Listed Species

Based on the analysis, the FDOT made an effect determination of may affect, but not likely to adversely affect is anticipated for the wood stork and eastern indigo snake. An effect determination of no effect is anticipated for the Florida scrub-jay and red-cockaded woodpecker.

State Listed Species

Based on the analysis, the FDOT has determined there are no adverse effects anticipated for the gopher tortoise, Southeastern American kestrel, Florida sandhill crane, little blue heron, and the tricolored heron. There is no effect anticipated on the Florida burrowing owl.

Protected, Non-Listed Species

These are species that are no longer listed by USFWS or FWC, but are still afforded protection. Included species are the osprey, bald eagle, and Florida black bear.

State Listed Plant Species

Three state listed plant species were observed in the project area and no federal listed plant species were observed or are documented in the project area. The species observed include sand dune spurge, Florida spiny-pod, and leafless beaked orchid. The FDOT has determined only limited areas of existing habitat for these species are anticipated to be affected by the proposed project; therefore, there is no effect anticipated for the long-term viability of these species by the proposed project.

USFWS Critical Habitat

Review of the USFWS's available GIS data resulted in the identification of no Critical Habitat within the project area.

Essential Fish Habitat

This project was evaluated for EFH in accordance with *Part 2, Chapter 17 – Essential Fish Habitat* of the FDOT PD&E Manual (January 2019) and the requirements of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) of 1996. No EFH is located within the project area; therefore, there will be no involvement with EFH for this project.

Potential Faunal Species Effect Determinations

SPECIES SCIENTIFIC NAME	SPECIES COMMON NAME	LISTING STATUS	EFFECT DETERMINATIONS
FEDERAL LISTED (USFWS)			
Mycteria americana	Wood stork	T	MANLAA
Drymarchon corais couperi	Eastern indigo snake	T	MANLAA
Aphelocoma coerulescens	Florida scrub-jay	T	No effect
Picoides borealis	Red-cockaded woodpecker	E	No effect
STATE LISTED (FWC)			
Gopherus polyephemus	Gopher tortoise	T (C)	No adverse effect anticipated
Falco sparverius paulus	Southeastern American Kestrel	T	No adverse effect anticipated
Athene cunicularia	Burrowing owl	T	No effect anticipated
Grus canadensis pratensis	Florida sandhill crane	T	No adverse effect anticipated
Egretta caerulea	Little blue heron	T	No adverse effect anticipated
Egretta tricolor	Tricolored heron	T	No adverse effect anticipated
OTHER PROTECTED			
Pandion haliaetus	Osprey[2]	--	--
Haliaeetus leucocephalus	Bald eagle[2,3]	--	--
Ursus americanus floridanus	Florida black bear[1]	--	--

USFWS=United States Fish and Wildlife Service, FWC=Florida Fish and Wildlife Commission
MANLAA=May Affect, Not Likely to Adversely Affect
T=Threatened, E=Endangered, C=Candidate (federal)
1 Protected under the *Florida Black Bear Conservation* (68A-4.009, F.A.C.)
2 Protected under the *Migratory Bird Treaty Act* (16 U.S.C. §§ 703–712)
3 Protected under the *Bald and Golden Eagles Protection Act* (16 U.S.C. 668-668c)

Potential Floral Species Effect Determinations

SPECIES SCIENTIFIC NAME	SPECIES COMMON NAME	LISTING STATUS	EFFECT DETERMINATIONS
STATE-LISTED (FDACS)			
Chamaesyce cumulicola	Sand dune spurge	E	No effect anticipated
Matelea floridana	Florida spiny-pod	E	No effect anticipated
Sacoila lanceolata var. lanceolate	Leafless Beaked orchid	T	No effect anticipated

FDACS=Florida Department of Agriculture and Consumer Services

5.2 WETLANDS

The proposed Build Alternative would result in approximately 0.96 acre of wetland and 0.68 acre of surface water impacts based on the proposed conceptual design. Wetland mitigation options will be pursuant to 373.4137, F.S., and may include purchase of wetland mitigation credits through an approved mitigation bank, mitigation services through the SWFWMD or creation, restoration or enhancement of wetlands within the project watersheds. The mitigation will satisfy the requirements of Part IV, Chapter 373, F.S. and 33 U.S.C. 1344.

Potential Wetland Impacts

WETLAND ID	NWI / USFWS	FLUCCS	PROJECT IMPACT ACREAGE
560+00R	PEM1F	641	0.00
563+70R	PEM1K	641/640	0.00
564+00R	PEM1Fd	641	0.00
570+00R	PFO1&6/PEM1Fd	615/641	0.00
593+70L	PEM1E	641/640	0.00
635+00L	PEM1E/L2AB3H	641/520	0.00
660+00L	PFO1&6F	615	0.21
671+50L	PFO1&6E/PSS1F	615	0.00
686+00R	PFO1&6E	615	0.19
693+70R	PEM1F/PAB3F	641	0.32
697+00L	PFO/PEM1F	615/641	0.00
719+00R	PFO6E	615	0.02
795+00R	PFO6E	615	0.22
TOTAL			**0.96**

NWI = National Wetlands Inventory
FLUCCS = Florida Land Use Cover and Forms Classification

Potential Surface Water Impacts

SURFACE WATER ID	NWI / USFWS	FLUCCS	PROJECT IMPACT ACREAGE
622+50	PUB/PUBx	510	0.03
659+80	PUBx	510	0.02
743+00L	PUBC	520	0.20
743+00R	PUBC	520	0.18
776+50R	PUBC	520	0.12
778+50L	PUBC	520	0.13
TOTAL			**0.68**

5.3 IMPLEMENTATION MEASURES

- Surveys for potentially affected gopher tortoise burrows will be conducted prior to construction, and permits to relocate tortoises and commensals as appropriate will be obtained from the FWC.
- Surveys to update locations of active osprey and bald eagle nest sites will be conducted during the permitting phase of the project, and permits will be acquired if there are unavoidable impacts during construction. Coordination with USFWS and FWC will take place as necessary.
- Plants surveys should be conducted prior to construction during the appropriate survey season. If protected species are located, coordination with the Florida Department of Agriculture and Consumer Services - Division of Plant Industry (FDACS–DPI) will be initiated to determine requirements.

5.4 COMMITMENTS

- The FDOT will incorporate the most current USFWS guideline *Standard Protection Measures for the Eastern Indigo Snake* if it is determined that the project's construction limits would involve habitat for this species. **Appendix G** provides an example of the currently approved construction guidelines.
- Surveys for the Southeastern American Kestrel will be conducted during the nesting season (May through August). If it is determined nest areas are found and could be impacted by the project, FDOT will coordinate with FWC to determine appropriate avoidance and minimization measures during construction.

SECTION 6 REFERENCES

Chafin L. G., 2000. *Field Guide to the Rare Plants Florida*, Florida Natural Areas Inventory.

Florida Department of Environmental Protection, *The Florida Wetlands Delineation Manual*, Chapter 62-340, Florida Administrative Code.

FDOT. January 1999. *Florida Land Use, Cover and Forms Classification System*. Surveying and Mapping Thematic Mapping Section. Tallahassee, Florida. 91 pp.

FDOT. January 2014. *Project Development and Environmental Study – SR 50 (Cortez Boulevard) from Lockhart Road to US 301 (SR 35/Treiman Boulevard), WPI Segment No.: 416732-2.*

FDOT. January 2019. *Project Development and Environment Manual, Part 2, Chapter 9, Wetlands and Other Surface Waters*.

FDOT, *Project Development and Environment Manual, Part 2, Chapter 16, Protected Species and Habitat*, January 14, 2019.

FDOT. *Efficient Transportation Decision Making Environmental Screening Tool*, ETDM Project No. 13980, Programming Screen Summary Report, dated 1/7/2014.

FDOT, January 2019, *Standard Specifications for Road and Bridge Construction*, Maps and Publication Sales, Tallahassee, FL.

FWC, Division of Habitat and Species Conservation, Species Conservation Planning Section, WildlifePermits@myFWC.com, *Osprey Nest Removal Guidelines.*

FWC. December 2018. *Florida's Endangered Species and Threatened Species*. Florida Fish and Wildlife Conservation Commission. Tallahassee, Florida. 13 pp.

FWC. 2005. Red-cockaded Woodpeckers Shapefile. Located at http://geodata.myfwc.com/datasets/606024ebee054e4f89d90fa1a456292f_10 Last accessed September 2015.

FWC. 2012. Black Bear Nuisance Reports Shapefile. Located at http://geodata.myfwc.com/datasets/a27014d0f6e84e3082da209995a1285f_2 Last accessed September 2015.

FWC. 2014. Bald Eagle Nests Shapefile. Located at http://geodata.myfwc.com/datasets/eb20bf44aeea44a8ab4a47cd4329c6b6_5 Last accessed September 2015.

FWC. 1999. Wading Bird Rookeries Shapefile. Located at http://geodata.myfwc.com/datasets/be5de4a4165f4f09bbd6b7117fb395bc_15 Last accessed September 2015.

FWC. 1999. Wildlife Observations (Burrowing Owls) Shapefile. http://geodata.myfwc.com/datasets/1d4aeb26f9164be4a07b4381f0747cf0_16 Last accessed September 2015.

Florida Natural Areas Inventory and Florida Department of Natural Resources, 1990. *Guide to the Natural Communities of Florida*. Tallahassee, FL.

Hyde, Adam G. et al., 1977. *Soil Survey of Hernando County, Florida*. USDA Soil Conservation Service in cooperation with University of Florida IFAS, Agricultural Experiment Stations and Soil Science Department.

ISB Atlas of Florida Vascular Plants http://www.florida.plantatlas.usf.edu/

SWFWMD. 2004. GIS Land Use Mapping. Located at http://www.swfwmd.state.fl.us/data/gis.

U.S. Army Corps of Engineers (Jacksonville District). 2010. *Regional Supplement to the Corps of Engineers' Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0*. US Army Corps of Engineers. Jacksonville, Florida. 180 pp.

U.S. Department of the Interior (Fish and Wildlife Service), December 1979, *Classification of Wetlands and Deepwater Habitats of the United States*, Washington, D.C.

USFWS. Last updated December 19, 2017, *Bald Eagle Management Guidelines and Conservation Measures*. Located at http://www.fws.gov/southeast/es/baldeagle/index.html.

USFWS. *Information, Planning, and Conservation System (IPAC)*, project location, June 2015.

USFWS. 2003. Red-cockaded Woodpecker Consultation Area Shapefile. http://www.fws.gov/verobeach/GIS.html Last accessed 2014.

USFWS. 2003. Florida Scrub-jay Consultation Area Shapefile. http://www.fws.gov/verobeach/GIS.html Last accessed 2014.

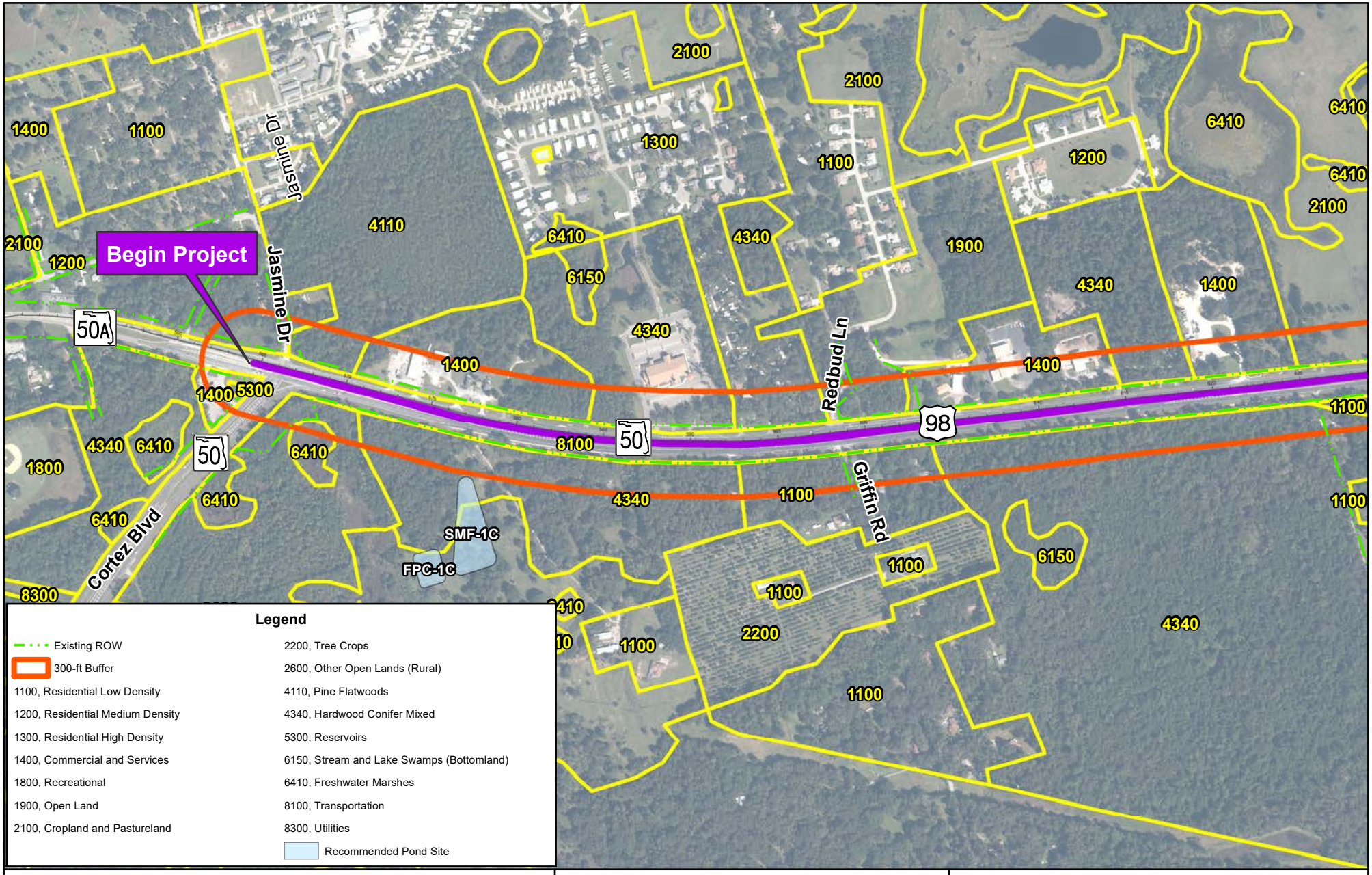
Ward D. B., 1978. *Rare and Endangered Plants of Florida*, University Press of Florida.

Weaver R. E. & Anderson P. J., 2010. *Notes on Florida's Endangered and Threatened Plants*, FDACS-Bureau of Entomology, Nematology and Plant Pathology – Botany Section. Contribution 38, 5th edition.

Wunderlin R. P. & Hansen B. F., 2011. *Guide to the Vascular Plants of Florida, 3rd edition*, University Press of Florida.

List of Appendices

Appendix A
Existing Land Use Map



SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

Existing Land Use Map

Source: NWFWMD

Appendix A
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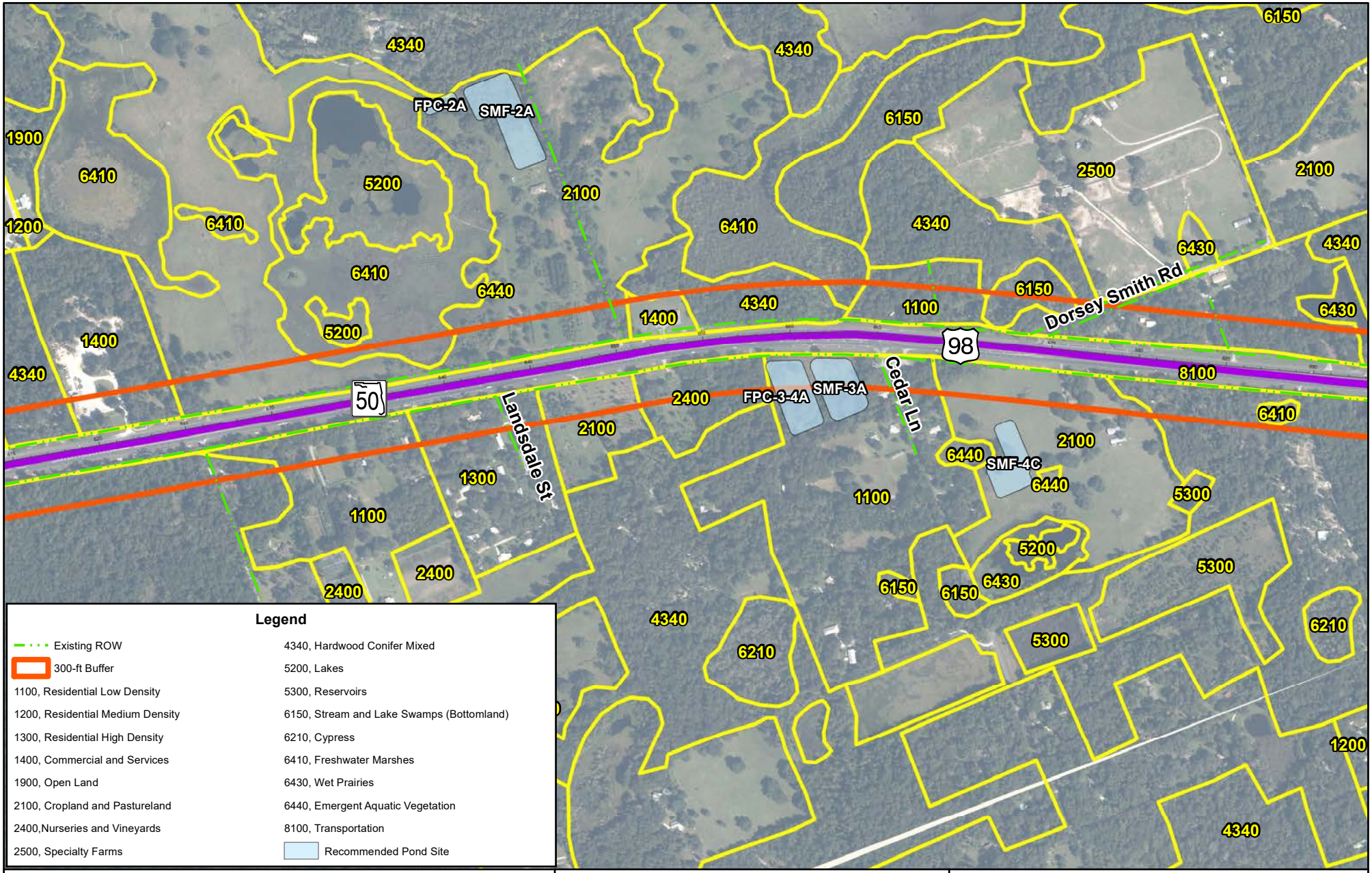

Legend

Existing ROW	4340, Hardwood Conifer Mixed
300-ft Buffer	5200, Lakes
1100, Residential Low Density	5300, Reservoirs
1200, Residential Medium Density	6150, Stream and Lake Swamps (Bottomland)
1300, Residential High Density	6210, Cypress
1400, Commercial and Services	6410, Freshwater Marshes
1900, Open Land	6430, Wet Prairies
2100, Cropland and Pastureland	6440, Emergent Aquatic Vegetation
2400,Nurseries and Vineyards	8100, Transportation
2500, Specialty Farms	Recommended Pond Site

FDOT

SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

Existing Land Use Map

Source: NWFWMD

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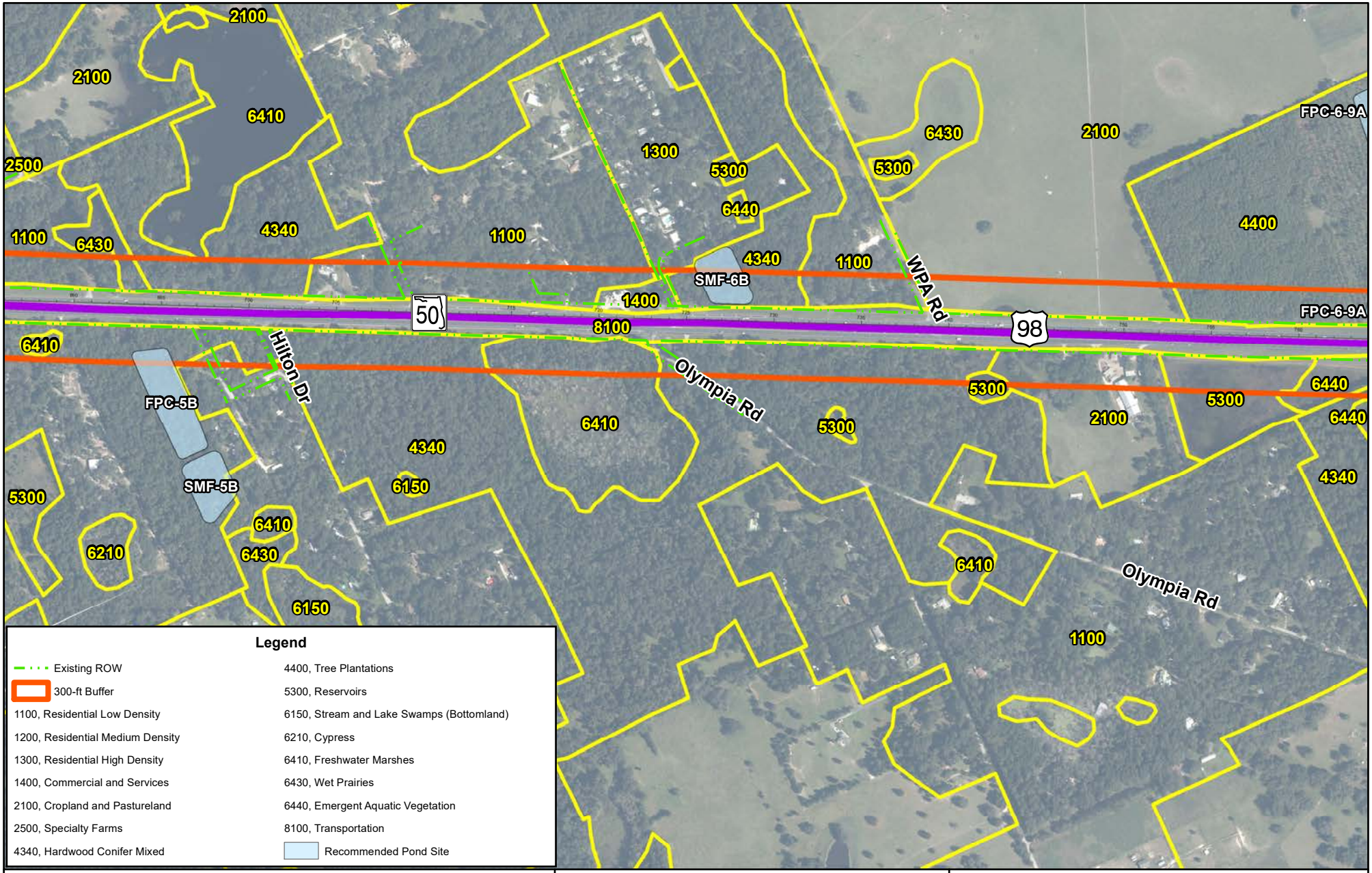

Legend

Existing ROW	4400, Tree Plantations
300-ft Buffer	5300, Reservoirs
1100, Residential Low Density	6150, Stream and Lake Swamps (Bottomland)
1200, Residential Medium Density	6210, Cypress
1300, Residential High Density	6410, Freshwater Marshes
1400, Commercial and Services	6430, Wet Prairies
2100, Cropland and Pastureland	6440, Emergent Aquatic Vegetation
2500, Specialty Farms	8100, Transportation
4340, Hardwood Conifer Mixed	Recommended Pond Site

FDOT

SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

Existing Land Use Map

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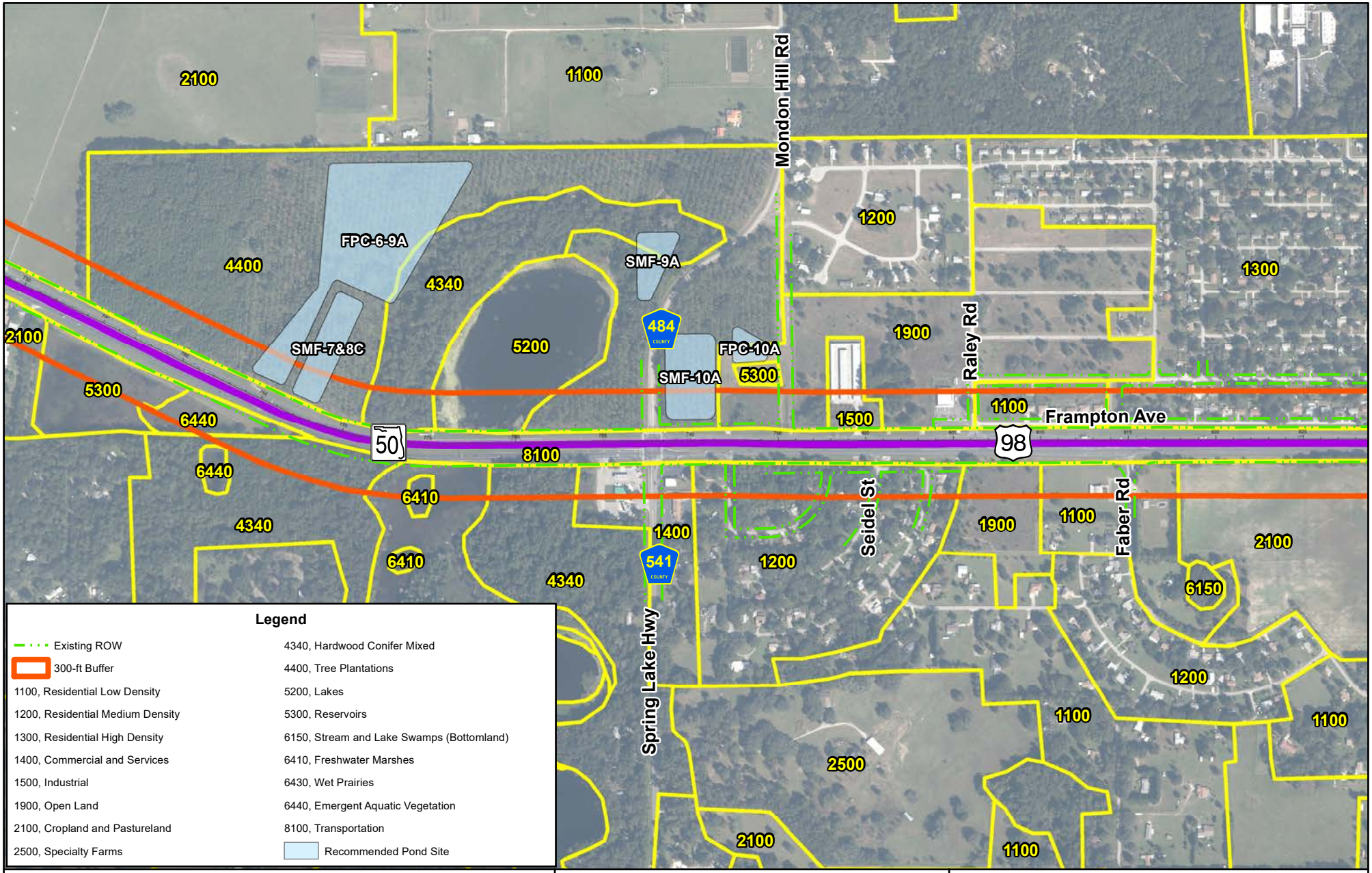

SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

Existing Land Use Map

Source: NWFWMD

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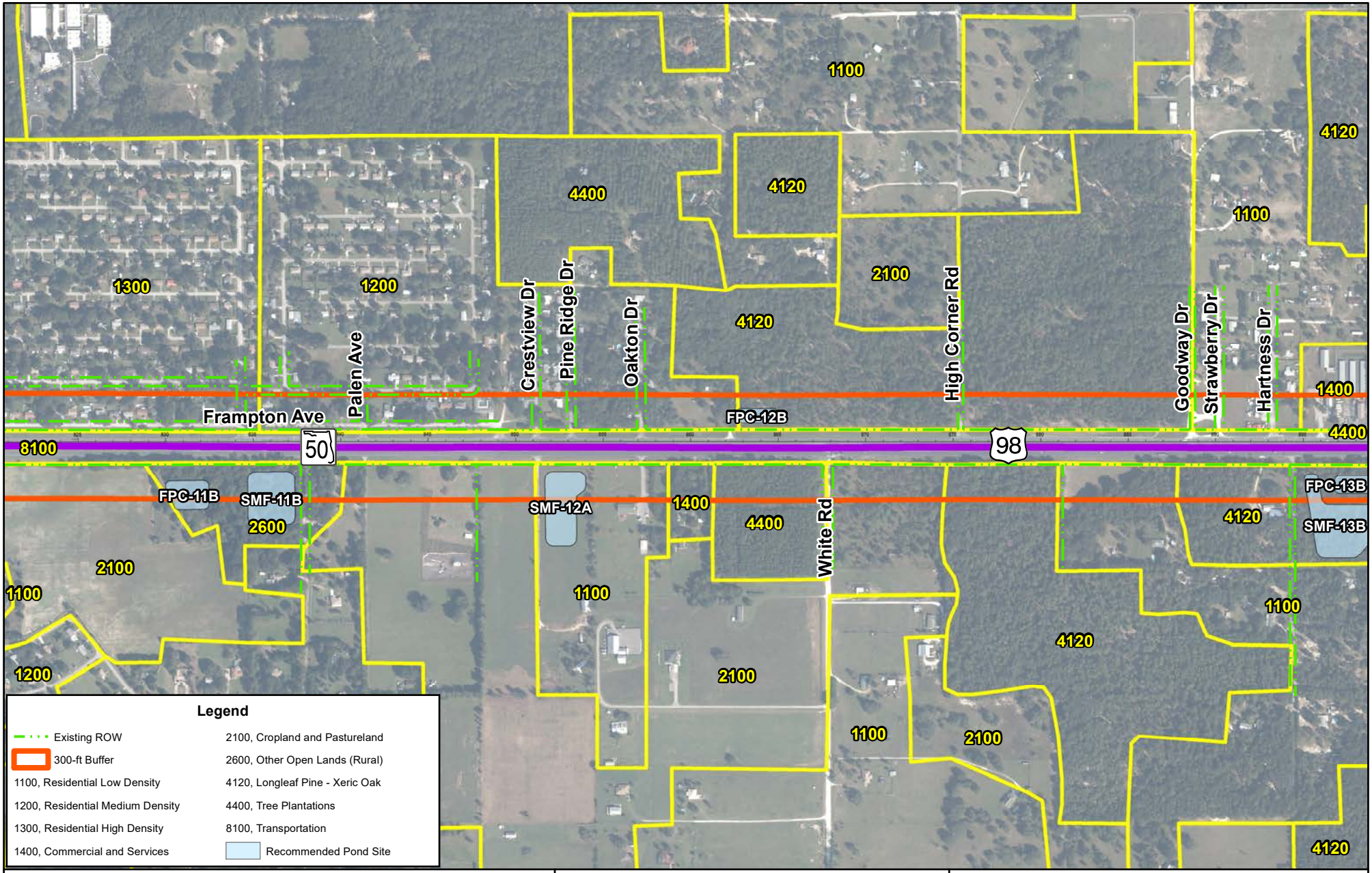

SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

Existing Land Use Map

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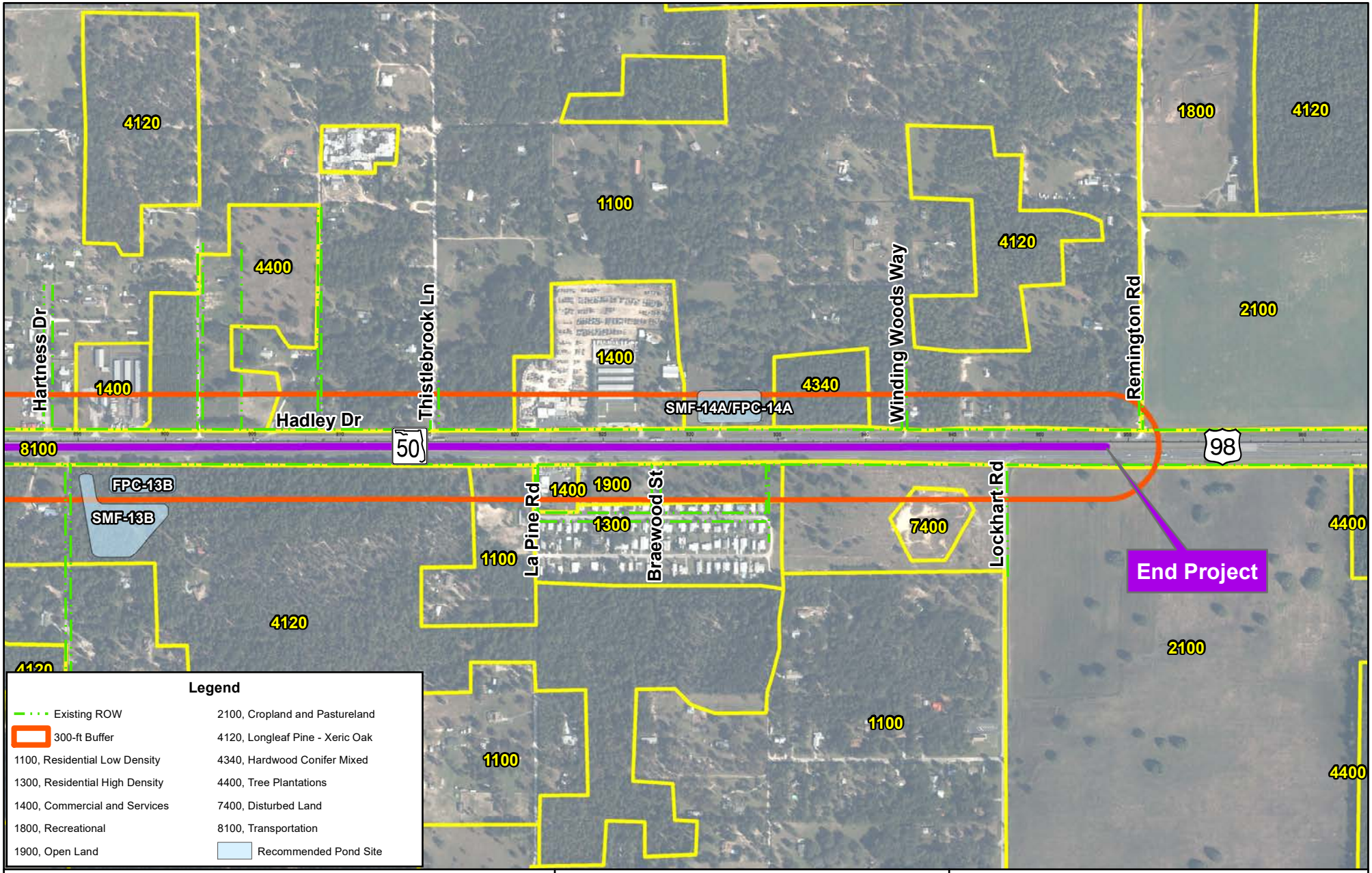

SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

Existing Land Use Map

Source: NWFWMD

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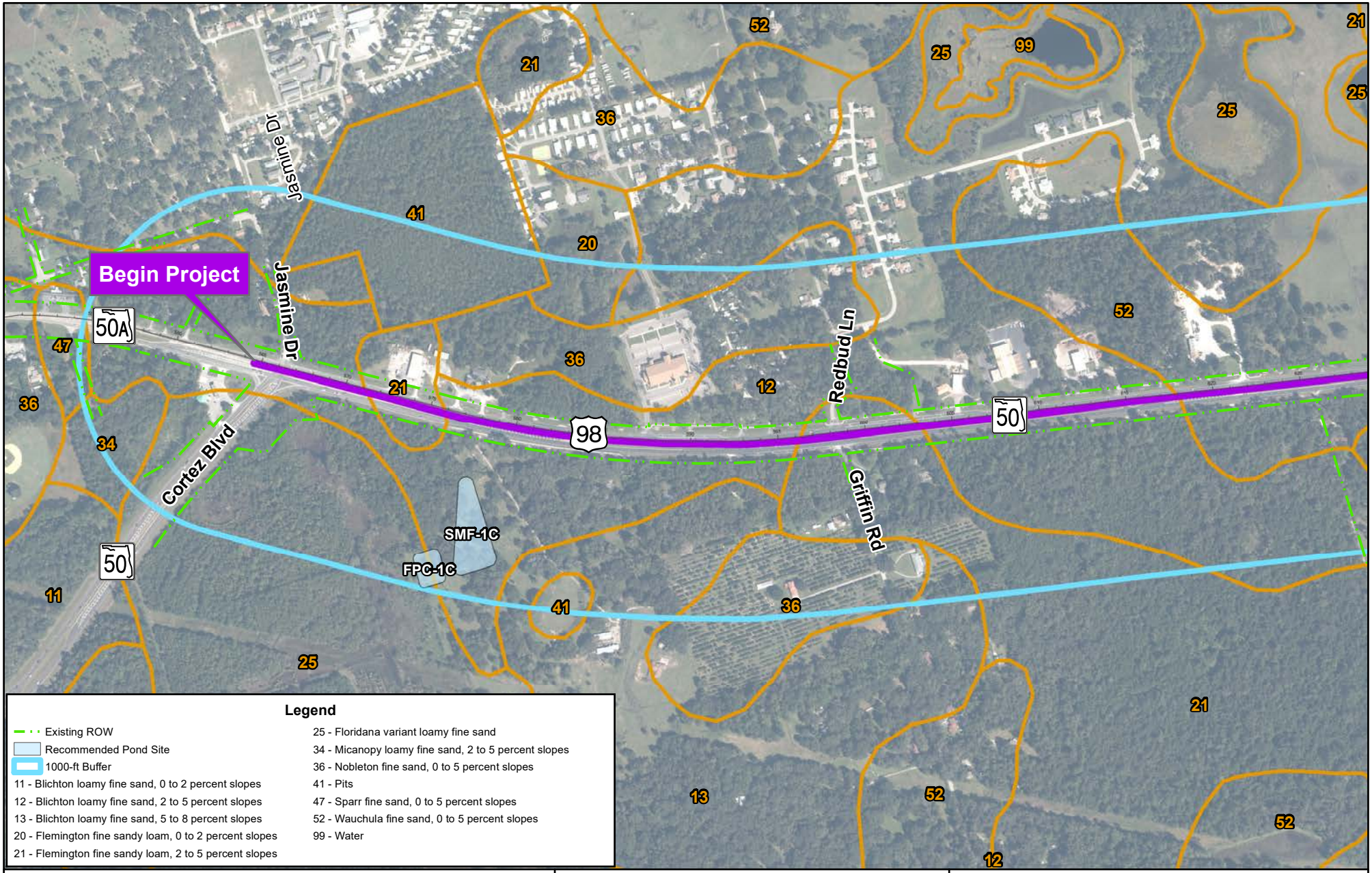
Appendix B
NRCS Soils Map



FDOT

SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

NRCS Soils Map

Source: NRCS

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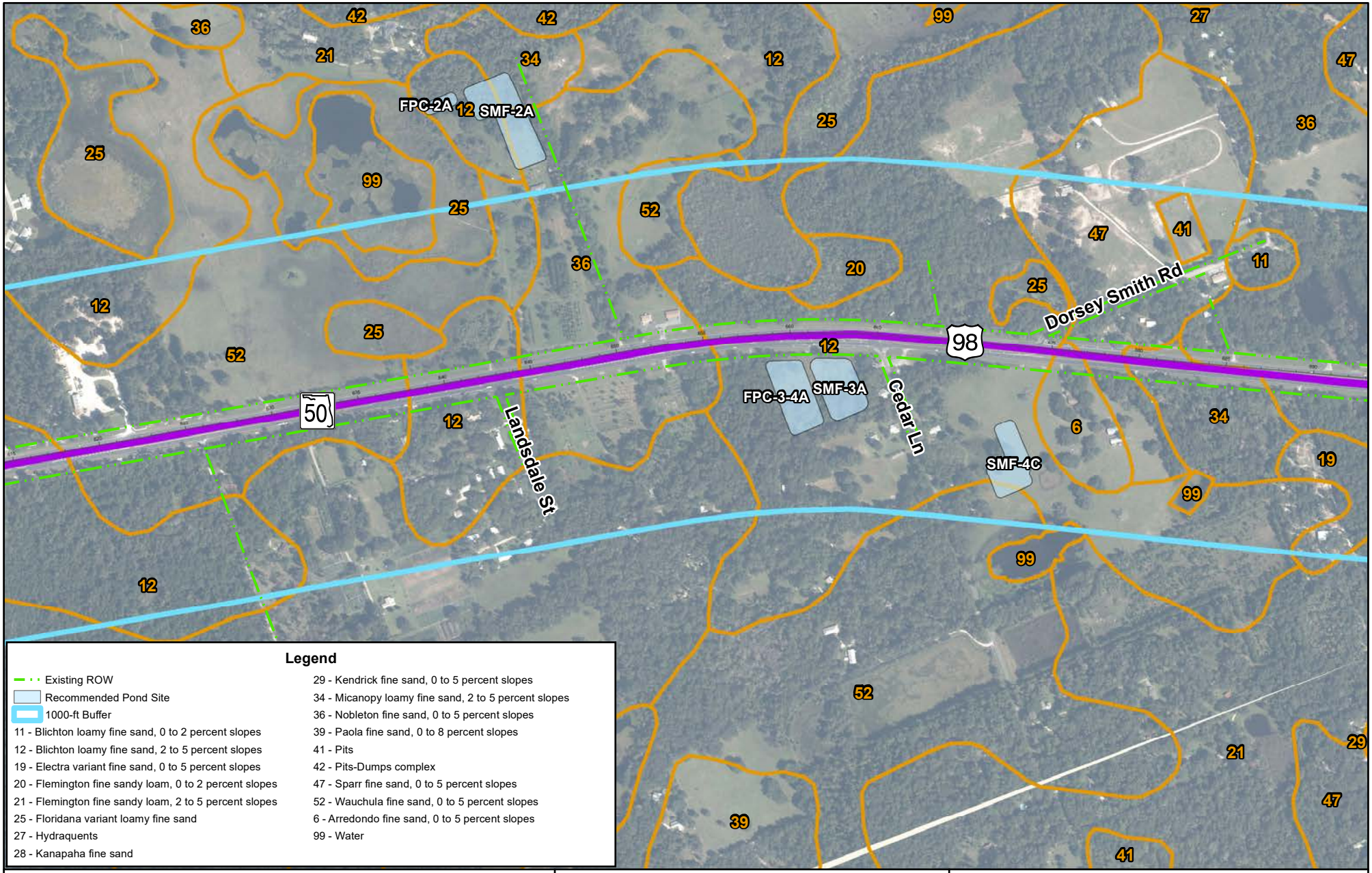

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Source: NRCS

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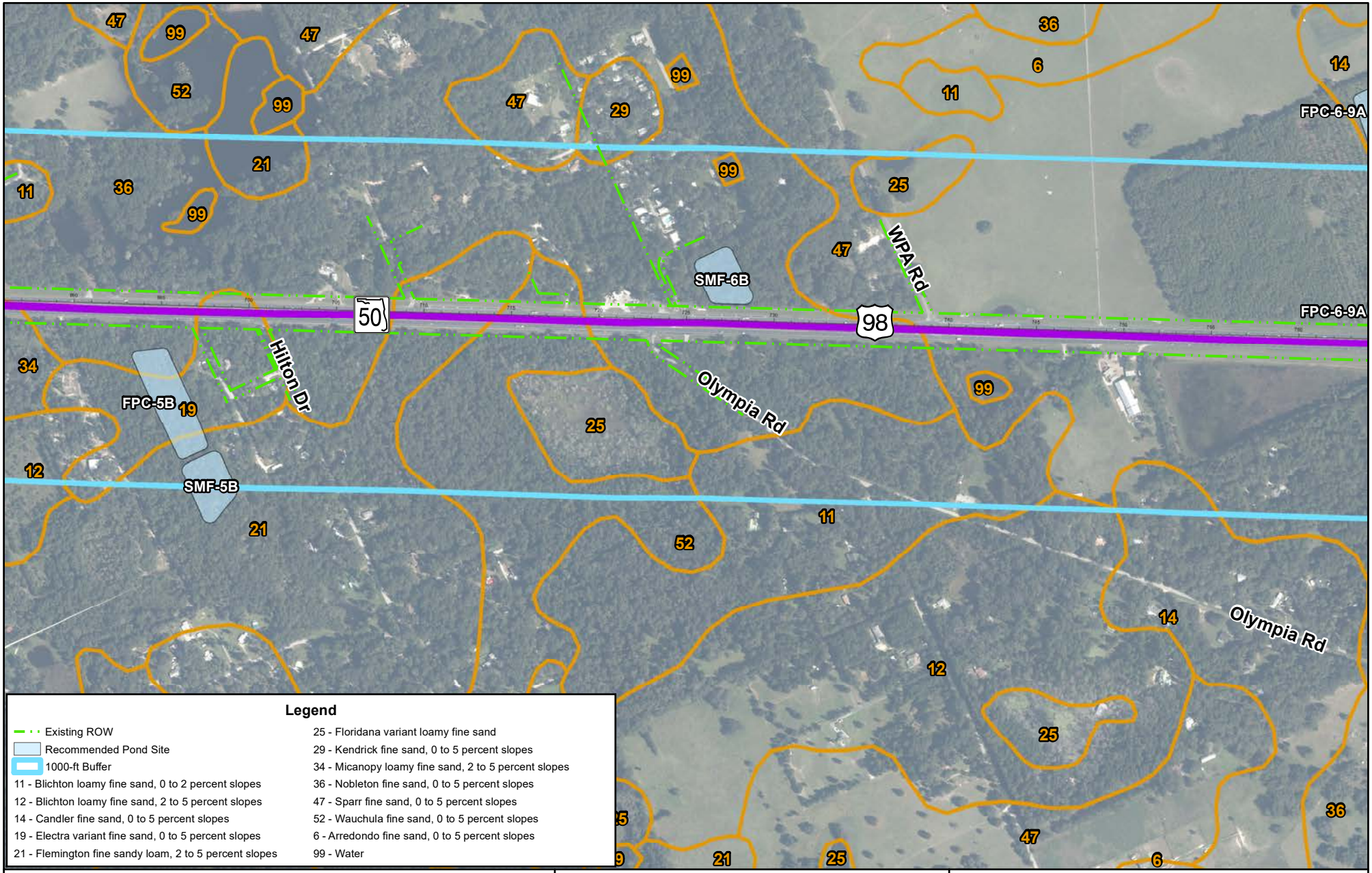

FDOT

SR 50 (US 98) PD&E Study

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WPI Segment No. 430051-1: Hernando County

NRCS Soils Map

Source: NRCS

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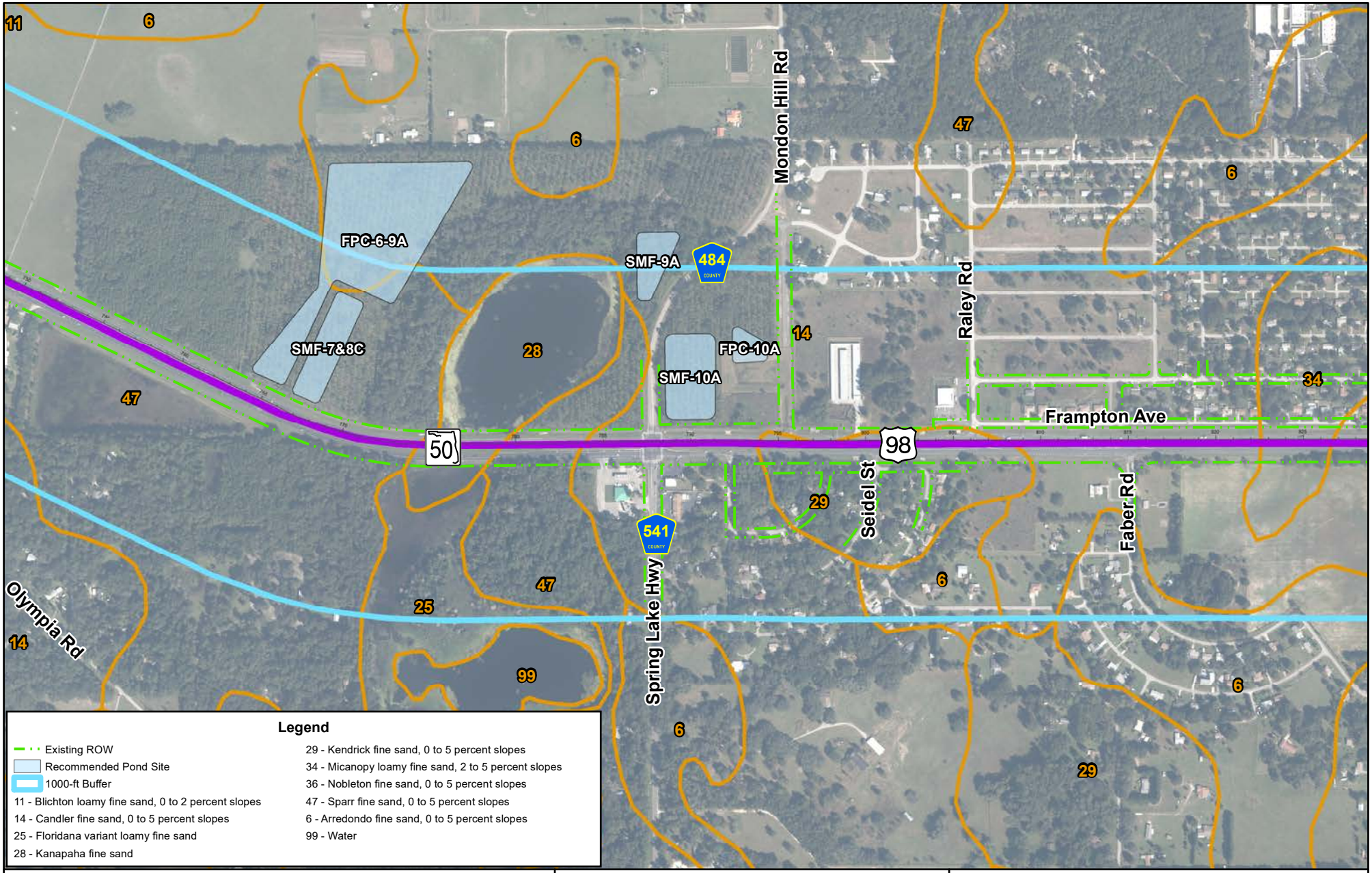

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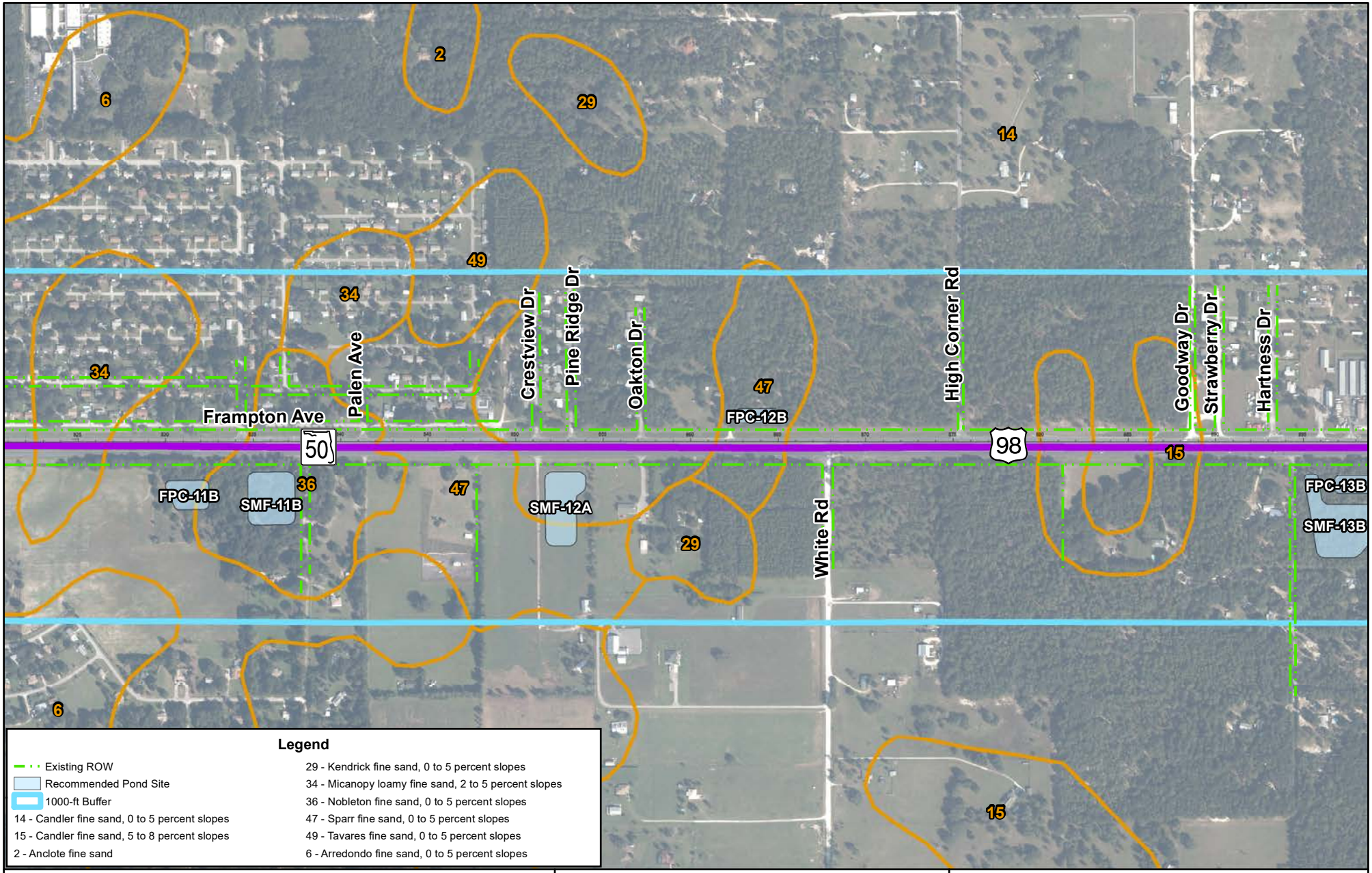

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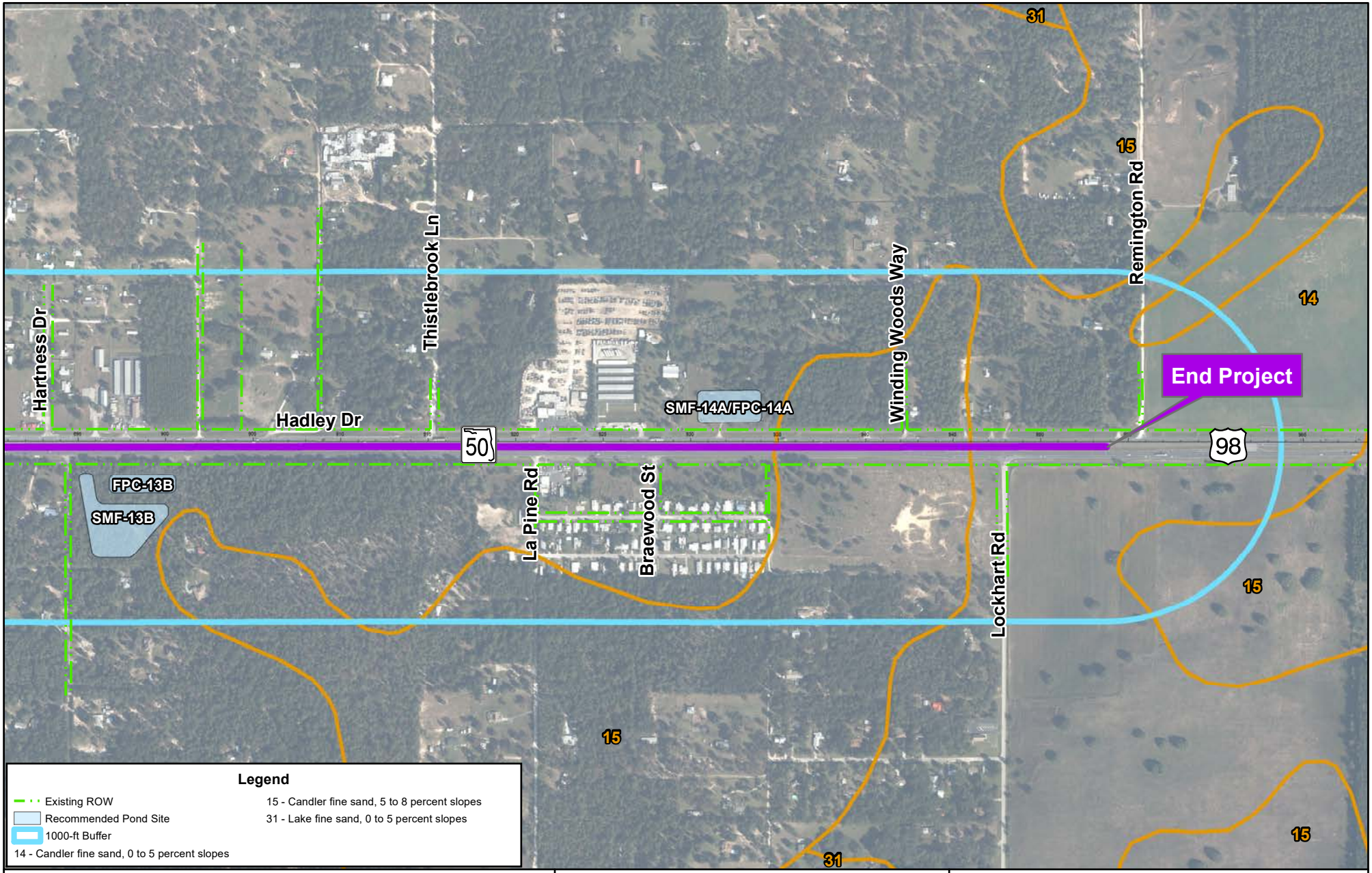

SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

NRCS Soils Map

Source: NRCS

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Appendix C
Wetland and Surface Water Photographs

Appendix C
Wetland and Surface Water Photographs

SR 50 PD&E from Brooksville Bypass to I-75
WPI Segment No. 430051-1

Wetlands

Wetland 563+70R

Wetland 570+00R

Wetland 593+70L

Wetland 635+00L

Wetland 660+00L

Wetland 671+50L

Wetland 686+00R

Wetland 693+70R

Wetland 697+00L

Wetland 719+00R

Wetland 795+00R

Surface Waters

Surface Water 622+50

Surface Water 659+80

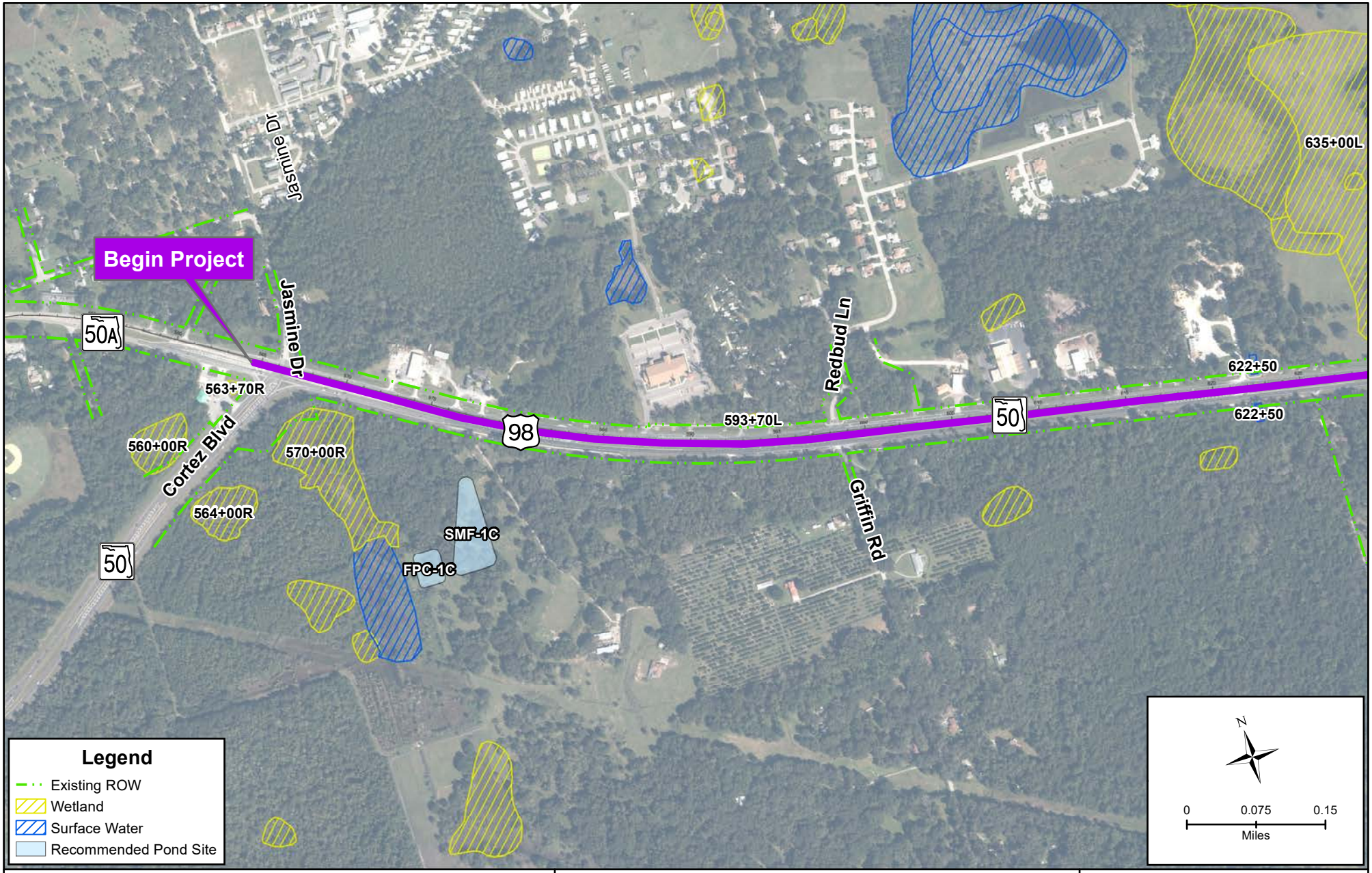
Surface Water 743+00L

Surface Water 743+00R

Surface Water 776+50R

Surface Water 778+50L

Appendix D
Wetland and Surface Water Map



SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

Wetland and Surface Water Map

Source: NWI

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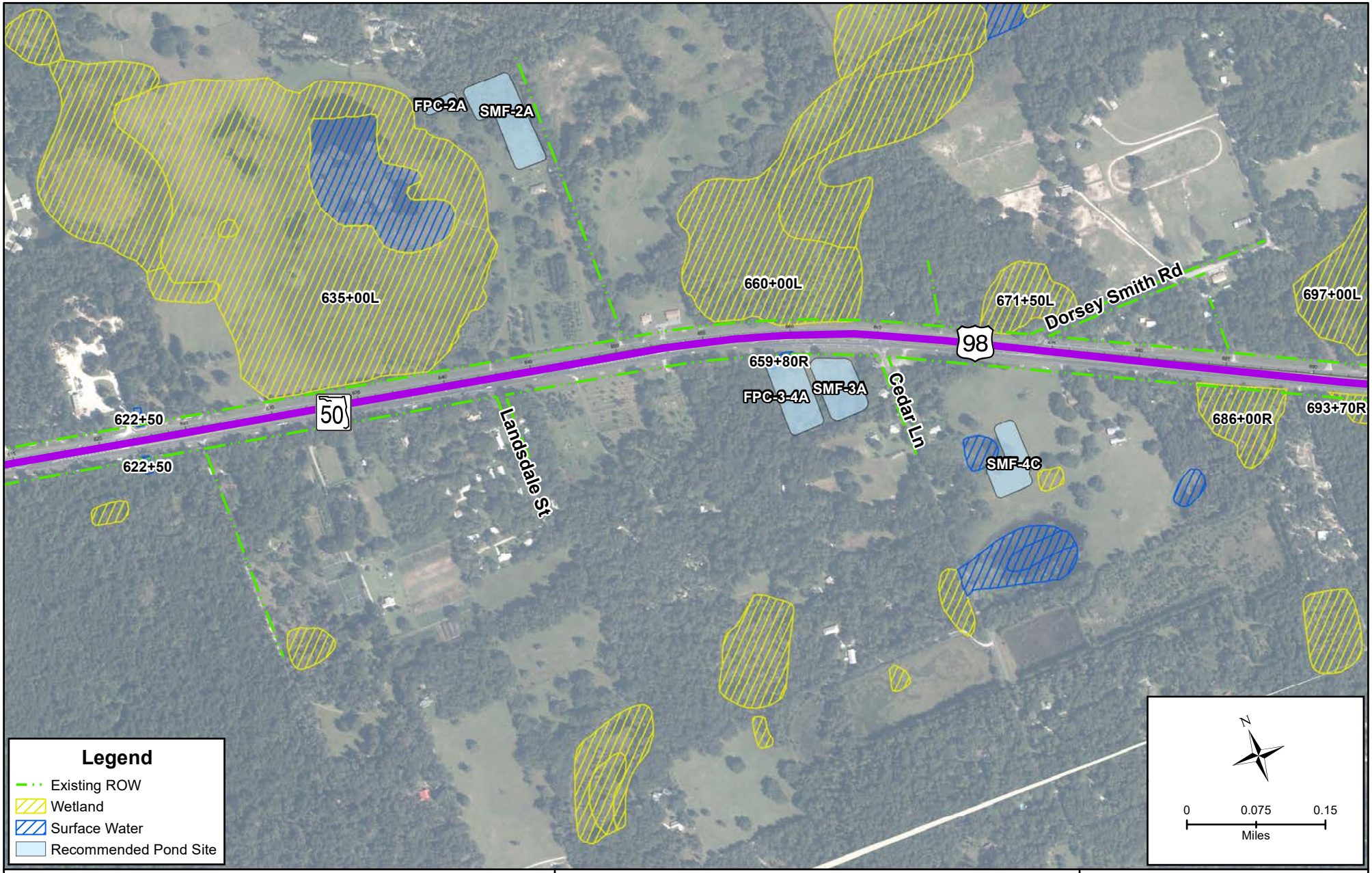

SR 50 (US 98) PD&E Study

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WPI Segment No. 430051-1: Hernando County

Wetland and Surface Water Map

Source: NWI

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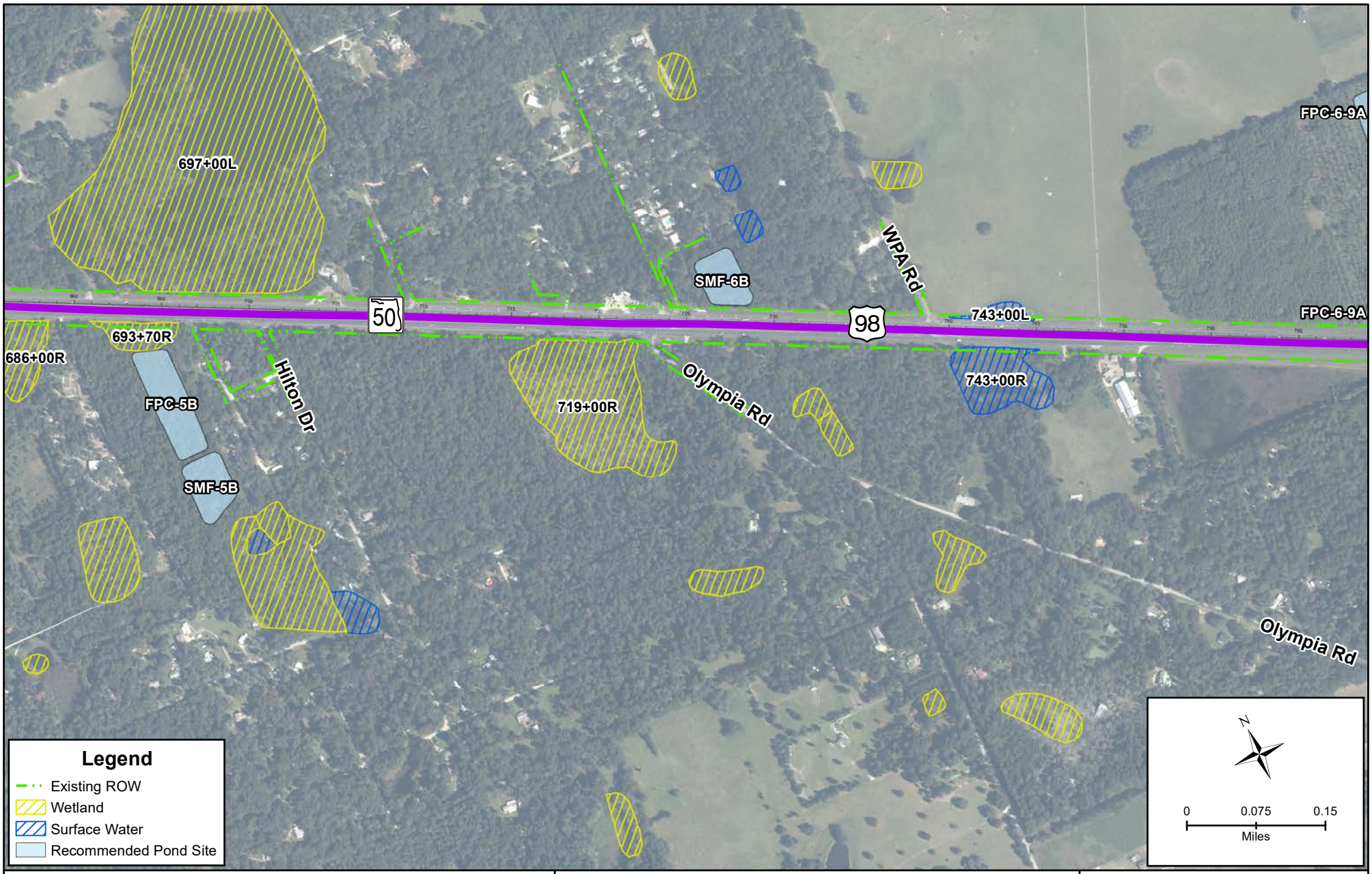

SR 50 (US 98) PD&E Study

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WPI Segment No. 430051-1: Hernando County

Wetland and Surface Water Map

Source: NWI

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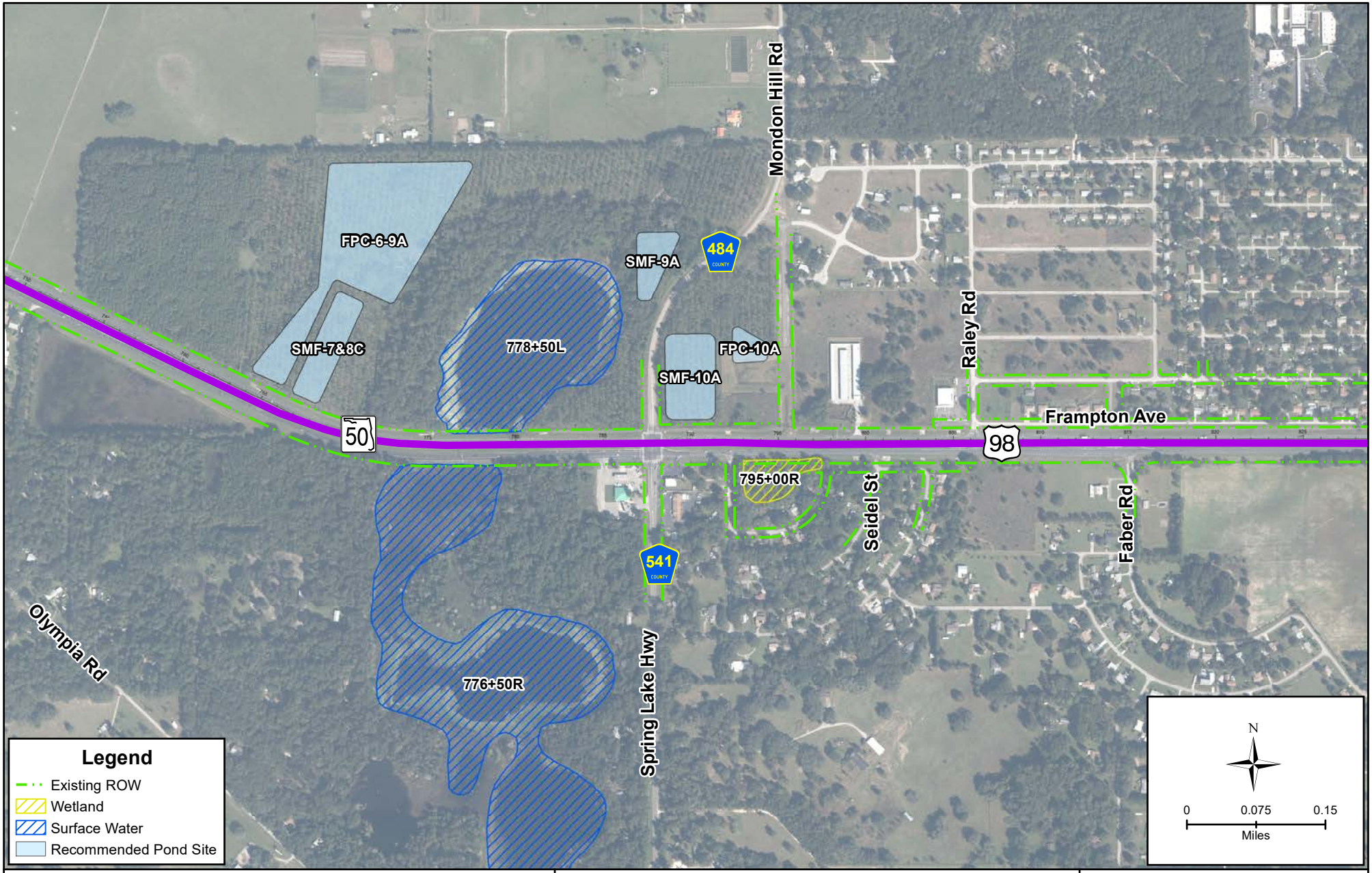

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Wetland and Surface Water Map

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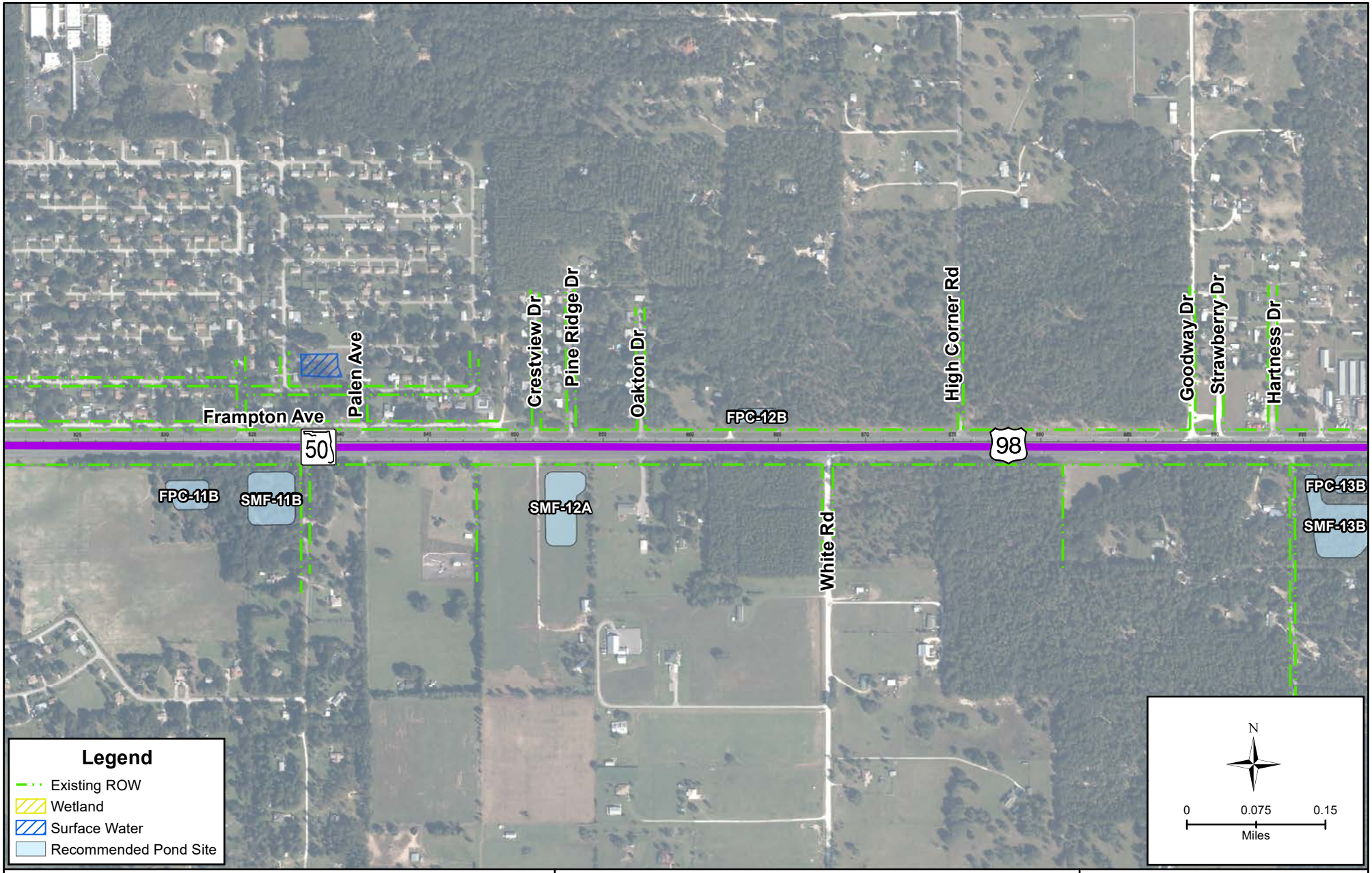

SR 50 (US 98) PD&E Study

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Wetland and Surface Water Map

Source: NWI

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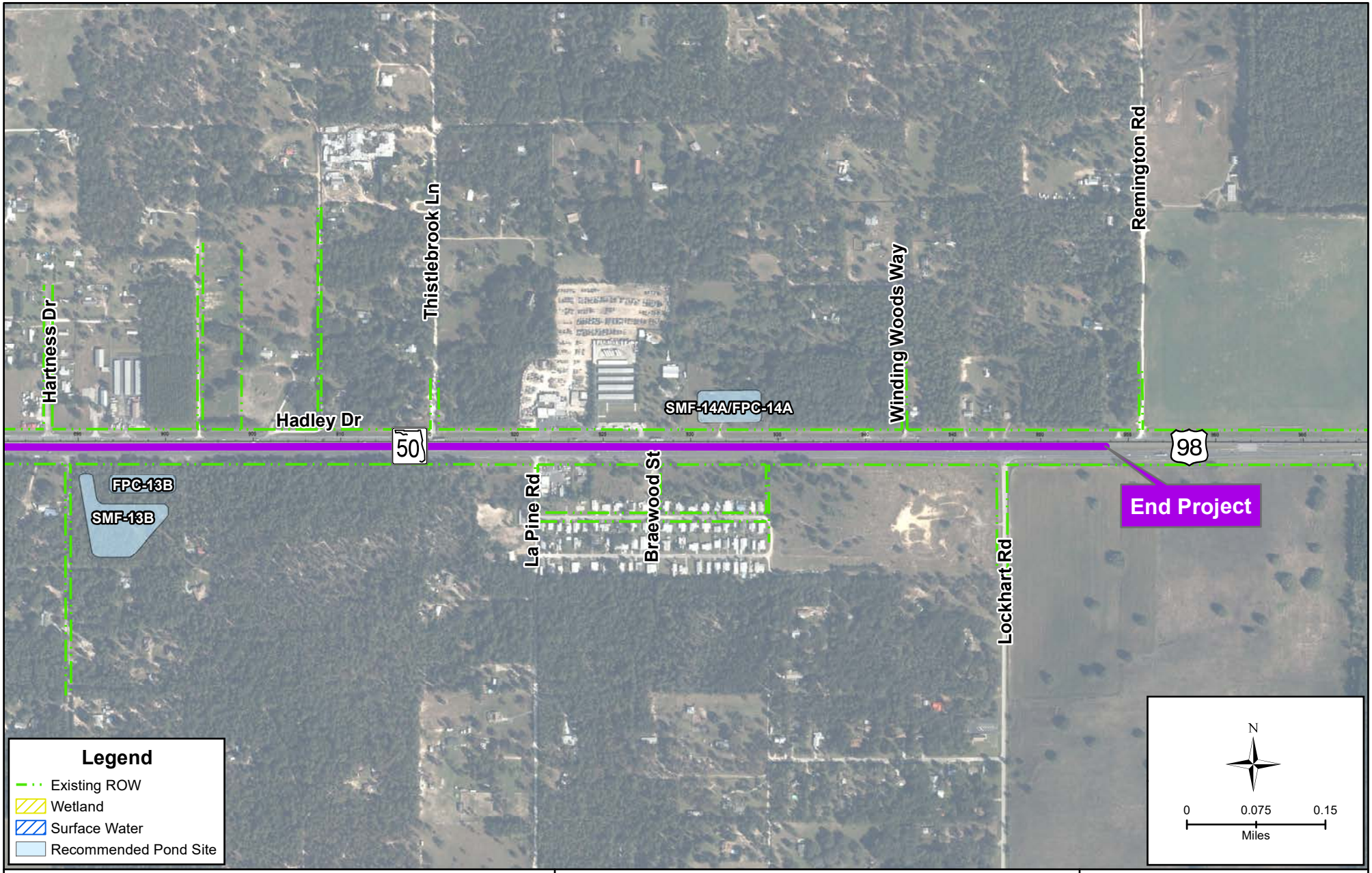

SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

Wetland and Surface Water Map

Source: NWI

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Appendix E
UMAM Assessments

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

Site/Project Name	Application Number	Assessment Area Name or Number
SR 50 - Brooksville Bypass to I-75		Freshwater Marsh (Non-Forested)

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
641 (641/640)	PEM1	Impact	0.32 acres

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

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

Marsh systems impacted by the proposed project are located adjacent to SR 50. Most of the surrounding areas are rural in nature for most of the wetland systems. Wetlands, uplands, agricultural land, and/or low density residential lands surround most of the sites. The majority of the SR 50 corridor has undeveloped habitat that provides movement for wildlife.

Assessment area description

Vegetation identified within the freshwater marsh systems includes cattails (Typha spp.), pickerelweed (Pontedaria cordata), rushes (Juncus spp.), lizard's tail (Saururus cernuus), duck potato (Sagittaria latifolia), lance-leaf arrowhead (Sagittaria lancifolia), and pennywort (Hydrocotyle spp.).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Wetlands, uplands, agricultural land, and/or low density residential lands surround most of the sites.	Not unique to this region.

Functions	Mitigation for previous permit/other historic use
These wetlands could provide habitat to birds, amphibians and other wildlife. It also helps in filtering of nutrients and storage of runoff from the surrounding areas.	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)
Cricket frog, pig frog, American alligator, Florida banded water snake, wood stork, great blue heron, great egret, greenbacked heron, wing rail, purple gallinule, snowy egret, white ibis, little blue heron, tricolored heron, and white heron.	wood stork (FT), little blue heron (ST), tricolored heron (ST), Florida sandhill crane (ST)

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

Species observered within the project corridor (not specific to wetland type) include: snowy egret, Florida sandhill crane, bald eagle, osprey

Additional relevant factors:

N/A

Assessment conducted by:	Assessment date(s):
Chris Salicco	April 2019

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

Site/Project Name	Application Number	Assessment Area Name or Number
SR 50 - Brooksville Bypass to I-75	N/A	Freshwater Marsh (Non-Forested)
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Chris Salicco	April 2019

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

	w/o pres or current		with	
.500(6)(a) Location and Landscape Support	**7**		**0**	Marsh systems impacted by the proposed project are located adjacent to SR 50. Most of the surrounding areas are rural in nature for most of the wetland systems. Wetlands, uplands, agricultural land, and/or low density residential lands surround most of the sites. The majority of the SR 50 corridor has undeveloped habitat that provides movement for wildlife.
.500(6)(b)Water Environment (n/a for uplands)	**7**		**0**	Hydroperiods seem to fluctuate within the surface waters along the corridor. There are some years where there is little water within the surface waters and other years that water levels have been relatively high. In years where water levels are low, vegetation may appear in the surface waters.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	**7**		**0**	Vegetation identified within the freshwater marsh systems includes cattails (Typha spp.), pickerelweed (Pontedaria cordata), rushes (Juncus spp.), lizard's tail (Saururus cernuus), duck potato (Sagittaria latifolia), lance-leaf arrowhead (Sagittaria lancifolia), and pennywort (Hydrocotyle spp.). Systems located directly adjacent to SR 50 have been impacted from the original construction and previous widening of SR 50, including existing stormwater management constructed along the corridor.

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres		with
	0.70		**0**

Delta = [with-current]
0.70

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

For impact assessment areas
FL = Delta x acres = 0.22

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

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

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

Site/Project Name	Application Number	Assessment Area Name or Number
SR 50 - Brooksville Bypass to I-75		Freshwater Forested

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
615	PFO1/6	Impact	0.64 acres

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

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

Forested systems impacted by the proposed project are located adjacent to SR 50. Most of the surrounding areas are rural in nature for most of the wetland systems. Wetlands (marsh pockets within forested system), uplands, agricultural land, and/or low density residential lands surround most of the sites. The majority of the SR 50 corridor has undeveloped habitat that provides movement for wildlife.

Assessment area description

For the majority of the freshwater forested wetland systems within the project area, both evergreen and deciduous trees are present. Wetlands within the project area described as forested wetlands typically have a canopy including red maple (Acer rubrum), laurel oak (Quercus laurifolia), water oak (Quercus nigra), cabbage palms (Sabal palmetto), and some live oak (Quercus virginiana).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Wetlands, uplands, agricultural land, and/or low density residential lands surround most of the sites.	Not unique to this area.

Functions	Mitigation for previous permit/other historic use
These wetlands could provide habitat to birds, amphibians and other wildlife. It also helps in filtering of nutrients and storage of runoff from the surrounding areas.	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)
marbled salamander, mole salamander, threelined salamander, slimy salamander, five-lined skink, ringneck snake, gray rat snake, eastern king snake, cottonmouth, red-tailed hawk, turkey, yellow-billed cuckoo, screechowl, great-horned owl, ruby-throated hummingbird, acadian flycatcher, pileated woodpecker, hermit thrush, cedar waxwing, yellow-throated warbler, opossum, gray squirrel.	eastern indigo snake (T), wood stork (FT), little blue heron (ST), tricolored heron (ST), Florida sandhill crane (ST)

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

Species observered within the project corridor (not specific to wetland type) include: snowy egret, Florida sandhill crane, bald eagle, osprey

Additional relevant factors:

N/A

Assessment conducted by:	Assessment date(s):
Chris Salicco	April 2019

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

Site/Project Name	Application Number	Assessment Area Name or Number
SR 50 - Brooksville Bypass to I-75	N/A	Freshwater Forested
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Chris Salicco	April 2019

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

.500(6)(a) Location and Landscape Support	w/o pres or current	with	Forested systems impacted by the proposed project are located adjacent to SR 50. Most of the surrounding areas are rural in nature for most of the wetland systems. Wetlands (marsh pockets within forested system), uplands, agricultural land, and/or low density residential lands surround most of the sites. The majority of the SR 50 corridor has undeveloped habitat that provides movement for wildlife.
	7	**0**	
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current	with	Hydroperiods seem to fluctuate within the surface waters along the corridor. There are some years where there is little water within the surface waters and other years that water levels have been relatively high. In years where water levels are low, vegetation may appear in the surface waters.
	7	**0**	
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current	with	For the majority of the freshwater forested wetland systems within the project area, both evergreen and deciduous trees are present. Wetlands within the project area described as forested wetlands typically have a canopy including red maple (Acer rubrum), laurel oak (Quercus laurifolia), water oak (Quercus nigra), cabbage palms (Sabal palmetto), and some live oak (Quercus virginiana).
	7	**0**	

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.70	**0**

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

For impact assessment areas
FL = Delta x acres = 0.45

Delta = [with-current]
0.70

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

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

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

Site/Project Name	Application Number	Assessment Area Name or Number
SR 50 - Brooksville Bypass to I-75		Surface Water

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
510/520	PUB	Impact	0.68 acres

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

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

These systems are located adjacent to SR 50 throughout the project corridor.

Assessment area description

Surface waters along the project corridor. Surface waters within this area of Hernando County have water levels that fluctuate throughout the seasons and different years.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Wetlands, uplands, agricultural land, and/or low density residential lands surround most of the sites.	Not unique to this area.

Functions	Mitigation for previous permit/other historic use
These wetlands could provide habitat to birds, amphibians and other wildlife. Used as foraging for many species.	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)
Cricket frog, pig frog, American alligator, Florida banded water snake, wood stork, great blue heron, great egret, greenbacked heron, wing rail, purple gallinule, snowy egret, white ibis, little blue heron, tricolored heron, and white heron.	wood stork (FT), little blue heron (ST), tricolored heron (ST), Florida sandhill crane (ST)

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

Great white heron wading

Additional relevant factors:

N/A

Assessment conducted by:	Assessment date(s):
Chris Salicco	April 2019

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

Site/Project Name	Application Number	Assessment Area Name or Number
SR 50 - Brooksville Bypass to I-75	N/A	Surface Water
Impact or Mitigation	**Assessment conducted by:**	**Assessment date:**
Impact	Chris Salicco	April 2019

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

.500(6)(a) Location and Landscape Support w/o pres or current: **6** with: **0**	Surface waters impacted by the proposed project are located adjacent to SR 50, some of which have been bisected by the roadway. Most of the surrounding areas are rural in nature for most of the wetland systems. Wetlands, uplands, agricultural land, and/or low density residential lands surround most of the sites. The majority of the SR 50 corridor has undeveloped habitat that provides movement for wildlife.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current: **7** with: **0**	Hydroperiods seem to fluctuate within the surface waters along the corridor. There are some years where there is little water within the surface waters and other years that water levels have been relatively high. In years where water levels are low, vegetation may appear in the surface waters.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current: **4** with: **0**	Most surface waters are devoid of vegetation or have minimal vegetation. During years or periods where water levels are low, vegetation may exist. Some of the surface waters are low points within agricultural fields and consist mostly of bahia grass.

Score = sum of above scores/30 (if uplands, divide by 20)	If preservation as mitigation,	For impact assessment areas
current or w/o pres: **0.57** with: **0**	Preservation adjustment factor =	FL = Delta x acres = 0.39
	Adjusted mitigation delta =	

Delta = [with-current]	If mitigation	For mitigation assessment areas
0.57	Time lag (t-factor) =	RFG = delta/(t-factor x risk) =
	Risk factor =	

Appendix F

Effect Determination Key for The Wood Stork in Central and North Peninsular Florida

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

Purpose and Background

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

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

Scope of the key

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

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

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

Summary of General Wood Stork Nesting and Foraging Habitat Information

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

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

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

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

WOOD STORK KEY

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

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

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

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

Project impacts SFH[2]……go to C

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

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

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

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

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

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

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

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

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

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

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

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

Monitoring and Reporting Effects

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

Literature Cited

Kahl, M.P., Jr. 1964. Food ecology of the wood stork (*Mycteria americana*) in Florida. Ecological Monographs 34:97-117.

Ogden, J.C. 1991. Nesting by wood storks in natural, altered, and artificial wetlands in central and northern Florida. Colonial Waterbirds 14:39-45.

Rodgers, J.A. Jr., A.S. Wenner, and S.T. Schwikert. 1987. Population dynamics of wood storks in northern and central Florida, USA. Colonial Waterbirds 10:151-156.

Rodgers, J.A., Jr., S.T. Schwikert, and A. Shapiro-Wenner. 1996. Nesting habitat of wood storks in north and central Florida, USA. Colonial Waterbirds 19:1-21.

U.S. Fish and Wildlife Service. 1999. South Florida multi-species recovery plan. Fish and Wildlife Service; Atlanta, Georgia. Available from: http://verobeach.fws.gov/Programs/Recovery/vbms5.html.

Appendix G
Standard Protection Measures For the Eastern Indigo Snake

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

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

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

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

POSTER INFORMATION

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

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

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

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

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

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

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

IF YOU SEE A <u>LIVE</u> EASTERN INDIGO SNAKE ON THE SITE:

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

IF YOU SEE A <u>DEAD</u> EASTERN INDIGO SNAKE ON THE SITE:

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

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

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

PRE-CONSTRUCTION ACTIVITIES

1. The applicant or designated agent will post educational posters in the construction office and throughout the construction site, including any access roads. The posters must be clearly visible to all construction staff. A sample poster is attached.

2. Prior to the onset of construction activities, the applicant/designated agent will conduct a meeting with all construction staff (annually for multi-year projects) to discuss identification of the snake, its protected status, what to do if a snake is observed within the project area, and applicable penalties that may be imposed if state and/or federal regulations are violated. An educational brochure including color photographs of the snake will be given to each staff member in attendance and additional copies will be provided to the construction superintendent to make available in the onsite construction office (a final brochure for Plan compliance, to be printed double-sided on 8.5" x 11" paper and then properly folded, is attached). Photos of eastern indigo snakes may be accessed on USFWS and/or FWC websites.

3. Construction staff will be informed that in the event that an eastern indigo snake (live or dead) is observed on the project site during construction activities, all such activities are to cease until the established procedures are implemented according to the Plan, which includes notification of the appropriate USFWS Field Office. The contact information for the USFWS is provided on the referenced posters and brochures.

DURING CONSTRUCTION ACTIVITIES

1. During initial site clearing activities, an onsite observer may be utilized to determine whether habitat conditions suggest a reasonable probability of an eastern indigo snake sighting (example: discovery of snake sheds, tracks, lots of refugia and cavities present in the area of clearing activities, and presence of gopher tortoises and burrows).

2. If an eastern indigo snake is discovered during gopher tortoise relocation activities (i.e. burrow excavation), the USFWS shall be contacted within one business day to obtain further guidance which may result in further project consultation.

3. Periodically during construction activities, the applicant's designated agent should visit the project area to observe the condition of the posters and Plan materials, and replace them as needed. Construction personnel should be reminded of the instructions (above) as to what is expected if any eastern indigo snakes are seen.

POST CONSTRUCTION ACTIVITIES

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

Appendix H
Eastern Indigo Snake Programmatic Effect Determination Key

United States Department of the Interior
U. S. FISH AND WILDLIFE SERVICE
7915 BAYMEADOWS WAY, SUITE 200
JACKSONVILLE, FLORIDA 32256-7517

IN REPLY REFER TO:
August 13, 2013

Colonel Alan M. Dodd, District Engineer
Department of the Army
Jacksonville District Corps of Engineers
P.O Box 4970
Jacksonville, Florida 32232-0019
(Attn: Mr. David S. Hobbie)

RE: Update Addendum to USFWS Concurrence Letter to U.S. Army Corps of Engineers Regarding Use of the Attached Eastern Indigo Snake Programmatic Effect Determination Key

Dear Colonel Dodd:

This letter is to amend the January 25, 2010, letter to the U.S. Army Corps of Engineers regarding the use of the attached eastern indigo snake programmatic effect determination key (key). It supersedes the update addendum issued January 5, 2012.

We have evaluated the original programmatic concurrence and find it suitable and appropriate to extend its use to the remainder of Florida covered by the Panama City Ecological Services Office.

On Page 2

The following replaces the last paragraph above the signatures:

"Thank you for your continued cooperation in the effort to conserve fish and wildlife resources. Any questions or comments should be directed to Annie Dziergowski (North Florida ESO) at 904-731-3089, Harold Mitchell (Panama City ESO) at 850-769-0552, or Victoria Foster (South Florida ESO) at 772-469-4269."

On Page 3

The following replaces both paragraphs under "Scope of the key":

"This key should be used only in the review of permit applications for effects determinations for the eastern indigo snake within the State of Florida, and not for other listed species or for aquatic resources such as Essential Fish Habitat (EFH)."

On Page 4

The following replaces the first paragraph under Conservation Measures:

"The Service routinely concurs with the Corps' "not likely to adversely affect" (NLAA) determination for individual project effects to the eastern indigo snake when assurances are given that

our *Standard Protection Measures for the Eastern Indigo Snake* (Service 2013) located at: http://www.fws.gov/northflorida/IndigoSnakes/indigo-snakes.htm will be used during project site preparation and project construction. There is no designated critical habitat for the eastern indigo snake."

On Page 4 and Page 5 (Couplet D)

The following replaces D. under Conservation Measures:

D. The project will impact less than 25 acres of xeric habitat (scrub, sandhill, or scrubby flatwoods) or less than 25 active and inactive gopher tortoise burrows……*go to* E

The project will impact more than 25 acres of xeric habitat (scrub, sandhill, or scrubby flatwoods) or more than 25 active and inactive gopher tortoise burrows and consultation with the Service is requested[2]…… *"may affect"*

On Page 5

The following replaces footnote #3:

"[3]If excavating potentially occupied burrows, active or inactive, individuals must first obtain state authorization via a FWC Authorized Gopher Tortoise Agent permit. The excavation method selected should also minimize the potential for injury of an indigo snake. Applicants should follow the excavation guidance provided within the most current Gopher Tortoise Permitting Guidelines found at http://myfwc.com/gophertortoise ."

Thank you for making these amendments concerning the Eastern Indigo Snake Key. If you have any questions, please contact Jodie Smithem of my staff at the address on the letterhead, by email at jodie_smithem@fws.gov, or by calling (904)731-3134.

Sincerely,

Dawn Jennings
Acting Field Supervisor

cc:
Panama City Ecological Services Field Office, Panama City, FL
South Florida Ecological Services Field Office, Vero Beach, FL

United States Department of the Interior

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

January 25, 2010

David S. Hobbie
Chief, Regulatory Division
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Service Federal Activity Code: 41420-2009-FA-0642
Service Consultation Code: 41420-2009-I-0467
41910-2010-I-0045
Subject: North and South Florida Ecological Services Field Offices Programmatic Concurrence for Use of Original Eastern Indigo Snake Key(s) Until Further Notice

Dear Mr. Hobbie:

The U.S. Fish and Wildlife Service's (Service) South and North Florida Ecological Services Field Offices (FO), through consultation with the U.S. Army Corps of Engineers Jacksonville District (Corps), propose revision to both Programmatic concurrence letters/keys for the federally threatened Eastern Indigo Snake (*Drymarchon corais couperi*), (indigo snake), and now provide one key for both FO's. The original programmatic key was issued by the South Florida FO on November 9, 2007. The North Florida FO issued a revised version of the original key on September 18, 2008. Both keys were similar in content, but reflected differences in geographic work areas between the two Field Offices. The enclosed key satisfies each office's responsibilities under the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C.1531 *et seq.*).

Footnote number 3 in the original keys indicated "A member of the excavation team should be authorized for Incidental Take during excavation through either a section 10(a)(1)(A) permit issued by the Service or an incidental take permit issued by the Florida Fish and Wildlife Conservation Commission (FWC)." We have removed this reference to a Service issued Section 10(a)(1)(A) permit, as one is not necessary for this activity. We also referenced the FWC's revised April 2009 Gopher Tortoise Permitting Guidelines with a link to their website for updated excavation guidance, and have provided a website link to our Standard Protection Measures. All other conditions and criteria apply.

We believe the implementation of the attached key achieves our mutual goal for all users to make consistent effect determinations regarding this species. The use of this key for review of projects

located in all referenced counties in our respective geographic work areas leads the Service to concur with the Corps' determination of "may affect, not likely to adversely affect" (MANLAA) for the Eastern indigo snake. The biological rationale for the determinations is contained within the referenced documents and is submitted in accordance with section 7 of the Act.

Should circumstances change or new information become available regarding the eastern indigo snake or implementation of the key, the determinations may be reconsidered as deemed necessary.

Thank you for your continued cooperation in the effort to conserve fish and wildlife resources. Any questions or comments should be directed to either Allen Webb (Vero Beach) at 772-562-3909, extension 246, or Jay Herrington (Jacksonville) at 904-731-3326.

Sincerely,

Paul Souza
Field Supervisor
South Florida Ecological Services Office

David L. Hankla
Field Supervisor
North Florida Ecological Services Office

Enclosure

cc: electronic only
FWC, Tallahassee, Florida (Dr. Elsa Haubold)
Service, Jacksonville, Florida (Jay Herrington)
Service, Vero Beach, Florida (Sandra Sneckenberger)

Eastern Indigo Snake Programmatic Effect Determination Key

Scope of the key

This key should be used only in the review of permit applications for effects determinations within the North and South Florida Ecological Services Field Offices Geographic Areas of Responsibility (GAR), and not for other listed species or for aquatic resources such as Essential Fish Habitat (EFH). Counties within the **North** Florida GAR include Alachua, Baker, Bradford, Brevard, Citrus, Clay, Columbia, Dixie, Duval, Flagler, Gilchrist, Hamilton, Hernando, Hillsborough, Lafayette, Lake, Levy, Madison, Manatee, Marion, Nassau, Orange, Pasco, Pinellas, Putnam, St. Johns, Seminole, Sumter, Suwannee, Taylor, Union, and Volusia.

Counties in the **South** Florida GAR include Broward, Charlotte, Collier, De Soto, Glades, Hardee, Hendry, Highlands, Lee, Indian River, Martin, Miami-Dade, Monroe, Okeechobee, Osceola, Palm Beach, Polk, Sarasota, St. Lucie.

Habitat

Over most of its range, the eastern indigo snake frequents several habitat types, including pine flatwoods, scrubby flatwoods, high pine, dry prairie, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields, coastal dunes, and human-altered habitats (Service 1999). Eastern indigo snakes appear to need a mosaic of habitats to complete their life cycle. Wherever the eastern indigo snake occurs in xeric habitats, it is closely associated with the gopher tortoise *(Gopherus polyphemus),* the burrows of which provide shelter from winter cold and summer desiccation (Speake et al. 1978; Layne and Steiner 1996). Interspersion of tortoise-inhabited uplands and wetlands improves habitat quality for this species (Landers and Speake 1980; Auffenberg and Franz 1982).

In south Florida, agricultural sites, such as sugar cane fields, created in former wetland areas are occupied by eastern indigo snakes (Enge pers. comm. 2007). Formerly, indigo snakes would have only occupied higher elevation sites within the wetlands. The introduction of agriculture and its associated canal systems has resulted in an increase in rodents and other species of snakes that are prey for eastern indigo snakes. The result is that indigos occur at higher densities in these areas than they did historically.

Even though thermal stress may not be a limiting factor throughout the year in south Florida, indigo snakes still seek and use underground refugia. On the sandy central ridge of central Florida, eastern indigos use gopher tortoise burrows more (62 percent) than other underground refugia (Layne and Steiner 1996). Other underground refugia used include armadillo (*Dasypus novemcinctus*) burrows near citrus groves, cotton rat (*Sigmodon hispidus*) burrows, and land crab (*Cardisoma guanhumi*) burrows in coastal areas (Service 2006). Natural ground holes, hollows at the base of trees or shrubs, ground litter, trash piles, and crevices of rock-lined ditch walls are also used (Layne and Steiner 1996). These refugia are used most frequently where tortoise burrows are not available, principally in low-lying areas off the central and coastal ridges. In extreme south Florida (the Everglades and Florida Keys), indigo snakes are found in tropical

hardwood hammocks, pine rocklands, freshwater marshes, abandoned agricultural land, coastal prairie, mangrove swamps, and human-altered habitats (Steiner et al. 1983). It is suspected that they prefer hammocks and pine forests, because most observations occur in these habitats disproportionately to their presence in the landscape (Steiner et al. 1983). Hammocks may be important breeding areas as juveniles are typically found there. The eastern indigo snake is a snake-eater so the presence of other snake species may be a good indicator of habitat quality.

Conservation Measures

The Service routinely concurs with the Corps' "not likely to adversely affect" (NLAA) determination for individual project effects to the eastern indigo snake when assurances are given that our *Standard Protection Measures for the Eastern Indigo Snake* (Service 2004) located at: http://www.fws.gov/northflorida/IndigoSnakes/indigo-snakes will be used during project site preparation and project construction. There is no designated critical habitat for the eastern indigo snake.

In an effort to reduce correspondence in effect determinations and responses, the Service is providing an Eastern Indigo Snake Effect Determination Key, similar in utility to the West Indian Manatee Effect Determination Key and the Wood Stork Effect Determination Keys presently being utilized by the Corps. 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 and no additional correspondence will be necessary[1]. This key is subject to revisitation as the Corps and Service deem necessary.

A. Project is not located in open water or salt marsh.....*go to* B

Project is located solely in open water or salt marsh.....*"no effect"*

B. Permit will be conditioned for use of the Service's *Standard Protection Measures For The Eastern Indigo Snake* during site preparation and project construction.....*go to* C

Permit will not be conditioned as above for the eastern indigo snake, or it is not known whether an applicant intends to use these measures and consultation with the Service is requested[2] .....*"may affect"*

C. There are gopher tortoise burrows, holes, cavities, or other refugia where a snake could be buried or trapped and injured during project activities .....*go to* D

There are no gopher tortoise burrows, holes, cavities, or other refugia where a snake could be buried or trapped and injured during project activities .....*"NLAA"*

D. The project will impact less than 25 acres of xeric habitat supporting less than 25 active and inactive gopher tortoise burrows.....*go to* E

The project will impact more than 25 acres of xeric habitat or more than 25 active and inactive gopher tortoise burrows and consultation with the Service is requested[2]..... *"may affect"*

E. Any permit will be conditioned such that all gopher tortoise burrows, active or inactive, will be evacuated prior to site manipulation in the vicinity of the burrow[3]. If an indigo snake is encountered, the snake must be allowed to vacate the area prior to additional site manipulation in the vicinity. Any permit will also be conditioned such that holes, cavities, and snake refugia other than gopher tortoise burrows will be inspected each morning before planned site manipulation of a particular area, and, if occupied by an indigo snake, no work will commence until the snake has vacated the vicinity of proposed work..... *"NLAA"*

Permit will not be conditioned as outlined above and consultation with the Service is requested[2] ..... *"may affect"*

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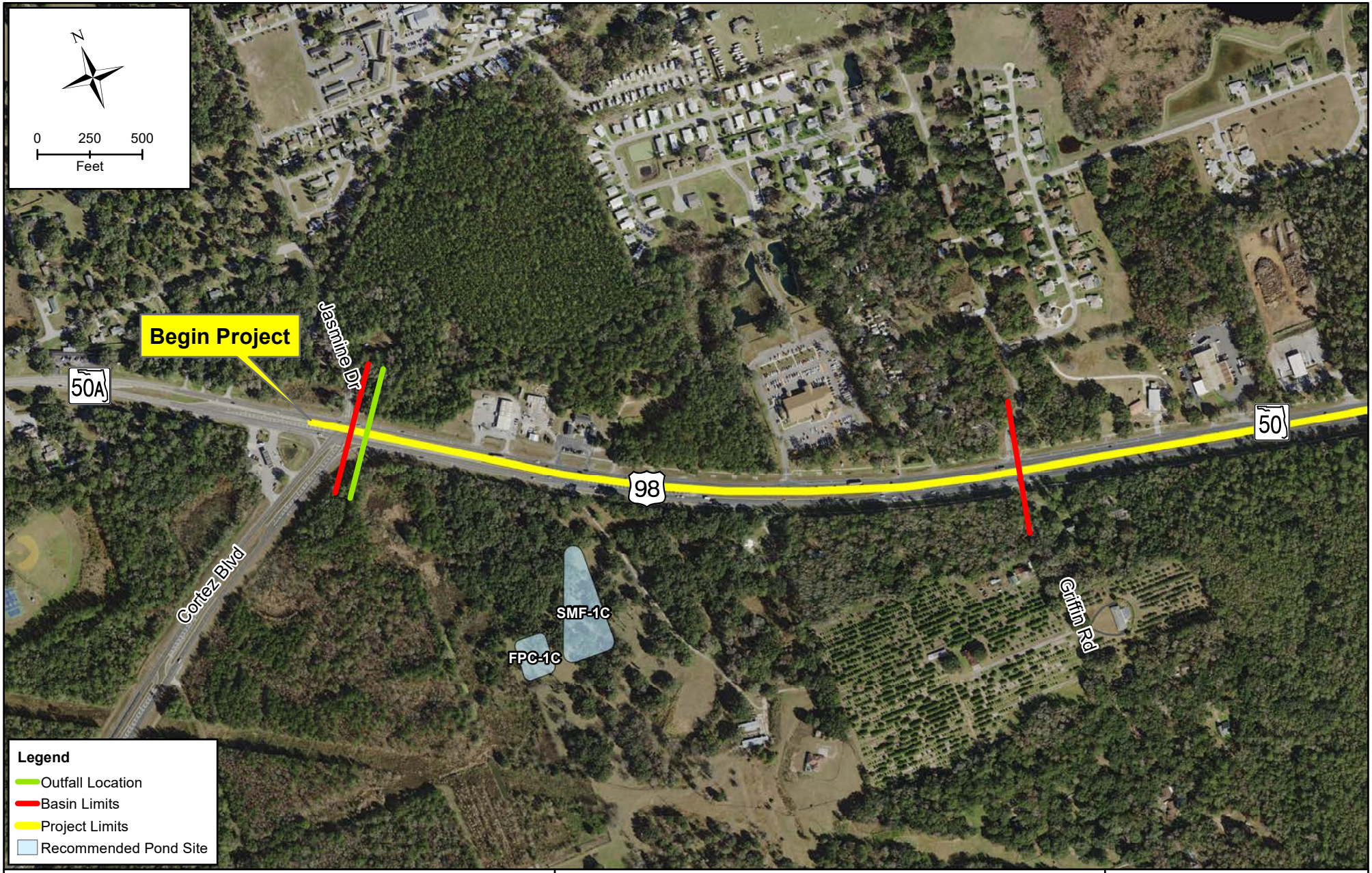
[1]With an outcome of "no effect" or "NLAA" as outlined in this key, the requirements of section 7 of the Act are fulfilled for the eastern indigo snake and no further action is required.

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

[3] If burrow excavation is utilized, it should be performed by experienced personnel. The method used should minimize the potential for injury of an indigo snake. Applicants should follow the excavation guidance provided within the Florida Fish and Wildlife Conservation Commission's revised April 2009 Gopher Tortoise Permitting Guidelines located at **http://myfwc.com/License/Permits_ProtectedWildlife.htm#gophertortoise**. A member of the excavation team should be authorized for Incidental Take during excavation through an incidental take permit issued by the Florida Fish and Wildlife Conservation Commission.

Appendix I

Stormwater Management System and Floodplain Compensation Site Locations



SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

Recommended Stormwater Management Facility & Floodplain Compensation Site Locations

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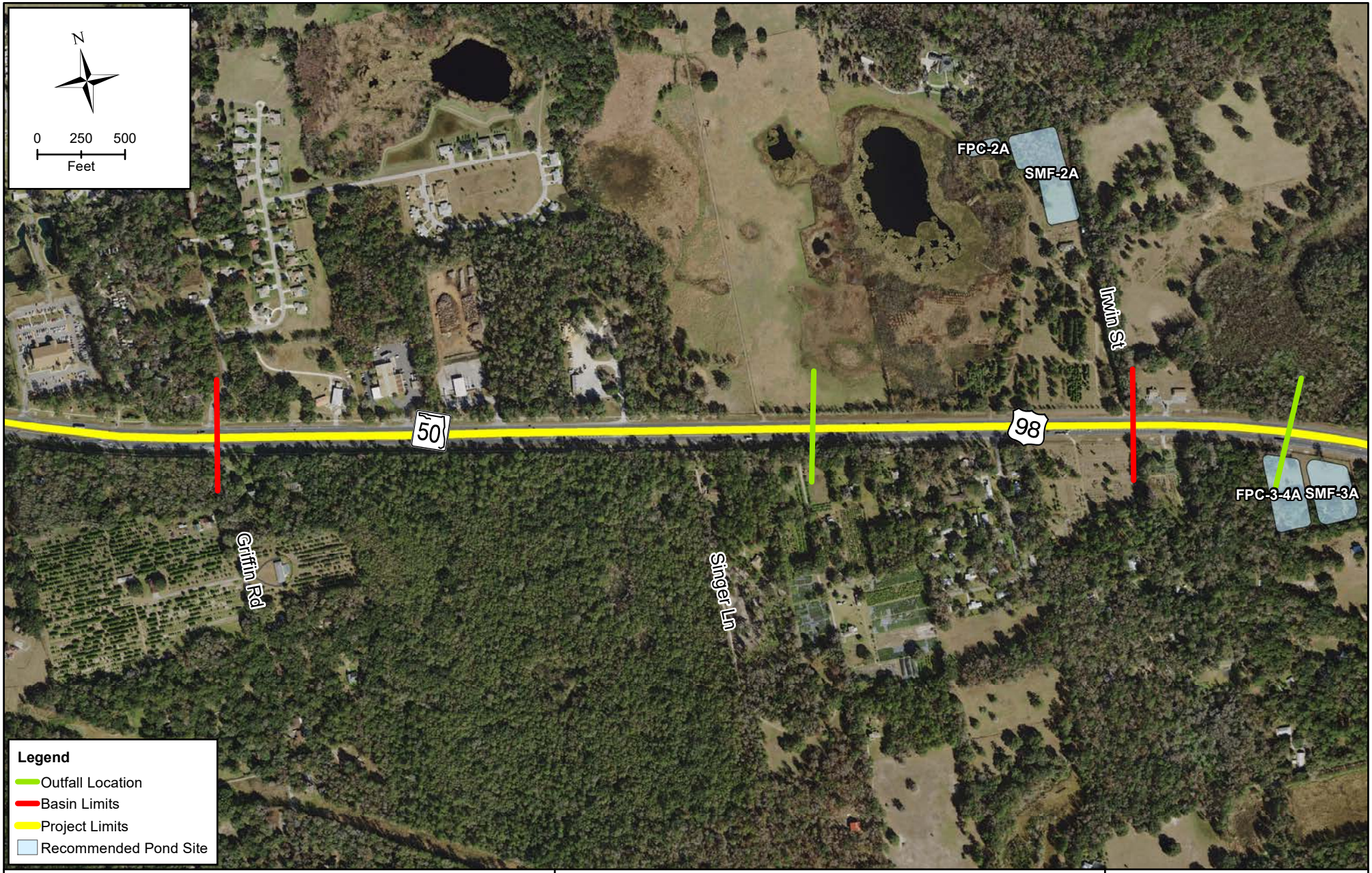
Basin 1



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Recommended Stormwater Management Facility & Floodplain Compensation Site Locations

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Basin 2

SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

WPI Segment No. 430051-1: Hernando County

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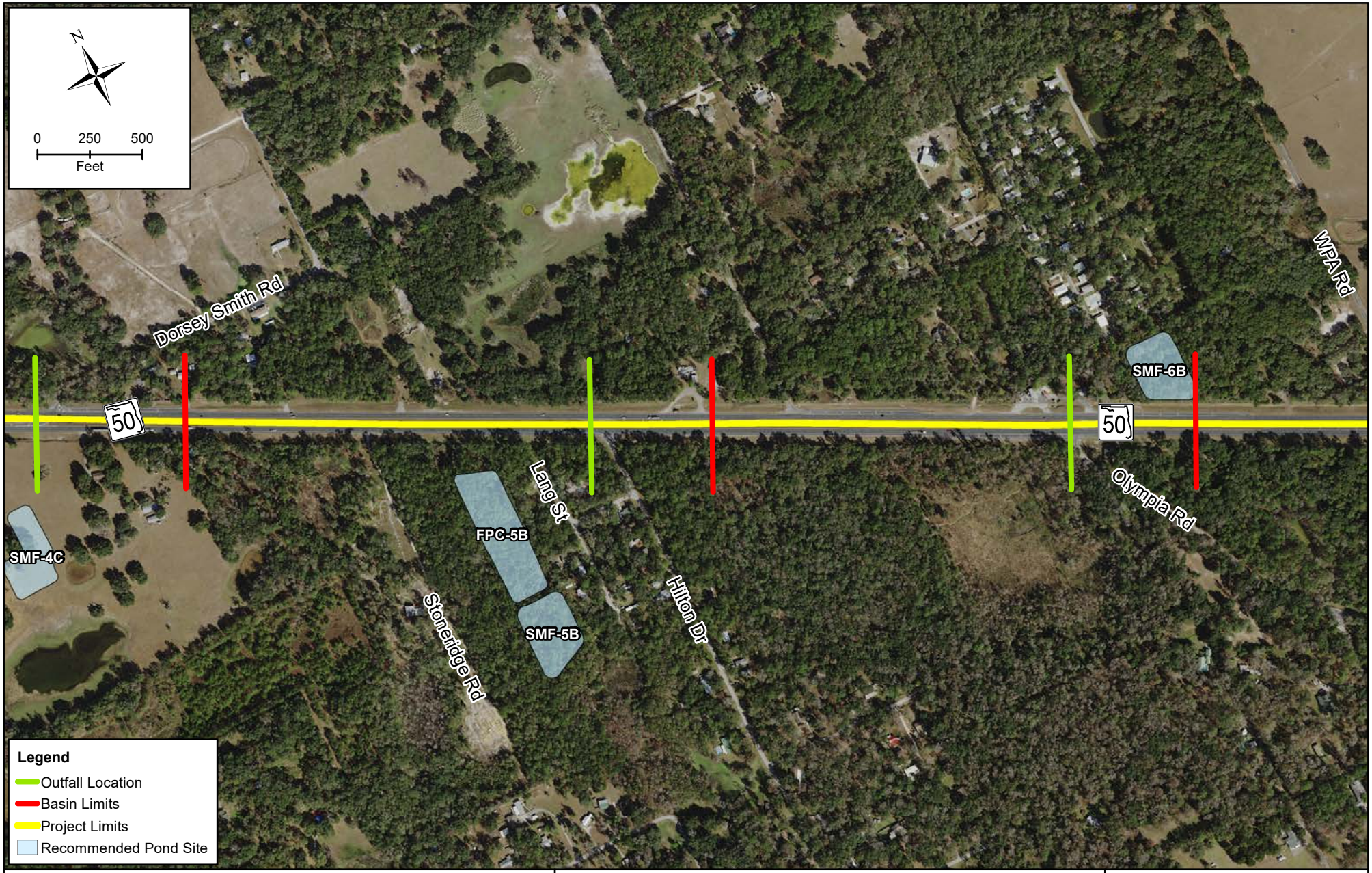
Basins 3 & 4



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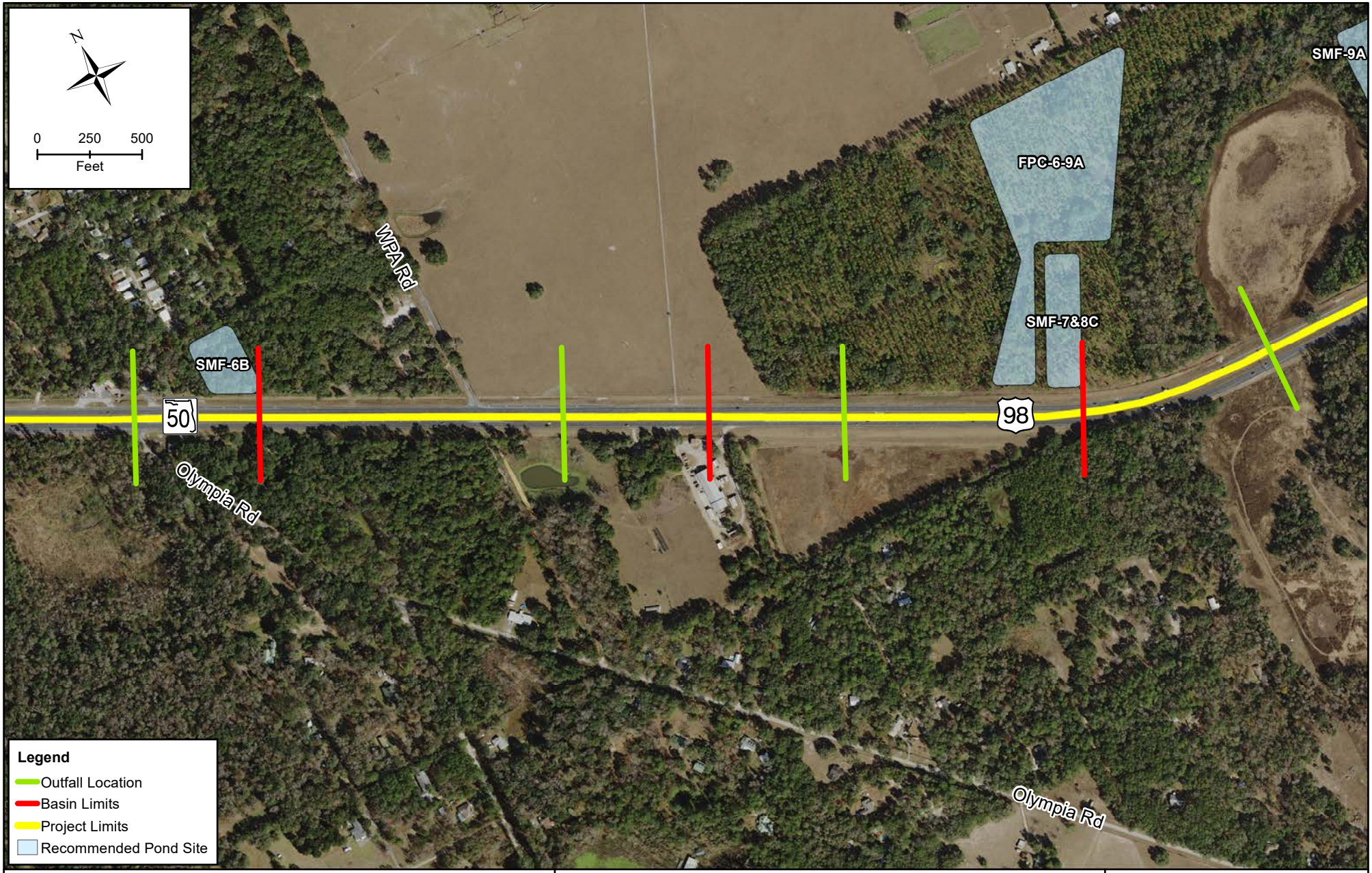

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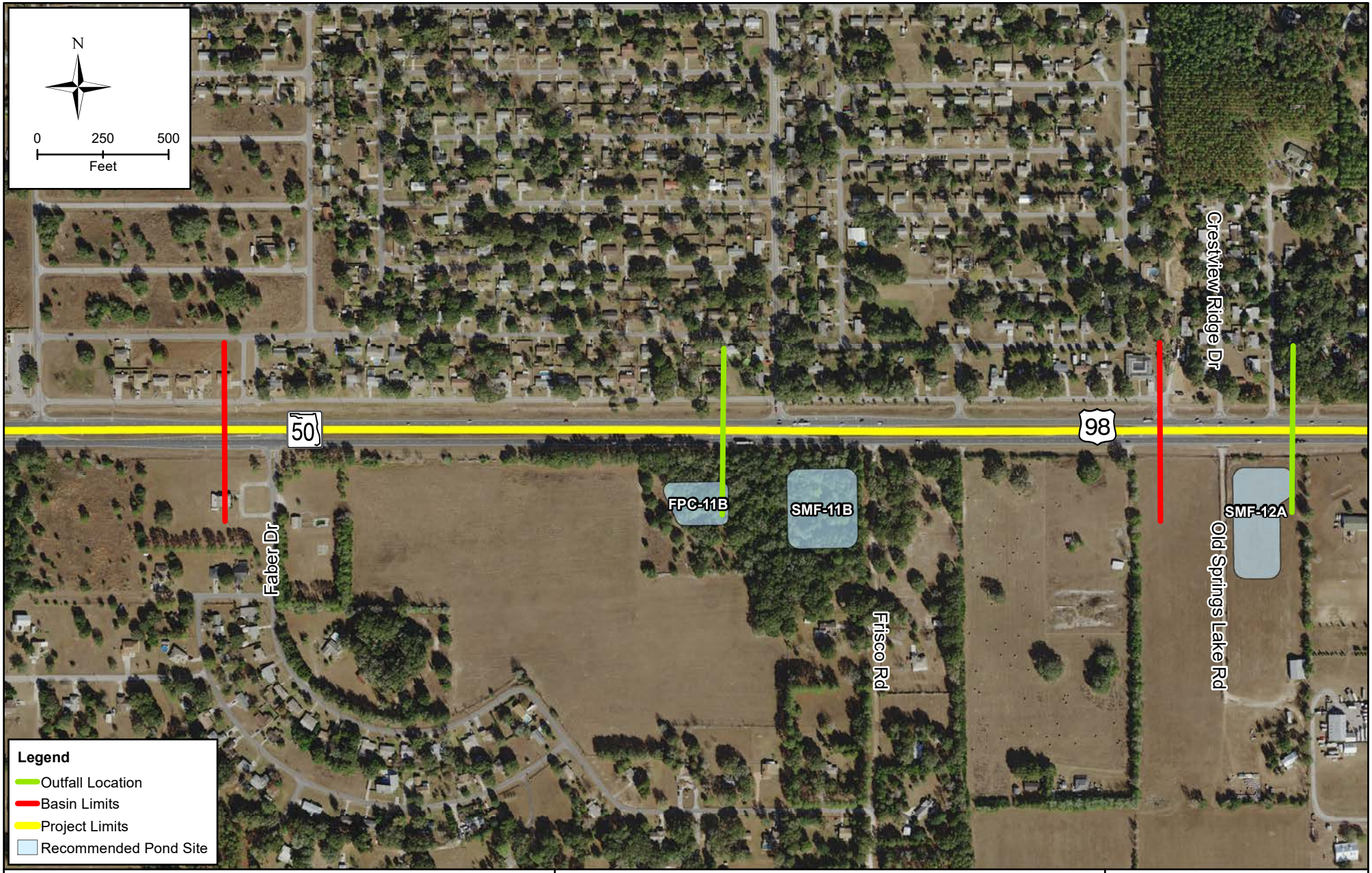
Basins 9 & 10



SR 50 (US 98) PD&E Study

From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

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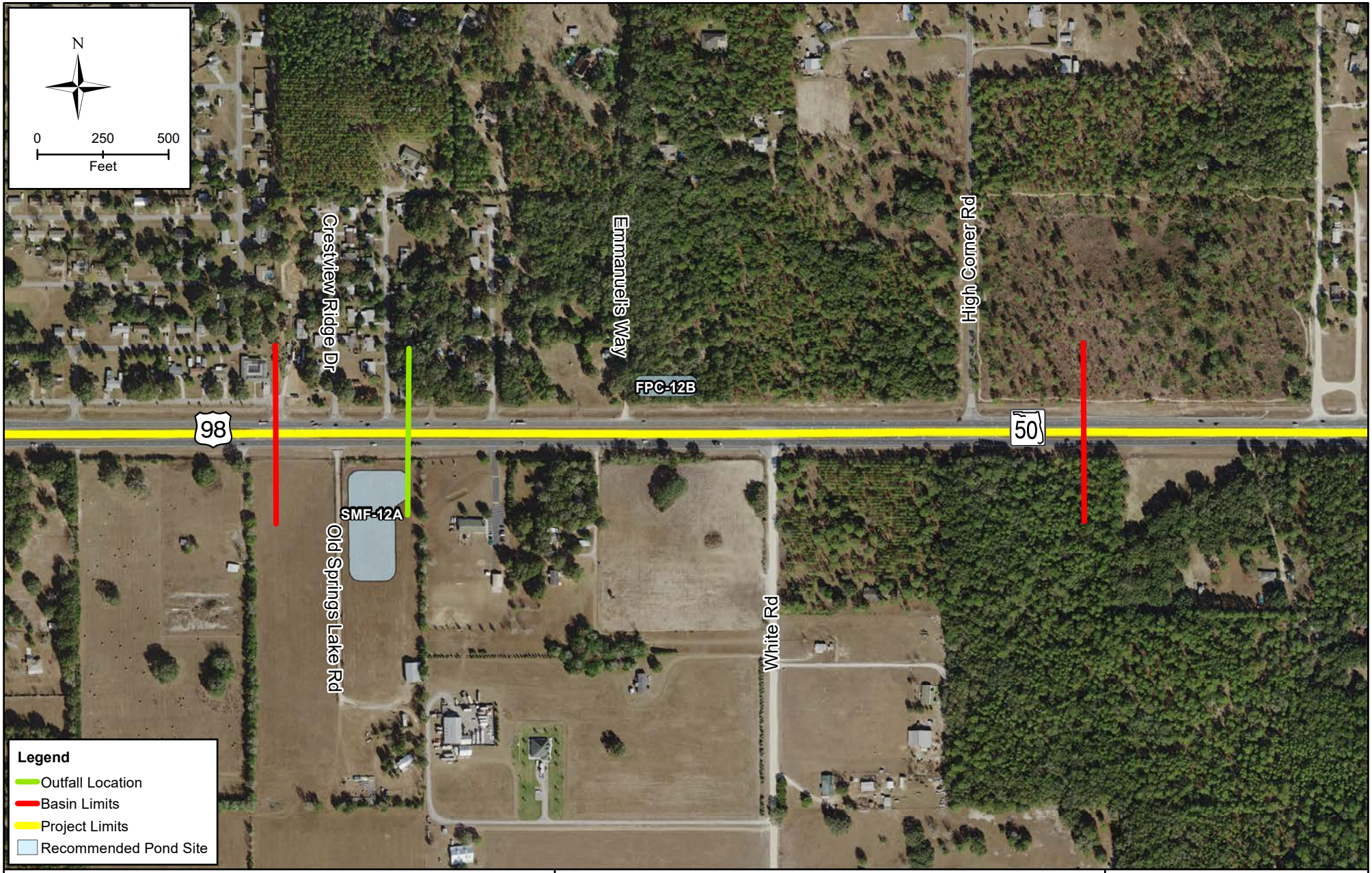
Basin 11



SR 50 (US 98) PD&E Study

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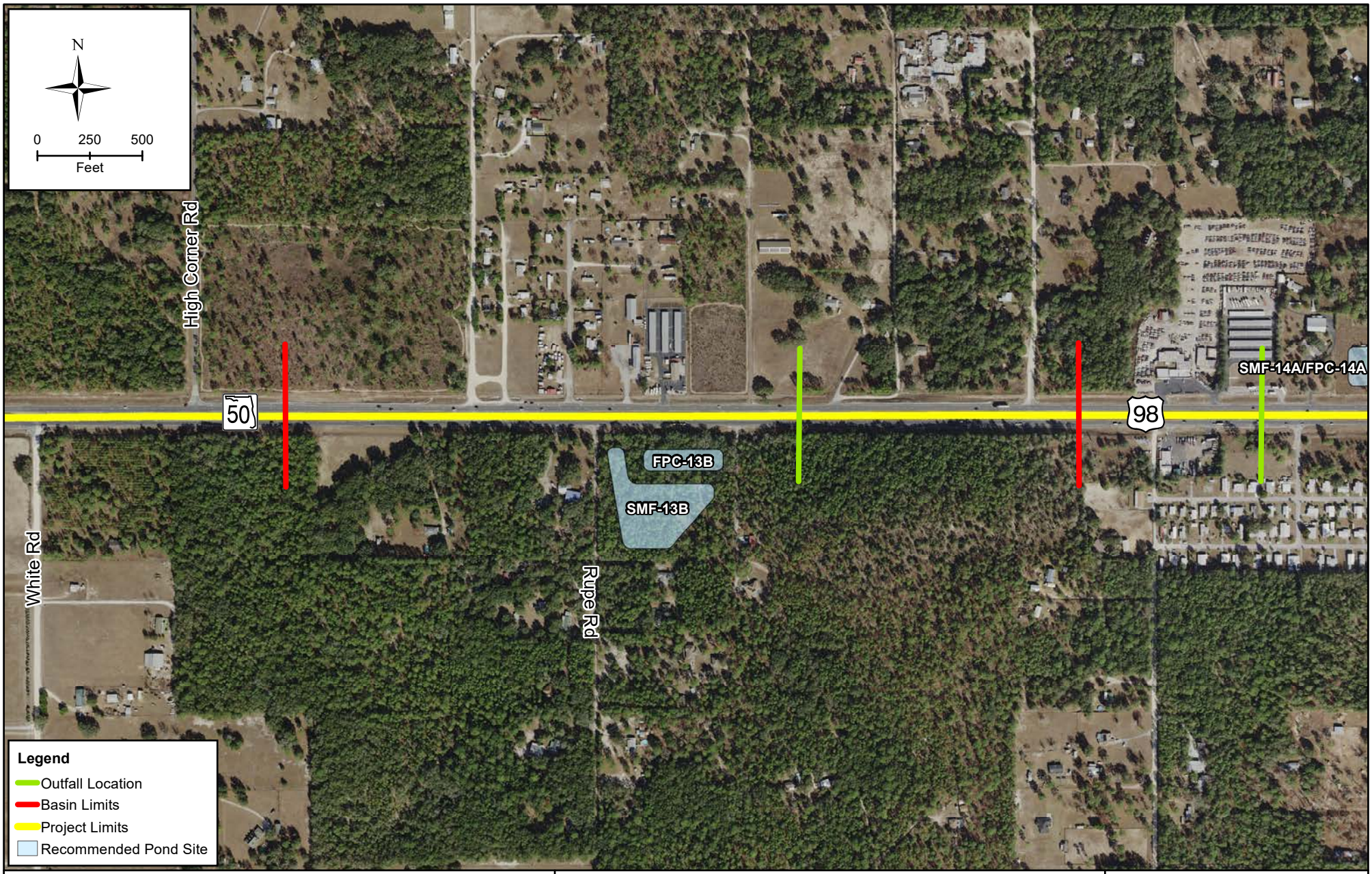
Basin 12



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From Brooksville Bypass/SR 50A/E. Jefferson Street to Interstate 75

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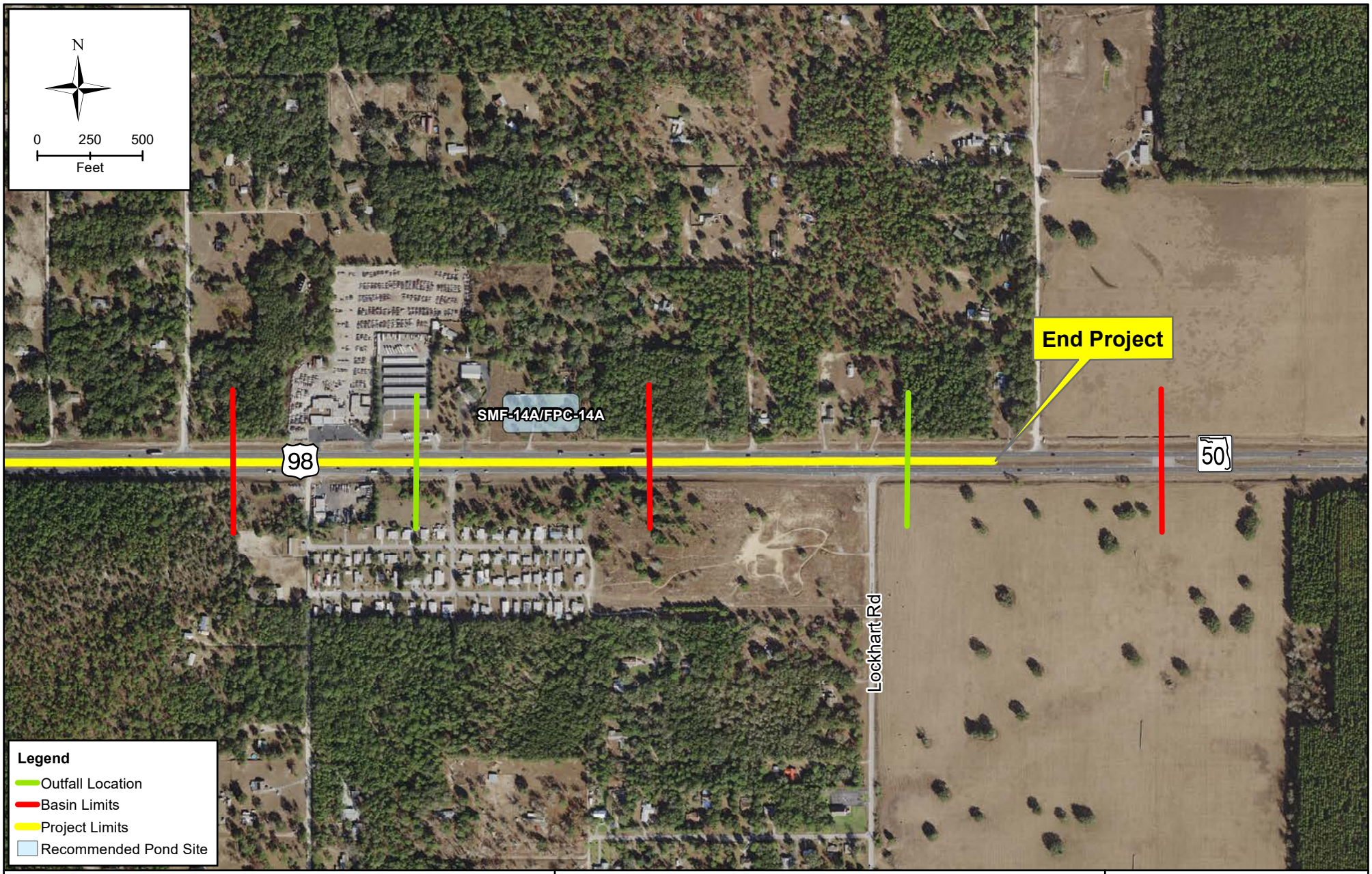
Basin 13



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