Project Development & Environment (PD&E) Study

Natural Resource Evaluation

Simpson Road Improvements

US 192 to 560 feet south of Myers Road

Osceola County, Florida

Contract No. PS-18-9906-DG

Osceola County

Department of Transportation and Transit

May 2020

HDR

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EXECUTIVE SUMMARY

Osceola County conducted a Project Development and Environment (PD&E) Study for an approximate 4.2-mile segment of Simpson Road in Osceola County, Florida. The proposed improvements include widening Simpson Road from US192 to 560 feet south of Myers Road, which would require stormwater management ponds and floodplain compensation. The proposed improvements would be used to provide additional roadway capacity, improve traffic operations and enhance bicycle and pedestrian safety. This Natural Resource Evaluation (NRE) was prepared as a component of the PD&E Study to evaluate Protected Species and Habitat and Wetlands and Other Surface Waters.

Protected Species and Habitat

Federally protected wildlife observed or which have the potential to occur within the project study area based on U.S. Fish and Wildlife Service (USFWS) Consultation Area boundaries and considering existing habitat conditions included reptiles (Eastern indigo snake, sand skink, and blue-tailed mole skink) and birds (wood stork, crested caracara, Everglade snail kite, red-cockaded woodpecker, Florida scrub-jay, and Florida grasshopper sparrow). USFWS designated critical habitats, as defined by Congress 50 CFR § 17.94, were not present; therefore, the proposed project would not result in the destruction or adverse modification of critical habitats.

The non-listed, but federally protected bald eagle and osprey could utilize the project area for foraging. The bald eagle receives protections through the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668-668d). Both the eagle and the osprey are afforded protection under the Migratory Bird Treaty Act, 16 U.S.C. 703-712 (MBTA). Osprey nests are protected by Chapter 68A of the F.A.C. The project is not expected to impact these species.

Effects determinations were based on existing conditions, proposed project impacts, agency guidelines, and Osceola County commitments. The project would be expected to result in the following effects determinations for federal species.

Federal Listed Species	Status	Project Impact Determination
Eastern indigo snake (*Drymarchon corais couperi*)	T	***may affect, not likely to adversely affect***
Sand skink (*Neoseps* reynoldsi)	T	***No effect***
Blue-tailed mole skink (*Eumeces egregious lividus*)	T	***No effect***
Wood stork (*Mycteria americana*)	T	***may affect, not likely to adversely affect***
Crested caracara (*Caracara cheriway*)	T	***may affect, not likely to adversely affect***
Everglade snail kite (*Rostrhamus sociabilis plumbeus*)	E	***No effect***
Florida scrub-jay (*Aphelocoma coerulescens*)	T	***No effect***
Red-cockaded woodpecker (*Picoides borealis*)	E	***No effect***
Florida grasshopper sparrow (*Ammodramus savannarum floridanus*)	E	***No effect***

State-protected species known to occur or with the potential to utilize habitat within the project study area included reptiles (gopher tortoise, short-tailed snake, and pine snake) and birds (Florida sandhill crane, Florida burrowing owl, Southeastern American kestrel, and little blue heron). The project would be expected to result in the following determinations for state protected species.

State Listed Species	Status	Project Impact Determination
Gopher tortoise (*Gopherus polyphemus*)	T	***No adverse effect anticipated***
Short-tailed snake (*Lampropeltis extenuate*)	T	***No adverse effect anticipated***
Florida pine snake (*Pituophis melanoleucus mugitus*)	T	***No adverse effect anticipated***
Florida sandhill crane (*Antigone canadensis pratensis*)	T	***No adverse effect anticipated***
Florida burrowing owl (*Athene cunicularia floridana*)	T	***No adverse effect anticipated***
Southeastern American kestrel (*Falco sparverius paulus*)	T	***No adverse effect anticipated***
Little blue heron (*Egretta caerulea*)	T	***No adverse effect anticipated***

Since no federal or state-listed plants were observed within the study area, a determination of ***no effect*** would be anticipated for both federal and state protected plants.

Wetlands and Surface Waters

Wetlands within the project area contained freshwater forested and non-forested systems and surface waters. Impacts to wetlands and surface waters were estimated for the Preferred **Build** Alternative and the preferred stormwater ponds. No impacts to wetlands or surface waters would be expected for the floodplain compensation area. The project is expected to result in impacts as follows:

Preferred Alternative	Wetland or Surface Water Type (Wetland ID)	FLUCFCS [1] Classification	USFWS [2] Classification	Impact Estimate (acres)
Corridor Alternative B	Forested wetland (MH1) (Ex2) (C1)	617, 617, 621	PFO_C	0.17
	Non-forested wetland - Willow (W1)	640	PSS_C	0.04
	Hydric-cut surface water	510	$PUBH_x$	0.44
	Upland-cut surface water	510	$PUBH_x$	0.27
Pond 1B	Upland-cut surface water	510	$PUBH_x$	0.17
Floodplain Area	NA	--	--	NA
Pond 2B	Upland-cut surface water	510	$PUBH_x$	0.12
Pond 3A	NA	--	--	NA
Pond 4A	Forested wetland (Ex1)	619	PFO_C	2.22
Pond 5A and 5B	NA	--	--	NA
Pond 6A	NA	--	--	NA
Pond 7A	Upland-cut surface water	510	$PUBH_x$	0.59

[1] FDOT, 1999. [2] Cowardin, *et al*. 1979.

Wetland and surface water impacts could total 4.02 acres. Impacts were evaluated based on existing habitat conditions at the time of the PD&E study using the Uniform Mitigation Assessment Method (UMAM) (Chapter 62-345, F.A.C.). The predominant project impacts would occur over forested wetlands. Based on the impacts discussed herein, the project would be expected to have a total functional loss of 0.88 habitat units.

Jurisdictional wetland impacts that result from construction of this project would be mitigated pursuant to Section 373.4137, Florida Statue (F.S.), to satisfy all mitigation requirements of Part IV of Chapter 373, F.S., and 33 U.S.C. §1344. The project is within the Kissimmee River Watershed and is bisected by the Lake Tohopekaliga/East Lake Tohopekaliga drainage basins. Efforts would be made to purchase wetland mitigation credits from a mitigation bank located within the watershed of the project impacts.

Essential Fish Habitat

An Essential Fish Habitat (EFH) Assessment was not required for this project per the requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) of 1996. The project will have ***no effect*** on EFH.

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

1.0 Introduction

The Simpson Road Project Development and Environment (PD&E) Study evaluated road corridor alternatives for providing additional roadway capacity to meet the needs of the growing Osceola County community along a 4.2-mile segment of Simpson Road from US 192 to 560 feet south of Myers Road, as shown on **Figure 1**.

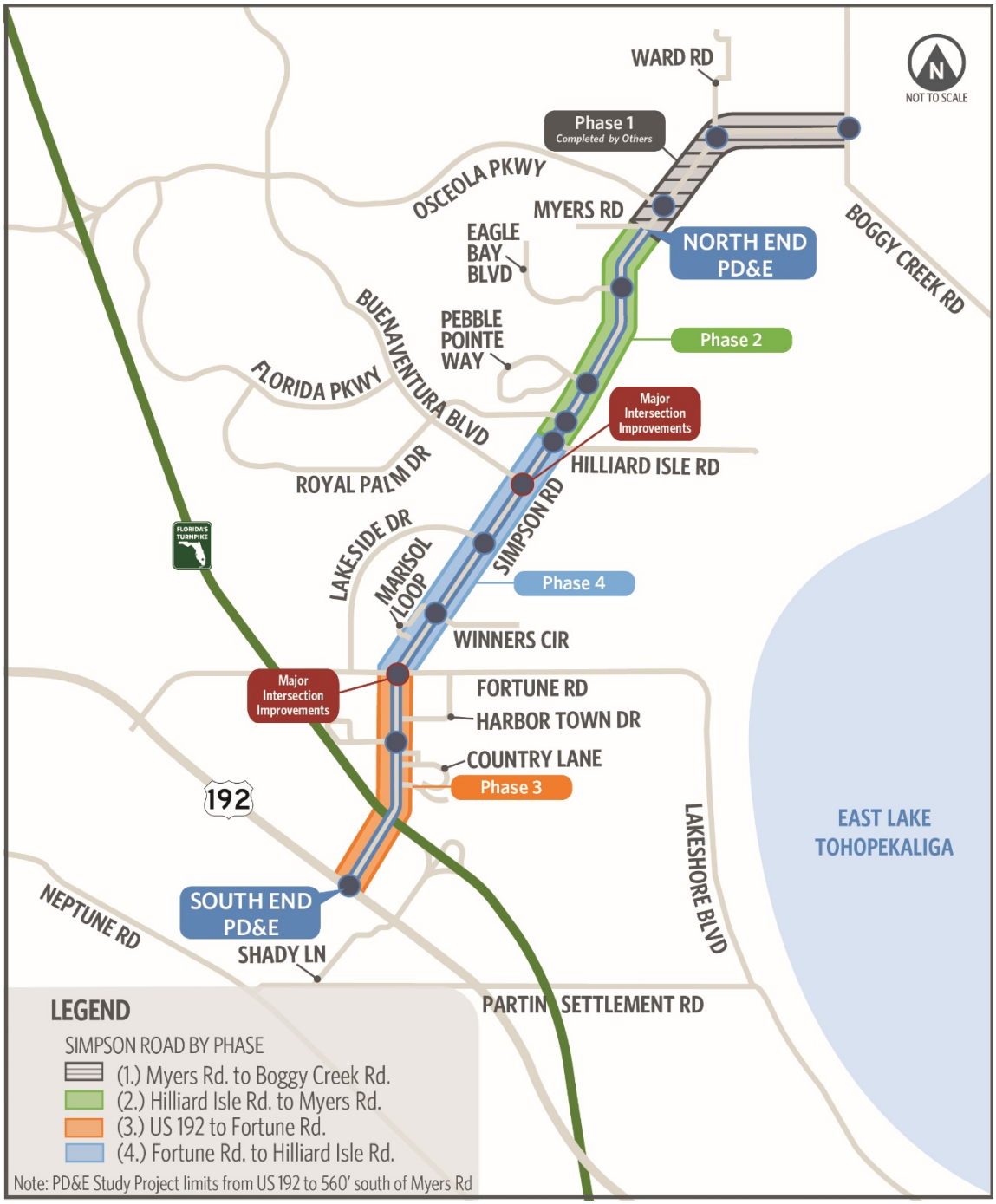

Figure 1 Project Location Map

1.1 Project Description

Although the Simpson Road PD&E Study addressed the corridor from US 192 to 560 feet south of Myers Road, incremental implementation of the improvements is anticipated. For this reason, the Simpson Road corridor is segmented into four construction phases, as defined by Osceola County. Construction Phase 1 is outside of the PD&E Study limits and under design by others. Construction Phases 2, 3 and 4 are within the PD&E Study limits. Pond sites and a floodplain compensation area are also evaluated as part of this PD&E Study.

The four segments, listed in order of construction phase, are described below:

Phase 1

560 feet south of Myers Road to Boggy Creek Road: This 1.4-mile, two lane segment is outside the limits of the Simpson Road PD&E Study from US 192 to 560 feet south of Myers Road. While this segment is undergoing design by others, it is identified to facilitate completeness of the Simpson Road corridor.

Phase 2

Hilliard Isle Road to 560 feet south of Myers Road: This 1.4-mile, two lane segment, is evaluated to widen to four lanes, including a ten foot shared use path on both sides of the roadway. The improvements recommended by this PD&E Study provide a typical section that ties into the existing four lane roadway 560 feet south of Myers Road and the intersection with Osceola Parkway.

Phase 3

US 192 to Fortune Road: This 1.3-mile, two lane segment, is evaluated to widen to four lanes, including a ten foot shared use path on both sides of the roadway. The improvements will tie into the planned new bridge over the Turnpike, which will be designed and constructed by others.

Phase 4

Fortune Road to Hilliard Isle Road: This 1.5-mile segment includes an existing five lane undivided highway with limited sidewalks and no bicycle facilities. It is evaluated to increase capacity through intersection improvements with the addition of auxiliary lanes while maintaining the four existing through lanes. Additionally, improvements include a 10-foot shared use path on both sides of the roadway.

1.2 Purpose and Need

The primary project purpose is to enhance mobility along Simpson Road from US 192 to 560 feet south of Myers Road and to improve connections between the City of Kissimmee, the emerging NeoCity, the Orlando International Airport (OIA), and the emerging Medical City at Lake Nona. A secondary purpose is to improve overall traffic operations and safety along the existing highway network within the PD&E Study area.

The primary needs for this project include providing consistency with transportation plans, establishing system linkages, increasing capacity, addressing transportation demand, improving safety, and meeting social and economic needs. In addition, the proposed project will provide improved modal interconnections.

1.3 Alternatives Discussion

The objective of the alternatives evaluation process is to identify technically and environmentally sound alternatives that provide a safe facility, are acceptable to the community, and are cost effective. The alternatives under consideration would increase capacity through the corridor and enhance pedestrian and bicycle safety. The process will result in the selection of the Preferred Alternative, which will be advanced to the Design Phase. This section summarizes the alternatives considered as part of the PD&E Study.

One (1) **No-Build** and two (2) **Build** Alternative typical sections have been identified for each of the three (3) project phases (Phase 2, 3, and 4). Major intersection improvements were proposed at Fortune Road and Buenaventura Boulevard. Two (2) intersection options were considered for each intersection. Twelve (12) pond site alternatives and one (1) floodplain compensation area were evaluated across seven (7) drainage basins.

No-Build Alternative

The **No-Build** Alternative would maintain the existing configuration along the entire study corridor except at Fortune Road where FDOT intersection improvements have been planned for construction prior to 2025. Therefore, those intersection improvements were considered under the **No-Build** Alternative condition. The FDOT planned intersection configuration changes include:

- Convert the free-flow southbound right-turn lane to a signalized dual right-turn lane
- Add a second southbound left-turn lane
- Add a second eastbound and westbound through lane
- Add a northbound right-turn lane
- Install medians at all approaches

Corridor Alternatives

The roadway corridor alternatives considered included increasing the number of lanes throughout the corridor to four-lanes with the addition of continuous auxiliary lanes between Fortune Road and Buenaventura Boulevard due to the number of access cross roads, proposed signalization, and the significant traffic movements at these major intersections.

The **Alternative A** typical section includes a four-lane divided roadway with a 26-foot median, a five-foot bike lane and a five-foot sidewalk. In Phases 2 and 3, this proposed typical section would require a 115-foot right of way. In Phase 4, the right of way need would expand to 125-feet to support four lanes plus an auxiliary turn lane in each direction with a 19.5-foot median, a five-foot bike lane adjacent to the roadway, and a five-foot sidewalk.

The **Alternative B** typical section in Phase 2 and 3 includes a four-lane divided roadway with a 26-foot median. This alternative includes a ten-foot shared path for both bicycles and pedestrians and requires a 115-foot right of way. In Phase 4, the right of way need expands to 125-feet to support four-lanes plus an auxiliary turn lane in each direction with a 10-foot shared use path for bikes and pedestrians.

Intersection Options

Major intersection improvements were being considered at Fortune Road and Buenaventura Boulevard. Two (2) options were being considered for each intersection including **Option 1 - Conventional** with impacts confined within the Corridor Alternatives and **Option 2 - Quad Road** that would provide alternative traffic movements.

Option 1 – Conventional

The conventional options would maximize the standard intersection configurations by adding lanes, extending turn-bays, and optimizing signal phasing.

At Fortune Road, three eastbound left-turn lanes would service future demand. The southbound right-turn lanes would run on their own phase and as an overlap phase with the eastbound left-turn. The westbound left-turn would require one lane, with a striped out section available for a future left-turn lane addition.

At Buenaventura Boulevard, a second eastbound right-turn lane would be added as an overlap with the northbound left-turn. The northbound left-turn bay would be extended to accommodate the entire queue. The southbound left-turn lane would be converted from a permitted only phase to a protected-permitted phase.

Option 2 – Quad Road

This Quad Road option would utilize short connector-roads, or Quad Roads, to re-route traffic near Fortune Road and Buenaventura Boulevard. The Quad Roads would improve traffic flow by distributing traffic over the entire network and alleviating the demand at these major intersections.

At Fortune Road, the Quad Road would be constructed in the northeast quadrant to service the southbound left-turn and the westbound right-turn at Fortune Road. The southbound left-turn lane would be removed from the main intersection to facilitate use of the Quad Road. However, the westbound right-turn would remain to provide access to businesses on the east side of Simpson Road. The Quad Road would service the majority of the westbound right-turn volume since it would provide a “short cut” to bypass the main intersection. Two new signalized intersections would be required to support the Quad Road.

At Buenaventura Boulevard, the Quad Road would be constructed in the southwest quadrant utilizing existing roads adjacent to the shopping center. This Quad Road would serve 10% to 20% of the northbound left-turn and eastbound right-turn traffic at Buenaventura Boulevard. The Buenaventura Boulevard intersection would remain the primary intersection for all movements; however, the Quad Road would support bypass traffic to the shopping center or nearby residential communities.

Pond Alternatives

Pond site alternatives were evaluated within each basin/sub-basin, which involved coordination with property owners and Osceola County. Twelve (12) pond site alternatives and one (1) floodplain compensation area were evaluated across seven (7) drainage basins (**Figure 2**). The recommended eight (8) pond site alternatives (i.e. Pond 1B, 2B, 3A, 4A, 5A, 5B, 6A, and 7A) and one (1) floodplain compensation site are discussed below:

- **Basin 1:** Pond 1B was the recommended alternative, which would impact floodplain. A Floodplain Compensation Site would be needed to offset floodplain impacts in this Basin.
- **Basin 2**: Two (2) pond sites were evaluated. Through coordination with Osceola County, the expansion of an existing School District of Osceola County pond was identified as the recommended Pond 2B.
- **Basin 3**: Two (2) pond sites were evaluated. Pond 3A was recommended as it would enable direct connection to the basin outfall.
- **Basin 4**: Two (2) pond sites were evaluated. Pond 4A was recommended including the easement to convey runoff from Simpson Road to the basin outfall.
- **Basin 5**: Two (2) pond sites were evaluated in coordination with the property owner and Osceola County. Basins 5A and 5B were both recommended with an option for potential shared use in the future.
- **Basin 6**: Two (2) pond sites were evaluated in coordination with the property owner and Osceola County. Pond 6A was recommended.

- **Basin 7**: Two (2) pond sites were evaluated. Pond 7A was recommended, which would involve expansion of an existing pond.

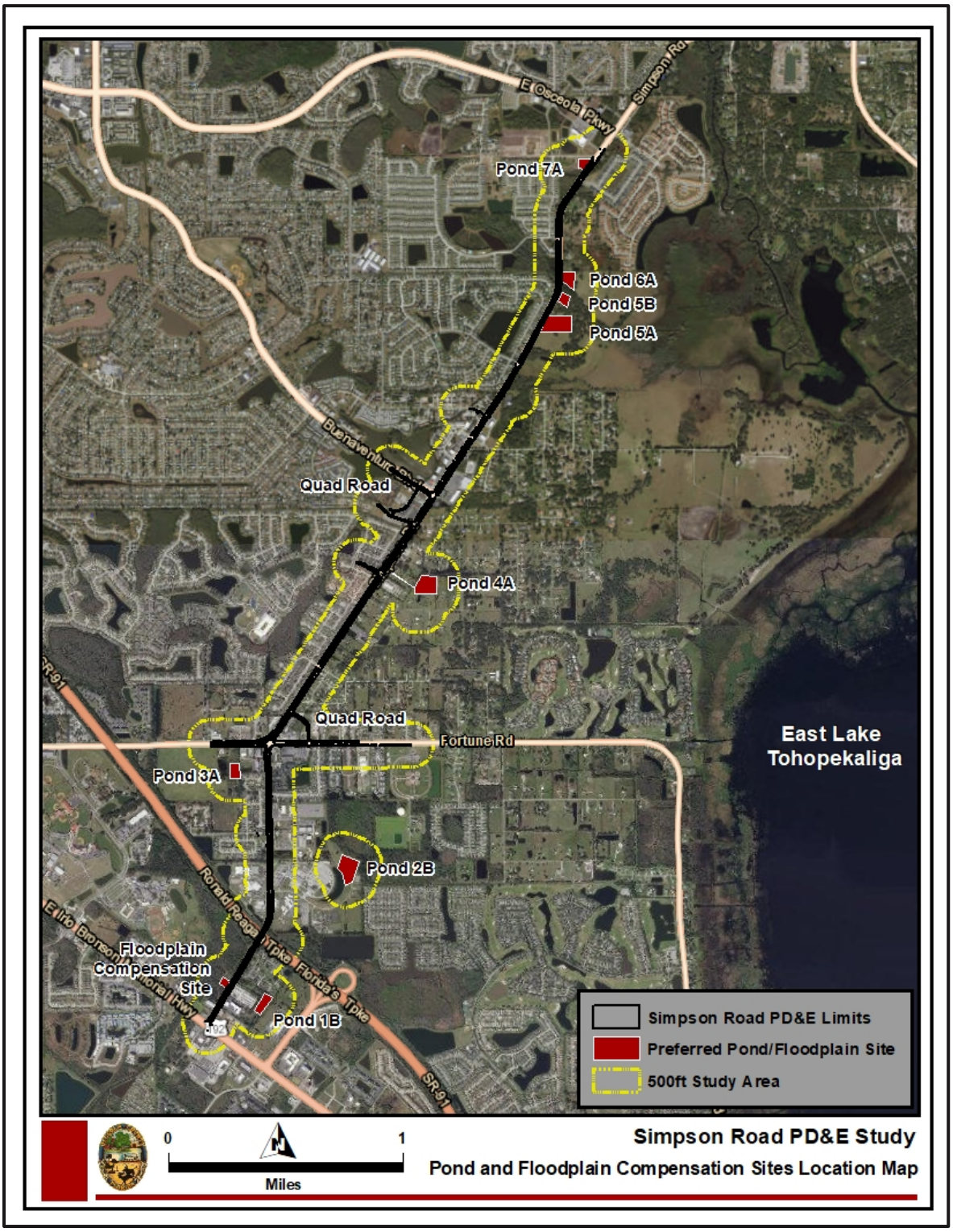

Figure 2 **Preferred Pond and Floodplain Compensation Site Map**

Preferred Alternatives

With public participation, coordination with Osceola County staff and approval from the Osceola Board of County Commissioners, the alternatives advancing for further engineering development and environmental analyses are Alternative B for the corridor roadway improvements and Option 2 for the intersection improvements at Fortune Road and Buenaventura Boulevard, including the use of standard intersection designs in the interim period.

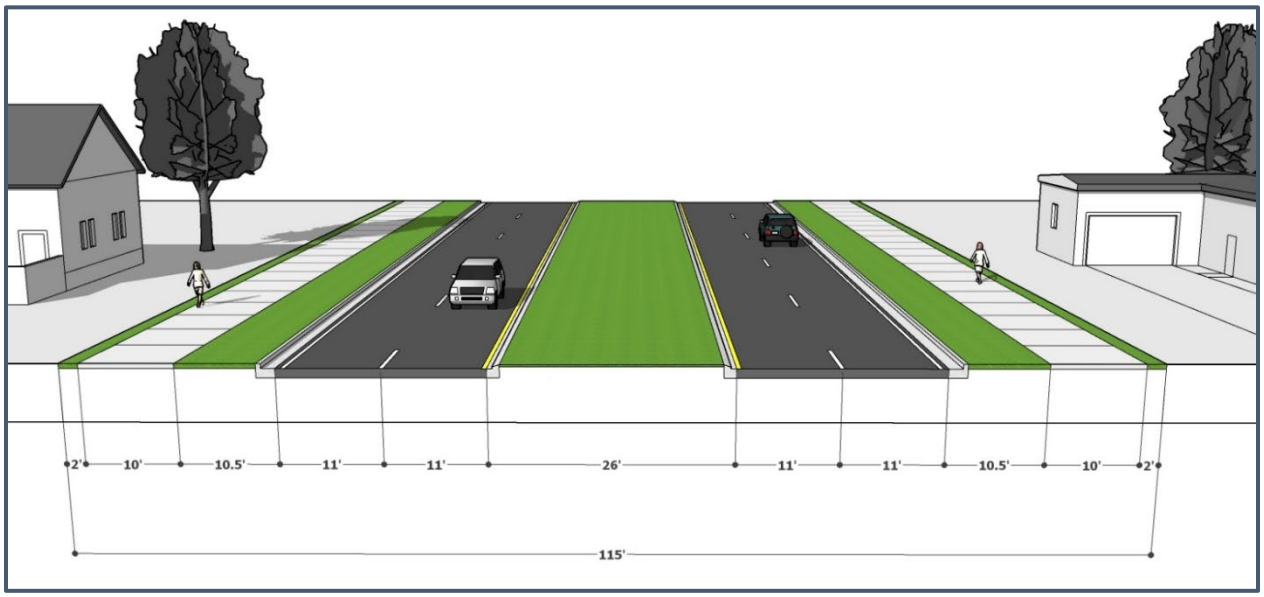

Figure 3 Alternative B, Phase 2 & 3 Typical Section

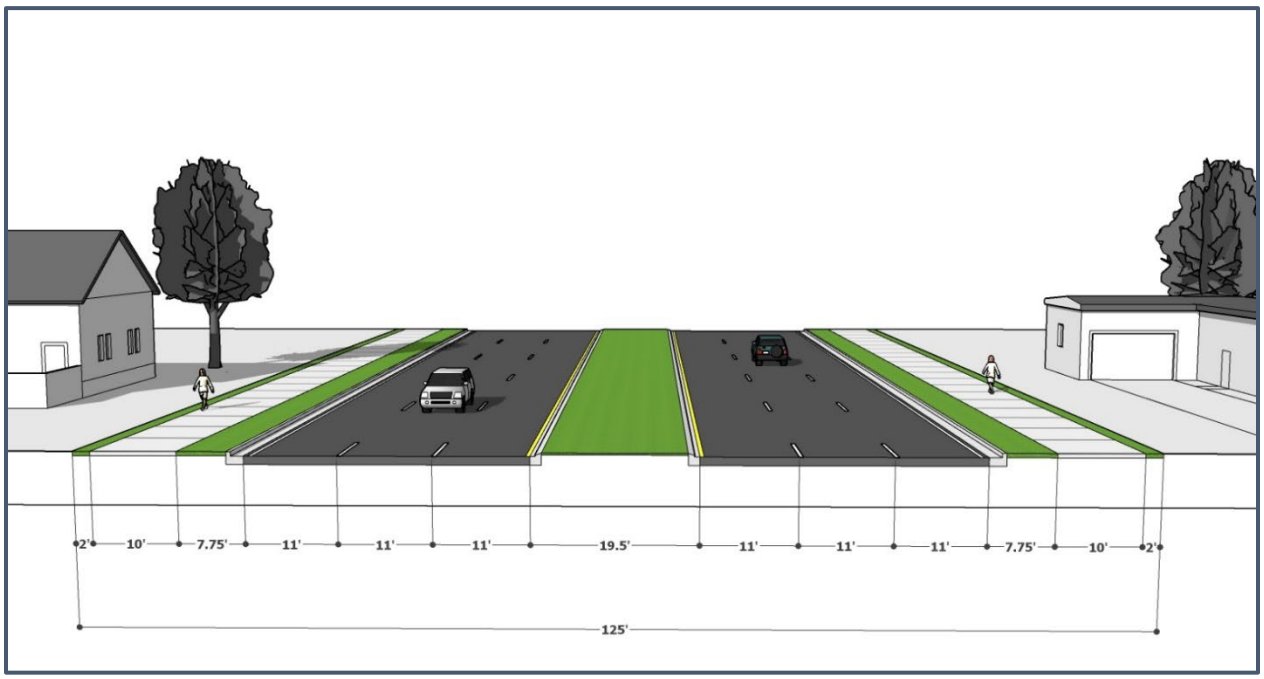

Figure 4 Alternative B Phase 4 Typical Section

2.0 Report Purpose

This Natural Resource Evaluation (NRE) was prepared as a component of the PD&E Study in accordance with the PD&E Manual (January 14, 2019) to evaluate Protected Species and Habitat and Wetlands and Other Surface Waters. This NRE documents wildlife resources within the project area in accordance with Part 2, Chapter 16 - Protected Species and Habitat - of the FDOT PD&E Manual, the Endangered Species Act (ESA) of 1973, as amended, and the Florida Endangered and Threatened Species Act, Section 379.2291, F.S. Pursuant to Presidential Executive Order 11990 entitled Protection of Wetlands, the U.S. Department of Transportation (USDOT) developed 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, project alternatives were evaluated to determine potential impacts to these resources. An Essential Fish Habitat (EFH) Assessment was not required for this project per the requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) of 1996.

2.1 Advanced Notification

Pursuant to 23 United States Code (U.S.C.) § 327 and the Memorandum of Understanding (MOU) executed on December 14, 2016, the Florida Department of Transportation (FDOT) was assigned responsibilities by the Federal Highway Administration (FHWA) under the National Environmental Policy Act (NEPA) for highway projects on the State Highway System (SHS) and Local Agency Program (LAP) projects off the SHS. Although an Osceola County project, preliminary coordination was initiated through the FDOT Advanced Notification (AN) process in accordance with the PD&E Manual (2019) Part 1, Chapter 3 – Preliminary Environmental Discussion and Advanced Notification, as required by Title 23 U.S.C., Highways, the President's Executive Order 12372, and the Governor's Executive Order 95-359 for projects expected to receive federal funding or which constitute a federal action.

AN was submitted to the Florida State Clearinghouse Department of Environmental Protection in January 2019 for distribution to State agencies that conduct federal consistency reviews in accordance with the Coastal Zone Management Act and Presidential Executive Order 12372. Agency comments were received from the Florida Fish and Wildlife Conservation Commission (FWC) on February 7, 2019. These comments are addressed below and correspondence records are provided as **Appendix A**.

3.0 Field Assessments

HDR biologists performed desktop analysis to map wetlands and surface waters and identify potential wildlife habitats. This analysis was followed by field assessments on October 19, 2018, and January 8, February 12, March 12, and April 9, 2019. Wetlands and surface waters were ground-truthed along the project corridor and within 12 pond site alternatives and one (1) floodplain compensation area. Wetland and surface water determinations were completed in accordance with the Corps of Engineers Wetland Delineation Manual (1987); Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (2010); the Florida Wetlands Delineation Manual (1995); and Rule 62-340, F.A.C., Delineation of the Landward Extent of Wetlands and Surface Waters. All potential habitat within the project area was observed in search of evidence of wildlife and/or critical wildlife habitat.

A Proposed Pond Site Alternatives Technical Memorandum was submitted under a separate heading. This NRE incorporated the findings from that pond site evaluation. A Crested Caracara Nesting Season Survey Technical Memorandum was also submitted under a separate heading dated June 2019 (**Appendix B**). The crested caracara survey and other wildlife evaluations are discussed below.

Agency records were referenced to facilitate the desktop and field analyses using Geographic Information System (GIS) tools. Sources referenced included:

- ArcGIS World Image Service (2011 and 2017)
- Florida Natural Areas Inventory Biodiversity Matrix Query (October 2018)
- Florida Natural Areas Inventory Element Occurrence Records (Oct. 2007)
- Florida Natural Areas Inventory Florida Conservation Lands (June 2014)
- Natural Resources Conservation Service Soils of Osceola County Geodatabase (2012)
- South Florida Water Management District (SFWMD) Land Cover Land Use Geodata (2014-2016)
- U.S. Fish and Wildlife Service, Eagle Nest Database (2016)
- U.S. Fish and Wildlife Service Wood Stork Nesting Colonies / Core Foraging Areas (2018)
- U.S. Fish and Wildlife Service Sand Skink Consultation Area (2011)
- U.S. FWS Threatened and Endangered Species Act (ESA) Critical Habitat (March 2019)

4.0 Existing Conditions

4.1 Existing Land Use

Land use and land cover along Simpson Road and within the ponds sites and floodplain compensation area were evaluated in accordance with the Florida Land Use, Cover and Forms Classification System (FLUCFCS) developed by the Florida Department of Transportation (FDOT, 1999) and combined desktop analysis using the South Florida Water Management District (SFWMD) Land Cover Land Use GIS data (2014-2016) and site-specific data collected during field evaluations. All wetland and surface water habitat characterizations were consistent with Cowardin's *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin *et.al.*1979).

The project study area, including the pond site alternatives, existed within an active transportation network within a predominantly urbanizing landscape with high density and low density residential, commercial services, institutional facilities, and utilities, as well as areas with disturbed open land, developing agricultural lands, forested wetlands and uplands, and lakes. Some former agricultural lands were in transition, cleared, or under development at the time of this evaluation.

An inventory of existing land use and land cover within the project study area is presented in **Table 1**.

Figure 5 provides the land use and land cover map of the project study area.

Table 1 Land Use Land Cover Inventory

Category	Area	Cover Type	FLUCFCS [1] Classification
Urban	Study Area	Residential, Low Density	1100
	Study Area	Residential, High Density	1310
	Study Area	Commercial Services	1400
	Study Area	Institutional Facilities	1700
Infrastructure	Study Area	Electrical Utilities	8315
	Simpson Road	Roads and Highways	8140
Barren Land	Pond 7A (preferred)	Borrow Area (Pond)	7420
Urban	Pond 7B (alternate)	Undeveloped Urban Land	1910
Agriculture	Pond 6A (preferred)	Improved Pasture	2110
	Pond 5A (preferred)	Woodland Pasture	2130
	Pond 5B (preferred)	Woodland Pasture	2130
Wetland	Pond 4A (preferred)	Exotic Wetland Hardwood	6191
Agriculture	Pond 4B (alternate)	Improved Pasture	2110
Urban	Pond 3A (preferred)	Undeveloped Urban Land	1910
	Pond 3B (alternate)	Undeveloped Urban Land	1910
	Pond 2B (preferred)	Undeveloped Urban Land	1910
Upland Forest	Pond 1A (alternate)	Pine – Mesic Oak	4140
Rangeland	Pond 1B (preferred)	Mixed Rangeland	3300
Urban	Floodplain Compensation Area	Undeveloped Urban Land	1910

Source: SFWMD Land Cover Land Use GIS data (2014-2016); [1] FDOT, 1999.

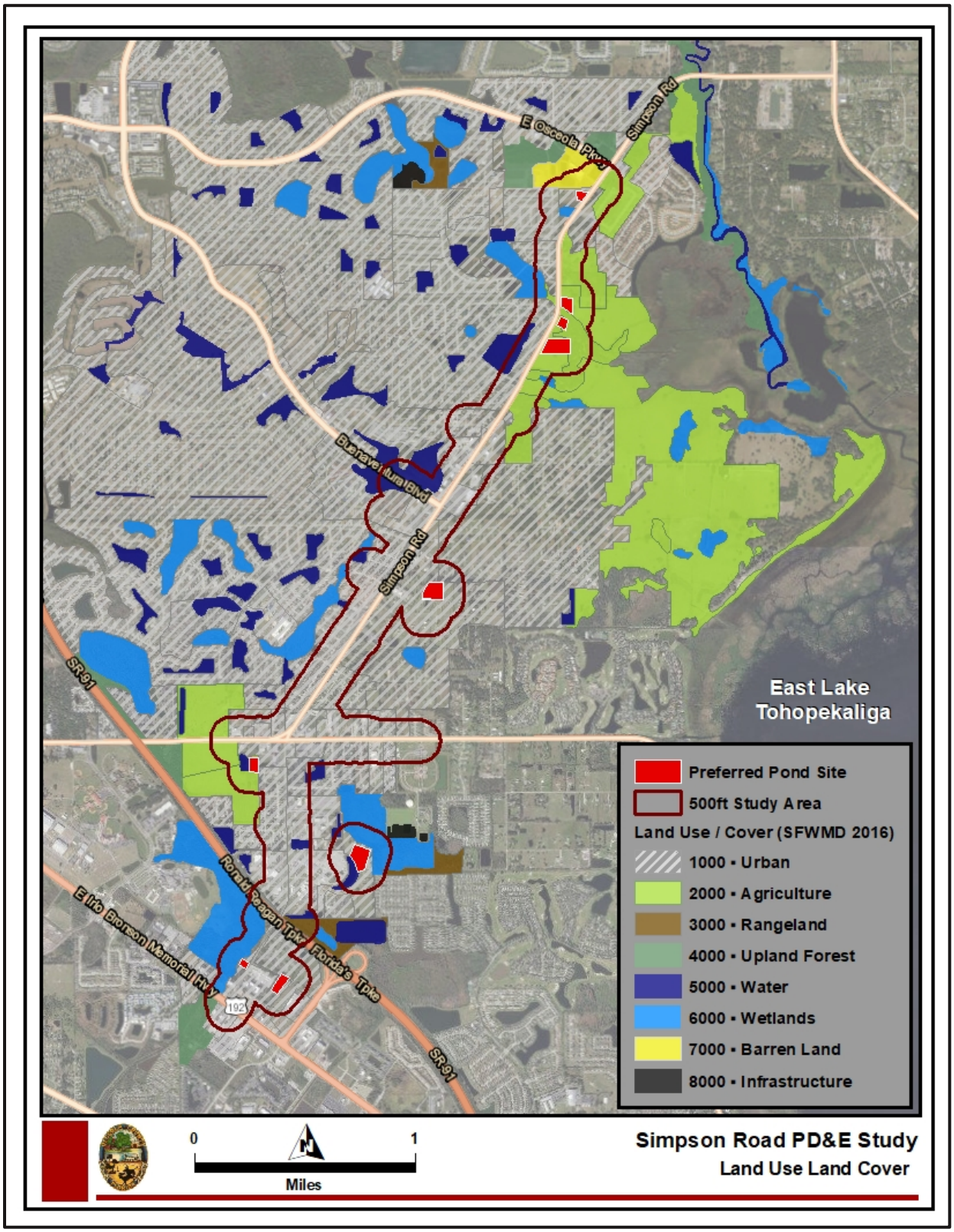

Figure 5 Land Use Land Cover Map

4.2 Soils

According to the USDA Natural Resources Conservation Service (NRCS) Soil Survey of Osceola County, the project contained hydric and non-hydric soils as shown on **Figure 6**.

Table 2 summarizes the soil types mapped within the project study area.

Table 2 Project Soils

#	Name	Hydric	Drainage Class
4	Arents (0-5% slopes)	No	Somewhat Poorly Drained
5	Basinger Fine Sand	Yes	Poorly Drained
6	Basinger Fine Sand (depressional)	Yes	Very Poorly Drained
16	Immokalee Fine Sand	No	Poorly Drained
22	Myakka Fine Sand	No	Poorly Drained
24	Narcoossee Fine Sand	No	Moderately Well Drained
27	Ona Fine Sand	No	Poorly Drained
32	Placid Fine Sand (depressional)	Yes	Very Poorly Drained
33	Placid Variant Fine Sand	No	Somewhat Poorly Drained
34	Pomello Fine Sand (0-5% slopes)	No	Moderately Well Drained
36	Pompano Fine Sand	Yes	Poorly Drained
40	Samsula Muck	Yes	Very Poorly Drained
42	Smyrna Fine Sand	No	Poorly Drained
44	Tavares Fine Sand (0-5% slopes)	No	Moderately Well Drained
99	Water	NA	NA

Source: NRCS Soil Survey Osceola County, Florida (Geodatabase, 2012)

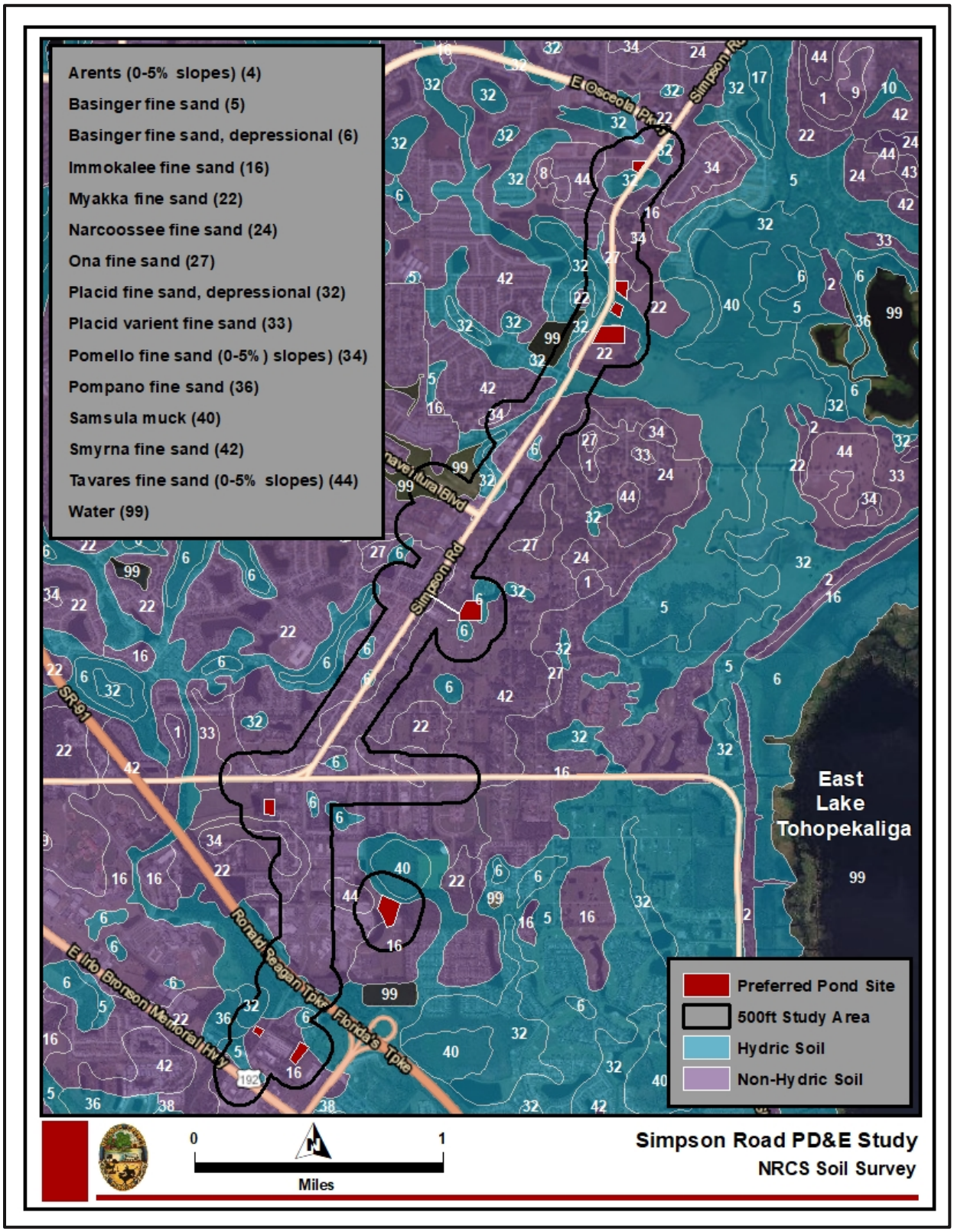

Figure 6 NRCS Soil Survey Map

4.3 Natural and Biological Features

4.3.1 Upland Habitats

The majority of the project area contained urban development with associated infrastructure. The most common undeveloped upland habitats included woodland pasture with live oak (*Quercus virginiana*) and slash pine (*Pinus elliottii*), bahiagrass (*Paspalum notatum*) fields, undeveloped lots with forested vegetation, and abandoned lots with disintegrating concrete and asphalt slabs that were regenerating with ruderal species.

4.3.2 Wetlands and Surface Water Habitats

Wetlands, surface waters, and channelized drainage features were present. Wetlands included bald cypress (*Taxodium distichum*), mixed wetland hardwoods, exotic wetland hardwoods, and non-forested wetlands with nuisance and exotic shrubs and cattails (*Typha* spp.). Several channelized drainage features were associated with Boggy Creek and East Lake Tohopekaliga and some supported wetland hardwoods and bald cypress. Several small, man-made ponds and lakes with and without littoral vegetation and shrubs were present. All other surface waters were associated with existing drainage ditches or stormwater management ponds. Wetlands and surface water features are characterized further in **Section 6.0**.

5.0 Protected Species and Habitat

The project study area was evaluated for potential occurrences of federal and state protected plant and animal species in accordance with Section 7 of the ESA of 1973, as amended, and Chapters 5B-40 and 68A-27 of the Florida Administrative Code (FAC). The following sections document wildlife resources in accordance with the PD&E Manual (2019) Part 2, Chapter 16 – Protected Species and Habitat – and examine the conceptual design alternatives with regard to the potential for these resources to be impacted. Each species is discussed based on anticipated construction effects by addressing agency comments and referencing wildlife guidelines.

5.1 Agency Coordination and Methodology

Preliminary agency coordination was initiated through the FDOT Advanced Notification process in accordance with the PD&E Manual (2019) Part 1, Chapter 3 – Preliminary Environmental Discussion and Advanced Notification.

Florida Fish and Wildlife Conservation Commission (FWC)

The FWC responded to the AN confirming participation as a reviewing agency in the pre-construction planning and design activities. FWC offered technical assistance throughout the design and permitting phase to minimize project impacts on fish and wildlife resources.

U.S. Fish and Wildlife Service

The USFWS provided guidance regarding the crested caracara and recommended monthly field surveys to inspect cabbage palms during the 2019 crested caracara nesting season.

Agency correspondence records are provided in **Appendix A**.

Methodology

Wildlife surveys occurred within the project study area October 19, 2018, and January 8, February 12, March 12, and April 9, 2019 to evaluate habitat and document the presence or absence of terrestrial and aquatic wildlife. Surveys were conducted along the road corridor and within the twelve pond site alternatives and one floodplain compensation area. Habitat and wildlife observations were marked and delineated using a Trimble GeoXT 6000 Series GPS and mapped using ArcMap 10.6.1.

Additional species-specific surveys were performed. An informal crested caracara survey occurred per recommendations from the USFWS. Surveys were conducted monthly (four events) within the woodland pasture north of Hilliard Isle Road from January to April during the 2019 nesting season. Each survey lasted two to three hours and concluded with cabbage palm (*Sabal palmetto*) inspections within 300 meters of Pond Sites 5A, 5B, and 6A. An informal gopher tortoise survey was also conducted within the project study area, including a 15% or greater habitat and burrow survey along the road corridor and within the pond site alternatives. Potentially occupied burrows discovered during the surveys were marked and mapped. Existing conditions evaluations were conducted for sand skinks, including a desktop review of land elevations and mapped soils followed by ground-truthing areas containing potential “skink soils”. Each potential “skink soil” was evaluated to recommend whether a formal sand skink survey should be required.

Table 3 lists federal and state protected wildlife observed or potentially occurring within the project study area. Each species was designated as having a low, moderate or high likelihood of occurrence as defined below.

Low	Species documented within Osceola County, but with a low likelihood to occur within the project study area due to the limited presence of suitable habitat
Moderate	Species documented within Osceola County or within nearby counties and for which suitable habitat is present within the project study area; however, no documented occurrences exist
High	Species highly likely to occur within the project study area based on known habitat ranges and the existence of suitable habitat within the project study area. Species are known to occur within or adjacent to the project study area or have been documented within the vicinity of the project

A wildlife map is provided as **Figure 7**.

Table 3 Protected Wildlife Occurring or Potentially Occurring within the Project Study Area

Scientific Name	Common Name	Federal Listing (USFWS)	State Listing (FWC)	Habitat Preferences	Probability of Occurrence
REPTILES AND AMPHIBIANS					
Drymarchon corais couperi	Eastern indigo snake	T	FT	Forested uplands & wetlands; open fields	**Low**
Gopherus polyphemus	Gopher tortoise	C	T	Uplands with well-drained sandy soils and forage	**Observed**
Lampropeltis extenuate	Short-tailed snake	NL	T	Sandy uplands	**Low**
Pituophis melanoleucus mugitus	Florida pine snake	NL	T	Dry, sandy fields, pine flatwoods; utilize tortoise burrows	**Moderate**
Neoseps reynoldsi	Sand skink	T	FT	Uplands; open sandy ground with xeric vegetation	**Low**
Eumeces egregious lividus	Blue-tailed mole skink	T	FT		**Low**
BIRDS					
Ammodramus savannarum floridanus	Florida grasshopper sparrow	E	FE	Dry prairie	**Low**
Antigone canadensis pratensis	Florida sandhill crane	**	T	Wet prairie, lake edges, pasture, and marsh	**Observed**
Aphelocoma coerulescens	Florida scrub-jay	T	FT	Oak scrub; scrubby flatwoods	**Low**
Athene cunicularia floridana	Florida burrowing owl	**	T	Upland fields	**Low**
Caracara cheriway	Crested caracara	T	FT	Open prairie/pasture (foraging); cabbage palms (nesting)	[1] **Moderate**
Egretta caerulea	Little blue heron	**	T	Freshwater marsh, creeks and rivers	**Moderate**
Falco sparverius paulus	SE American kestrel	**	T	Open land with perches and snags for nesting	**Moderate**
Haliaeetus leucocephalus	Bald eagle	* | **	* | **	Inland lakes, rivers, forested habitat, marshes	**Moderate**
Mycteria americana	Wood stork	T	FT	Marshes, streams, ponds, and ditches	**Observed**
Picoides borealis	Red-cockaded woodpecker	E	FE	Fire-dependent, longleaf pine flatwoods	**Low**
Rostrhamus sociabilis plumbeus	Everglade snail kite	E	FE	Sloughs and littoral zones for nests; surface waters with snails for foraging	**Low**

Source: USFWS Endangered Species (Feb. 2019) and Florida Endangered and Threatened Species (Dec. 2018). Protected - * Bald and Golden Eagle Protection Act; ** Migratory Bird Treaty Act. [1]USFWS recommendation – conduct cabbage palm surveys 4x during 2019 nest season. Federal Status: E = Endangered: Species in danger of extinction throughout all or a significant portion of its range. T = Threatened: Likely to become endangered w/in foreseeable future throughout all or a significant portion of its range. C = Candidate for listing. NL = Not Listed. State Status: FE = federally designated Endangered - Species in imminent danger of extinction. FT = federally designated Threatened - Species facing a very high risk of extinction in the future. T = State-designated Threatened. NL = Not Listed

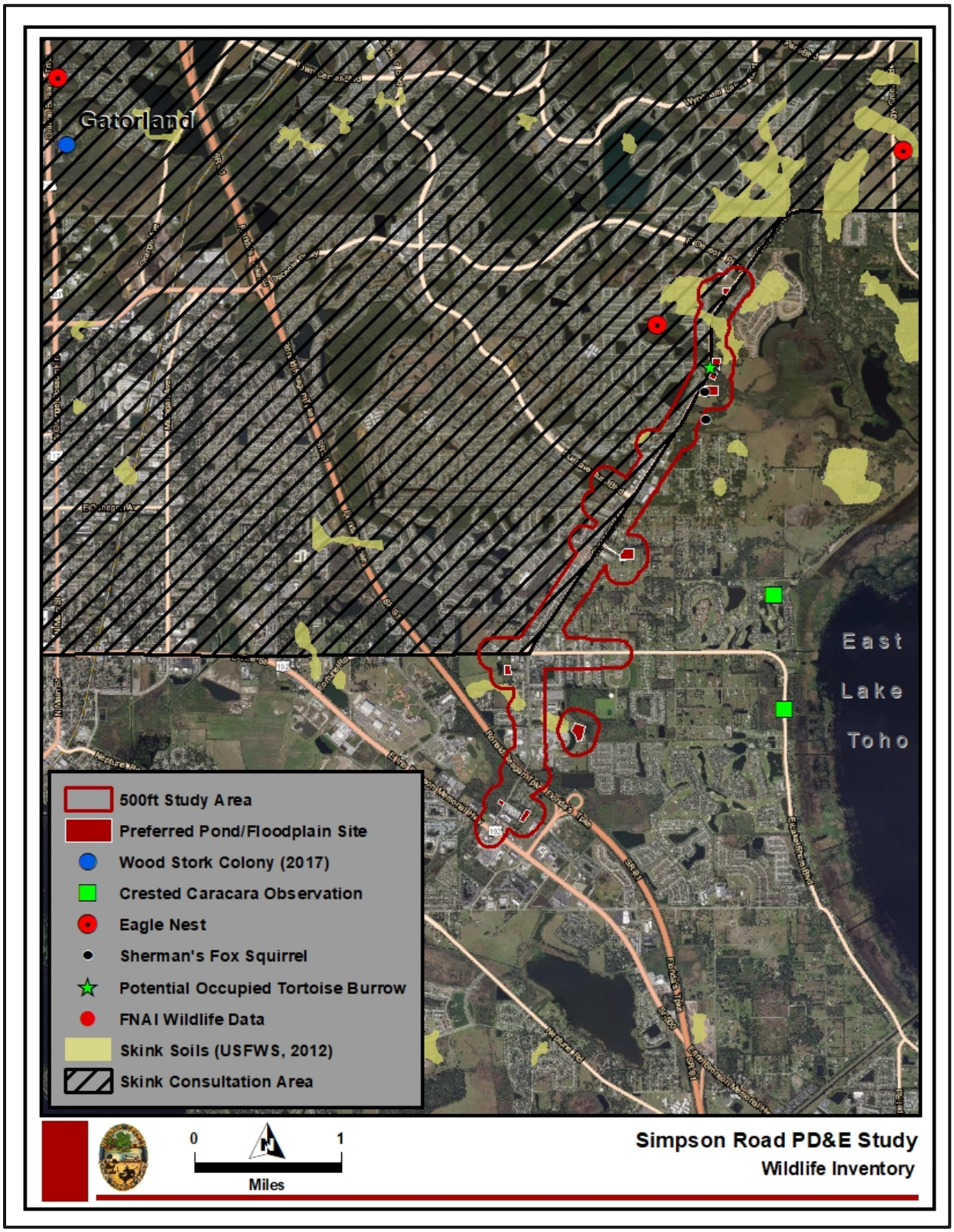

Figure 7 Protected Wildlife Map

5.2 Federally Listed Species and Critical Habitat

Federally protected wildlife observed within the project study area or with the potential to occur based on USFWS Consultation Area boundaries and/or existing habitat included reptiles (Eastern indigo snake, sand skink, and blue-tailed mole skink) and birds (wood stork, crested caracara, Everglade snail kite, red-cockaded woodpecker, Florida scrub-jay, and Florida grasshopper sparrow).

Potential wildlife habitat within the project study area included open land and woodland pasture, forested and non-forested freshwater wetlands, unnamed tributaries of Boggy Creek, vegetated surface waters, and shallow ponds with littoral zones. Species-specific surveys and occupancy evaluations were conducted within these areas.

The project study area was evaluated for Critical Habitat, as defined by Congress 17 CFR 35.1532. Review of GIS data obtained from the USFWS (2019) confirmed no designated critical habitat within the project study area. Therefore, the proposed project will not result in the destruction or adverse modification of critical habitat.

A discussion of potential wildlife utilization and likelihood of occurrence follows.

5.2.1 Reptiles and Amphibians

Eastern Indigo Snake (Drymarchon corais couperi)

The federal status for the Eastern indigo snake is threatened. The indigo snake will use a range of habitats from disturbed open land to pastureland to pine flatwoods. Although not recorded in this increasingly urbanized area, Eastern indigo snake presence would be assumed where open, undeveloped land is present.

The Eastern indigo snake was not observed. However, due to the presence of potential habitat and refugia within undeveloped pastureland, Osceola County will ensure contractor adherence to the USFWS *Standard Protection Measures for the Eastern Indigo Snake* (most recent guidance) during construction (**Appendix C**). Given the commitment to protect the indigo snake during construction and per the Eastern Indigo Snake Programmatic Effect Determination Key (2017) (**Appendix D**), it is anticipated that the project ***may affect, not likely to adversely affect*** the Eastern indigo snake.

Sand Skink *(Neoseps* reynoldsi*)* and Blue-tailed Mole Skink *(Eumeces egregious lividus)*

The federal status for the sand skink and blue-tailed mole skink is threatened. A portion of the project occurs within the USFWS Consultation Area for the sand skink; therefore, potential effects to both the sand skink and blue-tailed mole skink were considered. Since sand skinks are more numerous and easier to detect than the blue-tailed mole skink, sand skinks were used as a proxy for both species (USFWS, 2012). As required by the *Peninsular Florida Species Conservation and Consultation Guide* (USFWS, 2012), skink surveys must be conducted within the USFWS Consultation Area in all potential skink habitat as defined by three specific criteria:

1) **Location**: Land within a “skink region” regardless of vegetative cover (i.e. Osceola County),
2) **Elevation**: Land at or above a ground elevation of 82 feet, and
3) **Soils**: Excessively, well, or moderately well-drained sandy “skink soils”.

In Florida, skinks have been detected in all suitable "skink soils" regardless of land conditions or habitat degradation; therefore, habitat quality is a secondary consideration to an appropriate soil type. "Skink soils" were mapped within the project study area using the NRCS Soil Survey for Osceola County (NRCS, 2012). Soils with the potential to support the sand skink included those associated with the Tavares and Pomello soil series.

Four "skink soils" were within the project study area as depicted on **Figure 7**. The two southern-most polygons were outside the official USFWS Consultation Area. These land areas were between elevations 78 to 85 feet (Google Earth); however, neither pond sites nor road work would occur in either area. A small isolated pocket of "skink soils" mapped north of Hilliard Isle Road was entirely developed with single family homes. No road work would occur in this area. The northern-most pocket of "sink soils" intercepting Simpson Road was within the USFWS Consultation Area. This area was evaluated in the field and in GIS referencing land elevations (Google Earth). The area was predominantly road right-of-way north of Eagle Bay Boulevard and was mostly developed west of Simpson Road. The land elevations where the skink assessment criteria overlapped the project study area were between 69 and 78 feet, and therefore, would not meet the conditions requiring a formal skink survey. No other potential skink areas, per the USFWS guidance, were identified within the project study area. Based on the criteria defined in the *Peninsular Florida Species Conservation and Consultation Guide*, it was anticipated that the project would have ***no effect*** on the sand skink or the blue-tailed mole skink.

5.2.2 Birds

Wood Stork (Mycteria americana)

The federal status for the wood stork is threatened. The wood stork is a transient wading bird that forages in shallow water containing high prey densities and utilizes forested habitats for nesting and roosting. Wood storks typically nest in colonies and construct nests in forested wetlands including hardwood and cypress swamps and along forested sloughs.

The project study area falls within the jurisdiction of the USFWS South Florida Ecological Services Office, which recognizes an 18.6-mile Core Foraging Area (CFA) around wood stork rookeries per the USFWS's Standard Local Operating Procedures for Endangered Species (SLOPES). The project is within the CFA of six wood stork colonies (i.e. Lawne Lake, Eagle Nest Park, Gatorland, 612037 - Lake Mary Jane, Lake Russell, and 612048 – Reedy Creek). The nearest active wood stork colony was approximately 4 miles west of the project study area.

Nesting colonies were not documented within the project study area, but forested habitat was present and intermittent resting could be expected in these areas. Additionally, the USFWS recognizes the need to protect wood stork suitable foraging habitat (SFH) within the CFA of active wood stork colonies. SFH is defined as calm, relatively open waters, uncluttered by dense vegetation with a seasonal water level between 2 and 15 inches (USFWS 2012). Wood storks were observed foraging on several occasions within surface waters along Simpson Road and SFH was documented throughout the project study area, including within drainage ditches and along littoral zones within shallow ponds as well as within remnant cypress stands and along forested creeks.

Potential impacts to SFH could total 4.02 acres.

Construction of the project would impact forested wetlands and SFH; therefore, provisions to reduce or minimize impacts would be implemented. If necessary, these measures would include wetland mitigation pursuant to s.373.4137, F.S., Part IV, Chapter 373, F.S. and 33 U.S.C. §1344. If wetland and surface water impacts for the project were to exceed 5 acres, a Wood Stork Foraging Habitat Assessment would be required to determine mitigation needed to offset impacts to wood stork SFH. Due to the requirement to evaluate the corridor for SFH and to mitigate impacts to wetlands and SFH, and based on the guidance from the Wood Stork Effect Determination Key (USFWS 2010) (**Appendix D**), it is anticipated that the project ***may affect, but is not likely to adversely affect*** the wood stork.

Crested caracara (*Caracara cheriway*)

The federal status for the crested caracara is threatened. The project is within the USFWS crested caracara Consultation Area and crested caracara have been observed approximately one (1) mile east of the project study area near East Lake Tohopekaliga. The caracara utilizes prairie habitats with scattered cabbage palm and sparsely forested cabbage palm/oak hammocks and caracara pairs typically nest in cabbage palms. Nesting has also been known to occur in bald cypress and live oaks. Due to land use changes throughout Florida, the caracara has been increasingly found utilizing improved pastures, as well as woodland pastures, agricultural fields, and rangeland.

Caracara have been known to nest close to development; however the increasing urban development within the project study area is a likely deterrent. The crested caracara could utilize undeveloped pastureland within the project study area; however, nesting would be unlikely adjacent to Simpson Road where the project development activities would occur. In order to address the possible presence of caracara and ensure protections for them, communication was initiated with the USFWS (**Appendix A**) and an informal survey was conducted to confirm the presence or absence of nesting caracara within the woodland and improved pasture areas north of Hilliard Isle Road. Per USFWS guidance, informal nest surveys were conducted monthly during the 2019 nesting season. These surveys began at sunrise and concluded with cabbage palm inspections.

No caracara were observed and long-term use of the project study area by nesting caracara would not be expected based on the survey. Additionally, mature cabbage palms would not be expected to be removed during construction of. A Crested Caracara Nesting Season Survey Technical Memorandum is provided as **Appendix B.** If evidence of caracara nesting were observed during permitting (including the presence of nesting pairs or nesting behavior), formal Section 7 Consultation with the USFWS would be initiated. Given that nesting caracara were not observed within the project study area during the 2019 survey, it is anticipated that the project ***may affect, but is not likely to adversely affect*** the crested caracara.

Everglade snail kite (Rostrhamus sociabilis plumbeus)

The federal status for the Everglade snail kite is endangered. The project is within the USFWS Consultation Area for the Everglade snail kite. Everglade snail kites utilize shallow grassy sloughs, marshes, shallow lakes and surface waters supporting the Florida apple snail (*Pomacea paludosa*) and exotic apple snail (*P. insularum*). While the Everglade snail kite would have been expected to utilize the agricultural lands that previously covered this region, due to the increasingly urbanized area within the project study area and the lack of nesting and foraging habitat, neither foraging nor nesting would be expected. Therefore, it is anticipated that the project would have ***no effect*** on the Everglade snail kite.

Florida scrub-jay (*Aphelocoma coerulescens*)

The federal status for the Florida scrub-jay is threatened. The project is within the USFWS Florida scrub-jay Consultation Area. Florida scrub-jays are habitat-specific and utilize sand pine and oak scrub, as well as scrubby flatwoods. Relic patches of potential scrub-jay habitat were mapped in the region and the nearest recorded scrub-jay occurrence was 5 miles northeast near Barton Lake. However, habitat suitable for the Florida scrub-jay was not present within the project study area. For this reason, it is anticipated that the project would have ***no effect*** on the Florida scrub-jay.

Red-cockaded woodpecker (*Picoides borealis*)

The federal status for the red-cockaded woodpecker (RCW) is endangered. The project is within the USFWS red-cockaded woodpecker Consultation Area. Red-cockaded woodpeckers are a territorial, non-migratory species that often live in small nesting groups (i.e. clusters). The RCW is typically found in fire-dependent habitats where it creates nest cavities in living longleaf pines (*Pinus palustris*), but slash pines (*Pinus elliottii*) and artificial cavities are also used. There were no known RCW clusters recorded within the project study area and neither RCW habitat nor nesting cavities were observed. Therefore, it is anticipated that the project would have ***no effect*** on the red-cockaded woodpecker.

Florida grasshopper sparrow (*Ammodramus savannarum floridanus*)

The federal status for the Florida grasshopper sparrow is endangered. The project is within the USFWS grasshopper sparrow Consultation Area. The grasshopper sparrow is endemic to Florida and restricted to native dry prairie habitats of central and south Florida. Dry prairie used as active cattle pasture typically lacks the habitat structure to support this species. Habitat for the grasshopper sparrow was not observed within the project study area and the species would not be expected in this area. For these reasons, it is anticipated that the project would have ***no effect*** on the Florida grasshopper sparrow.

5.3 State-Protected Species

State-protected species known to occur, or with the potential to utilize habitat within the project study area, included reptiles (gopher tortoise, short-tailed snake, and pine snake) and birds (Florida sandhill crane, Florida burrowing owl, Southeastern American kestrel, and little blue heron). Potential wildlife habitat within the project study area included open land and woodland pasture, forested and non-forested freshwater wetlands, unnamed tributaries of Boggy Creek, vegetated surface waters, and shallow ponds with littoral zones. Species specific surveys and occupancy evaluations were conducted in these areas.

5.3.1 Reptiles and Amphibians

Gopher Tortoise (*Gopherus polyphemus*)

The state protection status for the gopher tortoise is threatened. The tortoise is a candidate for federal listing. Tortoises occupy a variety of upland habitats, preferring those with well-drained sandy soils, a seasonal high water table below 18 inches, and open areas with abundant forage. Habitats supportive of healthy gopher tortoise populations include, but are not limited to dry pastures, pine flatwoods, hardwood hammocks, dry prairies, and disturbed open habitats with ruderal vegetation. Tortoise burrows are known to be used by commensals such as the Eastern indigo snake and the Florida pine snake.

The gopher tortoise is common throughout this region. Habitat with the potential to support the gopher tortoise was observed within the project right-of-way and within pond sites 1B, 2B, 3A, 5A and 5B, and 6A. One (1) potentially occupied gopher tortoise burrow was located within the Simpson Road right-of-way along a sandy

embankment near an unnamed tributary of Boggy Creek. The gopher tortoise and any potentially occupied burrow discovered in or within 25 feet of the project construction corridor would require coordination with the FWC to secure a Gopher Tortoise Relocation Permit. Due to the requirement to relocate tortoises, ***no adverse effect is anticipated***.

Short-tailed snake (*Lampropeltis extenuata*)

The state protection status for the short-tailed snake is threatened. This snake is found in north-central peninsular Florida and prefers dry upland habitats including scrub, xeric hammocks and sandhills where it is known to burrow under the soil. Potential sandy pasture habitat was observed within the project study area; however, expansive natural habitat requirements and increasing urban development likely precludes its presence. Therefore, ***no adverse effect is anticipated***.

Pine snake (*Pituophis melanoluecus*)

The state protection status for the pine snake is threatened. This snake utilizes dry, sandy open areas and has been found within tortoise burrows. Potential pine snake habitat was observed within the project limits; however, increasing urban development likely limits its presence. Due to the requirement to excavate all potentially occupied tortoise burrows, which would include requirements to safely release commensal species, ***no adverse effect is anticipated***.

5.3.2 Birds

Florida Sandhill Crane (*Antigone canadensis pratensis*)

The state protection status of the Florida sandhill crane is threatened. Florida sandhill cranes, active nests, eggs, and young are protected under the Migratory Bird Treaty Act, 16 U.S.C. 703-712 (MBTA), as well as by Rule 68A-16.001, F.A.C. and Rule 68A-4.001, F.A.C. Sandhill cranes forage, breed, and nest in a variety of shallow water habitats preferring wet prairies, marshy lake margins, improved and woodland pastures, and sparsely vegetated marshes.

Marshy littoral zones and pasture existed within the project study area and sandhill cranes were observed foraging within pasture areas on multiple occasions between January and April. Given the number of cranes observed over the winter months, it is believed that the majority of the cranes observed were the migratory sandhill crane, but some sandhill crane pairs remained into spring as observed during the April field inspection. Per the FWC species guidelines (2016), pre-construction surveys should occur in areas with the potential to support nesting sandhill cranes during the breeding season to ensure active nests and/or flightless young will be protected. A 400-foot buffer would be required around active nests, if found.

Construction of the project would impact potential sandhill crane habitat; therefore, provisions to reduce or minimize impacts to wetlands and surface waters would be implemented. If necessary, these measures would include mitigation pursuant to s.373.4137, F.S., Part IV, Chapter 373, F.S. and 33 U.S.C. §1344 and type-for-type replacement of habitat. Due to the requirement to ensure protection of active sandhill crane nests and mitigate wetland and surface water impacts, ***no adverse effect is anticipated***.

Florida Burrowing Owl (*Athene cunicularia Floridana*)

The state protection status for the Florida burrowing owl is threatened. Marginal burrowing owl habitat was observed within the project study area, including within some of the drier pasture areas; however, neither burrowing owls nor burrows were observed. Due to the lack of documented Florida burrowing owl presence and the mostly developed conditions along the corridor, ***no adverse effect is anticipated***.

Southeastern American kestrel (*Falco sparverius paulus*)

The state protection status for the Southeastern American kestrel is threatened. Kestrels utilize pastures and agricultural lands and prefer open areas with perches, a diverse prey population, and snags for nesting. Nesting habitat was not observed and marginal foraging habitat was present in the few remaining undeveloped areas. Given the absence of suitable Southeastern American kestrel nesting habitat and minimal impact to foraging habitat, ***no adverse effect is anticipated***.

Little blue heron (*Egretta Caerulea*)

The little blue heron is designated as threatened by the FWC. Potential little blue heron habitat within the project study area included freshwater wetlands, tributaries of Boggy Creek, vegetated surface waters, and shallow ponds with littoral zones. However, since impacts to jurisdictional wetlands and surface waters will be minimized and mitigated, ***no adverse effect is anticipated*** to the little blue heron or other wading birds.

5.4 Non-Listed, Federally Protected Wildlife

Bald eagle (*Haliaeetus leucocephalus*)

The bald eagle was removed from the USFWS List of Endangered and Threatened Wildlife effective August 8, 2007. The bald eagle continues to receive protections through the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668-668d), as amended, and the MBTA. Construction activities are restricted within 330 feet of an active nest tree and the USFWS Eagle Management Guidelines are required if construction is within 660 feet of an active eagle nest during the nesting season (October 1 - May 15). The bald eagle typically uses forested habitats for nesting and roosting and forages in open water habitats. The nearest recorded bald eagle nest was less than 0.5 miles west of Simpson Road. The nest was last confirmed active in 2015.

Osceola County will resurvey the corridor during permitting and design. If a bald eagle nest is identified within 660 feet of the project, the county will coordinate with the USFWS in accordance with the BGEPA and MBTA. Because this project will be consistent with the BGEPA and MBTA, it is anticipated that the project will not impact the bald eagle.

Osprey (*Pandion haliaetus*)

Ospreys are afforded protection under the MBTA and are state protected by Chapter 68A of the F.A.C. Although both active and inactive osprey nests are federally protected, only active nests require a federal take permit. Under state rules, only inactive osprey nests may be taken, as determined by the absence of eggs or flightless young. Typically, a replacement nesting structure is required to be erected.

Surveys to locate active osprey nests will be conducted during the permitting phase of the project and permits will be acquired if impacts during construction are unavoidable. Nest structure replacement will occur if removal is required. Because the project will be consistent with federal and state requirements, it is anticipated that the project will not impact the osprey.

5.5 Federal and State Listed Plants

The Florida Natural Areas Inventory (FNAI) Biodiversity Matrix was queried to develop a list of plants with the potential to occur within the project study area (**Table 3**). Thirty species protected by the Florida Department of Agricultural and Consumer Services (FDACS) potentially occur within the study area. If protected plants were found during construction, coordination with the USFWS and/or the FDACS would be initiated. No listed plant species were observed during the review of the pond site alternatives.

Table 3 Protected Plants Potentially Occurring within the Project Limits

Common Name	Scientific Name	Federal Status	State Status
Ashe's savory	*Calamintha ashei*	N	T
Beautiful pawpaw	*Deeringothamnus pulchellus*	E	E
Britton's beargrass	*Nolina brittoniana*	E	E
Carter's warea	*Warea carteri*	E	E
Celestial lily	*Nemastylis floridana*	N	E
Chapman's sedge	*Carex chapmanii*	N	T
Cutthroat grass	*Coleattaenia abscissa*	N	E
Florida beargrass	*Nolina atopocarpa*	N	T
Florida bonamia	*Bonamia grandiflora*	T	E
Florida blazing star	*Liatris ohlingerae*	E	E
Florida spiny-pod	*Matelea floridana*	N	E
Florida willow	*Salix floridana*	N	E
Giant orchid	*Pteroglossaspis ecristata*	N	E
Hairy beach sunflower	*Helianthus debilis ssp. vestitus*	N	E
Hartwrightia	*Hartwrightia floridana*	N	T
Lewton's polygala	*Polygala lewtonii*	E	E
Many-flowered grass-pink	*Calopogon multiflorus*	N	E
Nodding pineweed	*Lechea cernua*	N	T
Paper-like nailwort	*Paronychia chartacea spp. chartacea*	T	E
Pine-woods bluestem	*Andropogon arctus*	N	T
Pygmy fringe tree	*Chionanthus pygmaeus*	E	E
Sand butterfly pea	*Centrosema arenicola*	N	E
Scrub buckwheat	*Eriogonum longifolium var. gnaphalifolium*	T	E
Scrub lupine	*Lupinus aridorum*	E	E
Scrub pigeon-wing	*Clitoria fragrans*	T	E
Short-leaved rosemary	*Conradina brevifloa*	E	E
Small's Flax	*Linum carteri var. smallii*	N	E
Small's jointweed	*Polygonella myriophylla*	E	E
Star anise	*Illicium parviflorum*	N	E
Yellow fringeless orchid	*Platanthera integra*	N	E

Source: FNAI Biodiversity Matrix (Nov. 2018).
E = Endangered: plants in imminent danger of extinction, the survival of which is unlikely if decline continues. **T** = Threatened: plants in rapid decline, but which have not decreased in number as to cause them to become endangered. **N** = Not currently listed.

6.0 Existing Wetlands and Surface Waters

Pursuant to Presidential Executive Order 11990 entitled Protection of Wetlands, 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 the FDOT PD&E Manual Part 2, Chapter 9 - Wetlands and Other Surface Waters, this evaluation examined the road design alternatives, as well as the pond site alternatives and floodplain compensation area with regard to these resources.

6.1 Agency Coordination and Methodology

Preliminary agency coordination was initiated through the FDOT Advanced Notification process in accordance with the PD&E Manual (2019) Part 1, Chapter 3 – Preliminary Environmental Discussion and Advanced Notification.

Methodology

The project study area was field reviewed to identify and quantify existing wetland communities as a component of this PD&E Study. Habitat evaluations to facilitate wetland and surface water resource mapping were conducted October 19, 2018, March 12, and April 9, 2019. All habitats were mapped using ArcMap 10.6.1 software.

The PD&E Study considered one (1) **No-Build** alternative and two (2) **Build** alternatives – Corridor Alternative A and Corridor Alternative B **–** for each of the three (3) PD&E Study project phases evaluated – Phase 2, 3 and 4. Both **Build** alternatives would result in the same right of way impacts.

Major intersection improvements would also occur at Fortune Road and Buenaventura Boulevard. Two (2) options were considered for each intersection including the Conventional Option 1 and the Quad Road Option 2.

Twelve (12) pond site alternatives and one (1) floodplain compensation area were also considered across seven drainage basins.

The recommended alternative was Corridor Alternative B with intersection Option 2. The recommended pond site alternatives were Pond 1B, Pond 2B, Pond 3A, Pond 4A, Pond 5A, Pond 5B, Pond 6A, and Pond 7A. The floodplain compensation site was also recommended.

A summary of wetland and surface water habitat conditions and estimated impact areas for the recommended alternatives are discussed below.

6.2 Wetland and Surface Water Descriptions

Wetlands, surface waters, and channelized drainage features were present. Each wetland and surface water within the project study area was classified using the FLUCFCS (FDOT, 1999) and the USFWS National Wetlands Inventory (NWI) *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin *et al.* 1979). Wetlands included freshwater forested wetlands (i.e. cypress, mixed wetland hardwoods, and exotic hardwoods) and vegetated non-forested wetlands with nuisance and exotic shrubs and cattails. The channelized drainage features were associated with Boggy Creek and East Lake Tohopekaliga. Some supported wetland hardwoods and cypress strands. Several man-made ponds and lakes with and without littoral vegetation and shrubs were present. All other surface waters were associated with existing drainage ditches or stormwater management ponds. Resource maps are provided in **Appendix E**.

Cypress (C)

FLUCFCS (621); USFWS PFO_2C (Palustrine, Forested, Needle-leaved Deciduous, Seasonally Flooded)

A relic bald cypress dome was present along Simpson Road in Basin 7 at the northern extent of the project study area. This cypress area was likely once contiguous with a narrow forested tributary associated with Boggy Creek, but the tributary has since been ditched, mostly cleared, and impacted by development. The quality of the cypress dome and health of the trees was marginal and nuisance species, including Peruvian primrose willow (*Ludwigia peruviana*) had proliferated throughout the area. Impacts to an estimated 0.13 acres would occur to a disturbed edge of the cypress along the power easement in order to widen Simpson Road.

Mixed Wetland Hardwood (MH)

FLUCFCS (617); USFWS PFO_1C (Palustrine, Forested, Broad-leaved Deciduous, Seasonally Flooded)

Mixed wetland hardwoods containing bald cypress were present within the drainage feature east of Pebble Pointe Way associated with Boggy Creek. Species included sub-canopy and canopy cover by scattered red maple (*Acer rubrum*), American elm (*Ulmus americana*), laurel oak (*Quercus laurifolia*), bald cypress, and the exotic and invasive Chinese tallow (*Triadica sebifera*). Minor impacts approximating 0.04 acres would occur near where this drainage feature intercepts Simpson Road.

Exotic Wetland Hardwoods (Ex)

FLUCFCS (619); USFWS PFO_C (Palustrine, Forested, Seasonally Flooded)

Wetlands dominated by exotic hardwoods were present. Chinese tallow was the predominant tree typically growing within mature Brazilian pepper (*Shinus terebinthifolia*) and Carolina willow (*Salix caroliniana*) communities. These areas appeared dewatered and highly disturbed. Wetland species including various primrose willows (*Ludwigia* spp.) and cattails were present in the sub-canopy. Impacts to approximately 2.22 acres of exotic wetland hardwoods would occur to construct Pond Site 4A and 0.20 acres would be impacted to build the Fortune Road Quad Road.

Vegetated Non-Forested Wetland (W)

FLUCFCS (640); USFWS PSS_C (Palustrine, Scrub-Shrub, Seasonally Flooded)

Non-forested, shrubby wetlands and surface waters were present. In most cases, Carolina willow and primrose willow were predominant, but these areas also included cattail, saltbush (*Baccharis halimifolia*), wax myrtle (*Myrica cerifera*), Brazilian pepper, and torpedograss (*Panicum repens*). Red maple saplings were present. These areas were typically associated with disturbed wetland edges and shallow, man-made ponds within the project study area. Impacts would occur to non-forested shrubby wetlands, including 0.04 acres to construct Corridor Alternative B.

Surface Waters

FLUCFCS (510); USFWS $PUBH_x$ (Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated)

Two surface water types were present, including linear drainage features and shallow ponds. The linear drainage features were either man-made or associated with tributaries of Boggy Creek. Some surface waters were excavated from hydric soils and were associated with former wetlands or creek systems; others were excavated from non-hydric soils. Surface waters excavated through hydric soils or historic wetlands could be expected to potentially require an assessment for mitigation, as a requirement of permitting, including potential loss of SFH for the wood stork. Some upland-excavated surface waters could also be regulated based on habitat value or size. Wood storks were observed foraging in man-made, upland-excavated surface waters along Simpson Road on multiple occasions.

Approximately 0.44 acres of hydric-cut surface water impacts would be expected along Simpson Road to construct the recommended corridor alternative. Impacts to an estimated 0.27 acres to upland-cut surface waters would occur to construct Corridor Alternative B with an additional 0.88 acres of impact associated with Pond sites 1B, 2B, and 7A.

6.3 Outstanding Florida Waters / Aquatic Preserves

This section has been prepared in accordance with FDOT's PD&E Manual Part 2, Chapter 10 – Aquatic Preserves and Outstanding Florida Waters (OFW). No aquatic preserves or OFWs were located within the project study area.

6.4 Wetland Impact Analysis

Impacts to wetlands and surface waters were estimated for the Preferred **Build** Alternative and the recommended pond site alternatives. No impacts would be expected to construct the floodplain compensation area. Actual impact areas could be more or less depending on the engineering design and avoidance measures developed during the design, permitting, and construction phases of the project. Wetland and surface water resource maps, including areas that would be impacted, have been provided in **Appendix E**. The project is expected to result in impacts as follows:

Preferred Alternative	Wetland or Surface Water Type (Wetland ID)	FLUCFCS [1] Classification	USFWS [2] Classification	Impact Estimate (acres)
Corridor Alternative B	Forested wetland (MH1) (Ex2) (C1)	617, 617, 621	PFO_C	0.17
	Non-forested wetland - Willow (W1)	640	PSS_C	0.04
	Hydric-cut surface water	510	$PUBH_x$	0.44
	Upland-cut surface water	510	$PUBH_x$	0.27
Pond 1B	Upland-cut surface water	510	$PUBH_x$	0.17
Floodplain Area	NA	--	--	NA
Pond 2B	Upland-cut surface water	510	$PUBH_x$	0.12
Pond 3A	NA	--	--	NA
Pond 4A	Forested wetland (Ex1)	619	PFO_C	2.22
Pond 5A and 5B	NA	--	--	NA
Pond 6A	NA	--	--	NA
Pond 7A	Upland-cut surface water	510	$PUBH_x$	0.59

[1] FDOT, 1999.
[2] Cowardin, *et al*. 1979.

6.5 Avoidance, Minimization and Erosion Control

Wetland and surface water impacts would be avoided and minimized to the extent practical during project design and permitting. However, unavoidable direct impacts could be expected. In addition, indirect secondary impacts would require consideration. Regulatory agencies generally assume secondary impacts based on reduction of functional habitat value within a 25-foot buffer of impacted wetlands. Temporary impacts would also be considered. Temporary impacts would be minimized utilizing best management practices (BMPs), maintaining a stormwater pollution prevention plan (SWPPP), and implementing FDOT design standards.

BMPs would be implemented during construction to protect water quality. Degradation of water quality resulting from construction or excess stormwater runoff from the project has the potential to adversely impact wetland communities and surface waters associated with Boggy Creek and East Lake Tohopekaliga. Water quality impacts from construction would be avoided and minimized through the use of BMPs, including but not limited to, construction phasing, sediment barriers, floating turbidity screenings, silt fences, and other construction techniques identified during design and permitting in coordination with the regulatory agencies.

6.6 Uniform Mitigation Assessment Method

Impacts to wetlands and surface waters were evaluated using the Uniform Mitigation Assessment Method (UMAM) (Chapter 62-345, F.A.C.). The UMAM provides a standardized procedure for assessing ecological functions provided by wetlands and surface waters, the amount that those functions are reduced by a proposed impact, and the amount of habitat mitigation necessary to offset that loss. The UMAM process evaluates three parameters for each impact area, including:

- Location and landscape support (*i.e.* position in relation to surroundings);
- Water environment (*i.e.* water quality and quantity); and
- Vegetative community structure (*i.e*. plant cover).

Impacts to wetlands were estimated for the Preferred **Build** Alternative, the recommended stormwater ponds, and the floodplain compensation area. The predominant impacts would occur over forested wetlands. Based on the anticipated impacts, the project would be expected to have a functional loss of 0.88 habitat units. **Table 4** provides summarizes the preliminary UMAM scores by habitat type based on observed conditions at the time of the PD&E study. The preliminary UMAM forms are provided in **Appendix F**.

Table 4 Estimated UMAM Scores for Wetlands and Surface Water Impacts

WETLAND TYPE (FLUCFCS) (ID)		Location and Landscape		Water Environment		Vegetation		Impact Area (acres)	Delta	FL (units)
		Current	With	Current	With	Current	With			
Cypress (621) (C1)	PFO	3	0	4	0	4	0	0.13	0.37	0.05
Mixed Wetland Hardwoods (617) (MH1)	PFO	7	0	5	0	6	0	0.04	0.60	0.02
Exotic Wetland Hardwoods (619) (Ex1 and Ex2)	PFO	2	0	5	0	3	0	2.42	0.33	0.80
Non-forested Wetland (640)(W1)	PSS	3	0	4	0	3	0	0.04	0.33	0.01
Hydric-cut Surface Water	PUB	TBD	0	TBD	0	TBD	0	TBD	--	--
									Total Estimate	0.88

6.7 Mitigation Requirements

Impacts to wetlands and jurisdictional surface waters resulting from construction of the recommended alternatives would require mitigation pursuant to Section 373.4137, F.S., to satisfy all mitigation requirements of Part IV of Chapter 373, F.S., and 33 U.S.C. §1344.

Private mitigation banks provide an alternative to on-site, permittee-responsible wetland mitigation when available within a project watershed and mitigation banks are recommended by the permitting agencies. Mitigation banking offers the sale of mitigation credits from a private operating entity to offset project impacts.

The project is within the SFWMD-designated Kissimmee River Watershed and is bisected by the Lake Tohopekaliga/East Lake Tohopekaliga drainage basins. Efforts should be made to purchase mitigation credits from a mitigation bank within the watershed of the project impact to avoid greater permitting scrutiny, cumulative impact analysis, and higher mitigation costs.

Wetland mitigation would be expected to be required to permit this project. At the time of this PD&E study, several private mitigation banks within the project watershed offered state and federal mitigation bank credits for freshwater wetlands. Final mitigation requirements, including credit type and mitigation bank credit availability, would be determined during the permitting and design phase using the methodology presented above. Impacts to upland-cut surface waters could also require mitigation to account for replacement of wood stork suitable foraging habitat depending on final project impacts.

6.8 Cumulative Impacts Assessment

The project falls within the Kissimmee River Watershed within the East Lake Tohopekaliga and Lake Tohopekaliga drainage basins. To avoid the need to address cumulative wetland impacts, mitigation should be provided within the watershed of impact.

7.0 Essential Fish Habitat (EFH)

An EFH Assessment was not required, per the requirements of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) of 1996. The MSFCMA was enacted by the U.S. Congress to protect marine fish stocks and their habitat, to prevent and stop overfishing, and to minimize by-catch. Congress defined EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. 1802 (10)). EFH is not present within the project study area.

8.0 Anticipated Permits

Impacts to USACE and SFWMD regulate wetlands within the project study area will require permits. Other agencies, including the USFWS and the Florida Fish and Wildlife Conservation Commission (FWC) will review and comment on the permit applications, including potential affects to wetland-dependent wildlife. The Florida Department of Environmental Protection (FDEP) will ensure protection of water quality.

Impacts associated with this project will be permitted through the following agencies:

- USACE Section 404 Dredge and Fill Permit
- SFWMD Environmental Resource Permit (ERP)
- FDEP National Pollutant Discharge Elimination System Permit (NPDES)

U.S. Army Corps of Engineers

Due to impacts to Waters of the U.S., the project would require coordination with the USACE. The complexity of the permit process will depend on the degree of the impact to jurisdictional waters. Due to anticipation that impacts will exceed ½ acre, an application for a Section 404 Individual Permit would be expected, which would require that wetland and surface water impacts were avoided and/or minimized to the greatest extent possible and that unavoidable impacts would be mitigated. Should impacts fall under ½ acre, the project could qualify for Nationwide Permit 14.

South Florida Water Management District

The project is under the regulatory jurisdiction of the SFWMD. The SFWMD requires an ERP when projects result in the creation or modification of a surface water management system or if a project impacts jurisdictional waters of the State. The complexity of the ERP process depends on the size of the project and/or the extent of wetland and/or surface water impacts. Due to the anticipated activities, the project would be expected to require an Individual Permit from the SFWMD and would be permitted pursuant to Section 373.4137, FS, to satisfy all mitigation requirements of Part IV of Chapter 373, FS, and 33 USC §1344.

Florida Department of Environmental Protection (FDEP)

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

of stormwater discharges from the project and addresses BMPs to reduce the potential for pollutant discharges during construction.

9.0 Conclusion

9.1 Protected Species & Habitat

Federally protected wildlife which have the potential to occur within the project study area based on USFWS Consultation Area boundaries and/or existing habitat conditions included reptiles (Eastern indigo snake, sand skink, and blue-tailed mole skink) and birds (wood stork, crested caracara, Everglade snail kite, red-cockaded woodpecker, Florida scrub-jay, and Florida grasshopper sparrow). Anticipated effects determinations were based on existing conditions, proposed project impacts, agency guidelines, and Osceola County commitments. The project would be expected to result in the following effects determinations for federal species.

Federal Listed Species	Status	Project Impact Determination
Eastern indigo snake (*Drymarchon corais couperi*)	T	***may affect, not likely to adversely affect***
Sand skink (*Neoseps* reynoldsi)	T	***No effect***
Blue-tailed mole skink (*Eumeces egregious lividus*)	T	***No effect***
Wood stork (*Mycteria americana*)	T	***may affect, not likely to adversely affect***
Crested caracara (*Caracara cheriway*)	T	***may affect, not likely to adversely affect***
Everglade snail kite (*Rostrhamus sociabilis plumbeus*)	E	***No effect***
Florida scrub-jay (*Aphelocoma coerulescens*)	T	***No effect***
Red-cockaded woodpecker (*Picoides borealis*)	E	***No effect***
Florida grasshopper sparrow (*Ammodramus savannarum floridanus*)	E	***No effect***

Although the bald eagle is no longer listed under the ESA, it remains protected by the MBTA and BGEPA. Because this project will be consistent with the BGEPA and MBTA, it is anticipated that the project will not impact the bald eagle. Osprey nests are also protected by the MBTA and by Chapter 68A of the F.A.C. Since Osceola County will adhere to state and federal requirements that protect osprey nests; it is anticipated that the project will not impact the osprey.

Designated critical habitat does not fall within the project limits. Therefore, the proposed project will have ***no effect*** on USFWS designated Critical Habitat, as defined by Congress 50 CFR § 17.94.

State-protected species known to occur or with the potential to utilize habitat within the project study area included reptiles (gopher tortoise, short-tailed snake, and pine snake) and birds (Florida sandhill crane, Florida burrowing owl, Southeastern American kestrel, and little blue heron).

The project would be expected to result in the following determinations for state protected species.

State Listed Species	Status	Project Impact Determination
Gopher tortoise (*Gopherus polyphemus*)	T	***No adverse effect anticipated***
Short-tailed snake (*Lampropeltis extenuate*)	T	***No adverse effect anticipated***
Florida pine snake (*Pituophis melanoleucus mugitus*)	T	***No adverse effect anticipated***
Florida sandhill crane (*Antigone canadensis pratensis*)	T	***No adverse effect anticipated***
Florida burrowing owl (*Athene cunicularia floridana*)	T	***No adverse effect anticipated***

Southeastern American kestrel (*Falco sparverius paulus*)	T	***No adverse effect anticipated***
Little blue heron (*Egretta caerulea*)	T	***No adverse effect anticipated***

Thirteen federally protected plants and 30 state-protected plants potentially occur within the project study area; none were observed. A determination of ***no effect*** is expected for protected plants.

9.2 Wetland

Impacts to wetlands and surface waters were estimated for the Preferred Corridor Alternative B with Intersection Option 2 and the preferred pond site alternatives. The preferred pond site alternatives were Pond 1B, Pond 2B, Pond 3A, Pond 4A, Pond 5A, Pond 5B, Pond 6A, and Pond 7A. No impacts would be expected to construct the floodplain compensation area.

Based on these criteria, the project would be expected to impact the following:

Preferred Alternative	Wetland or Surface Water Type	FLUCFCS [1] Classification	USFWS [2] Classification	Impact Estimate (acres)
Corridor Alternative B	Forested wetland (MH1) (Ex2) (C1)	617, 617, 621	PFO_C	0.17
	Non-forested wetland - Willow (W1)	640	PSS_C	0.04
	Hydric-cut surface water	510	$PUBH_x$	0.44
	Upland-cut surface water	510	$PUBH_x$	0.27
Pond 1B	Upland-cut surface water	510	$PUBH_x$	0.17
Floodplain Area	NA	--	--	NA
Pond 2B	Upland-cut surface water	510	$PUBH_x$	0.12
Pond 3A	NA	--	--	NA
Pond 4A	Forested wetland (Ex1)	619	PFO_C	2.22
Pond 5A and 5B	NA	--	--	NA
Pond 6A	NA	--	--	NA
Pond 7A	Upland-cut surface water	510	$PUBH_x$	0.59

[1] FDOT, 1999. [2] Cowardin, *et al*. 1979.

Wetland and surface water impacts could total 4.02 acres. Wetland impacts would be avoided and minimized to the greatest extent practical during the project design and permitting phase of the project. All impacts to jurisdictional waters would be evaluated using the UMAM (Chapter 62-345 FAC). Impacts resulting from construction of the Preferred Alternative would require mitigation pursuant to Section 373.4137, F.S., to satisfy all mitigation requirements of Part IV of Chapter 373, F.S., and 33 U.S.C. §1344.

10.0 Implementation Measures

Measures required to be implemented per construction procedures, standard specifications, or other agency requirements issued in a later project phase are listed below to help address project effects and facilitate efficient review of this NRE.

- Water quality impacts from construction will be avoided and minimized through the use of BMPs including, but not limited to, construction phasing, sediment barriers, floating turbidity curtains, silt fences, and other techniques identified during design and permitting by the regulatory agencies and later during construction by the selected contractor.
- Osceola County will coordinate with the FWC to secure a Gopher Tortoise Relocation Permit for any gopher tortoise or potentially occupied burrow discovered in or within 25 feet of the project construction area.
- Due to the observed presence of the Florida sandhill crane, Osceola County will resurvey the project area for active sandhill crane nests prior to construction.
- If a bald eagle nest is identified within 660 feet of the project prior to or during construction, Osceola County will coordinate with the USFWS in accordance with the BGEPA and MBTA and will adhere to the USFWS *Bald Eagle Management Guidelines*.
- Surveys to update locations of active osprey nest site(s) will be conducted during the permitting phase of the project. If an osprey nest is identified, FDOT will coordinate with the USFWS and/or the FWC depending on the activity status of the nest.
- If wetland and surface water impacts exceed 5 acres, a Wood Stork Foraging Habitat Assessment will be prepared to determine mitigation needed to offset impacts to wood stork SFH.

11.0 Commitments

In order to ensure that adverse impacts will not occur to protected species or habitat or wetlands or surface waters as a result of the project, Osceola County will adhere to the following commitments and protection measures:

- Osceola County will adhere to the most current USFWS Standard Protection Measures for the Eastern Indigo Snake during construction.
- Osceola County is committed to reducing construction staging areas, which should be located in disturbed upland areas to avoid impacts to fish and wildlife habitat resources, including wetlands.

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