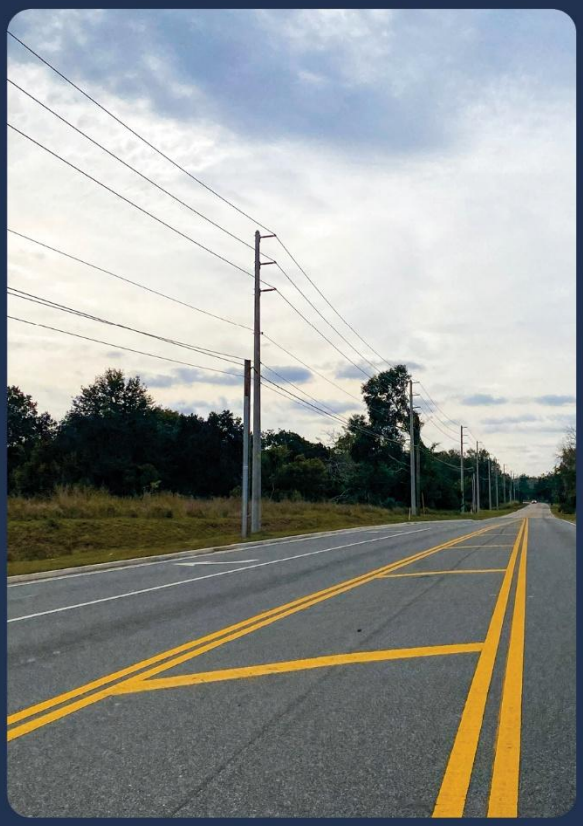
Prepared for

ORANGE COUNTY FLORIDA



CR 545 (Avalon Road) South
US 192 to Hartzog Road

Project Development and Environment (PD&E) Study

NATURAL RESOURCES EVALUATION

APRIL 2026

Submitted by

DRMP

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EXECUTIVE SUMMARY

Orange County plans to widen approximately 1.6 miles of Avalon Road (CR 545) from US 192 (West Irlo Bronson Memorial Highway) to north of Hartzog Road. The County completed a Roadway Conceptual Analysis (RCA) in 2024 and is currently conducting a Project Development and Environment (PD&E) Study, including updating the RCA to a Project Environmental Impact Report (PEIR) to support and document compliance with state and federal environmental laws.

This project is primarily needed to address current and future traffic demand in southwest Orange County. It will also support the county's vision by providing a multimodal corridor serving vehicles, pedestrians, and bicyclists. Improvements include increased capacity, multimodal facilities, lighting, and landscaping to enhance mobility, safety, and corridor aesthetics. The proposed project includes widening Avalon Road (CR 545) from a two-lane roadway to a four-lane roadway with 12-foot travel lanes with curb and gutter, a 22-foot raised median, a 6-foot sidewalk, and a 10-foot multi-use path.

The purpose of this Natural Resources Evaluation (NRE) is to document protected species and their habitat within the study area, analyze potential impacts to those protected species and habitats from the proposed widening, provide support for protected species effect determinations, evaluate wetland and surface water impacts from the Preferred Alternative, identify mitigation needs, and consult with federal and state regulatory and resource agencies. The NRE is prepared in accordance with Wetlands and Other Surface Waters, Protected Species and Habitat, and Essential Fish Habitat (EFH), of the *FDOT PD&E Manual* (2024) and the Natural Resources Evaluation Outline and Guidance (2020).

The project is located within Section 06 of Township 25S, Range 27E and Sections 30 and 31 of Township 24S, Range 27E. A study area for the Preferred Alternative was defined for purposes of this Natural Resources Evaluation, encompassing areas within 100 feet of the proposed widening alignment along the proposed right-of-way.

Protected Species

The study area was evaluated for potential occurrences of federal and state protected species in accordance with Section 7 of the Endangered Species Act of 1973 (ESA), as amended, and Chapters 5B-40 and 68A-27 of the Florida Administrative Code (FAC). The evaluation included literature and database reviews, as well as field assessments of the study area to identify the potential occurrence of protected species and/or presence of federal-designated critical habitat. Project biologists conducted field reviews of the study area and adjacent habitats in March 2026. An analysis was conducted to assess potential protected species impacts.

Based on the evaluation of collected data and field reviews, the federal and state protected species listed in **Table ES-1 and ES-2** were observed or were determined to have the potential to occur within or adjacent to the study area in accordance with the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) and the Florida Natural Areas Inventory (FNAI) databases. In addition, the study area occurs within the USFWS Consultation Areas for the blue-tailed mole skink (*Eumeces egregious lividus*), crested caracara (*Caracara plancus spp. audubonii)*, Everglade snail kite (*Rostrhamus sociabilis spp. plumbeus)*, Florida scrub-jay (*Aphelocoma coerulescens)*, red-cockaded woodpecker (*Dryobates* borealis), and sand skink

(*Plestiodon reynoldsi*). **Section 2** discusses the potential for federal and state protected species to occur within the study area.

Table ES-1: Federal Protected Species Effect Determinations

Project Effect Determination	Federal Listed Species
"No Effect"	American Alligator (*Alligator mississippiensis*)
	Avon Park Rabbit-Bells (*Crotalaria avonensis*)
	Beautiful Pawpaw (*Deeringothamnus pulchellus*)
	Bluenose Shiner (*Pteronotropis welaka*)
	Britton's Beargrass (*Nolina brittoniana*)
	Carter's Warea (*Warea carteri*)
	Clasping Warea (*Warea amplexifolia*)
	Eastern Black Rail (*Laterallus jamaicensis spp. jamaicensis*)
	Florida Blazing Star (*Liatris ohlingerae*)
	Florida Bonamia (*Bonamia grandiflora*)
	Florida Jointweed (*Polygonella basiramia*)
	Florida Panther (*Puma concolor coryi*)
	Garrett's Scrub Balm (*Dicerandra christmanii*)
	Highlands Scrub Hypericum (*Hypericum cumulicola*)
	Lewton's Polygala (*Polygala lewtonii*)
	Monarch Butterfly (*Danaus plexippus*)
	Paper-Like Nailwort (*Paronychia chartacea spp. chartacea*)
	Papery Whitlow-Wort (*Paronychia chartacea*)
	Perforate Reindeer Lichen (*Cladonia perforata*)
	Pygmy Fringe-Tree (*Chionanthus pygmaeus*)
	Sandlace (*Polygonella myriophylla*)
	Scrub Buckwheat (*Erigonum longifolium spp. ghanphalifolium*)
	Scrub Lupine (*Lupinus aridorum*)
	Scrub Mint (*Dicerandra frutescens*)
	Scrub Pigeon-wing (*Clitoria fragrans*)
	Scrub Plum (*Prunus geniculata*)
	Short-Leaved Rosemary (*Conradina brevifolia*)
	Short-Tailed Snake (*Stilosoma extenatum*)
	Small's Jointweed (*Polygonella myriophylla*)
	Southern Hognose Snake (*Heterodon simus*)
	Tricolored Bat (*Perimyotis subflavus*)
"No Adverse Effect Anticipated"	Bald Eagle (*Haliateetus leucocephalus*)
"Not Likely to Adversely Affect"	Everglade Snail Kite (*Rostrhamus sociabilis spp. plumbeus*)
	Red-Cockaded Woodpecker (*Picoides borealis*)
"May Affect"	Eastern Indigo Snake (*Drymarchon couperi*)
Coordination with USFWS Required	Blue-Tailed Mole Skink (*Eumeces egregious lividus*)
	Crested Caracara (*Caracara plancus spp. audubonnii*)
	Florida Scrub-Jay (*Aphelocoma coerulescens*)
	Sand Skink (*Plestiodon reynoldsi*)

Table ES-2: State Protected Species Effect Determinations

Project Effect Determination	State Listed Species
"No Effect Anticipated"	Ashe's Savory (*Calamintha ashei*)
	Butterfly Orchid (*Encyclia tampensis*)
	Celestial Lily (*Nemastylis floridana*)
	Chapman's Sedge (*Carex chapmannii*)
	Comp polypody (*Pecluma ptilota*)
	Cutthroatgrass (*Coleataenia abscissa*)
	Florida Beargrass (*Nolina atopocarpa*)
	Florida Black Bear (*Ursus americanus floridanus*)
	Florida Loosestrife (*Lythrum flagellare*)
	Florida Spiny-Pod (*Matelea floridana*)
	Florida Willow (*Salix floridana*)
	Giant Orchid (*Pteroglossaspis ecristata*)
	Hand Fern (*Ophioglossum palmatum*)
	Hartwrightia (*Hartwrightia floridana*)
	Many-Flowered Grass-Pink (*Calopogon multiflorus*)
	Narrowleaf Naiad (*Najas filifolia*)
"No Adverse Effect Anticipated"	Nodding Pinweed (*Lechea cernua*)
	Piedmont Jointgrass (*Coelorachis tuberculosa*)
	Pine pinweed (*Lechea divaricata*)
	Plume Polypody (*Pecluma plumula*)
	Redmargin Zephyrlily (*Zephyranthes simpsonii*)
	Sand Butterfly Pea (*Centrosema arenicola*)
	Scrub Bluestem (*Schizahyrium niveum*)
	Scrub Stylisma (*Stylisma abdita*)
	Star Anise (*Illicium parviflorum*)
	Yellow Fringeless Orchid (*Platanthera integra*)
	Florida Burrowing Owl (*Athene cunicularia spp. floridana*)
	Florida Pine Snake (*Pituophis melanoleucus mugitus*)
	Florida Sandhill Crane (*Antigone canadensis spp. pratensis*)
	Gopher Tortoise (*Gopherus polyphemus*)
	Little Blue Heron (*Egretta caerulea*)
	Roseate Spoonbill (*Platalea ajaja*)
	Tricolored Heron (*Egretta tricolor*)

Wetlands and Surface Waters

For the purposes of this document, wetlands are defined in accordance with the State Unified Wetland Delineation Methodology (Chapter 62-340, FAC) and with Federal guidelines (Corps 1987 Wetland Delineation Manual, Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (October 2008)). Surface waters are defined as open water bodies and manmade drainage features.

Professional wetland scientists conducted a preliminary desktop review and identified the extent of the wetlands and surface waters within the study area during a field visit on March 11, 2026, in accordance with federal and state guidelines. The proposed Preferred Alternative is expected to result in unavoidable wetland

and surface water impacts. The direct and secondary wetland impacts associated with the proposed Preferred Alternative are depicted in **Table ES-3.** The total direct wetland impacts anticipated for the proposed Preferred Alternative are 3.55 acres. The total wetland secondary impacts for the proposed Preferred Alternative are 2.51 acres. The total functional loss due to direct impacts totals 2.40 functional loss units.

Table ES-3: Preferred Alternative Wetland and Surface Water Impacts

Impact Type	FLUCFCS Classification[1]	FLUCFCS Description	USFWS Classification[2]	Preferred Alternative Impact Acreage
Wetlands	6172	Mixed Shrubs	PFO6F, PFO7B	0.71
	6210	Cypress	PFO6F	0.81
	6410	Freshwater Marshes / Graminoid Prairie - Marsh	PUBH, PA1F, PEM1F, PAB3H	4.54
			Total Wetland Impacts	**6.06**
Surface Waters	5200	Lakes	PFO1F	0.78
	5300	Reservoirs	PFO7B	0.16
			Total Surface Water Impacts	**0.94**
			Total Wetland and Surface Water Impacts	**7.00**

[1] Florida Land Use Cover and Forms Classification System (FLUCFCS) Florida Department of Transportation (FDOT), 1999
[2] Cowardin, *et al.* 1979

Orange County proposes mitigation to meet the rule (mitigation will be addressed to satisfy all mitigation requirements of Part IV, Chapter 373, FS and 33 U.S.C. 1344). Compensatory mitigation for this project will be completed through the use of mitigation banks and any other mitigation options that satisfy state and federal requirements.

Both South Florida Water Management District (SFWMD) and U.S. Army Corps of Engineers (USACE) differentiate between forested and herbaceous impacts. The proposed project is anticipated to require 0.4 freshwater forested and 2.1 freshwater herbaceous credits. Mitigation banks with available type-for-type state and federal credits within the Kissimmee Basin include Split Oak Forest, Bullfrog Bay, Hatchineha Ranch, Twin Oaks, Southport Ranch, and Shingle Creek.

Critical Habitat

Critical habitat, as defined by the USFWS, includes areas that are vital for a species' conservation once it has been listed under the ESA. Based on the USFWS Critical Habitat for Threatened & Endangered Species database (accessed March 2026), the study area does not overlap designated critical habitat for listed species. The project will have no impacts to critical habitat.

Essential Fish Habitat

The National Marine Fisheries Service (NMFS) is the regulatory agency responsible for the nation's living marine resources and their habitats, including Essential Fish Habitat (EFH). Based on the NOAA EFH Mapper (accessed March 2026), the study area does not overlap designated EFH for Highly Migratory Species. Based on the nature of the project, the project will have no impacts to EFH.

1.0 PROJECT OVERVIEW

1.1 Project Description

The proposed project includes widening the existing two-lane roadway to four 12-foot travel lanes with curb and gutter, a 22-foot raised median, a six-foot-wide sidewalk on the east side of the roadway, and a 10-foot-wide multi-use path on the west side to accommodate pedestrians and bicyclists. These facilities will be separated from the roadway by a grass utility strip and will connect to planned regional pedestrian and bicycle facilities north of Hartzog Road. Pedestrian features, including crosswalks and pedestrian signals, will be provided at US 192, which is the only signalized intersection within the project limits. All facilities will comply with the American with Disabilities Act (ADA).

This project is being designed to minimize, to the extent possible, right-of-way impacts to adjacent existing and planned developments. The Preferred Alternative accommodates projected future traffic demands, improves roadway operations and safety, and incorporates stormwater management features designed to meet South Florida Water Management District (SFWMD) and Orange County requirements. Three stormwater management ponds and a floodplain compensation site are planned to provide water quality treatment and runoff attenuation while avoiding impacts to nearby wetlands and floodplain areas, where feasible.

1.2 Purpose and Need

The purpose of the project is to reduce congestion and improve mobility along Avalon Road between US 192 and Hartzog Road. Improvements will also address safety concerns and support the County's vision for corridors to serve as multi-modal facilities that serve motorists, pedestrians, and bicyclist. The project need is due to many of the existing segments along Avalon Road currently operating at Level of Service (LOS) F with traffic operations expected to worsen through 2048.

A Roadway Conceptual Analysis (RCA) was originally completed for the project in 2024. It recommended a 4-lane divided roadway with multi-modal enhancements including a sidewalk on the east side, a 10-foot multi-use path on the west side, and a pedestrian crossing at US 192. The project began design in April 2025. To support permitting efforts under the stormwater rule transition period, the RCA has been updated to a Project Development and Environmental (PD&E) study. It is also funded for right-of-way and construction in the Metroplan Orlando Fiscal Year (FY) 26-30 Transportation Improvement Program (#7640).

1.3 Study Area

The study area is 130 acres, and includes areas within 100 feet of the proposed widening alignment along the Avalon Road ROW. The study area extends 1.64 miles along Avalon Road from US 192 (West Irlo Bronson Memorial Highway) to north of Hartzog Road in Winter Garden, Orange County, Florida (**Figure 1, Project Location Map**).

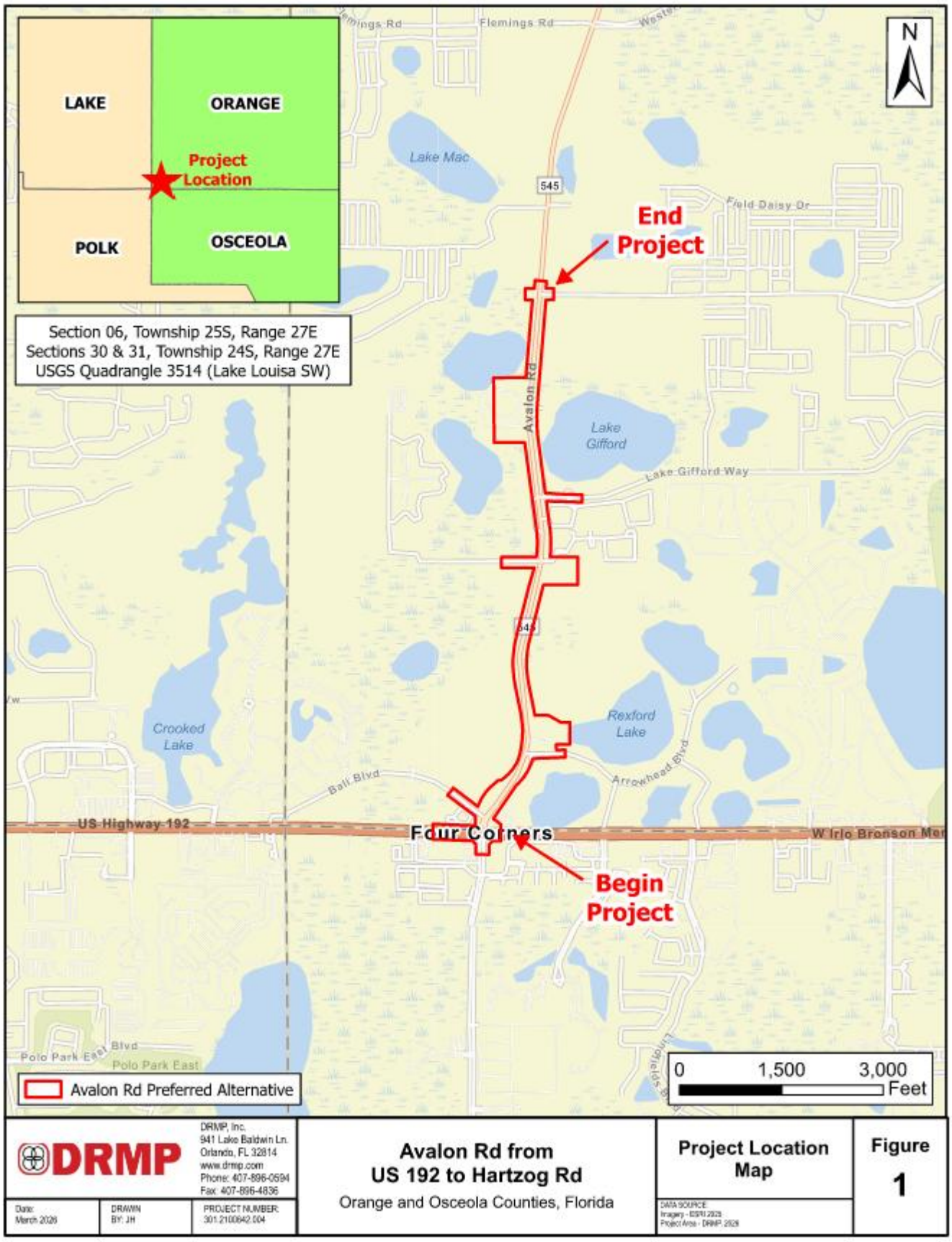

Figure 1. Project Location Map

1.4 Existing Conditions

1.4.1 Land Use

The land uses within the study area were defined by using the SFWMD Florida Land Use, Cover, and Forms Classification System (FLUCFCS) 2023 Geographical Information System (GIS) data and further categorized using the U.S. Fish & Wildlife Service (USFWS) National Wetlands Inventory (NWI) Wetlands Mapper. Analysis of aerial imagery and field reviews conducted along the corridor have determined that the mapped land use data does not accurately represent existing conditions, as it does not account for the existing Avalon Road roadway that would otherwise be labeled as Transportation (FLUCFCS 8100). The table below (**Table 1**) and **Figure 2**, **Land Use Map** provides information about each land use within the study area.

Table 1: FLUCFCS within the Study Area

FLUCFCS Code		FLUCFCS Description	Area (Acres)	Site Description
1100's, 1200's, and 1300's	1110	Low Density, Fixed Single-Family Unit	10.39	The land use designation is for fixed homes with at least two dwellings per acre. This area is located along Arrowhead Boulevard.
	1130	Mixed Units, Fixed and Mobile Home Units	8.43	The land use designation for a consistent mixture of both types of units. This area is located along County Road and the middle of the Avalon Road corridor.
	1180	Rural Residential	6.55	The land use designation for fixed homes with two to five acres per dwelling. This area is located along Lake Gifford Way and adjacent to Lake Gifford.
	1330	High Density, Multiple Dwelling Units, Low Rise	4.38	The land use designation for areas with multiple homes or low rises that are three stories or less. This area is located along Lake Gifford Way and the middle of the Avalon Road corridor.
	1340	High Density, Multiple Dwelling Units, High Rise	3.89	The land use designation for areas with multiple homes or high rises that are four stories or more. This area is located opposite Lake Gifford Way and the middle of the Avalon Road corridor.
1400's	1400	Commercial and Services	9.09	This land use designation is for commercial businesses. These areas are located on US 192 and the southern portion of the Avalon Road corridor.
	1490	Commercial and Services Under Construction	2.35	This land use designation is for commercial businesses that are under construction. This area is located south of US 192 along Westside Boulevard.

FLUCFCS Code		FLUCFCS Description	Area (Acres)	Site Description
1900's	1920	Inactive Lands with Street Pattern	13.38	This land use designation is for open areas where development had started, halted, and been abandoned. This area is between Lake Oliver and Lake Austin along the northern portion of the Avalon Road corridor.
3000's	3200	Shrub and Brushland	7.76	This land use designation is for upland, non-agricultural, non-forested lands with no cattle grazing and shrubs covering more than 67% of the area. These areas are located around the middle of the Avalon Road corridor.
	3210	Palmetto Prairies	3.61	This land use designation is for nearly treeless plains with a dense groundcover dominated by saw palmetto. This area is located around the southern portion of the Avalon Road corridor.
	3300	Mixed Upland Non-Forested	6.59	This land use designation is for upland, non-agricultural, non-forested lands with no cattle grazing and neither shrubs or herbaceous species covering more than 67% of the area. This area is located south of County Road along the Avalon Road corridor.
4000's	4110	Upland Coniferous Forests	8.77	This land use designation is for areas that are dominated by pines and other coniferous species. This area is located along Bali Boulevard towards the southern portion of the Avalon Road corridor.
	4340	Upland Mixed Forests	0.92	This land use designation is for areas that are not dominated by any tree species. This area is located adjacent to Rexford Lake along the Avalon Road corridor.
5000's	5200	Lakes	1.03	This land use designation is for freshwater bodies greater than 2 acres in size, which are typically natural in origin. These areas are located adjacent to Rexford Lake, Lake Gifford, and Lake Oliver.
	5300	Reservoirs	1.05	This land use designation is for artificial impoundments of water that have been significantly modified from their natural state. These areas are located throughout the Avalon Road corridor.

FLUCFCS Code		FLUCFCS Description	Area (Acres)	Site Description
6000's	6170	Wetland Hardwood Forests	3.81	This land use designation is for wetland communities that are dominated by hard wood trees. This area is located adjacent to Lake Austin along the Avalon Road corridor.
	6172	Mixed Shrubs	3.22	This land use designation is for wetland areas that are dominated by woody vegetation less than twenty (20) feet in height. These areas are located throughout the Avalon Road corridor.
	6210	Cypress	2.82	This land use designation is for forested wetland communities in which cypress over 67% of the forest canopy. These areas are located throughout the Avalon Road corridor.
	6250	Hydric Pine Flatwoods	1.77	This land use designation is for forests with a sparse to moderate canopy of slash pine with an understory of grasses. This area is located along County Road.
	6300	Wetland Forested Mixed	3.68	This land use designation is for wetland forested communities in which neither hardwoods nor conifers achieve a 67% dominance of canopy composition. These areas are located at the northern and southern portions of the Avalon Road corridor.
	6410	Vegetated Non-Forested Wetlands	8.56	This land use designation is for wetlands that do not have a large tree canopy. These areas are located throughout the Avalon Road corridor.
	6440	Emergent Aquatic Vegetation	0.47	This land use designation is for flooded areas with emergent or floating vegetation. These areas are located adjacent to Rexford Lake and Lake Oliver.
7400's	7400	Disturbed Lands	12.45	This land use designation is for areas that are considered disturbed. These areas are located around the northern portion of the Avalon Road corridor.
8100's	8140	Roads and Highways	5.45	This land use designation represents travel lanes for cars and trucks. This area is located around the southern portion of the Avalon Road corridor along US 192.

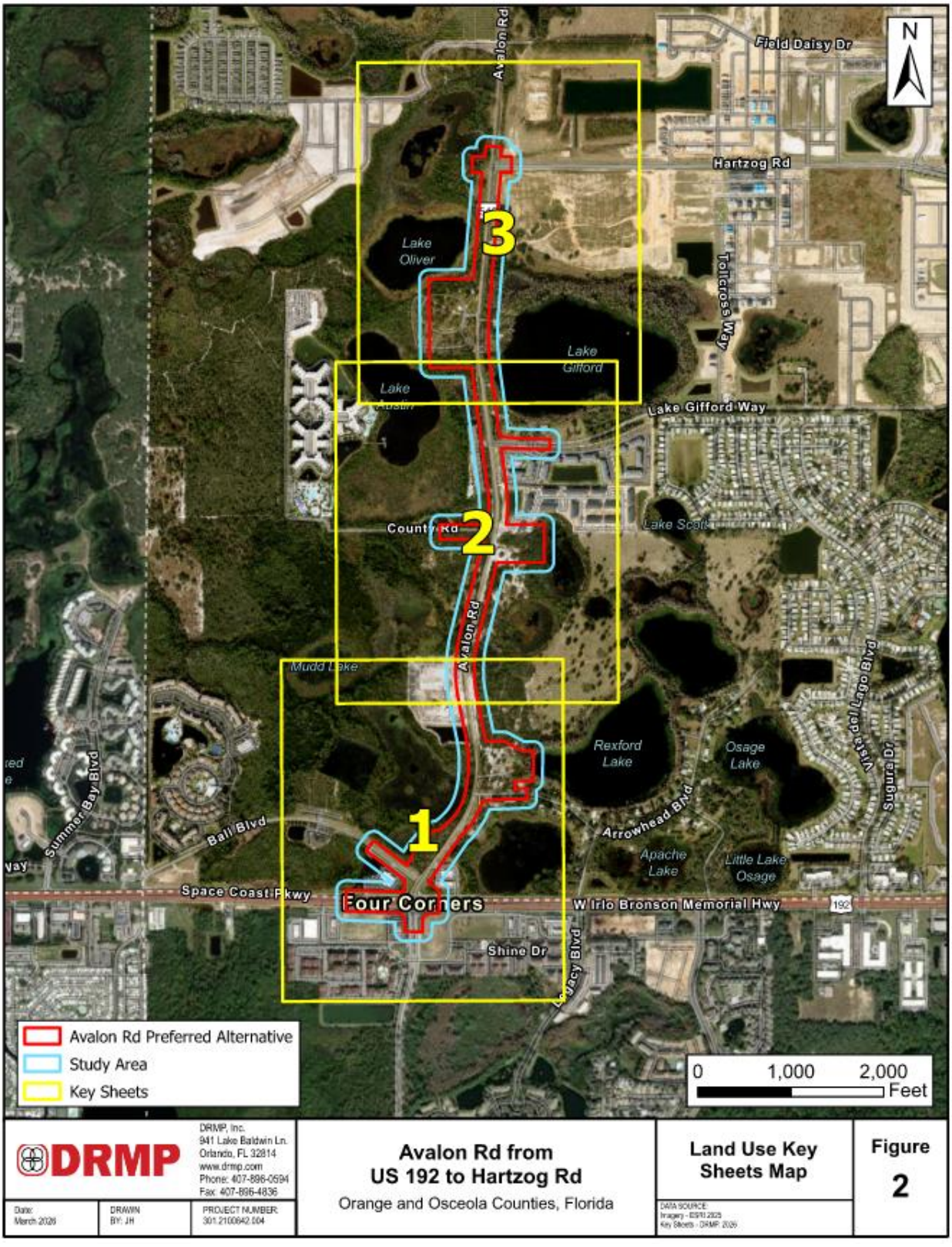

Figure 2. Land Use Key Sheets Map

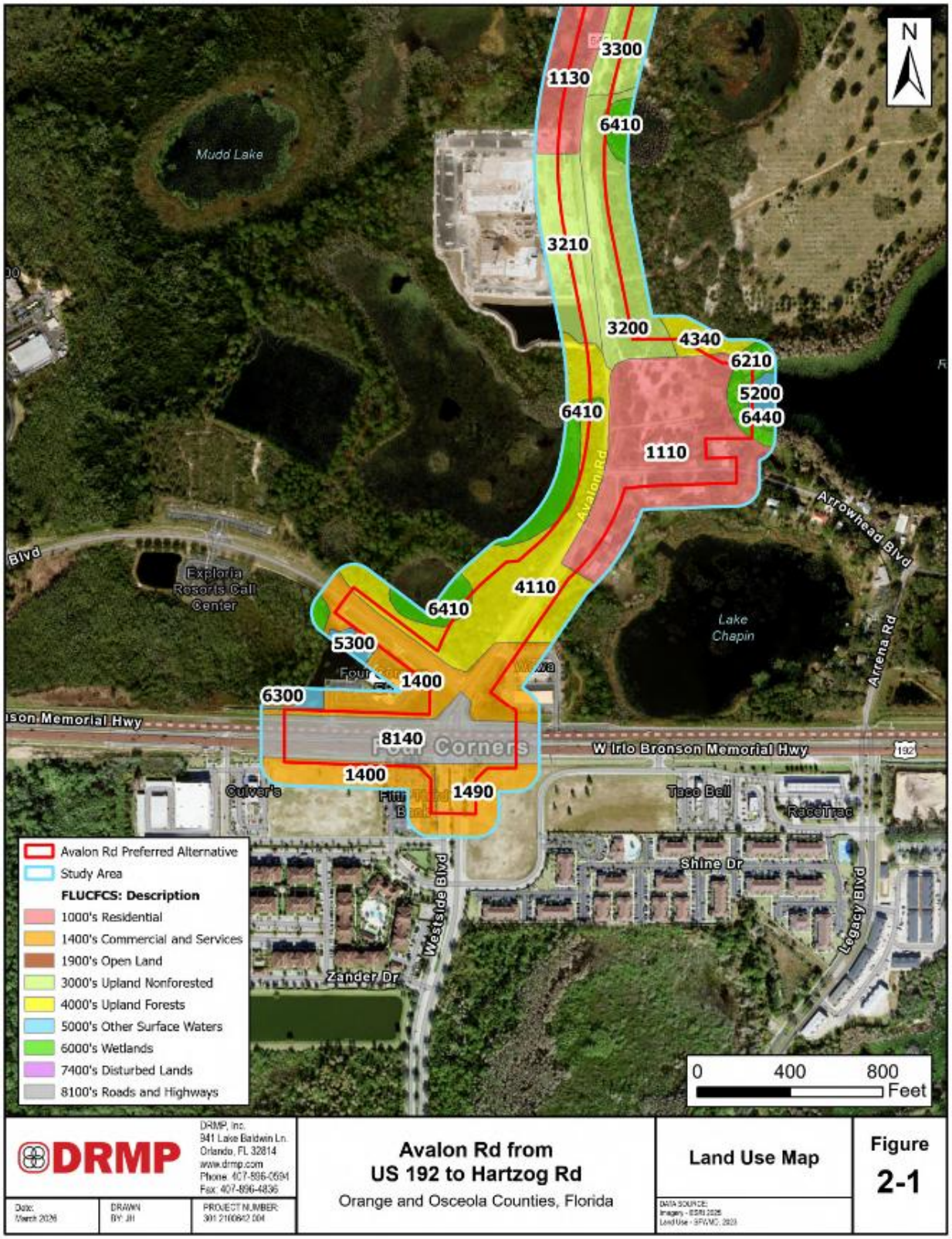

Figure 2-1. Land Use Map

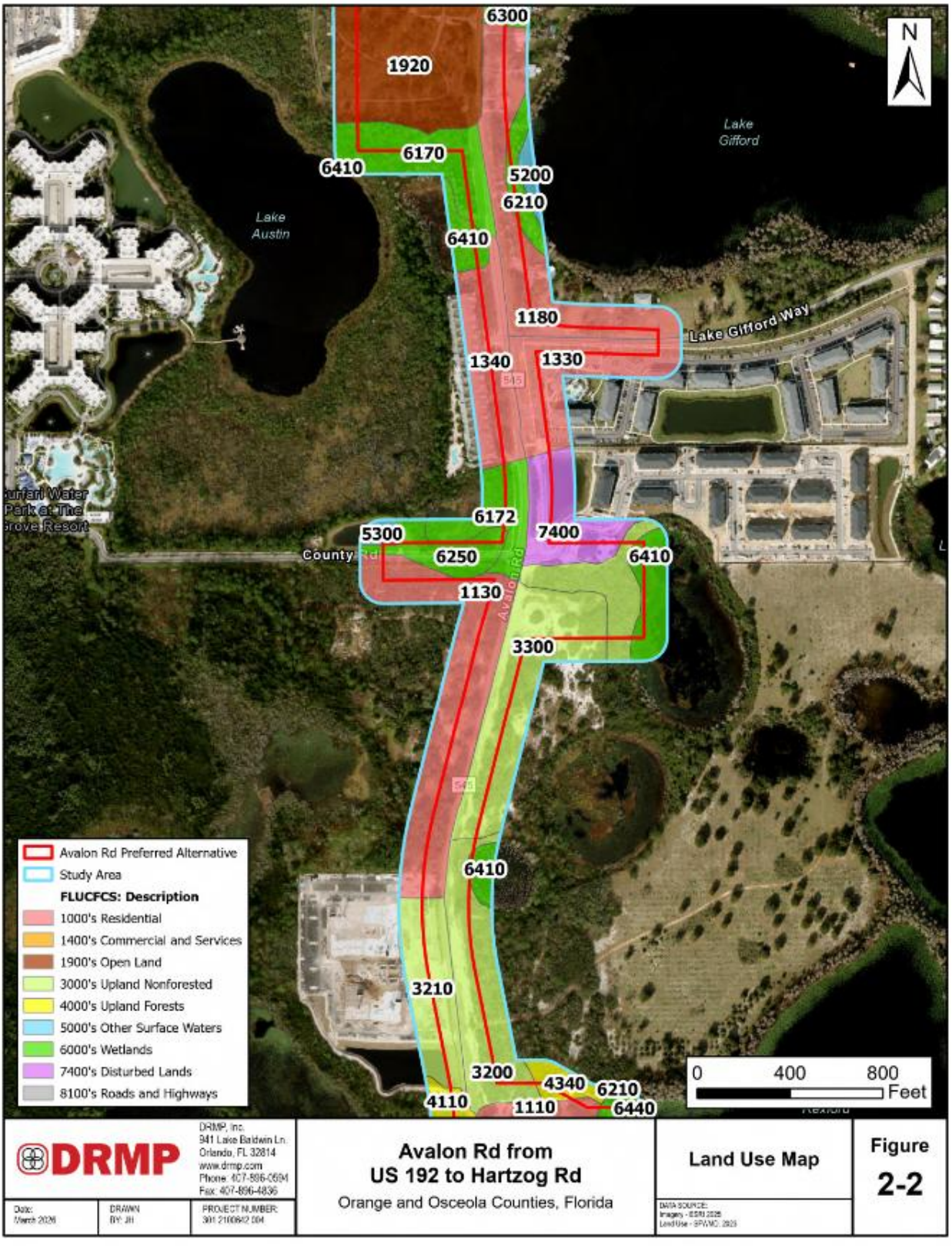

Figure 2-2. Land Use Map

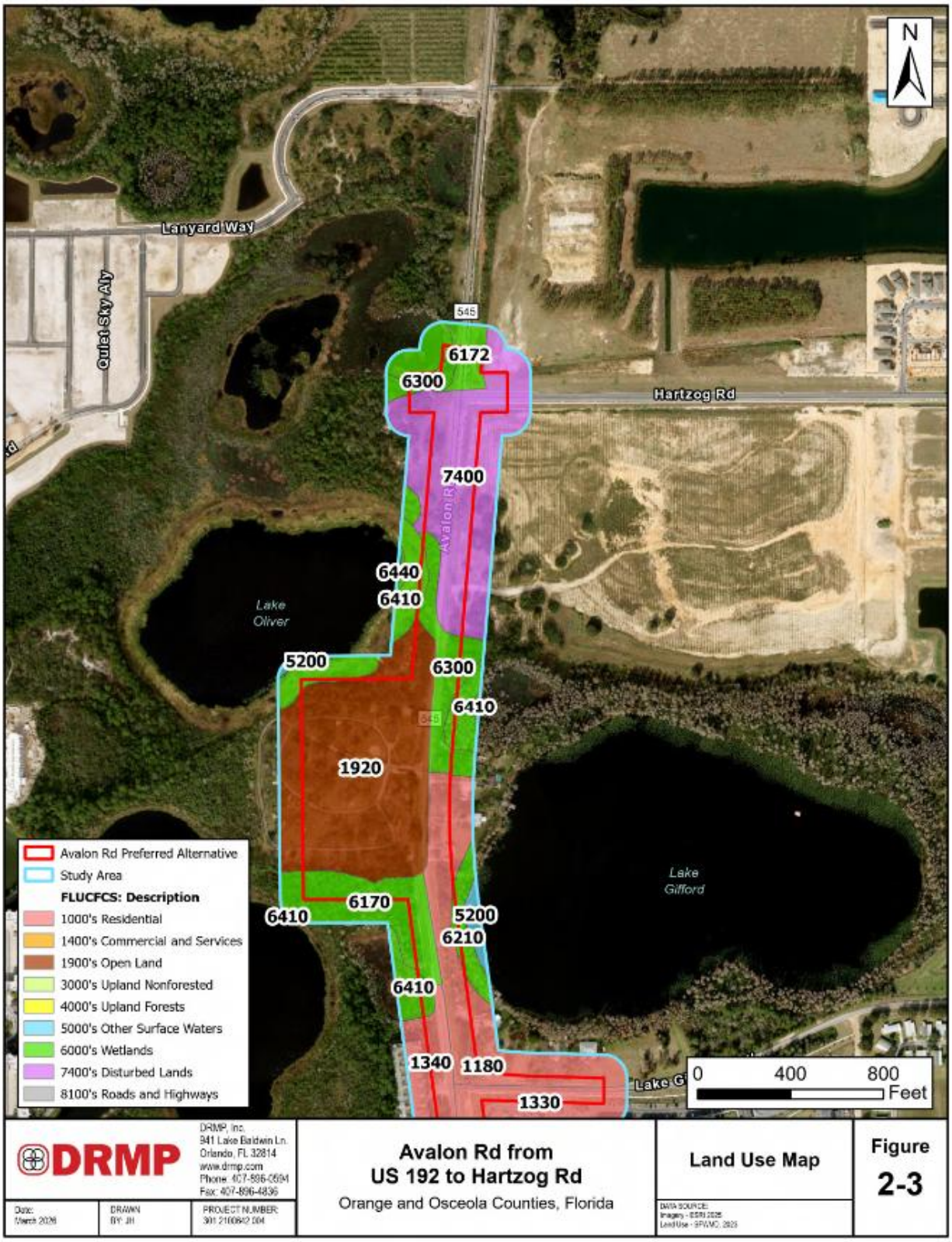

Figure 2-3. Land Use Map

1.4.2 Soils

The soils within the study area were defined using the National Resource Conservation Service (NRCS) Soil Survey Geographic Database (SSURGO) data and the Soil Survey of Orange and Osceola Counties, Florida (2026). Of the 11 soils mapped within the study area, four (4) soils are designated as hydric soils by the NRCS Hydric Soils List (accessed 2026) and Hydric Soils of Florida Handbook (2007). **Tables 2 and 3** lists and summarize the soil types mapped with the study area, and **Figure 3, NRCS Soils Map** depicts the location the soils mapped within the study area.

Table 2: Soils within the Study Area in Orange County

Map Unit ID	Map Unit Name	Hydrological Group	Hydric (Yes/No)	Drainage Class	Soil Type Location
2	Archbold Fine Sand, 0-5% Slopes	A	No	Moderately Well Drained	This soil type is mapped towards the southern portion of the Avalon Road corridor.
3	Basinger Fine Sand, Frequently Ponded, 0-1% Slopes	A/D	Yes	Poorly Drained	This soil type is mapped throughout the Avalon Road corridor, north of US 192.
20	Immokalee Fine Sand	B/D	No	Poorly Drained	This soil type is mapped throughout the Avalon Road corridor, north of US 192.
40	Samsula Muck, Frequently Ponded, 0-1% Slopes	A/D	Yes	Very Poorly Drained	This soil type is mapped opposite Arrowhead Boulevard along Avalon Road.
42	Sanibel Muck	A/D	Yes	Very Poorly Drained	This soil type is mapped throughout the Avalon Road corridor, north of US 192.
46	Tavares Fine Sand, 0-5% Slopes	A	No	Moderately Well Drained	This soil type is mapped towards the northern portion of the Avalon Road corridor.
47	Tavares-Millhopper Fine Sands, 0-5% Slopes	A	No	Moderately Well Drained	This soil type is mapped towards the northern portion of the Avalon Road corridor.

Map Unit ID	Map Unit Name	Hydrological Group	Hydric (Yes/No)	Drainage Class	Soil Type Location
99	Water	Unranked	Unranked	Unranked	This soil type is mapped throughout the Avalon Road corridor, north of US 192.

Table 3: Soils within the Study Area in Osceola County

Map Unit ID	Map Unit Name	Hydrological Group	Hydric (Yes/No)	Drainage Class	Soil Type Location
15	Hontoon Muck, Frequently Ponded, 0-1% Slopes	A/D	Yes	Very Poorly Drained	This soil type is mapped south of US 192 along Westside Boulevard.
16	Immokalee Fine Sand, 0-2% Slopes	B/D	No	Poorly Drained	This soil type is mapped south of US 192 along Westside Boulevard.
43	St. Lucie Fine Sand, 0-5% Slopes	A	No	Excessively Drained	This soil type is mapped within US 192 in Osceola County.

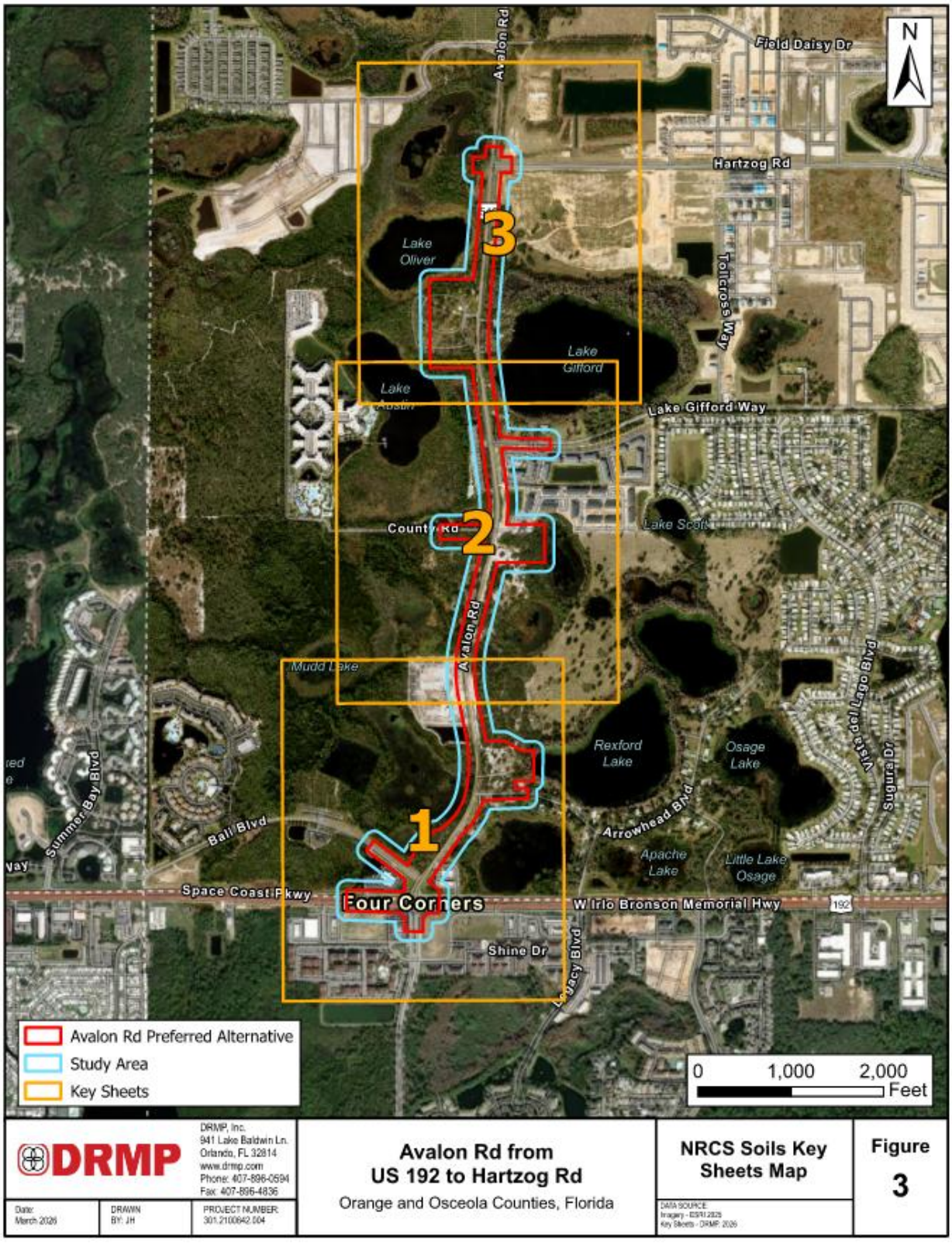

Figure 3. NRCS Soils Key Sheets Map

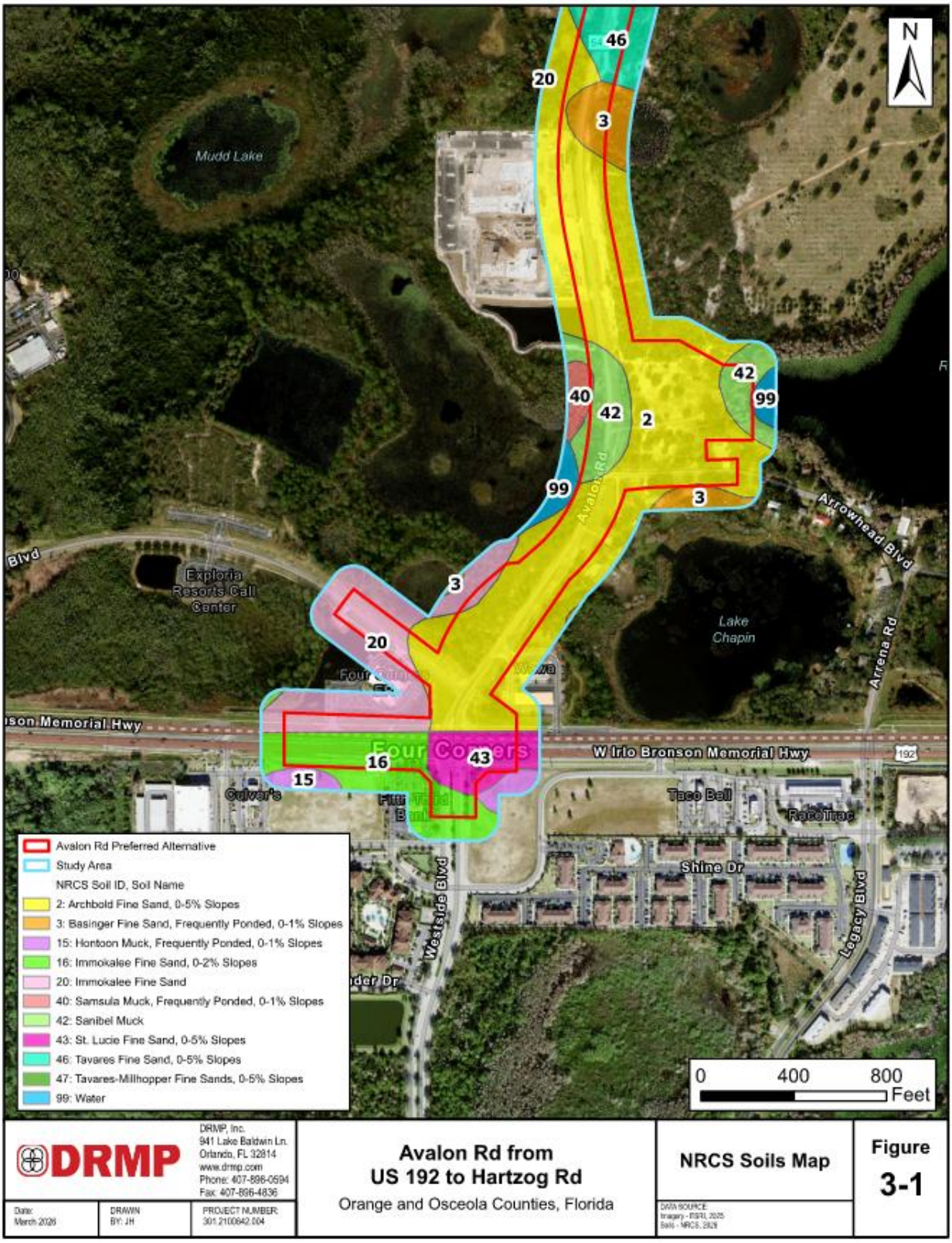

Figure 3-1. NRCS Soils Map

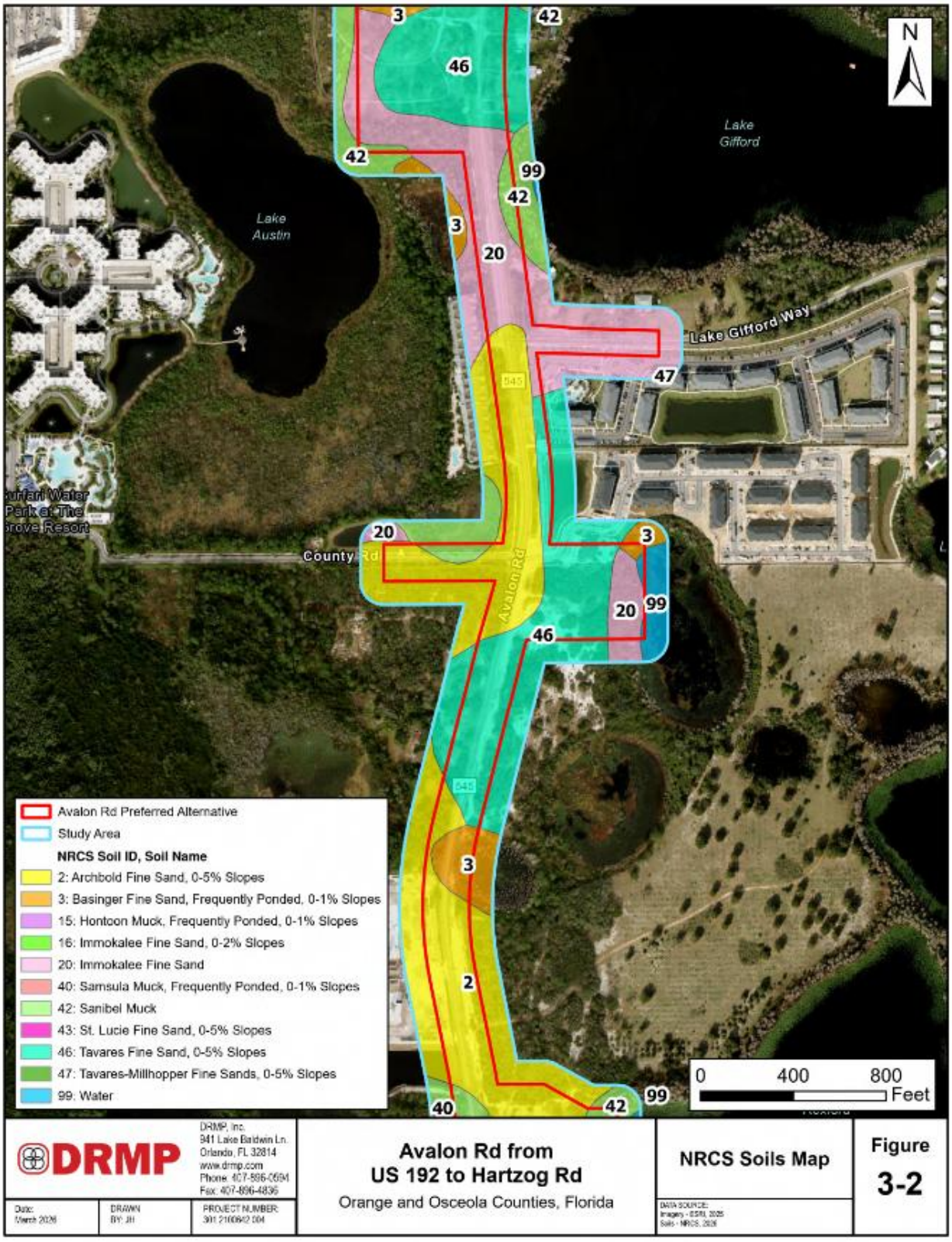

Figure 3-2. NRCS Soils Map

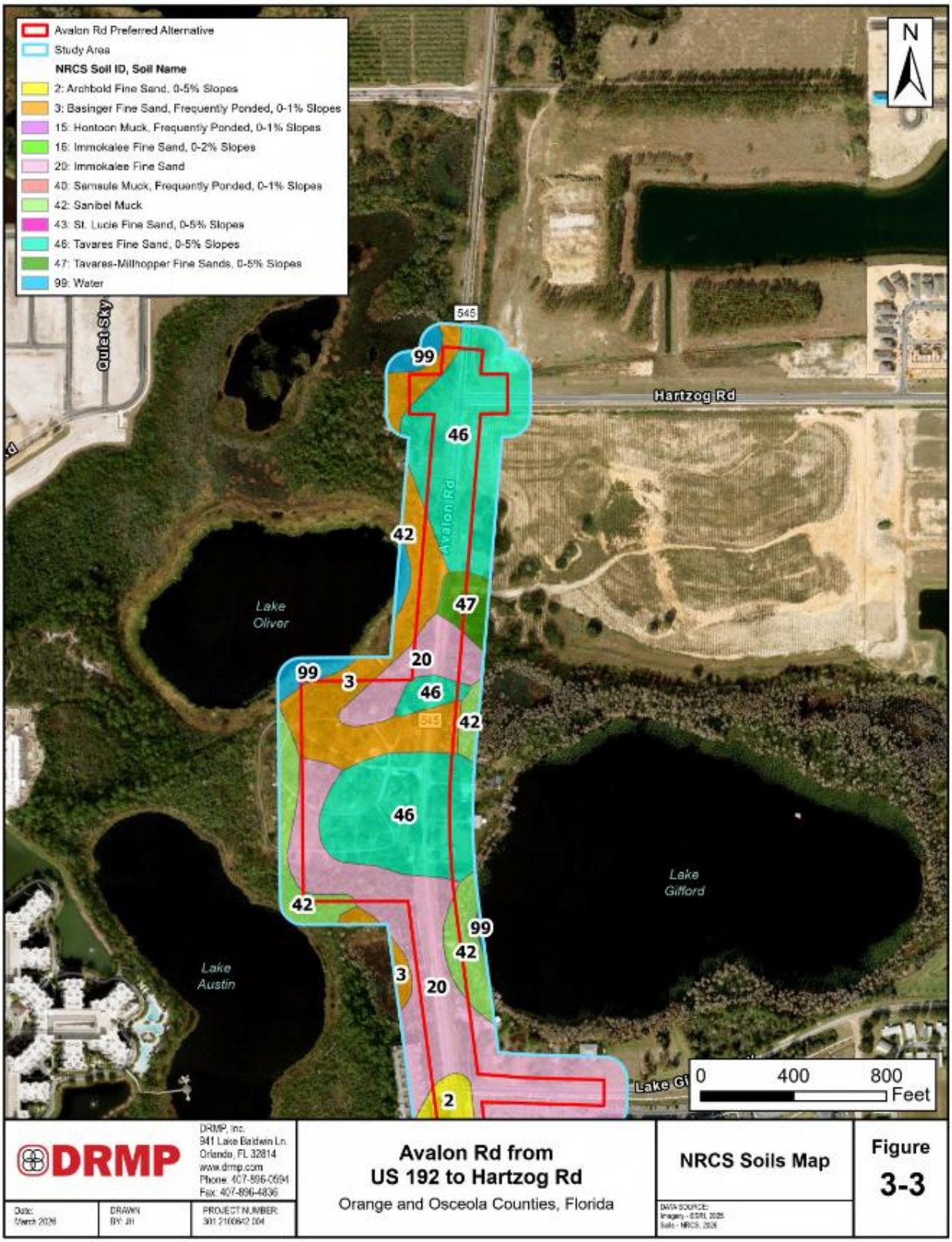

Figure 3-3. NRCS Soils Map

1.4.3 Public and Other Conservation Lands

According to the Florida Natural Areas Inventory (FNAI) Florida Conservation Lands (2024) GIS data, the public land titled "Westside Conservation Easements" is located south of US 192 and the study area (**Figure 4, Conservation and Public Lands Map**). The proposed widening will not impact any public land within or adjacent to the study area.

A review of the Orange and Osceola Counties GIS data for Environmental Easement Data (2024) was conducted and revealed that four (4) conservation easements (CE) occur within the study area (**Figure 4**). Two (2) CEs occur within the Preferred Alternative. The proposed widening will impact 0.25 acres of CE No. 040121-28-CE1, granted by the Grove Resort Community Development District, and 0.21 acres of CE No. 980522-3-CE1, granted by Delmar Properties, Inc. Both CEs were permitted under the SFWMD, and each will require a permit modification to release the CEs.

1.4.4 Farmlands

According to the U.S. Department of Agriculture *Soil Data Access (SDA) Prime and Other Important Farmlands* database, two (2) soil types within the study area are considered "Farmland of Unique Importance": Map Unit 46 – Tavares Fine Sand, 0-5% Slopes and Map Unit 47 – Tavares-Millhopper Fine Sands, 0-5% Slopes. These areas are depicted within **Figure 4.** Although these areas are classified as farmlands, they are not actively being used for agricultural purposes. Therefore, the Preferred Alternative will not impact any farmlands.

1.4.5 Wild and Scenic Rivers

A review of the National Park Service (NPS) Nationwide River Inventory (2026) was conducted as a part of this Natural Resources Evaluation. No rivers within the Nationwide River Inventory or National Wild and Scenic River System via the U.S. Department of Agriculture Forest Service were documented within the Preferred Alternative.

1.4.6 Other Natural Features

As a part of this study, other natural features were further evaluated using SFWMD, FDEP, and Orange County GIS databases and literature for spring and karst features within and adjacent to the study area. Based on this evaluation, the study area is not located within or adjacent to any spring or karst features.

The preferred alignment will result in impacts to several Waterbody IDs (WBIDs) including Upper Kissimmee (WBID No. 3170F5), Rexford Lake (WBID No. 3170FC), Lake Gifford (WBID No. 3170FB), and Lake Oliver (3170FA). The Water Quality Impact Evaluation Checklist can be found in **Appendix A.**

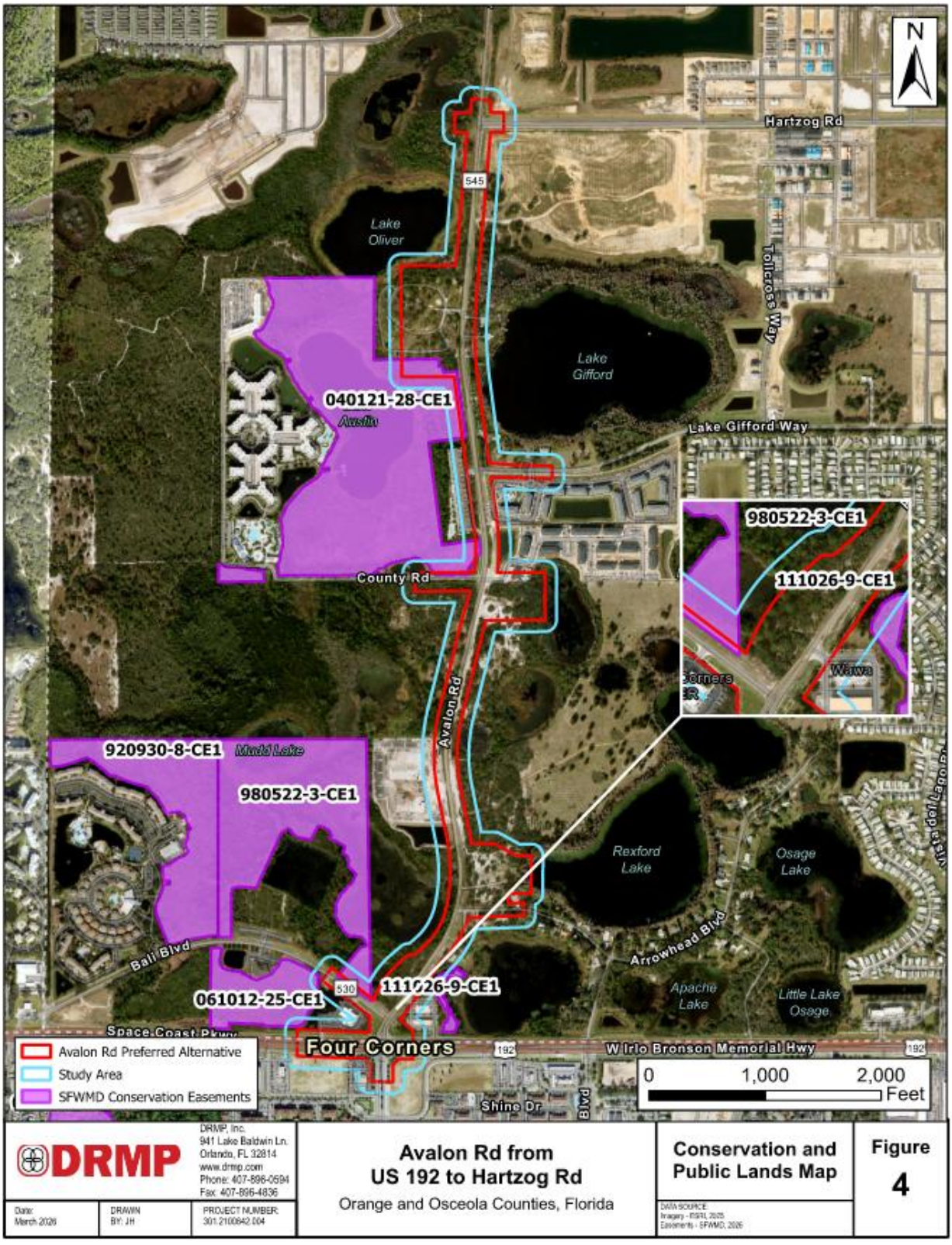

Figure 4. Conservation and Public Lands Map

2.0 PROTECTED SPECIES AND HABITAT

2.1 Introduction

Protected species refers to plant and animal species that are protected by law, regulation or rule. The protected species and habitat discussed in this document include those listed in accordance with the Endangered Species Act of 1973 (ESA), as amended (50 Code of Federal Regulations (CFR) 17); critical habitat as defined in the ESA (16 United States Code (USC) § 1532); Chapter 68A-27, Florida Administrative Code (FAC), Florida Endangered and Threatened Species List; Chapter 5B-40, FAC, Regulated Plant Index; and United States Migratory Bird Act, the Bald and Golden Eagle Protection Act.

Coordination with the USFWS Florida Ecological Services Office and the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) Southeast Regional Office will be required for potential impacts to federally protected species per Section 7 of the ESA. For state-protected species, the Florida Fish and Wildlife Conservation Commission (FWC) oversees protection of listed wildlife, and the Florida Department of Agriculture and Consumer Services (FDACS) oversees the protection of native plants.

This report evaluates impacts to protected species and critical habitat with potential to occur within the project study area. The following sections describe the methodology used to assess the potential for occurrence of protected species and to identify the effects that implementation of the Preferred Alternative may have on protected species.

2.2 Methodology

Prior to a field review, ecologists performed a Geographic Information System (GIS) database and literature review to identify protected species or habitat that have been documented within and adjacent to the study area. Referenced materials included, but were not limited to, the following data sources:

- Current and historical aerial photography;
- USFWS consultation area GIS data layers;
- USFWS Information for Planning and Consultation (IPaC) website (accessed 2026);
- Florida Natural Areas Inventory (FNAI) Biodiversity Matrix (accessed 2026);
- USFWS and NOAA critical habitat maps and GIS layers;
- FWC Wildlife Observations:
    - Black Bear Road Mortality (2023);
    - Black Bear Related Calls (2023); and
    - Wading Bird Rookeries (2020).
- FWC Historical Waterbird Colony Locator (accessed 2026);
- FWC Critical Wildlife Areas (2022); and
- Audubon's Center for Birds and Prey EagleWatch Program (2026).

The species listed below in **Table 4** have the potential to occur within the region or the study area. Based on the field review conducted by ecologists on March 11, 2026, these species were evaluated for their potential of occurrence within the study area and those determinations are included within **Table 4**. The relevant protected species occurrence GIS data and results of the field review are shown on **Figure 5, Protected Species Map**.

Based on the field reviews conducted by ecologists in March 2026, the potential of species' occurrence within the study area was classified as "none", "low," "moderate," "high," or "observed":

- None: Species have not been documented in the counties and the study area has no suitable habitat.
- Low: Species has been documented in the counties, but there are no documented occurrences near the study area and the study area has limited or suboptimal suitable habitat.
- Moderate: Species has been documented in the counties and potentially suitable habitat occurs in the study area; however, the species was not observed.
- High: Species has been documented in and/or near the study area and suitable habitat occurs in the study area; however, the species was not observed.
- Observed: Species was observed within or near the study area during the field review.

Species assigned with a "none" or "low" potential of occurrence are not described further unless the study area occurs within the USFWS Consultation Area or critical habitat of that species.

Table 4: Protected Species and their Potential for Occurrence within the Study Area

Protected Species		Jurisdictional Agency		Potential of Occurrence
Common Name	**Scientific Name**	**USFWS/ NMFS**	**FWC/ FDACS**	
FISH				
Bluenose Shiner	*Pteronotropis welaka*	-	T	Low
REPTILES				
American alligator	*Alligator mississippiensis*	T (S/A)	T (S/A)	Low
Blue-tailed mole skink	*Eumeces egregious lividus*	T	T	Moderate
Eastern indigo snake	*Drymarchon couperi*	T	T	Moderate
Florida pine snake	*Pituophis melanoleucus mugitus*	-	T	Moderate
Gopher tortoise	*Gopherus polyphemus*	-	T	High
Sand skink	*Plestiodon reynoldsi*	T	T	Moderate
Short-tailed snake	*Stilosoma extenatum*	PT	-	Low
Southern hognose snake	*Heterodon simus*	PT	-	Low
BIRDS				
Bald eagle	*Haliateetus leucocephalus*	BGEPA/ MBTA	68A-16.002 FAC*	Moderate
Crested caracara	*Caracara plancus spp. audubonnii*	T	T	Moderate
Eastern black rail	*Laterallus jamaicensis spp. jamaicensis*	T	T	Low

Protected Species		Jurisdictional Agency		Potential of Occurrence
Common Name	Scientific Name	USFWS/ NMFS	FWC/ FDACS	
Everglade snail kite	*Rostrhamus sociabilis spp. plumbeus*	E	E	Moderate
Florida burrowing owl	*Athene cunicularia spp. floridana*	-	T	Moderate
Florida sandhill crane	*Antigone canadensis spp. pratensis*	-	T	Observed
Florida scrub-jay	*Aphelocoma coerulescens*	T	T	Moderate
Little blue heron	*Egretta caerulea*	-	T	Moderate
Red-cockaded woodpecker	*Dryobates borealis*	T	T	Low
Roseate spoonbill	*Platalea ajaja*	-	T	Moderate
Tricolored heron	*Egretta tricolor*	-	T	Moderate
Wood stork	*Mycteria americana*	-	-	Moderate
MAMMALS				
Florida black bear	*Ursus americanus floridanus*	-	68A-4.009, FAC**	Moderate
Florida panther	*Puma concolor coryi*	E	E	Low
Tricolored bat	*Perimyotis subflavus*	PE	-	Moderate
INSECTS				
Monarch butterfly	*Danaus plexippus*	PT	-	Low
PLANTS				
Ashe's savory	*Calamintha ashei*	-	T	Low
Avon Park rabbit-bells	*Crotalaria ayonensis*	E	E	Moderate
Beautiful pawpaw	*Deeringothamnus pulchellus*	E	E	Low
Britton's beargrass	*Nolina brittoniana*	E	E	Moderate
Butterfly orchid	*Encyclia tampensis*	-	-	Moderate
Carter's warea	*Warea carteri*	E	E	Low
Celestial lily	*Nemastylis floridana*	-	E	Moderate
Chapman's sedge	*Carex chapmannii*	-	T	Low
Cinnamon fern	*Osmunda cinnamomeum*	-	-	Moderate
Clasping warea	*Warea amplexifolia*	E	E	Low
Comp polypody	*Pecluma ptilota*	-	E	Low
Cutthroatgrass	*Coelataenia abscissa*	-	E	Low
Florida beargrass	*Nolina atopocarpa*	-	T	Low
Florida blazing star	*Liatris ohlingerae*	E	E	Low

Protected Species		Jurisdictional Agency		Potential of Occurrence
Common Name	Scientific Name	USFWS/ NMFS	FWC/ FDACS	
Florida bonamia	*Bonamia grandiflora*	T	E	Moderate
Florida jointweed	*Polygonella basiramia*	E	E	Low
Florida loosestrife	*Lythrum flagellare*	-	E	Low
Florida spiny-pod	*Matelea floridana*	-	E	Moderate
Florida willow	*Salix floridana*	-	E	Low
Garrett's scrub balm	*Dicerandra christmanii*	E	E	Low
Giant orchid	*Pteroglossaspis ecristata*	-	T	Low
Green-fly orchid	*Epidendrum conopseum*	-	-	Low
Hand fern	*Ophioglossum palmatum*	-	E	Low
Hartwrightia	*Hartwrightia floridana*	-	T	Low
Highlands scrub hypericum	*Hypericum cumulicola*	E	E	Moderate
Lewton's polygala	*Polygala lewtonii*	E	E	Low
Many-flowered grass-pink	*Calopogon multiflorus*	-	T	Low
Narrowleaf naiad	*Najas filifolia*	-	T	Low
Needle palm	*Rhapidophyllum hystrix*	-	-	Low
Nodding pinweed	*Lechea cernia*	-	T	Moderate
Paper-like nailwort	*Paronychia chartacea spp. chartacea*	T	E	Moderate
Papery whitlow-wort	*Paronychia chartacea*	T	T	Moderate
Perforate reindeer lichen	*Cladonia perforata*	E	E	Low
Piedmont jointgrass	*Coelorachis tuberculosa*	-	T	Low
Pine pinweed	*Lechea divaricata*	-	E	Moderate
Plume polypody	*Pecluma plumula*	-	E	Moderate
Pygmy fringe-tree	*Chionanthus pygmaeus*	E	E	Moderate
Redmargin zephyrlily	*Zephyranthes simpsonii*	-	T	Moderate
Royal fern	*Osmunda regalis*	-	-	Observed
Sand butterfly pea	*Centrosema arenicola*	-	E	Moderate
Saw palmetto	*Serenoa repens*	-	-	Observed
Sandlace	*Polygonella myriophylla*	E	E	Moderate
Scrub bluestem	*Schizachyrium niyeum*	-	E	Low
Scrub buckwheat	*Erigonum longifolium spp. ghnaphailfolium*	T	E	Low

Protected Species		Jurisdictional Agency		Potential of Occurrence
Common Name	Scientific Name	USFWS/ NMFS	FWC/ FDACS	
Scrub lupine	*Lupinus aridorum*	E	E	Low
Scrub mint	*Dicerandra frutescens*	E	E	Moderate
Scrub pigeon-wing	*Clitoria fragrans*	T	E	Low
Scrub plum	*Prunus geniculata*	E	E	Low
Scrub stylisma	*Stylisma abdita*	-	E	Moderate
Short-leaved rosemary	*Conradina brevifolia*	E	E	Moderate
Small's jointweed	*Polygonella myriophylla*	E	E	Moderate
Staghorn clubmoss	*Lycopodiella cernua*	-	-	Moderate
Star anise	*Illicium parviflorum*	-	E	Low
Yellow fringeless orchid	*Platanthera integra*	-	E	Low

Definitions:
E = Endangered, PE=Proposed Endangered, T = Threatened, PT=Proposed Threatened, SSC=Species of Special Concern, T (S/A)= T(S/A) =Threatened due to Similarity of Appearance
* Removed from Florida's Endangered and Threatened Species List in 2008, but is still protected under the Bald and Golden Eagle Protection Act (BGEPA), Migratory Bird Treaty Act (MBTA), and FAC.
**Removed from Florida's Endangered and Threatened Species List in 2012, but still protected under the FAC.

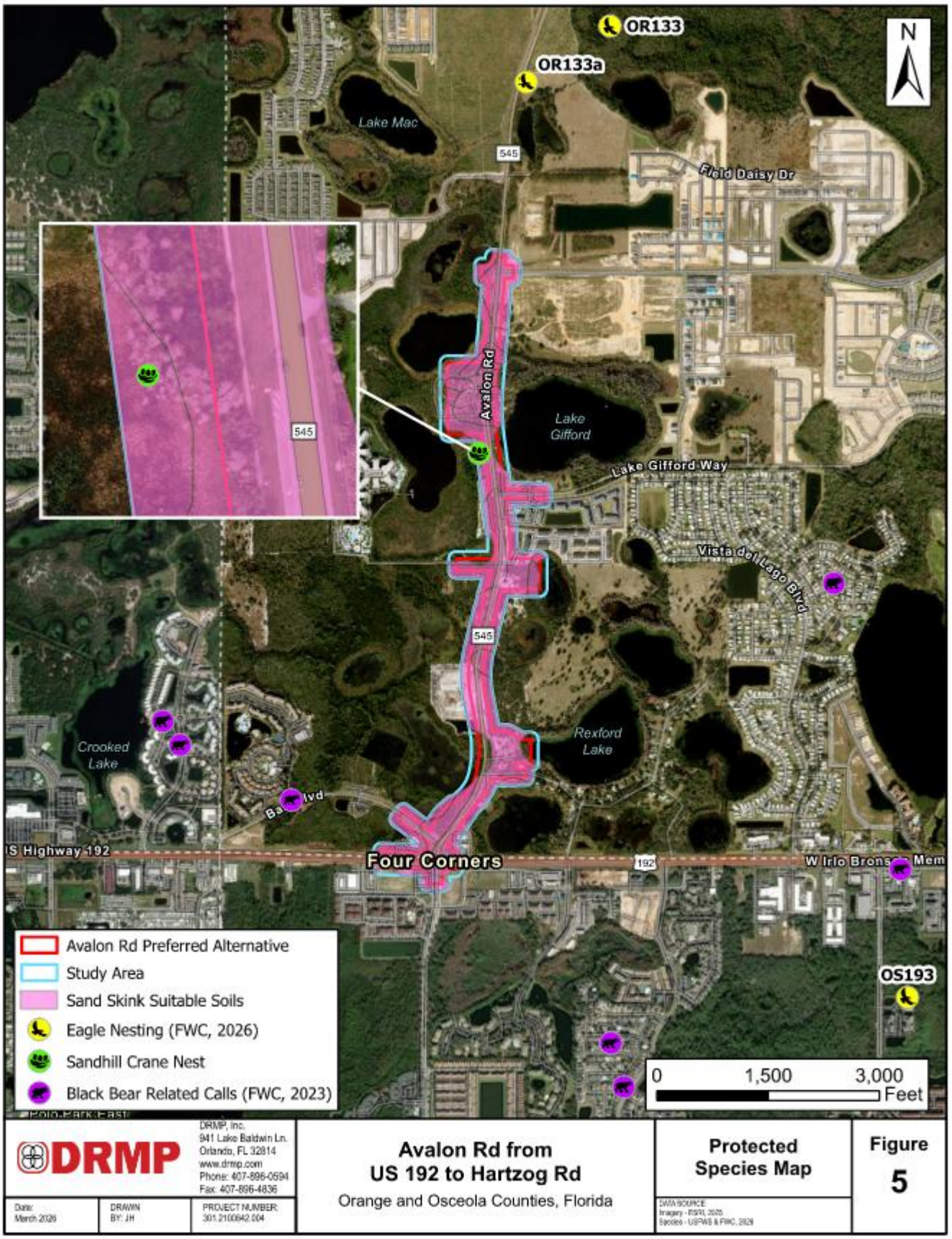

Figure 5. Protected Species Map

2.3 Results

The following subsections describe the federally listed species observed, identified to have a "moderate" or "high" potential of occurrence within the study area, as listed above in **Table 4**, or the project occurs within the species' USFWS Consultation Area, critical habitat or focus area.

2.3.1 Reptiles

Blue-Tailed Mole Skinks and Sand Skinks

The blue-tailed mole skink and sand skink are listed by the USFWS and FWC as threatened. The study area is located within the USFWS designated blue-tailed mole skink and sand skink Consultation Areas. Skink habitat consists of loose sand found in sandhills and xeric hammocks, oak and sand pine scrubs, and turkey oak barrens. These skinks occur on Florida's central ridges requiring appropriate elevation and soil types. According to the *Peninsular Florida Species Conservation and Consultation Guide* (USFWS, 2020), skink habitat includes skink soils at or above 82 feet above sea level. Skink soils are defined as one of the following: Apopka, Arredondo, Archbold, Astatula, Basinger, Candler, Daytona, Duette, Florahome, Gainesville, Hague, Immokalee, Kendrick, Lake, Millhopper, Orsino, Paola, Placid, Pomello, Pompano, Satellite, Samsula, Smyrna, St. Lucie, Urban Land, Tavares, Zolfo, and Zuber soil series.

A review of the FDEP elevation data (2023) and NRCS soil data (2026) shows that the Preferred Alternative lies within areas that meet the USFWS elevation and soil requirement for skink habitat. The March 2026 field review confirmed the presence of suitable habitat; therefore, coordination with the USFWS will be required to determine potential impacts to blue-tailed mole skinks and sand skinks.

Eastern Indigo Snake

The eastern indigo snake is listed by the USFWS as threatened. This species uses a wide variety of habitats including pine flatwoods, scrubby flatwoods, high pine, dry prairie, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields, coastal dunes, and human-altered habitats. They are known to winter in gopher tortoise burrows. Following the *Programmatic Eastern Indigo Snake Effect Determination Key* (2013) for the North Florida Ecological Services Office:

A. The proposed build alternative is not located solely in open water or saltmarsh;
B. The proposed build alternative will be conditioned to follow the USFWS's *Standard Protection Measures for the Eastern Indigo Snake*; and
C. Gopher tortoise burrows, holes, cavities, or refugia are assumed to be present within the study area; available to be used by eastern indigo snake.
D. The project is anticipated to impact approximately 30 acres of xeric habitat or more than 25 active and inactive gopher tortoise burrows; therefore, consultation with the USFWS is required.

A copy of the *Programmatic Eastern Indigo Snake Effect Determination Key* is found in **Appendix B**. Orange County commits to implementing the USFWS's *Standard Protection Measures for the Eastern Indigo Snake* (**Appendix C**) during construction. Therefore, it is anticipated the Preferred Alternative "**may affect"** the eastern indigo snake (A>B>C>D).

2.3.2 Birds

Crested Caracara

The Audubon's crested caracara (caracara) is listed as threatened by the USFWS and FWC. The caracara is a large, distinctive raptor with a large head, black cap, and crest. The caracara is strongly associated with open habitats, preferring large expanses of pasture, grasslands, or prairies with numerous shallow ponds and sloughs with small clumps of cabbage palms or live oaks to utilize for nesting. Potentially suitable habitat was documented within the study area during the March 2026 field reviews, and the study area falls within the USFWS crested caracara Consultation Area. It is anticipated that a formal survey will be required for the Preferred Alternative. Coordination with the USFWS will be required to determine appropriate survey methodology.

Everglade Snail Kite

The Everglade snail kite is listed by the USFWS and FWC as endangered. This species has a highly specific diet, which is made up exclusively of apple snails (*Pomacea paludosa*). Everglade snail kite habitat consists of shallow freshwater marshes and the grassy shorelines of lakes where apple snails are abundant. Everglade snail kites require clear and open foraging areas free of dense vegetation so they can visually search for apple snails. Nearly continuous flooding of wetlands supports apple snail populations that sustain foraging by snail kites.

Although the study area falls within the USFWS Consultation Area for the Everglade snail kite, it is outside of designated Critical Habitat for the species. No Everglade snail kites or apple snails were observed within the study area during the March 2026 field survey; therefore, it is anticipated that the Preferred Alternative will result in a **"not likely to adversely affect**" determination for the Everglade snail kite.

Florida Scrub-Jay

The Florida scrub-jay is listed as threatened by the USFWS and FWC. It is the only species of bird that is endemic to Florida. Scrub-jays prefer low-growing sand pine and xeric oak scrub as well as scrubby flatwoods, which occur in the highest and driest areas of Florida. The study area is located within the USFWS Florida scrub-jay Consultation Area and suitable habitat was documented during the March 2026 field survey. It is anticipated that a formal survey will be required for the Preferred Alternative. Coordination with the USFWs will be required to determine appropriate survey methodology.

Red-cockaded Woodpecker

The red-cockaded woodpecker (RCW) is listed by the USFWS and FWC as endangered. RCW inhabits pine stands or pine-dominated forests with little to no understory and numerous old growth pines, particularly long-leaf pines (*Pinus palustris*). It excavates cavities in the living parts of pine trees, typically choosing trees greater than eighty (80) years old. The nearest known location of RCW is 2.34 miles east of the study area adjacent to Osceola Parkway and the Walt Disney World Resort Ponds. Although the study area is located within the USFWS Consultation Area for the RCW, the Preferred Alternative contains no suitable habitat; therefore, the Preferred Alternative will result in a **"not likely to adversely affect"** determination for the RCW.

2.3.3 Mammals

Tricolored Bat

As of September 14, 2022, the USFWS proposed to list the tricolored bat as an endangered species under the ESA. Designated critical habitat is not proposed for the tricolored bat at this time. Tricolored bats are found

throughout Florida, however, are more common in the northern half of the state. The tricolored bat populations have been drastically impacted by a fungal infection, white nose syndrome, that affects hibernating bat colonies. The small, insect-eating bats prefer to roost in mature hardwood forests, caves, and manmade structures. When tree hollows or other naturally occurring roosts are unavailable, the bats have been documented roosting in man-made structures such as road culverts or abandoned wells. Tricolored bats forage in waterways, forests, and agricultural areas where small insects such as mosquitoes, leafhoppers, or small beetles can be found. The study area contains suitable roosting and foraging habitat for the tricolored bat. Coordination with the USFWS will be required to determine the potential effect determination for the tricolored bat once a final listing decision has been made.

2.3.4 Federally Protected Plants

Federally protected plants are protected under the ESA. Upon review of FNAI data, federally listed plant species known to occur within Orange and Osceola Counties have been identified. Based on the habitat requirements of the plant species listed in Table 4, eleven (11) federally listed species have a "Moderate" potential of occurrence within the study area and are discussed below.

Avon Park Rabbit-Bells

Avon Park rabbit-bells is federally and state listed as endangered. This plant has yellow pea-like flowers with nearly round leaves. This plant is found in bare patches of white sand in the Lake Wales Ridge scrub, disturbed areas, or in partial shade. No Avon Park rabbit-bells were identified during the field review; therefore, **"no effect"** is anticipated for the Avon Park rabbit-bells.

Britton's Beargrass

Britton's beargrass is federally and state listed as endangered. This plant has long, stiff leaves growing up to 4.5 feet tall. This plant is found in scrubs, sandhills, and xeric hammocks. Although suitable habitat for the Britton's beargrass is present within the Preferred Alternative, no individuals were observed during the field review; therefore, **"no effect"** is anticipated for the Britton's beargrass.

Florida Bonamia

Florida bonamia is federally listed as threatened and state listed as endangered. This plant has a vine with small leaves and purple-white flowers protruding from the stem. This species is commonly found in disturbed areas within white sand scrub or within scrub oaks, sand pine, and lichens. Although suitable habitat for the Florida bonamia is present within the Preferred Alternative, no individuals were observed during the field review; therefore, **"no effect"** is anticipated for the Florida bonamia.

Highlands Scrub Hypericum

Highlands scrub hypericum is federally and state listed as endangered. This plant has wiry stems with yellow forked flowers and small, rolled leaves. This plant occurs in open patches within white sand scrubs and is often abundant after fires. Although suitable habitat for the Highlands scrub hypericum is present within the Preferred Alternative, no individuals were observed during the field review; therefore, **"no effect"** is anticipated for the Highlands scrub hypericum.

Paper-Like Nailwort

Paper-like nailwort is federally listed as threatened and state-listed as endangered. This small, bush-like plant has whirled leaves and is a bright shade of green. It is often found in well-drained, sandy habitats, and sandhill ecosystems. Although suitable habitat for the paper-like nailwort is present within the Preferred Alternative,

no individuals were observed during the field review; therefore, **"no effect"** is anticipated for the paper-like nailwort.

Papery Whitlow-Wort

Papery whitlow-wort is federally and stated listed as threatened. This small plant has clumps of circular leaves, looking similarly to sea grape (*Coccoloba uvifera*) up close. This species is found in well-drained, sandy habitats within scrub and sandhill ecosystems. Although suitable habitat for the papery whitlow-wort is present within the Preferred Alternative, no individuals were observed during the field review; therefore, **"no effect"** is anticipated for the papery whitlow-wort.

Pygmy Fringe-Tree

Pygmy fringe-tree is federally and state listed as endangered. This small tree has gray twigs and leathery, yellow-green leaves. Clusters of white flowers are also present. This species is found in scrub, sandhills, and xeric hammocks. Although suitable habitat for the pygmy fringe-tree is present within the Preferred Alternative, no individuals were observed during the field review; therefore, **"no effect"** is anticipated for the pygmy fringe-tree.

Sandlace

Sandlace is federally and state listed as endangered. This shrub has red stems, green finger-like leaves, and white flowers with clusters of petals. It is commonly found in scrub and sandhill habitats. Although suitable habitat for the sandlace is present within the Preferred Alternative, no individuals were observed during the field review; therefore, **"no effect"** is anticipated for the sandlace.

Scrub Mint

Scrub mint is federally and state listed as endangered. The scrub mint has white and purple orchid-like flowers with visible stamen. The leaves are alternate on the stem in a bushy configuration. The scrub mint is commonly found in Florida scrub habitat. Although suitable habitat for the scrub mint is present within the Preferred Alternative, no individuals were observed during the field review; therefore, **"no effect"** is anticipated for the scrub mint.

Short-Leaved Rosemary

Short-leaved rosemary is federally and state listed as endangered. This herb has bright green leaves with a gray-green tint on the underside. The leaves are clumped together in a whirling position on the stem. Short-leaved rosemary is commonly found in scrub habitat. Although suitable habitat for the short-leaved rosemary is present within the Preferred Alternative, no individuals were observed during the field review; therefore, **"no effect"** is anticipated for the short-leaved rosemary.

Small's Jointweed

Small's jointweed is federally and state listed as endangered. This shrub has sprawling branches with small, white flowers and no petals protruding from thin stems. This shrub is found in open, sandy areas within scrub. Although suitable habitat for the small's jointweed is present within the Preferred Alternative, no individuals were observed during the field review; therefore, **"no effect"** is anticipated for the small's jointweed.

2.3.5 Critical Habitat

As a part of this study, critical habitat was further evaluated using USFWS GIS databases and literature within and adjacent to the study area. Based on this evaluation, the study area is not located within or adjacent to any critical habitat areas for listed species.

2.4 State Listed Species

The sections that follow describe the state-listed species with a moderate to high potential of occurrence within the study area, as listed above in **Table 4.**

2.4.1 Reptiles

Gopher Tortoise

The gopher tortoise is listed as threatened by the FWC. Gopher tortoises are found in dry habitats such as sandhills, xeric oak habitats, and dry pine flatwoods. More than three hundred and fifty (350) other commensal species benefit from the gopher tortoises' extensive burrows. Two (2) commensal species, protected at the state and federal level, have the potential to occur within the study area: the Eastern indigo snake and Florida pine snake. There are portions of the study area that contain suitable habitat for the gopher tortoise.

A gopher tortoise survey of 100% suitable habitat will be conducted within the project footprint prior to construction, following the *Gopher Tortoise Permitting Guidelines* (FWC, revised 2023). For any gopher tortoise burrows located within the Preferred Alternative footprint, a gopher tortoise relocation permit will be obtained from the FWC, and the impacted gopher tortoise burrows will be excavated and relocated prior to construction. With the above commitments and removal of all impacted potentially occupied gopher tortoise burrows, the Preferred Alternative will result in **no adverse effect anticipated** for the gopher tortoise.

Florida Pine Snake

The Florida pine snake is listed by the FWC as threatened. The Florida pine snake is a large, stocky, tan colored snake with a relatively small head. This species spends most of its time below ground with occasional surface activity from spring through fall. Their preferred habitat includes relatively open canopies with dry sandy soils, in which they burrow and often coexist with pocket gophers and gopher tortoises. The Florida pine snake was not observed during site assessments of the study area. The Florida pine snake is considered a cryptic species and therefore, field surveys are not recommended to document presence within a project footprint. In accordance with the current FWC *Gopher Tortoise Permitting Guidelines* (revised 2023), a survey will be conducted for gopher tortoise burrows prior to construction and will acquire a FWC Gopher Tortoise Conservation Permit for gopher tortoises and associated commensal species, including the Florida pine snake, prior to construction. With the implementation of these measures, it has been determined that the proposed project will result in **no adverse effect anticipated** for the Florida pine snake.

2.4.2 Birds

Florida Burrowing Owl

The Florida burrowing owl is listed as threatened by the FWC. The Florida burrowing owl is a pint-sized bird that lives in open, treeless areas. The burrowing owl spends most of its time on the ground, where its sandy brown plumage provides camouflage from potential predators. The Florida burrowing owl inhabits open prairies in Florida that have very little understory vegetation. These areas include golf courses, airports, pastures, agriculture fields, and vacant lots.

There are no known Florida burrowing owl locations within the study area according to the *Species Action Plan for the Florida Burrowing Owl* (FWC, 2013). Although burrowing owls were not observed during the field reviews, suitable habitat is present within the study area. A Florida burrowing owl survey, in accordance with the *Species Conservation Measures and Permitting Guidelines for the Florida Burrowing Owl* (FWC, 2018), will be conducted during design and permitting to determine if any burrowing owls exist within the project footprint. If burrowing owls are present, an incidental take permit and mitigation will be required from the FWC for potential impacts. Therefore, the Preferred Alternative will result in **no adverse effect anticipated** on the Florida burrowing owl.

Florida Sandhill Crane

The Florida sandhill crane is listed as threatened by the FWC. Florida sandhill cranes forage in a variety of open habitats, including shallow herbaceous wetlands, improved pastures, prairies, open pine forests, croplands, golf courses, airports, and sod farms. They nest and roost in shallow freshwater marshes and these locations vary from year to year based on fluctuating water levels. During the March 2026 field review, two (2) adult and two (2) juvenile Florida sandhill cranes and their nest were observed within the study area (**Figure 5**).

During the design and permitting phase, a formal survey for Florida sandhill cranes will be conducted following the *Species Conservation Measures and Permitting Guidelines for the Sandhill Crane* (FWC, 2016), and coordination with the FWC will be initiated to avoid and mitigate all adverse impacts to the species. Therefore, the Preferred Alternative will have **no adverse effect anticipated** for the Florida sandhill crane.

State-Listed Wading Birds

Wetlands and surface waters within the study area contain suitable foraging habitat for two (2) state-listed wading bird species: little blue heron and tricolored heron. During the field review in March 2026, no nesting activity for wading birds was observed during the study area. The FWC Historic Waterbird Colony Locator database indicates that the nearest wading bird colony is 14.78 miles east of the study area located in Lake Mary Jane. Although modification of suitable foraging habitat is anticipated from the Preferred Alternative, wetland mitigation provided through the Environmental Resource Permit (ERP) process will be considered sufficient to meet the requirements of Rule 68A-27.007, F.A.C., and no further FWC authorization for take of foraging habitat is required. Therefore, the Preferred Alternative will have **no adverse effect anticipated** for state-listed wading birds.

2.4.3 State-Listed Plants

The FDACS Division of Plant Industry is regulatory agency responsible for the protection of plant species that are endangered, threatened, or commercially exploited in the State of Florida. The Florida Regulated Plant Index includes all plants listed as endangered, threatened, or commercially exploited as defined in Chapter 5B-40.0055, F.A.C. According to the FNAI, and FDACS, there are forty-seven (47) state protected plant species that have the potential to occur in Orange and Osceola Counties (**Table 4**). Of those forty-seven (47) species, eight (8) have a "Moderate" potential of occurrence within the study area and are discussed below.

Celestial Lily

Celestial lily is state listed as endangered. This plant has a tall stem with small, scattered leaves. A dark blue-purple flower opens around 4 pm and closes by dusk. Celestial lily is often found in wet flatwoods, prairies, marshes, and cabbage palm hammock edges. Although suitable habitat for the celestial lily is present within the Preferred Alternative, no individuals were observed during the field review; therefore, the Preferred Alternative will have **no adverse effect anticipated** on the celestial lily.

Florida Spiny-pod

The Florida spiny-pod is state listed as endangered. This plant has large, opposite leaves with a maroon-colored flower. This species is commonly found in sandhill, upland pine, and dry hammocks. Although suitable habitat for the Florida spiny-pod is present within the Preferred Alternative, no individuals were observed during the field review; therefore, the Preferred Alternative will have **no adverse effect anticipated** on the Florida spiny-pod.

Nodding Pinweed

Nodding pinweed is state listed as threatened. This herb-like plant has long stems with alternate leaves along the entire length. The nodding pinweed is found in open, unshaded white sands of scrub and scrubby flatwoods. Although suitable habitat for the nodding pinweed is present within the Preferred Alternative, no individuals were observed during the field review; therefore, the Preferred Alternative will have **no adverse effect anticipated** on the nodding pinweed.

Pine Pinweed

Pine pinweed is state listed as endangered. This bush-like herb has slender, flowering stems arising from a dense cluster of old stems. Pine pinweed is found in dry sandy soils in openings, mainly in scrubby flatwoods. Although suitable habitat for the pine pinweed is present within the Preferred Alternative, no individuals were observed during the field review; therefore, the Preferred Alternative will have **no adverse effect anticipated** for the pine pinweed.

Plume Polypody

The plume polypody is state listed as endangered. This fern species has lance-shaped leaflets with a dark midvein. The leaflets are closer together than that of a royal fern. Plume polypody is found in floodplain forests, moist hammocks and swamps, tree bases, and occasionally on rocks. Although suitable habitat for the plume polypody is present within the Preferred Alternative, no individuals were observed during the field review; therefore, the Preferred Alternative will have **no adverse effect anticipated** for the plume polypody.

Redmargin Zephyrlily

The redmargin zephyrlily is state listed as threatened. This small plant has an orchid-like white and pink flower, with visible yellow stamens. This species is often found in mowed roadsides, pine savannas, and peaty pastures. Although suitable habitat for the redmargin zephyrlily is present within the Preferred Alternative, no individuals were observed during the field review; therefore, the Preferred Alternative will have **no adverse effect anticipated** for the redmargin zephyrlily.

Sand Butterfly Pea

Sand butterfly pea is state listed as endangered. This vine with 3 oval, leathery leaflets have purple-blue flowers with triangular lobes. This plant is found in sandhills, scrubby flatwoods, and dry upland woods. Although suitable habitat for the sand butterfly pea is present within the Preferred Alternative, no individuals were observed during the field review; therefore, the Preferred Alternative will have **no adverse effect anticipated** for the sand butterfly pea.

Scrub Stylisma

The scrub stylisma is state listed as endangered. This herb has long stems with short, hairy, alternate leaves along the stems. White funnel-shaped flowers are present on the stems. The scrub stylisma is found in dry, sandy soils in scrub and sandhills. Although suitable habitat for the scrub stylisma is present within the Preferred Alternative, no individuals were observed during the field review; therefore, the Preferred Alternative will have **no adverse effect anticipated** for the scrub stylisma.

2.5 Other Protected Species or Habitats

Bald Eagle

The bald eagle was removed from the protection of the ESA in 2007 (72 FR 37345) and from the FWC imperiled list in 2008; however, it is still protected under the U.S. Migratory Bird Act, the Bald and Golden Eagle Protection Act, and under the state bald eagle rule 68A-16.002, F.A.C. Bald eagles forage in expanses of fresh and salt water and nest in forested areas generally located along habitat edges that provide an unobstructed view of the surrounding habitat. Most bald eagle nests are relatively large and located within two (2) miles from a water source, they prefer tall pine trees but will also utilize cypress, oaks, or man-made structures such as power poles or utility towers. The FWC has monitored the population of nesting eagles since 1972; however, FWC has recently teamed with the Audubon's Center for Birds and Prey EagleWatch program. The EagleWatch program will continue to maintain and update the nesting information while assigning nest identification numbers for new nests. According to the FWC and EagleWatch data, the closest documented bald eagle nest (OR133a) is 0.43 miles north of the study area, well beyond the 660-foot protection zone (**Figure 5**). The study area contains suitable foraging and nesting habitat for the bald eagle; however, no individual or nests were observed during the field review.

Florida Black Bear

The Florida black bear is not listed by the USFWS and was removed from FWC's list of threatened species in 2012; however, the Florida black bear is still protected under the Bear Conservation Rule (68A-4.009, F.A.C.) and the FWC *Florida Black Bear Management Plan*. Suitable habitat for black bears includes a mixture of flatwoods, swamps, scrub oak ridges, bayheads, and hammocks. Suitable habitat exists within the study area; however, movement is restricted due to the network of canals, roadways, and residential development. The Florida black bear thrives in habitats that provide an annual supply of seasonally available food sources, secluded areas for denning, and some degree of protection from humans. FWC maintains a database of bear-related calls, mortality occurrences, telemetry, and release data. There are no documented bear-related calls within the study area. To avoid potential conflicts with bears during construction, the contractor will implement standard specifications for black bear and garbage and food debris will be properly removed during construction to eliminate possible sources of food that could encourage and attract bears in accordance with the *Florida Black Bear Management Plan*.

2.6 Strategic Habitat Conservation Areas

Strategic Habitat Conservation Areas (SHCA) are areas of potential habitat not currently managed for the conservation of species. In 1994, FWC biologists completed a project entitled *Closing the Gaps in Florida's Wildlife Habitat Conservation System (*Cox et al 1994), that assessed the security of rare and imperiled species on existing conservation lands in Florida. This research identified important habitat areas for imperiled

species in Florida with no conservation protection. These areas are ranked according to priority for conservation from one (1) to five (5), with one being the highest priority for conservation and five being lowest priority for conservation. Wetlands and surface waters throughout the study area have been ranked between one (1) and five (5). Surface Water 6 and the Registry on Grass Lake apartment complex have the highest ranking of five (5) throughout the project corridor. Surface Water 6 is anticipated to have minimal impacts; however, the SHCA will be minorly affected. To reduce the impact on SHCA, silt fences and turbidity barriers will be installed and maintained throughout construction. The area around the Registry on Grass Lake apartment complex has already been impacted through the development of the apartment complex. The Preferred Alternative will not impact any additional Rank five (5) SHCA than the development of the apartment complex. As most of the SHCA is located along roads, residential, and commercial areas, it is unlikely that these areas will be priorities for conservation; therefore, the Preferred Alternative will have no adverse effect on SHCA.

3.0 WETLAND EVALUATION

3.1 Introduction

This section summarizes overall existing conditions and characteristics of wetlands located within the study area. The wetland and surface water limits were evaluated by Professional Wetland Scientists (PWS) in accordance with the State Unified Wetland Delineation Methodology (Chapter 62-340, FAC) and with Federal guidelines (Corps 1987 Wetland Delineation Manual, Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (October 2008). The occurrence of hydric soil characteristics, hydrophytic vegetation, and evidence of hydrology were used to identify the existence of wetland or surface waters within the study area.

The wetlands and surface waters within the study area fall under the jurisdiction of the USACE, who regulate the discharge of dredged or fill material into Waters of the United States (WOTUS) under the CWA, and the SFWMD, who manage the state's water resources and permit activities conducted in wetlands and surface waters.

Ecologists conducted a field review on March 11, 2026, to evaluate the wetlands and surface waters within the study area. Nine (9) wetlands and seven (7) surface waters (SW) were observed within the study area (**Figure 6, Wetlands**). The wetland and surface water limits will be verified by regulatory agencies during the project design and permitting phase The wetland and surface waters evaluated are described in further detail below. Photos documenting the March 2026 field review are provided in **Appendix D.**

The analysis conducted and documented within this report is consistent with requirements of Executive Order 11990, Protection of Wetlands; USDOT Order 5660.1A, Preservation of the Nation's Wetlands; Technical Advisory T6640.8A; and the PD&E Manual Part 2, Chapter 9, Wetlands and Other Surface Waters.

3.2 Methodology

Prior to a field review, ecologists performed a GIS database and literature review to identify protected species or wetlands that have been documented within and adjacent to the study area. Referenced materials included, but were not limited to, the following data sources:

- Current and historical aerial photography;
- SFFWMD FLUCCS map data (2023);
- NRCS Soil Survey for Orange County GIS data (accessed 2026);
- USFWS National Wetland Inventory (NWI) Mapper (accessed 2026);
- Corps of Engineers Wetland Delineation Manual, 1987;
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region, 2010;
- Chapter 62-345, FAC, Uniform Mitigation Assessment Method (UMAM); and
- Chapter 62-340, FAC, Delineation of the Landward Extent of Wetlands and Surface Waters.

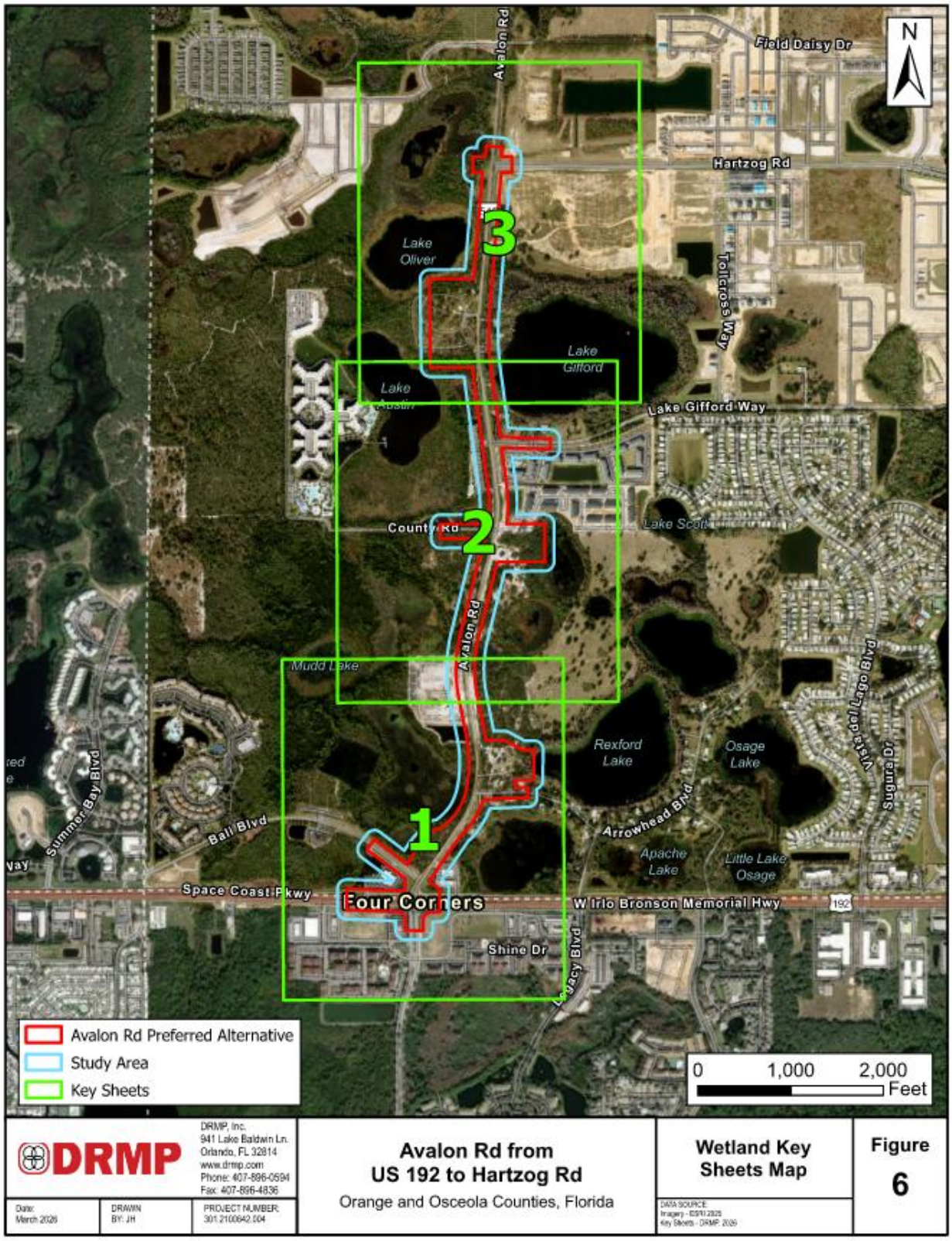

Figure 6. Wetland Key Sheets Map

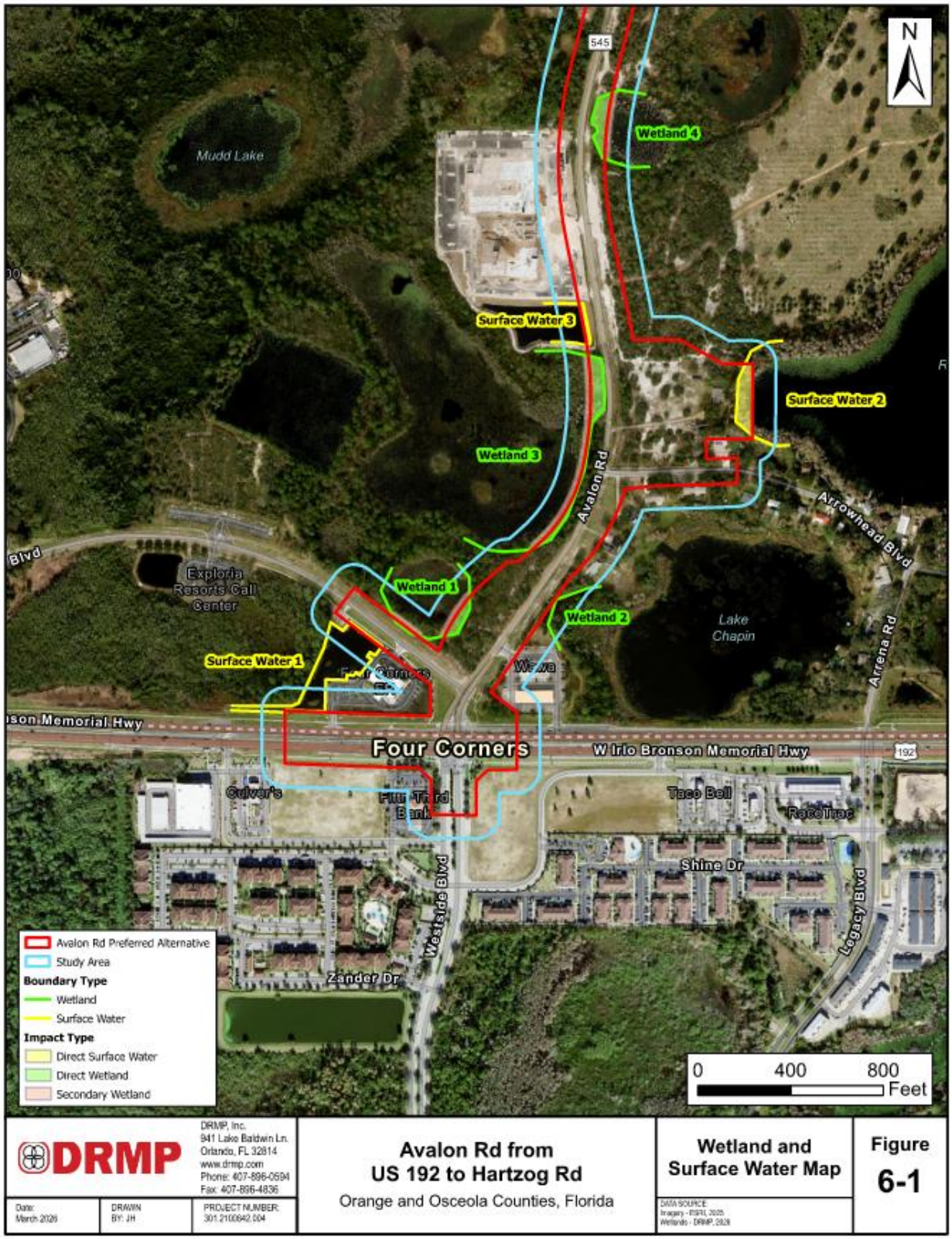

Figure 6-1. Wetland and Surface Water Map

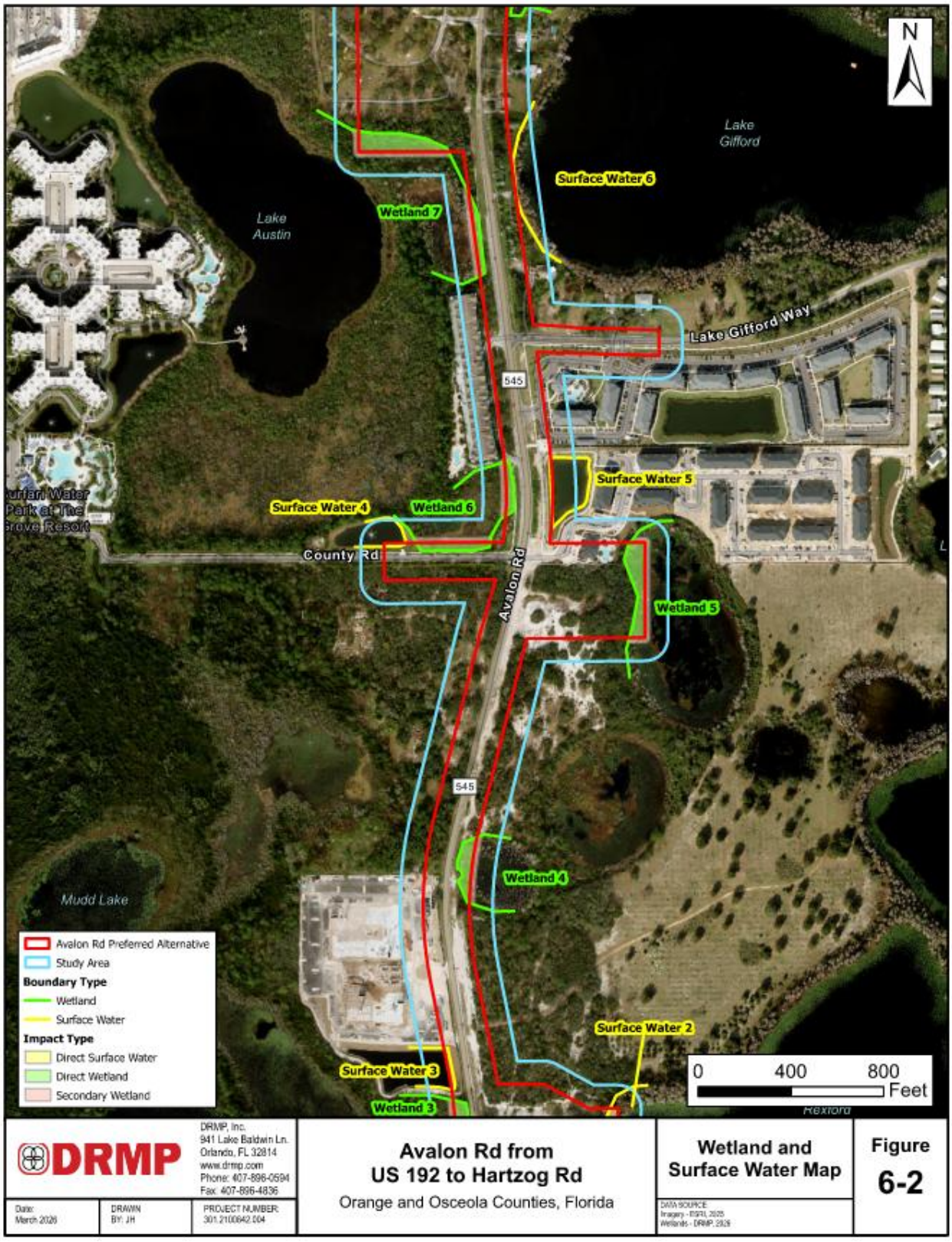

Figure 6-2. Wetland and Surface Water Map

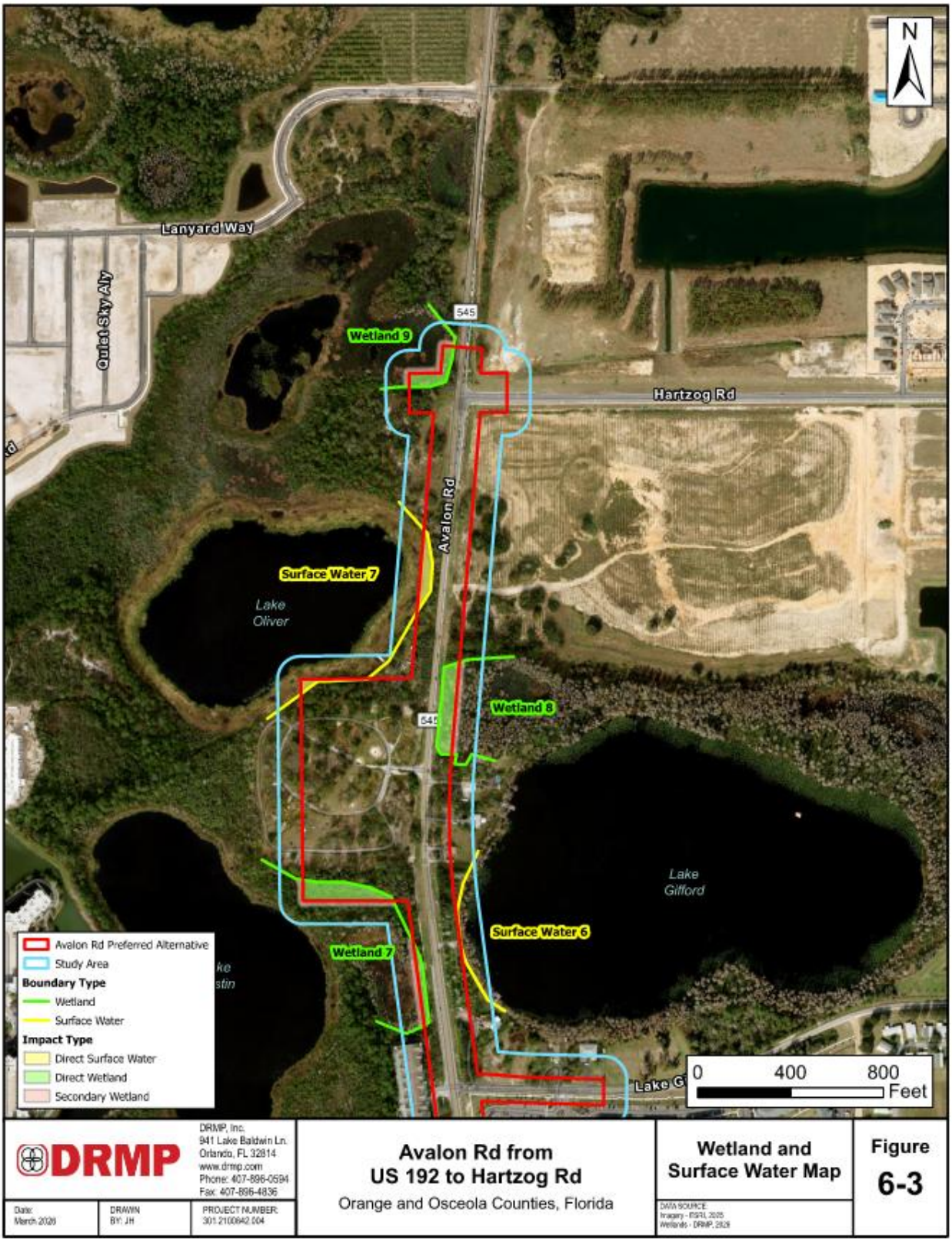

Figure 6-3. Wetland and Surface Water Map

3.3 Results

The study area includes wetlands that are hydrologically connected to multiple lakes adjacent to the study area, such as Lake Chapin, Rexford Lake, Mudd Lake, Lake Austin, Lake Gifford, and Lake Oliver. The wetlands and surface waters discussed below are located within the study area of the preferred alignment for the roadway widening.

Wetland 1

SFWMD FLUCFCS 6410: Freshwater Marshes / Graminoid Prairie – Marsh
USFWS NWI: PUBH (Palustrine, Unconsolidated Bottom, Permanently Flooded)
Wetland 1 is a freshwater marsh system located at the southern limits of the study area, along Bali Boulevard. Vegetation observed within the wetland system includes wax myrtle (*Morella cerifera*), cattail (*Typha spp.*), marsh pennywort (*Hydrocotyle umbellata*), and saw palmetto (*Serenoa repens*). Soils in the wetland area are mapped as Map Unit 20 – Immokalee Fine Sand. Hydrologic indicators including standing water, water-stained leaves, and water marks on wax myrtle were observed in this system.

Wetland 2

SFWMD FLUCFCS 6410: Freshwater Marshes / Graminoid Prairie – Marsh
USFWS NWI: PF01/3C (Palustrine, Forested, Broad-Leaved Deciduous, Broad-Leaved Evergreen, Seasonally Flooded
Wetland 2 is a freshwater marsh system hydrologically connected to Lake Chapin. Vegetation observed within the wetland system includes groundseltree (*Baccharis hamilifolia*), wax myrtle, Carolina willow (*Salix caroliniana*), bald cypress (*Taxodium distichum*), cattail, and marsh pennywort with longleaf pine (*Pinus palustris*) present on the edges. Soils in the wetland area are mapped as Map Unit 3 – Basinger Fine Sand, Frequently Ponded, 0-1% Slopes. Hydrologic indicators including standing water, water-stained leaves, and water marks on the bald cypress were observed in this system.

Wetland 3

SFWMD FLUCFCS 6410: Freshwater Marshes / Graminoid Prairie – Marsh
USFWS NWI: PUBH (Palustrine, Unconsolidated Bottom, Permanently Flooded) & PFO6F (Palustrine, Forested, Deciduous, Semipermanently Flooded)
Wetland 3 is a freshwater marsh system located across from Arrowhead Boulevard towards the southern limits of the study area. Vegetation observed within the wetland system includes saw palmetto, bald cypress, royal fern (*Osmunda regalis*), sweetbay magnolia (*Magnolia virginiana*), and maidencane (*Panicum hemitomon*). Soils in the wetland area are mapped as Map Unit 40 – Samsula Muck, Frequently Ponded, 0-1% Slopes and Map Unit 99 – Water. Hydrologic indicators including standing water and water marks on the bald cypress and sweetbay magnolia were observed in this system.

Wetland 4

SFWMD FLUCFCS 6410: Freshwater Marshes / Graminoid Prairie – Marsh
USFWS NWI: PAB1F (Palustrine, Aquatic Bed, Algal, Semipermanently Flooded)
Wetland 4 is a freshwater marsh system located across from the Registry on Grass Lake apartment complex. Vegetation observed within the system includes wax myrtle, saw palmetto, groundseltree, maidencane, spatterdock (*Nuphar advena*), Carolina willow, and red maple (*Acer rubrum*). Soils in the wetland area are mapped as Basinger Fine Sand, Frequently Ponded, 0-1% Slopes. Hydrologic indicators including standing water and water marks on the Carolina willow and red maple were observed in this system.

Wetland 5

SFWMD FLUCFCS 6410: Freshwater Marshes / Graminoid Prairie – Marsh

USFWS NWI: PEM1F (Palustrine, Emergent, Persistent, Semipermanently Flooded)

Wetland 5 is a freshwater marsh system located south of the Prose Horizons Village apartment complex. Vegetation observed within the system includes bald cypress, saw palmetto, wax myrtle, Caesar weed (*Urena lobata*), and marsh pennywort. Soils in the wetland area are mapped as Map Unit 20 – Immokalee Fine Sand and Map Unit 3 – Basinger Fine Sand, Frequently Ponded, 0-1% Slopes. Hydrologic indicators including standing water, drafted debris, and water marks on the bald cypress were observed in this system.

Wetland 6

SFWMD FLUCFCS 6172: Mixed Shrubs

USFWS NWI: PFO6F (Palustrine, Forested, Deciduous, Semipermanently Flooded) & PFO7B (Palustrine, Forested, Evergreen, Seasonally Saturated)

Wetland 6 is a freshwater marsh system located along the intersection of County Road and Avalon Road. Vegetation observed within the system includes wax myrtle, bald cypress, groundseltree, and maidencane. Soils in the wetland area are mapped as Map Unit 42 – Sanibel Muck. Hydrologic indicators including drafted debris and water marks on the bald cypress were observed in this system.

Wetland 7

SFWMD FLUCFCS 6410: Freshwater Marshes / Graminoid Prairie – Marsh

USFWS NWI: PUBH (Palustrine, Unconsolidated Bottom, Permanently Flooded)

Wetland 7 is a freshwater marsh system hydrologically connected to Lake Austin. Vegetation observed within the system includes bald cypress, royal fern, sweetbay magnolia, and wax myrtle. Soils in the wetland area are mapped as Map Unit 3 – Basinger Fine Sand, Frequently Ponded, 0-1% Slopes. Hydrologic indicators including buttressed trunks and water marks on the bald cypress were observed in this system.

Wetland 8

SFWMD FLUCFCS 6210: Cypress

USFWS NWI: PFO6F (Palustrine, Forested, Deciduous, Semipermanently Flooded)

Wetland 8 is a freshwater marsh system hydrologically connected to Lake Gilford. Vegetation observed within this system includes bald cypress, wax myrtle, bluestem (*Andropogon glomeratus*), and pine on the edges. Soils in the wetland area are mapped as Map Unit 42 – Sanibel Muck. Hydrologic indicators including buttressed trunks and water marks on the bald cypress were observed in this system.

Wetland 9

SFWMD FLUCFCS 6410: Freshwater Marshes / Graminoid Prairie – Marsh

USFWS NWI: PAB3H (Palustrine, Aquatic Bed, Rooted Vascular, Permanently Flooded)

Wetland 9 is a freshwater marsh system located across from the intersection of Hartzog Road and Avalon Road. Vegetation observed within this system include wax myrtle, sweetbay magnolia, bald cypress, maidencane, bluestem, pickerel weed (*Pontederia cordata*), and royal fern. Soils in the wetland area are mapped as Map Unit 3 – Basinger Fine Sand, Frequently Ponded, 0-1% Slopes. Hydrologic indicators include pneumatophores, standing water, stain lines on the bald cypress, and drafted debris.

Surface Water 1
SFWMD FLUCFCS 5300: Reservoirs
USFWS NWI: Not Classified
Surface Water 1 is located between US 192 and Bali Boulevard, adjacent to AdventHealth Four Corners Emergency Room. It is a large, stormwater management feature associated with the nearby development and is permanently flooded. This feature is largely an open water area with no vegetation.

Surface Water 2
SFWMD FLUCFCS 5200: Lakes
USFWS NWI: PFO1F (Palustrine, Forested, Broad-Leaved Deciduous, Semipermanently Flooded)
Rexford Lake (Surface Water 2) is located adjacent to Arrowhead Boulevard toward the southern portion of the study area. This portion of Rexford Lake is open water. The shoreline was dominated by bald cypress and pickerelweed.

Surface Water 3
SFWMD FLUCFCS 5300: Reservoirs
USFWS NWI: Not Classified
Surface Water 3 is located south of Registry on the Lake apartment complex. It is a stormwater management feature associated with the adjacent apartment complex and is permanently flooded. This feature is largely an open water area with no vegetation.

Surface Water 4
SFWMD FLUCFCS 5300: Reservoirs
USFWS NWI: PFO7B (Palustrine, Forested, Evergreen, Seasonally Saturated)
Surface Water 4 is located north of County Road toward the middle of the study area. It is a stormwater management feature associated with the adjacent roadway and is permanently flooded. This feature is largely an open water area with no vegetation.

Surface Water 5
SFWMD FLUCFCS 5300: Reservoirs
USFWS NWI: Not Classified
Surface Water 5 is located south of Prose Horizons Village apartment complex. It is a stormwater management feature associated with the adjacent apartment complex and is permanently flooded. This feature is largely an open water area with no vegetation.

Surface Water 6
SFWMD FLUCFCS 5200: Lakes
USFWS NWI: PFO6F (Palustrine, Forested, Deciduous, Semipermanently Flooded)
Lake Gifford (Surface Water 6) is located north of the residences along Lake Gifford Way towards the middle of the study area. This portion of Lake Gifford is open water. The shoreline is dominated by bald cypress and pickerelweed.

Surface Water 7
SFWMD FLUCFCS 5200: Lakes
USFWS NWI: PFO7C (Palustrine, Forested, Evergreen, Seasonally Flooded) & PAB4H (Palustrine, Aquatic Bed, Floating Vascular, Permanently Flooded)
Lake Oliver (Surface Water 7) is located south of the intersection of Avalon Road and Hartzog Road. This portion of Lake Oliver is open water. The shoreline is dominated by bald cypress, sweetbay magnolia, wax myrtle, and royal fern.

3.4 Potential Impacts

The Preferred Alternative will include the widening of the existing two-lane roadway to four 12-foot travel lanes with curb and gutter, a 22-foot raised median, a six-foot-wide sidewalk, and a 10-foot-wide multi-use path throughout the project corridor. The best-fit alignment primarily consists of working both within the existing right-of-way and acquiring additional right-of-way. Based on the Preferred Alternative, impacts to wetlands or surface waters are anticipated.

The following subsections evaluate the direct, indirect, and cumulative impacts that the Preferred Alternative has on wetlands and other surface waters.

3.4.1 Direct Impacts

The Preferred Alternative will result in unavoidable wetland and surface water impacts. Wetland and surface water impacts for the Preferred Alternative were calculated based on the estimated footprint, accounting for the proposed right-of-way width, drainage improvements and floodplain compensation areas. The Preferred Alternative and pond sites will result in approximately 3.55 acres of direct wetland impacts and 0.94 acres of surface water impacts. The calculated impacts per system are provided below in **Table 5 and Table 6**.
The Uniform Mitigation Assessment Methodology (UMAM) was used to calculate the functional assessment of wetlands throughout the Preferred Alternative. It is anticipated that the Preferred Alternative will require a total of 0.4 freshwater forested and 2.1 freshwater herbaceous credits. Additional compensatory mitigation discussion is provided in Section 3.7.

3.4.2 Indirect Impacts

Indirect (or secondary) effects are defined in the EPA Regulations at 40 CFR Part 230.11. The EPA regulations state that "Secondary effects are effects on an aquatic ecosystem that are associated with a discharge of dredged or fill materials, but do not result from the actual placement of the dredged or fill material." Examples of secondary impacts include increased sunlight due to canopy removal, increased human activity from noise and debris causing habitat disruption in adjacent wetlands and reduction of wildlife utilization. The secondary impacts to wetlands were calculated twenty-five (25) feet beyond the limits of the direct wetland impacts for the Preferred Alternative. Secondary impacts were not calculated for surface waters. It is anticipated that the Preferred Alternative will result in 0.94 acres of secondary wetland impacts.

Impacts to water quality during construction will be reduced by erosion control measures and the use of Best Management Practices (BMPs) during construction would be implemented to provide reasonable assurance the Preferred Alternative would not contribute to violations of water quality standards.

3.4.3 Cumulative Impacts

In order to provide reasonable assurances that a regulated activity will not cause unacceptable cumulative impacts upon wetlands and surface waters, Orange County will provide mitigation for adverse wetland and surface water impacts within the same drainage basin as the anticipated impacts or develop a regional mitigation plan pursuant to Section 373.4137, Florida Statutes.

Table 5: Wetland Impacts from the Preferred Alternative

Wetland ID	FLUCFCS	NWI Code	Approximate Direct Impacts (Acres)	Approximate Secondary Impacts (Acres)
Wetland 1	6410	PUBH	0.17	0.22
Wetland 3	6410	PUBH & PFO6F	0.49	0.51
Wetland 4	6410	PAB1F	0.30	0.17
Wetland 5	6410	PEM1F	0.54	0.33
Wetland 6	6172	PFO6F	0.39	0.32
Wetland 7	6140	PUBH	0.77	0.51
Wetland 8	6210	PFO6F	0.58	0.23
Wetland 9	6410	PAB3H	0.31	0.22
Approximate Wetlands Total			**3.55**	**2.51**

Table 6: Surface Water Impacts from the Preferred Alternative

Wetland ID	FLUCFCS	NWI Code	Approximate Direct Impacts (Acres)	Approximate Secondary Impacts (Acres)
Surface Water 1	5300	Not Classified	0.03	-
Surface Water 2	5200	PFO1F	0.40	-
Surface Water 3	5300	Not Classified	0.07	-
Surface Water 4	5300	PFO7B	0.03	-
Surface Water 5	5300	Not Classified	0.03	-
Surface Water 7	5200	PFO7C	0.38	-
Approximate Surface Waters Total			**0.94**	**0.00**

3.5 Avoidance and Minimization

In accordance with federal and state regulations, avoidance and minimization of wetland impacts were considered in developing the Preferred Alternative. These measures include evaluating the best alignment within existing right-of-way constraints, designing drainage features outside of wetland and surface water boundaries, and implementing BMPs during construction.

3.6 Functional Assessment Methodology

The Uniform Mitigation Assessment Methodology (UMAM), as established by Chapter 62-345 Florida Administrative Code, was used to complete a functional assessment of the wetlands and surface waters within the Preferred Alternative. The UMAM is a rating index that assists in evaluating the functions and values of a wetland system. It establishes a numerical ranking for a wetland based on various ecological or anthropogenic variables known to influence the functional value of a wetland. UMAM scores are based on the total of three (3) categories, scored from zero (0) (lowest) to ten (10) (highest), divided by the total maximum score of thirty (30) for the variables. The UMAM value is expressed as a number between zero (0) and one (1), with one (1) being assigned to the highest valued/functioning wetlands. The three (3) categories are described as follows:

- **Location and Landscape Support:** evaluates the location of the assessment area in relation to the connectivity and landscape position of the surrounding areas and the impact, or lack thereof, for the utilization of fish and wildlife. The potential for use by wildlife (i.e., availability of cover, food, and nesting areas) is also evaluated in this category.
- **Water Environment:** evaluates the quantity of water in an assessment area, including timing, frequency, depth, duration, and quality. These characteristics may compromise the ability of the area to support wildlife.
- **Community Structure:** evaluates the vegetation and benthic habitat present in an assessment area. This evaluation includes the presence, abundance, health, condition, appropriateness, and distribution of plant communities and benthic habitats.

3.7 UMAM Results and Mitigation

The UMAM was used to determine the functional value of vegetative communities and the amount of mitigation required to offset adverse impacts to these communities. The results of the UMAM assessments are provided in **Table 7** and the anticipated functional loss of each wetland system is provided in **Table 8** below. The UMAM assessment worksheets demonstrating these results are provided in **Appendix E.** These values may be refined through coordination and review by the regulatory agencies during project design and permitting.

Table 7: Summary of UMAM Scores

Wetland ID	Location & Landscape	Water Environment	Community Structure	UMAM Composite Score
Wetland 1	5	7	7	0.63
Wetland 3	6	7	7	0.67
Wetland 4	6	7	7	0.67
Wetland 5	7	7	7	0.70
Wetland 6	6	7	7	0.67
Wetland 7	6	7	7	0.67
Wetland 8	6	7	7	0.67
Wetland 9	6	7	7	0.67

Table 8: Potential Wetland Functional Loss

Wetland ID	Direct Impact (Acres)	UMAM Composite Score	Potential Functional Loss
Wetland 1	0.17	0.63	0.11
Wetland 3	0.49	0.67	0.33
Wetland 4	0.30	0.67	0.20
Wetland 5	0.54	0.70	0.38
Wetland 6	0.39	0.67	0.26
Wetland 7	0.77	0.67	0.52
Wetland 8	0.58	0.67	0.39
Wetland 9	0.31	0.67	0.21
Approximate Functional Loss Total			**2.40**

Avoidance and minimization of potential wetland and surface water impacts were incorporated throughout the development of the Preferred Alternative. Unavoidable direct and indirect impacts to wetlands and surface waters will be mitigated through the purchase of credits from an approved mitigation bank or through the provisions of Section 373.4137 F.S. to satisfy all mitigation requirements of Part IV, Chapter 373 F.S. and 33 U.S.C. 1344. The proposed project is anticipated to require 0.4 freshwater forested and 2.1 freshwater herbaceous credits, totaling an estimated 2.5 credits to satisfy all mitigation requirements.

4.0 ESSENTIAL FISH HABITAT

The NMFS is the regulatory agency responsible for the nation's living marine resources and their habitats, including EFH. This authority is designated by the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), as amended. The MSFCMA defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. § 1802(10)]. During the field reviews, the surface waters within the Preferred Alternative lack submerged aquatic vegetation or mangroves. No in-water impacts to wetlands and surface waters are habitat classified as EFH. The Preferred Alternative will no effect on EFH resources. Therefore, an EFH assessment or coordination with NMFS will not be required during the design and permitting phase.

5.0 PERMITTING AND REVIEW AGENCIES

The Preferred Alternative would require permits from state and federal regulatory agencies for impacts to wetlands, conservation easements, and water quality. Several agencies, such as USFWS, FWC, NMFS, U.S. Coast Guard (USCG), Environmental Protection Agency (EPA), and the State Historic Preservation Officer (SHPO), would also have the opportunity to review and comment on the permit applications. **Table 9** below lists the anticipated permits associated with the construction of the Preferred Alternative.

Table 9: Anticipated Permits for the Preferred Alternative

Permit Type	Agency
Individual Environmental Resource Permit	SFWMD
Environmental Resource Permit Modification – Conservation Easement Release (Permit No. 48-01048-P / Application No. 980552-3)	SFWMD
Environmental Resource Permit Modification – Conservation Easement Release (Permit No. 48-01437-P / Application No. 040121-28)	SFWMD
Section 404 Dredge and Fill Permit	USACE
National Pollution Discharge Prevention and Elimination System (NPDES)	FDEP
Gopher Tortoise Relocation Permit (as necessary)	FWC
Incidental Take Permit (as necessary)	USFWS/FWC

5.1 South Florida Water Management District

5.1.1 Individual Environmental Resource Permit

SFWMD requires an Environmental Resource Permit (ERP) when construction of any project results in the creation of a new or modification of an existing surface water management system, or results in impacts to waters of the state. Based on the proposed stormwater management facilities, construction of new impervious surfaces, and impacts to wetlands and surface waters, an Individual ERP will be required from SFWMD.

5.1.2 Environmental Resource Permit Modification

SFWMD requires an ERP modification when a proposed project will impact a permitted CE. Based on the alignment of the Preferred Alternative, modifications of SFWMD Permit Nos. 48-01048-P and 48-01437-P will be required to release the CE. Additional mitigation may be required to offset the CE release.

5.2 U.S. Army Corps of Engineers

5.2.1 Section 404 Dredge and Fill Permit

A Section 404 Dredge and Fill permit from the USACE will require compliance with the Section 404(b)(1) Clean Water Act (CWA) guidelines, including verification that all wetland impacts have first been avoided to the

greatest extent possible, that unavoidable impacts have been minimized to the greatest extent possible, and lastly that unavoidable impacts have been mitigated for in the form of wetlands creation, restoration, and/or enhancement. In addition, coordination with the USFWS will be necessary for potential effects to federally protected species.

5.3 Florida Department of Environmental Protection

5.3.1 National Pollutant Discharge Elimination System (NPDES)

Under the State of Florida's delegated authority to administer the NPDES program, construction sites that will result in greater than one (1) acre of disturbance must file for an obtain either coverage under an appropriate generic permit contained in Chapter 62-621, F.A.C., or an individual permit issued pursuant to Chapter 62-620, F.A.C. A major component of the NPDES permit is the development of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP identifies potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from the site and discusses good engineering practices (i.e., best management practices) that will be used to reduce the pollutants.

5.4 Florida Fish and Wildlife Conservation Commission

5.4.1 Gopher Tortoise Relocation Permit

In accordance with the requirements of Rules 68A-25.002 and 68A-27.004 F.A.C., a permit for gopher tortoise capture/release activities must be secured from the FWC before initiating any relocation work. A Conservation Permit is available for development projects that require the relocation of gopher tortoises when more than ten (10) burrows occur on the development site. The Ten or Fewer Burrows Permit is available for projects that contain ten (10) or fewer gopher tortoise burrows on the development site. Both permits allow for the relocation either to an on-site preserve or off-site to an FWC-certified Recipient Site. The FWC will require a 100 percent gopher tortoise survey to be conducted within ninety (90) days of construction commencement to support the permit application.

5.4.2 Incidental Take Permit (As Necessary)

Based on field reviews, suitable foraging and nesting habitat exists within the project area for the Florida burrowing owl, Florida sandhill crane, little blue heron, roseate spoonbill, and tricolored heron. If determined necessary after technical assistance from the FWC, a permit authorizing incidental take of affected species must be secured from the FWC. While avoidance and minimization is the preferred course of action, a Listed Species Incidental Take Permit is available to cover a take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity.

5.5 U.S. Fish and Wildlife Service

5.5.1 Incidental Take Permit (As Necessary)

The USFWS can issue Incidental Take Permits when a non-federal entity believes that otherwise lawful activities may result in take of federally managed endangered or threatened plant or animal species. The USFWS provides comments and recommendations on federal permits. These comments and recommendations are included as conditions of the federal permits. However, if no federal permit or other federal nexus is associated with the action of a non-federal entity, the USFWS can issue Incidental Take Permits. Incidental Take Permits are available to cover a take that is incidental to, and not the purpose of, carrying out an otherwise lawful activity.

6.0 CONCLUSIONS

The Avalon Road PD&E Study was conducted to evaluate alternatives to address increasing traffic throughout the Avalon Road corridor from US 192 to Hartzog Road. The Preferred Alternative would address capacity concerns by providing new travel lanes and a multi-use path and implement avoidance and minimization measures to the greatest extent feasible to reduce impacts to wetlands, surface waters, and protected species. The Preferred Alternative will not result in impacts to critical habitat for any federally listed species. Coordination with the USFWS and FWC to request concurrence on the species' effect determinations and potential impacts to federally and state protected species will occur as review of this Natural Resources Evaluation. **Tables 10 and 11** below summarize the current listing status and anticipated effect determinations for federally and state listed species that have the potential to occur within the study area.

Table 10: Federal Protected Species Effect Determinations

Project Effect Determination	Federal Listed Species
"No Effect"	American Alligator (*Alligator mississippiensis*)
	Avon Park Rabbit-Bells (*Crotalaria avonensis*)
	Beautiful Pawpaw (*Deeringothamnus pulchellus*)
	Bluenose Shiner (*Pteronotropis welaka*)
	Britton's Beargrass (*Nolina brittoniana*)
	Carter's Warea (*Warea carteri*)
	Clasping Warea (*Warea amplexifolia*)
	Eastern Black Rail (*Laterallus jamaicensis spp. jamaicensis*)
	Florida Blazing Star (*Liatris ohlingerae*)
	Florida Bonamia (*Bonamia grandiflora*)
	Florida Jointweed (*Polygonella basiramia*)
	Florida Panther (*Puma concolor coryi*)
	Garrett's Scrub Balm (*Dicerandra christmanii*)
	Highlands Scrub Hypericum (*Hypericum cumulicola*)
"No Effect"	Lewton's Polygala (*Polygala lewtonii*)
	Monarch Butterfly (*Danaus plexippus*)
	Paper-Like Nailwort (*Paronychia chartacea spp. chartacea*)
	Papery Whitlow-Wort (*Paronychia chartacea*)
	Perforate Reindeer Lichen (*Cladonia perforata*)

Project Effect Determination	Federal Listed Species
	Pygmy Fringe-Tree (*Chionanthus pygmaeus*)
	Sandlace (*Polygonella myriophylla*)
	Scrub Buckwheat (*Erigonum longifolium spp. ghanphalifolium*)
	Scrub Lupine (*Lupinus aridorum*)
	Scrub Mint (*Dicerandra frutescens*)
	Scrub Pigeon-wing (*Clitoria fragrans*)
	Scrub Plum (*Prunus geniculata*)
	Short-Leaved Rosemary (*Conradina brevifolia*)
	Short-Tailed Snake (*Stilosoma extenatum*)
	Small's Jointweed (*Polygonella myriophylla*)
	Southern Hognose Snake (*Heterodon simus*)
	Tricolored Bat (*Perimyotis subflavus*)
"No Adverse Effect Anticipated"	Bald Eagle (*Haliateetus leucocephalus*)
"Not Likely to Adversely Affect"	Everglade Snail Kite (*Rostrhamus sociabilis spp. plumbeus*)
	Red-Cockaded Woodpecker (*Picoides borealis*)
"May Affect"	Eastern Indigo Snake (*Drymarchon couperi*)
Coordination with USFWS Required	Blue-Tailed Mole Skink (*Eumeces egregious lividus*)
	Crested Caracara (*Caracara plancus spp. audubonnii*)
	Florida Scrub-Jay (*Aphelocoma coerulescens*)
	Sand Skink (*Plestiodon reynoldsi*)

Table 11: State Protected Species Effect Determinations

Project Effect Determination	State Listed Species
"No Effect Anticipated"	Ashe's Savory (*Calamintha ashei*)
	Butterfly Orchid (*Encyclia tampensis*)
	Celestial Lily (*Nemastylis floridana*)
	Chapman's Sedge (*Carex chapmannii*)
	Comp polypody (*Pecluma ptilota*)
	Cutthroatgrass (*Coleataenia abscissa*)
	Florida Beargrass (*Nolina atopocarpa*)
	Florida Black Bear (*Ursus americanus floridanus*)
	Florida Loosestrife (*Lythrum flagellare*)
	Florida Spiny-Pod (*Matelea floridana*)
	Florida Willow (*Salix floridana*)
"No Effect Anticipated"	Giant Orchid (*Pteroglossaspis ecristata*)
	Hand Fern (*Ophioglossum palmatum*)
	Hartwrightia (*Hartwrightia floridana*)
	Many-Flowered Grass-Pink (*Calopogon multiflorus*)
	Narrowleaf Naiad (*Najas filifolia*)
	Nodding Pinweed (*Lechea cernua*)

Project Effect Determination	State Listed Species
"No Adverse Effect Anticipated"	Piedmont Jointgrass (*Coelorachis tuberculosa*)
	Pine pinweed (*Lechea divaricata*)
	Plume Polypody (*Pecluma plumula*)
	Redmargin Zephyrlily (*Zephyranthes simpsonii*)
	Sand Butterfly Pea (*Centrosema arenicola*)
	Scrub Bluestem (*Schizahyrium niveum*)
	Scrub Stylisma (*Stylisma abdita*)
	Star Anise (*Illicium parviflorum*)
	Yellow Fringeless Orchid (*Platanthera integra*)
	Florida Burrowing Owl (*Athene cunicularia spp. floridana*)
	Florida Pine Snake (*Pituophis melanoleucus mugitus*)
	Florida Sandhill Crane (*Antigone canadensis spp. pratensis*)
	Gopher Tortoise (*Gopherus polyphemus*)
	Little Blue Heron (*Egretta caerulea*)
	Roseate Spoonbill (*Platalea ajaja*)
	Tricolored Heron (*Egretta tricolor*)

Wetland and surface water habitat types to be impacted by the proposed construction include stormwater management features, lakes, cypress wetlands, and freshwater marshes. Impacts associated with the Preferred Alternative total 7.00 acres and include 6.06 acres of wetlands and 0.94 acres of surface waters (**Tables 5 and 6**). A UMAM analysis (**Appendix E**) was performed to estimate the functional loss due to wetland impacts from the Preferred Alternative. Construction of the Preferred Alternative results in a loss of 2.40 functional units (**Table 7**). Wetland impacts which will result from the construction of this project will be mitigated pursuant to Section 373.4137, F.S. to satisfy all mitigation requirements of Part IV Chapter 373, F.S. and 33 U.S.C. 1344. Compensatory mitigation for this project will be completed through the use of mitigation banks and any other mitigation options that satisfy state and federal requirements.

6.1 Implementation Measures

Implementation measures are actions the Orange County would be required to take per procedure, standard specifications, or other agency requirements that would be implemented at a later project phase, but which would help address or reduce project effects and that need to be relayed to the agencies during review of the NRE. To ensure the project will not adversely affect protected species or contribute to water quality degradation, Orange County and/or contractor will perform or adhere to the following measures.

- Conduct surveys for listed plants in suitable habitat prior to construction. If listed plants are observed in the project footprint, Orange County will coordinate with the appropriate agency to receive the necessary authorizations prior to construction.
- Conduct a pre-construction survey for the gopher tortoise. If gopher tortoise burrows are located within 25 feet of the project footprint, a relocation permit will be obtained from the FWC prior to construction for burrows that cannot be avoided or excluded from project construction.
- Conduct a formal survey for Florida sandhill cranes following the *Species Conservation Measures and Permitting Guidelines for the Sandhill Crane.*
- Apply BMPs (e.g., erosion and sediment controls) prior to and throughout construction to avoid adverse impacts to wetland and aquatic resources adjacent to the project area.

6.2 Commitments

To ensure the project will not adversely affect protected species or their habitats, Orange County and/or contractor will commit to perform or adhere to the following measures.

- Adhere to the *Standard Protection Measures for the Eastern Indigo Snake* during construction.
- To prevent potential conflicts with Florida black bears during construction activities, Orange County will require contractors to remove garbage daily from the construction site or use bear proof containers for securing food and other debris from the project work area to prevent these items from becoming an attractant for the Florida black bear. Any interaction with nuisance bears will be reported to the FWC Wildlife Alert hotline.
- Provide mitigation for impacts to wetlands and surface waters.

6.3 Agency Coordination

Agency coordination will continue to take place during the project's design and permitting phases. Coordination with the USFWS, FWC, and FDACS will be required to determine species survey requirements and to secure any necessary permits required for protected species. As described in **Section 5.0**, coordination will be required from the following agencies to obtain the necessary permits and approvals summarized below:

- **South Florida Water Management District:** Individual Environmental Resource Permit, Environmental Resource Permit Modification – Conservation Easement Release of Permit Nos. 48-01048-P and 48-01347-P
- **U.S. Army Corps of Engineers:** Section 404 Dredge and Fill Permit
- **Florida Department of Environmental Protection:** National Pollution Discharge Prevention and Elimination System
- **Florida Fish and Wildlife Conservation Commission:** Gopher Tortoise Relocation Permit (as necessary), Incidental Take Permit (as necessary)
- **U.S. Fish and Wildlife Service:** Incidental Take Permit (as necessary)

The resulting coordination and/or concurrence would henceforth be documented for reference during the design and permitting phase of the project.

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APPENDIX A

WATERBODY QUALITY IMPACT EVALUATION CHECKLIST

WATER QUALITY IMPACT EVALUATION CHECKLIST

PART 1: PROJECT INFORMATION

Project Name:	Avalon Road from US 192 to Hartzog Road
County:	Orange and Osceola
FM Number:	N/A
Federal Aid Project No:	N/A
Brief Project Description:	This PD&E Study proposes the preferred alternative for the Avalon Road which would widen the roadway to four-travel lanes with a median.

PART 2: DETERMINATION OF WQIE SCOPE

Does project discharge to surface or ground water? ☒ Yes ☐ No

Does project alter the drainage system? ☒ Yes ☐ No

Is the project located within a permitted MS4? ☒ Yes ☐ No
Name: Orange County - FLS000011

If the answers to the questions above are no, complete the applicable sections of Part 3 and 4, and then check Box A in Part 5.

PART 3: PROJECT BASIN AND RECEIVING WATER CHARACTERISTICS

Surface Water
Receiving water names: Rexford Lake, Lake Gifford, Lake Austin, Lake Oliver

Water Management District: South Florida Water Management District

Coordination meeting date: Click here to enter a date.
Attach meeting minutes/notes to the checklist.

Water Control District Name(s) (list all that apply): _____

Groundwater
Sole Source Aquifer (SSA)? ☐ Yes ☒ No
Name _____
If yes, complete Part 5, D and the EPA Region 4 Sole Source Aquifer Project Review Form

Other Aquifer? ☒ Yes ☐ No
Name Surficial Aquifer System

Springs vents? ☐ Yes ☒ No
Name _____

Well head protection area? ☐ Yes ☒ No

Name _____
Groundwater recharge? ☒ Yes ☐ No
Name Rainfall, infiltration

Notify District Drainage Engineer if karst conditions are expected or if a higher level of treatment may be needed due to a project being located within a WBID verified as Impaired in accordance with Chapter 62-303, F.A.C.

Date of notification: Click here to enter a date.

PART 4: WATER QUALITY CRITERIA

List all WBIDs and all parameters for which a WBID has been verified impaired, or has a TMDL in **Table 1**. This information should be updated during each re-evaluation as required.

Note: If BMAP or RAP has been identified in **Table 1**, **Table 2** must also be completed.
*Attach notes or minutes from all coordination meetings identified in **Table 2**.*

EST recommendations confirmed with agencies? ☐ Yes ☒ No

BMAP Stakeholders contacted? ☐ Yes ☒ No

TMDL program contacted? ☐ Yes ☒ No

RAP Stakeholders contacted? ☐ Yes ☒ No

Regional water quality projects identified in through coordination or the WATERSS process? ☐ Yes ☒ No

If yes, describe:

Potential direct effects associated with project construction and/or operation identified? ☒ Yes ☐ No

If yes, describe:

The proposed roadway alignment would widen the Avalon Road and introduce new pollutant discharges into nearby systems and watersheds. Stormwater management facilities will be constructed in accordance with State requirements to minimize impacts from the new roadway.

Discuss any other relevant information related to water quality including Regulatory Agency Water Quality Requirements.

PART 5: WQIE DOCUMENTATION

- ☐ A. No involvement with water quality
- ☐ B. No water quality regulatory requirements apply.
- ☒ C. Water quality regulatory requirements apply to this project (provide Evaluator's information below). Water quality and stormwater issues will be mitigated through compliance with the design requirements of authorized regulatory agencies.
- ☐ D. EPA Ground/Drinking Water Branch review required. ☐ Yes ☒ No
  Concurrence received? ☐ Yes ☐ No
  If Yes, Date of EPA Concurrence: Click here to enter a date..
  Attach the concurrence letter

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated May 26, 2022, and executed by the Federal Highway Administration and FDOT.

Evaluator Name (print): Jordan Haselwood	
Title:Environmental Scientist	
Signature:	Date:3/17/2026

Table 1: Water Quality Criteria

Receiving Waterbody Name (list all that apply)	FDEP Group Number / Name	WBID(s) Numbers	Classification (I,II,III,IIIL,IV,V)	Special Designations*	NNC limits**	Verified Impaired (Y/N)	TMDL (Y/N)	Pollutants of concern	BMAP, RA Plan or SSAC
Upper Kissimee	4	3170F5	III	N/A		No	No		BMAP
Rexford Lake	4	3170FC	III	N/A		No	No		BMAP
Lake Gifford	4	3170FB	III	N/A		No	No		BMAP
Lake Oliver	4	3170FA	III	N/A		No	No		BMAP

*** ONRW, OFW, Aquatic Preserve, Wild and Scenic River, Special Water, SWIM Area, Local Comp Plan, MS4 Area, Other**
**** Lakes, Spring vents, Streams, Estuaries**
Note: If BMAP or RAP has been identified in Table 1, Table 2 must also be completed.

Table 2: REGULATORY Agencies/Stakeholders Contacted

Receiving Water Name (list all that apply)	Contact and Title	Date Contacted	Follow-up Required (Y/N)	Comments

APPENDIX B

EASTERN INDIGO SNAKE

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"*

---

[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 C

STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE

STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE

U.S. Fish and Wildlife Service

May 2024

The Standard Protection Measures for the Eastern Indigo Snake (Plan) below has been developed by the U.S. Fish and Wildlife Service (USFWS) in Florida and Georgia for use by project proponents and their construction personnel help minimize adverse impacts to eastern indigo snakes. However, implementation of this Plan does not replace any state of federal consultation or regulatory requirements. At least 30 days prior to any land disturbance activities, the project proponent shall notify the appropriate USFWS Field Office (see Field Office contact information) via e-mail that the Plan will be implemented as described below.

As long as the signatory of the e-mail certifies compliance with the below Plan (including use of the approved poster and pamphlet (USFWS Eastern Indigo Snake Conservation webpage), no further written confirmation or approval from the USFWS is needed regarding use of this Plan as a component of the project.

If the project proponent 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. The project proponent 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.

STANDARD PROTECTION MEASURES

BEFORE AND DURING CONSTRUCTION ACTIVITIES:

- All Project personnel shall be notified about the potential presence and appearance of the federally protected eastern indigo snake (*Drymarchon couperi*).
- All personnel shall be advised that there are civil and criminal penalties for harassing, harming, pursuing, hunting, shooting, wounding, killing, capturing, or collecting the species, in knowing violation of the Endangered Species Act of 1973.
- The project proponent or designated agent will post educational posters in the construction office and throughout the construction site. The posters must be clearly visible to all construction staff and shall be posted in a conspicuous location in the

Project field office until such time that Project construction has been completed and time charges have stopped.

- Prior to the onset of construction activities, the project proponent or 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 pamphlet 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. Photos of eastern indigo snakes may be accessed on USFWS, Florida Fish and Wildlife Conservation Commission and/or Georgia Department of Natural Resources websites.
- Each day, prior to the commencement of maintenance or construction activities, the Contractor shall perform a thorough inspection for the species of all worksite equipment.
- If an eastern indigo snake (alive, dead or skin shed) 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 Office. The contact information for the USFWS is provided below and on the referenced posters and pamphlets.
- During initial site clearing activities, an onsite observer is recommended 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).
- Periodically during construction activities, the project area should be visited 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.
- For erosion control use biodegradable, 100% natural fiber, net-free rolled erosion control blankets to avoid wildlife entanglement.

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 (See USFWS Field Office Contact Information).

USFWS FIELD OFFICE CONTACT INFORMATION

Georgia Field Office: Phone: (706) 613-9493, email: gaes_assistance@fws.gov
Florida Field Office: Phone: (352) 448-9151, email: fw4flesregs@fws.gov

POSTER & PAMPHLET INFORMATION

Posters with the following information shall be placed at strategic locations on the construction site and along any proposed access roads (final posters for Plan compliance are available on our website in English and Spanish and should be printed on 11 x 17in or larger paper and laminated (USFWS Eastern Indigo Snake Conservation webpage). Pamphlets are also available on our webpage and should be printed on 8.5 x 11in paper and folded, and available and distributed to staff working on the site.

POSTER CONTENT (ENGLISH):

ATTENTION

Federally-Threatened Eastern Indigo Snakes may be present on this site!

Killing, harming, or harassing eastern indigo snakes is strictly prohibited and punishable under State and Federal Law.

IF YOU SEE A LIVE EASTERN INDIGO SNAKE ON THE SITE:

• Stop land disturbing activities and allow the snake time to move away from the site without interference. Do NOT attempt to touch or handle the snake.

• Take photographs of the snake, if possible, for identification and documentation purposes.

• Immediately notify supervisor/agent, and a U.S. Fish and Wildlife Service (USFWS) Ecological Services Field Office, with the location information and condition of the snake.

• If the snake is located near clearing or construction activities that will cause harm to the snake, the activities must pause until a representative of the USFWS returns the call (within one day) with further guidance.

IF YOU SEE A DEAD EASTERN INDIGO SNAKE ON THE SITE:

• Stop land disturbing activities and immediately notify supervisor/applicant, and a USFWS Ecological Services Field 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.

DESCRIPTION: The eastern indigo snake is one of the largest non-venomous snakes in North America, reaching up to 8 ft long. Named for the glossy, blue-black scales above and slate blue below, they often have orange to reddish color (cream color in some cases)

in the throat area. They are not typically aggressive.

SIMILAR SPECIES: The black racer resembles the eastern indigo snake. However, black racers have a white or cream chin, and thinner bodies.

LIFE HISTORY: Eastern indigo snakes live in a variety of terrestrial habitat types. Although they prefer uplands, they also use wetlands and agricultural areas. They will shelter inside gopher tortoise burrows, other animal burrows, stumps, roots, and debris piles. Females may lay from 4 to 12 white eggs as early as April through June, with young hatching in late July through October.

PROTECTED STATUS: The eastern indigo snake is protected by the USFWS, Florida Fish and Wildlife Conservation Commission, and Georgia Department of Natural Resources. Any attempt to kill, harm, harass, pursue, hunt, shoot, wound, trap, capture, collect, or engage eastern indigo snakes is prohibited by the U.S. Endangered Species Act. Penalties include a maximum fine of $25,000 for civil violations and up to $50,000 and/or imprisonment for criminal offenses. Only authorized individuals with a permit (or an Incidental Take Statement associated with a USFWS Biological Opinion) may handle an eastern indigo snake.

Please contact your nearest USFWS Ecological Services Field Office if a live or dead eastern indigo snake is encountered:

Florida Office: (352) 448-9151

Georgia Office: (706) 613-9493

POSTER CONTENT (SPANISH):

ATENCIÓN

¡Especie amenazada, la culebra Índigo del Este, puede ocupar el área!

Matar, herir o hostigar culebras Índigo del Este es estrictamente prohibido bajo la Ley Federal.

SI VES UNA CULEBRA ÍNDIGO DEL ESTE O UNA CULEBRA NEGRA VIVA EN EL ÁREA:

• Pare excavación y permite el movimiento de la culebra fuera del área sin interferir. NO atentes tocar o recoger la culebra.

• Fotografié la culebra si es posible para identificación y documentación.

• Notifique supervisor/agente, y la Oficina de Campo de Servicios Ecológicos del Servicio Federal de Pesca y Vida Silvestre (USFWS) apropiada con información acerca del sitio y condición de la culebra.

• Si la culebra está cerca de un área de construcción que le pueda causar daño, las actividades deben parar hasta un representante del USFWS regrese la llamada (dentro de un día) con más orientación.

SI VES UNA CULEBRA ÍNDIGO DEL ESTE MUERTA EN EL ÁREA:

• Pare excavación. Notifique supervisor/aplicante, y la Oficina de Campo de Servicios Ecológicos apropiada con información acerca del sitio y condición de la culebra.

• Fotografié la culebra si es posible para identificación y documentación.

• Emerge completamente la culebra en agua y congele la especie hasta que personal apropiado de la agencia de vida silvestre la recoja.

DESCRIPCIÓN. La culebra Índigo del Este es una de las serpientes sin veneno más grande en Norte América, alcanzando hasta 8 pies de largo. Su nombre proviene del color azul-negro brilloso de sus escamas, pero pueden tener un color anaranjado-rojizo (color crema en algunos casos) en su mandíbula inferior. No tienden a ser agresivas.

SERPIENTES PARECIDAS. La corredora negra, que es de color negro sólido, es la única otra serpiente que se asemeja a la Índigo del Este. La corredora negra se diferencia por una mandíbula inferior color blanca o crema y un cuerpo más delgado.

HÁBITATS Y ECOLOGÍA. La culebra Índigo del Este vive en una variedad de hábitats, incluyendo tierras secas, humedales, y áreas de agricultura. Ellas buscan refugio en agujeros o huecos de tierra, en especial madrigueras de tortugas de tierra. Las hembras ponen 4 hasta 12 huevos blancos entre abril y junio, y la cría emergen entre julio y octubre.

PROTECCIÓN LEGAL. La culebra Índigo del Este es clasificada como especie amenazada por el USFWS, la Comisión de Conservación de Pesca y Vida Silvestre de Florida y el Departamento de Recursos Naturales de Georgia. Intento de matar, hostigar, herir, lastimar, perseguir, cazar, disparar, capturar, colectar o conducta parecida hacia las culebras Índigo del Este es prohibido por la Ley Federal de Especies en Peligro de Extinción. Penalidades incluyen un máximo de $25,000 por violaciones civiles y $50,000 y/o encarcelamiento por actos criminales. Solos individuales autorizados con un permiso o Determinación de toma incidental (Incidental Take Statement) asociado con una Opinión Biológico del USFWS pueden recoger una Índigo del Este.

Por favor de contactar tu Oficina de Campo de Servicios Ecológicos más cercana si encuentras una culebra Índigo del Este viva o muerta:

Oficina de Florida: (352) 448-9151

Oficina de Georgia: (706) 613-9493

APPENDIX D

PHOTO LOG

Photo 1 – Wetland 1

Photo 2 – Wetland 1

Photo 3 – Wetland 2

Photo 4 – Wetland 2

Photo 5 – Wetland 3

Photo 6 – Wetland 3

Photo 7 – Wetland 4

Photo 8 – Wetland 4

Photo 9 – Wetland 5

Photo 10 – Wetland 5

Photo 11 – Wetland 6

Photo 12 – Wetland 6

Photo 13 – Wetland 7

Photo 14 – Wetland 7

Photo 15 – Wetland 8

Photo 16 – Wetland 8

Photo 17 – Wetland 9

Photo 18 – Wetland 9

Photo 19 – Surface Water 4

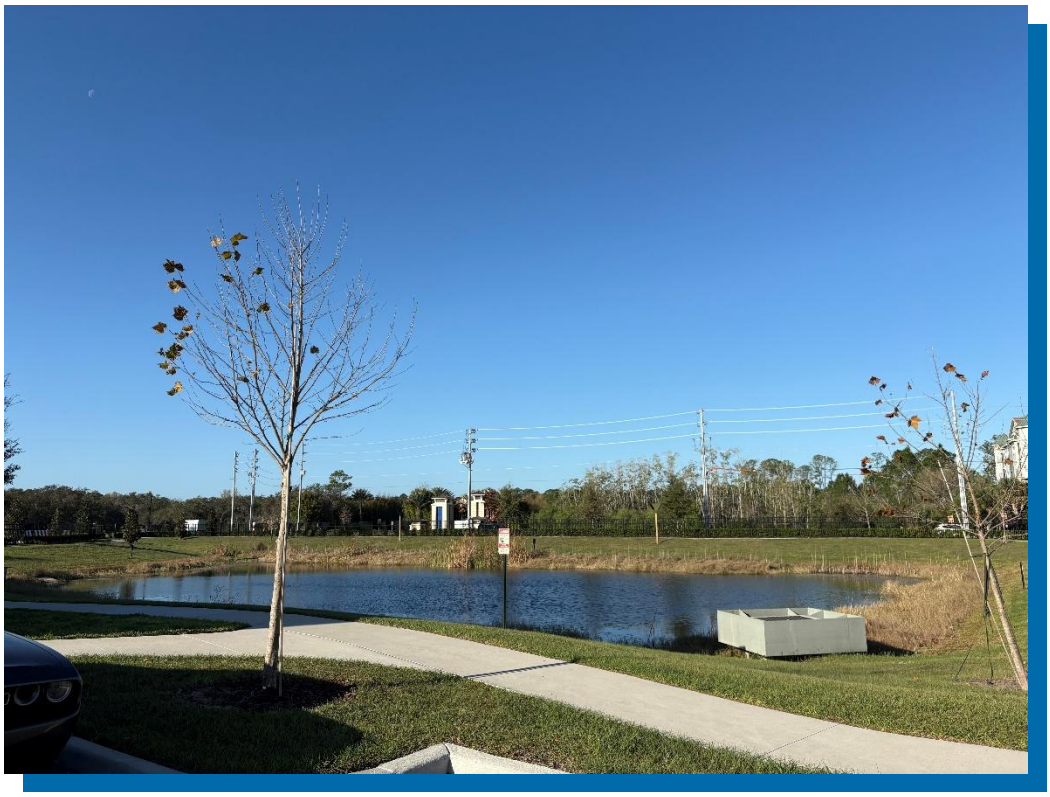

Photo 20 – Surface Water 5

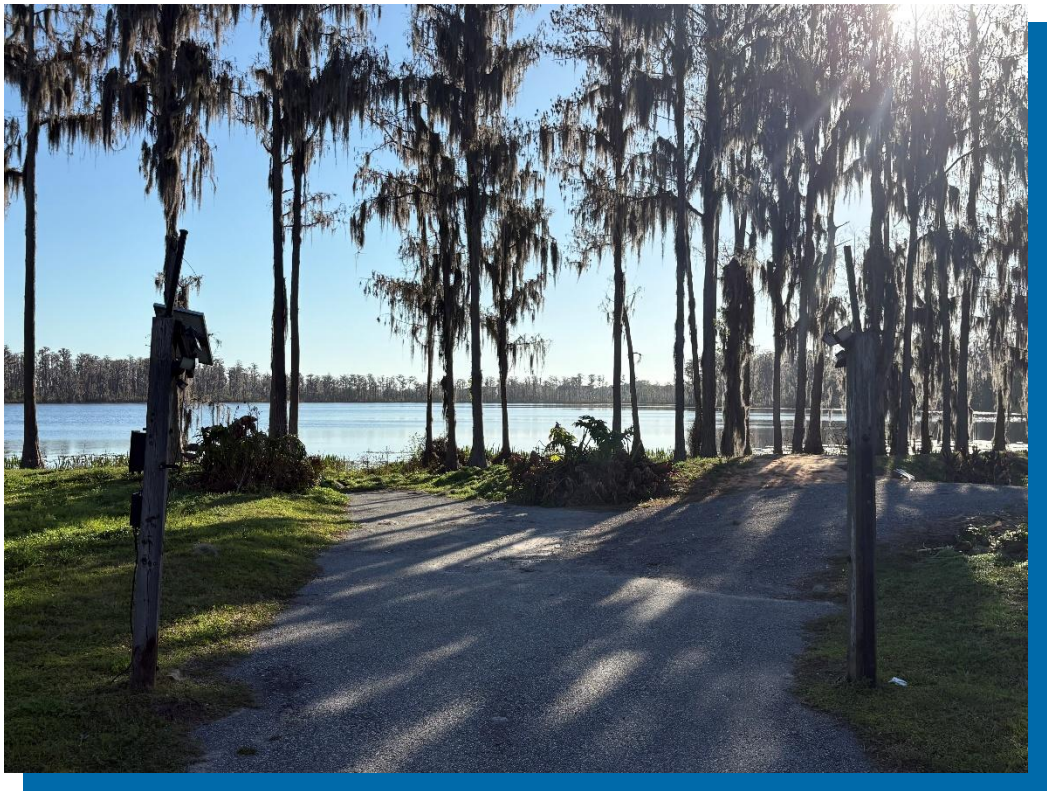

Photo 21 – Surface Water 6

Photo 22 – Surface Water 6

Photo 23 – Surface Water 7

Photo 24 – Surface Water 7

Photo 25 – Pond site north of Arrowhead Boulevard

Photo 26 – Pond site north of Arrowhead Boulevard

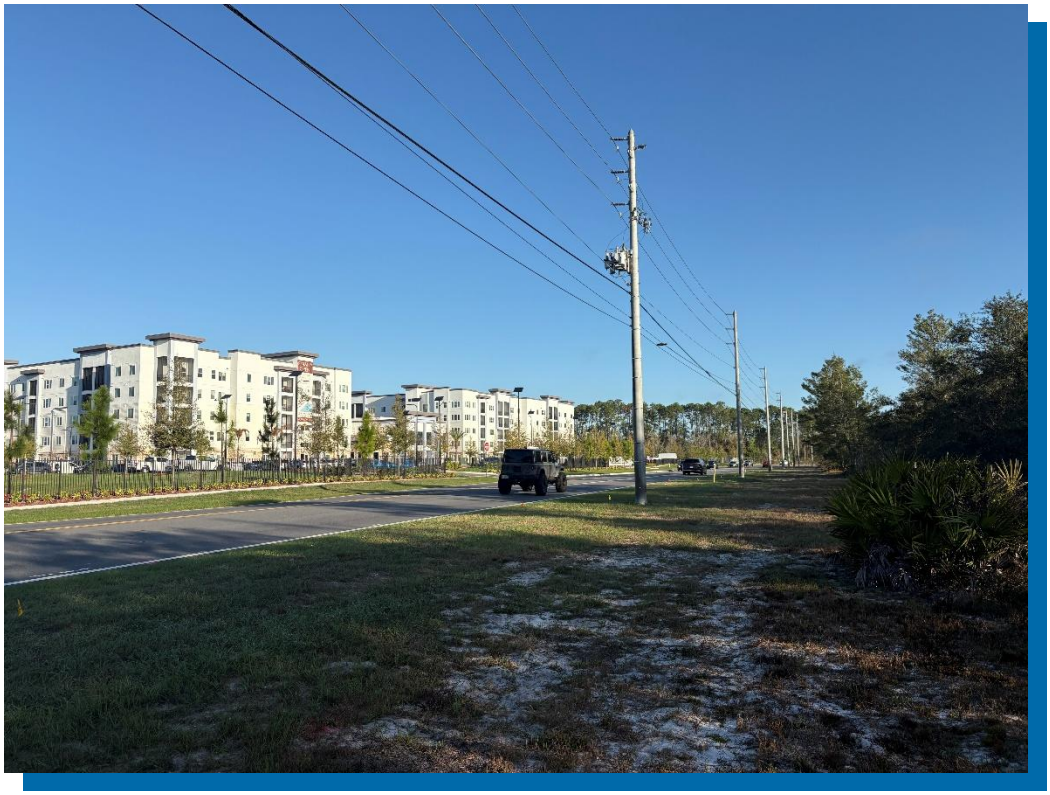

Photo 27 – Facing north on Avalon Road adjacent to pond site north of Arrowhead Boulevard

Photo 28 – Facing south on Avalon Road adjacent to pond site north of Arrowhead Boulevard

Photo 29 – Pond site south of Easthampstead Road

Photo 30 – Pond site south of Easthampstead Road

Photo 31 – Facing north on Avalon Road adjacent to Wetland 8

Photo 32 – Facing east on Avalon Road adjacent to Wetland 8

Photo 33 – Facing south on Avalon Road between Wetland 9 and Surface Water 7

Photo 34 – Facing south on Avalon Road between Wetland 9 and Surface Water 7

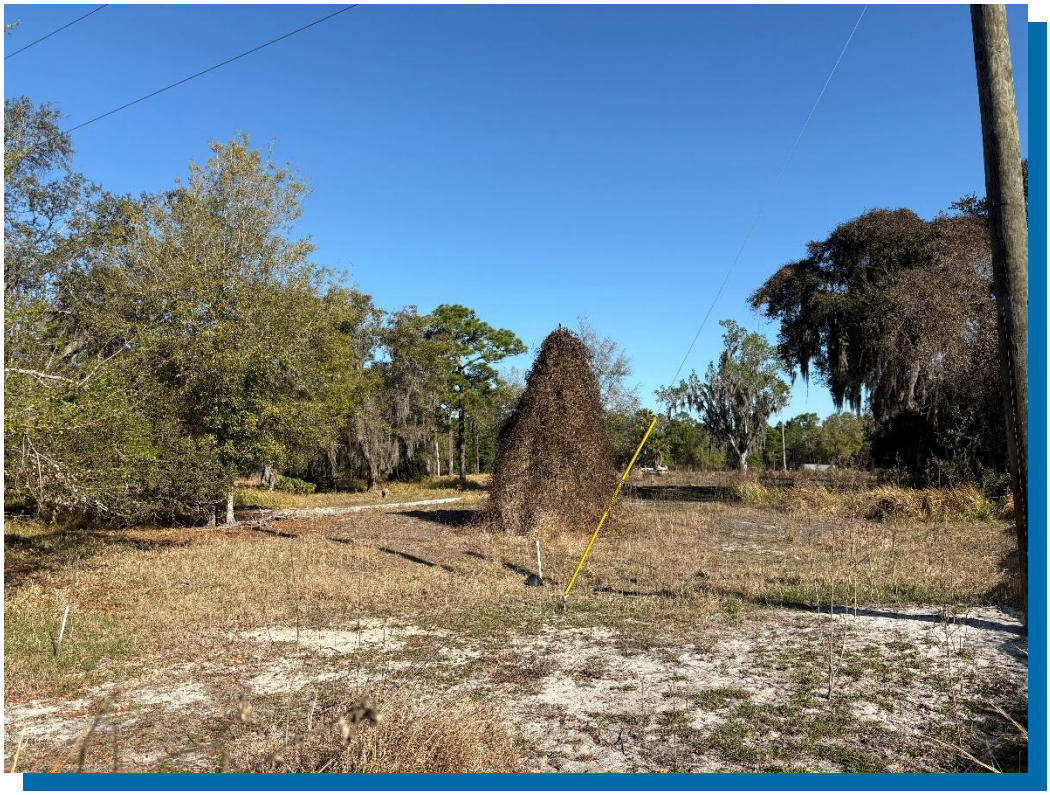

Photo 35 – Pond site between Wetland 7 and Surface Water 7

Photo 36 – Pond site between Wetland 7 and Surface Water 7

Photo 37 – Facing south on Avalon Road adjacent to Wetland 7

Photo 38 – Facing northwest adjacent to Avalon Road and Bali Boulevard intersection

APPENDIX E

UNIFORM MITIGATION ASSESSMENT METHODOLOGY WORKSHEETS

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

Site/Project Name	Application Number	Assessment Area Name or Number
Avalon Road from US 192 to Hartzog Road		**Wetland 1**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
6410	**Freshwater Marshes / Graminoid Prairie - Marsh**	**Impact**	**0.17** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
Reedy Creek	**Class III**	**Not applicable.**

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

Wetland 1 is a freshwater marsh system located along the intersection of Bali Boulevard and Avalon Road. It is adjacent to Wetland 3.

Assessment area description

Observed sub-canopy species include wax myrtle (*Morella cerifera*) and saw palmetto (*Serenoa repens*). Groundcover consisted of cattail (*Tyhpa spp.*) and marsh pennywort (*Hydrocotyle umbellata*).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Wetland 3 and Mudd Lake	**This is a common wetland for this region.**

Functions	Mitigation for previous permit/other historic use
Wildlife habitat, water quality, nutrient uptake	**Wetland 1 is protected under Conservation Easement No. 061012-25-CEI through the South Florida Water Management District.**

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)
It is anticipated that this system be utilized by birds, snakes, and other small mammals.	**State-listed wading birds (ST) nesting and foraging, Black bear (FS), Bald eagle (FS).**

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

No wildlife utilization was observed.

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
Jordan Haselwood	**03/11/26**

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

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

Site/Project Name:	Application Number:	Assessment Area Name or Number:
Avalon Road from US 192 to Hartzog Road	**-**	**Wetland 1**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Direct Impact	**Jordan Haselwood**	**03/11/26**

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	Current: **5**	With Impact: **0**
Fair support for species; no invasive species present; wildlife access is partially limited from the adjacent roadway (Bali Boulevard and Avalon Road); downstream benefits provided to fish and wildlife are substantially limited by barriers; hydrologic connectivity to downstream areas is less than optimal; downstream habitats derive minimal benefits from AA quality.		
.500(6)(b) Water Environment (n/a for uplands)	Current: **7**	With Impact: **0**
Water level and flow is slightly less than appropriate for the community type, water level indicators are consistent with expectations; soil is appropriate for the community; vegetation was appropriate for the community type; wildlife usage is less than expected due to the proximity of the roadway.		
.500(6)(c) Community Structure _____ Vegetation _____ Benthic x Both	Current: **7**	With Impact: **0**
A majority of desirable species are present within the system; no invasice/exotic species are present; normal new growth or regeneration observed; generally good plants' condition; topographic features are optimal.		

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	**With Impact**
0.63	0.00

Impact Delta (ID)	
Current - w/Impact	0.63

Impact Acres =	0.17

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.11

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

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

Site/Project Name	Application Number	Assessment Area Name or Number
Avalon Road from US 192 to Hartzog Road		**Wetlands 3, 4, 7, and 9**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
6410	**Freshwater Marshes / Graminoid Prairie - Marsh**	**Impact**	**1.87** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
Reedy Creek	**Class III**	**Not applicable.**

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

Wetlands 3, 4, and 9 are isolated freshwater herbaceous wetlands. Wetland 7 is hydrologically connected to Lake Austin. Wetlands 3, 7, and 9 are located on the western side of Avalon Road and Wetland 4 is located on the eastern side.

Assessment area description

Observed canopy species include bald cypress (*Taxodium distichum*), red maple (*Acer rubrum*), and sweetbay magnolia (*Magnolia virginiana*). Observed sub-canopy species include saw palmetto (*Serenoa repens*), Carolina willow (*Salix caroliniana*), and wax myrtle (*Morella cerifera*). Groundcover consists of maidencane (*Panicum hemiotomon*), spatterdock (*Nuphar advena*), royal fern (*Osmunda regalis*), bluestem (*Andropogon glomeratus*), pickerel weed (*Pontederia cordata*), and falsewillow (*Baccharis spp.*).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Mudd Lake, Lake Austin, Lake Oliver	**This is a common wetland for this region.**

Functions	Mitigation for previous permit/other historic use
Wildlife habitat, water quality, nutrient uptake	**No previous mitigation has occurred for these wetlands.**

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)
It is anticipated that this system be utilized by birds, snakes, and other small mammals.	**State-listed wading birds (ST) nesting and foraging, Black bear (FS), Bald eagle (FS).**

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

Florida sandhill cranes were observed utilizing Wetland 7 for foraging and nesting.

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
Jordan Haselwood	**03/11/26**

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

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

Site/Project Name:	Application Number:	Assessment Area Name or Number:
Avalon Road from US 192 to Hartzog Road	**-**	**Wetlands 3, 4, 7, and 9**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Direct Impact	**Jordan Haselwood**	**03/11/26**

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

	Current	With Impact	
.500(6)(a) Location and Landscape Support	**6**	**0**	Good support for species; no invasive species present; wildlife access is partially limited from the adjacent roadway (Avalon Road); downstream benefits provided to fish and wildlife are slightly limited by barriers; hydrologic connectivity to downstream areas is less than optimal; downstream habitats derive minimal benefits from AA quality.
.500(6)(b) Water Environment (n/a for uplands)	**7**	**0**	Water level and flow is slightly less than appropriate for the community type, water level indicators are consistent with expectations; soil is appropriate for the community; vegetation was appropriate for the community type; wildlife usage is less than expected due to the proximity of the roadway.
.500(6)(c) Community Structure _____ Vegetation _____ Benthic x Both	**7**	**0**	A majority of desirable species are present within the system; no invasice/exotic species are present; near-normal new growth or regeneration observed; generally good plants' condition; topographic features are optimal.

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	Current	With Impact
	0.67	0.00

Impact Delta (ID)	
Current - w/Impact	0.67

Impact Acres =	1.87

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	1.25

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

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

Site/Project Name	Application Number	Assessment Area Name or Number
Avalon Road from US 192 to Hartzog Road		**Wetland 5**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
6410	**Freshwater Marshes / Graminoid Prairie - Marsh**	**Impact**	**0.54** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
Reedy Creek	**Class III**	**Not applicable.**

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

Wetland 5 is an isolated freshwater herbaceous wetland. It is located south of the Prose Horizones Village apartment complex.

Assessment area description

Observed canopy species include bald cypress (Taxodium distichum). Observed sub-canopy layer species include saw palmetto (*Serenoa repens*) and wax myrtle (*Morella cerifera*). Groundcover consists of marsh pennywort (*Hydrocotyle umbellata*) and caesarweed (*Urena lobata*).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Lake Scott, Lake Gifford, Lake Austin	**This is a common wetland for this region.**

Functions	Mitigation for previous permit/other historic use
Wildlife habitat, water quality, nutrient uptake	**No previous mitigation has occurred for these wetlands.**

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)
It is anticipated that this system be utilized by birds, snakes, and other small mammals.	**State-listed wading birds (ST) nesting and foraging, Black bear (FS), Bald eagle (FS).**

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

No wildlife utilization was observed for Wetland 5.

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
Jordan Haselwood	**03/11/26**

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

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

Site/Project Name:	Application Number:	Assessment Area Name or Number:
Avalon Road from US 192 to Hartzog Road	**-**	**Wetland 5**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Direct Impact	**Jordan Haselwood**	**03/11/26**

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	Optimal support for species; minimal invasive species present; wildlife access is partially limited from the adjacent roadway and development (Easthampstead Road and Prose Horizons Village apartment complex); downstream benefits provided to fish and wildlife are slightly limited by barriers; hydrologic connectivity to downstream areas is less than optimal; downstream habitats derive significant benefits from AA quality.	
Current: **7**	**With Impact**: **0**	
.500(6)(b) Water Environment (n/a for uplands)	Water level and flow is slightly less than appropriate for the community type, water level indicators are not consistent with expectations; soil is appropriate for the community; vegetation was appropriate for the community type; wildlife usage is less than expected due to the proximity of the roadway.	
Current: **7**	**With Impact**: **0**	
.500(6)(c) Community Structure _____ Vegetation _____ Benthic x Both	A majority of desirable species are present within the system; minimal invasice/exotic species are present; near-normal new growth or regeneration observed; generally good plants' condition; topographic features are optimal.	
Current: **7**	**With Impact**: **0**	

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	**With Impact**
0.70	0.00

Impact Delta (ID)	
Current - w/Impact	0.70

Impact Acres =	0.54

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.38

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

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

Site/Project Name	Application Number	Assessment Area Name or Number
Avalon Road from US 192 to Hartzog Road		**Wetland 6**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
6172	**Mixed Shrubs**	**Impact**	**0.39** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
Reedy Creek	**Class III**	**Not applicable.**

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

Wetland 6 is hydrologically connected to Lake Austin. Wetland 6 is located north of the intersection between County Road and Avalon Road.

Assessment area description

Observed canopy species include bald cypress (*Taxodium distichum*). Observed sub-canopy layer species include wax myrtle (*Morella cerifera*) and falsewillow (*Baccharis spp.*). Groundcover species consist of maidencane (*Panicum hemitomon*).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Lake Austin, Lake Gifford, Lake Oliver	**This is a common wetland for this region.**
Functions **Wildlife habitat, water quality, nutrient uptake**	Mitigation for previous permit/other historic use **Wetland 6 is currently protected under Conservation Easement No. 040121-28-CEI through the South Florida Water Management District.**
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) **It is anticipated that this system be utilized by birds, snakes, and other small mammals.**	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) **State-listed wading birds (ST) nesting and foraging, Black bear (FS), Bald eagle (FS).**

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

No wildlife utilization was observed for Wetland 6.

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
Jordan Haselwood	**03/11/26**

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

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

Site/Project Name	Application Number	Assessment Area Name or Number
Avalon Road from US 192 to Hartzog Road		**Wetland 6**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
6172	**Mixed Shrubs**	**Impact**	**0.39** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
Kissimmee	**Not applicable.**	**Not applicable.**

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

Wetland 6 is hydrologically connected to Lake Austin. Wetland 6 is located north of the intersection between County Road and Avalon Road.

Assessment area description

Observed canopy species include bald cypress (*Taxodium distichum*). Observed sub-canopy layer species include wax myrtle (*Morella cerifera*) and falsewillow (*Baccharis spp.*). Groundcover species consist of maidencane (*Panicum hemitomon*).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Lake Austin, Lake Gifford, Lake Oliver	**This is a common wetland for this region.**

Functions	Mitigation for previous permit/other historic use
Wildlife habitat, water quality, nutrient uptake	**Wetland 6 is currently protected under Conservation Easement No. 040121-28-CEI through the South Florida Water Management District.**

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)
It is anticipated that this system be utilized by birds, snakes, and other small mammals.	**State-listed wading birds (ST) nesting and foraging, Black bear (FS), Bald eagle (FS).**

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

No wildlife utilization was observed for Wetland 6.

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
Jordan Haselwood	**03/11/26**

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

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

Site/Project Name	Application Number	Assessment Area Name or Number
Avalon Road from US 192 to Hartzog Road		**Wetland 8**

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
6210	**Cypress**	**Impact**	**0.58** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
Reedy Creek	**Class III**	**Not applicable.**

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

Wetland 8 is hydrologically connected to Lake Gifford. Wetland 8 is located south of the intersection of Avalon Road and Hartzog Road.

Assessment area description

Observed canopy species include bald cypress (*Taxodium distichum*) and longleaf pine (*Pinus palustris*) on the edges. Observed sub-canopy layer species include wax myrtle (*Morella cerifera*). Groundcover consists of bluestem (*Andropogon glomeratus*).

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Lake Gifford, Lake Oliver, Lake Austin	**This is a common wetland for this region.**

Functions	Mitigation for previous permit/other historic use
Wildlife habitat, water quality, nutrient uptake	**No previous mitigation has been performed for this wetland.**

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)
It is anticipated that this system be utilized by birds, snakes, and other small mammals.	**State-listed wading birds (ST) nesting and foraging, Black bear (FS), Bald eagle (FS).**

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

No wildlife utilization was observed using Wetland 8.

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
Jordan Haselwood	**03/11/26**

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

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

Site/Project Name:	Application Number:	Assessment Area Name or Number:
Avalon Road from US 192 to Hartzog Road	**-**	**Wetland 8**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Direct Impact	**Jordan Haselwood**	**03/11/26**

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

	Current	With Impact	
.500(6)(a) Location and Landscape Support	**6**	**0**	Good support for species; no invasive species present; wildlife access is partially limited from the adjacent roadway (Avalon Road); downstream benefits provided to fish and wildlife are slightly limited by barriers; hydrologic connectivity to downstream areas is less than optimal; downstream habitats derive minimal benefits from AA quality.
.500(6)(b) Water Environment (n/a for uplands)	**7**	**0**	Water level and flow is slightly less than appropriate for the community type, water level indicators are consistent with expectations; soil is appropriate for the community; vegetation was appropriate for the community type; wildlife usage is less than expected due to the proximity of the roadway.
.500(6)(c) Community Structure _____ Vegetation _____ Benthic x Both	**7**	**0**	A majority of desirable species are present within the system; no invasice/exotic species are present; near-normal new growth or regeneration observed; generally good plants' condition; topographic features are optimal.

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	**With Impact**
0.67	0.00

Impact Delta (ID)	
Current - w/Impact	0.67

Impact Acres =	0.58

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.39

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