Natural Resources Evaluation

Florida Department of Transportation
District Five

St. Johns River to Sea Loop Trail Gap

Project Development and Environment Study

from Lake Beresford Park to Grand Avenue
Volusia County, Florida

Financial Project ID: 439874-1-22-01

January 2020

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) study to construct a multi-use path from Lake Beresford Park to Grand Avenue in Volusia County.

The purpose of this PD&E study is to evaluate engineering and environmental data and document information that will aid Volusia County and FDOT District Five in determining the type, preliminary design and location of the proposed improvements. The study was conducted in order to meet the requirements of the FDOT and related federal and state laws, rules and regulations.

This Natural Resources Evaluation (NRE) is being prepared as part of this PD&E study. This report reviews the possible impacts to wetland systems and federal- and state-protected species. The identification of measures to avoid, minimize and mitigate for any potential impacts is also discussed. The alternatives evaluation process for this PD&E study began with extensive survey and ROW mapping tasks for identification of potential viable corridors that could be evaluated for connection of existing trailheads at Lake Beresford Park and Grand Avenue. In order to utilize available right-of-way wherever possible, proposed alternative alignments were chosen based on availability of ROW adjacent to existing roadways as a priority factor. Two preliminary alternative trail alignments were identified within the project area. These alignments are generally described as Alternative 1 (located west of the CSX/FDOT RR line) and Alternative 2 (located east of the CSX/FDOT RR line). FDOT approved a refined Alternative 2 as the Preferred Alternative in October 2019. This Preferred Alternative is used as the basis for the engineering and environmental analyses (and subsequent documentation) for finalization of the PD&E study.

A summary of the analysis of potential project impacts associated with the proposed construction of the St Johns River to Sea Loop Trail Gap is presented below.

Protected Species

The project area was evaluated for potential occurrences of federal- and state-listed protected plant and animal species in accordance with Section 7 of the Endangered Species Act of 1973, as amended, and Chapters 5B-40 and 68A-27 of the Florida Administrative Code (F.A.C.). The evaluation included literature and database reviews with the U.S. Fish and Wildlife Service (USFWS), the Florida Fish and Wildlife Conservation Commission (FWC), and the Florida Natural Areas Inventory (FNAI); as well as field assessments of the project area to identify the potential occurrence of protected species and/or presence of federal-designated critical habitat. Project biologists conducted field evaluations of the project area, adjacent habitats, and species surveys on May 31, 2019.

Based on evaluation of collected data and field reviews, the federal- and state-listed species discussed in **Table ES-1** and **Table ES-2** were observed or were determined to have the potential to occur within or adjacent to the project area. An effect determination was made for each of these

federal- and state-listed species based on an analysis of the potential impacts of the proposed project on each species. Other protected species with the potential to occur in the project area are the bald eagle (*Haliaeetus leucocephalus*), osprey (*Pandion haliaetus*), and Florida black bear (*Ursus americanus floridanus*).

Table ES-1 Federal Listed Species

Project Impact Determination	Federal Listed Species
"no effect"	Okeechobee Gourd (Cucurbita okeechobeensis)
	American Alligator (Alligator mississippiensis)
	Wood Stork (Mycteria americana)
	Red-cockaded Woodpecker (Picoides borealis)
	West Indian Manatee (Trichechus manatus)
may affect, but is not likely to adversely affect	Rugel's Pawpaw (Deeringothamnus rugelii)
	Striped Newt (Notophthalmus perstriatus)
	Eastern Indigo Snake (Drymarchon couperi)
	Florida Scrub-jay (Aphelocoma coerulescens)

Table ES-2 State Listed Species

Project Impact Determination	State Listed Species
"no effect anticipated"	Many-flowered Grass-pink (Calopogon multiflorus)
	Sand Butterfly Pea (Centrosema arenicola)
	Large-flowered Rosemary (Conradina grandiflora)
	Hartwrightia (Hartwrightia floridana)
	Star Anise (Illicium parviflorum)
	Nodding Pinweed (Lechea cernua)
	Florida Spiny-pod (Matelea floridana)
	Celestial Lily (Nemastylis floridana)
	Florida Beargrass (Nolina atopocarpa)
	Giant Orchid (Pteroglossaspis ecristata)
	Ocala Vetch (Vicia ocalensis)
	Bluenose Shiner (Pteronotropis welaka)
"no adverse effect anticipated"	Gopher Tortoise (Gopherus polyphemus)
	Florida Pine Snake (Pituophis melanoleucus mugitus)
	Florida Burrowing Owl (Athene cunicularia floridana)
	Florida Sandhill Crane (Grus canadensis pratensis)

Wetland Evaluation

For the purposes of this document, wetlands are defined as per 62.340 Florida Administrative Code, Section 373.019 (27) Florida Statutes, and Corps of Engineers Wetland Delineation Manual (1987) with Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region (2010).

Based on collected field data and in-house reviews, a total of two (2) wetland and surface water habitat types were identified within the project study area. Wetland and surface water habitats include mixed wetland hardwoods and freshwater marshes. Five (5) wetlands are within 300 feet of the Preferred Alternative trail alignment. No wetlands are directly within the Preferred Alternative alignment footprint. A description of land use, dominant vegetation, soil type, and other descriptors regarding these communities is provided in subsequent sections of this report.

Final determination of jurisdictional boundaries, in addition to mitigation requirements, will be coordinated between Volusia County and applicable permitting agencies during the final design phase of the project. The results of this PD&E study indicate there are no anticipated wetland or surface water impacts with the proposed trail gap project.

Essential Fish Habitat

No Habitat Areas of Particular Concern (HAPC) were identified at the project location. No EFH Areas Protected from Fishing (EFHA) were identified at the project location. The project is anticipated to have "**no effect**" on Essential Fish Habitat (EFH).

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SECTION 1.0 PROJECT OVERVIEW

1.1 Project Description

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) study to evaluate the proposed construction of a multi-use trail from Lake Beresford Park to Grand Avenue in Volusia County, as depicted in **Figure 1-1**. The project study area totals approximately 3.6 square miles in size. The purpose of this PD&E study is to evaluate engineering and environmental data and document information that will aid Volusia County and FDOT District 5 in determining the type, preliminary design and location of the proposed improvements. The study is being conducted in order to meet the requirements of federal and state laws, rules, and regulations. The purpose of this report is to document wetlands, protected species, and essential fish habitat (EFH) involvement within the proposed project's study corridor.

Figure 1-1 Project Study Area

The alternatives evaluation process for this PD&E study began with extensive survey and right-of-way (ROW) mapping tasks for identification of potential viable corridors that could be evaluated for connection of existing trailheads at Lake Beresford Park and Grand Avenue. In order to utilize available right-of-way wherever possible, proposed alternative alignments were chosen based on availability of right-of-way adjacent to existing roadways as a priority factor. Two preliminary alternative trail alignments were identified within the project area shown in **Figure 1-1**. These alignments are generally described as Alternative 1 (located west of the CSX/FDOT RR line) and Alternative 2 (located east of the CSX/FDOT RR line). The proposed typical section associated with these alternatives consists of a 12-foot multi-use trail located adjacent to an existing roadway with a 5-foot minimum separation as shown in **Figure 1-2**.

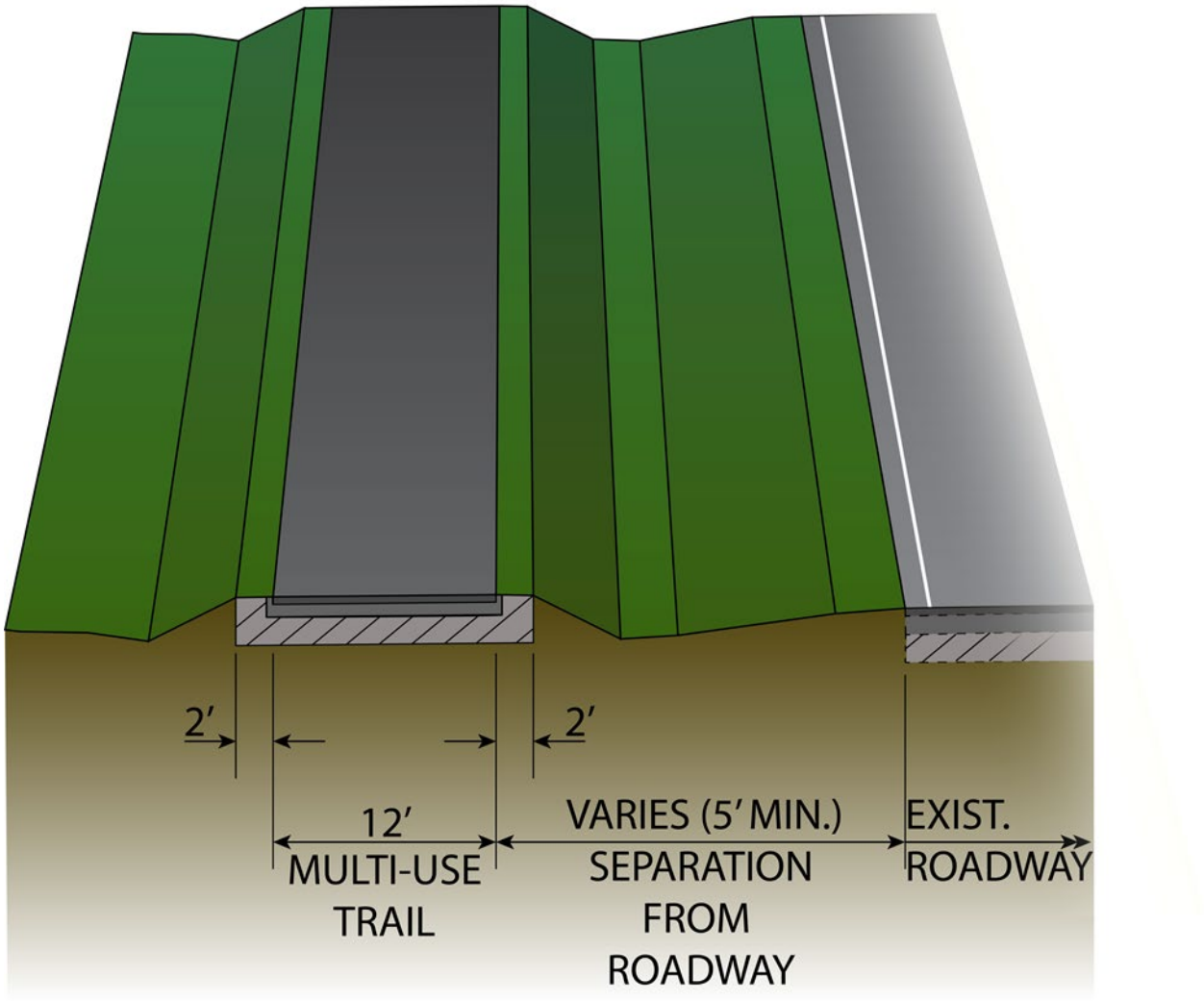

Figure 1-2 Proposed Typical Section

These preliminary alternative trail alignments were presented to the public, along with the no-build alternative, at an alternatives public meeting in December 2018. An evaluation matrix was developed and presented at this meeting for comparison of these three alternatives. The

information in the matrix included alignment length, cost, property impacts and environmental effects. Taking into consideration the factors within the evaluation matrix combined with feedback received from the public as a result of this meeting, FDOT chose to move forward with further refinement of Alternative 2. This alternative connects to the existing trailhead at Lake Beresford Park at the southern terminus and continues northward adjacent to Alexander Drive, West Beresford Road, South Beresford Road, South Grand Avenue and Grand Avenue until connection with the existing trailhead at Grand Avenue at the northern terminus.

Alternative 2 was further refined at its southern end and along South Beresford Drive as a result of public feedback received at neighborhood meetings held in January and August 2019. FDOT approved a refined Alternative 2 as the Preferred Alternative in October 2019. This Preferred Alternative is used as the basis for the engineering and environmental analyses (and subsequent documentation) for finalization of the PD&E study. The Preferred Alternative is shown in **Figure 1-3**.

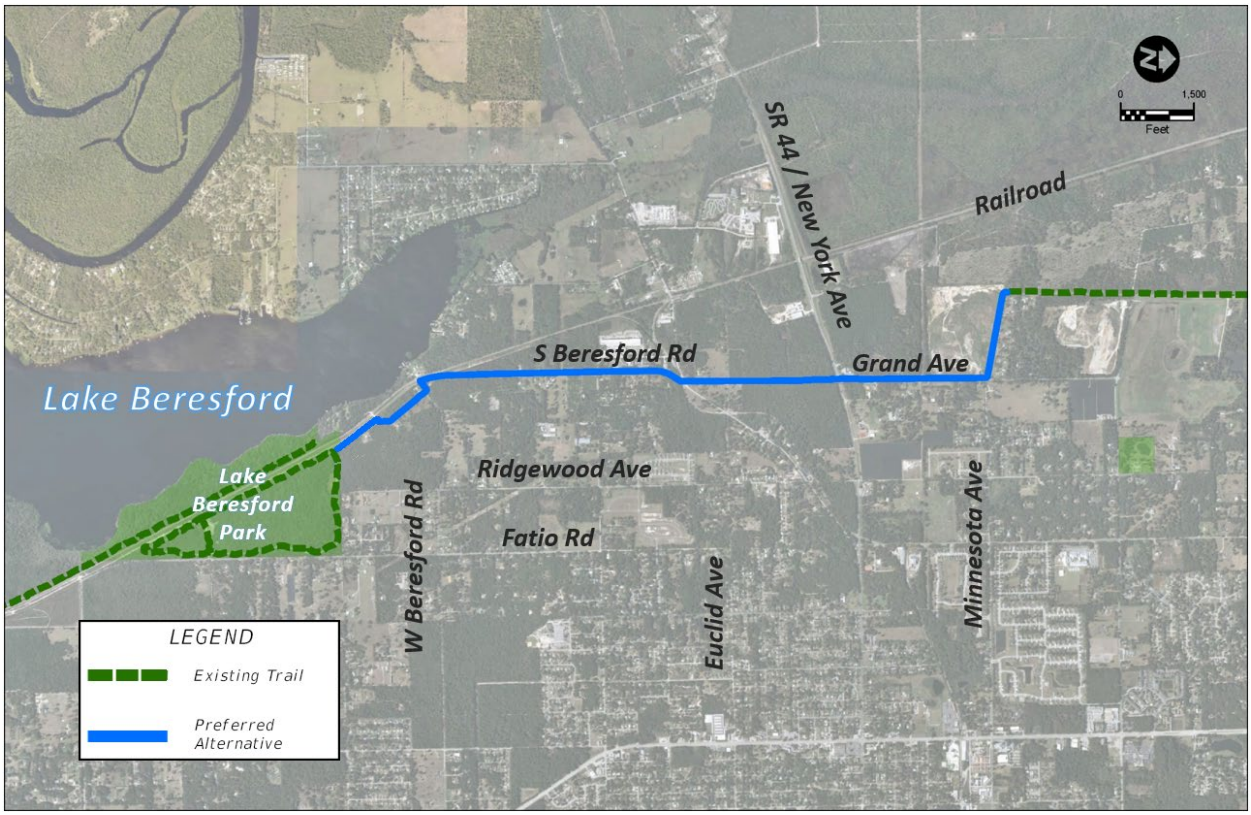

Figure 1-3 Preferred Alternative

1.2 EXISTING CONDITIONS

This section presents a description of existing conditions within the project study area, including soils and land use/vegetative cover types within both upland and wetland communities. **Section 2.0** presents a description of the potential impacts to federal- and state- protected species and proposed conservation measures to off-set these impacts. **Section 3.0** presents a description of wetland, surface water, and other surface water impacts that would result from the construction of the proposed project and a discussion of the mitigation options to offset these impacts. **Section 4.0** presents a description of the potential impacts to EFH.

For this report, the study area is defined as a 600-foot corridor extending 300 feet to either side of the proposed trail centerline.

In order to assess the approximate locations and boundaries of existing wetland and upland communities within the project area, the following site-specific data were collected and reviewed:

- Aerial photographs, (scale 1"=200') ESRI 2019;
- U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS), Soil Survey of Volusia County, Florida, 1980;
- Florida Association of Environmental Soil Scientists, Hydric Soils of Florida Handbook, 4th ed., (Hurt et. al. 2007);
- Natural Resources Conservation Service Web Soil Survey, United States Department of Agriculture, (July 2019);
- USGS. 7.5 Minute Topographical Quadrangle Map, De Land, Florida. U.S. Geological Survey;
- FDOT, Florida Land Use Cover, and Forms Classification System (FLUCFCS), 3rd ed., January 1999;
- St. Johns River Water Management District (SJRWMD), Florida Land Use, Cover and Forms Classification System GIS Database;
- U.S. Fish and Wildlife Service (USFWS), National Wetlands Inventory (NWI), Wetlands Online Mapper (May 2019); and
- USFWS, Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et. al. 1979).

For the purposes of this document, wetlands are defined as per 62.340 Florida Administrative Code and Section 373.019 (27), Florida Statutes. Surface waters are defined as open water bodies.

Environmental scientists familiar with Florida's natural communities conducted field reviews of the study area on May 31, 2019. Field reviews consisted of pedestrian transects throughout all natural habitat types found within the study area. The purpose of the reviews was to verify and/or refine preliminary habitat boundaries and classification codes established through in-office literature

reviews and aerial photo interpretation. During field investigations, each upland habitat and wetland and surface water habitat within the study area was visually inspected where accessible. Attention was given to identifying plant species and composition for each community. Exotic plant infestations and other disturbances such a soil subsidence, clearing, canals, power lines, etc., were noted. Attention was also given to identifying wildlife and signs of wildlife usage in each wetland and adjacent upland habitats within the study area.

Based on site-specific data searches and field evaluations, a total of seven (7) soil types and 14 upland and two (2) wetland habitat types were identified within the study area. The following subsections describe the soils, upland and wetland community types, and individual wetlands and surface waters that occur within the study area.

1.2.1 Soils

Based on the Soil Survey of Volusia County, Florida (NRCS, 1980) the study area is comprised of seven (7) soil types. **Appendix A** provides an aerial map depicting the boundaries of each soil type within the project study area and soil descriptions and their general characteristics. According to the NRCS Web Soil Survey, no soil type reported within the study area is classified as hydric. The seven (7) soils are listed as non-hydric. Mapped non-hydric soils comprise 227.23 acres (99.94 percent) of the study area. The remaining 0.13 acres (0.06 percent) of the study area is designated as open water.

Table 2-1 lists the soil types reported within the study area, their corresponding NRCS reference numbers reported in the Soil Survey of Volusia County, Florida, their hydric classification, and the approximate acreage and percentage.

Table 2-1 Soil Types and Coverage within the St Johns River to Sea Loop Trail Gap Study Area

Soil Type	Hydric	Area within Project Study Area	Percentage of Study Area
	Y/N		
1 APOPKA FINE SAND, 0 TO 5 PERCENT SLOPES	N	186.98	82.24%
4 ASTATULA FINE SAND, 0 TO 8 PERCENT SLOPES	N	5.51	2.42%
17 DAYTONA SAND, 0 TO 5 PERCENT SLOPES	N	3.37	1.48%
37 ORSINO FINE SAND, 0 TO 5 PERCENT SLOPES	N	6.63	2.91%
47 PITS	N/A	2.55	1.12%
49 POMONA FINE SAND	N	17.55	7.72%
63 TAVARES FINE SAND, 0 TO 5 PERCENT SLOPES	N	4.66	2.05%
99 WATER	N/A	0.13	0.06%
		227.36	

1.2.2 Existing Land Use and Vegetative Cover

Based on the Volusia County 2016 existing land use data, a total of fourteen (14) upland and two (2) wetland habitat types were found within the project study area. Descriptions and aerial maps depicting existing land uses and habitats within the project study area are provided in **Appendix B**. **Table 2-2** provides land use and habitat types, their FLUCFCS classifications, and their total acreage and percent coverage within the project study area.

Upland communities comprise 221.60 acres (97.5 percent) of the project study area and include residential development, commercial, agricultural, upland forest and utilities. Wetland communities comprise 5.76 acres (2.5 percent) of the project study area and include Mixed wetland hardwoods and freshwater marsh.

Table 2-2 Existing Land Use and Coverage within the St Johns River to Sea Loop Trail Gap Study Area

FLUCCS Classification and Description	Area within Project Study Area	Percentage of Study Area
1100: Low Density, <2 dwelling units/acre	38.08	16.75%
1180: Residential, rural - one unit on 2 or more acres	21.39	9.41%
1400: Commercial and Services	16.24	7.14%
2110: Improved Pastures	1.86	0.82%
2130: Woodland Pastures	14.51	6.38%
2150: Field Crops	2.90	1.28%
2210: Citrus Groves	8.30	3.65%
2432: Hammock Ferns	2.43	1.07%
3300: Mixed Upland Nonforested	3.35	1.47%
4200: Upland Hardwood Forests	18.98	8.35%
4340: Upland Mixed - Coniferous / Hardwood	46.12	20.29%
4410: Coniferous Plantations	16.35	7.19%
8320: Electrical Power Transmission Lines	9.86	4.34%
8350: Solid Waste Disposal	21.23	9.34%
UPLANDS	221.60	97.47%
6170: Mixed Wetland Hardwoods	5.60	2.46%
6410: Freshwater Marshes	0.16	0.07%
WETLANDS	5.76	2.53%
	227.36	

1.2.3 Wetlands and Surface Waters

During field reviews of the project study area, environmental scientists delineated the approximate boundaries of existing wetland and surface water communities on 1” = 200’ true-color aerial photographs. Each wetland and surface water habitat within the project study area was classified using FLUCFCS (FDOT 1999) and the USFWS Classification of Wetlands and Deepwater

Habitats of the United States (Cowardin, et al., 1979). Approximate wetland boundaries were identified in accordance with the State of Florida Wetlands Delineation Manual [Chapter 62-340, Florida Administrative Code (F.A.C.)], the criteria found within the U.S. Army Corps of Engineers (USACE) 1987 Corps of Engineers Wetland Delineation Manual (Y-87-1) and 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coast Plain Region (Version 2.0) (ERDC/EL TR-10-20), EO 11990, and Part 2, Chapter 9 - Wetlands and Other Surface Waters of the FDOT PD&E Manual.

Formal wetland boundary delineation and surveys were not conducted as part of this study and will be completed as part of the state and federal permit process.

Based on collected field data and in-house reviews, a total of two (2) wetland and surface water habitat types were identified within the project study area. Wetland and surface water habitats include mixed wetland hardwoods and freshwater marshes.

Appendix B provides descriptions of all identified wetland and surface water habitats, a table of their acreage within the project study area, and aerial maps of the location of these systems within the project study area. When appropriate, these communities are discussed collectively depending upon their hydrologic connection. There are no wetlands or surface water designated as Outstanding Florida Waterways within the project study area.

SECTION 2.0 PROTECTED SPECIES

2.1 Introduction

Listed species are afforded special protective status by federal and state agencies. This special protection is federally administered by the United States Department of the Interior, USFWS, and National Oceanic and Atmospheric Administration – National Marine Fisheries Services (NOAA-NMFS) pursuant to the Endangered Species Act of 1973 as amended (ESA). The USFWS administers the federal list of Endangered and Threatened Wildlife and Plants (50 CFR 17.11-12). Federal protection of marine species is the responsibility of the NOAA-NMFS. Impacts to critical habitat were also evaluated per Section 3(5)(A) of the ESA. The study area was also evaluated for the occurrence of Critical Habitat as defined by the ESA and 50 CFR Part 424.

Administered by the Florida Fish and Wildlife Conservation Commission (FWC), the State of Florida affords special protection to animal species designated as State-designated Threatened or State Species of Special Concern, pursuant to Chapter 68A-27, F.A.C. The state also affords protection to Federally-designated Endangered and Threatened Species, thus all federally-listed species are also state listed, pursuant to Chapter 68A- 27.003(1)(b). The State of Florida also protects and regulates plant species designated as endangered, threatened or commercially exploited as identified on the Regulated Plant Index (5B- 40.0055, F.A.C.), which is administered by the Florida Department of Agriculture and Consumer Services (FDACS), Division of Plant Industry, pursuant to Chapter 5B-40, F.A.C.

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 proposed project alternative may have on protected species in accordance with Part 2, Chapter 16 – Protected Species and Habitat of the FDOT PD&E Manual.

2.2 Methodology

In order to determine federal- and state-listed protected plant and animal species that have potential to occur within the study area, available site-specific data was collected and evaluated.

Literature reviewed and databases searched as part of this evaluation included:

- Aerial photographs, (scale 1”= 200’) ESRI 2018;
- U.S. Department of Agriculture (USDA), NRCS, Soil Survey of Volusia County, Florida, 1980;
- FDOT, FLUCFCS, 3rd ed., January 1999;
- St. Johns River Water Management District (SJRWMD), Florida Land Use, Cover and Forms Classification System GIS Database;
- USFWS, Endangered and Threatened Wildlife and Plants, 50 CFR 17.11 and 17.12, June 2007;

- FDACS, Florida Forest Service, Florida's Federally Listed Plant Species website; (http://www.freshfromflorida.com/Divisions-Offices/Florida-Forest-Service/Our-Forests/Forest-Health/Florida-Statewide-Endangered-and-Threatened-Plant-Conservation-Program/Florida-s-Federally-Listed-Plant-Species);
- FWC, Florida's Endangered Species and Threatened Species, May 2017;
- FWC, Eagle Nest Locator website (https://public.myfwc.com/FWRI/EagleNests/nestlocator.aspx), May 2018;
- FWC, Wading Bird Rookeries website (http://ocean.floridamarine.org/TRGIS/Description_Layers_Terrestrial.htm), 1999;
- Florida Natural Areas Inventory (FNAI) Biodiversity Matrix Map Server (http://www.fnai.org/biointro.cfm);
- USFWS, 2017 Wood Stork Nesting Colonies Maps (http://www.fws.gov/northflorida/woodstorks/wood-storks.htm), January 2018;
- USFWS, Critical Habitat Portal website (http://criticalhabitat.fws.gov/crithab/);
- FNAI Tracking List (http://www.fnai.org/trackinglist.cfm); and
- USFWS, Information for Planning and Consultation (IPaC) Mapper (https://ecos.fws.gov/ipac/location/index).

Environmental scientists familiar with Florida natural communities conducted field reviews of the project area, adjacent habitats, and species-specific surveys on May 31, 2019. For the purposes of this study, the project study area is defined as a 600-foot corridor extending 300 feet to either side of the proposed trail centerline. Field reviews consisted of pedestrian transects throughout the natural habitat types located within the study area. The purpose of the reviews was to verify and/or refine preliminary habitat boundaries and classification codes established through in-office literature reviews and aerial photo interpretation. During field investigations, upland and wetland communities within the study area were visually inspected. Attention was given to identifying dominant plant species composition for each community. Additional attention was given to identifying potential wildlife and signs of wildlife usage in each wetland and upland community within the study area. The FNAI was contacted for documentation occurrences of listed species within one mile of the study area (see **Appendix C** for the FNAI data report).

Based on the evaluation of collected data, field reviews, FNAI data, and database searches, the federal- and state-listed protected species discussed in **Section 2.3** were considered as having the potential to occur within or adjacent to the study area. For a species to be considered potentially present the study area must be within the species' distribution range. An effect determination was then made for each federal- and state-listed species based on an analysis of the potential impacts of the Preferred Alternative alignment on each species.

2.3 Results

Based on the information collected and field reviews conducted during May 2019, a list of protected species with the potential to occur within the project study area was generated. This list includes a total of 29 federal- or state- protected species that have the potential for occurrence within the project study area. These protected species include thirteen (13) plant, one (1) fish, one (1) amphibian, four (4) reptile, seven (7) avian, and three (3) mammal species. **Appendix D** presents a list of protected species with the potential to occur within the study area, their federal or state protection status, preferred habitat, and ranking of potential occurrence. Locations of all listed species documented within one mile of the project study area as well as the locations of all protected species observed during field reviews are also provided in **Appendix D**.

The potential for occurrence for each species was designated as Low, Moderate, or High based on the type of habitat present within the study area, its relative condition, if the species has been previously documented within one (1) mile of the project area, or if the species was observed in the project study area. A Low rating indicates that suitable habitat for that species was found within the project study area, but the species has not been documented within one (1) mile of the project study area. A Moderate rating indicated that suitable habitat exists and the species has been documented within one mile of the project study area. A High rating indicates that suitable habitat exists and the species was observed during field reviews.

While the proposed project has taken all practicable measures to avoid and minimize impacts to potentially occurring protected species and their habitats, unavoidable impacts may occur as a result of trail construction. A determination of the anticipated project "effect" on protected species was made based on their probability of occurrence within the project study area, the proposed changes to their habitat quality, quantity and availability as a result of project construction, and how each species is expected to respond to anticipated habitat changes. Listed below are the "effect" determinations for each species.

2.3.1 Federal Species

2.3.1.1 Plants

Okeechobee Gourd (Cucurbita okeechobeensis)

The Okeechobee gourd is a vine with long, twisting tendrils and slender stems, running over the ground or climbing shrubs and trees to 40 feet high. Leaves 6 - 8 inches broad, rough-hairy, alternate, paired with tendrils, broadly heart-shaped, slightly to deeply lobed, lightly toothed, sometimes mottled with silvery-green, often with tiny, spike-like hairs on veins on under surface of leaf and on leaf stalk. Flowers 2.5 - 3 inches long, yellow, bell-shaped with a ribbed tube and 5 rounded lobes. Fruit about 3 inches wide, hard, inedible, round, smooth and waxy, light green with pale stripes when mature; turning tan when dry; immature fruits densely hairy. Seeds flat with raised margins. Habitat: Pond apple swamps and mucky soils on Lake Okeechobee shores and islands; floodplain forests along the St Johns River. Range-wide Distribution: Endemic to central FL. Conservation Status: Once locally abundant in the mucky soils of the lower Kissimmee River basin, now known only from a few sites around Lake Okeechobee and along the St. Johns River,

where populations seem to be declining. It is listed as endangered by the USFWS. No suitable habitat is present within the project study area. According to FNAI data, the Okeechobee gourd has the potential to occur in Volusia County; however, this species was not observed during the field reviews of the study area. Based on this information, it has been determined that the proposed project will have "**no effect**" on the Okeechobee gourd.

Rugel's Pawpaw (Deeringothamnus rugelii)

The Rugel's pawpaw is a low shrub with a woody base and slender, non-woody shoots that die back to the ground in the winter, 4 - 8 inches long, arching or erect, seldom branched. Leaves 1.5 - 3 inches long, alternate, erect, leathery, oblong, tips blunt or notched, with raised veins on underside and rolled under margins. Flowers: fragrant, solitary in leaf axils, with 3 sepals and 6 yellow petals. Fruit: yellow-green, peanut-shaped, 1 - 3 inches long. Habitat: Open slash pine or longleaf pine flatwoods with wiregrass and saw palmetto in the understory. Range-wide Distribution: Endemic to Volusia County, FL. Rugel's pawpaw is known from 29 sites, about half of which are on public lands. Habitat has been severely reduced by development. This plant is listed as endangered by the USFWS. Although marginally suitable habitat is present within the pine flatwoods and pine plantations located in the project study area, this species relies on frequent fires to limit competition with larger grasses and shrubs. According to FNAI data, the Rugel's pawpaw has the potential to occur in Volusia County; however, this species was not observed during the field reviews of the project study area. Based on this information, it has been determined that the proposed project "**may affect, but is not likely to adversely affect**" on the Rugel's pawpaw.

2.3.1.2 Amphibians

Striped Newt (Notophthalmus perstriatus)

The striped newt is a relatively small salamander, 2.4–3.9 in. (61–99 mm) with several distinct life stages. Adults and older juveniles are olive to greenish brown with red line running down each side of back and terminating on tail. Belly is yellow with black spots; skin rough, not slimy as in most salamanders. Larvae aquatic, brown, with bushy external gills between eyes and front legs, and dorsolateral lines generally broken into segments. Juvenile terrestrial eft stage, when present, rough-skinned, dull orange to reddish brown with two red stripes. Tail in all aquatic stages with dorsal and ventral fins, which are lacking in terrestrial stages. Habitat: Xeric upland communities, principally sandhill but also scrub; occasionally in pine flatwoods. Breeds in isolated, mostly ephemeral wetlands (depression marshes) that lack predatory fishes as a result of periodic drying cycles. Occasional fire and relatively undisturbed soil and vegetative groundcover are important terrestrial habitat components. This species is listed as candidate by the USFWS. According to FNAI data, the striped newt has the potential to occur in Volusia County; however, this species was not observed during the field reviews of the project study area. Based on this information and the lack of documented occurrences, it has been determined that the proposed project "**may affect, but is not likely to adversely affect**" on the striped newt.

2.3.1.3 Reptiles

American Alligator (Alligator mississippiensis)

The American alligator is a large, rounded-snout crocodilian listed as threatened by the USFWS due to its similarity of appearance to the American crocodile (Crocodylus acutus). Alligators thrive in a wide variety of wetland habitats including streams, ponds, lakes, freshwater marshes, and ditches. The American alligator's exceptional adaptability allow it to utilize freshwater wetland and surface water systems adjacent to the project area, no suitable habitat is present within the project footprint, and this species was not observed during field reviews. As this project will have no wetland impacts, it has been determined that the proposed project will have "**no effect**" on the American alligator.

Eastern Indigo Snake (Drymarchon couperi)

The eastern indigo snake is a large, glossy black snake that is listed as threatened by the USFWS. This species can be found in a variety of habitat types, including pine flatwoods, scrubby flatwoods, high pine, dry prairie, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields, coastal dunes, as well as human-altered habitats. It may also utilize gopher tortoise burrows for shelter to escape hot or cold ambient temperatures. While there is suitable habitat for this species within the study area and gopher tortoise burrows were observed during field reviews, the eastern indigo snake was not observed during field reviews. Additionally, according to FNAI data, no individuals have been documented within one (1) mile of the project study area; however, it is reasonable to expect that these species could utilize habitat within the project study area. There are no anticipated impacts to xeric habitat. To minimize potential adverse impacts to the eastern indigo snake, the FDOT will implement the USFWS-approved Standard Protection Measures for the Eastern Indigo Snake (updated August 2013) during construction of the proposed roadway improvements (see **Appendix E** Standard Protection Measures for the Eastern Indigo Snake). Additionally, construction of the proposed project will result in less than 25 acres of impact to xeric habitat and will impact less than 25 active and inactive gopher tortoise burrows. Volusia County will also survey the project area prior to construction to determine the presence and location of gopher tortoise burrows within the project area. If gopher tortoises or burrows are found within 25 feet of the limits of construction, Volusia County will coordinate with the FWC to secure all permits needed to relocate the tortoises and associated commensal species. With the implementation of these measures, it has been determined that the proposed project "**may affect, but is not likely to adversely affect**" the eastern indigo snake.

2.3.1.4 Birds

Florida Scrub-Jay (Aphelocoma coerulescens)

The Florida scrub-jay is similar in size and shape to the common blue jay, with a pale blue crestless head, nape, wings, and tail. It is listed as threatened by the USFWS. Optimal scrub-jay habitat consists of low growing, scattered scrub species with patches of bare sandy soil such as

those found in sand pine scrub and scrubby flatwoods habitats that are occasionally burned. In areas where these types of habitats are unavailable, Florida scrub-jays may be found in less optimal habitats such as pine flatwoods with scattered oaks. The project study area is located within the USFWS Florida Scrub-jay Consultation Area (see **Appendix D** Protected Species Map), Service Area, and State-wide Habitat. There is no current suitable scrub habitat located within the project area as the area is not managed or burned regularly. According to FNAI data, there have been no documented occurrences within one (1) mile of the project study area. Additionally, no observations were made during field reviews. Based on this information, it has been determined that the proposed project "**may affect, but is not likely to adversely affect**" the Florida scrub jay.

Wood Stork (Mycteria americana)

The wood stork is a large, white, wading bird that is listed as threatened by the USFWS. The wood stork is an opportunistic feeder and utilizes various habitat types including freshwater marshes, swamps, lagoons, ponds, tidal creeks, flooded pastures, and ditches. Water that is relatively calm, uncluttered by dense aquatic vegetation, and with a permanent or seasonal water depth between two (2) and 15 inches is considered optimal foraging habitat for this species. While suitable foraging habitat for the wood stork is present within the study area, no individuals were observed during field reviews. Additionally, there have been no documented occurrences within one (1) mile of the project study area.

According to the USFWS wood stork colony website, the study area is located within the 18.6-mile core foraging area (CFA) of three (3) wood stork nesting colonies: Hontoon Island (Volusia County), Old Mud Lake (Lake County) and Lake Disston (Flager County) (see **Figure 2-1** Wood Stork Core Foraging Area Map). The primary concern for this species is loss of suitable foraging habitat within the CFA of a wood stork colony. As this project will have no wetland impacts, it has been determined that the proposed project will have "**no effect**" on the wood stork.

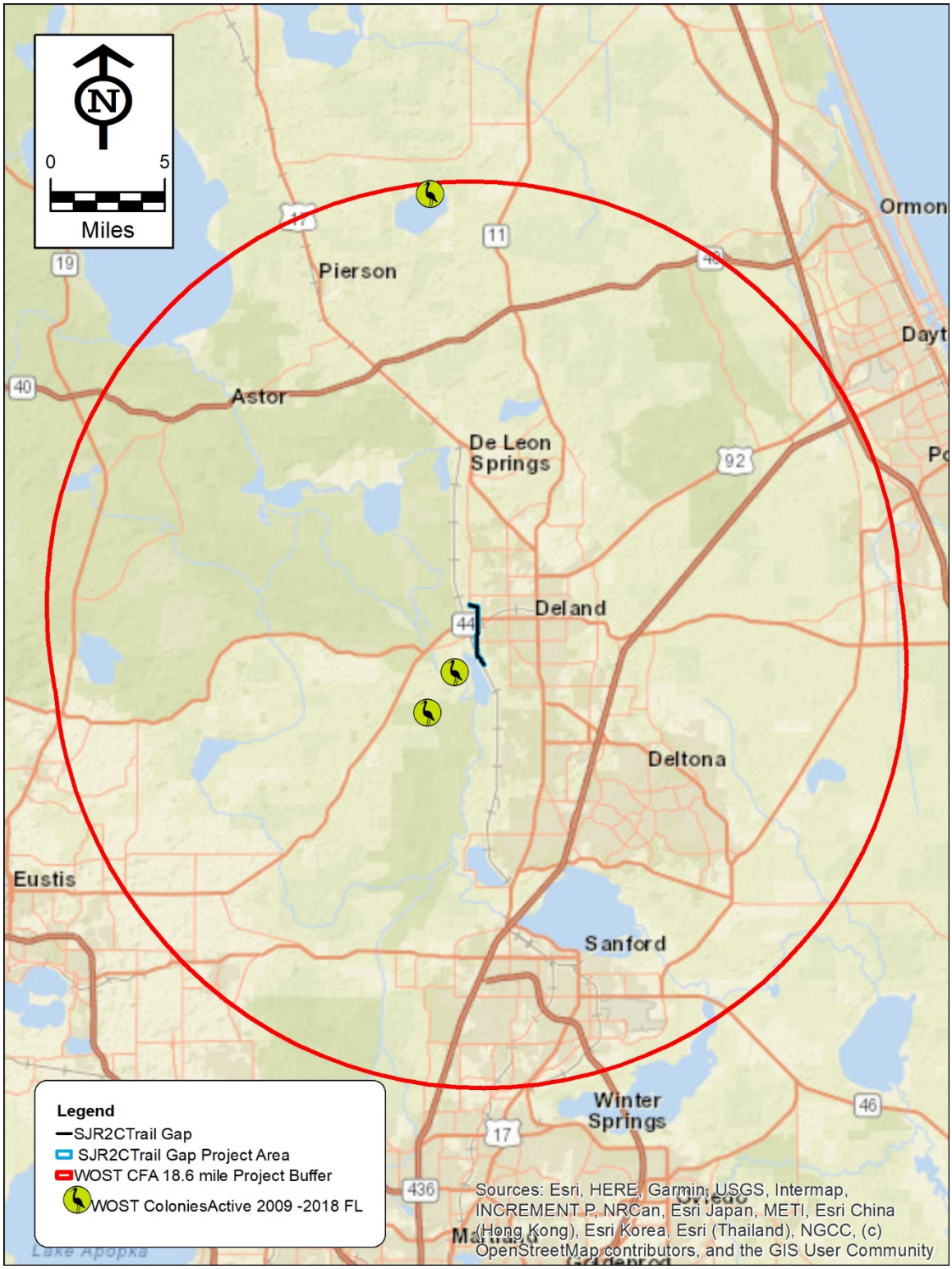

Figure 2-1 Wood Stork Core Foraging Area Map

Red-cockaded Woodpecker (Picoides borealis)

The red-cockaded woodpecker (RCW) is a small woodpecker that is listed as endangered by the USFWS. This species is found primarily in open, mature pine woodlands with a sparse understory consisting of a diverse variety of grass and forbs. Additionally, large pines with a minimum diameter at breast-height of 10 inches with the heartwood disease are necessary for RCWs to construct nesting cavities. While the study area is located within the USFWS RCW Consultation Area (see **Appendix D** Protected Species Map), no suitable nesting or foraging habitat exists within the project study area. According to FNAI data, there have been no documented occurrences within one (1) mile of the project study area. Additionally, no observations were made during field reviews. Based on this information, it has been determined that the proposed project will have "**no effect**" on the red-cockaded woodpecker.

2.3.1.5 Mammals

West Indian Manatee (Trichechus manatus)

The West Indian manatee is a large, aquatic mammal that is listed as threatened by the USFWS. This species is found in marine, brackish, and freshwater systems in coastal and riverine areas throughout Florida. Preferred habitats include areas near the shore featuring underwater vegetation like seagrass, eelgrass, and other aquatic plants, which are also a large part of their diet. The study area falls outside the USFWS West Indian Manatee Consultation Area and Critical Habitat (see **Appendix D** Protected Species Map). There are no anticipated impacts to critical habitat. Because there are no anticipated impacts to the critical habitat for the West Indian manatee, it has been determined that the project will have "**no effect**" on the West Indian manatee.

2.3.2 State Species

2.3.2.1 Plants

Many-Flowered Grass-Pink (Calopogon multiflorus)

The many-flowered grass-pink is a small plant with grass like leaves and dark pink flowers that is listed as threatened by the FDACS. This species is a member of the orchid (Orchidaceae) family and occurs in dry to moist flatwoods with longleaf pine, saw palmetto, and wiregrass. There is limited suitable habitat available for the many-flowered grass-pink within the project study area. According to FNAI data, the many-flowered grass-pink has the potential to occur within Volusia County, but it has not been documented within one (1) mile of the study area. Additionally, this species was not observed during the field reviews of the project area. Based on this information, it has been determined that the proposed project will have "**no effect anticipated**" on the many-flowered grass pink.

Sand Butterfly Pea (Centrosema arenicola)

The sand butterfly pea is a perennial vine with stems up to 10 feet long twining over bushes with 1.5-inch wide, purplish-blue flowers that is listed as endangered by the FDACS. This species is a member of the pea (Fabaceae) family and occurs in sandhill, scrubby flatwoods and dry upland woods. There is suitable habitat available for the sand butterfly pea within the project study area. According to FNAI data, the sand butterfly pea has the potential to occur within Volusia County, but it has not been documented within one (1) mile of the study area. Additionally, this species was not observed during the field reviews of the project area. Based on this information, it has been determined that the proposed project will have "**no effect anticipated**" on the sand butterfly pea.

Large-flowered Rosemary (Conradina grandiflora)

Large-flowered rosemary is a small, drought tolerant native shrub well suited for use as a tall ground cover or low shrub along the beach. This aromatic shrub generally grows up to about 1.5 meters in maximum height. Each flower has a hairy, maroon-tinged calyx of pointed sepals. This species is a member of the mint (Labiatae) family It is an endangered plant in Florida. This plant grows on dunes and other landforms with deep, sandy soils, often near the coast. The habitat is generally Florida scrub, and the plant is common in remaining remnants of scrub habitat. It is well-adapted to a regime of frequent fires. According to FNAI data, the large-flowered rosemary has the potential to occur within Volusia County, but it has not been documented within one (1) mile of the study area. Additionally, this species was not observed during the field reviews of the project area. Based on this information, it has been determined that the proposed project will have "**no effect anticipated**" on the large-flowered rosemary.

Hartwrightia (Hartwrightia floridana)

The hartwrightia is a perennial herb with single, erect stem, 2-3 feet tall, rising from a basal rosette with a large open inflorescence with flat-topped clusters of flower heads of pink disk flowers that is listed as threatened by the FDACS. This species is a member of the composite flower (Asteraceae) family and occurs on seepage slopes, wet prairies and wet flatwoods. There is limited suitable habitat available for the hartwrightia within the project study area. According to FNAI data, the hartwrightia has the potential to occur within Volusia County, but it has not been documented within one (1) mile of the study area. Additionally, this species was not observed during the field reviews of the project area. Based on this information, it has been determined that the proposed project will have "**no effect anticipated**" on the hartwrightia.

Star Anise (Illicium parviflorum)

The star anise is a shrub with one or several trunks with 6-inch long glossy leaves and 1-inch wide yellow flowers and a woody star-shaped fruit that is listed as endangered by the FDACS. This species is a member of the anisetree (Illiciaceae) family and occurs on banks of spring-run or seepage streams, bottomland forest, hydric hammock, baygall dominated by red maple and sweet bay. There is limited suitable habitat available for the star anise within the project study area. According to FNAI data, the star anise has the potential to occur within Volusia County, but it has not been documented within one (1) mile of the study area. Additionally, this species was

not observed during the field reviews of the project area. Based on this information, it has been determined that the proposed project will have "**no effect anticipated**" on the star anise.

Nodding pinweed (Lechea cernua)

The nodding pinweed is a shrub-like perennial herb, usually from a deep taproot and with several spreading, ascending or erect shoots with very small, short, reddish petals. It is listed as threatened by the FDACS. This species is a member of the rock-rose (Cistacea) family and occurs on dry sandy areas, sand pine scrub, scrub, dunes and sandy ridges. There is suitable habitat available for the nodding pinweed within the project study area. According to FNAI data, the nodding pinweed has the potential to occur within Volusia County, but it has not been documented within one (1) mile of the study area. Additionally, this species was not observed during the field reviews of the project area. Based on this information, it has been determined that the proposed project will have "**no effect anticipated**" on the nodding pinweed.

Florida Spiny-pod (Matelea floridana)

The Florida spiny-pod is a deciduous herbaceous vining milkweed that produces a milky sap when the leaves or stems are cut or injured and each bloom is a rich burgundy red with five petals and are rather flat. It is listed as endangered by the FDACS. This species is a member of the dogbane (Apocynaceae) family and occurs on open woodlands, sandhills and open fields. There is suitable habitat available for the Florida spiny-pod within the project study area. According to FNAI data, the Florida spiny-pod has the potential to occur within Volusia County, but it has not been documented within one (1) mile of the study area. Additionally, this species was not observed during the field reviews of the project area. Based on this information, it has been determined that the proposed project will have "**no effect anticipated**" on the Florida spiny-pod.

Celestial Lily (Nemastylis fliridana)

The celestial lily is a perennial herb from a bulb with a single, tall, slender stem with flowers more than 1.5 inches across, with 6 dark blue, spreading petals and sepals that is listed as endangered by the FDACS. This species is a member of the iris (Iridaceae) family and occurs in wet flatwoods (often in cabbage palm flatwoods variant), prairies, marshes, and cabbage palm hammocks edges. There is limited suitable habitat available for the celestial lily within the project study area. According to FNAI data, the celestial lily has the potential to occur within Volusia County, but it has not been documented within one (1) mile of the study area. Additionally, this species was not observed during the field reviews of the project area. Based on this information, it has been determined that the proposed project will have "**no effect anticipated**" on the celestial lily.

Florida Beargrass (Nolina atopocarpa)

Florida beargrass is a fire-dependent, grass-like herb with small white flowers that is listed as threatened by FDACS. This species is a member of the flowering plant (Asparagaceae) family and typically occurs in mesic to wet flatwoods. Marginally suitable habitat is found in the flatwoods areas of the project study area. According to FNAI data, this species has the potential to occur in

Volusia County, but it has not been documented within one (1) mile of the project study area. Additionally, this species was not observed during field reviews or species-specific surveys. Based on this information, it has been determined that the proposed project will have "**no effect anticipated**" on Florida beargrass.

Giant Orchid (Pteroglossaspis ecristata)

The giant orchid is a perennial herb with yellow-green flowers twisted in towards the stalk. It is listed as threatened by FDACS. This species is a member of the orchid (Orchidaceae) family and typically occurs on sandhill, scrub, pine flatwoods, and pine rocklands. Marginally suitable habitat for this species occurs in the project study area pine flatwoods. According to FNAI data, this species has the potential to occur in Volusia County, but it has not been documented within one (1) mile of the project study area. Additionally, this species was not observed during field reviews or species-specific surveys. Based on this information, it has been determined that the proposed project will have "**no effect anticipated**" on the giant orchid.

Ocala Vetch (Vicia ocalensis)

The Ocala vetch is a perennial vine with nearly hairless stems to 4 feet in length and flowers about 0.5-inch long, lavender blue to white with faintly striped banner petal. It is listed as endangered by FDACS. This species is a member of the pea (Fabaceae) family and typically occurs on open, wet thickets along margins of spring runs and streams. Little suitable habitat for this species occurs in the project study area. According to FNAI data, Ocala vetch has the potential to occur in Volusia County, but it has not been documented within one (1) mile of the project study area. Additionally, this species was not observed during field reviews. Based on this information, it has been determined that the proposed project will have "**no effect anticipated**" on the Ocala vetch.

2.3.2.2 Fish

Bluenose Shiner (Pteronotropis welaka)

The bluenose shiner is a small shiner measuring 1.3 - 1.9-inch. (33 - 48 mm); olive-colored with a dark lateral stripe bordered above by a narrow amber stripe, a dark caudal spot highlighted by light-colored areas above and below, and a blue "nose" (adults only). Adult males have large, darkly pigmented dorsal fins and yellow pelvic and anal fins streaked with black. The bluenose shiner is listed as threatened by the FWC. This species requires areas of quiet backwaters and pools of blackwater streams and rivers and spring runs; usually with thick vegetation nearby. There is no suitable habitat for this species within the project study area and has not been documented within one (1) mile of the project study area. Based on this information, it has been determined that the proposed project will have "**no effect anticipated**" on the bluenose shiner.

2.3.2.3 Reptiles

Gopher Tortoise (Gopherus polyphemus)

The gopher tortoise is a large, terrestrial tortoise that is listed as threatened by the FWC. This species requires well-drained and loose sandy soils for burrowing, and low-growing herbs and grasses for food. These conditions are best found in the sandhill (longleaf pine-xeric oak) community, although tortoises are known to use many other habitats including sand pine scrub, xeric oak hammocks, dry prairies, pine flatwoods, and ruderal sites. During field reviews of the project study area, several active gopher tortoise burrows were observed (see **Figure 2-2** Gopher Tortoise Burrow Location Map). Based on current FWC regulations, any gopher tortoise located within 25 feet of the project construction area must be relocated to an FWC-approved recipient site or temporarily relocated onsite. Volusia County will survey the project area prior to construction to determine the presence of this species within the project area. If gopher tortoises or burrows are found within 25 feet of the limits of construction, Volusia County will coordinate with the FWC to secure all permits needed to relocate the tortoises and associated commensal species. With the implementation of these measures, it has been determined that the proposed project will have "**no adverse effect anticipated**" on the gopher tortoise.

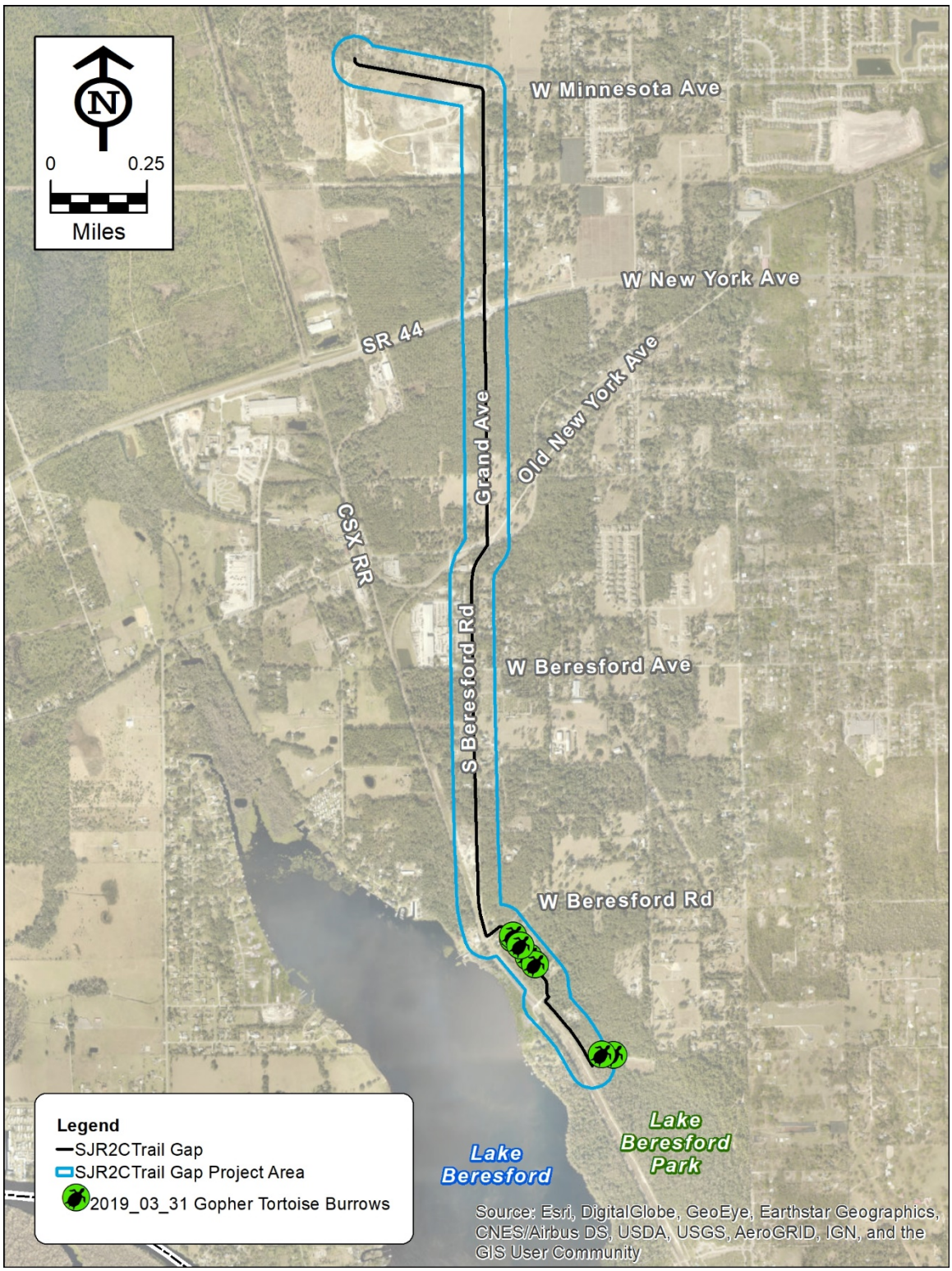

Figure 2-2 Gopher Tortoise Burrow Location Map

Pine Snake (Pituophis melanoleucus)

The pine snake is a large, stocky, tan or rusty colored snake with an indistinct pattern of blotches. This snake is listed as threatened by the FWC. The species requires habitats with open canopies and dry sandy soils such as sandhill, sand pine scrub, and scrubby flatwoods, in which it burrows and often coexists with pocket gophers and gopher tortoises. Suitable habitat for the pine snake exists within the project study area in areas with identified gopher tortoise burrows. According to FNAI data, this species has the potential to occur in Volusia County, but has not been documented within one (1) mile of the project study area. Additionally, this species was not observed during field reviews or species-specific surveys. Volusia County will survey the Preferred Alternative alignment for gopher tortoise burrows prior to construction and will coordinate with the FWC to secure the necessary permits to relocate gopher tortoises and associated commensal species prior to construction. With the implementation of these measures, it has been determined that the proposed project will have "**no adverse effect anticipated**" on the pine snake.

2.3.2.4 Birds

Florida Burrowing Owl (Athene cunicularia floridana)

The Florida burrowing owl is a small, ground-dwelling owl that is listed as threatened by the FWC. This species requires areas of short, herbaceous groundcover such as prairies, sandhills, and farmland. While there is suitable habitat for this species within the project study area, it was not observed during the field reviews and has not been documented within one (1) mile of the project study area. Based on this information, it has been determined that the proposed project will have "**no adverse effect anticipated**" on the Florida burrowing owl.

Florida Sandhill Crane (Grus canadensis pratensis)

The Florida sandhill crane is a tall, long-necked, long-legged crane that is listed as threatened by the FWC. This species requires wet and dry prairies, marshes, and marshy lake edges. Nests are generally a mound of herbaceous plant material in shallow water or on the ground in marshy areas. FNAI has not documented the species within one (1) mile of the study area. Additionally, there were no nests or individuals observed during field reviews of the project study area. Volusia County will survey areas of suitable nesting habitat prior to construction if construction activities take place during the nesting season (January through July), and will coordinate with the FWC if nesting pairs are identified within 400 feet of the project's construction limits. With the implementation of these measures, it has been determined that the project will have "**no adverse effect anticipated**" on the Florida sandhill crane.

2.3.3 Other Species of Concern

2.3.3.1 Birds

Bald Eagle (Haliaeetus leucocephalus)

The bald eagle is a large raptor with a distinctive white head and yellow bill. This species has been de-listed from the Endangered Species Act by the USFWS. However, it remains federally protected under the Bald and Golden Eagle Protection Act (BGEPA) in accordance with 16 United States code 668 and the Migratory Bird Treaty Act of 1918. The bald eagle tends to utilize riparian habitats associated with coastal areas, lake shorelines, and riverbanks. Nests are generally located near water bodies that provide a dependable food source. Nests within Florida are closely monitored by the FWC, and the FWC Center for Biostatics and Modeling maintains a website of known bald eagle nest locations. According to this database, the closest bald eagle nest to the project is nest VO105 which is located approximately 0.63 miles (3,325 feet) south of the project corridor (see **Figure 2-3** Bald Eagle Nest Location Map). This nest was last surveyed and determined to be active in 2016. No additional nests are located within one (1) mile of the project area. The project is located outside of the primary (330 feet) and secondary (660 feet) buffer zones of the identified bald eagle nests. No bald eagles or bald eagle nests were observed during field reviews. (see **Appendix D** Protected Species Map). During the project design and permitting phase, Volusia County will review the project area for active bald eagle nests. If an active nest is identified within 660 feet of the proposed area, Volusia County will coordinate with the USFWS to secure all necessary approvals prior to the start of construction.

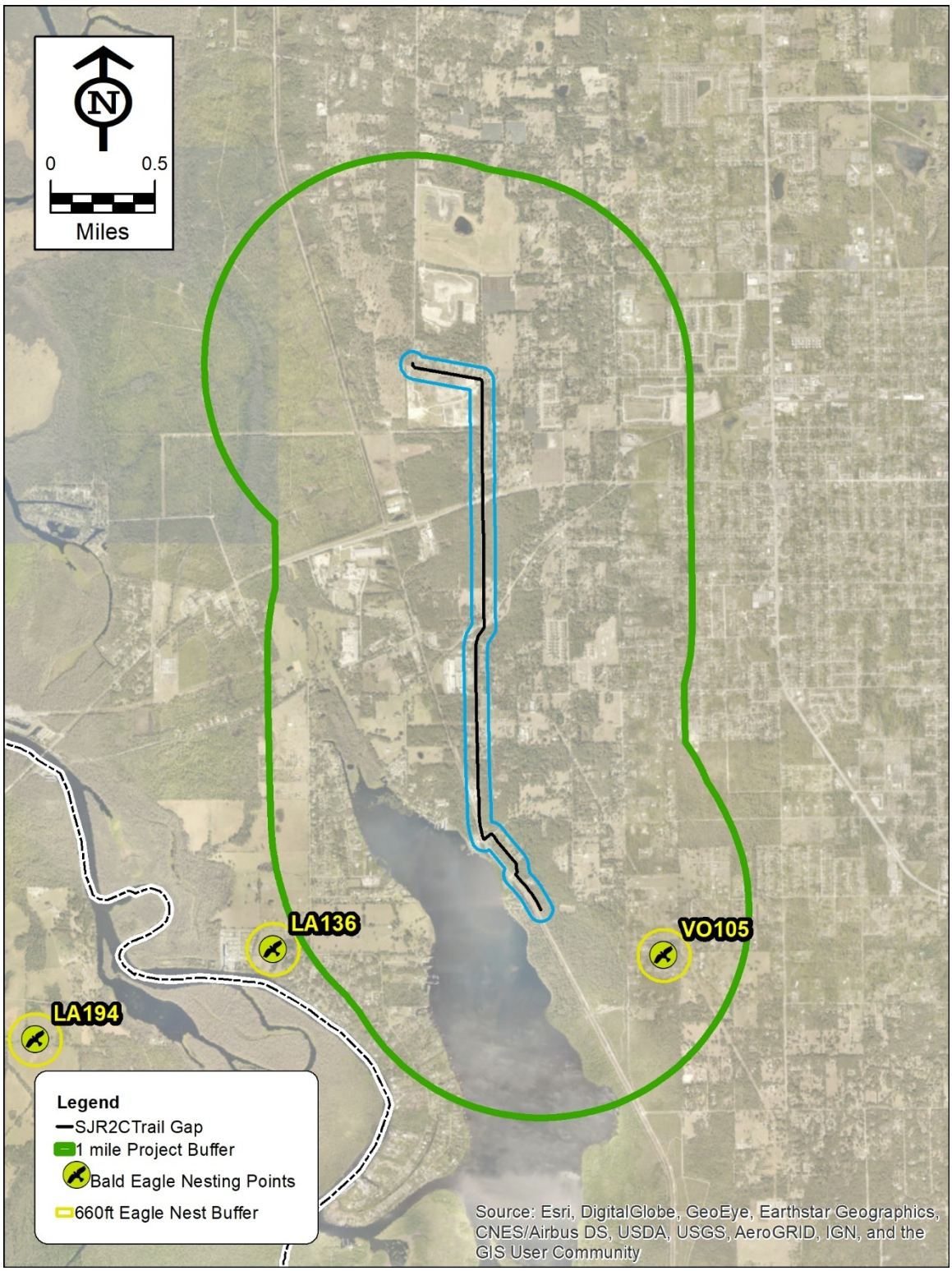

Figure 2-3 Bald Eagle Nest Location Map

Osprey (Pandion haliaetus)

The osprey is a large, black and white, raptor that is federally protected under the Migratory Bird Treaty Act (16 U.S.C. 703-712) and state protected under Chapter 68A of the F.A.C. The osprey utilizes riparian habitat associated with coastal areas, lake shorelines, and riverbanks. Nests are generally located near water bodies that provide a dependable food source. During field reviews of the project area, no active osprey nests were observed within the project area. During the project's design and permitting phase, Volusia County will survey the project area to determine the presence of active osprey nests. If nest removal is deemed necessary, Volusia County will remove nest(s) during the non-nesting season.

2.3.3.2 Mammals

Florida Black Bear (Ursus americanus floridanus)

The Florida black bear is a large mammal with glossy black hair and a brown muzzle. This species has been de-listed by the FWC; however, it is managed under the FWC's Florida Black Bear Management Plan (FWC 2012). The Florida black bear can be found statewide in a number of habitats including mixed hardwood pine communities, cabbage palm hammock, and forested wetland systems. This species tends to den alone in tree cavities, riverbanks, logs or caves. They will also den on the ground in palmetto thickets, gallberry, fetterbush, and sweet pepperbush. Within the project study area, suitable habitat for the black bear occurs within the forested upland and wetland areas. According to the FNAI observation data and FWC telemetry data, black bears have been reported within one mile of the study area (see **Figure 2-4** Black Bear Telemetry Map and **Appendix D** Protected Species Map). The project area is located within the FWC- designated primary range of the Central Bear Management Unit but no black bears were observed within the study area during field reviews.

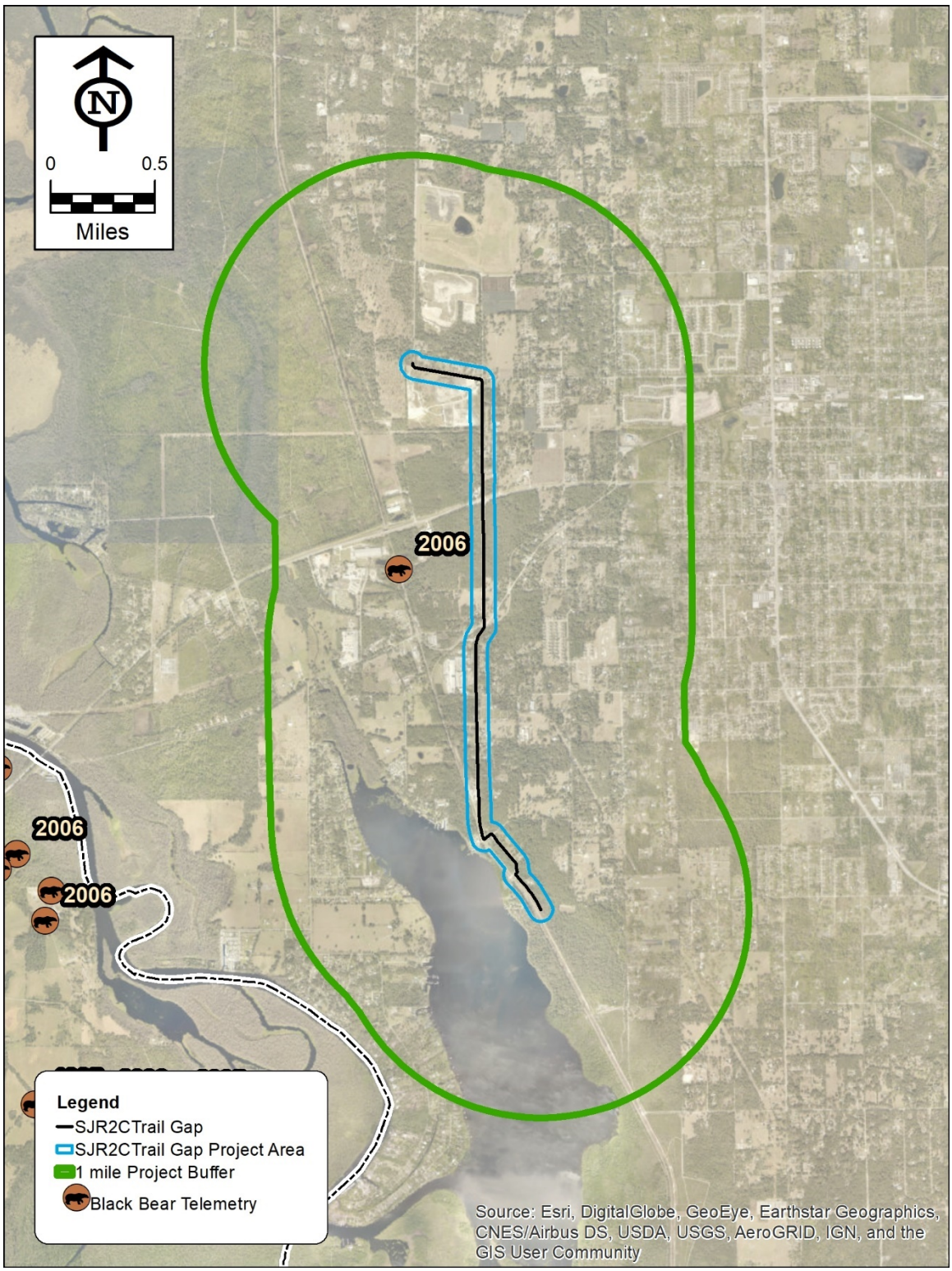

Figure 2-4 Black Bear Telemetry Map

Southern Fox Squirrel (Sciurus niger niger)

The Southern fox squirrel is a large, typically brown to silver colored squirrel. Although they are no longer a listed species, southern fox squirrels, their nests, and young are afforded protection under 68A-29.002(1)(c) F.A.C.

This species inhabits pine forests, dominated by longleaf or slash pine and oak hammocks with open space for foraging. There is suitable habitat present within the forested areas of the project study area. There have been no documented observations within one (1) mile of the project study area and no individuals were observed during field reviews. Volusia County will conduct preconstruction surveys of appropriate Southern fox squirrel habitat. A permit from FWC will be obtained if it is determined that fox squirrel nest trees will be impacted by the proposed project.

2.3.4 Critical Habitat

The study area was evaluated for the occurrence of Critical Habitat as defined by the ESA and 50 CFR Part 424. The USFWS has the authority, as a federal agency, to protect critical habitat from destruction or adverse modification of the biological or physical constituent elements essential to the conservation of listed species. Critical Habitat is defined as the specific areas within the geographical area occupied by a species on which are found those physical or biological features essential to the conservation of the species and which defined may require special management considerations or protection.

The project area is not located within the Critical Habitat for listed species.

SECTION 3.0 WETLAND EVALUATION

3.1 Introduction

In accordance with EO 11990 and Part 2, Chapter 9 - Wetlands and Other Surface Waters of the FDOT PD&E Manual, the FDOT has undertaken all actions to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities.

3.2 Methodology

For the purposes of this document, wetlands are defined as per 62.340 F.A.C. and Section 373.019 (27), Florida Statutes and Corp of Engineers Wetland Delineation Manual (Technical Report Y-87-1) (USACE 1987) with Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region (ERDC/EL TR-10-20) (USACE 2010). Surface waters are defined as open water bodies or man-made, upland-cut water courses with a defined channel and bank structure. During field reviews of the project study area, environmental scientists delineated the approximate boundaries of existing wetland and surface water communities on 1" = 200' true-color aerial photographs. Each wetland and surface water habitat within the project study area was classified using FLUCFCS (FDOT 1999) and the USFWS Classification of Wetlands and Deepwater Habitats of the United States (Cowardin, et al., 1979). Approximate wetland boundaries were identified in accordance with the State of Florida Wetlands Delineation Manual (Chapter 62-340, F.A.C.), the criteria found within the USACE 1987 Corps of Engineers Wetland Delineation Manual (Y-87-1) and 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coast Plain Region (Version 2.0) (ERDC/EL TR-10-20), EO 11990, and Part 2, Chapter 9 - Wetlands and Other Surface Waters of the FDOT PD&E Manual.

3.3 Results

Five (5) wetlands are within 300 feet of the Preferred Alternative trail alignment. No wetlands are within the Preferred Alternative trail alignment. No wetland impacts are anticipated with the proposed trail gap project.

3.3.1 Uniform Mitigation Assessment Methodology

The Uniform Mitigation Assessment Methodology (UMAM) per Chapter 62-345, F.A.C., is a state and federal approved method to assess wetlands in the State of Florida. UMAM was developed by the Florida Department of Environmental Protection (FDEP) and the water management districts to determine the amount of mitigation required to offset adverse impacts to wetlands. The methodology was designed to assess functions provided by wetlands, the amount those functions are reduced by a proposed impact, and the amount of mitigation necessary to offset the proposed functional losses. This method is also used to determine the degree of improvement in ecological value that will be created by proposed mitigation activities.

The UMAM assessment includes a Qualitative Characterization (Part 1) as well as a Quantitative Assessment and Scoring (Part 2). The Qualitative Assessment is a basic descriptor of the site being evaluated. The variable described include the following:

- Significant nearby features,
- Water classifications,
- Assessment area size,
- Hydrology and relationship to contiguous off-site wetlands,
- Uniqueness of the assessment area,
- Functions of the assessment area, and
- Wildlife utilization.

The Quantitative Assessment provides a score of the assessment area in both the current conditions and "with impact" condition. The assessment scoring evaluates the following parameters:

- Location and landscape support,
- Water environment, and
- Vegetative community.

3.3.2 Uniform Mitigation Assessment Methodology Results

In order to calculate functional loss, the difference between the existing condition (current) scores and the proposed condition (with) scores for each habitat type is multiplied by the acreage of the proposed impact to determine the lost value of functions to fish and wildlife resulting from construction of a project. Given that the Preferred Alternative trail alignment would not cause primary, secondary or cumulative impacts to wetlands or surface waters, the Preferred Alternative alignment will result in no functional loss units.

3.4 Mitigation

In 2008 the USACE and the United States Environmental Protection Agency (EPA) issued regulations governing compensatory mitigation for activities authorized by the Department of the Army (Federal Register, 2008). These regulations, as promulgated in 33 Code of Federal Regulations (CFR) Part 332, establish a hierarchy for determining the type and location of compensatory mitigation. To briefly summarize, the rule establishes a preference for the use of mitigation bank credits if a mitigation bank has the appropriate number and resource type of credits available. If the permitted impacts are not in the service area of an approved mitigation bank, or if the appropriate number and resource type of credits are otherwise unavailable, then the rule establishes a preference for in lieu fee program credits. If an approved mitigation bank or in-lieu fee program cannot be used to provide the required compensatory mitigation, the rule establishes a preference for permittee responsible mitigation conducted under a watershed

approach. Wetland impacts which will result from the construction of a project will be mitigated pursuant to Section 373.4137, F.S., to satisfy all mitigation requirements of Part IV of Chapter 373, F.S., and 22 U.S.C. §1344. Compensatory mitigation for a project will be completed through the use of mitigation banks and any other mitigation options that satisfy state and federal requirements.

Presently, the project area is located within the service area of the Wekiva River Mitigation Bank, Blackwater Creek Mitigation Bank, Barberville Mitigation Bank and Farmton Mitigation Bank.

Final determination of jurisdictional boundaries, in addition to mitigation requirements, will be coordinated between Volusia County and applicable permitting agencies during the final design phase of the project. The results of this PD&E study indicate there are no anticipated wetland or surface water impacts with the proposed trail gap project.

SECTION 4.0 ESSENTIAL FISH HABITAT

4.1 Introduction

This section documents EFH in accordance with Part 2, Chapter 17 – Essential Fish Habitat of the FDOT PD&E Manual and The Magnuson-Stevens Fishery Conservation and Management Act, as amended, (Magnuson-Stevens Act).

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

4.2 Methodology

In order to determine essential fish habitat that has potential to occur within the study area, available site-specific data was collected and evaluated. The project area has been reviewed to assess the potential occurrence of the highly migratory species during any stage of their life cycle.

Biologists familiar with Florida natural communities conducted field reviews of the project study area, adjacent habitats, and species-specific surveys in May 2019.

The project area is located in the interior of the state of Florida and the impacts associated with this project will not affect marine or estuarine environments, therefore, no potential impacts to EFH are proposed or expected.

4.3 Results

Based on the evaluation of collected data, field reviews, and database searches, no EFH occur within or adjacent to the study area. Due to the nature of the project, no populations of any of the managed species are expected to be adversely affected by the Preferred Alternative trail alignment. The project is anticipated to have "**no effect**" on EFH.

SECTION 5.0 PERMITTING AND APPROVAL

Both the USACE and the SJRWMD regulate impacts to wetlands within the project area. Other agencies, including the USFWS, NMFS, EPA, and the FWC, review and comment on wetland permit applications. The FWC also issues permits for gopher tortoise relocation activities and Southern fox squirrel nest takes. In addition, the FDEP regulates stormwater discharges from construction sites. The complexity of the permitting process will depend on the degree of impact to jurisdictional areas. It is anticipated that the following permits will be required for this project:

Permit	Issuing Agency
No Permit Required	USACE
Environmental Resource Permit (ERP)	SJRWMD
National Pollutant Discharge Elimination System (NPDES)	FDEP
Gopher Tortoise Relocation Permit (as necessary)	FWC
Incidental Take Permit (as necessary)	FWC

Federal Permits

Section 404 Dredge and Fill Permit

The project as proposed will not require a Department of the Army permit in accordance with Section 10 of the Rivers and Harbors Act of 1899 as it is not located within the navigable waters of the United States. Furthermore, a permit will not be required in accordance with Section 404 of the Clean Water Act as it will not involve the discharge of dredged or fill material into waters of the United States. Provided the work is done in accordance with the proposed drawings, Department of the Army authorization will not be required. For situations where there is no activity jurisdiction or an activity is exempt under Section 404(f) of the Clean Water Act, preparation of a "no permit required" letter is adequate. A "no permit required" letter is used to acknowledge that a Department of the Army permit is not required for a particular activity. In addition, coordination with the USFWS will be necessary for potential effects to federal listed protected species and critical habitat.

State Permits

Environmental Resource Permit

SJRWMD requires an 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. As with USACE permits, the complexity associated with the ERP permitting process will depend on the size of the project and/or the extent of wetland impacts. Under current state rules, the SJRWMD will require a General Permit 62-330.447 to the FDOT, Counties, and Municipalities for Minor Activities within Existing ROW or Easements for this project.

National Pollutant Discharge Elimination System

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

Gopher Tortoise Relocation Permit

According to the FWC Gopher Tortoise permitting guidelines, there are four (4) available options to address the presence of gopher tortoises on lands slated for development:

1. Avoid development,
2. Avoid destruction of tortoise burrows,
3. Relocate tortoises on-site (permit required), or
4. Relocate tortoises off site (permit required).

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 FWC before initiating any relocation work. A Conservation Permit is available for development projects that require the relocation of gopher tortoises when more than 10 burrows occur on the development site. The 10 or Fewer Burrows Permit is available for projects that contain 10 or fewer gopher tortoise burrows on the development site. Both of these permits allow for relocation either to an on-site preserve or off-site to a FWC-certified Recipient Site.

Incidental Take Permit (as necessary)

Based on field reviews, suitable foraging and nesting habitat exists within the project study area for the Southern fox squirrel. Should an active Southern fox squirrel nest be identified during pre-construction surveys, in accordance with rules 68A-4.001 and 68A-29.002(1)(c), F.A.C. a permit for removal of inactive Southern fox squirrel nests must be secured from the FWC before initiating nest tree(s) removal. An Incidental Take Permit is available for development projects that require the removal of nest tree(s).

SECTION 6.0 CONCLUSIONS

6.1 Protected Species and Habitat

The project area was evaluated for the presence of federal and/or state protected species and their suitable habitat in accordance with Section 7 of the ESA and Part 2, Chapter 16 of the PD&E Manual. **Table 6-1** and **Table 6-2** summarize the impact determinations that have been made for each federal and state listed species based upon their probability ranking and the implementation measures and/or commitments to offset any potential impacts to each species. Other protected species with the potential to occur in the project area are the bald eagle (*Haliaeetus leucocephalus*), osprey (*Pandion haliaetus*), and Florida black bear (*Ursus americanus floridanus*).

There are no anticipated impacts to critical habitat.

Table 6-1 Federal Listed Species

Project Impact Determination	Federal Listed Species
"no effect"	Okeechobee Gourd (Cucurbita okeechobeensis)
	American Alligator (Alligator mississippiensis)
	Wood Stork (Mycteria americana)
	Red-cockaded Woodpecker (Picoides borealis)
	West Indian Manatee (Trichechus manatus)
may affect, but is not likely to adversely affect	Rugel's Pawpaw (Deeringothamnus rugelii)
	Striped Newt (Notophthalmus perstriatus)
	Eastern Indigo Snake (Drymarchon couperi)
	Florida Scrub-jay (Aphelocoma coerulescens)

Table 6-2 State Listed Species

Project Impact Determination	State Listed Species
"no effect anticipated"	Many-flowered Grass-pink (Calopogon multiflorus)
	Sand Butterfly Pea (Centrosema arenicola)
	Large-flowered Rosemary (Conradina grandiflora)
	Hartwrightia (Hartwrightia floridana)
	Star Anise (Illicium parviflorum)
	Nodding Pinweed (Lechea cernua)
	Florida Spiny-pod (Matelea floridana)
	Celestial Lily (Nemastylis floridana)
	Florida Beargrass (Nolina atopocarpa)
	Giant Orchid (Pteroglossaspis ecristata)
	Ocala Vetch (Vicia ocalensis)
	Bluenose Shiner (Pteronotropis welaka)
"no adverse effect anticipated"	Gopher Tortoise (Gopherus polyphemus)
	Florida Pine Snake (Pituophis melanoleucus mugitus)
	Florida Burrowing Owl (Athene cunicularia floridana)
	Florida Sandhill Crane (Grus canadensis pratensis)

6.2 Wetland Evaluation

The Preferred Alternative trail alignment was evaluated for impacts to wetlands in accordance with Executive Order (EO) 11990 and Part 2, Chapter 9 of the PD&E Manual. Based on the type and location of project impacts, the FDOT has determined that there is no proposed construction in wetlands. The proposed project will have no significant short-term or long-term adverse impacts to wetlands. In accordance with EO 11990, the FDOT has undertaken all actions to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities.

Based on collected field data and in-house reviews, a total of two (2) wetland and surface water habitat types were identified within the project study area. Wetland and surface water habitats include mixed wetland hardwoods and freshwater marshes. Five (5) wetlands are within 300 feet of the Preferred Alternative trail alignment. No wetlands are within the Preferred Alternative trail alignment. A description of land use, dominant vegetation, soil type, and other descriptors regarding these communities is provided in previous sections of this report.

Final determination of jurisdictional boundaries, in addition to mitigation requirements, will be coordinated between Volusia County and permitting agencies during the final design phase of the project. The results of this PD&E study indicate there are no anticipated wetland or surface water impacts with the proposed trail gap project.

6.3 Essential Fish Habitat

No Habitat Areas of Particular Concern (HAPC) were identified at the project location. No EFH or Areas Protected from Fishing were identified at the project location. The project is anticipated to have "**no effect**" on EFH.

6.4 Implementation Measures

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

- Volusia County will perform additional wildlife surveys for Florida sandhill crane, Southern fox squirrel, bald eagle, osprey, gopher tortoise, and other wildlife species during the project design phase. If these species are found to be present in the project area, then the appropriate measures discussed in this report will be followed.

6.5 Commitments

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

- The USFWS Standard Protection Measures for the Eastern Indigo Snake will be implemented during construction.

SECTION 7.0 REFERENCES

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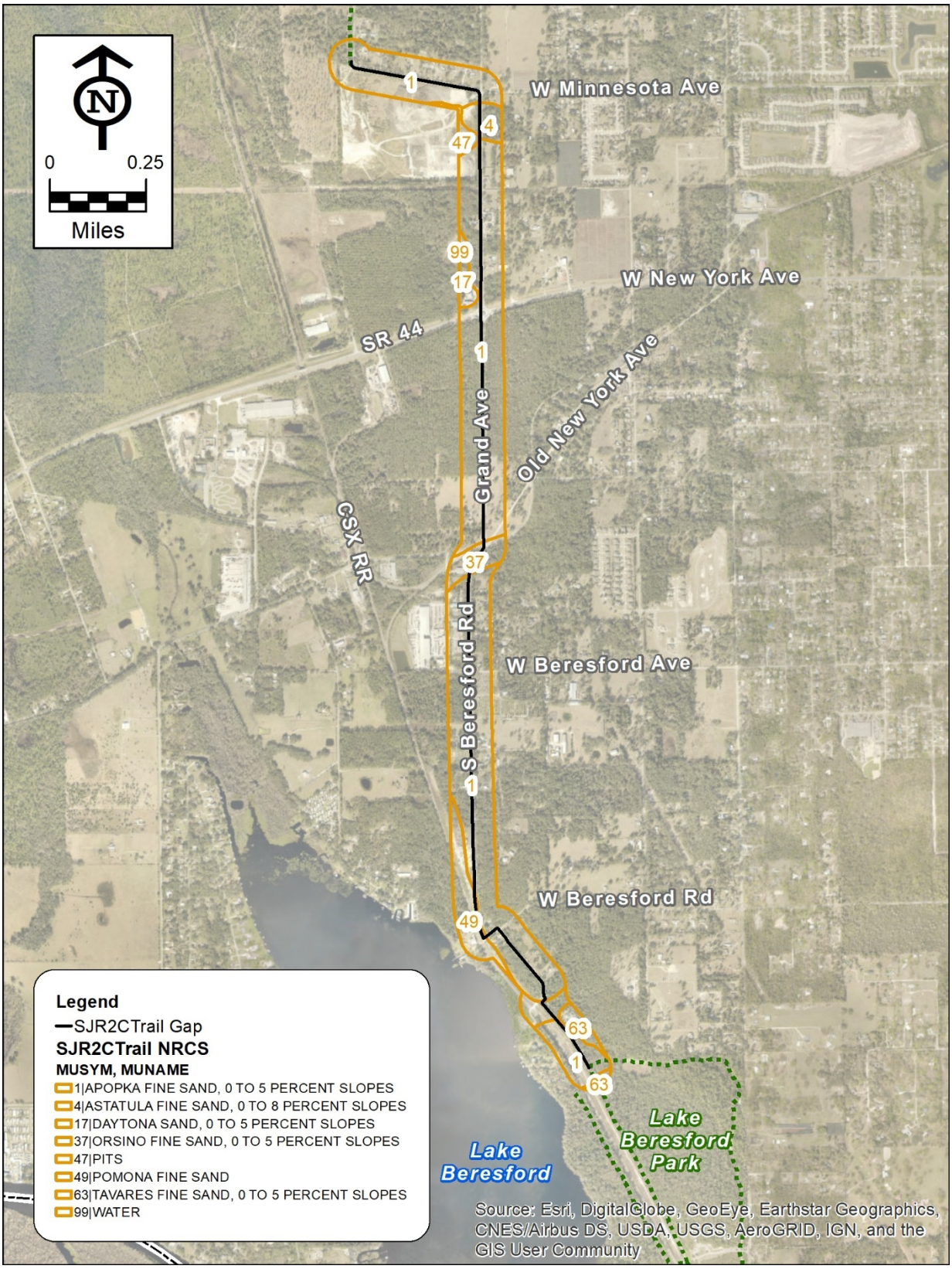
APPENDIX A

Soil Descriptions and Map


N
0
0.25
Miles
W Minnesota Ave
W New York Ave
SR 44
Old New York Ave
Grand Ave
CSX RR
S Beresford Rd
W Beresford Ave
W Beresford Rd
Lake Beresford
Lake Beresford Park
1
4
47
99
17
1
37
1
49
63
1
63
Legend
SJR2CTrail Gap
SJR2CTrail NRCS
MUSYM, MUNAME
1|APOPKA FINE SAND, 0 TO 5 PERCENT SLOPES
4|ASTATULA FINE SAND, 0 TO 8 PERCENT SLOPES
17|DAYTONA SAND, 0 TO 5 PERCENT SLOPES
37|ORSINO FINE SAND, 0 TO 5 PERCENT SLOPES
47|PITS
49|POMONA FINE SAND
63|TAVARES FINE SAND, 0 TO 5 PERCENT SLOPES
99|WATER
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Volusia County Soils

1 – APOPKA FINE SAND, 0 TO 5 PERCENT SLOPES

This nearly level to gently sloping, well drained soil is on intermediate to high sand hills. Included with this soil in mapping are small areas of Astatula, Electra, Orsino, and Tavares soils. Also included are soils in shallow depressions that are not so well drained as this Apopka soil. The included soils generally make up no more than 15 percent of any one mapped area. The water table is below 72 inches. Permeability is rapid in the sandy layers and moderate in the sandy clay loam subsoil. Runoff is slow. The available water capacity is very low. Natural fertility and the organic matter content are low.

4 – ASTATULA FINE SAND, 0 TO 8 PERCENT SLOPES

This excessively drained, nearly level to sloping soil is on sandhills. Included with this soil in mapping are small areas of Apopka, Deland, Orsino, Paola, St. Lucie, and Tavares soils. Also included are small areas where slopes are more than 8 percent. The included areas make up about 15 percent of any one mapped area. The water table is always below 80 inches and is usually below 120 inches. The available water -capacity is very low. Permeability is very rapid. Natural fertility and the organic matter content are very low.

17 – DAYTONA SAND, 0 TO 5 PERCENT SLOPES

This moderately well drained, nearly level to gently sloping soil is on gently undulating sandhills or slightly elevated places in flatwoods. Included with this soil in mapping are small areas of Cassia, Electra, lmmokalee, Orsino, Satellite, and St. Lucie soils. In some low areas the water table may come to within 30 inches of the surface, and in some the upper layer of the subsoil is slightly thicker than is typical. Also included are a few areas where the surface layer is coarse sand, a few areas where it is fine sand, and a few small areas of similar soils where the subsoil is within a depth of 50 to 60 inches. The included areas generally make up no more than about 15 percent of any one mapped area. The water table is commonly at a depth of 40 to 50 inches for 1 to 4 months during the wet season, and it drops to 72 inches or more during the drier part of the year. The available water capacity is low. Permeability is very rapid in the surface layer and moderately rapid in the subsoil. Natural fertility and the organic matter content are low.

37 – ORSINO FINE SAND, 0 TO 5 PERCENT SLOPES

This moderately well drained, nearly level and gently sloping sandy soil occurs on low flat ridges and low side slopes of higher sandhills. Included with this soil in mapping are small areas of Cassia, Paola, Daytona, and Tavares soils. The included soils generally make up no more than 20 percent of any one mapped area. The water table is 40 to 60 inches below the soil surface in wet seasons. It recedes to below 60 inches in dry seasons. The available water capacity, the organic matter content, and the natural fertility are very low. Permeability is very rapid.

47 – PITS

Pits are excavations from which soil and geologic material have been removed for use in road construction or for foundations. Most are abandoned, but excavation is continuing in a few places. Vegetation has become established in the older abandoned pits. It is mostly an assortment of weedy forbs, grasses, and shrubs. Pits, locally called borrow pits, occur in small to large mapped areas. Those that have been excavated below the normal water table and contain water for 9 months or more each year are mapped as water.

49 – POMONA FINE SAND

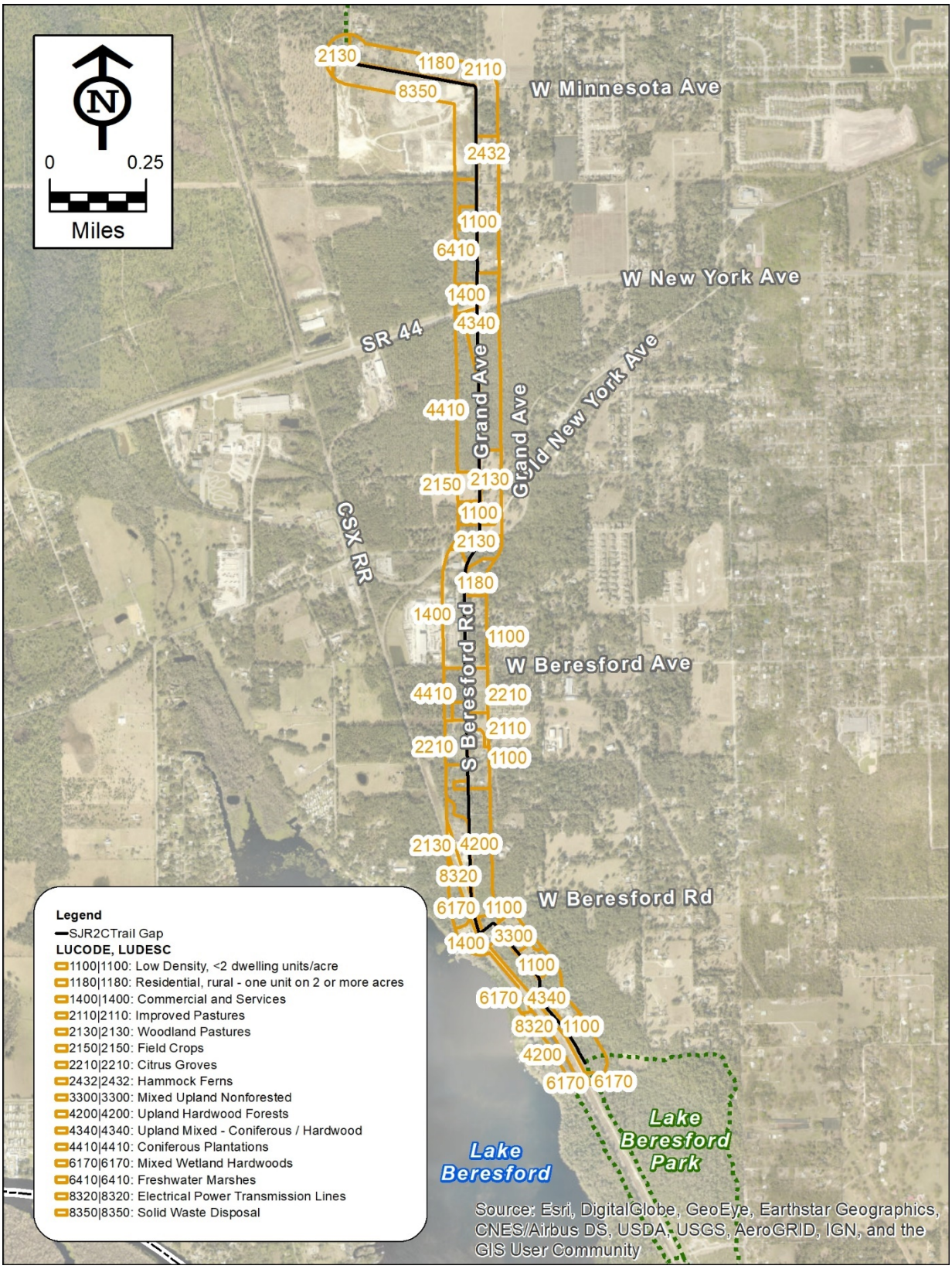
This poorly drained, nearly level soil occurs in low, broad areas within the flatwoods. Included with this soil in mapping are small areas of Farmton, EauGallie, Immokalee, Myakka, Basinger, and Wauchula soils. The included areas make up about 20 percent of any one mapped area. The water table is within a depth of 10 inches for 1 to 3 months and within 40 inches for about 6 months during most years. The available water capacity is medium. Permeability is rapid to about 18 inches, moderate from 18 to 33 inches, rapid from 33 to 50 inches, and moderately slow from 50 to 60 inches. Internal drainage is slow, but if artificial drainage is provided, it is generally good. Natural fertility and the organic matter content are low.

63 – TAVARES FINE SAND, 0 TO 5 PERCENT SLOPES

This moderately well drained, nearly level to gently sloping sandy soil occurs on higher positions on the low sand ridges and in intermediate positions on the higher sand ridges. Included with this soil in mapping are small areas of Apopka, Astatula, Cassia, Daytona, Deland, and Paola soils and small areas of a soil that is similar to the Tavares soil but has a surface layer more than 10 inches thick. Also included are small areas of somewhat poorly drained soils that have a profile similar to that of the Tavares soil. The included areas generally make up no more than 25 percent of any one mapped area. The water table is between 40 and 60 inches during wet seasons. The available water capacity is very low, and permeability is very rapid. Natural fertility and the organic matter content are low.

APPENDIX B

Land Use Map and Descriptions


N
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0.25
Miles
2130
1180
2110
8350
W Minnesota Ave
2432
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6410
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4340
SR 44
Grand Ave
Old New York Ave
4410
Grand Ave
2150
2130
1100
CSX RR
2130
1180
1400
1100
S Beresford Rd
W Beresford Ave
4410
2210
2110
2210
1100
2130
4200
8320
6170
1100
W Beresford Rd
1400
3300
1100
6170
4340
8320
1100
4200
6170
6170
Lake Beresford Park
Lake Beresford
Legend
SJR2CTrail Gap
LUCODE, LUDESC
1100|1100: Low Density, <2 dwelling units/acre
1180|1180: Residential, rural - one unit on 2 or more acres
1400|1400: Commercial and Services
2110|2110: Improved Pastures
2130|2130: Woodland Pastures
2150|2150: Field Crops
2210|2210: Citrus Groves
2432|2432: Hammock Ferns
3300|3300: Mixed Upland Nonforested
4200|4200: Upland Hardwood Forests
4340|4340: Upland Mixed - Coniferous / Hardwood
4410|4410: Coniferous Plantations
6170|6170: Mixed Wetland Hardwoods
6410|6410: Freshwater Marshes
8320|8320: Electrical Power Transmission Lines
8350|8350: Solid Waste Disposal
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Upland Habitats and Land Uses

FLUCFCS: 1100 (Residential, Low Density)

The low density residential land use classification includes areas with less than two (2) fixed family or mobile home units per acre. This land use is found throughout the project study area. While these areas have homes present, the surrounding lands remain mostly undeveloped and consists predominantly of hardwood-conifer mixed forests, with areas cleared of natural vegetation for maintained landscaping. Low-density residential areas comprise 38.08 acres (16.75 percent) of the project study area.

FLUCFCS: 1800 (Residential, rural – one unit on 2 or more acres)

The rural residential land use classification includes areas with one (1) dwelling unit on two (2) or more acres. This land use is found throughout the project study area. The surrounding lands have mostly been cleared of natural vegetation for maintained landscaping. Rural residential areas comprise 21.39 acres (9.41 percent) of the project study area.

FLUCFCS: 1400 (Commercial and Services)

The commercial and services land use is comprised of commercial areas that are predominantly associated with the distribution of products and services. This land use includes all secondary structures associated with the enterprise such as sheds, warehouses, driveways, parking areas, and landscaped areas. This land use is scattered throughout the project study area. Within the project study area, this land use consists of a gas station, boat shop, concrete products and business complex. This area is developed with no natural habitat present. Commercial and services facilities comprise 16.24 acres (7.14 percent) of the project study area.

FLUCFCS: 2110 (Improved Pastures)

The improved pastures category is composed of land which has been cleared, tilled, reseeded with specific grasses and periodically improved with mowing and fertilizer application. This land use is located within the southern portion of the project study area and consists primarily of maintained groundcover with cabbage palm (*Sabel palmetto*) and live oak (*Quercus virginiana*). Improved pasture comprises 1.86 acres (0.82 percent) of the project study area.

FLUCFCS: 2130 (Woodland Pastures)

The woodland pastures land use category generally includes forested lands used as pastures. Woodland pasture communities are scattered throughout the project study area. Woodland pasture comprises 14.51 acres (6.38 percent) of the project study area.

FLUCFCS: 2150 (Field Crops)

The field crops category includes wheat, oats, hay and grasses. Within the study area, this land use is dominated by hay and grasses. This land use is located in the center of the project study area. Field crops comprises 2.90 acres (1.28 percent) of the project study area.

FLUCFCS: 2210 (Citrus Groves)

The citrus groves category includes orange, grapefruit, tangerines, etc. This land use is located in the southern portion of the project study area. Citrus groves comprise 8.30 acres (3.65 percent) of the project study area.

FLUCFCS: 2432 (Hammock Ferns)

The hammock fern category is a specific category within the ornamental nursery category in which the dominate vegetation grown is ferns. This land use is located in the northern portion of the project study area. Hammock ferns comprise 2.43 acres (1.07 percent) of the project study area.

FLUCFCS: 3300 (Mixed Upland Nonforested)

The mixed upland nonforested land use category generally includes a one-third intermixture of either grassland or shrub-brushland. Within the study area, this land use is dominated by sparse cabbage palm, grapevine (*Vitis rotundifolia*), bluestem (*Andropogon* sp.), wax myrtle (Morella cerifera), Brazilian pepper (*Schinus terebinthifolia*), and bahiagrass (Paspalum notatum). Mixed upland nonforested comprises 3.35 acres (1.47 percent) of the project study area.

FLUCFCS: 4200 (Upland Hardwood Forest)

The upland hardwood forest land use category generally consists of a hardwood community in which no single species or species group appears to achieve dominance of the canopy. This class of hardwoods includes any combination of large and small hardwood tree species none of which can be identified as dominating the canopy. This land use is located within the southern portion of the project study area. Within the project study area, this land use consists of live oak, cabbage palm, Brazilian pepper, slash pine (*Pinus elliottii*), grapevine (*Vitis rotundifolia*), blueberry, laurel oak (*Quercus laurifolia*), and saw palmetto (*Senenoa repens*). Upland hardwood forest comprises 18.98 acres (8.35 percent) of the project study area.

FLUCFCS: 4340 (Upland Mixed – Coniferous/Hardwood)

The mixed coniferous/hardwood forest land use category generally consists of a coniferous and hardwood community in which no species group appears to achieve dominance of the canopy. This land use is located throughout the project study area. Within the project study area, this land use consists of live oak, laurel oak, slash pine, cabbage palm, Brazilian pepper and saw palmetto. Mixed coniferous/hardwood forest comprises 46.12 acres (20.29 percent) of the project study area.

FLUCFCS: 4410 (Coniferous Plantations)

The coniferous plantations land use category is a pine forest artificially generated by planting seedling stock, characterized by high tree densities and uniform appearance of rows and tree size. This land use is located throughout the project area. Coniferous plantations comprise 16.35 acres (7.19 percent) of the project study area.

FLUCFCS: 8320 (Electrical Power Transmission Lines)

The electrical power transmission lines land use category represents facilities that are used for the movement of electricity. The land is characterized by overhead power lines, power poles, transformers and substations. The land is typically cleared of natural canopy and has managed brush and undergrowth control. This land use is located within the southern portion of the project study area. Electrical power transmission lines comprise 9.86 acres (4.34 percent) of the project study area.

FLUCFCS: 8350 (Solid Waste Disposal)

The solid waste disposal land use category represents facilities that are used for the disposal of solid waste materials. Operations often include large pits and excavation of material and the creation of large piles of material. The land is typically cleared of all natural vegetation. This land use is located within the northern portion of the project study area. Solid waste disposal comprises 21.23 acres (9.34 percent) of the project study area.

Wetland and Surface Water Habitats and Land Uses

FLUCFCS: 6170 (Mixed Wetland Hardwoods)

USFWS: PFO1C (Palustrine, Forested, Broad-leaved Deciduous, Seasonally Flooded)

This habitat type is reserved for those wetland hardwood communities which are composed of a large variety of hardwood species tolerant of hydric conditions yet exhibit an ill defined mixture of species. The mixed wetlands hardwoods are located at the southern end of the project study area near Lake Beresford. Vegetation consists of laurel oaks, sweet gum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), ash (*Fraxinus caroliniana*), and cabbage palms. Mixed wetland hardwoods comprise 5.6 acres (2.46 percent) of the project study area.

FLUCFCS: 6410 (Freshwater Marshes)

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

This wetland category includes marshes and seasonably flooded basins and meadows. These communities are usually confined to relatively level, low-lying areas. This category does not include areas that have a tree cover which meets the crown closure threshold for the forested categories. Sawgrass (*Cladium jamaicense*) and cattail (*Typha* spp) are the predominant species in freshwater marshes. A small portion of a freshwater marsh is located at the northern portion of the project study area. Dominant vegetation consists of maidencane (*Panicum hemitomon*). Freshwater marsh comprises 0.16 acres (0.07 percent) of the project study area.

APPENDIX C

Florida Natural Areas Inventory Data Report

FLORIDA
Natural Areas
INVENTORY

1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
850-224-8207
fax 850-681-9364
www.fnai.org

November 20, 2019

Patrick Griffin
AIM Engineering & Surveying, Inc.
3802 Corporex Park Drive, Suite 225
Tampa, FL 33619

Dear Mr. Griffin,

Thank you for requesting information from the Florida Natural Areas Inventory (FNAI). At your request we have produced the following report for your project area.

The purpose of this Standard Data Report is to provide objective scientific information on natural resources located in the vicinity of a site of interest, in order to inform those involved in project planning and evaluation. This Report makes no determination of the suitability of a proposed project for this location, or the potential impacts of the project on natural resources in the area.

Project: St Johns River to Sea Loop Trail Gap PD&E Study

Date Received: 11/14/19

Location: Volusia County

Element Occurrences

A search of our maps and database indicates that we currently have several element occurrences mapped in the vicinity of the study area (see enclosed map and element occurrence table). Please be advised that a lack of element occurrences in the FNAI database is not a sufficient indication of the absence of rare or endangered species on a site.

The element occurrences data layer includes occurrences of rare species and natural communities. The map legend indicates that some element occurrences occur in the general vicinity of the label point. This may be due to lack of precision of the source data, or an element that occurs over an extended area (such as a wide ranging species or large natural community). For animals and plants, element occurrences generally refer to more than a casual sighting; they usually indicate a viable population of the species. Note that some element occurrences represent historically documented observations which may no longer be extant. Extirpated element occurrences will be marked with an 'X' following the occurrence label on the enclosed map.

Likely and Potential Rare Species

In addition to documented occurrences, other rare species and natural communities may be identified on or near the site based on habitat models and species range models (see enclosed Biodiversity Matrix Report). These species should be taken into consideration in field surveys, land management, and impact avoidance and mitigation.

FNAI habitat models indicate areas, which based on land cover type, offer suitable habitat for one or more rare species that is known to occur in the vicinity. Habitat models have been developed for approximately 300 of the rarest species tracked by the Inventory, including all federally listed species.

Florida Resources
and Environmental
Analysis Center

Institute of Science
and Public Affairs

The Florida State University

FNAI species range models indicate areas that are within the known or predicted range of a species, based on climate variables, soils, vegetation, and/or slope. Species range models have been developed for approximately 340 species, including all federally listed species.

The FNAI Biodiversity Matrix Geodatabase compiles Documented, Likely, and Potential species and natural communities for each square mile Matrix Unit statewide.

CLIP

The enclosed map shows natural resource conservation priorities based on the Critical Lands and Waters Identification Project. CLIP is based on many of the same natural resource data developed for the Florida Forever Conservation Needs Assessment, but provides an overall picture of conservation priorities across different resource categories, including biodiversity, landscapes, surface waters, and aggregated CLIP priorities (that combine the individual resource categories). CLIP is also based primarily on remote sensed data and is not intended to be the definitive authority on natural resources on a site.

For more information on CLIP, visit http://www.fnai.org/clip.cfm .

Managed Areas

Portions of the site appear to be located within the Lake Beresford, managed by Volusia County.

The Managed Areas data layer shows public and privately managed conservation lands throughout the state. Federal, state, local, and privately managed conservation lands are included.

The Inventory always recommends that professionals familiar with Florida's flora and fauna conduct a site-specific survey to determine the current presence or absence of rare, threatened, or endangered species.

Please visit www.fnai.org/trackinglist.cfm for county or statewide element occurrence distributions and links to more element information.

The database maintained by the Florida Natural Areas Inventory is the single most comprehensive source of information available on the locations of rare species and other significant ecological resources. However, the data are not always based on comprehensive or site-specific field surveys. Therefore this information should not be regarded as a final statement on the biological resources of the site being considered, nor should it be substituted for on-site surveys. Inventory data are designed for the purposes of conservation planning and scientific research, and are not intended for use as the primary criteria for regulatory decisions.

Information provided by this database may not be published without prior written notification to the Florida Natural Areas Inventory, and the Inventory must be credited as an information source in these publications. **The maps contain sensitive environmental information, please do not distribute or publish without prior consent from FNAI.** FNAI data may not be resold for profit.

Thank you for your use of FNAI services. An invoice will be mailed separately. If I can be of further assistance, please contact me at (850) 224-8207 or at kbrinegar@fnai.fsu.edu.

Sincerely,

Kerri Brinegar

Kerri Brinegar
GIS / Data Services

Encl

St Johns River to Sea Loop Trail Gap PD&E Study

Site boundaries are approximate.

Volusia County

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FLORIDA Natural Areas INVENTORY

Element Occurrences

- Animals
- Plants
- Communities
- Other
- Data Sensitive
- Point Indicates General Vicinity of Element
- U.S. Fish & Wildlife Service Scrub Jay Survey 1992-96

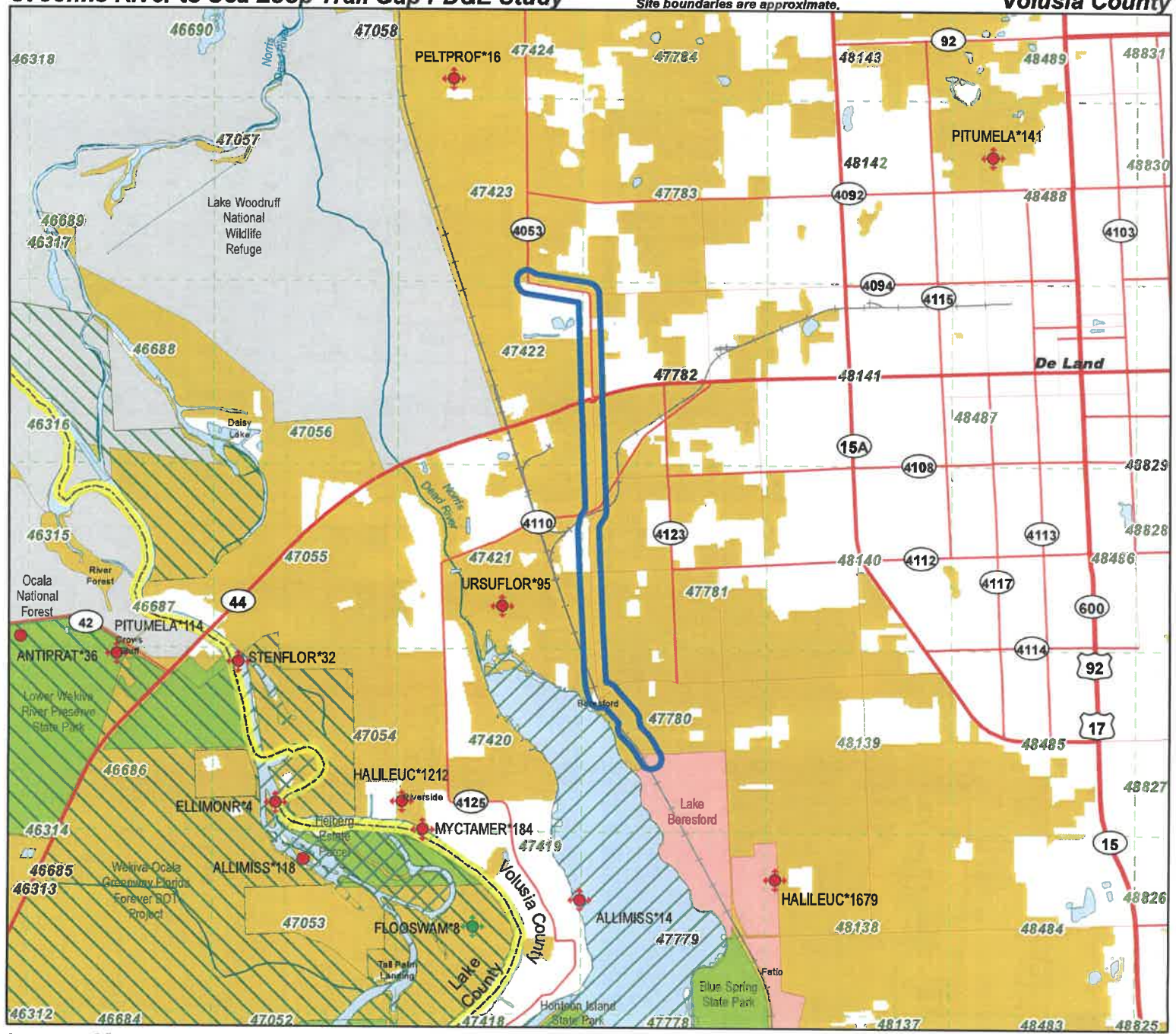
Conservation Lands

- Federal
- State
- Local
- Private
- State Aquatic Preserves

Land Acquisition Projects

- Florida Forever Board of Trustees Projects
- FNAI Rare Species Habitat
- FNAI Biodiversity Matrix Square Mile Units
- County Boundary
- Roads
- Water

N



0 0.5 1 2 Miles

NOTE

This map contains environmentally sensitive information. Please do not distribute or publish without prior consent from FNAI. Map should not be interpreted without accompanying documents.

Map produced by KAB
11/19/2019

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FLORIDA Natural Areas INVENTORY

CLIP v4.0 Resource Priorities

Biodiversity Resource Category
- Priority 1 - highest
- Priority 2
- Priority 3
- Priority 4
- Priority 5

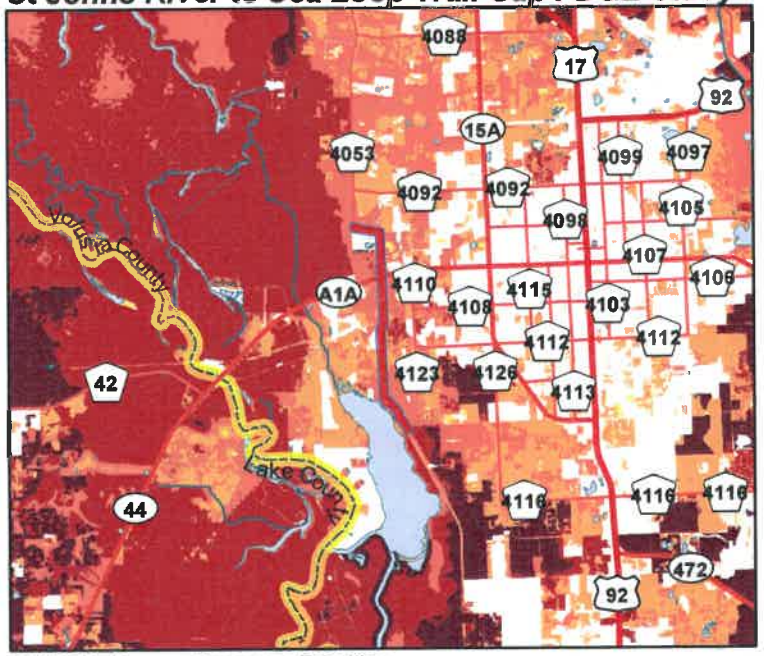
Landscape Resource Category
- Priority 1 - highest
- Priority 2
- Priority 3
- Priority 4
- Priority 5

Surface Water Resource Category
- Priority 1 - highest
- Priority 2
- Priority 3
- Priority 4
- Priority 5

Aggregated CLIP Priorities
- Priority 1 - highest
- Priority 2
- Priority 3
- Priority 4
- Priority 5
- Site Boundary

Map should not be interpreted without accompanying documents.

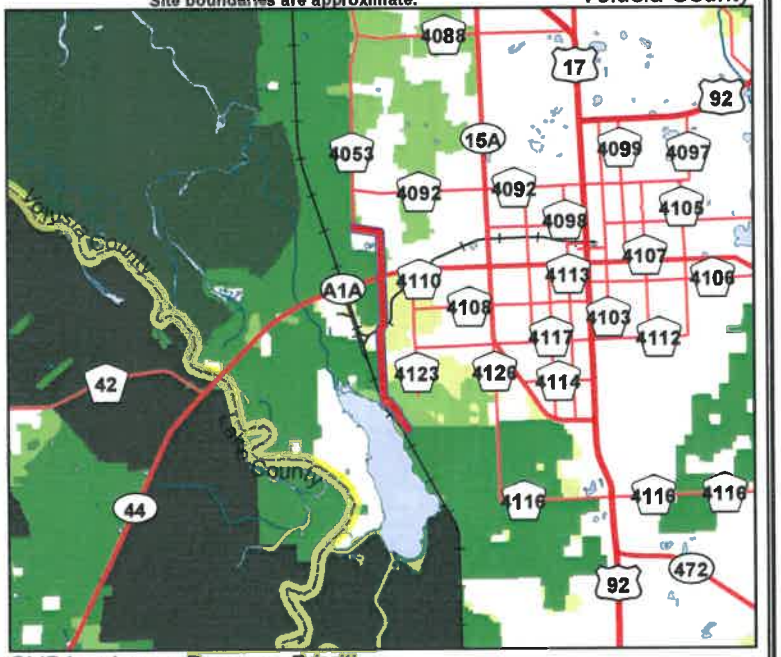
Critical Lands and Waters Identification Project (CLIP) is a cooperative effort between the FSU Florida Natural Areas Inventory, UF Center for Landscape Conservation Planning, and FL Fish & Wildlife Conservation Commission, with additional funding from FL Dept of Environmental Protection and US Fish & Wildlife Service.



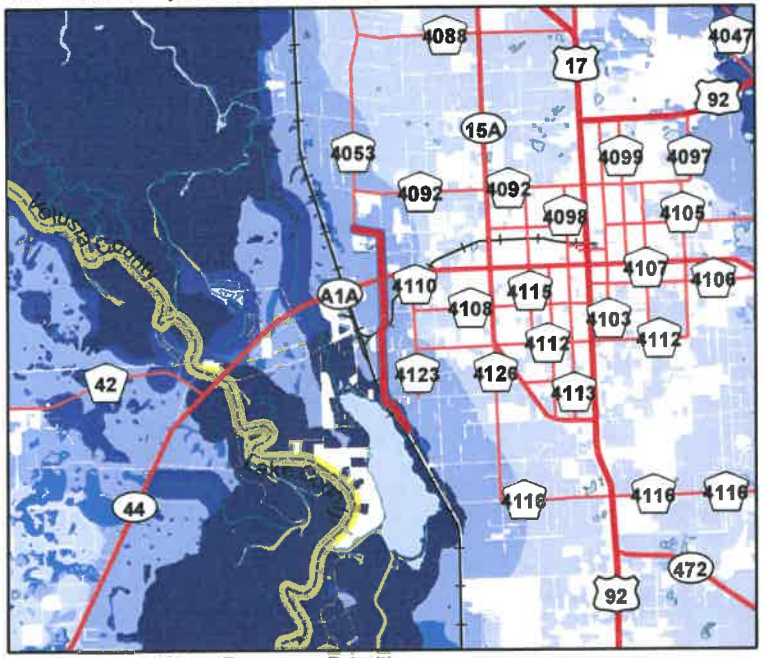
CLIP Biodiversity Resource Priorities

Site boundaries are approximate.

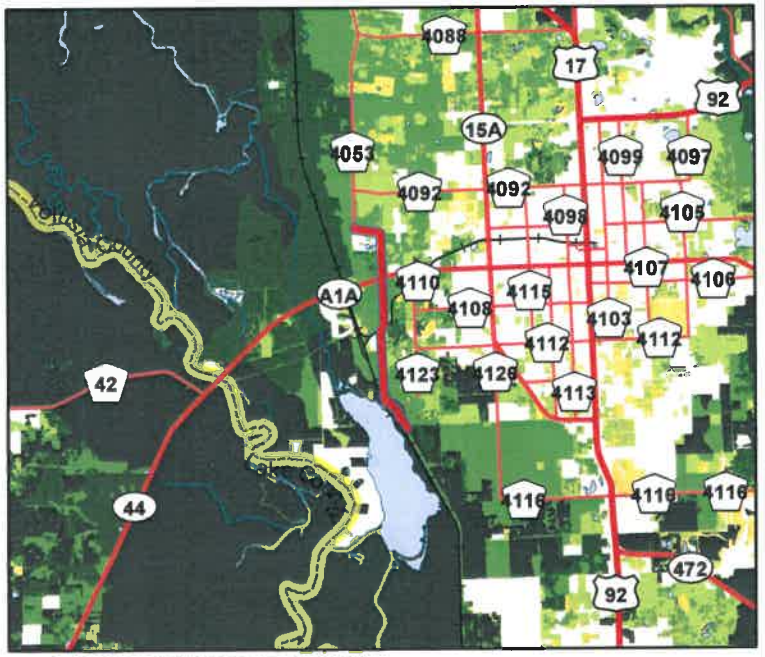
Volusia County



CLIP Landscape Resource Priorities



CLIP Surface Water Resource Priorities



CLIP Aggregated Resource Priorities

0 0.5 1 2 3 4 5 6 7 8 9 Miles

Map produced by KAB
11/20/2019

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FLORIDA Natural Areas INVENTORY

FNAI ELEMENT OCCURRENCE REPORT on or near

St Johns River to Sea Loop Trail Gap PD&E Study

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
ALLIMISS*14	*Alligator mississippiensis*	American Alligator	G5	S4	SAT	FT(S/A)	1984	MOUTH OF SPRING RUN IN LAGOONS OF BOTH PARKS, IN RIVER.	SMALL POPULATION.
ELLIMONR*4	*Elliptio monroensis*	St. Johns Elephantear	G1G2	S1S2	N	N	2015 pre	St. Johns River system, at least south (upstream) of Lake George. Inhabits river, lakes along the main stem, and lower reaches of some large tributaries (B14WIL01FLUS:205).	Williams et al. (2014) depict at least 17 sites from which this occurrence has been documented. For specific data, references, and sites, see individual source features and Additional Topics field in this record.
FLOOSWAM*8	Floodplain swamp		G4	S4	N	N	2004	1983: SURROUNDS BLACKWATER STREAM, RIVER FLOODPLAIN, HYDRIC HAMMOCK ISLANDS WITH SHELL MOUNDS; 6 PANDION HAL., 3 ARAMUS GUA. PIC. AND 3 FLOCKS EUDOCIMUS ALB. OBSERVED. 1994: A LARGE, YOUNG GROWTH HARDWOOD DOMINATED FLOODPLAIN SWAMP WITH YDRIC HAMMOCK AND SHELL MOUND ISLANDS, THREE MAJOR ABANDONED MEANDER CHANNELS (A.K.A. RIVER FLOODPLAIN LAKES), AND BLACKWATER STREAMS (U95REE01FLUS).	2004: Update to last obs date was based on interpretation of aerial photography (previous value was 1983-01-05) (U05FNA02FLUS). 1983: SURROUNDED BY FLOODPLAIN SWAMP W/ TAXODIUM DIS.- FRAXINUS PRO. -ULMUS AME.-ACER RUB>SABAL PAL (+OS SP.) >CORNUS FOEMINA>CRINUM AME. OS & MS SP. W/ TILLANDSIA SPP., EPIDENDRON SP., ENCYCLIA SP., POLYPODIUM POL, PHLEBODIUM AUR. & PSILOTUM NUDUM. 1994: TAXODIUM DISTICHUM <= 21" DBH, OTHER HARDWOODS AVE. 14" DBH. ASSOCIATED FLORA: DOMINANT: BLECHNUM SERRULATUM (LOCAL); ABUNDANT: TAXODIUM DISTICHUM, TILLANDSIA BARTRAMII, FRAXINUS CAROLINIANA, NYSSA SYLVATICA VAR. BIFLORA; COMMON: SABAL PALMETTO, SALIX CAROLINIANA, QUERCUS LAURIFOLIA, TAILLANDSIA USNEOIDES, POLYPODIUM POLYPODIOIDES VAR. MICHAUXIANUM, ACER RUBRUM VAR. TRILOBUM, THALIA GENICULATA (LOCAL), PHORADENDRON LEUCARPUM, SAMBUCUS CANADENSIS (LOCAL AND ECOTONAL), MYRICA CERIFLUA (U95REE01FLUS).
HALILEUC*1212	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	2005-07-12: Source does not provide a description.	Nest status: Active, 2003, 2002, 2001, 2000, 1999;(U03FWC01FLUS)

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FLORIDA Natural Areas INVENTORY

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St Johns River to Sea Loop Trail Gap PD&E Study

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
HALILEUC*1679	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	2005-07-12: Source does not provide a description.	Nest status: Active, 2003; Unknown status or not assessed, 2002, 2001, 2000, 1999;(U03FWC01FLUS)
MUSTPENI*6	*Mustela frenata peninsulae*	Florida Long-tailed Weasel	G5T3?	S3	N	N	1957-01-17	No general description given	MUSEUM SPECIMEN, #01214 COLLECTED BY R.F. HARLOW 1957-01-17.
MYCTAMER*184	*Mycteria americana*	Wood Stork	G4	S2	T	FT	2006	No general description given	Colony inactive in 2010 (U11TSA01FLUS). Colony active for 4 years; species present 2002, 2003, 2004 and 2006, with a maximum of 67 nests in 2006 (U11TSA01FLUS).
PELTPROF*16	*Peltotrupes profundus*	Florida Deepdigger Scarab Beetle	G3	S3	N	N	1960-05-05	1960-05-05: No description given (B73WOO01FLUS).	1960-05-05: Five specimens were collected by C.R.Roberts using a malt trap (B73WOO01FLUS). 1960-04-22: Four specimens were collected by R.E. Woodruff using a malt trap (B73WOO01FLUS).
PITUMELA*141	*Pituophis melanoleucus*	Pine Snake	G4	S3	N	ST	1951-04-09	No general description given	SPEC. COLL. 9 APRIL 1951 BY W. AUFFENBERG (#2084).

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Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
URSUFLOR*95	*Ursus americanus floridanus*	Florida Black Bear	G5T4	S4	N	N	2016	Large area of pine plantation, mesic and wet flatwoods, and dome and basin swamps; Largely private commercial timberland, nurseries, and small neighborhoods; public lands are dominated by pine plantation but also have flatwoods interspersed with dome swamps and patches of scrub; Large area of sand pine and oak scrub, mesic flatwoods, sandhill, depression marshes and hardwood swamps, pine plantation; regular harvesting of sand pine (U05SIM01FLUS).	2002: 1,025-1,539 bears estimated in the primary ranges in the Ocala-St. John's region. Part of a larger population that includes Okefenokee Swamp National Wildlife Refuge in Georgia (U05SIM01FLUS). 2014: 1,198 bears estimated in the Ocala-St. John's region and 495 estimated in the Osceola region (A16HUM01FLUS). 2016: polygons created to show where bears are considered 'Abundant' and 'Common' (U16FWC01FLUS) Primary is the FWC-designated core area that represents breeding range and contains documented evidence of reproduction or female bears within available habitat, and Secondary is the FWC-designated area where bears occur within available habitat but outside primary bear range (evidence of bears without documented evidence of reproduction) (U12FWC02FLUS, U05SIM01FLUS). These boundaries are based on decades of bear observations, roadkill distribution, nuisance bear locations, and bear research projects. For detailed location data contact the FWC.

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FLORIDA Natural Areas INVENTORY

Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Matrix Unit ID: 47421					
Documented					
Ursus americanus floridanus	Florida Black Bear	G5T4	S4	N	N
Likely					
Drymarchon couperi	Eastern Indigo Snake	G3	S3	T	FT
Mesic flatwoods		G4	S4	N	N
Mycteria americana	Wood Stork	G4	S2	T	FT
Upland hardwood forest		G5	S3	N	N
Potential					
Alligator mississippiensis	American Alligator	G5	S4	SAT	FT(S/A)
Antigone canadensis pratensis	Florida Sandhill Crane	G5T2	S2	N	ST
Aphelocoma coerulescens	Florida Scrub-Jay	G2?	S2	T	FT
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	ST
Calopogon multiflorus	many-flowered grass-pink	G2G3	S2S3	N	T
Centrosema arenicola	sand butterfly pea	G2Q	S2	N	E
Conradina grandiflora	large-flowered rosemary	G3	S3	N	T
Cucurbita okeechobeensis	Okeechobee gourd	G1	S1	E	E
Deeringothamnus rugelii	Rugel's pawpaw	G1	S1	E	E
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Hartwrightia floridana	hartwrightia	G2	S2	N	T
Heterodon simus	Southern Hognose Snake	G2	S2S3	N	N
Illicium parviflorum	star anise	G2	S2	N	E
Lechea cernua	nodding pinweed	G3	S3	N	T
Lithobates capito	Gopher Frog	G3	S3	N	N
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3?	S3	N	N
Nemastylis floridana	celestial lily	G2	S2	N	E
Nolina atopocarpa	Florida beargrass	G3	S3	N	T
Notophthalmus perstriatus	Striped Newt	G2G3	S2	N	N
Pituophis melanoleucus	Pine Snake	G4	S3	N	ST
Podomys floridanus	Florida Mouse	G3	S3	N	N
Pteroglossaspis ecristata	giant orchid	G2G3	S2	N	T
Pteronotropis welaka	Bluenose Shiner	G3G4	S3S4	N	ST
Sciurus niger niger	Southeastern Fox Squirrel	G5T5	S3	N	N
Trichechus manatus	West Indian Manatee	G2	S2	T	FT
Vicia ocalensis	Ocala vetch	G2	S1	N	E
Matrix Unit ID: 47422					
Documented					
Ursus americanus floridanus	Florida Black Bear	G5T4	S4	N	N
Likely					
Drymarchon couperi	Eastern Indigo Snake	G3	S3	T	FT
Mesic flatwoods		G4	S4	N	N
Mycteria americana	Wood Stork	G4	S2	T	FT
Potential					

Definitions: *Documented - Rare species and natural communities documented on or near this site.*
Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
Potential - This site lies within the known or predicted range of the species listed.

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FLORIDA Natural Areas INVENTORY

Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Alligator mississippiensis	American Alligator	G5	S4	SAT	FT(S/A)
Antigone canadensis pratensis	Florida Sandhill Crane	G5T2	S2	N	ST
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	ST
Calopogon multiflorus	many-flowered grass-pink	G2G3	S2S3	N	T
Centrosema arenicola	sand butterfly pea	G2Q	S2	N	E
Conradina grandiflora	large-flowered rosemary	G3	S3	N	T
Cucurbita okeechobeensis	Okeechobee gourd	G1	S1	E	E
Deeringothamnus rugelii	Rugel's pawpaw	G1	S1	E	E
Dryobates borealis	Red-cockaded Woodpecker	G3	S2	E	FE
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Hartwrightia floridana	hartwrightia	G2	S2	N	T
Heterodon simus	Southern Hognose Snake	G2	S2S3	N	N
Illicium parviflorum	star anise	G2	S2	N	E
Lechea cernua	nodding pinweed	G3	S3	N	T
Lithobates capito	Gopher Frog	G3	S3	N	N
Matelea floridana	Florida spiny-pod	G2	S2	N	E
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3?	S3	N	N
Nemastylis floridana	celestial lily	G2	S2	N	E
Nolina atopocarpa	Florida beargrass	G3	S3	N	T
Notophthalmus perstriatus	Striped Newt	G2G3	S2	N	N
Pituophis melanoleucus	Pine Snake	G4	S3	N	ST
Podomys floridanus	Florida Mouse	G3	S3	N	N
Pteroglossaspis ecristata	giant orchid	G2G3	S2	N	T
Pteronotropis welaka	Bluenose Shiner	G3G4	S3S4	N	ST
Sciurus niger niger	Southeastern Fox Squirrel	G5T5	S3	N	N
Vicia ocalensis	Ocala vetch	G2	S1	N	E

Matrix Unit ID: 47423

Documented

Ursus americanus floridanus	Florida Black Bear	G5T4	S4	N	N

Likely

Drymarchon couperi	Eastern Indigo Snake	G3	S3	T	FT
Mesic flatwoods		G4	S4	N	N
Mycteria americana	Wood Stork	G4	S2	T	FT

Potential

Antigone canadensis pratensis	Florida Sandhill Crane	G5T2	S2	N	ST
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	ST
Calopogon multiflorus	many-flowered grass-pink	G2G3	S2S3	N	T
Centrosema arenicola	sand butterfly pea	G2Q	S2	N	E
Conradina grandiflora	large-flowered rosemary	G3	S3	N	T
Cucurbita okeechobeensis	Okeechobee gourd	G1	S1	E	E
Deeringothamnus rugelii	Rugel's pawpaw	G1	S1	E	E
Dryobates borealis	Red-cockaded Woodpecker	G3	S2	E	FE
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Hartwrightia floridana	hartwrightia	G2	S2	N	T
Heterodon simus	Southern Hognose Snake	G2	S2S3	N	N
Illicium parviflorum	star anise	G2	S2	N	E

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FLORIDA Natural Areas INVENTORY

Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Lechea cernua	nodding pinweed	G3	S3	N	T
Lithobates capito	Gopher Frog	G3	S3	N	N
Matelea floridana	Florida spiny-pod	G2	S2	N	E
Nemastylis floridana	celestial lily	G2	S2	N	E
Nolina atopocarpa	Florida beargrass	G3	S3	N	T
Notophthalmus perstriatus	Striped Newt	G2G3	S2	N	N
Peltotrupes profundus	Florida Deepdigger Scarab Beetle	G3	S3	N	N
Pituophis melanoleucus	Pine Snake	G4	S3	N	ST
Podomys floridanus	Florida Mouse	G3	S3	N	N
Pteroglossaspis ecristata	giant orchid	G2G3	S2	N	T
Sciurus niger niger	Southeastern Fox Squirrel	G5T5	S3	N	N
Vicia ocalensis	Ocala vetch	G2	S1	N	E
Matrix Unit ID: 47780					
Documented					
Ursus americanus floridanus	Florida Black Bear	G5T4	S4	N	N
Likely					
Drymarchon couperi	Eastern Indigo Snake	G3	S3	T	FT
Mycteria americana	Wood Stork	G4	S2	T	FT
Sandhill		G3	S2	N	N
Scrub		G2	S2	N	N
Upland hardwood forest		G5	S3	N	N
Potential					
Alligator mississippiensis	American Alligator	G5	S4	SAT	FT(S/A)
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Calopogon multiflorus	many-flowered grass-pink	G2G3	S2S3	N	T
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Cucurbita okeechobeensis	Okeechobee gourd	G1	S1	E	E
Deeringothamnus rugelii	Rugel's pawpaw	G1	S1	E	E
Dryobates borealis	Red-cockaded Woodpecker	G3	S2	E	FE
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
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Heterodon simus	Southern Hognose Snake	G2	S2S3	N	N
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Lithobates capito	Gopher Frog	G3	S3	N	N
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3?	S3	N	N
Nemastylis floridana	celestial lily	G2	S2	N	E
Nolina atopocarpa	Florida beargrass	G3	S3	N	T
Notophthalmus perstriatus	Striped Newt	G2G3	S2	N	N
Pituophis melanoleucus	Pine Snake	G4	S3	N	ST
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Pteroglossaspis ecristata	giant orchid	G2G3	S2	N	T
Pteronotropis welaka	Bluenose Shiner	G3G4	S3S4	N	ST
Sciurus niger niger	Southeastern Fox Squirrel	G5T5	S3	N	N

Definitions: *Documented - Rare species and natural communities documented on or near this site.*
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FLORIDA Natural Areas INVENTORY

Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Trichechus manatus	West Indian Manatee	G2	S2	T	FT
Vicia ocalensis	Ocala vetch	G2	S1	N	E
Matrix Unit ID: 47781					
Documented					
Ursus americanus floridanus	Florida Black Bear	G5T4	S4	N	N
Likely					
Drymarchon couperi	Eastern Indigo Snake	G3	S3	T	FT
Mesic flatwoods		G4	S4	N	N
Mycteria americana	Wood Stork	G4	S2	T	FT
Sandhill		G3	S2	N	N
Upland hardwood forest		G5	S3	N	N
Potential					
Alligator mississippiensis	American Alligator	G5	S4	SAT	FT(S/A)
Antigone canadensis pratensis	Florida Sandhill Crane	G5T2	S2	N	ST
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	ST
Calopogon multiflorus	many-flowered grass-pink	G2G3	S2S3	N	T
Centrosema arenicola	sand butterfly pea	G2Q	S2	N	E
Conradina grandiflora	large-flowered rosemary	G3	S3	N	T
Cucurbita okeechobeensis	Okeechobee gourd	G1	S1	E	E
Deeringothamnus rugelii	Rugel's pawpaw	G1	S1	E	E
Dryobates borealis	Red-cockaded Woodpecker	G3	S2	E	FE
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Hartwrightia floridana	hartwrightia	G2	S2	N	T
Heterodon simus	Southern Hognose Snake	G2	S2S3	N	N
Illicium parviflorum	star anise	G2	S2	N	E
Lechea cernua	nodding pinweed	G3	S3	N	T
Lithobates capito	Gopher Frog	G3	S3	N	N
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3?	S3	N	N
Nemastylis floridana	celestial lily	G2	S2	N	E
Nolina atopocarpa	Florida beargrass	G3	S3	N	T
Notophthalmus perstriatus	Striped Newt	G2G3	S2	N	N
Pituophis melanoleucus	Pine Snake	G4	S3	N	ST
Podomys floridanus	Florida Mouse	G3	S3	N	N
Pteroglossaspis ecristata	giant orchid	G2G3	S2	N	T
Sciurus niger niger	Southeastern Fox Squirrel	G5T5	S3	N	N
Matrix Unit ID: 47782					
Documented					
Ursus americanus floridanus	Florida Black Bear	G5T4	S4	N	N
Likely					
Drymarchon couperi	Eastern Indigo Snake	G3	S3	T	FT
Mycteria americana	Wood Stork	G4	S2	T	FT
Potential					

Definitions: *Documented - Rare species and natural communities documented on or near this site.*
Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
Potential - This site lies within the known or predicted range of the species listed.

1018 Thomasville Road
Suite 200-C
Tallahassee, FL 32303
(850) 224-8207
(850) 681-9364 Fax

FLORIDA Natural Areas INVENTORY

Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Alligator mississippiensis	American Alligator	G5	S4	SAT	FT(S/A)
Antigone canadensis pratensis	Florida Sandhill Crane	G5T2	S2	N	ST
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	ST
Calopogon multiflorus	many-flowered grass-pink	G2G3	S2S3	N	T
Centrosema arenicola	sand butterfly pea	G2Q	S2	N	E
Conradina grandiflora	large-flowered rosemary	G3	S3	N	T
Deeringothamnus rugelii	Rugel's pawpaw	G1	S1	E	E
Dryobates borealis	Red-cockaded Woodpecker	G3	S2	E	FE
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Hartwrightia floridana	hartwrightia	G2	S2	N	T
Heterodon simus	Southern Hognose Snake	G2	S2S3	N	N
Lechea cernua	nodding pinweed	G3	S3	N	T
Lithobates capito	Gopher Frog	G3	S3	N	N
Matelea floridana	Florida spiny-pod	G2	S2	N	E
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3?	S3	N	N
Nemastylis floridana	celestial lily	G2	S2	N	E
Nolina atopocarpa	Florida beargrass	G3	S3	N	T
Notophthalmus perstriatus	Striped Newt	G2G3	S2	N	N
Pituophis melanoleucus	Pine Snake	G4	S3	N	ST
Podomys floridanus	Florida Mouse	G3	S3	N	N
Pteroglossaspis ecristata	giant orchid	G2G3	S2	N	T
Sciurus niger niger	Southeastern Fox Squirrel	G5T5	S3	N	N
Matrix Unit ID: 47783					
Documented					
Ursus americanus floridanus	Florida Black Bear	G5T4	S4	N	N
Likely					
Drymarchon couperi	Eastern Indigo Snake	G3	S3	T	FT
Mycteria americana	Wood Stork	G4	S2	T	FT
Upland hardwood forest		G5	S3	N	N
Potential					
Antigone canadensis pratensis	Florida Sandhill Crane	G5T2	S2	N	ST
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	ST
Centrosema arenicola	sand butterfly pea	G2Q	S2	N	E
Conradina grandiflora	large-flowered rosemary	G3	S3	N	T
Dryobates borealis	Red-cockaded Woodpecker	G3	S2	E	FE
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Hartwrightia floridana	hartwrightia	G2	S2	N	T
Heterodon simus	Southern Hognose Snake	G2	S2S3	N	N
Lechea cernua	nodding pinweed	G3	S3	N	T
Lithobates capito	Gopher Frog	G3	S3	N	N
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3?	S3	N	N
Nemastylis floridana	celestial lily	G2	S2	N	E
Notophthalmus perstriatus	Striped Newt	G2G3	S2	N	N
Peltotrupes profundus	Florida Deepdigger Scarab Beetle	G3	S3	N	N
Pituophis melanoleucus	Pine Snake	G4	S3	N	ST
Sciurus niger niger	Southeastern Fox Squirrel	G5T5	S3	N	N

Definitions: *Documented - Rare species and natural communities documented on or near this site.*
Documented-Historic - Rare species and natural communities documented, but not observed/reported within the last twenty years.
Likely - Rare species and natural communities likely to occur on this site based on suitable habitat and/or known occurrences in the vicinity.
Potential - This site lies within the known or predicted range of the species listed.

Elements and Element Occurrences

An **element** is any exemplary or rare component of the natural environment, such as a species, natural community, bird rookery, spring, sinkhole, cave, or other ecological feature.

An **element occurrence (EO)** is an area of land and/or water in which a species or natural community is, or was, present. An EO should have practical conservation value for the Element as evidenced by potential continued (or historical) presence and/or regular recurrence at a given location.

Element Ranking and Legal Status

Using a ranking system developed by NatureServe and the Natural Heritage Program Network, the Florida Natural Areas Inventory assigns two ranks for each element. The global rank is based on an element's worldwide status; the state rank is based on the status of the element in Florida. Element ranks are based on many factors, the most important ones being estimated number of Element Occurrences (EOs), estimated abundance (number of individuals for species; area for natural communities), geographic range, estimated number of adequately protected EOs, relative threat of destruction, and ecological fragility.

FNAI GLOBAL ELEMENT RANK

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
G2 = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
G3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
G4 = Apparently secure globally (may be rare in parts of range).
G5 = Demonstrably secure globally.
GH = Of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker).
GX = Believed to be extinct throughout range.
GXC = Extirpated from the wild but still known from captivity or cultivation.
G#? = Tentative rank (e.g., G2?).
G#G# = Range of rank; insufficient data to assign specific global rank (e.g., G2G3).
G#T# = Rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1).
G#Q = Rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q).
G#T#Q = Same as above, but validity as subspecies or variety is questioned.
GU = Unrankable; due to a lack of information no rank or range can be assigned (e.g., GUT2).
GNA = Ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species).
GNR = Element not yet ranked (temporary).
GNRTNR = Neither the element nor the taxonomic subgroup has yet been ranked.

FNAI STATE ELEMENT RANK

S1 = Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
S2 = Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
S3 = Either very rare and local in Florida (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction from other factors.
S4 = Apparently secure in Florida (may be rare in parts of range).
S5 = Demonstrably secure in Florida.
SH = Of historical occurrence in Florida, possibly extirpated, but may be rediscovered (e.g., ivory-billed woodpecker).
SX = Believed to be extirpated throughout Florida.
SU = Unrankable; due to a lack of information no rank or range can be assigned.
SNA = State ranking is not applicable because the element is not a suitable target for conservation (e.g. a hybrid species).
SNR = Element not yet ranked (temporary).

FEDERAL LEGAL STATUS

Legal status information provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant federal agency.

Definitions derived from U.S. Endangered Species Act of 1973, Sec. 3. Note that the federal status given by FNAI refers only to Florida populations and that federal status may differ elsewhere.

C = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.
E = Endangered: species in danger of extinction throughout all or a significant portion of its range.
E, T = Species currently listed endangered in a portion of its range but only listed as threatened in other areas
E, PDL = Species currently listed endangered but has been proposed for delisting.
E, PT = Species currently listed endangered but has been proposed for listing as threatened.
E, XN = Species currently listed endangered but tracked population is a non-essential experimental population.
T = Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.
PE = Species proposed for listing as endangered
PS = Partial status: some but not all of the species' infraspecific taxa have federal
PT = Species proposed for listing as threatened
SAT = Treated as threatened due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.
SC = Not currently listed, but considered a "species of concern" to USFWS.

STATE LEGAL STATUS

Provided by FNAI for information only. For official definitions and lists of protected species, consult the relevant state agency.

Animals: Definitions derived from "Florida's Endangered Species and Species of Special Concern, Official Lists" published by Florida Fish and Wildlife Conservation Commission, 1 August 1997, and subsequent updates.

C = Candidate for listing at the Federal level by the U. S. Fish and Wildlife Service
FE = Listed as Endangered Species at the Federal level by the U. S. Fish and Wildlife Service
FT = Listed as Threatened Species at the Federal level by the U. S. Fish and Wildlife Service
FXN = Federal listed as an experimental population in Florida
FT(S/A) = Federal Threatened due to similarity of appearance
ST = State population listed as Threatened by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.
SSC = Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species. (SSC* for Pandion haliaetus (Osprey) indicates that this status applies in Monroe county only.)
N = Not currently listed, nor currently being considered for listing.

Plants: Definitions derived from Sections 581.011 and 581.185(2), Florida Statutes, and the Preservation of Native Flora of Florida Act, 5B-40.001. FNAI does not track all state-regulated plant species; for a complete list of state-regulated plant species, call Florida Division of Plant Industry, 352-372-3505 or see: http://www.doacs.state.fl.us/pi/.

E = Endangered: species of plants native to Florida that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act.
T = Threatened: species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered.
N = Not currently listed, nor currently being considered for listing.

Element Occurrence Ranking

FNAI ranks of quality of the element occurrence in terms of its viability (EORANK). Viability is estimated using a combination of factors that contribute to continued survival of the element at the location. Among these are the size of the EO, general condition of the EO at the site, and the conditions of the landscape surrounding the EO (e.g. an immediate threat to an EO by local development pressure could lower an EO rank).

A = Excellent estimated viability
A? = Possibly excellent estimated viability
AB = Excellent or good estimated viability
AC = Excellent, good, or fair estimated viability
B = Good estimated viability
B? = Possibly good estimated viability
BC = Good or fair estimated viability
BD = Good, fair, or poor estimated viability
C = Fair estimated viability
C? = Possibly fair estimated viability
CD = Fair or poor estimated viability
D = Poor estimated viability
D? = Possibly poor estimated viability
E = Verified extant (viability not assessed)
F = Failed to find
H = Historical
NR = Not ranked, a placeholder when an EO is not (yet) ranked.
U = Unrankable
X = Extirpated

*For additional detail on the above ranks see: http://www.natureserve.org/explorer/eorankguide.htm

FNAI also uses the following EO ranks:

H? = Possibly historical
F? = Possibly failed to find
X? = Possibly extirpated

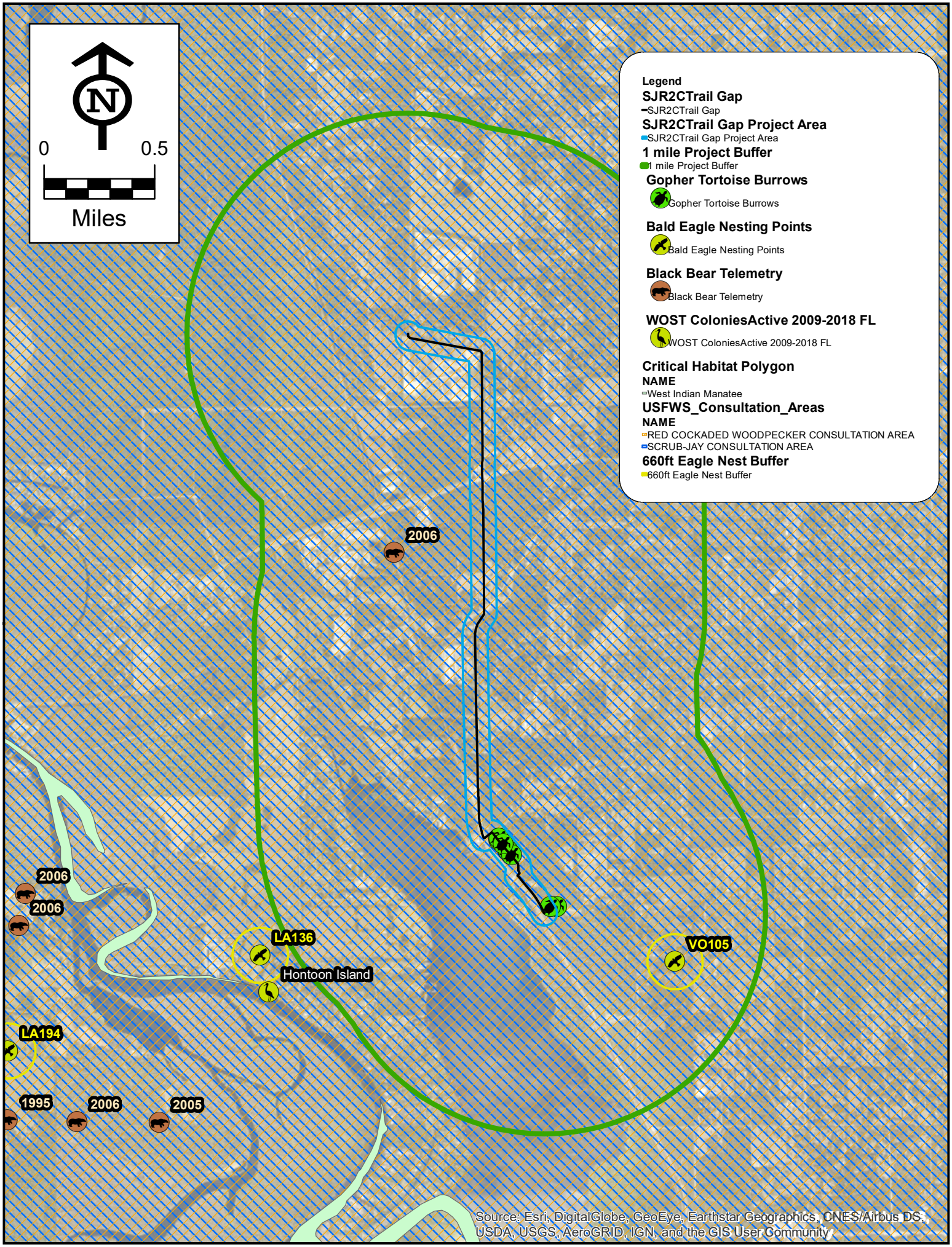
The following offers further explanation of the H and X ranks as they are used by FNAI:

The rank of H is used when there is a lack of recent field information verifying the continued existence of an EO, such as (a) when an EO is based only on historical collections data; or (b) when an EO was ranked A, B, C, D, or E at one time and is later, without field survey work, considered to be possibly extirpated due to general habitat loss or degradation of the environment in the area. This definition of the H rank is dependent on an interpretation of what constitutes "recent" field information. Generally, if there is no known survey of an EO within the last 20 to 40 years, it should be assigned an H rank. While these time frames represent suggested maximum limits, the actual time period for historical EOs may vary according to the biology of the element and the specific landscape context of each occurrence (including anthropogenic alteration of the environment). Thus, an H rank may be assigned to an EO before the maximum time frames have lapsed. Occurrences that have not been surveyed for periods exceeding these time frames should not be ranked A, B, C, or D. The higher maximum limit for plants and communities (i.e., ranging from 20 to 40 years) is based upon the assumption that occurrences of these elements generally have the potential to persist at a given location for longer periods of time. This greater potential is a reflection of plant biology and community dynamics. However, landscape factors must also be considered. Thus, areas with more anthropogenic impacts on the environment (e.g., development) will be at the lower end of the range, and less-impacted areas will be at the higher end.

The rank of X is assigned to EOs for which there is documented destruction of habitat or environment, or persuasive evidence of eradication based on adequate survey (i.e., thorough or repeated survey efforts by one or more experienced observers at times and under conditions appropriate for the Element at that location).

APPENDIX D

Protected Species Potential for Occurrence and Map


N
0
0.5
Miles
Legend
SJR2CTrail Gap
SJR2CTrail Gap
SJR2CTrail Gap Project Area
SJR2CTrail Gap Project Area
1 mile Project Buffer
1 mile Project Buffer
Gopher Tortoise Burrows
Gopher Tortoise Burrows
Bald Eagle Nesting Points
Bald Eagle Nesting Points
Black Bear Telemetry
Black Bear Telemetry
WOST ColoniesActive 2009-2018 FL
WOST ColoniesActive 2009-2018 FL
Critical Habitat Polygon
NAME
West Indian Manatee
USFWS_Consultation_Areas
NAME
RED COCKADED WOODPECKER CONSULTATION AREA
SCRUB-JAY CONSULTATION AREA
660ft Eagle Nest Buffer
660ft Eagle Nest Buffer
2006
2006
2006
LA136
Hontoon Island
VO105
LA194
1995
2006
2005
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Protected Species Potential for Occurrence
St Johns River to Sea Loop Trail Gap

Scientific Name Common Name	Designated Status Federal	 State	Habitat Preference	Potential for Occurrence
Flora				
Calopogon multiflorus Many-flowered Grass-pink	-	T	Dry to moist flatwoods with longleaf pine, wiregrass, and saw palmetto	Low
Centrosema arenicola Sand Butterfly Pea	-	E	Sandhill, scrubby flatwoods and dry upland woods	Low
Conradina grandiflora Large-flowered Rosemary	-	T	Dunes and other landforms with deep, sandy soils, scrub habitat	Low
Cucurbita okeechobeensis Okeechobee Gourd	E	-	Floodplain forests along the St Johns River	Low
Deeringothamnus rugelii Rugel's Pawpaw	E	-	Open slash pine or longleaf pine flatwoods with wiregrass and saw palmetto in the understory	Low
Hartwrightia floridana Hartwrightia	-	T	Seepage slopes, wet prairies and wet flatwoods	Low
Illicium parviflorum Star Anise	-	E	Banks of spring-run or seepage streams, bottomland forest, hydric hammock	Low
Lechea cernua Nodding Pinweed	-	T	Dry sandy areas, sand pine scrub, scrub, dunes and sandy ridges	Low
Matelea floridana Florida Spiny-pod	-	E	Open woodlands, sandhills and open fields	Low
Nemastylis floridana Celestial Lily	-	E	Wet flatwoods, prairies, marshes, and cabbage palm hammocks edges	Low
Nolina atopocarpa Florida Beargrass	-	T	Mesic to wet flatwoods	Low
Pteroglossaspis ecristata Giant Orchid	-	T	Sandhill, scrub, pine flatwoods, and pine rocklands.	Low
Vicia ocalensis Ocala Vetch	-	E	Open, wet thickets along margins of spring runs and streams	Low
Fish				
Pteronotropis welaka Bluenose Shiner	-	T	Quiet backwaters and pools of blackwater streams and rivers and spring runs; usually with thick vegetation nearby	Low

Protected Species Potential for Occurrence
St Johns River to Sea Loop Trail Gap

Scientific Name Common Name	Designated Status Federal	 State	Habitat Preference	Potential for Occurrence
Amphibian				
Notophthalmus perstriatus Striped Newt	C	-	Xeric upland communities, principally sandhill but also scrub; occasionally in pine flatwoods. Breeds in isolated, mostly ephemeral wetlands (depression marshes) that lack predatory fishes	Low
Reptilian				
Alligator mississippiensis American Alligator	SAT	-	Freshwater and brackish marshes, ponds, lakes, rivers, swamps, bayous, canals, and large spring runs.	Low
Drymarchon couperi Eastern Indigo Snake	T	-	Mesic flatwoods, upland pine forests, swamps, wet prairies, xeric pinelands, and scrub habitats.	Low
Gopherus polyphemus Gopher Tortoise	C	T	Dry upland habitats including sandhills, scrub, xeric oak hammock, and dry pine flatwoods; also uses disturbed habitats such as pastures, old fields, and road shoulders	High (AIM 2019)
Pituophis melanoleucus mugitus Florida Pine Snake	-	T	Dry sandy soils with open canopies. Sandhill, sand pine scrub, and scrubby flatwoods.	Low
Avian				
Aphelocoma coerulescens Florida Scrub-Jay	T	-	Typically found in early successional stages of fire dominated xeric oak communities located on well drained, sandy soils; preferred habitat consists of scrub oaks between 3 and 10 feet tall, with open sand and scattered clumps of herbaceous vegetation.	Low
Athene cunicularia floridana Florida Burrowing Owl	-	T	Areas of short, herbaceous groundcover; including prairies, sandhills, and farmland.	Low
Grus canadensis pratensis Florida Sandhill Crane	-	T	Wet and dry prairies, marshes, and marshy lake edges	Low
Haliaeetus leucocephalus Bald Eagle	NL	NL	Large open water bodies, saltwater marshes, dry prairies, mixed pine, hardwood forests, wet prairies, marshes, pine flatwoods, and sandhills.	Low
Mycteria americana Wood Stork	T	-	Fresh and saltwater habitats such as fresh and saltwater marshes, tidal flats, wet prairies, cypress swamps, and agricultural environments.	Low

Protected Species Potential for Occurrence
St Johns River to Sea Loop Trail Gap

Scientific Name Common Name	Designated Status Federal	 State	Habitat Preference	Potential for Occurrence
Pandion haliaetus Osprey	NL	NL	Near still or slow flowing, including both fresh and salt water such as lakes, rivers, wooded swamps, and shorelines.	Low
Picoides borealis Red-cockaded Woodpecker	E	-	Mature pine woodlands that have a diversity of grass, forb, and shrub species. Longleaf and slash pine flatwoods.	Low
Mammals				
Sciurus niger niger Southern Fox Squirrel	-	NL	High pine sandhills, pine flatwoods, pastures and other open, rural habitats with scattered pines and oaks.	Low
Trichechus manatus West Indian Manatee	T	-	A near-shore species that utilize warm-water refuges during the winter. During warmer months they will migrate far up rivers, estuaries, and canals.	Low
Ursus americanus floridanus Florida Black Bear	-	NL	Mixed hardwood pine, cabbage palm hammock, upland oak scrub, and forested wetlands, such as cypress and riverine.	Moderate

APPENDIX E

Standard Protection Measures for the Eastern Indigo Snake

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

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

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

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

POSTER INFORMATION

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

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

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

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

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

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

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

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

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

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

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

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

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

PRE-CONSTRUCTION ACTIVITIES

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

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

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

DURING CONSTRUCTION ACTIVITIES

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

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

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

POST CONSTRUCTION ACTIVITIES

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