

Yellow Fever Creek Preserve Enhancement Environmental Assessment Listed Species Survey Addendum

History

A *Yellow Fever Creek Preserve Land Stewardship Plan & Park Master Plan* was commissioned by the City of Cape Coral in January 2007. A *Yellow Fever Creek Preserve Enhancement Environmental Assessment* was commissioned in September 2016. This Listed Species Survey Addendum is designed to amend the Environmental Assessment for the SFWMD application # 190201-2.

For stewardship purposes, special consideration is given to all plants and animals listed by the U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWC), Florida Department of Agriculture and Consumer Services (FDACS), Florida Natural Areas Inventory (FNAI) and/or the IRC. There are a variety of listed animal and plant species found at the Yellow Fever Creek. (Table 3 of Yellow Fever Creek Preserve Land Stewardship Plan & Park Master Plan, January 2007) documents listed species both known and expected to be found at the “Park”.

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 coordination, 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). The evaluation also included 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 and adjacent habitats on March 13, 2019, and species surveys took place on May 10, 2019. Results of the species survey are documented in Figure 1.

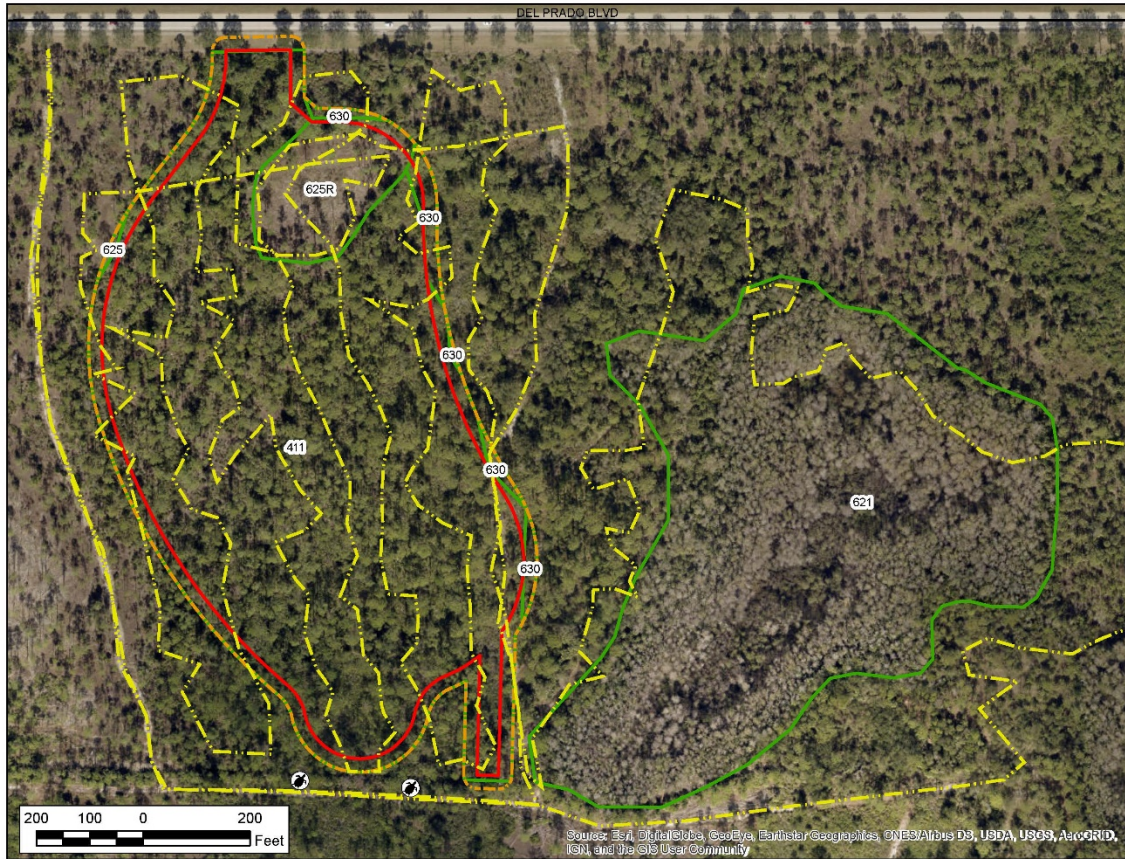


Figure 1 Species Survey Map

Based on evaluation of collected data and field reviews, the federal- and state-listed species discussed in **Table 1** and **Table 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 1 Federal Protected Species Impact Determinations

Project Impact Determination	Federal Listed Species	Ranking
"No effect"	Beautiful pawpaw (<i>Deeringothamnus pulchellus</i>)	No
	Aboriginal prickly apple (<i>Harrisia aboriginum</i>)	No
	Gulf sturgeon (<i>Acipenser oxyrinchus desotoi</i>)	No
	Smalltooth sawfish (<i>Pristis pectinata</i>)	No
	Loggerhead sea turtle (<i>Caretta caretta</i>)	No
	Green sea turtle (<i>Chelonia mydas</i>)	No
	Kemp's Ridley sea turtle (<i>Lepidochelys kempii</i>)	No
	American crocodile (<i>Crocodylus acustus</i>)	No
	Leatherback sea turtle (<i>Dermochelys coriacea</i>)	No
	Hawksbill Sea Turtle (<i>Eretmochelys imbricata</i>)	No
	Florida scrub-jay (<i>Aphelocoma coerulescens</i>)	No
	Crested Caracara (<i>Caracara cheriway</i>)	No
	West Indian manatee (<i>Trichechus manatus</i>)	No
	Piping plover (<i>Charadrius melodus</i>)	No
	Everglade snail kite (<i>Rostrhamus sociabilis plumbeus</i>)	No
"May affect, but is not likely to adversely affect"	American alligator (<i>Alligator mississippiensis</i>)	Low
	Eastern indigo snake (<i>Drymarchon couperi</i>)	Low
	Red-cockaded woodpecker (<i>Picoides borealis</i>)	Low
	Wood stork (<i>Mycteria americana</i>)	Low
	Florida bonneted bat (<i>Eumops floridanus</i>)	Low

Table 2 State Protected Species Impact Determinations

Project Impact Determination	State Listed Species	Rating
"No effect anticipated"	Iguana hackberry (<i>Celtis iguanaea</i>)	No
	Sand-Dune Spurge (<i>Chamaesyce cumulicola</i>)	No
	Tampa vervain (<i>Glandularia tampensis</i>)	No
	Nodding pinweed (<i>Lechea cernua</i>)	No
	Pine pinweed (<i>Lechea divaricata</i>)	No
	Sleeping beauty waterlily (<i>Nymphaea jamesoniana</i>)	No
	Flowering Southern Morning-glory (<i>Stylisma abditia</i>)	No
	Pine snake (<i>Pituophis melanoleucus</i>)	No
	Florida burrowing owl (<i>Athene cunicularia floridana</i>)	No
	Snowy plover (<i>Charadrius nivosus</i>)	No
	American oystercatcher (<i>Haematopus palliatus</i>)	No
	Black skimmer (<i>Rynchops niger</i>)	No
	Least tern (<i>Sternula antillarum</i>)	No
"No adverse effect anticipated"	Golden leather fern (<i>Acrostichum aureum</i>)	Low
	American bird's nest fern (<i>Asplenium serratum</i>)	Low
	Red stopper (<i>Eugenia rhombea</i>)	Low
	Lowland Loosestrife (<i>Lythrum flagellare</i>)	Low
	Florida beargrass (<i>Nolina atopocarpa</i>)	Low
	Hand fern (<i>Ophioglossum palmatum</i>)	Low
	Giant orchid (<i>Pteroglossaspis ecristata</i>)	Low
	Twisted Airplant/Banded wildpine (<i>Tillandsia flexuosa</i>)	Low
	Rain Lily/Redmargin zephyrlily (<i>Zephyranthes simpsonii</i>)	Low
	Gopher tortoise (<i>Gopherus polyphemus</i>)	Medium
	Little blue heron (<i>Egretta caerulea</i>)	Low
	Tricolored heron (<i>Egretta tricolor</i>)	Low
	Roseate spoonbill (<i>Platalea ajaja</i>)	Low
Southeastern American kestrel (<i>Falco sparverius paulus</i>)	Low	
Florida sandhill crane (<i>Grus canadensis pratensis</i>)	Low	

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). 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 Endangered Species Act of 1973 as amended and 50 CFR Part 424.

Administered by the 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 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 may have on protected species.

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), Natural Resource Conservation Service (NRCS), Soil Survey of Lee County, Florida, 1981;
- Florida Department of Transportation (FDOT), Florida Land Use Cover, and Forms Classification System (FLUCFCS), January 2017;
- South Florida Water Management District (SFWMD), Florida Land Use, Cover and Forms Classification System GIS Database; (SFWMD 2008);
- U.S. Fish and Wildlife Service (USFWS), Endangered and Threatened Wildlife and Plants, 50 CFR 17.11 and 17.12, June 2007;
- Florida Department of Agriculture and Consumer Services, 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>);
- Florida Fish and Wildlife Conservation Commission (FWC), Florida's Endangered

Species and Threatened Species, May 2017;

- FWC, Eagle Nest Locator website (<http://myfwc.maps.arcgis.com/apps/webappviewer/>), 2016-2017;
- FWC, Wading Bird Rookeries website (http://ocean.floridamarine.org/TRGIS/Description_Layers_Terrestrial.htm), 1999;
- FNAI Biodiversity Matrix Map Server (<http://www.fnai.org/biointro.cfm>);
- USFWS, 2019 Wood Stork Nesting Colonies Maps (<http://www.fws.gov/northflorida/woodstorks/wood-storks.htm>), 2018-2019;
- USFWS, Critical Habitat Portal website (<http://criticalhabitat.fws.gov/crithab/>);
- Florida Natural Areas Inventory (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 March 13, 2019, and species surveys took place on May 10, 2019. For the purposes of this study, the project study area is defined as a the project footprint and 25-foot buffer. 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 reviewed for documentation occurrences of listed species within one mile of the study area.

Based on the evaluation of collected data, field reviews, FNAI data, and database searches, the federal- and state-listed protected species discussed in the following sections 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 proposed project alternatives on each species.

Results

Based on the information collected and field reviews, a list of protected species with the potential to occur within the project study area was generated. This list includes a total of 48 federal or state protected species that have the potential for occurrence within the project study area. The following section 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.

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 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.

Federal Species

Plants

Beautiful Pawpaw (*Deeringothamnus pulchellus*)

The beautiful pawpaw is a low shrub with small, fragrant, solitary, white flowers that often curve backwards when fully opened. This plant is listed as endangered by the USFWS. This species is a member of the magnolia (*Annonaceae*) family and occurs on open slash or longleaf pine flatwoods with dwarf live oak and wiregrass in the understory. Although marginally suitable habitat is present within the pine flatwoods 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 beautiful pawpaw has the potential to occur in Lee County; however, it has not been documented within one (1) mile of the project area. Additionally, 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 will have “no effect” on the beautiful pawpaw.

Aboriginal Prickly Apple (*Harrisia aboriginum*)

The aboriginal prickly apple is a cactus with slender, cylindrical arms and red, round fruits resembling an apple with wooly spines. It is listed as endangered by the USFWS. This species is a member of the cactus (*Cactaceae*) family and occurs in coastal hammocks, shell mounds, and on edges of mangrove zones. No suitable habitat is present within the project study area. According to FNAI data, the aboriginal prickly apple has the potential to occur in Lee County; however, it has not been documented within one (1) mile of the project area. Additionally, 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 aboriginal prickly apple.

Fish

Gulf Sturgeon (*Acipenser oxyrinchus desotoi*)

The gulf sturgeon is a large fish reaching seven (7) feet long with a v-shaped snout and prominent bony scutes. This species is listed as threatened by the USFWS. This species spends its adult life in the open ocean returning to rivers to spawn. They are often found in estuarine or gulf waters during cooler months of the year. According to FNAI data, the gulf sturgeon has the potential to occur in Lee County; however, it has not been documented within one (1) mile of the project area. Additionally, no suitable habitat is present within the project study area. Based on this information

and the lack of documented occurrences, it has been determined that the proposed project will have “no effect” on the gulf sturgeon.

Smalltooth Sawfish (*Pristis pectinata*)

The smalltooth sawfish is a large, cartilaginous fish with a long, flattened, toothed rostrum that extends outward from its flattened head resembling a saw. This species is listed as endangered by the NMFS. No suitable habitat is present within the project study. Based on this information, it has been determined that the project “no effect” the smalltooth sawfish.

Reptiles

American Alligator (*Alligator mississippiensis*)

The American alligator is a large, rounded-snout crocodylian 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 allows it to utilize freshwater wetland and surface water systems within the project area. Although suitable habitat is present throughout the project study area, this species was not observed during field reviews. As part of this project, wetland impacts will be mitigated to prevent a loss of wetland functions and values. Since the mitigation of wetland impacts will be undertaken by the FDOT, it has been determined that the proposed project “may affect, but is not likely to adversely affect” the American alligator.

Sea Turtles

Loggerhead Sea Turtle (*Caretta caretta*), Green Sea Turtle (*Chelonia mydas*), Leatherback Sea Turtle (*Dermochelys coriacea*), and Kemp’s Ridley Sea Turtle (*Lepidochelys kempii*)

The loggerhead sea turtle and green sea turtle are listed as threatened and the leatherback sea turtle and Kemp’s Ridley sea turtle are listed as endangered by the USFWS/NMFS. While each species is distinct, sea turtles are discussed collectively since they occupy similar habitats and have similar nesting patterns. These sea turtles are all known to nest on sandy beaches along the Florida coastline. Additionally, they will occasionally utilize the waters of bays for swimming and foraging habitat. No suitable habitat is present within the project study. The primary concern for impacts to these species is the loss of nesting habitat (sandy beaches). There is no nesting habitat available within one (1) mile of the project area. Based on this information, it has been determined that the proposed project will have “no effect” on the loggerhead sea turtle, green sea turtle, leatherback sea turtle, and Kemp’s Ridley sea turtle.

American Crocodile (*Crocodylus acutus*)

The American crocodile is a large, pointed-snout crocodylian listed as threatened by the USFWS. American crocodiles utilize brackish or saltwater areas including ponds, coves, creeks, and mangrove swamps. Due to the extensive canal systems of Florida, they can also occasionally be found in freshwater systems. While no suitable habitat is present in the project area, the project area is located at the northern edge of the American crocodile’s range. The American crocodile was not observed during field reviews. Additionally, there have been no documented occurrences 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” on the American crocodile.

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. It is reasonable to expect that these species could utilize habitat within the project study area. To minimize potential adverse impacts to the eastern indigo snake, the project will implement the USFWS-approved Standard Protection Measures for the Eastern Indigo Snake (updated August 2013) during construction of the proposed project. Additionally, construction of the proposed project will result in less than 25 acres of impact to xeric habitat and will impact no active and inactive gopher tortoise burrows. 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.

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, 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. Based on this information, it has been determined that the proposed project will have “no effect” on the Florida scrub jay.

Crested Caracara (*Caracara cheriway*)

The crested caracara is a large, boldly patterned raptor with a crest. It is listed as threatened by the USFWS. This species often inhabits open country, such a dry prairie and pasture lands with scattered cabbage palms, cabbage palm/live-oak hammocks, and shallow ponds and sloughs. It also uses cabbage palms or live oaks with low-growing surrounding vegetation for nesting. While the project study area falls within the USFWS Crested Caracara Consultation Area, minimal suitable habitat exists within the project study area. According to data, there have not been any 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 crested caracara.

Piping Plover (*Charadrius melodus*)

The piping plover is a small, brown and white bird with a black bill, yellow legs, and pale underparts. It is listed as threatened by the USFWS. This species inhabits open, sandy beaches, tidal mudflats, and tidal sand flats along both coasts of Florida. While the project study area falls within the USFWS Piping Plover Consultation Area, no suitable habitat exists within the project study area. According to data, there have not been any 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 piping plover.

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 (dbh) 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, minimal suitable nesting or foraging habitat exists within the project study area. According to 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 red-cockaded woodpecker.

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 data, the study area is located within the 18.6-mile core foraging area (CFA) of two (2) wood stork nesting colonies: 619040 Caloosahatchee River East and 619041 Caloosahatchee River West. The primary concern for this species is loss of suitable foraging habitat within the core foraging area (CFA) of a wood stork colony.

As part of this project, impacts to wetlands will be mitigated for within the CFA of both of the affected rookeries. Therefore, it has been determined that the proposed project, “may affect, but is not likely to adversely affect” the wood stork.

Everglade Snail Kite (*Rostrhamus sociabilis plumbeus*)

The Everglade snail kite is a medium-sized raptor that is listed as endangered by the USFWS. The Everglade snail kite is found primarily in lowland freshwater marshes in tropical and subtropical America from Florida, Cuba, and Mexico south to Argentina and Peru. Nesting almost always occurs over waters that maintain fairly consistent water levels, which deters predation. According to FNAI data, the Everglade snail kite has the potential to occur in Lee County; however, there have been no documented occurrences within one (1) mile of the project study area. No potential foraging habitat or apple snails were observed. Additionally, no visual observations were made during field reviews. Based on this information, it has been determined that the proposed project will have “no effect” on the Everglade snail kite.

Mammals

Florida Bonneted Bat (*Eumops floridanus*)

The Florida bonneted bat is a large, free-tailed bat with joined ears that varies in color from dark gray to brownish gray or cinnamon brown. It is listed as endangered by the USFWS. Precise roosting and foraging habitat requirements are unknown; however, the species forages in open areas and is

closely associated with forested communities due to their roosting habits. They are thought to nest in tree cavities or building crevices. The project location is within the USFWS Florida Bonneted Bat Consultation Area but outside of the designated Focal Areas. The project was reviewed for tree cavities and man-made structures during species specific surveys for the Florida bonneted bat in May 2019. Several cavities were located and inspected; however, no signs of the Florida bonneted bat were observed in these cavities. According to data, the Florida bonneted bat has the potential to occur in Lee County; however, minimal suitable habitat with suitable roost structures exist within the proposed alternative alignments and no occurrences have been documented within one (1) mile of the project study area. Additionally, no visual observations of individuals were made during field reviews or species specific surveys. Based on this information, it has been determined that the proposed project “may affect, but is not likely to adversely affect” the Florida bonneted bat.

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. Based on this information, it has been determined that the proposed project will have “no effect” on the West Indian manatee.

State Species

Plants

Golden Leather Fern (*Acrostichum aureum*)

The golden leather fern is a large fern that is listed as threatened by FDACS. This species is a member of the fern (*Pteridaceae*) family and typically occurs in mangrove swamps, saltwater marshes and some freshwater wetlands. Minimal suitable habitat for this species occurs within the project study area. According to data, the golden leather fern has not been documented within one (1) mile of the project study area. Additionally, this species was not observed during field reviews. Based on the lack of documented observations, it has been determined that the proposed project will have “no adverse effect anticipated” on the golden leather fern.

American bird's nest fern / Bird's-nest Spleenwort (*Asplenium serratum*)

Bird's nest fern is a fern with numerous upright unlobed leaves, 1 - 2.5 feet long, in a rosette; leaf margins finely toothed, veins conspicuous and parallel. Sporangia in linear sori paralleling veins on underside of upper half of leaf. Roots fibrous and brown-hairy. This fern is epiphytic or epipetric on moist rocks, fallen logs, and tree bases in swamps and wet hammocks. Suitable habitat for this species occurs within the project study area. According to data, the bird's nest fern has not been documented within one (1) mile of the project study area. Additionally, this species was not observed during field reviews. Based on the lack of documented observations, it has been determined that the proposed project will have “no adverse effect anticipated” on the bird's nest fern.

Iguana Hackberry (*Celtis iguanaea*)

The iguana hackberry is a small deciduous tree armed with recurved spines at each leaf node. It is listed as endangered by FDACS. This species is a member of the elm (*Ulmaceae*) family and typically

occurs in dry or wet thickets of plains and hillsides including shell mounds and middens in tropical coastal hammocks. There is limited suitable habitat available for this species within and around the project study area. According to FNAI data, this species has the potential to occur in Lee 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 and the lack of suitable habitat, it has been determined that the proposed project will have “no effect anticipated” on the iguana hackberry.

Sand-Dune Spurge (*Chamaesyce cumulicola*)

Perennial herb, somewhat woody at the base, sprawling, stems flexible rather than wiry, string-like, and zigzag. It is listed as endangered by FDACS. This species is a member of the spurge (*Euphorbiaceae*) family and typically found in coastal scrub and stabilized dunes. There is no suitable habitat available for this species within and around the project study area. According to FNAI data, this species has the potential to occur in Lee 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 and the lack of suitable habitat, it has been determined that the proposed project will have “no effect anticipated” on the sand-dune spurge.

Spiceberry Eugenia (*Eugenia rhombea*)

Red stopper is a small erect evergreen tree 20-25 feet high with trunk 2-8 inches in diameter. It is listed as endangered by FDACS. This species is a member of the myrtle (*Myrtaceae*) family and typically found in hammocks or dry rocky limestone woodland. There is minimal suitable habitat available for this species within the project study area. According to FNAI data, this species has the potential to occur in Lee 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 and the lack of suitable habitat, it has been determined that the proposed project will have “no adverse effect anticipated” on the spiceberry eugenia.

Tampa vervain (*Glandularia tampensis*)

The Tampa vervain is a perennial herb from a short, shallow rhizome or from short lateral offshoots. Inflorescence a compact spike, elongating with age, with slightly irregular, salverform, purple flowers. It is listed as endangered by FDACS. This species typically occurs in sandy coastal hammocks and dunes, clearings, well-drained live oak-slash or longleaf pine-saw palmetto flats, and disturbed areas. There is limited suitable habitat available for this species within and around the project study area. According to FNAI data, this species has the potential to occur in Lee 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 and the lack of suitable habitat, it has been determined that the proposed project will have “no effect anticipated” on the Tampa vervain.

Nodding Pinweed (*Lechea cernua*)

The nodding pinweed is a shrublike perennial herb, usually from a deep taproot and with several spreading, ascending or erect shoots. It is listed as threatened by FDACS. Nodding pinweed is always found in deep sands, usually ancient dunes, on which the most common forest is a mixture of evergreen scrub oaks. It may be found under mature scattered pine or oak but is more frequently in sandy openings. There is no suitable habitat available for this species within and around the project study area. Additionally, this species was not observed during field reviews. Based on this information and the lack of suitable habitat, it has been determined that the proposed project will have “no effect anticipated” on the nodding pinweed.

Pine Pinweed (*Lechea divaricata*)

The pine pinweed is a somewhat shrubby perennial herb, growing to 5 dm tall. Stems are branching, ascending to erect, and covered with spreading hairs. Leaves are spirally arranged, less than 1 cm long. Flowers have very reduced petals, 5 calyx lobes. It is listed as endangered by FDACS. This species is a member of the rock-rose (Cistaceae) family. Pine pinweed is typically found in deep sands of sand pine scrub, ancient dunes, scrub oak, and moist dune swales. There is no suitable habitat available for this species within and around the project study area. Additionally, this species was not observed during field reviews. Based on this information and the lack of suitable habitat, it has been determined that the proposed project will have “no effect anticipated” on the pine pinweed.

Lowland Loosestrife (*Lythrum flagellare*)

Lowland loosestrife is a sprawling, perennial herb. Newer stems are erect or decumbent, produced from a creeping rhizome. Older stems are entirely prostrate. Leaves are mostly opposite, 5-10 mm long. Petals are 4-5 mm long and lavender to purple in color. It is listed as endangered by FDACS. This species is a member of the loosestrife (Lythraceae) family. Lowland loosestrife is typically found in mucky or sandy-peat muck soils of pond margins, ditch banks, and edges of cypress depressions. There is suitable habitat available for this species within and around the project study area. According to FNAI data, this species has the potential to occur in Lee 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 and the lack of suitable habitat, it has been determined that the proposed project will have “no adverse effect anticipated” on the lowland loosestrife.

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 Lee 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 adverse effect anticipated” on Florida beargrass.

Sleeping Beauty Waterlily (*Nymphaea glandulifera*)

The sleeping beauty waterlily is a night-blooming waterlily with a large, showy, white flower. It is listed as endangered by FDACS. This species is a member of the waterlily (Nymphaeaceae) family and typically occurs in shallow ponds. There is minimal habitat for this species available within the freshwater wetlands and roadside ditches/canals adjacent to the project study area. According to FNAI data, this species has the potential to occur in Lee 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 sleeping beauty waterlily.

Hand Fern (*Ophioglossum palmatum*)

The hand fern is a fleshy fern with seven (7) lobes or fingers on long leaf stalks. It is listed as endangered by FDACS. This species is a member of the fern (Ophioglossaceae) family and typically

occurs in “boots” or old leaf bases of cabbage palms in maritime or wet hammocks. There is minimal suboptimal habitat available within the hammock ecosystems in and around the project area for the hand fern. According to FNAI data, this species has the potential to occur in Lee 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 adverse effect anticipated” on the hand fern.

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 Lee 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 adverse effect anticipated” on the giant orchid.

Flowering Southern Morning-glory (*Stylisma abdita*)

The flowering southern morning-glory is a small perennial vine with 1-several stems, 1-3 dm long, growing radially from a deep taproot and trailing on or just above the substrate. Single, small, white funnel-shaped flowers bloom from April through November. The plants are inconspicuous among grass and leaf litter. It is listed as endangered by the FDACS. This species is a member of the morning-glory (Convolvulaceae) family and occurs in dry sandy soil in oak or sand pine scrub or turkey oak barrens. There is limited suitable habitat available for the flowering southern morning-glory within the project study area. According to FNAI data, the flowering southern morning-glory has the potential to occur within Lee 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 flowering southern morning-glory.

Rain Lily (*Zephyranthes simpsonii*)

The rain lily is a perennial herb, up to 3 dm tall. Leaves reach 3 dm in length and are 2 mm wide. Sepals and petals grow to 6 cm long and are white or pink with purple stripes that is listed as threatened by the FDACS. This species is a member of the lily (Liliaceae) family and occurs in Found on black, highly organic sands of wet pine flatwoods, meadows, pastures, roadsides, and glade borders. According to FNAI data, the rain lily has the potential to occur within Lee County. There is limited suitable habitat available for the rain lily within the project 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 adverse effect anticipated” on the rain lily.

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, two active gopher tortoise burrows were observed. 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. No gopher tortoises or burrows are found within 25 feet of the limits of construction. With the implementation of these measures, it has been determined that the proposed project will have “no adverse effect anticipated” on the gopher tortoise.

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. Minimal suitable habitat for the pine snake exists within the project study area. According to FNAI data, this species has the potential to occur in Lee 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. It has been determined that the proposed project will have “no effect anticipated” on the pine snake.

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 suboptimal habitat for this species within the disturbed lands of the project study area; however, 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 effect anticipated” on the Florida burrowing owl.

Snowy Plover (*Charadrius nivosus*)

The snowy plover is a small, brown and white shorebird with a horizontal posture and a short neck. It is listed as threatened by the FWC. This species occurs in barren to sparsely vegetated sand beaches, dry salt flats in lagoons, dredge spoils deposited on beach or dune habitat, levees and flats at salt-evaporation ponds, river bars, along alkaline or saline lakes, reservoirs and ponds. Nests are generally created in natural or scraped depressions in the ground and are usually lined with pebbles, shell fragments, fish bones, mud chips, vegetation fragments, or invertebrate skeletons. There is no habitat within the project study area. This species was not observed during field reviews. Additionally, there have been no documented occurrences within one (1) mile of the project study area according to FNAI data. Based on this information, it has been determined that the proposed project will have “no effect anticipated” on the snowy plover.

Wading Birds

Little Blue Heron (*Egretta caerulea*), Tricolored Heron (*Egretta tricolor*), and Roseate Spoonbill (*Platalea ajaja*)

The little blue heron, tricolored heron, and roseate spoonbill are listed as threatened by the FWC. While each species is distinct, wading birds are discussed collectively since they occupy similar habitats and have similar feeding patterns. These wading birds nest and forage among both fresh

and saltwater habitats such as freshwater marshes, coastal beaches, mangrove swamps, cypress swamps, hardwood swamps, wet prairies and bay swamps. The populations of these species have been primarily impacted by the destruction of wetlands for development and by the drainage of wetlands for flood control and agriculture. Suitable habitat for these wading birds is available within the study area within saltwater marshes, mangrove swamps, vegetated non-forested wetlands, exotic hardwood wetlands, and ditches and canals. According to FNAI data and the FWC Wading Bird Rookery Database, there are no active wading bird rookeries documented within one (1) mile of the study area. The primary concern for impacts to these species is the loss of foraging habitat (wetlands). As part of implementing the proposed project, all wetland impacts will be mitigated to prevent a net loss of wetland functions and values. Since the mitigation of impacts will be undertaken, it has been determined that the proposed project will have “no adverse effect anticipated” on the little blue heron, tricolored heron, and roseate spoonbill.

Southeastern American Kestrel (*Falco sparverius paulus*)

The southeastern American kestrel is the smallest falcon species found in the Southeastern United States and is listed as threatened by the FWC. This species utilizes pine scrub habitat, dry prairies, mixed pine hardwood forests, and pine flatwoods. Nests are typically built in tall dead trees or utility poles with an unobstructed view of surroundings. There is little suitable nesting habitat present within the project study area. According to FNAI data, there has been no documentation of the species within one (1) mile of the project study area and no kestrels were observed within the project study area during field reviews. Based on this information, it has been determined that the project will have “no adverse effect anticipated” on the southeastern American kestrel.

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. It has been determined that the project will have “no adverse effect anticipated” on the Florida sandhill crane.

American Oystercatcher (*Haematopus palliatus*)

The American oystercatcher is a large, boldly patterned bird with a black head and large orange beak. It is listed as threatened by the FWC. During the breeding season, this species is found in coastal habitats including sand or shell beaches, dunes, salt marshes, marsh islands, mudflats, and dredge spoil islands made out of sand or gravel. During migration and winter, this species can be found feeding in mud or sand flats exposed by the tide, or on shellfish beds. These birds tend to roost on beaches, dunes, or marsh islands near their foraging sites, and very rarely travel inland. There is no suitable habitat found of the project study area. Additionally, this species was not observed during field reviews. Based on this information, it has been determined that the project will have “no effect anticipated” on the American oystercatcher.

Black Skimmer (*Rynchops niger*)

The black skimmer is a black and white bird with a unique red and black bill with its lower mandible longer than the upper. This species is listed as threatened by the FWC. Black skimmers occur on sandy beaches, gravel or shell bars with sparse vegetation, or on mats of sea wrack in salt marshes. There is no suitable habitat for this species available in 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 black skimmer.

Least Tern (*Sternula antillarum*)

The least tern is the smallest of all North American terns with a black cap, short white eye-stripe, and a yellow bill with a black tip. This species is listed as threatened by the FWC. Least terns occur on sea coasts, beaches, bays, estuaries, lagoons, lakes, and rivers and breed on sandy or gravelly beaches and banks. No suitable habitat for this species occurs within 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 adverse effect anticipated” on the least tern.

Other Species of Concern

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 Biostatistics 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 LE092 which is located approximately 1.25 miles (6.885 feet) southwest of the project. This nest was last surveyed and determined to be active in 2017. The project is located outside of the primary (330 feet) and secondary (660 feet) buffer zones of these bald eagle nests.

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 nest was observed within the proposed project area.

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 not been reported within the study area. The project area is not located within the FWC- designated primary or secondary range of the South Florida Bear Management Unit and no black bears were

observed within the study area during field reviews.

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 suboptimal 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. A permit from FWC will be obtained if it is determined that fox squirrel nest trees will be impacted by the proposed project.