STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
TECHNICAL REPORT COVERSHEET

NATURAL RESOURCES EVALUATION

Florida Department of Transportation District 6

Ludlam Trail Corridor Project Development & Environment (PD&E) Study

From SW 80th Street to 400 feet North of NW 7th Street
Miami-Dade County, Florida

Financial Management Number: 444236-1-22-01
ETDM Number: 14369

March 2021

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

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List of Acronyms

ADA	Americans with Disabilities Act
CFR	Code of Federal Regulations
CFA	Core Foraging Area
DOE	Degree of Effect
DERM	Division of Environmental Resources Management
EEL	Environmentally Endangered Lands
EFH	Essential Fish Habitat
EO	Executive Order
ESA	Endangered Species Act
EST	Environmental Screening Tool
ETDM	Efficient Transportation Decision Making
FAC	Florida Administrative Code
FDACS	Florida Department of Agriculture and Consumer Services
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FECR	Florida East Coast Railroad
FLUCFCS	Florida Land Use, Cover and Forms Classification System
FNAI	Florida Natural Areas Inventory
FWC	Florida Fish and Wildlife Conservation Commission
FWCA	Fish and Wildlife Conservation Act
GIS	Geographic Information System
IPaC	Information for Planning and Consultation
LAP	Local Agency Program
MDPROS	Miami-Dade County Parks, Recreation and Open Spaces
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRE	Natural Resources Evaluation
PD&E	Project Development and Environment
ROW	Right-of-Way
SFWMD	South Florida Water Management District
SMART	Strategic Miami Area Rapid Transit
SUN	Shared-Use Nonmotorized
SWPPP	Stormwater Pollution Prevention Plan
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service

EXECUTIVE SUMMARY

Miami-Dade County Parks, Recreation, and Open Spaces (MDPROS) in coordination with the Florida Department of Transportation (FDOT), is conducting a Project Development and Environment (PD&E) Study, in accordance with the National Environmental Policy Act (NEPA), to assess the proposed development of a 5.6-mile multi-use trail within a former railroad corridor, in Miami-Dade County, Florida. Presently, the Preferred Alternative is being considered as part of this PD&E Study.

This Natural Resources Evaluation (NRE) was prepared to document the natural resources analyses performed to support decisions related to the evaluation of the project alternatives and to summarize potential impacts to wetlands, federal and state protected species, and protected habitats. Measures considered to avoid, minimize, and mitigate for potential impacts are also discussed. This report provides documentation of these processes to supplement the NEPA Environmental Document.

The project study area was evaluated for potential occurrences of federally listed and state-listed animal and plant species in accordance with Section 7 of the Endangered Species Act (ESA) of 1973, as amended; the Fish and Wildlife Conservation Act (FWCA); the Migratory Bird Treaty Act (16 U.S.C.703-712); Part 2, Chapter 16 of the FDOT PD&E Manual; and Chapters 5B-40 and 68A-27 of the Florida Administrative Code (FAC). Based on this evaluation, a total of ten (10) federally listed wildlife species, twelve (12) federally listed plant species, two (2) state-listed animal species, and 25 state-listed plant species were identified as having the potential to occur within the limits of the Preferred Alternative. Additionally, while not state or federally listed under the ESA, the bald eagle (*Haliaeetus leucocephalus*) and osprey (*Pandion haliaetus*) were included in the protected species analysis due to the current regulatory protections associated with these species. **Table ES-1** provides a summary of the federally and state-listed animal and plant species with potential to occur within the limits of the study area, along with their corresponding effect determinations.

The project study area was also evaluated for the presence of federally designated Critical Habitat as defined in 50 Code of Federal Regulations (CFR) 17. Based on this evaluation, it was determined that the project study area occurs within federally designated Critical Habitat for the West Indian manatee (*Trichechus manatus*).

Prior coordination with the National Marine Fisheries Service (NMFS) during the Efficient Transportation Decision Making (ETDM) process indicated that the proposed project does not appear to directly impact any NMFS trust resources (i.e., listed/protected marine species and/or Essential Fish Habitat [EFH]). Therefore, no discussion of EFH is included in this NRE. The ETDM Summary Report (published on July 2, 2019) includes NMFS comments received during the ETDM review.

Table ES - 1: Summary of Listed Species and Effect Determinations

Scientific Name	Common Name	Effect Determination	Status	
			Federal	State
Federally Listed/Protected Wildlife Species				
Alligator mississippiensis	American alligator	No Effect	T(S/A)	FT(S/A)
Drymarchon corais couperi	Eastern indigo snake	No Effect	T	FT
Eumops floridanus	Florida bonneted bat	No Effect	E	FE
Haliaeetus leucocephalus	Bald eagle	Not Applicable	NL[(1)]	NL
Mycteria americana	Wood stork	No Effect	T	FT
Pandion haliaetus	Osprey	Not Applicable	NL[(2)]	NL
Anaea troglodyta floridalis	Florida leafwing butterfly	No Effect	E	FE
Cicindela floridana	Miami tiger beetle	No Effect	E	FE
Strymon acis bartrami	Bartram's hairstreak butterfly	No Effect	E	FE
Trichechus manatus	West Indian manatee	May Affect, Not Likely to Adversely Affect	T	FT
Federally Listed Plant Species				
Amorpha crenulata	Crenulate lead- plant	No Effect	E	FE
Argythamnia blodgettii	Blodgett's silverbush	No Effect	T	FT
Chamaesyce deltoidea ssp. deltoidea	Deltoid spurge	No Effect	E	FE
Chamaesyce deltoidea pinetorum	Pineland sandmat	No Effect	T	FT
Chamaesyce garberi	Garber's spurge	No Effect	T	FT
Dalea carthagenensis floridana	Florida prairie-clover	No Effect	E	FE
Digitaria pauciflora	Florida pineland crabgrass	No Effect	T	FT
Linum arenicola	Sand flax	No Effect	E	FE
Linum carteri carteri	Carter's small-flowered flax	No Effect	E	FE
Polygala smallii	Tiny polygala	No Effect	E	FE
Sideroxylon reclinatum spp. *austrofloridense*	Everglades bully	No Effect	T	FT
Trichomanes punctatum	Florida bristle fern	No Effect	E[(3)]	E
State-Listed Wildlife and Other Protected Species				
Athene cunicularia floridana	Florida burrowing owl	No adverse effect anticipated	NL	T
Patagioenas leucocephala	White-crowned pigeon	No adverse effect anticipated	NL	T

Scientific Name	Common Name	Effect Determination	Status	
			Federal	State
State-Listed Plant Species				
Asplenium verecundum	Delicate spleenwort	No effect anticipated	NL	E
Basiphyllaea corallicola	Carter's orchid	No effect anticipated	NL	E
Bourreria cassinifolia	Little strongbark	No effect anticipated	NL	E
Chamaesyce porteriana	Porter's spurge	No effect anticipated	NL	E
Coccothrinax argentata	Silver palm	No effect anticipated	NL	T
Conradina grandiflora	Large-flowered rosemary	No effect anticipated	NL	T
Crossopetalum ilicifolium	Christmas berry	No effect anticipated	NL	T
Encyclia cochleata	Florida clamshell orchid	No effect anticipated	NL	E
Galeandra beyrichii	Helmet orchid	No effect anticipated	NL	E
Govenia utriculata	Gowen's orchid	No effect anticipated	NL	E
Ipomea microdactyla	Wild-potato morning-glory	No effect anticipated	NL	E
Ipomea tenuissima	Rocklands morning-glory	No effect anticipated	NL	E
Jacquemontia curtissii	Pineland jacquemontia	No effect anticipated	NL	T
Lantana depressa	Pineland lantana	No effect anticipated	NL	E
Linum carteri var. *smallii*	Everglades flax	No effect anticipated	NL	E
Lomariopsis kunzeana	Climbing holly fern	No effect anticipated	NL	E
Poinsettia pinetorum	Rockland painted-leaf	No effect anticipated	NL	E
Roystonea elata	Florida royal palm	No effect anticipated	NL	E
Sachsia polycephala	Bahama sachsia	No effect anticipated	NL	T
Selaginella eatonii	Pygmy spikemoss	No effect anticipated	NL	E
Stylosanthes calcicola	Everglades pencilflower	No effect anticipated	NL	E
Swietenia mahagoni	West Indian mahogany	No adverse effect anticipated	NL	T
Tragia saxicola	Pineland noseburn	No effect anticipated	NL	T
Tripsacum floridanum	Florida tripsacum	No effect anticipated	NL	T
Verbena maritima	Coastal vervain	No adverse effect anticipated	NL	E

F = Federally Listed / E = Endangered / T = Threatened / T(S/A) = Threatened due to similar appearance / NL = Not Listed

(1) The bald eagle is neither state nor federally listed; however, this species is federally protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. The bald eagle is also managed in Florida by the FWC's bald eagle rule (FAC 68A-16.002).

(2) The osprey is neither state nor federally listed; however, this species is federally protected under the Migratory Bird Treaty Act.

(3) The Florida bristle fern (*Trichomanes punctatum*) is listed as endangered under the ESA.

In accordance with Presidential Executive Order (EO) 11990 entitled "Protection of Wetlands", United States Department of Transportation Order 5660.1A, “Preservation of the Nation's Wetlands” and Part 2, Chapter 9 of the FDOT PD&E Manual, the project alternatives were assessed for the presence of wetlands that may be impacted by proposed project activities. Based on this evaluation, two (2) surface waters, consisting of upland-cut canals, were identified within the project study area. These canals are named conveyances (C-3/Coral Gables Canal and C-4/Tamiami Canal) that are part of a larger network of canals owned and operated by the South Florida Water Management District (SFWMD) for flood control purposes. No jurisdictional wetlands are present within the project study area.

1.0 INTRODUCTION

This Natural Resources Evaluation (NRE) provides information in support of the Ludlam Trail Corridor Project Development and Environment (PD&E) Study. The Miami-Dade County Parks, Recreation and Open Spaces (MDPROS) Department, in coordination with the Florida Department of Transportation (FDOT), is currently conducting a PD&E Study for the Ludlam Trail Corridor, which stretches from SW 80th Street to 400 feet north of NW 7th Street, between 69th and 70th Avenue, in Miami-Dade County.

1.1 Project Description and Location

MDPROS is proposing to develop a 5.6-mile multi-use trail within the former Florida East Coast Railroad (FECR) railroad corridor (i.e., the Ludlam Trail Corridor, or proposed project). As a priority paved land trail from the Florida Greenways and Trails System (FGTS) Priority Network and Shared-Use Nonmotorized (SUN) Trail Network, the proposed publicly accessible transportation corridor will serve bicyclists, pedestrians, and users of other types of non-motorized vehicles. In addition, the proposed project is anticipated to provide a safe, dedicated, and direct means of non-motorized transportation to and from areas of residences, work, schools, parks, and shopping centers.

The proposed project limits extend along a segment of the former FECR rail corridor from SW 80th Street to 400 feet north of NW 7th Street, between 69th and 70th Avenue (**Figure 1-1**). The project primarily occurs within the former FECR right-of-way (ROW) with the exception of proposed improvements at road and street crossings. The ROW for the proposed Ludlam Trail Corridor is approximately 100 feet wide for most of its length, although it narrows to between 75 and 80 feet in some areas and down to 18 feet in sections designated for mixed-use development. The project study area traverses sections of the City of Miami, the City of South Miami, and unincorporated Miami-Dade County, and is immediately adjacent to the City of West Miami. The Ludlam Trail Corridor project location is shown in **Figure 1-1**.

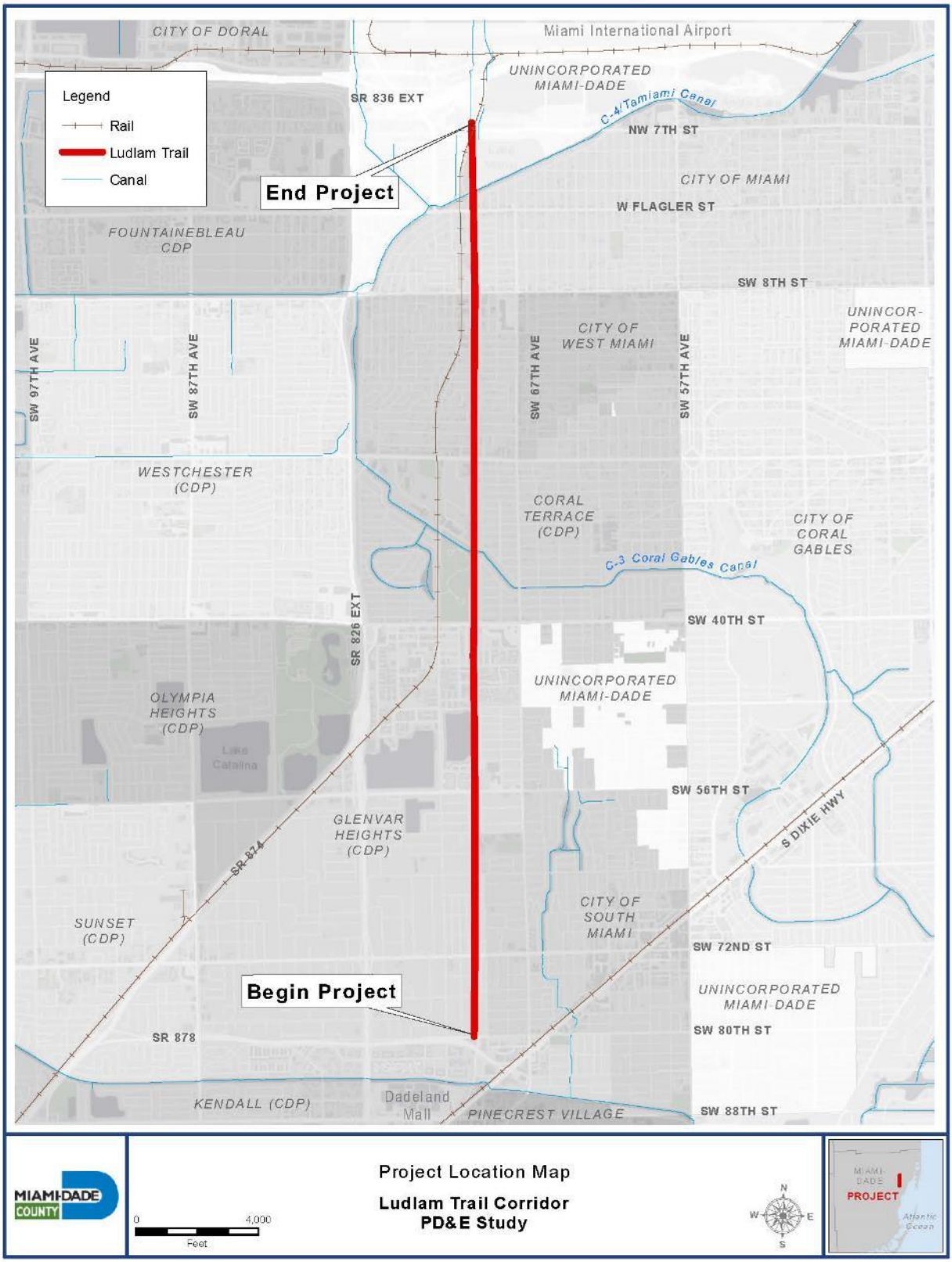

Figure 1 - 1: Project Location Map

1.2 Project Background

In December 2018, MDPROS acquired the land formerly used as a railroad corridor from FECR. Approximately one (1) mile of the northernmost section of the corridor has an Interim Trail Use designation by the Surface Transportation Board (STB) and, although the rails have been removed, the corridor could be re-activated for railroad use in the future. The remaining portion of the corridor, approximately five (5) miles in length, has been fully abandoned from railroad use since 2006. The County will develop the Ludlam Trail Corridor for public use, as a shared-use trail for non-motorized use. Miami-Dade County intends to utilize a variety of funding sources (e.g., federal, state, local) for the project through a Local Agency Program (LAP) agreement.

Consistent with the *Miami-Dade County Comprehensive Development Master Plan* (2018)[1] and zoning approvals, FECR has retained parcels for mixed-use development of the proposed Ludlam Trail Corridor. The locations of the development nodes include the north/south sides of SW 40th Street/Bird Road, SW 24th Street/Coral Way, and from SW 8th Street/Tamiami Trail/Calle Ocho to SW 12th Street. Miami-Dade County acquired an 18-foot wide perpetual easement through the proposed development nodes for continuity of the Ludlam Trail.

1.3 Project Purpose and Need

The purpose of the proposed Ludlam Trail Corridor Project is to encourage the use of alternate modes of transportation and enhance overall connectivity and accessibility to schools, parks, transit stations, and bus stops for as many as 30,500 residents present within two (2) miles of the proposed project corridor. The proposed project will provide a safe, dedicated, and direct means of non-motorized transportation to and from areas of residences, work, schools, parks, and shopping centers, and will serve bicyclists, pedestrians, and other non-motorized vehicle users. The need for the proposed project is based on the criteria identified below.

1.3.1 Primary Criteria

Area Wide Network/System Linkage

The proposed project supports the vision of the *Miami-Dade County Park and Open Space System Master Plan*, a primary element of which is to "provide an interconnected trail system which offers transportation alternatives and reduces traffic congestion." The Master Plan provides a 50-year unifying vision for a livable and sustainable Miami-Dade County, which involves the development of a seamless system of greenways, trails, and water trails. The Ludlam Trail will be a vital component of this network as it will link open spaces and civic institutions to neighborhoods, while offering a reliable transportation alternative. From a regional perspective, the proposed project will connect to the Metrorail Dadeland North Station to the south; the proposed Strategic Miami Area Rapid Transit (SMART) Plan Corridor #2 (East-West Corridor) near NW 7th Street to the north; and to other planned trails including The Underline/East Coast Greenway, South Dade Trail, Snapper Creek Trail, East/West Trail, and Merrick Trail.

[1] Miami-Dade County Department of Regulatory and Economic Resources, 2018. Adopted Components Comprehensive Development Master Plan for Miami-Dade County, Florida. As adopted October 2, 2013 and as amended through February 28, 2018.

1.3.2 Secondary Criteria

Social and Economic Demand

According to the *Miami-Dade County Trail Benefits Study – Ludlam Trail Case Study* (2011),[2] development of the Ludlam Trail Corridor will improve public mobility for walking and biking to schools, parks, and transit stations, resulting in a reduction of daily vehicle trips in the project vicinity. By providing additional non-motorized transportation options, fewer vehicles will likely travel on the surrounding roadway network, which will help to reduce traffic congestion on major arterials in the area. Furthermore, the proposed project will enhance mobility and strengthen connections to neighboring communities, providing increased opportunities for economic development.

[2] Miami-Dade County Parks and Recreation Department, 2011. Miami-Dade County Trail Benefits Study, Ludlam Trail Case Study. Prepared by AECOM. January 2011.

2.0 PROJECT ALTERNATIVES

The project study area, which extends 5.6 miles in length and has an average width of 100 feet, is of sufficient size to identify potential direct and indirect effects of the Preferred Alternative that may occur within or adjacent to the proposed project corridor.

2.1 Preferred Alternative

Based on preliminary engineering designs, the Ludlam Trail will consist of a 12-foot-wide bike path and an 8-foot-wide pedestrian path with an adjacent 2-foot soft natural surface, separated by a 14-foot grassed buffer. Generally, the paths will run along the center of the trail ROW. The Ludlam Trail will provide access to activity centers (i.e., schools, parks, and transit centers) via a 10-foot-wide multi-use path that can accommodate bicyclists and pedestrians. Connections to neighborhoods and parking facilities will be also be provided via a 10-foot multi-use path.

There will be two (2) potential configurations for the Ludlam Trail (see **Figures 2-1 and 2-2** for Proposed Typical Cross Sections):

- **Scenario 1 / Buffered Separation:** The trail consists of a 12-foot wide bike trail and an 8-foot wide pedestrian trail with an adjacent 2-foot soft natural surface that will be separated by a landscape buffer that varies in width from 4 to 14 feet.

- **Scenario 2 / No Separation:** The trail consists of a 12-foot-wide bike trail and an 8-foot-wide pedestrian trail with an adjacent 2-foot soft natural surface immediately adjacent to one another with pavement markings.

2.1.1 Roadway Crossings

The Ludlam Trail will cross several major roadways, closely aligned to the center point of the ROW. All crossings will be compliant with the Americans with Disabilities Act (ADA). Additionally, signs that indicate points of interest, such as information signs or kiosks, may be installed as appropriate. There will be two (2) options for roadway crossings along the Ludlam Trail:

- **At-Grade Crossings:** At these crossings, the trail will be divided by a raised median into bicycle and pedestrian paths. The crossing will include ADA tactile warning strips and curb cuts, a lean bar, and an area to turn around between the curbed median and the roadway. Each crossing will have signage for both the trail users and street traffic, a mid-crossing refuge island, high contrast roadway/trail pavers, cut-off pedestrian safety lighting at all crossings, potentially a half intersection traffic signal, and a push button actuator for the crossing.

- **Above-Grade Crossings:** These crossings will include an elevated (above-grade or grade separated) crossing that will carry the Ludlam Trail across the existing roadway. This type of above-grade crossing is proposed at four (4) locations: SW 40th Street/Bird Road, SW 24th Street/Coral Way, SW 8th Street/Tamiami Trail/Calle Ocho, and West Flagler Street.

Site specific conditions, such as volume of vehicle traffic, signal proximity, and driveway access points were considered to determine the specific type of roadway crossing most appropriate for each roadway crossing location. During the final design phase, intersection sight distance will be determined for selecting the appropriate control at a mid-block path-roadway intersection and approvals for sign placement will be obtained as necessary prior to construction.

2.1.2 Bridges

The proposed project corridor crosses two (2) canals – the Coral Gables/C-3 Canal and the Tamiami/C-4 Canal. Each of these canals are managed by the South Florida Water Management District (SFWMD). The existing bridge across the C-3 Canal is located approximately 0.5 mile north of SW 40th Street, in the northeast corner of A.D. "Doug" Barnes Park. The existing bridge across the C-4 Canal is located approximately 0.1 mile north of West Flagler Street. The existing bridges spanning each canal were originally part of the FEC rail line which has since been abandoned. As part of the proposed Ludlam Trail project, the bridges will be removed and replaced. The existing bridges currently consist of in-water pilings that will be removed as part of this project. It is anticipated that the new replacement bridges will each be single span without any structural elements (e.g., pilings, columns, foundations, etc.) located in the canal. Details regarding the removal and replacement of each of the bridges will be determined in the final design phase of this project.

2.1.3 Development Nodes

As discussed, the proposed project will also include nodes of private development at three (3) major roadway crossings: SW 40th Street/Bird Road, SW 24th Street/Coral Way, and from SW 8th Street/Tamiami Trail/Calle Ocho to SW 12th Street. The development nodes will be sensitive to and compatible with the adjacent areas (e.g., a neighborhood mixed-use development fronting the trail corridor, which will serve the specific needs of trail users, such as bike/skate shops, outdoor cafes, flexible office space, and multi-family residential areas).

2.1.4 Trail Improvements

Tree plantings and other forms of landscaping will surround the proposed Ludlam Trail, providing users with shade, improving aesthetics, and providing a buffer to adjacent single-family residences. It is anticipated that pedestrian rest areas will be located throughout the trail corridor and may offer trail amenities (e.g., information signs or kiosks, shaded benches or outdoor seating areas, trash receptacles, drinking fountains or spigots, bike racks and bike repair stations, security lighting). Proposed trailheads may also contain aesthetic features (e.g., decorative display fountains, opportunities for public artwork displays). Details regarding these trail improvements will be developed during the final design phase of this project.

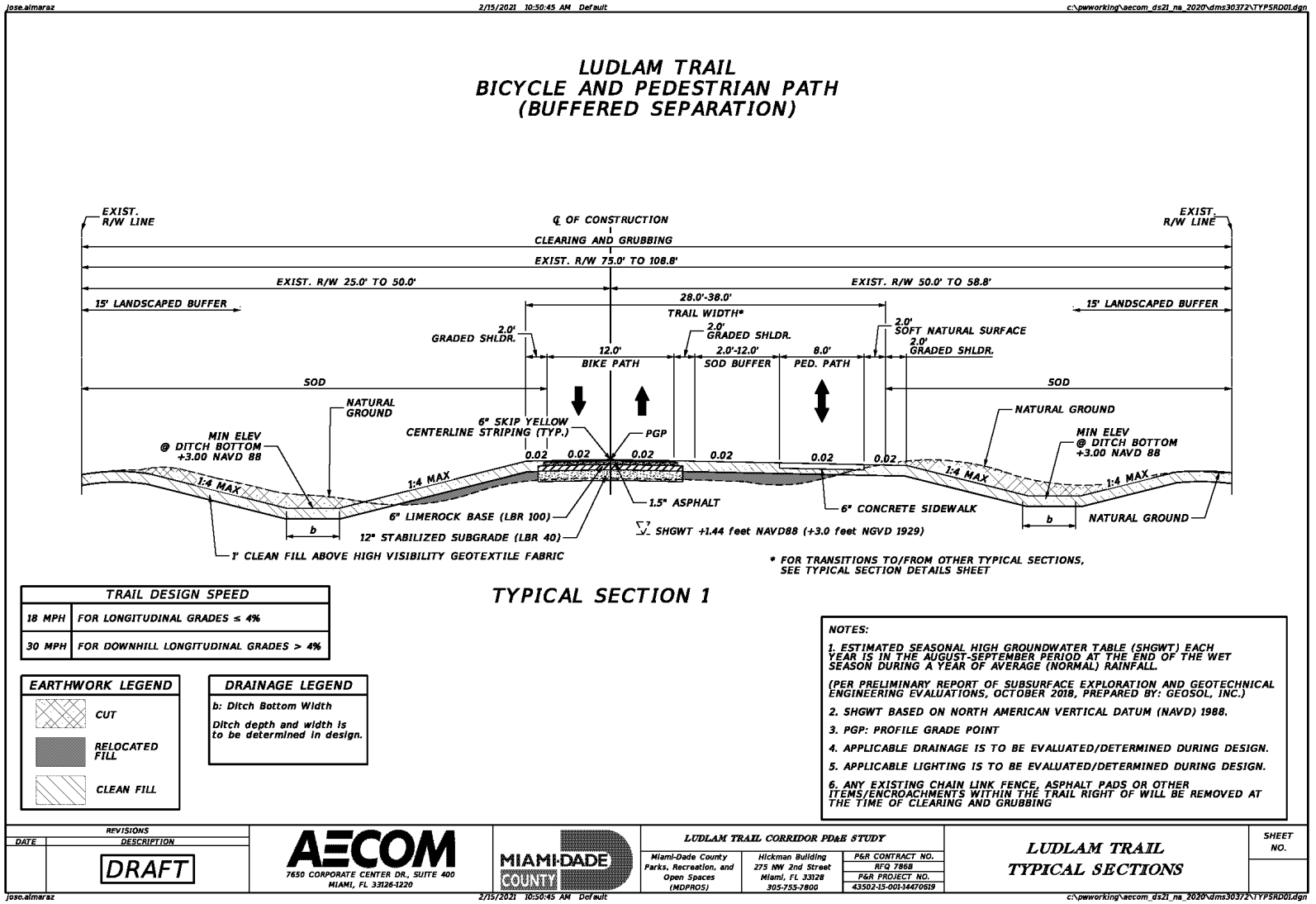

Figure 2 - 1: Proposed Typical Cross Section for the Ludlam Trail Bicycle and Pedestrian Path (Buffered Separation)

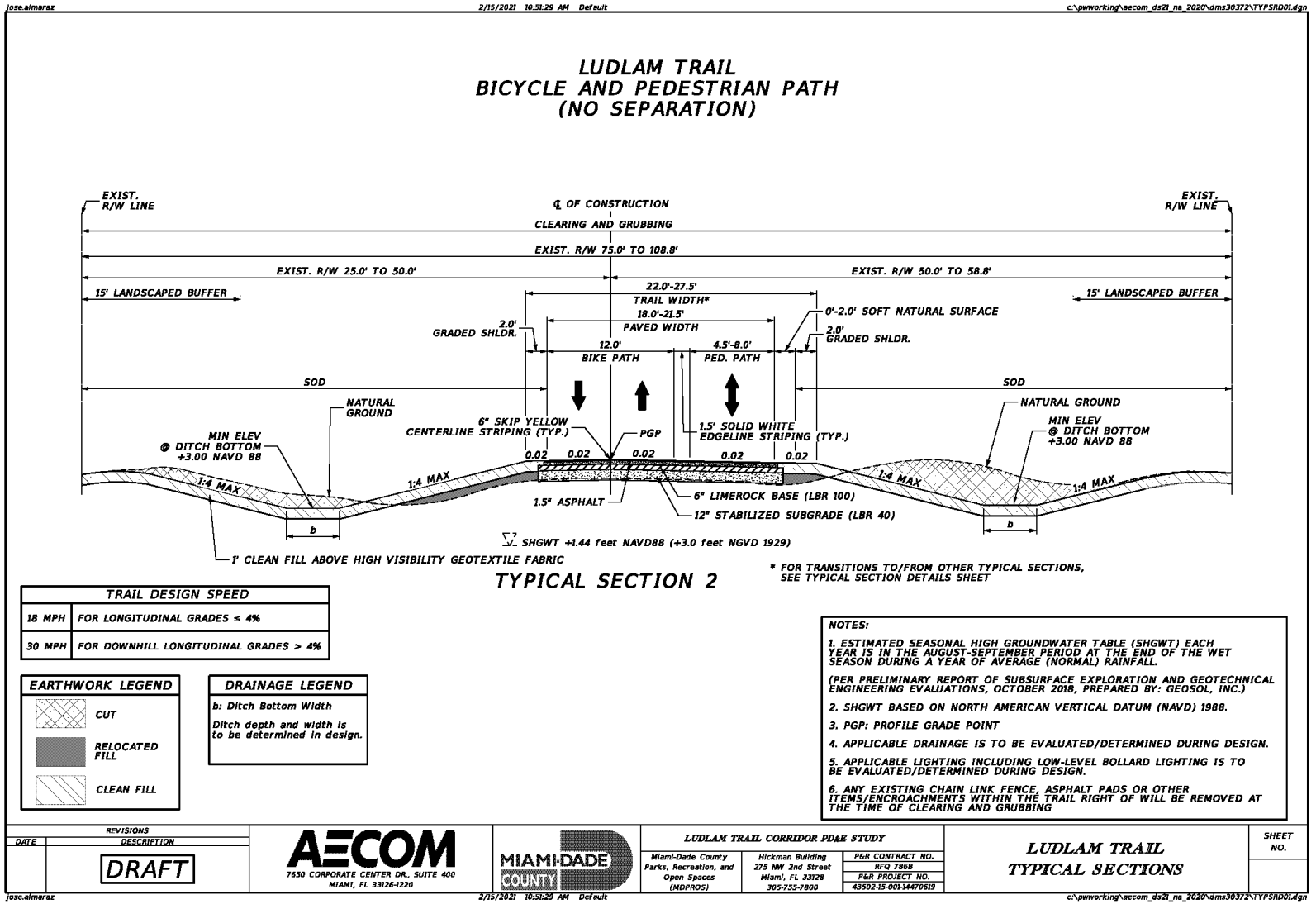

Figure 2 - 2: Proposed Typical Cross Section for the Ludlam Trail Bicycle and Pedestrian Path (No Separation)

3.0 PROJECT STUDY AREA EVALUATION

The project study area consists of the existing and proposed ROW limits for the Preferred Alternative. The project ROW is located along a segment of former FECR railroad corridor, from SW 80th Street to 400 feet north of NW 7th Street, and primarily occurs within the former railroad corridor ROW with the exception of proposed improvements at road and street crossings. The study area is of sufficient size to identify potential direct and indirect effects of the Preferred Alternative on habitats and wildlife species that may occur within or adjacent to the project corridor.

The proposed project will not directly impact any Essential Fish Habitat (EFH) because the project is located west of salinity control structures and there is no EFH located within or adjacent to the project study area. In addition, comments provided by NOAA's National Marine Fisheries Service (NMFS) during the ETDM Process concludes that EFH would not be impacted by the proposed project and that this project will not require an EFH Assessment. Therefore, an EFH Assessment is not required and no EFH discussion is included in this NRE.

3.1 Existing Conditions

Prior to field reviews, literature and database searches were conducted to assess existing land uses/vegetative cover, soils, and the potential for occurrences of federally listed and state-listed plant and animal species within the project study area. The project study area was also evaluated for the presence/absence of existing conservation lands.

The following data sources were reviewed as part of this evaluation:

- Aerial photographs (high-resolution, 1 inch=200 feet) (2018);
- FDOT, Florida Land Use, Cover and Forms Classification System (FLUCFCS), Third edition (1999);
- Florida Association of Environmental Soil Scientists, Hydric Soils of Florida Handbook (Hurt 2007);
- Florida Fish and Wildlife Conservation Commission (FWC), Telemetry (2014) and Mortality (2017) data sets (www.fgdl.org);
- FWC, Eagle Nest Locator website (http://myfwc.com/eagle/eaglenests/nestlocator.aspx);
- FWC, Florida's Endangered and Threatened Species (updated May 2017);
- Florida Natural Areas Inventory (FNAI) database (www.FNAI.org);
- South Florida Water Management District, Geographic Information System (GIS) Land Use Database (2018);
- United States Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey of Miami-Dade County (https://websoilsurvey.nrcs.usda.gov/app/);
- US Fish and Wildlife Service (USFWS), Classification of Wetlands and Deepwater Habitats of the United States (Cowardin *et al.* 1979);
- USFWS, National Wetlands Inventory, Wetlands Online Mapper (http://www.fws.gov/wetlands/Data/Mapper.html);
- USFWS, Threatened and Endangered Species' Critical Habitat Online Mapping Application (http://crithab.fws.gov/); and
- USFWS, Endangered Species Database (http://www.fws.gov/endangered/).

On August 13 and 14, 2018, qualified biologists with expertise in Florida's natural communities conducted field evaluations along pedestrian transects traversing the natural and altered habitat types located within the project study area. Attention was given to identifying dominant plant species within each habitat. Exotic plant infestations, shifts in historical plant communities, and other disturbances (such as soil subsidence, clearing, canals, power lines, etc.) were noted. Attention was also given to identifying signs of wildlife utilization (e.g., vocalizations, tracks, scat, burrows, etc.) at each upland and surface water community within the project study area. No jurisdictional wetlands were identified within or adjacent to the project study area.

During the August 2018 field inspection, preliminary habitat boundaries and classification codes established through literature reviews and aerial photograph interpretation were verified. Approximate surface water boundaries were field-verified in accordance with the State of Florida Wetlands Delineation Manual (Chapter 62-340, Florida Administrative Code [FAC]) and the guidelines found within the *Regional Supplement to the United States Army Corps of Engineers* (USACE) *Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region* (2010).

Based on site-specific data searches and field reviews, a total of two (2) land use/vegetative cover classifications and three (3) mapped soil units were identified within the project study area. Upland habitats were classified using FLUCFCS, and surface water habitats were classified using both FLUCFCS and the USFWS's *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin *et al.* 1979).

3.2 Land Use

The project study area is located within a highly developed area of Miami-Dade County. Adjacent lands along the former railway corridor are characterized by FDOT land use data as industrial, public/semi-public, recreational, residential, retail/office, vacant non-residential, and vacant residential.

FLUCFCS land use categories within the project study area include one (1) upland classification and one (1) surface water classification. USFWS's classification includes one (1) surface water classification. **Table 3-1** lists the acreage and percentage of each land use category within the project study area.

Table 3 - 1: Existing Land Uses/Vegetative Cover within the Project Study Area

FLUCFCS Classification [1]		USFWS Classification [2]	FLUCFCS Description	Preferred Alternative	
				Acres	Percent
Uplands, Transportation	810	N/A	Transportation	67.0	99.6%
Surface Waters, Canal	512	R2UB2Hx	Upland-cut Canals	0.3	0.4%
Total Land Use/Vegetative Cover				**67.3**	**100.0%**

[1] FDOT, FLUCFCS (Third edition), 1999.
[2] USFWS, Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al), 1979.

Descriptions of each FLUCFCS land use category are provided below. Aerial maps depicting the boundaries of existing land uses and vegetative cover (FLUCFCS) type within the project study area are shown as **Figure 3-1**.

3.2.1 Uplands

Transportation
FLUCFCS: 810

Transportation facilities are used for the movement of people and goods. These types of facilities are major influences and define many land use boundaries. The transportation land use category includes rail-oriented facilities such as stations, round-houses, repair and switching yards, and related areas. Within the project study area, this land use category consists of all upland portions of the railroad corridor and comprises 67.0 acres (99.6%) of the total project study area.

3.2.2 Other Surface Waters

Upland-Cut Canals
FLUCFCS: 512
USFWS: R2UB2Hx (Riverine, Unconsolidated Bottom, Sand, Permanently Flooded, Excavated)

This category includes upland-cut canals and flood control conveyances. Within the project study area, these surface water features consist of two (2) SFWMD owned flood-control canals (C-3/Coral Gables Canal and C-4/Tamiami Canal) that flow east through the project corridor. Both canals provide little habitat value due to their location within a densely developed urban area. Collectively, these two (2) upland-cut canals comprise 0.3 acre (0.4%) of the total project study area.

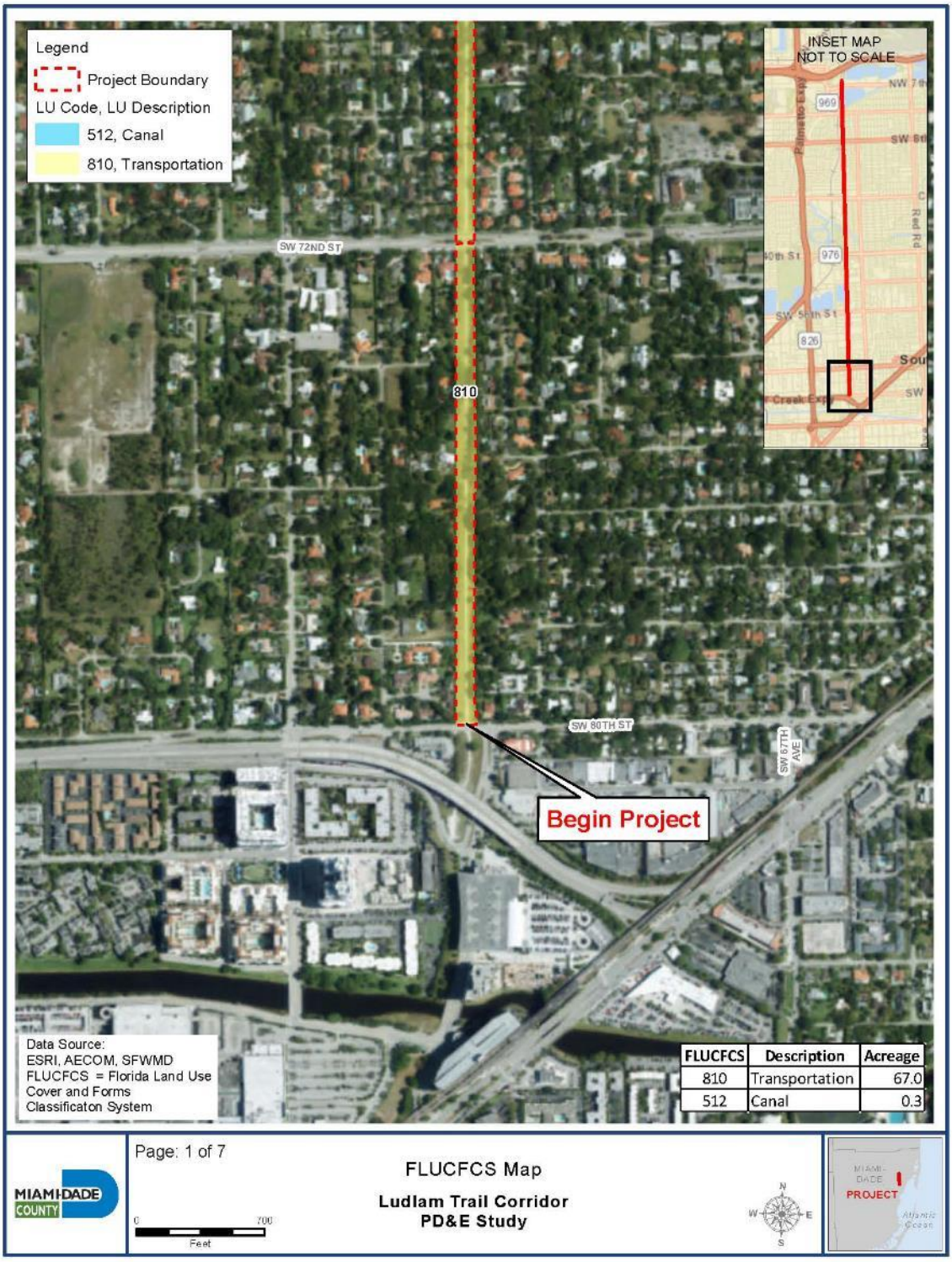

Figure 3 - 1: FLUCFCS Map (1 of 7)

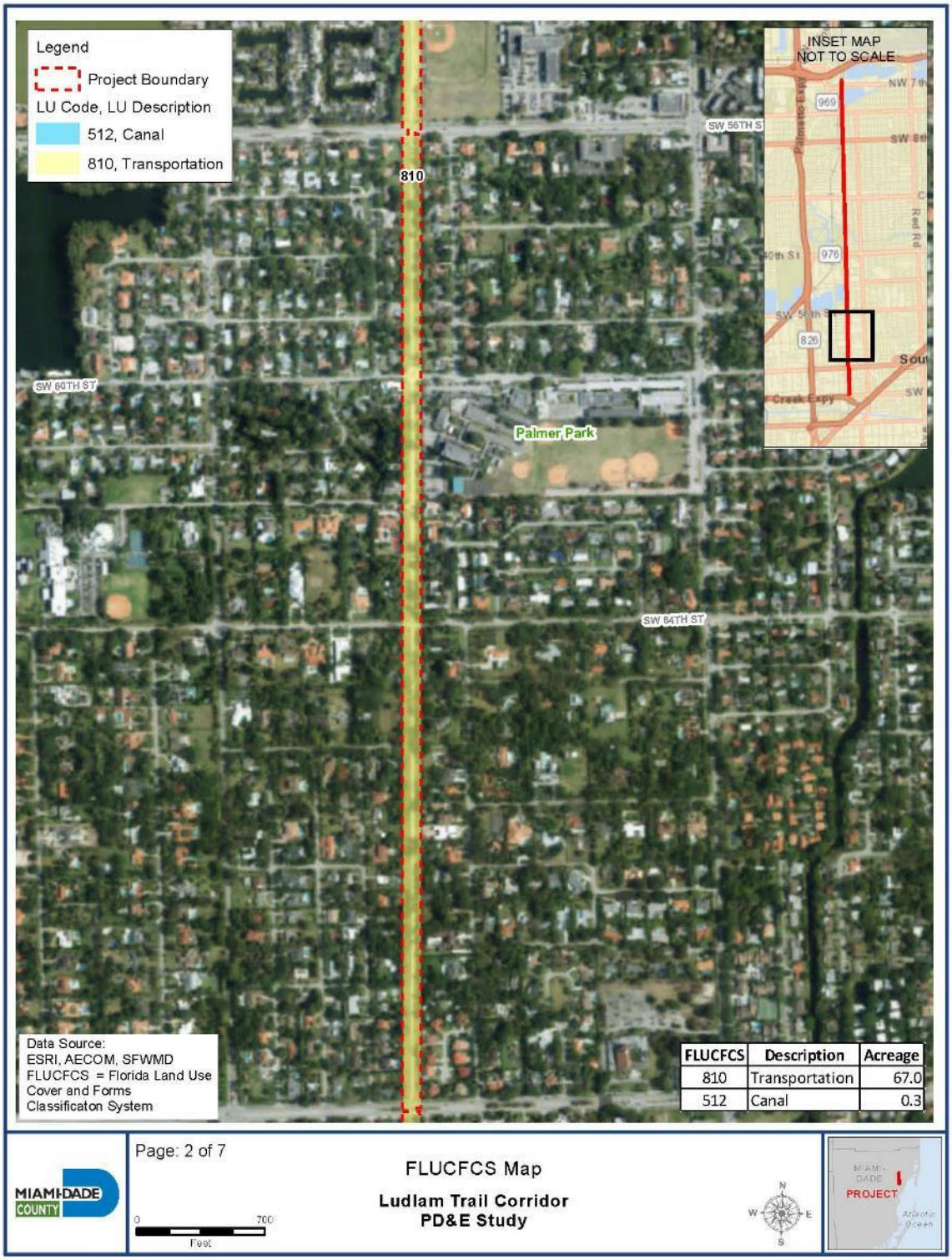

Figure 3 - 1: FLUCFCS Map (2 of 7)

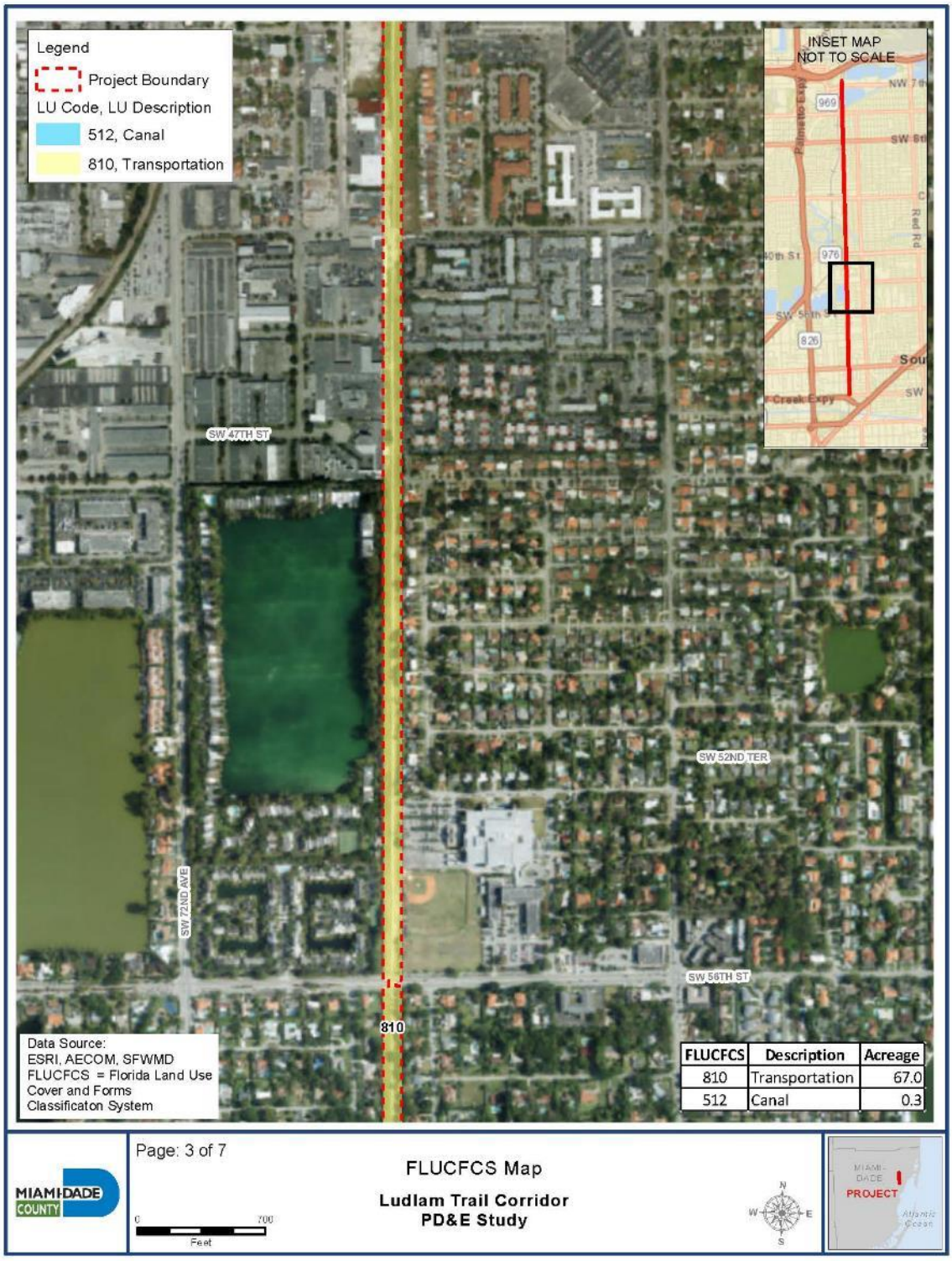

Figure 3 - 1: FLUCFCS Map (3 of 7)

Figure 3 - 1: FLUCFCS Map (4 of 7)

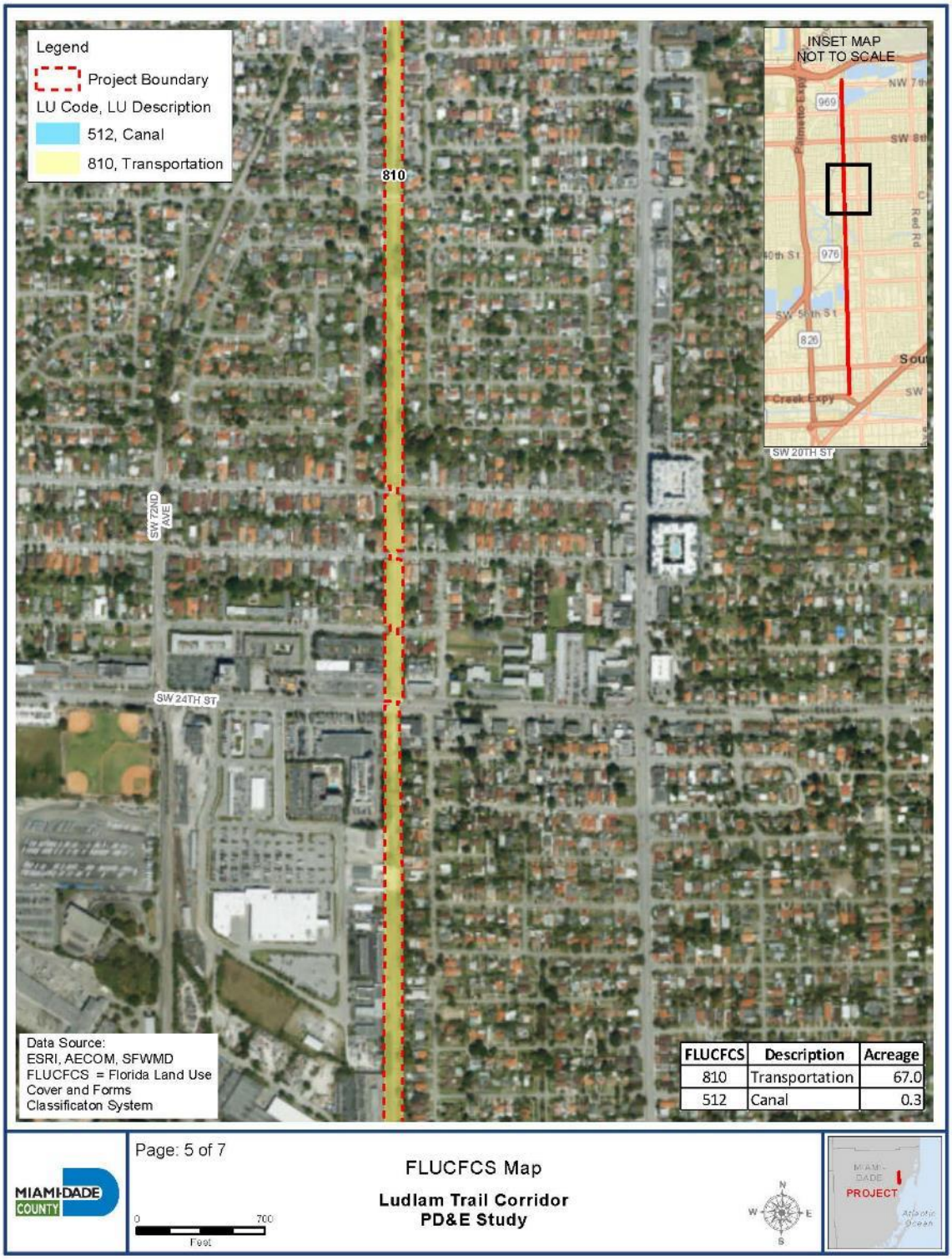

Figure 3 - 1: FLUCFCS Map (5 of 7)

Figure 3 - 1: FLUCFCS Map (6 of 7)

Figure 3 - 1: FLUCFCS Map (7 of 7)

3.3 Soils

Based on the USDA Web Soil Survey for Miami-Dade County, the project study area is comprised of three (3) mapped soil units (**Figure 3-2**). These mapped soil units are not considered hydric; and therefore, are not listed in the *Hydric Soils of Florida Handbook* (Hurt 2007). **Table 3-2** lists the acreage and percentage of each mapped soil type within the project study area.

Table 3 - 2: Soil Types and Coverage Project Study Area

Mapped Soil Type	Hydric (Y/N)	Preferred Alternative	
		Area (acres)	% of Total
9 – Udorthents – Water Complex	N	6.5	9.7%
10 – Udorthents, Limestone Substratum – Land Complex	N	18.2	27.0%
15 – Urban land	*	42.6	63.3%
Total		**67.3**	**100.0%**

*unranked

Descriptions of each soil type are provided below:

3.3.1 Map Unit 9 – Udorthents – Water Complex

This map unit consists of Udorthents and open bodies of water. Udorthents are very shallow to deep, over limestone bedrock, and consist of unconsolidated material removed during the excavation of ditches, canals, lakes, ponds, and quarries and deposited along the banks. Soils are well-drained, with slopes of 15 to 60 percent. Under natural conditions, the seasonal high-water table is more than 80 inches throughout the year. The permeability is generally rapid. The available water capacity is very low. Udorthents is not ranked by the *Hydric Soils of Florida Handbook* (Hurt 2007). This soil unit is found in the northern portion of the corridor and comprises 6.5 acres (9.7%) of the total project study area.

3.3.2 Map Unit 10 – Udorthents, Limestone Substratum – Land Complex

This nearly level, somewhat poorly drained soil consists of approximately 40 to 70 percent of the map unit and has material that has been shaped and contoured mainly for golf courses, lawns, vacant lots, parks, playgrounds, and major highways. Urban land comprises approximately 25 to 60 percent of the map unit. Udorthents and Urban land are intermixed or so small, mapping them separately is impractical. Nearly all areas are covered with fill to a depth of 55 inches or more. The permeability of this soil is moderate, and slopes are 0 to 2 percent. The available water capacity is low. Under natural conditions, the seasonal high-water table is at a depth of 20 to 50 inches for most of the year and is within the limestone bedrock. Udorthents is not ranked by the *Hydric Soils of Florida Handbook* (Hurt 2007). This soil unit is found in the southern portion of the corridor and comprises 18.2 acres (27.0%) of the total project study area.

3.3.3 Map Unit 15 – Urban land

This map unit consists of areas that are more than 85 percent covered by airports, shopping centers, parking lots, large buildings, streets and sidewalks, and other structures, so that the natural soil is not

readily observable. Unoccupied areas of this land type, mostly lawns, parks, vacant lots, and playgrounds, consist of Udorthents that have been altered by land grading and shaping or have been covered with approximately 18 inches of extremely stony, loamy fill material. These unoccupied areas are in tracts too small to be mapped separately. The fill is mostly sandy material, some of which contains limestone and shell fragments. This map unit is not assigned to a capability subclass and is not ranked by the *Hydric Soils of Florida Handbook* (Hurt 2007). This soil unit is found throughout the central portion of the project corridor and comprises 42.6 acres (63.3%) of the total project study area.

Figure 3 - 2: Soils Map (1 of 7)

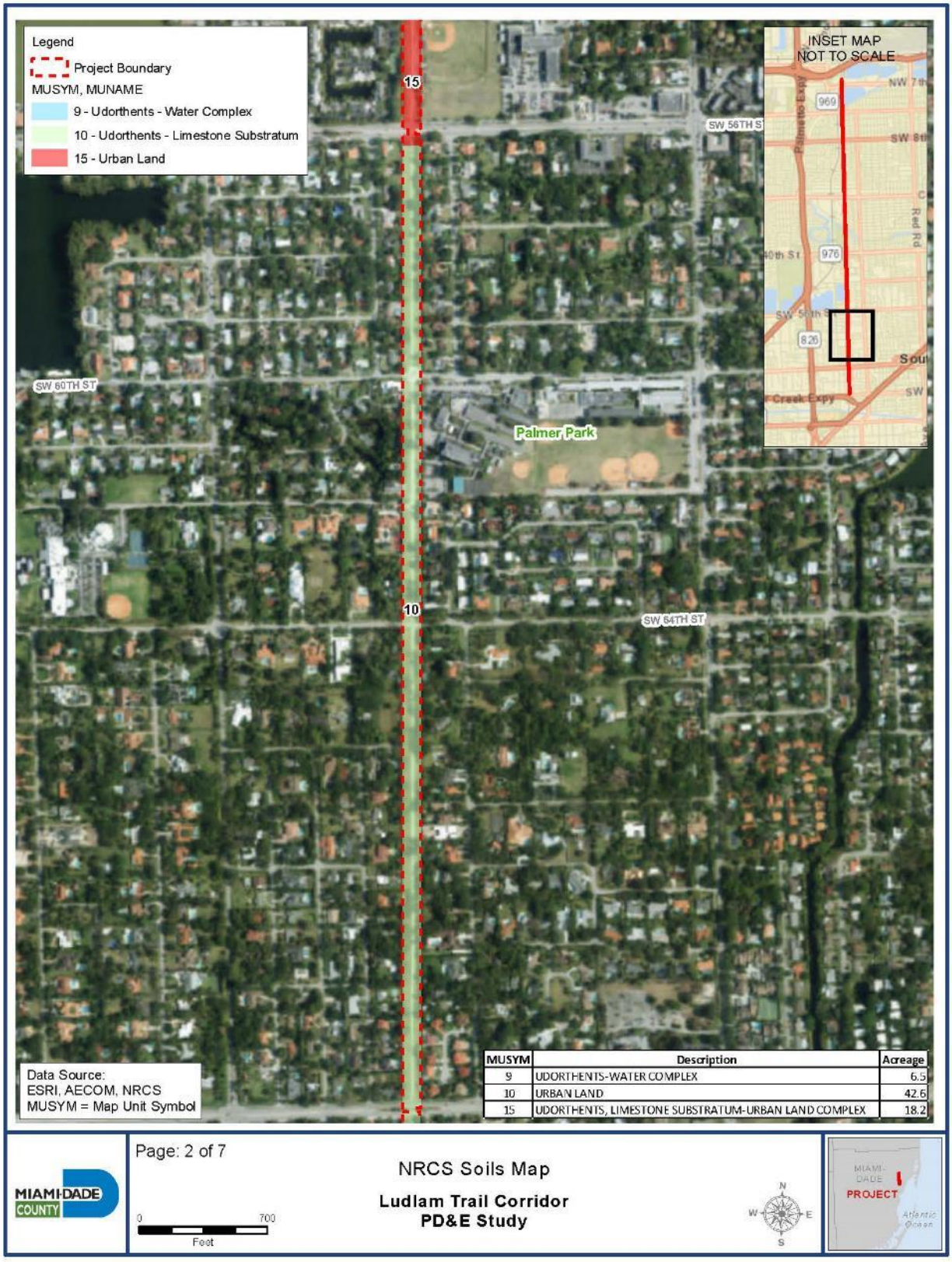

Figure 3 - 2: Soils Map (2 of 7)

Figure 3 - 2: Soils Map (3 of 7)

Figure 3 - 2: Soils Map (4 of 7)

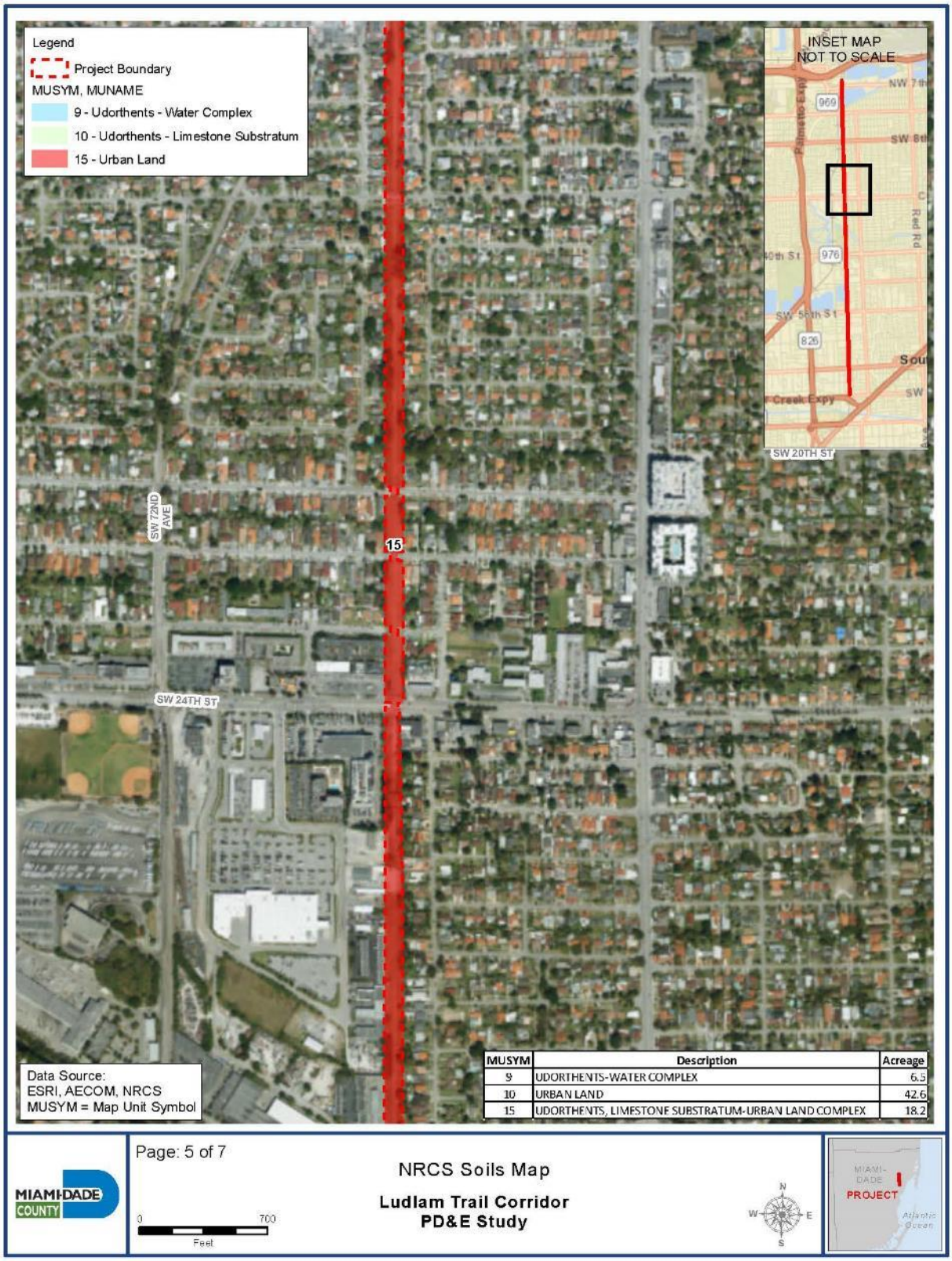

Figure 3 - 2: Soils Map (5 of 7)

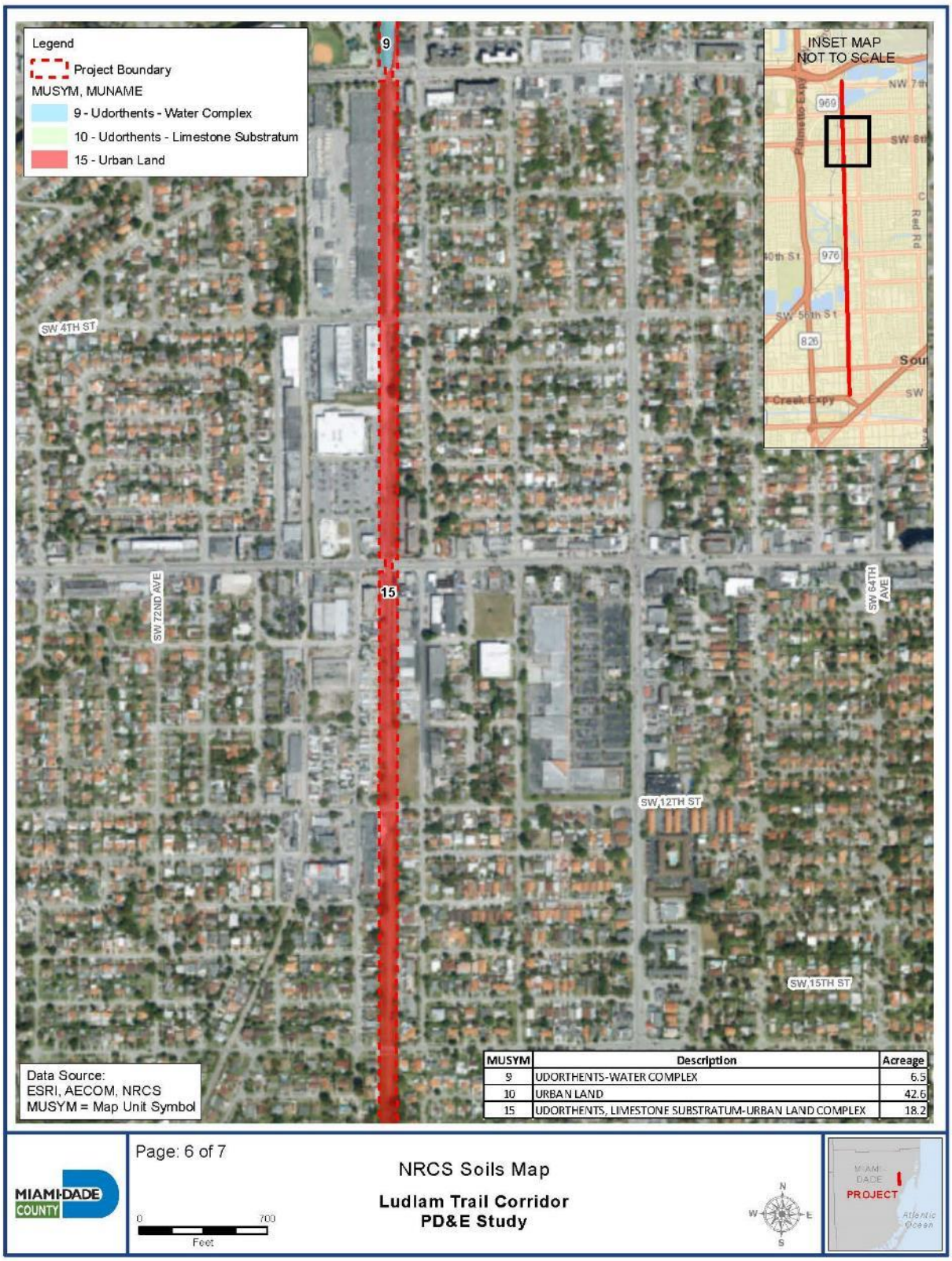

Figure 3 - 2: Soils Map (6 of 7)

Figure 3 - 2: Soils Map (7 of 7)

4.0 PROTECTED SPECIES AND HABITAT

4.1 Introduction

The project study area was evaluated for potential occurrences of federally listed and state-listed plant and animal species in accordance with Section 7 of the Endangered Species Act (ESA) of 1973, as amended; the Fish and Wildlife Conservation Act (FWCA); the Migratory Bird Treaty Act; Part 2, Chapter 16 of the FDOT PD&E Manual; and Chapters 5B-40 and 68A-27, FAC. It is important to note that all federally listed species are also considered state-listed species. The project study area was also evaluated for the occurrence of federally designated Critical Habitat, as defined by 50 Code of Federal Regulations (CFR) 17. Based on this evaluation, it was determined that the project study area traverses federally designated Critical Habitat for the West Indian manatee (*Trichechus manatus*).

The project has been screened through the ETDM Process (ETDM Project #14369). Regulatory agencies that reviewed the wildlife and habitat issue include the Florida Department of Agriculture and Consumer Services (FDACS), FWC, USFWS, and SFWMD. Each of these agencies assigned a 2 (Minimal) Degree of Effect (DOE) to the Wildlife and Habitat and Coastal and Marine issues. FDACS noted that the project does not impact any Florida Forest Service facility sites, and FWC did not identify any significant wildlife resources within the project study area. The USFWS indicated that the following federally listed species have the potential to occur in or near the project study area: wood stork (*Mycteria americana*), Florida bonneted bat (*Eumops floridanus*), eastern indigo snake (*Drymarchon corais couperi*), West Indian manatee, and federally listed plants. The USFWS recommended that a Florida bonneted bat survey, based on the most recent USFWS guidance, be conducted to determine the status of this species within the project study area.

The species referenced above, along with additional state and federally listed wildlife and plant species that may be affected by the project, are detailed in the following sections.

4.1.1 USFWS Consultation Areas

The USFWS has established “consultation areas” for certain listed species. Consultation Areas are typically regional in size, often spanning multiple counties and indicate an area where there is a potential for a listed species to occur. Species specific surveys may be required if a project study area is located within a consultation area and meets specific habitat requirements. The objective of a field review is to identify if the species is occupying the project study area utilizing survey methodologies that have been approved by the USFWS.

According to USFWS GIS data, the project study area is located within the Consultation Areas for the American crocodile (*Crocodylus acutus*), Florida bonneted bat, and Everglade snail kite (*Rostrhamus sociabilis plumbeus*), and falls within the core foraging area (CFA) of four (4) active nesting wood stork colonies.

4.1.2 Protected Habitats

An area of pine rockland habitat has been identified within the A.D. “Doug” Barnes Park; the park is located adjacent to the Ludlam Trail Corridor project study area. Pine rocklands have an open canopy of South Florida slash pine (*Pinus elliotti* var. *densa*) and a diverse, open subcanopy layer composed of

numerous species of palms and hardwoods. Pine rockland grades into and, in the absence of fire, succeeds to rockland hammock. Outcrops of weathered oolitic limestone, known locally as pinnacle rock, are common, and solution holes may be present within pine rockland communities. The oolitic limestone is at or very near the surface, and there is very little soil development. Numerous plants endemic to South Florida are found in pine rocklands, including several species that are restricted to this community such as Carter's small-flowered flax. Federally listed animals such as the eastern indigo snake use pine rocklands either for foraging or nesting; however, none are anticipated to be impacted by the proposed project. Florida leafwing butterfly (*Anaea troglodyta floridalis*), Bartram's hairstreak butterfly (*Strymon acis bartrami*), and Miami tiger beetle (*Cicindela floridana*) are among the invertebrates found in pine rocklands; however, none are anticipated to be impacted by the proposed project.

Pine rockland habitats are protected under Miami-Dade County's Environmentally Endangered Lands (EEL) Program which focuses on the protection and conservation of endangered lands. The protected pine rockland habitat within A.D. "Doug" Barnes Park is located over 1,000 feet outside of the project study area therefore no impacts to pine rockland communities are anticipated. Per the ETDM report, the Division of Environmental Resources Management (DERM) of the Miami-Dade County Department of Regulatory and Economic Resources stated that an erect barrier should be placed along the edge of the park prior to any work commencing to minimize potential impact to the EEL property. As part of this PD&E Study, MDPROS is committed to coordinating with DERM and FDACS during final design and construction to ensure the protection of the pine rockland community located within A.D. "Doug" Barnes Park.

4.2 Field Review

Field survey methods for specific habitat types and target species were developed based on the results of database searches, preliminary field reviews, review of aerial photography, and soil surveys. Limited pedestrian surveys were conducted within suitable gopher tortoise habitats identified within the project study area to detect the presence of burrows. Surface water habitats were visually scanned for the presence of protected wading bird species, and canopy trees were examined for utilization by other avian species. All potential nesting and roosting sources for the Florida bonneted bat located within and adjacent to the project study area were visually inspected for evidence of bat utilization. General pedestrian surveys of appropriate habitats throughout the entire corridor were also conducted to assess the presence of listed/protected plant species within the project study area.

4.3 Species Occurrence and Effect Determinations

Table 4-1 below lists the state- and federally listed wildlife species in Miami-Dade County with a potential to occur in the project vicinity based on the database and document reviews previously referenced. The potential for occurrence within the project study area was based on data reviews, field observations, presence and quality of suitable habitat, and the species' known ranges. Each species was assigned one (1) of the following degrees of likelihood for occurrence within the project study area: low, moderate, or high. An informal meeting was held on February 16, 2021 with John Wrublik (USFWS) to discuss the potential occurrence and effect determinations for each species per the USFWS guidelines. The potential for occurrence levels are defined below:

- *Low* – The project is within the species' range, and minimal or marginal quality habitat exists within or adjacent to the project study area; however, there are no documented occurrences of the species in the vicinity of the project, and the species was not observed during field reviews.

- *Moderate* – The project is within the species' range and suitable habitat does exist within or adjacent to the project study area; however, there are no documented occurrences of the species, and no evidence of the species' utilization was observed during field reviews.
- *High* – The project is within the species' range, suitable habitat does exist within or adjacent to the project study area, there is at least one (1) documented occurrence of the species within the project study area, and/or the species was observed during field reviews.

Table 4 - 1: Listed/Protected Wildlife Species with the Potential to Occur in the Project Study Area

Species	Common Name	Federal Status	State Status	Habitat	Potential Occurrence
Reptiles					
Alligator mississippiensis	American alligator	T(S/A)	FT(S/A)	Freshwater forested and herbaceous wetlands, canals, rivers, lakes and ponds	Moderate
Drymarchon corais couperi	Eastern indigo snake	T	FT	Various types of upland and wetland habitats, gopher tortoise burrows	Low
Birds					
Athene cunicularia floridana	Florida burrowing owl	NL	T	Dry prairies, open grassland	Low
Haliaeetus leucocephalus	Bald eagle	NL(1)	NL	Large bodies of open water with an abundant food supply	Low
Mycteria americana	Wood stork	T	FT	Marshes, wet prairies, cypress swamps, hardwood swamps, and mangrove swamps	Low
Pandion haliaetus	Osprey	NL(2)	NL	Lakes, rivers, and coastal areas	Moderate
Patagioenas leucocephala	White-crowned pigeon	NL	ST	Semi-deciduous woods and mangrove swamps	Low
Mammals					
Eumops floridanus	Florida bonneted bat	E	FE	Palms and hollow trees and buildings.	Low
Trichechus manatus	West Indian manatee	T	FT	Shallow coastal areas in marine, estuarine, and freshwater environments	Low
Insects					
Anaea troglodyta floridalis	Florida leafwing butterfly	E	FE	Pine rockland	Low
Cicindela floridana	Miami tiger beetle	E	FE	Pine rockland	Low
Strymon acis bartrami	Bartram's hairstreak butterfly	E	FE	Pine rockland	Low

F = Federally Listed/ E = Endangered/ T = Threatened/ T(S/A) = Threatened due to similar appearance/ NL = Not Listed

(1) The bald eagle is neither state- nor federally listed; however, this species is federally protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. The bald eagle is also managed in Florida by the FWC's bald eagle rule (FAC 68A-16.002).

(2) The osprey is neither state nor federally listed; however, this species is federally protected under the Migratory Bird Treaty Act.

All federal and state listed plant species were reviewed for the potential to exist along the project corridor. **Table 4-2** below lists the federal and state-listed plant species with the potential to occur based on observed habitats within and adjacent to the project study area as well as direct observances of plant species during the field investigations. The USFWS's Information for Planning and Consultation (IPaC) resource list generated for this project is enclosed as **Appendix A** for reference. In addition, the FNAI Element Occurrence Report generated for this project is enclosed as **Appendix B** for reference.

Table 4 - 2: Listed/Protected Plant Species with the Potential to Occur in the Project Study Area

Species	Common Name	Federal Status	State Status	Habitat	Natural Potential Occurrence
Ipomea microdactyla	Wild-potato morning-glory	NL	E	Pine rockland and vacant lots.	Low
Roystonea elata	Florida royal palm	NL	E	Rockland hammocks, shell middens, and strand swamps. May occur as part of landscaping activities.	Low
Swietenia mahagoni	West Indian mahogany	NL	T	Subtropical dry or moist forest, often on limestone outcrops, and disturbed areas. May occur as part of landscaping activities.	Low
Verbena maritima	Coastal vervain	NL	E	Sandy clearings in coastal dune swales, disturbed areas, scrub, pinelands, and live oak-cabbage palm.	Low

E = Endangered / T = Threatened / NL = Not Listed

4.3.1 Federally Listed Wildlife Species and Designated Critical Habitat

Reptiles

American Alligator (*Alligator mississippiensis*): The American alligator is federally listed as threatened due to its similar appearance to the American crocodile (*Crocodylus acutus*). Federally listed species are also considered state listed species. This species resides in a wide variety of wetland habitats including streams, ponds, lakes, freshwater marshes, ditches, and canals as well as brackish waters. The project study area contains suitable habitat for this species within the two (2) canal crossings as there is potential for the occurrence for this species to migrate into the project study area via the canal system. Although the project study area contains freshwater habitat, little to no American alligator nesting habitat is present within the limits of the project corridor. No alligators were observed during the field reviews, and none have been documented within or adjacent to the project study area. Therefore, for these reasons, this species was assigned a 'moderate' probability of occurrence. Although the project scope includes replacement of the two (2) existing bridges at the canal crossings, no in-water pilings will be installed as the replacement structures are both are proposed to be single-span. Additionally, the in-water pilings associated with the existing bridge structures will be removed at both locations. These impacts are anticipated to be short term and localized. Therefore, the effect determination for the American alligator is "No Effect."

Eastern Indigo Snake (*Drymarchon corais couperi*): The eastern indigo snake is listed as threatened by the USFWS due to extensive habitat loss and population declines. This species utilizes a variety of habitats including swamps, wet prairies, and pinelands and may also seek shelter in gopher tortoise burrows to escape hot or cold ambient temperatures within its range. Quality suitable habitat is not present within the project study area, this species has not been documented within or adjacent to the project study area, and no eastern indigo snakes or evidence of these snakes were observed during the field reviews. Additionally, due to the dense human population and highly urbanized area, lack of associated species, and lack of suitable habitat throughout much of the project corridor, it is not anticipated to be encountered. For these reasons, this species was assigned a 'low' probability of occurrence within the project study area.

To protect this species during construction, MDPROS will incorporate the most current protection guidelines for the eastern indigo snake, currently entitled *Standard Protection Measures for the Eastern Indigo Snake* (**Appendix C**), into the final project design and will require that the construction contractor abide strictly to the guidelines during construction. As such, it is anticipated that implementation of the Preferred Alternative will have "No Effect" on the eastern indigo snake.

Birds

Wood Stork (*Mycteria americana*): The wood stork is federally listed as threatened due to a sharp decline in breeding populations. This opportunistic wading bird utilizes various open hydric pine-cypress habitats and herbaceous marshes. A specialized method of feeding, commonly referred to as groping, limits its foraging ability to shallow waters with dense concentrations of small fish. Wood storks use freshwater and estuarine habitats for nesting, foraging, and roosting. They are typically colonial nesters and construct their nests in medium to tall trees located within wetlands or on islands.

The USFWS has defined an area with a radius of 18.6 miles (30 kilometers) from nesting wood stork colonies as the CFA for those colonies. The project study area is located within the CFA of four (4) active nesting wood stork colonies (**Figure 4-1**). As defined by the USFWS, suitable wood stork foraging habitat includes wetlands and surface waters with relatively calm water, uncluttered by dense thickets of aquatic vegetation, and which have permanent or seasonal water depths between 2 and 15 inches.

Marginal quality suitable wood stork foraging habitat is present within the project study area along the shorelines of the two (2) canals; however, this species has not been documented within or adjacent to the project study area, and none were observed during field reviews. Therefore, the wood stork was assigned a 'low' probability of occurrence within the project study area. While the project scope includes replacement of the two (2) existing bridges at the canal crossings, no in-water pilings will be installed as the replacement structures will both be single-span, and all in-water pilings associated with the existing bridge structures will be removed at both crossings during the bridge replacements.

Pursuant to the USFWS South Florida Programmatic Concurrence (i.e., Wood Stork Effect Determination Key) (USFWS 2010) (**Appendix D**), both canal crossings within the Preferred Alternative are greater than 0.47 mile from the nearest active nesting colony site, and proposed temporary construction impacts to suitable wood stork foraging habitat from the proposed bridge replacement activities will collectively not exceed one-half acre. Although the wood stork may temporarily occupy areas inundated with water, no suitable foraging habitat is present within the project area. Based on this information, it has been determined that implementation of the Preferred Alternative will have "No Effect" on the wood stork.

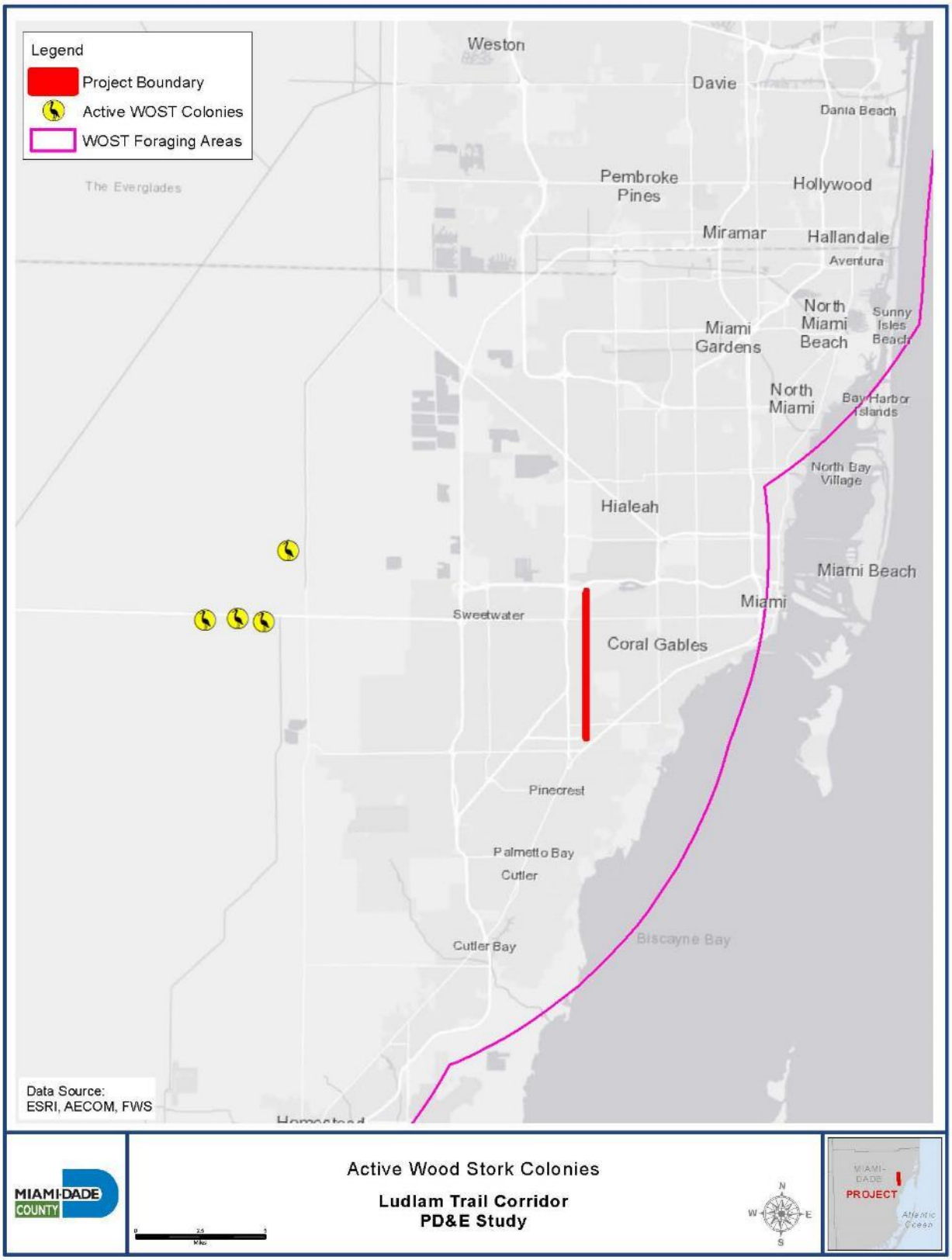

Figure 4 - 1: Active Nesting Wood Stork Colonies

Mammals

Florida Bonneted Bat (*Eumops floridanus*): The Florida bonneted bat is federally listed as endangered due to habitat loss attributed to urban development and natural disasters. At night, Florida bonneted bats feed on insects as they fly. During the day, they sleep beneath barrel tile roofs and live and dead palm trees, pine tree cavities, and in bat houses. Although limited information is available regarding specific habitat requirements of the Florida bonneted bat, all potential foraging and roosting areas within its known range are considered suitable habitat. While this species has not been documented within or adjacent to the project study area, the project occurs entirely within the 2019 USFWS Consultation Area for the Florida bonneted bat and within the South Florida Urban Bat Area and contains potential roost locations, although low quality, per the USFWS *Florida Bonneted Bat Consultation* Guidelines, dated October 2019. Due to the fact that this is a former rail corridor, the quantity of suitable roosting sites is low. Further evaluation of specific impacts will be reevaluated during final design.

On August 13 and 14, 2018, qualified biologists conducted a field survey to assess potential roost locations within the project study area for evidence of bat utilization. During the August 2018 field survey, the undersides of the existing bridge structures, tree cavities, buildings, and all other potentially suitable nesting/roosting sites within project study area were visually inspected. Based on the results of the field survey, no evidence of bat activity was observed within or adjacent to the project study area, and no bats of any species were documented.

In summary, the Florida bonneted bat was not observed during the roosting habitat survey and no sightings of the bat have ever been recorded within the project limits by the USFWS. The project corridor is located within a highly urbanized area and the probability of occurrence is determined to be 'low' as no evidence of bat roosting activities was determined to exist within the project area. Since the project is located within the South Florida Urban Bat Area, the USFWS 2019 Consultation Key is not applicable. No adverse impacts to the Florida bonneted bat are anticipated as a result of the proposed project since no suitable roosting habitat will be adversely impacted from the proposed construction activities. Therefore, it has been determined that implementation of the Preferred Alternative will have "No Effect" on the Florida bonneted bat. The field survey notes and photo log are provided in **Appendix E**.

In addition, MDPROS is committed to re-surveying for the Florida bonneted bat during final design, prior to construction activities. All surveys will be conducted in accordance with the most current USFWS survey guidelines, currently entitled *Florida Bonneted Bat Consultation* Guidelines. If any signs of the Florida bonneted bat are observed, MDPROS is committed to reinitiating coordination through FDOT with the USFWS and consultation, if necessary.

West Indian Manatee (*Trichechus manatus*): The West Indian manatee is listed as threatened by the USFWS due to its decline in population. The manatee is an herbivorous marine mammal typically found in freshwater rivers, estuaries, and coastal waters of the Gulf of Mexico and the Atlantic Ocean. Its range is generally limited to the tropics and sub-tropics due to an extremely low metabolic rate and lack of a thick layer of insulating body fat. It requires warm water effluent, such as springs, in the winter months and a source of cold water in the summer months. While the project traverses two (2) canals that may be considered suitable habitat, no manatees have been documented within or adjacent to the project study area, and none were observed during field reviews.

The project study area is located within federally designated Critical Habitat for the West Indian manatee. However, existing water flow control structures are located downstream (east) of both surface water

crossings that would likely prevent manatee migration upstream to the project corridor at both crossing locations. For this reason, a 'low' probability occurrence was assigned to this species. The proposed project would not result in the "destruction or adverse modification of critical habitat."

The Preferred Alternative will result in temporary construction impacts due to the proposed bridge removal and replacement at the two (2) canal crossings that may be considered suitable manatee habitat. To protect this species during construction, MDPROS will incorporate the most current version of the FWC's *Standard Manatee Conditions for In-Water Work* (**Appendix F**) into the final project design and will require that the construction contractor abide strictly to the guidelines during all in-water construction activities associated with this project. The project will be implemented in accordance with applicable local regulation including Miami-Dade County's Manatee Protection Plan. Therefore, pursuant to *The Corps of Engineers, Jacksonville District, and the State of Florida Effect Determination Key for the Manatee in Florida* (April 2013) provided as **Appendix G**, implementation of the Preferred Alternative "May Affect, but is Not Likely to Adversely Affect" the West Indian manatee.

Insects

Florida Leafwing Butterfly (*Anaea troglodyta floridalis*): The Florida leafwing butterfly is a federally endangered, medium-sized butterfly approximately three (3) inches in length. Showcasing colors of red, gray, and tan, with a tapered outline, this species mimics a dead leaf when at rest. The Florida leafwing occurs solely within pine rocklands that retain its larval hostplant, pineland croton (*Croton linearis*). The pineland croton is a subtropical species and is the only known larval host plant for the Florida leafwing. Therefore, the Florida leafwing is restricted to pine rocklands that contain pineland croton. The proposed project will not impact pine rockland habitat, and no pineland crotons were observed within or adjacent to the project study area. As such, it has been determined that the Preferred Alternative will have "No Effect" on the Florida leafwing butterfly.

Miami Tiger Beetle (*Cicindela floridana*): The Miami tiger beetle is a federally endangered, small, elongate beetle with an oval shape and bulging eyes. It is uniquely identified by the shiny dark green dorsal surface, sometimes with a bronze cast. Miami tiger beetle larvae are elongate with a white grub-like body and a dark or metallic head with large mandibles. An enlarged dorsal portion of the fifth abdominal segment, with two (2) pairs of hooks anchor the larvae into its permanent burrow, while the upper portion of the body extends to capture prey. The Miami tiger beetle also occupies the unique pine rockland habitat type and has only been documented in Miami-Dade County. The proposed project will not impact any pine rockland habitat. As such, it has been determined that the Preferred Alternative will have "No Effect" on the Miami tiger beetle.

Bartram's Hairstreak Butterfly (*Strymon acis bartrami*): The Bartman's hairstreak butterfly is a federally endangered, small butterfly approximately one (1) inch in length. Showcasing a grey underside marked with bold white lines beneath both wings provides an instant flash of color against the foliage of its only known hostplant, the pineland croton. The proposed activities do not include any impacts to pine rockland habitat, and no pineland crotons were observed within or adjacent to the project footprint. As such, it has been determined that the Preferred Alternative will have "No Effect" on the Bartman's hairstreak butterfly.

4.3.2 State Listed Wildlife Species

Birds

Florida Burrowing Owl (*Athene cunicularia floridana*): The Florida burrowing owl is state listed as threatened due to ongoing habitat degradation and loss. This species inhabits open native dry prairies and sandhill communities, as well as ruderal areas comprised of short, herbaceous groundcover. Although the project study area contains marginal quality suitable habitat for this species, there are no documented occurrences of the Florida burrowing owl within or adjacent to the project study area, and no individuals or burrows were observed during field reviews; therefore, this species was assigned a 'low' probability of occurrence. If Florida burrowing owls or burrows are later identified within the project study area, MDPROS will coordinate with the FWC to implement appropriate protection measures for this species. Based on this information, the Preferred Alternative is anticipated to have "No adverse effect anticipated" on the Florida burrowing owl.

White-crowned Pigeon (*Patagioenas leucocephala*): The white-crowned pigeon is state-listed as threatened due to overhunting during the late 1800s and early 1900s. Other threats to this species include habitat degradation and loss of food supply. White-crowned pigeons inhabit low-lying forest habitats with ample fruiting trees. Its distribution in the United States is restricted to Florida Bay, Biscayne Bay, and the Florida Keys, although a few individuals likely nest inland in Monroe and Miami-Dade Counties. The diet of the white-crowned pigeons primarily consists of tropical hardwood tree fruits. No white-crowned pigeons were observed within the project study area during the field survey and no habitat to support this species exists within the construction footprint. As such, the Preferred Alternative is anticipated to have "No adverse effect anticipated" on the white-crowned pigeon.

4.3.3 Federally Listed Plant Species

No suitable habitat is present with the limits of the project study area for any federally listed plant species and none were observed during field reviews.

4.3.4 State Listed Plant Species

Wild-Potato Morning-Glory (*Ipomea microdactyla*): The wild-potato morning-glory is state-listed as endangered and typically occurs within pine rockland habitat and vacant lots. Marginal quality suitable habitat is present within the project study area in the open disturbed regions; however, this species was not observed during the field reviews. Therefore, the wild-potato morning-glory was assigned a 'low' probability of occurrence, and implementation of the Preferred Alternative will have "No adverse effect anticipated" on this species.

Florida Royal Palm (*Roystonea elata*): the Florida royal palm is state-listed as endangered and typically occurs within rockland hammocks, shell middens, and strand swamps. Marginal quality suitable habitat is present within the project study area; however, this species may occur as part of landscaping activities. Naturally occurring Florida royal palms were not observed during the field reviews. Therefore, this species was assigned a 'low' probability of occurrence, and implementation of the Preferred Alternative will have "No adverse effect anticipated" on the Florida royal palm.

West Indian Mahogany (*Swietenia mahagoni*): The West Indian mahogany is state-listed as threatened and typically occurs in subtropical dry or moist hammocks, often on limestone outcrops. Marginal quality suitable habitat is present within the project study area in the open disturbed regions; however, this species may occur as part of landscaping activities. Naturally occurring West Indian mahogany was not observed during the field reviews. Therefore, the West Indian mahogany was assigned a 'low' probability of occurrence, and implementation of the Preferred Alternative will have "No adverse effect anticipated" on this species.

Coastal Vervain (*Verbena maritima*): The coastal vervain is state-listed as endangered and occurs within open habitats, such as sandy clearings in coastal dune swales, scrub, pinelands, and open live oak-cabbage palm communities. This species can also occupy open disturbed areas and clearings. While marginal quality suitable habitat is present within and adjacent to the project corridor in disturbed/cleared areas, no occurrences of this species have been previously documented within or adjacent to the project study area, and none were observed during field reviews. Therefore, this species was assigned a 'low' probability of occurrence, and implementation of the Preferred Alternative will have "No adverse effect anticipated" on the coastal vervain.

4.3.5 Other Protected Species

Bald Eagle *(Haliaeetus leucocephalus)*: The bald eagle is protected under the Migratory Bird Treaty Act, Bald and Golden Eagle Protection Act, and Florida's bald eagle rule (68A-16.002, FAC). The project study area is located in an area surrounded by urban development, and suitable nesting and foraging habitat for this species is extremely limited. According to available FWC GIS data, bald eagle nest DA-006 is located approximately 0.5 mile west of the project study area (**Figure 4-2**). The nest is situated on an isolated group of pine trees within a manmade stormwater management retention pond associated with the Shops at Lakeshore Park, directly east of the intersection of SR 874 and SR 826. No construction activities are proposed within the 660-foot nest protection buffer. Due to the historic potential for bald eagle populations to be threatened by human development and encroachment, the FWC has implemented a bald eagle permitting process in correlation with the USFWS. Although no suitable nesting habitat exists within close proximity to the project corridor, coordination with FWC and the permitting agencies will be required if any construction is proposed within 660 feet (0.125 mile) of a nest. Due to the lack of suitable nesting or foraging habitat within the project corridor and the distances of the closest nest from the project corridor (approximately 0.5 mile), no adverse impacts to the bald eagle are anticipated as a result of the proposed project.

Osprey *(Pandion haliaetus)*: Ospreys are afforded federal protection under the Migratory Bird Treaty Act and is part of FWC's Imperiled Species Management Plan. Although both active and inactive osprey nests are federally protected, only active nests require federal permits for taking. Inactive nests (i.e., nests without eggs or flightless young) can be removed without a permit. Ospreys live almost exclusively on fish and as such live near water and usually nest in the tops of tall dead trees. Due to the lack of suitable nesting or foraging habitat within the project corridor, no adverse impacts to the osprey are anticipated as a result of the proposed project.

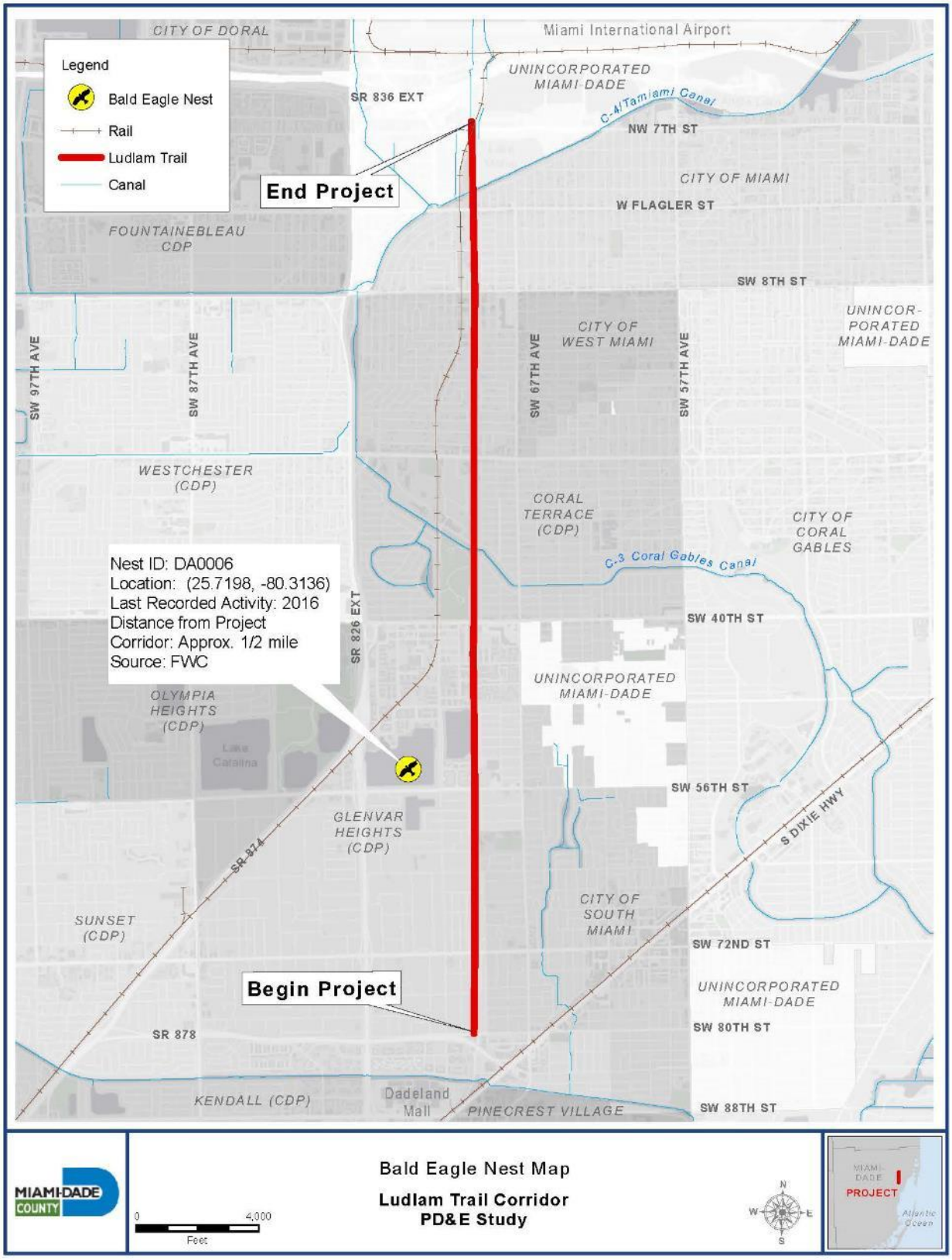

Figure 4 - 2: Bald Eagle Nest Map

5.0 WETLANDS AND OTHER SURFACE WATERS

5.1 Introduction

In accordance with Presidential Executive Order (EO) 11990 entitled "Protection of Wetlands" and United States Department of Transportation Order 5660.1A, “Preservation of the Nation's Wetlands” and Part 2, Chapter 9 of the FDOT PD&E Manual, the project study area was reviewed to identify, quantify, and map wetland communities that are located within the proposed project boundaries. To fully protect, preserve, and enhance wetlands, MDPROS has assessed wetlands that may be affected by the proposed multi-use trail project.

Regulatory agencies that provided comments during the ETDM Process included the US Environmental Protection Agency (USEPA), Florida Department of Environmental Protection (FDEP), USACE, SFWMD, NMFS, and USFWS. The DOE for the Wetlands and Surface Waters issue varied by agency from 0 (None) to 3 (Moderate). The FDEP assigned 0 (None) for the project and did not provide comments. The USACE, USFWS, SFWMD, and NMFS, assigned a 2 (Minimal) DOE for the project. The USACE stated that wetlands along the existing railway corridor are low quality due to secondary impacts. The SFWMD noted that the C-4/Tamiami Canal and the C-3/Coral Gables Canal both have downstream open tidal connections to Biscayne Bay. The NMFS confirmed that EFH will not be impacted by the project; therefore, the project will not require an EFH Assessment pursuant to the Magnuson-Stevens Act (P.L. 104-297). The USEPA expressed concerns regarding potential water quality issues and assigned a 3 (Moderate) DOE to the project. The wetland permitting agencies indicated that impacts to wetlands should be avoided and minimized to the greatest extent practicable, the design should meet state water quality and quantity standards, and best management practices should be implemented during construction.

5.2 Methodology

On August 13 and 14, 2018, qualified biologists familiar with Florida’s natural communities conducted a field review of the project study area to verify preliminary surface water boundaries and land use classifications. Mapped surface water habitat boundaries were field verified in accordance with the State of Florida Wetlands Delineation Manual (Chapter 62-340, FAC) and the guidelines found within the Regional Supplement to the *USACE Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region* (USACE 2010). During the field investigation, both surface waters within the project study area were visually inspected and recorded (see **Appendix E** for field survey notes and photo log). Attention was given to identifying plant species composition for each community. Exotic plant infestations and other disturbances (such as soil subsidence, clearing, canals, power lines, etc.) were noted. Wildlife observations and signs of wildlife usage within each surface water habitat within the project study area were also documented.

5.3 Individual Surface Waters

Based on the methodology described above, a total of two (2) “other surface waters” were identified within the Preferred Alternative; both consist of upland-cut flood-control conveyances. Both canals are named SFWMD facilities (C-3/Coral Gables Canal and C-4/Tamiami Canal), which flow east through the project study area (see **Figure 5-1** for an aerial photograph). Neither canal is hardened along the shoreline.

The two (2) canals, which collectively total 0.3 acre, are classified by FLUCFCS code and USFWS designation in **Table 5-1.** Brief descriptions of each are provided below.

Table 5 - 1: Summary of Individual Surface Waters

SW ID	FLUCFCS Description	FLUCFCS Code	USFWS Wetland Classification [1]	Acres in Study Area
SW-1	Upland-Cut Canal	514	R2UB2Hx	0.1
SW-2	Upland-Cut Canal	514	R2UB2Hx	0.2
Total				**0.3**

[1] USFWS Wetland Classification Descriptions: R2UB2Hx: Riverine, Lower Perennial, Unconsolidated Bottom, Sand, Permanently Flooded, Excavated

5.3.1 SW-1 (C-3/Coral Gables Canal)

FLUCFCS 514
USFWS: R2UB2Hx (Riverine, Lower Perennial, Unconsolidated Bottom, Sand, Permanently Flooded, Excavated)

Surface Water 1 (SW-1) is an upland-cut canal that flows through the project study area near the center of the corridor, approximately 0.5 mile north of SW 4th Street. This canal is part of a larger network of flood control conveyances owned and operated by the SFWMD. While not tidally influenced at the location of the proposed trail crossing, SW-1 flows into Biscayne Bay approximately five (5) miles southeast of the project study area. Within the vicinity of the proposed trail crossing, both banks contain dense Brazilian pepper (*Schinus terebinthifolius*), and the only aquatic vegetation observed was duckweed (*Lemna minor*). No wildlife or signs or wildlife utilization of the canal was identified during the August 2018 field review. Due to its designation as Critical Habitat for the West Indian manatee within the project study area, this surface water is both federally and state jurisdictional.

5.3.2 SW-2 (C-4/Tamiami Canal)

FLUCFCS 514
USFWS: R2UB2Hx (Riverine, Lower Perennial, Unconsolidated Bottom, Sand, Permanently Flooded, Excavated)

Surface Water 2 (SW-2) is an upland-cut canal that flows through the project study area approximately 0.5 mile south of the north terminus. While not tidally influenced at the location of the proposed trail crossing, this canal flows into Biscayne Bay approximately eight (8) miles east of the project study area. Within the vicinity of the proposed trail crossing, the canal banks are dominated by Brazilian pepper, Australian pine (*Casuarina equisetifolia*), dog fennel (*Eupatorium capillifolium*), beggar tick (*Bidens alba*), and air potato (*Dioscorea bulbifera*). No wetland vegetation or signs or wildlife utilization was identified within or adjacent to the canal during the August 2018 field review. Due to its designation as Critical Habitat for the West Indian manatee within the project study area, this surface water is both federally and state jurisdictional.

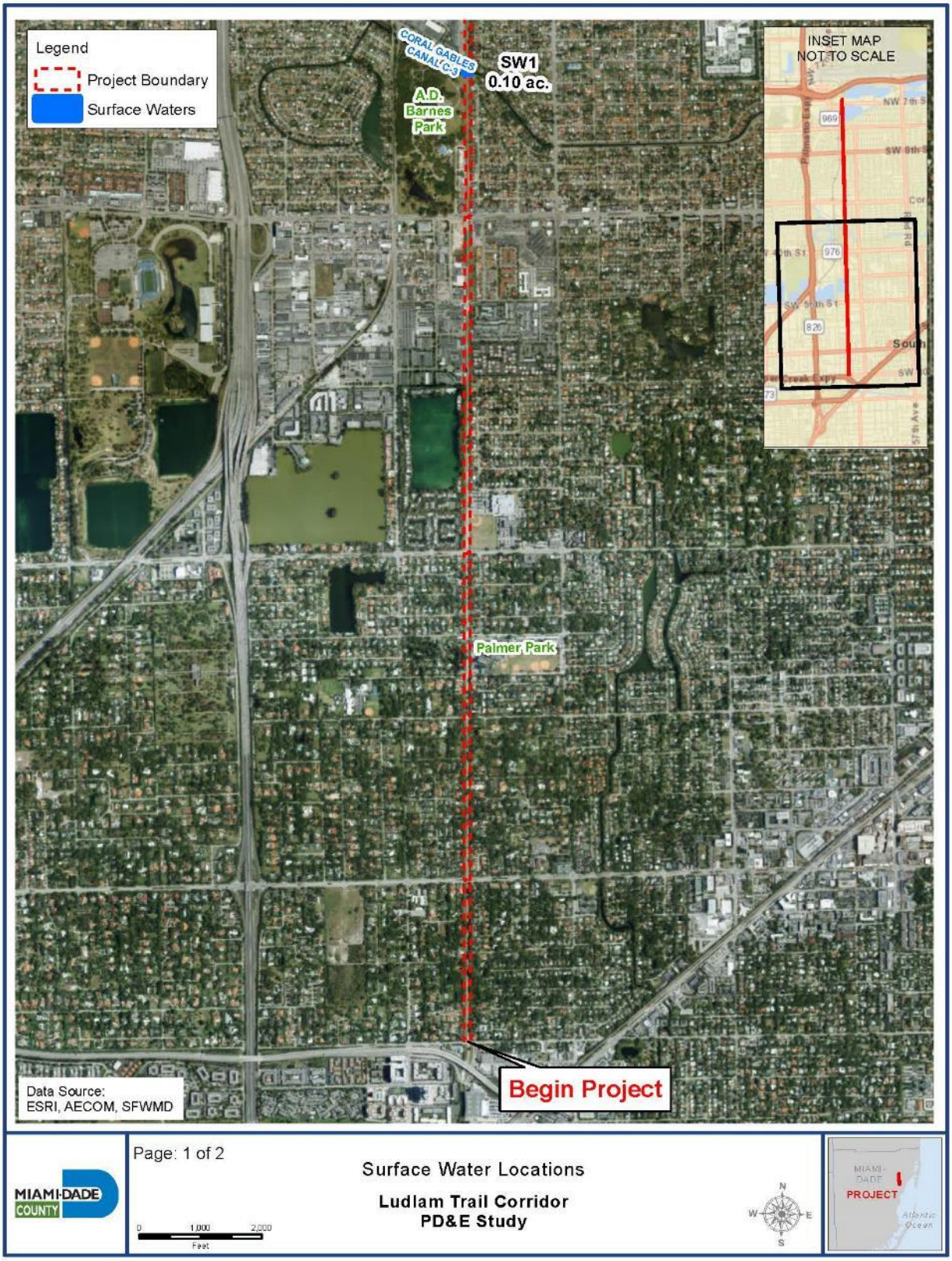

Figure 5 - 1: Surface Water Location Map (1 of 2)

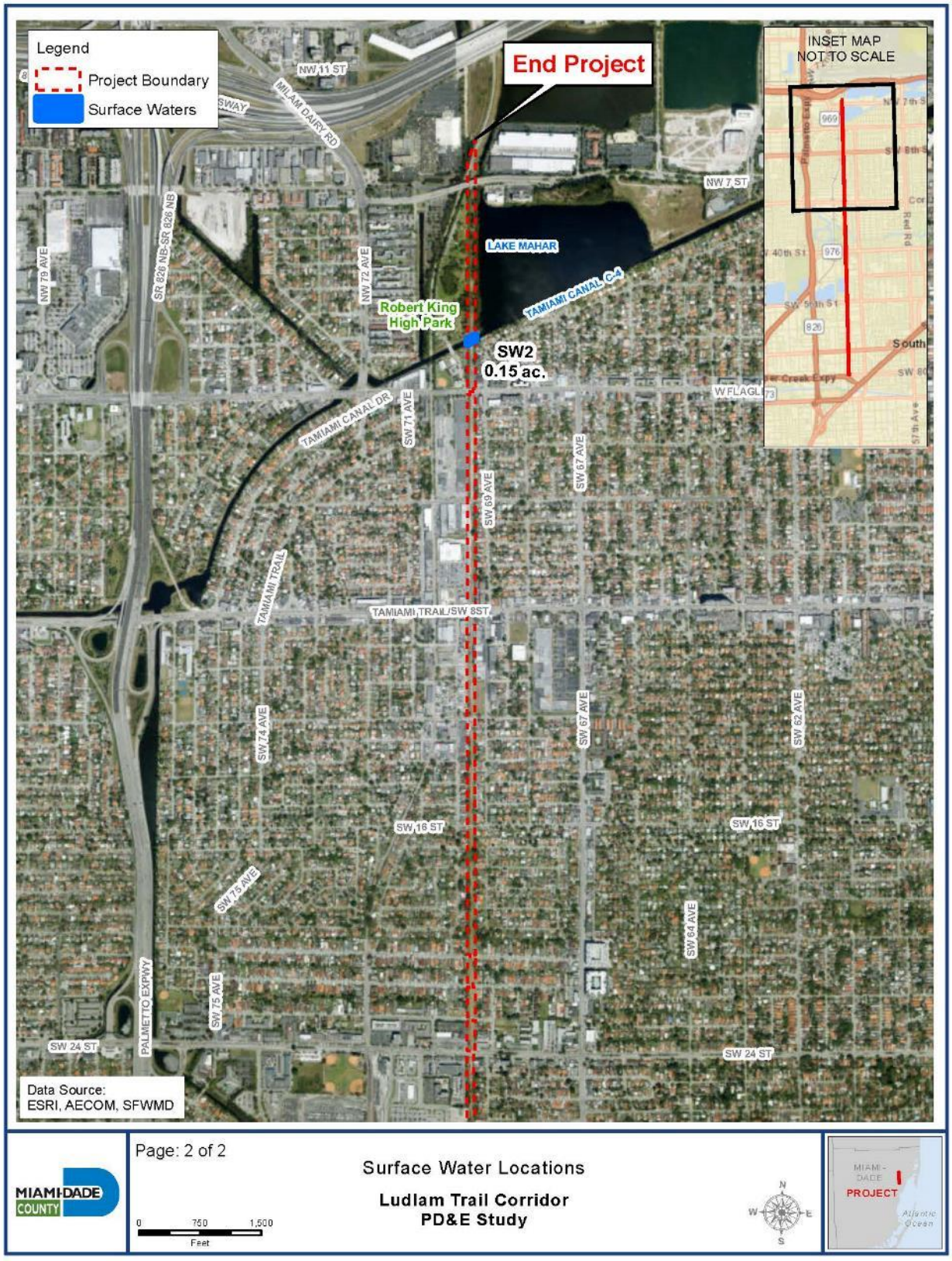

Figure 5 - 1: Surface Water Location Map (2 of 2)

5.4 Wetland and Other Surface Water Impacts

No permanent wetland or "other surface water" impacts will result from the Preferred Alternative, as the two (2) canal crossings will consist of single-span bridges with no in-water pilings proposed. However, temporary construction impacts may result from removal of existing in-water pilings. Any temporary construction impacts will be temporary and minor in nature and are not expected to adversely affect the water quality within the two (2) canals, as best management practices will be utilized during construction. Minimization measures will include measures included in FDOT's Standard Specifications for Road and Bridge Construction (e.g., temporary turf, rolled erosion control products, sediment containment systems, runoff control structures, sediment barriers, inlet protection systems, silt fences, turbidity barriers). As such, a wetland functional assessment was not conducted as part of this NRE.

5.5 Wetlands Findings

The Preferred Alternative was evaluated for impacts to wetlands in accordance with EO 11990. No jurisdictional wetlands were found within the project corridor. Based on the type and location of project impacts, MDPROS has determined that there is no practicable alternative to the proposed construction in other surface waters; however, no permanent surface water impacts will be expected to occur from the proposed project. Furthermore, the project will have no significant short-term or long-term adverse impacts to wetlands or surface waters.

6.0 ANTICIPATED PERMITS

Both the USACE and SFWMD regulate impacts to surface waters within the project study area. Other resource agencies, including the NMFS, USEPA, and USFWS, FWC, and DERM review and comment on wetland permit applications. In addition, the FDEP and DERM regulate stormwater discharges from construction sites. The complexity of the permitting process will depend greatly on the degree of the impact to jurisdictional areas.

It is anticipated that the following permits may be required for this project:

- USACE Section 404 Dredge and Fill Permit
- SFWMD Environmental Resource Permit (ERP)
- FDEP National Pollutant Discharge Elimination System (NPDES) authorization, including the implementation of a Stormwater Pollution Prevention Plan (SWPPP)
- SFWMD Canal ROW Permits

DERM permits may be required depending on final project details to be determined during the subsequent phase of the project (i.e., final design). For example, a Miami-Dade County Tree Permit would be required prior to the removal and/or relocation of any tree that is subject to the tree preservation and protection provisions of the Code. A DERM Class II permit may be required for any proposed drainage system that contains an outfall or overflow system in, on, or upon any water body of Miami-Dade County. The specific DERM permit requirements for this project will be determined during final design, which may include but are not limited to, DERM Class VI for drainage within a contaminated site as well as a DERM Class IV for impacts to the canal bank.

It is anticipated that a Regional General or Nationwide Permit will be required from the USACE. These permits will require compliance with the 404(b)(1) guidelines including verification that all impacts have first been avoided to the greatest extent possible; that unavoidable impacts have been minimized to the greatest extent possible; and that unavoidable impacts have been mitigated in the form of wetlands creation, restoration, and/or enhancement.

The project will not require Section 408 permitting from the USACE, as it does not propose to modify, alter, or occupy any existing USACE-constructed public works project. Public works projects include dams, basins, levees, channels, navigational channels, and any other local flood protection works constructed by the USACE.

The SFWMD requires an ERP when construction of any project results in the creation of a new, or modification of an existing stormwater 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 final engineering design. In addition, canal ROW permits may be required by the SFWMD for the two (2) proposed canal crossings. Coordination with the SFWMD will be necessary during the environmental permitting process.

40 CFR 122 prohibits point source discharges of stormwater to Waters of the United States without a NPDES permit. Under the State of Florida's delegated authority (from the USEPA) to administer the NPDES program, construction sites that disturb more than one (1) acre must file for and obtain either coverage

under an appropriate generic permit (contained in Chapter 62- 621, FAC) or an individual permit (issued pursuant to Chapter 62-620, FAC). A major component of the NPDES permit is the development of a SWPPP. The SWPPP identifies potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from the site and identifies specific engineering practices (i.e., best management practices) that will be used to reduce the pollutants from stormwater discharge.

7.0 CONCLUSION

7.1 Protected Species and Habitats

The project study area was evaluated for the presence of federal and state protected species and their suitable habitats in accordance with Section 7 of the ESA and Part 2, Chapter 16 of the FDOT PD&E Manual. The Preferred Alternative will not result in any permanent impacts to habitats potentially used by federally listed and state-listed species. **Table 7-1** below presents the respective effect determinations assigned to each federally listed and state-listed species based on their probability ranking and the implementation measures and/or commitments to be followed to offset potential impacts to the species. The Preferred Alternative will not adversely affect any federally designated Critical Habitat.

Table 7 - 1: Summary of Listed Species and Effect Determinations

Scientific Name	Common Name	Effect Determination	Status	
			Federal	State
Federally Listed/Protected Wildlife Species				
Alligator mississippiensis	American alligator	No Effect	T(S/A)	FT(S/A)
Drymarchon corais couperi	Eastern indigo snake	No Effect	T	FT
Eumops floridanus	Florida bonneted bat	No Effect	E	FE
Haliaeetus leucocephalus	Bald eagle	Not Applicable	NL[(1)]	NL
Mycteria americana	Wood stork	No Effect	T	FT
Pandion haliaetus	Osprey	Not Applicable	NL[(2)]	NL
Anaea troglodyta floridalis	Florida leafwing butterfly	No Effect	E	FE
Cicindela floridana	Miami tiger beetle	No Effect	E	FE
Strymon acis bartrami	Bartram's hairstreak butterfly	No Effect	E	FE
Trichechus manatus	West Indian manatee	May Affect, Not Likely to Adversely Affect	T	FT
Federally Listed Plant Species				
Amorpha crenulata	Crenulate lead- plant	No Effect	E	FE
Argythamnia blodgettii	Blodgett's silverbush	No Effect	T	FT
Chamaesyce deltoidea ssp. deltoidea	Deltoid spurge	No Effect	E	FE
Chamaesyce deltoidea pinetorum	Pineland sandmat	No Effect	T	FT
Chamaesyce garberi	Garber's spurge	No Effect	T	FT
Dalea carthagenensis floridana	Florida prairie-clover	No Effect	E	FE
Digitaria pauciflora	Florida pineland crabgrass	No Effect	T	FT

Scientific Name	Common Name	Effect Determination	Status	
			Federal	State
Linum arenicola	Sand flax	No Effect	E	FE
Linum carteri carteri	Carter's small-flowered flax	No Effect	E	FE
Polygala smallii	Tiny polygala	No Effect	E	FE
Sideroxylon reclinatum spp. *austrofloridense*	Everglades bully	No Effect	T	FT
Trichomanes punctatum	Florida bristle fern	No Effect	E(3)	E
State-Listed Wildlife and Other Protected Species				
Athene cunicularia floridana	Florida burrowing owl	No adverse effect anticipated	NL	T
Patagioenas leucocephala	White-crowned pigeon	No adverse effect anticipated	NL	T
State-Listed Plant Species				
Asplenium verecundum	Delicate spleenwort	No effect anticipated	NL	E
Basiphyllaea corallicola	Carter's orchid	No effect anticipated	NL	E
Bourreria cassinifolia	Little strongbark	No effect anticipated	NL	E
Chamaesyce porteriana	Porter's spurge	No effect anticipated	NL	E
Coccothrinax argentata	Silver palm	No effect anticipated	NL	T
Conradina grandiflora	Large-flowered rosemary	No effect anticipated	NL	T
Crossopetalum ilicifolium	Christmas berry	No effect anticipated	NL	T
Encyclia cochleata	Florida clamshell orchid	No effect anticipated	NL	E
Galeandra beyrichii	Helmet orchid	No effect anticipated	NL	E
Govenia utriculata	Gowen's orchid	No effect anticipated	NL	E
Ipomea microdactyla	Wild-potato morning-glory	No effect anticipated	NL	E
Ipomea tenuissima	Rocklands morning-glory	No effect anticipated	NL	E
Jacquemontia curtissii	Pineland jacquemontia	No effect anticipated	NL	T
Lantana depressa	Pineland lantana	No effect anticipated	NL	E
Linum carteri var. *smallii*	Everglades flax	No effect anticipated	NL	E
Lomariopsis kunzeana	Climbing holly fern	No effect anticipated	NL	E
Poinsettia pinetorum	Rockland painted-leaf	No effect anticipated	NL	E
Roystonea elata	Florida royal palm	No effect anticipated	NL	E
Sachsia polycephala	Bahama sachsia	No effect anticipated	NL	T
Selaginella eatonii	Pygmy spikemoss	No effect anticipated	NL	E
Stylosanthes calcicola	Everglades pencilflower	No effect anticipated	NL	E

Scientific Name	Common Name	Effect Determination	Status	
			Federal	State
Swietenia mahagoni	West Indian mahogany	No adverse effect anticipated	NL	T
Tragia saxicola	Pineland noseburn	No effect anticipated	NL	T
Tripsacum floridanum	Florida tripsacum	No effect anticipated	NL	T
Verbena maritima	Coastal vervain	No adverse effect anticipated	NL	E

F = Federally Listed / E = Endangered / T = Threatened / T(S/A) = Threatened due to similar appearance / NL = Not Listed

(1) The bald eagle is neither state nor federally listed; however, this species is federally protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. The bald eagle is also managed in Florida by the FWC's bald eagle rule (FAC 68A-16.002).

(2) The osprey is neither state nor federally listed; however, this species is federally protected under the Migratory Bird Treaty Act.

(3) The Florida bristle fern (*Trichomanes punctatum*) is listed as endangered under the ESA.

7.2 Commitments

At this time, to minimize the potential for adverse effects to species as a result of the proposed project, and in accordance with FDOT PD&E Manual, Part 2, Chapter 22, MDPROS will make the following specific project commitments as part of this NRE:

- MDPROS is committed to coordinating with DERM and FDACS during final design and construction to ensure the protection of the pine rockland community located within A.D. "Doug" Barnes Park.
- Consistent with the recommendation by USFWS provided in the ETDM Summary Report, MDPROS will, to the maximum extent practicable, use native wildflowers, bushes, and trees in the landscaping of the trail to benefit fish and wildlife resources (including pollinators such as butterflies and bees).
- MDPROS is committed to re-surveying for the Florida bonneted bat during final design, prior to construction activities. All surveys will be conducted in accordance with the most current USFWS survey guidelines, currently entitled *Florida Bonneted Bat Consultation* Guidelines, dated October 2019. If any signs of the Florida bonneted bat are observed, MDPROS is committed to reinitiating coordination through FDOT with the USFWS and consultation, as necessary.
- MDPROS will incorporate the USFWS's most current protection guidelines for the eastern indigo snake, currently entitled *Standard Protection Protocols for the Eastern Indigo Snake* (**Appendix C**), into the final project design and will require that the construction contractor abide to the guidelines during construction.
- During the construction phase of this project, MDPROS and their selected contractor will adhere to the FWC's *Standard Manatee Conditions for In-Water Work*, 2011 (**Appendix F**).
- Should protected plant species be identified within the project impact area during the design and permitting phase, MDPROS is committed to reinitiating coordination through FDOT with DERM and FDACS, and/or other agencies as appropriate, to allow for relocation to adjacent habitats or other suitable protected lands prior to construction.
- During the construction phase of this project, MDPROS and their selected contractor will adhere to the Florida stormwater management program per the Water Resources Implementation Rule (Chapter 62-40.431 FAC) and implement best management practices to avoid, where possible, and otherwise minimize adverse impacts to surface waters and water quality within the project limits.

7.3 Agency Consultation/Coordination

The Advance Notification (AN) was submitted through FDOT's ETDM process as project #14369 – Ludlam Trail Corridor. The Environmental Technical Advisory Team (ETAT) evaluated the project's effects on various natural, physical and social resources. During the ETAT evaluation, MDPROS committed to documenting environmental impacts in accordance with the PD&E manual. This NRE fulfills that commitment. This NRE will be submitted to the resource agencies for comments and coordination. Commitments will be documented per Part 2, Chapter 22, Commitments, of the PD&E Manual. After agency consultation has been completed, this NRE, any addendums, and the agency concurrence letters will be uploaded to SWEPT.

8.0 REFERENCES

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Appendix A:
IPaC Resource List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Field Office
1339 20th Street
Vero Beach, FL 32960-3559
Phone: (772) 562-3909 Fax: (772) 562-4288
http://fws.gov/verobeach

In Reply Refer To: February 23, 2021
Consultation Code: 04EF2000-2021-SLI-0413
Event Code: 04EF2000-2021-E-01043
Project Name: Ludlam Trail Corridor

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

South Florida Ecological Services Field Office
1339 20th Street
Vero Beach, FL 32960-3559
(772) 562-3909

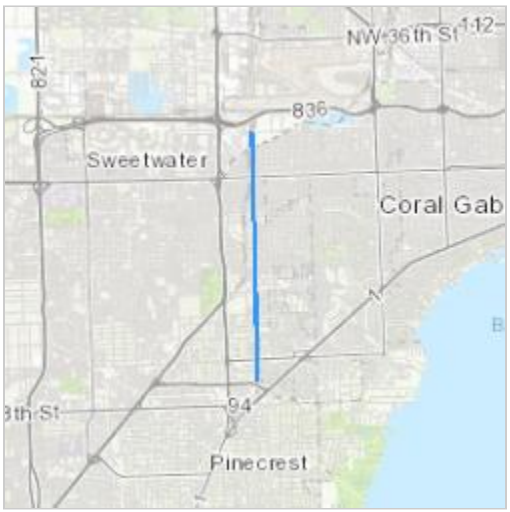
Project Summary

Consultation Code: 04EF2000-2021-SLI-0413
Event Code: 04EF2000-2021-E-01043
Project Name: Ludlam Trail Corridor
Project Type: LAND - EASEMENT / RIGHT-OF-WAY
Project Description: Miami-Dade County Parks, Recreation, and Open Spaces (MDPROS) in coordination with the Florida Department of Transportation (FDOT), is conducting a Project Development and Environment (PD&E) Study, in accordance with the National Environmental Policy Act (NEPA), to assess the proposed development of a 5.6-mile multi-use trail within a former Florida East Coast Railroad (FECR) railroad corridor, which stretches from SW 80th Street to 400 feet north of NW 7th Street, between 69th and 70th Avenue, in Miami-Dade County, Florida.

As a priority paved land trail from the Florida Greenways and Trails System (FGTS) Priority Network and Shared-Use Nonmotorized (SUN) Trail Network, the proposed publicly accessible transportation corridor will serve bicyclists, pedestrians, and users of other types of non-motorized vehicles. In addition, the proposed project is anticipated to provide a safe, dedicated, and direct means of non-motorized transportation to and from areas of residences, work, schools, parks, and shopping centers.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@25.73681695,-80.30741839689348,14z



Counties: Miami-Dade County, Florida

Endangered Species Act Species

There is a total of 33 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Florida Bonneted Bat *Eumops floridanus* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8630	Endangered
Florida Panther *Puma (=Felis) concolor coryi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1763	Endangered
Puma (=mountain Lion) *Puma (=Felis) concolor (all subsp. except coryi)* Population: FL No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6049	Similarity of Appearance (Threatened)

Birds

NAME	STATUS
Bachman's Warbler (=wood) *Vermivora bachmanii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3232	Endangered
Everglade Snail Kite *Rostrhamus sociabilis plumbeus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7713	Endangered
Wood Stork *Mycteria americana* Population: AL, FL, GA, MS, NC, SC No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8477	Threatened

Reptiles

NAME	STATUS
American Alligator *Alligator mississippiensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/776	Similarity of Appearance (Threatened)
American Crocodile *Crocodylus acutus* Population: U.S.A. (FL) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6604	Threatened
Hawksbill Sea Turtle *Eretmochelys imbricata* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3656	Endangered
Leatherback Sea Turtle *Dermochelys coriacea* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1493	Endangered
Loggerhead Sea Turtle *Caretta caretta* Population: Northwest Atlantic Ocean DPS There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1110	Threatened

Fishes

NAME	STATUS
Atlantic Sturgeon (gulf Subspecies) *Acipenser oxyrinchus (=oxyrhynchus) desotoi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/651	Threatened

Insects

NAME	STATUS
Bartram's Hairstreak Butterfly *Strymon acis bartrami* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4837	Endangered
Florida Leafwing Butterfly *Anaea troglodyta floridalis* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6652	Endangered
Miami Blue Butterfly *Cyclargus (=Hemiargus) thomasi bethunebakeri* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3797	Endangered

Flowering Plants

NAME	STATUS
Beach Jacquemontia *Jacquemontia reclinata* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1277	Endangered
Blodgett's Silverbush *Argythamnia blodgettii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6823	Threatened
Cape Sable Thoroughwort *Chromolaena frustrata* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4733	Endangered
Carter's Mustard *Warea carteri* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5583	Endangered
Carter's Small-flowered Flax *Linum carteri carteri* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7208	Endangered
Crenulate Lead-plant *Amorpha crenulata* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6470	Endangered
Deltoid Spurge *Chamaesyce deltoidea ssp. deltoidea* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/199	Endangered
Everglades Bully *Sideroxylon reclinatum ssp. austrofloridense* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4735	Threatened
Florida Brickell-bush *Brickellia mosieri* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/956	Endangered
Florida Pineland Crabgrass *Digitaria pauciflora* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3728	Threatened
Florida Prairie-clover *Dalea carthagenensis floridana* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2300	Endangered
Florida Semaphore Cactus *Consolea corallicola* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4356	Endangered
Garber's Spurge *Chamaesyce garberi* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8229	Threatened

NAME	STATUS
Pineland Sandmat *Chamaesyce deltoidea pinetorum* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1914	Threatened
Sand Flax *Linum arenicola* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4313	Endangered
Small's Milkpea *Galactia smallii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3360	Endangered
Tiny Polygala *Polygala smallii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/996	Endangered

Ferns and Allies

NAME	STATUS
Florida Bristle Fern *Trichomanes punctatum ssp. floridanum* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8739	Endangered

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
West Indian Manatee *Trichechus manatus* For information on why this critical habitat appears for your project, even though West Indian Manatee is not on the list of potentially affected species at this location, contact the local field office. https://ecos.fws.gov/ecp/species/4469#crithab	Final

Appendix B:
FNAI Element Occurrence Report

FLORIDA
Natural Areas
INVENTORY

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850-224-8207
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August 12, 2015

Mark Heinicke
Miami-Dade County
Recreation and Open Spaces Department
275 NW 2nd Street, 4th Floor
Miami, FL 33128-1794

Dear Mr. Heinicke,

Thank you for requesting information from the Florida Natural Areas Inventory (FNAI). We have compiled the following information for your project area.

Project: Ludlam Trail Corridor

Date Received: 8/11/2015

Location: Miami-Dade County

Based on the information available, this site appears to be located on or very near A. D. "Doug" Barnes Park, a significant site of rockland hammock and pine rockland habitat. These are natural communities in decline that provide important habitat for several rare species within a small area. Additional consideration should be given to avoid and/or mitigate impacts to these natural resources, and to design land uses that are compatible with these resources.

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.

Federally Listed Species

Our data indicate federally listed species, particularly *Amorpha herbacea var. crenulata* (Crenulate Lead-plant), are present on or very near this site (see enclosed map and tables for details). This statement should not be interpreted as a legal determination of presence or absence of federally listed species on a property.

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.

Florida Resources
and Environmental
Analysis Center

Institute of Science
and Public Affairs

The Florida State University

*Several of the species and natural communities tracked by the Inventory are considered **data sensitive**. Occurrence records for these elements contain information that we consider sensitive due to collection pressures, extreme rarity, or at the request of the source of the information. The Element Occurrence Record has been labeled "Data Sensitive." We request that you not publish or release specific locational data about these species or communities without consent from the Inventory. If you have any questions concerning this please do not hesitate to call.*

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.

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.

Managed Areas

Portions of the site appear to be located adjacent to A. D. "Doug" Barnes Park, managed by the Miami-Dade 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. FNAI data may not be resold for profit.

This report is made available at no charge due to funding from the Florida Department of Environmental Protection, Division of State Lands.

Thank you for your use of FNAI services. If I can be of further assistance, please contact me at (850) 224-8207 or at npasco@fnai.org.

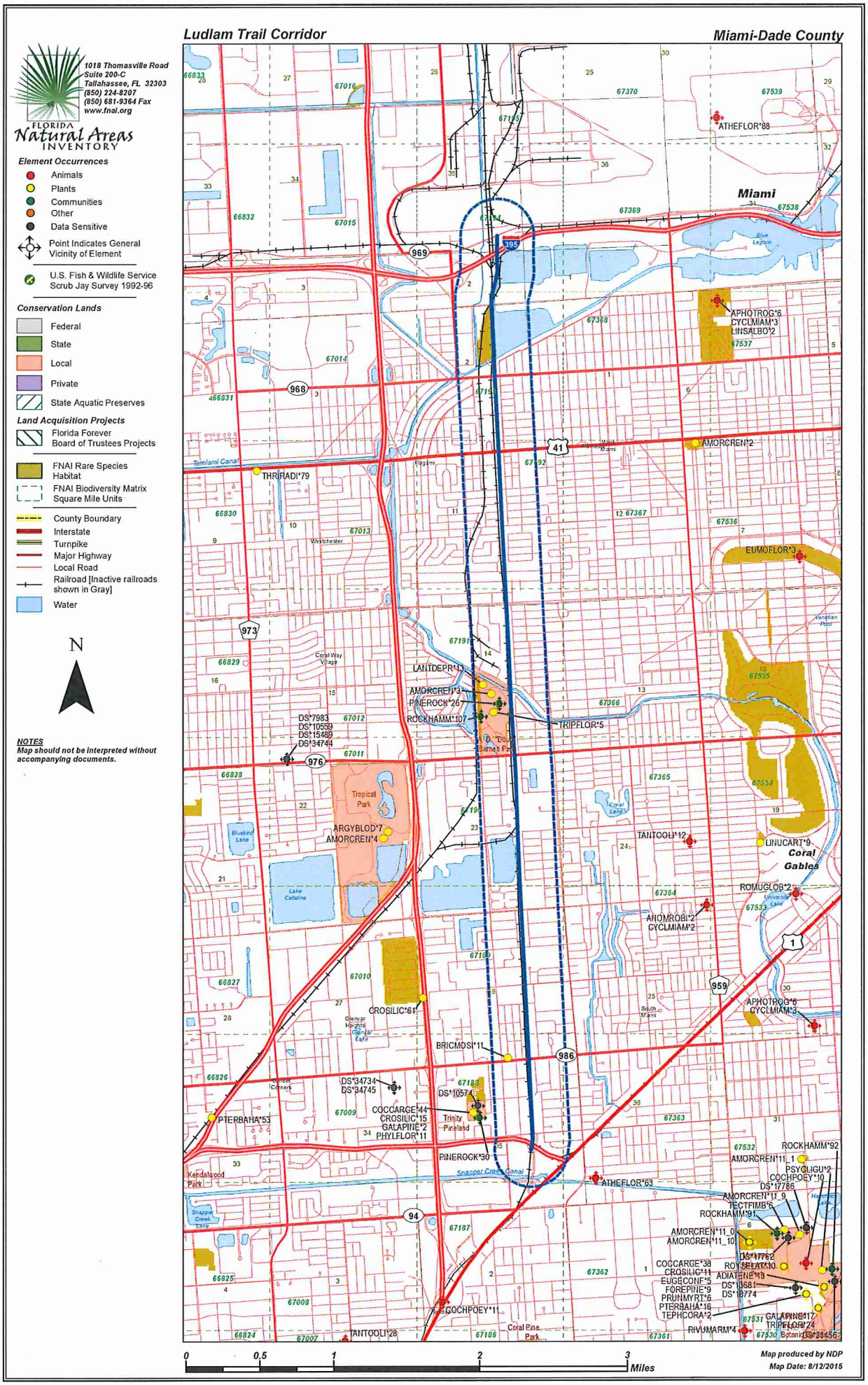
Sincerely,

Nathan Pasco

Nathan Pasco
GIS / Data Services

Encl

Exhibit A6 - FNAI



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FLORIDA Natural Areas INVENTORY

FNAI ELEMENT OCCURRENCE REPORT on or near

Ludlam Trail Corridor

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
AMORCREN*3	*Amorpha herbacea var. crenulata*	Crenulate Lead-plant	G4T1	S1	LE	E	2006	2006: Pineland with remnant transverse glades. Fire has been excluded for a long time, manual removal of deep leaf litter and encroaching vines, shrubs and hardwoods is in progress but sufficient resources are not ensured to maintain in this way	2006: 195 plants counted in 3 areas (U08FTG01FLUS). 1987-10-30: ca. 110 plants seen; few in fruit; see map for locations (P87HAR07FLUS).1985-06-09: 11-50 plants seen, some in flower and fruit; plants along w fence are small (1-3');
AMORCREN*4	*Amorpha herbacea var. crenulata*	Crenulate Lead-plant	G4T1	S1	LE	E	2010-01-21	2010-01-21: Pine rockland was burned in October 2009. Woody encroachment and exotic plants are still a problem, especially Nephrolepis cordifolia. Also present is Schinus terebinthifolius. Sabal palmetto is frequent throughout. Low-tech volunteer workday	2010-01-21: Estimate of from 6-26 plants, in various age classes; mostly vegetative but a few were in fruit (PNDDIA02FLUS). 2005-08-08: At least 11 plants observed in flower/bud in 100-1000 sq. meter area (F05TAN02FLUS). 2005: Southern source point: 12
ANOMROBI*2	*Anomala robinsoni*	Robinson's Anomala Scarab Beetle	G1?	S1?	N	N	1994-PRE	1994-Pre: No description given (B94DEY01FLUS).	1994-Pre: This species was collected (B94DEY01FLUS).
APHOTROG*6	*Aphodius troglodytes*	Gopher Tortoise Aphodius Beetle	G2G3	S2	N	N	1933-12-31	1933-12-31: No description given (B73WOO01FLUS).	1933-12-31: One specimen was collected in a Gopherus burrow by F.N.Young (B73WOO01FLUS). 1933-12-29: One specimen was collected in a Gopherus burrow by F.N.Young (B73WOO01FLUS).
APHRNELE*2	*Aphrissa neleis*	Pink-spot Sulphur	GU	S2	N	N	2012-06-23	2012-06-23: Quiet Garden in Crandon Park; former zoo grounds (F12NUE01FLUS). 2012-05-23: The butterfly appears to be doing well in a highly urbanized environment. The host plant appears in widely-varied places, both as mature trees as well as young ones,	2012-06-23: At least one adult was seen in a large garden on Key Biscayne during Coral Gables butterfly count (F12NUE01FLUS). 2012-05: Unspecified numbers of adults, larvae and eggs reported from 18 different localities in central Miami-Dade County durin
ARGYBLOD*7	*Argythamnia blodgettii*	Blodgett's Wild-mercury	G2	S2	C	E	2005-08-08	2005-08-08: Small pine rockland remnant of typical species with foot path bisecting (PNDTAN01FLUS). 1975-06-15: PINELAND REMNANT (S75HILFGFLUS).	2005-08-08: At least 20 plants in flower/fruit in two small clumps near foot path along open pineland edge (F05TAN02FLUS). 1975-06-15: 0.5 M TALL; FLOWERING/FRUITING (S75HILFGFLUS).
ATAEBREV*2	*Ataenius brevicollis*	An Ataenius Beetle	G3G5	S1S2	N	N	1960-09-13	1960-09-13: no description given (B73WOO01FLUS).	1960-09-13: one specimen collected at a blacklight trap by P. E. Briggs (B73WOO01FLUS).

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FLORIDA Natural Areas INVENTORY

FNAI ELEMENT OCCURRENCE REPORT on or near

Ludlam Trail Corridor

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
ATHEFLOR*63	*Athene cunicularia floridana*	Florida Burrowing Owl	G4T3	S3	N	SSC	1990-02	Urban.	1990-02: 6 owls and 6 burrows reported (M.S. Robson, GFC record).
ATHEFLOR*88	*Athene cunicularia floridana*	Florida Burrowing Owl	G4T3	S3	N	SSC	1992-03-27	airport	1992-03-27: 20 breeding territories reported by Brian Mealy to M.S. Robson, GFC.
BRICMOSI*11	*Brickellia mosieri*	Florida Brickell-bush	G1	S1	C	E	1968-09-05	1968-09-05: Vacant lot, pineland, sandy soil (G. N. Avery).	1968-09-05: Specimens taken [flowering and fruiting] (G. N. Avery).
COCCARGE*44	*Coccothrinax argentata*	Silver Palm	G4	S3	N	T	1985-12-02	REMNANT PINE ROCKLAND; RECENTLY BURNED S FL SLASH PINE FOREST WITH SAW PALMETTO UNDERSTORY. ABUNDANTNEYRAUDIA	1985; NONE GIVEN
COCHPOEY*11	*Cochlodinella poeyana*	Truncate Urocoptid	G1G2	S1S2	N	N	1961-09-14	1961-09-14: No description given (WNDFLO01FLUS).	1961-09-14: This species was collected by F. G. Thompson (WNDFLO01FLUS). 1941-11-30: This species was collected (WNDFLO01FLUS).
CROSILIC*15	*Crossopetalum ilicifolium*	Christmas Berry	G3	S3	N	T	1985	REMNANT PINE ROCKLAND; RECENTLY BURNED S FL SLASH PINE FOREST WITH SAW PALMETTO UNDERSTORY. ABUNDANTNEYRAUDIA.	1985; NONE GIVEN
CROSILIC*61	*Crossopetalum ilicifolium*	Christmas Berry	G3	S3	N	T	2007-01-18	2007-01-18: Roadside, in right-of-way (U07IRC01FLUS).	2007-01-18: Population size 11 - 50 plants. (U07IRC01FLUS)
CYCLMIAM*2	*Cyclocephala miamiensis*	Miami Chafer Beetle	G1?	S1?	N	N	1994-PRE	1994-Pre: No description given (B94DEY01FLUS).	1994-Pre: This species was collected at this site (B94DEY01FLUS).
CYCLMIAM*3	*Cyclocephala miamiensis*	Miami Chafer Beetle	G1?	S1?	N	N	1994-PRE	1994-Pre: No description given (B94DEY01FLUS).	1994-Pre: This species was collected here (B94DEY01FLUS).
DS*10574	*Data Sensitive Element*	Data Sensitive	G2T1	S1	LE	E	2008	Data Sensitive	Data Sensitive
DS*34734	*Data Sensitive Element*	Data Sensitive	G1	S1	N	N	1991-PRE	Data Sensitive	Data Sensitive
DS*34745	*Data Sensitive Element*	Data Sensitive	G3	S3	N	N	2010-PRE	Data Sensitive	Data Sensitive
GALAPINE*2	*Galactia pinetorum*	Pineland Milkpea	G2Q	S2	N	N	1985	1985: Remnant pine rockland; recenlty burned s fl slash pine forest with saw palmetto understory. Abundant Neyraudia (F85HAR15FLUS).	1985-12-02: NONE GIVEN (F85HAR15FLUS).

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FLORIDA Natural Areas INVENTORY

FNAI ELEMENT OCCURRENCE REPORT on or near

Ludlam Trail Corridor

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
LANTDEPR*13	*Lantana depressa var. depressa*	Florida Lantana	G2T1	S1	N	E	1995	2005-02-05: Surrounded by developement (PNDJEN04FLUS). 1999-08-16: Scarified pine rockland in northwest corner of A.D. Barnes Park. Occurence threatened by hybridization with L. camara (PNDBRA04FLUS).	1995: Uncommon in scarified pine rockland at northwest corner of Park. 101-1000 Plants (PNDBRA04FLUS).
LINSALBO*2	*Linsleyonides albomaculatus*	Tropical White-Spotted Long-Horned Beetle	G2G4	S1	N	N	1994-PRE	1994-Pre: This species was found in tropical hardwood hammocks (B94DEY01FLUS).	1994-Pre: Only a few specimens have been collected (B94DEY01FLUS).
PHYLFLOR*11	*Phyllanthus pentaphyllus var. floridanus*	Florida Five-petaled Leaf-flower	G4T2	S2	N	N	1985	REMNANT PINE ROCKLAND; RECENTLY BURNED S FL SLASH PINE FOREST WITH SAW PALMETTO UNDERSTORY. ABUNDANTNEYRAUDIA.	1985; NONE GIVEN
PINEROCK*26	Pine rockland		G1	S1	N	N	1999	THIN SAND OVER LIMESTONE. DEVELOPED AS PARK CA 1977.	1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1991-02-13) (U05FNA02FLUS). U82AVE04 GIVES PLANT LIST FOR PARK, BUT DOESN'T INDICATE HABITAT OR ABUNDANCE. PINUS ELLIOTTII VAR. DENSA (30-60 FT.) IS THE D
PINEROCK*30	Pine rockland		G1	S1	N	N	1999	REMNANT PINE ROCKLAND, PARTS RECENTLY BURNED IN 1991.	1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1991-02-13) (U05FNA02FLUS). 85-12-02, RECENTLY BURNED S FL. SLASH PINE FOREST WITHSAW PALMETTO UNDERSTORY. ABUNDANT NEYRAUDIA. 54 PLANT TAXA RECORDED ON 2
RIVUMARM*4	*Rivulus marmoratus*	Mangrove Rivulus	G4G5	S3	SC	SSC	1966-06-24	No general description given	One specimen in Florida Museum of Naturla History (UF-100028).
ROCKHAMM*107	Rockland hammock		G2	S2	N	N	1999	THIN SAND OVER LIMESTONE. DEVELOPED AS A PARK CA 1977.	1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1987-10-30) (U05FNA02FLUS). U82AVE04 GIVES PLANT LIST FOR PARK, BUT DOESN'T INDICATE HABITAT OR ABUNDANCE.

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FLORIDA Natural Areas INVENTORY

FNAI ELEMENT OCCURRENCE REPORT on or near

Ludlam Trail Corridor

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
TANTOOLI*12	*Tantilla oolitica*	Rim Rock Crowned Snake	G1G2	S1S2	N	ST	1950-03	2011: Coral Gables is highly developed but still includes various patches that might support this species.	For now, based on old museum specimens with vague data (following), but not impossible that species could still survive somewhere in Coral Gables. 1950-03: UF-3499, W. Auffenberg, "southwest of Miami" under rotten log in pasture (A66TEL01:294). 1945-03
TANTOOLI*28	*Tantilla oolitica*	Rim Rock Crowned Snake	G1G2	S1S2	N	ST	1948-05	2012: the Kendall area is nearly fully developed, mostly residential, but this may still provide ample habitat for the species.	1948-05: USNM specimen collected by W. E. Haast, but site recorded only as Kendall (A11HIN01FLUS).
TRIPFLOR*5	*Tripsacum floridanum*	Florida Gama Grass	G2	S2	N	T	1987-10-30	REMNANT DADE PINE ROCKLAND AND ROCKLAND HAMMOCK; THIN SAND OVER LIMESTONE. DEVELOPED AS PARK CA 1977.	1987-10-30: ONE PLANT SEEN ALONG NATURE TRAIL, NORTH ENTRANCE; IN FRUIT. 1982: NONE GIVEN. SPECIES LIST IN BEST SOURCE(U82AVE04).

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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
Documented					
Amorpha herbacea var. crenulata	Crenulate Lead-plant	G4T1	S1	E	E
Crossopetalum ilicifolium	Christmas Berry	G3	S3	N	T
Lantana depressa var. depressa	Florida Lantana	G2T1	S1	N	E
Pine rockland		G1	S1	N	N
Rockland hammock		G2	S2	N	N
Documented-Historic					
Brickellia mosieri	Florida Brickell-bush	G1	S1	C	E
Coccothrinax argentata	Silver Palm	G4	S3	N	T
Galactia pinetorum	Pineland Milkpea	G2Q	S2	N	N
Phyllanthus pentaphyllus var. floridanus	Florida Five-petaled Leaf-flower	G4T2	S2	N	N
Tripsacum floridanum	Florida Gama Grass	G2	S2	N	T
Likely					
Eumops floridanus	Florida bonneted bat	G1	S1	E	FE
Mesic flatwoods		G4	S4	N	N
Potential					
Anomala robinsoni	Robinson's Anomala Scarab Beetle	G1?	S1?	N	N
Aphodius troglodytes	Gopher Tortoise Aphodius Beetle	G2G3	S2	N	N
Argythamnia blodgettii	Blodgett's Wild-mercury	G2	S2	C	E
Asplenium verecundum	Modest Spleenwort	G1	S1	N	E
Ataenius brevicollis	An Ataenius Beetle	G3G5	S1S2	N	N
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	SSC
Basiphyllaea corallicola	Rockland Orchid	G1G3	S1	N	E
Bourreria cassinifolia	Smooth Strongbark	G3?	S1	N	E
Chamaesyce deltoidea ssp. adhaerens	Hairy Deltoid Spurge	G2T1	S1	E	E
Chamaesyce deltoidea ssp. deltoidea	Deltoid Spurge		S1	E	E
Chamaesyce garberi	Garber's Spurge	G1	S1	T	E
Chamaesyce porteriana	Porter's Broad-leaved Spurge	G2	S2	N	E
Cochlodinella poeyana	Truncate Urocoptid	G1G2	S1S2	N	N
Conradina grandiflora	Large-flowered Rosemary	G3	S3	N	T
Crocodylus acutus	American Crocodile	G2	S2	T	FT
Ctenogobius stigmaturus	Spottail Goby		S2	N	N
Cyclocephala miamiensis	Miami Chafer Beetle	G1?	S1?	N	N
Dalea carthagenensis var. floridana	Florida Prairie Clover	G5T1	S1	C	E
Drymarchon couperi	Eastern Indigo Snake	G3	S3	T	FT
Elytraria caroliniensis var. angustifolia	Narrow-leaved Carolina Scalystem	G4T2	S2	N	N
Encyclia cochleata var. triandra	Clamshell Orchid	G4G5T2	S2	N	E
Euphorbia pinetorum	Rockland Painted-leaf	G2	S2	N	E
Forestiera segregata var. pinetorum	Florida Pinewood Privet	G4T2	S2	N	N
Galactia smallii	Small's Milkpea	G1Q	S1	E	E
Galeandra bicarinata	Two-keeled Helmet Orchid	G1	S1	N	E
Glandularia maritima	Coastal Vervain	G3	S3	N	E
Gopherus polyphemus	Gopher Tortoise		S3	C	ST
Govenia floridana	Sheathing Govenia	G1Q	S1	N	E
Halophila johnsonii	Johnson's Seagrass	G2	S2	T	N
Ipomoea microdactyla	Wild Potato Morning Glory		S2	N	E
Ipomoea tenuissima	Rocklands Morning Glory	G3	S1	N	E
Jacquemontia curtissii	Pineland Jacquemontia	G2	S2	N	T

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
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Tallahassee, FL 32303
(850) 224-8207
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Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Linsleyonides albomaculatus	Tropical White-Spotted Long-Horned I	G2G4	S1	N	N
Linum carteri var. smallii	Small's Flax	G2T2	S2	N	E
Lomariopsis kunzeana	Holly Vine Fern	G2G4	S1	N	E
Patagioenas leucocephala	White-crowned Pigeon	G3	S3	N	ST
Polygala smallii	Tiny Polygala	G1	S1	E	E
Pteroglossaspis ecristata	Giant Orchid	G2G3	S2	N	T
Rivulus marmoratus	Mangrove Rivulus	G4G5	S3	SC	SSC
Roystonea elata	Florida Royal Palm	G2G3	S2	N	E
Sachsia polycephala	Bahama Sachsia	G2	S2	N	T
Selaginella eatonii	Eaton's Spike Moss	G2G3	S2	N	E
Stylosanthes calcicola	Pineland Pencil Flower	G3G4	S2	N	E
Swietenia mahagoni	West Indies Mahogany		S3	N	T
Tantilla oolitica	Rim Rock Crowned Snake	G1G2	S1S2	N	ST
Tragia saxicola	Pineland Noseburn	G2	S2	N	T
Trichomanes punctatum ssp. floridanum	Florida Filmy Fern	G4G5T1	S1	C	E
Zephyranthes simpsonii	Redmargin Zephyrlily	G2G3	S2S3	N	T

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 C:
Standard Protection Measures for the Eastern Indigo Snake

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

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

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

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

POSTER INFORMATION

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

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

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

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

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

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

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

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

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

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

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

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

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

PRE-CONSTRUCTION ACTIVITIES

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

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

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

DURING CONSTRUCTION ACTIVITIES

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

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

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

POST CONSTRUCTION ACTIVITIES

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

Appendix D:
Wood Stork Programmatic Effect Determination Key

United States Department of the Interior

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

May 18, 2010

Donnie Kinard
Chief, Regulatory Division
Jacksonville District Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Service Federal Activity Code: 41420-2007-FA-1494
Service Consultation Code: 41420-2007-I-0964
Subject: South Florida Programmatic Concurrence
Species: Wood Stork

Dear Mr. Kinard:

This letter addresses minor errors identified in our January 25, 2010, wood stork key and as such, supplants the previous key. The key criteria and wood stork biomass foraging assessment methodology have not been affected by these minor revisions.

The Fish and Wildlife Service's (Service) South Florida Ecological Services Office (SFESO) and the U.S. Army Corps of Engineers Jacksonville District (Corps) have been working together to streamline the consultation process for federally listed species associated with the Corps' wetland permitting program. The Service provided letters to the Corps dated March 23, 2007, and October 18, 2007, in response to a request for a multi-county programmatic concurrence with a criteria-based determination of "may affect, not likely to adversely affect" (NLAA) for the threatened eastern indigo snake (*Drymarchon corais couperi*) and the endangered wood stork (*Mycteria americana*) for projects involving freshwater wetland impacts within specified Florida counties. In our letters, we provided effect determination keys for these two federally listed species, with specific criteria for the Service to concur with a determination of NLAA.

The Service has revisited these keys recently and believes new information provides cause to revise these keys. Specifically, the new information relates to foraging efficiencies and prey base assessments for the wood stork and permitting requirements for the eastern indigo snake. This letter addresses the wood stork key and is submitted in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 *et seq.*). The eastern indigo snake key will be provided in a separate letter.

Wood stork

Habitat

The wood stork is primarily associated with freshwater and estuarine habitats that are used for nesting, roosting, and foraging. Wood storks typically construct their nests in medium to tall

trees that occur in stands located either in swamps or on islands surrounded by relatively broad expanses of open water (Ogden 1991, 1996; Rodgers et al. 1996). Successful colonies are those that have limited human disturbance and low exposure to land-based predators. Nesting colonies protected from land-based predators are characterized as those surrounded by large expanses of open water or where the nest trees are inundated at the onset of nesting and remain inundated throughout most of the breeding cycle. These colonies have water depths between 0.9 and 1.5 meters (3 and 5 feet) during the breeding season.

Successful nesting generally involves combinations of average or above-average rainfall during the summer rainy season and an absence of unusually rainy or cold weather during the winter-spring breeding season (Kahl 1964; Rodgers et al. 1987). This pattern produces widespread and prolonged flooding of summer marshes, which maximize production of freshwater fishes, followed by steady drying that concentrate fish during the season when storks nest (Kahl 1964). Successful nesting colonies are those that have a large number of foraging sites. To maintain a wide range of foraging sites, a variety of wetland types should be present, with both short and long hydroperiods. The Service (1999) describes a short hydroperiod as a 1 to 5-month wet/dry cycle, and a long hydroperiod as greater than 5 months. During the wet season, wood storks generally feed in the shallow water of the short-hydroperiod wetlands and in coastal habitats during low tide. During the dry season, foraging shifts to longer hydroperiod interior wetlands as they progressively dry-down (though usually retaining some surface water throughout the dry season).

Wood storks occur in a wide variety of wetland habitats. Typical foraging sites for the wood stork include freshwater marshes and stock ponds, shallow, seasonally flooded roadside and agricultural ditches, narrow tidal creeks and shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs. Because of their specialized feeding behavior, wood storks forage most effectively in shallow-water areas with highly concentrated prey. Through tactolocation, or grope feeding, wood storks in south Florida feed almost exclusively on fish between 2 and 25 centimeters [cm] (1 and 10 inches) in length (Ogden et al. 1976). Good foraging conditions are characterized by water that is relatively calm, uncluttered by dense thickets of aquatic vegetation, and having a water depth between 5 and 38 cm (5 and 15 inches) deep, although wood storks may forage in other wetlands. Ideally, preferred foraging wetlands would include a mosaic of emergent and shallow open-water areas. The emergent component provides nursery habitat for small fish, frogs, and other aquatic prey and the shallow, open-water areas provide sites for concentration of the prey during seasonal dry-down of the wetland.

Conservation Measures

The Service routinely concurs with the Corps' "may affect, not likely to adversely affect" determination for individual project effects to the wood stork when project effects are insignificant due to scope or location, or if assurances are given that wetland impacts have been avoided, minimized, and adequately compensated such that there is no net loss in foraging potential. We utilize our *Habitat Management Guidelines for the Wood Stork in the Southeast Region* (Service 1990) (Enclosure 1) (HMG) in project evaluation. The HMG is currently under review and once final will replace the enclosed HMG. There is no designated critical habitat for the wood stork.

The SFESO recognizes a 29.9 kilometer [km] (18.6-mile) core foraging area (CFA) around all known wood stork colonies in south Florida. Enclosure 2 (to be updated as necessary) provides locations of colonies and their CFAs in south Florida that have been documented as active within the last 10 years. The Service believes loss of suitable wetlands within these CFAs may reduce foraging opportunities for the wood stork. To minimize adverse effects to the wood stork, we recommend compensation be provided for impacts to foraging habitat. The compensation should consider wetland type, location, function, and value (hydrology, vegetation, prey utilization) to ensure that wetland functions lost due to the project are adequately offset. Wetlands offered as compensation should be of the same hydroperiod and located within the CFAs of the affected wood stork colonies. The Service may accept, under special circumstances, wetland compensation located outside the CFAs of the affected wood stork nesting colonies. On occasion, wetland credits purchased from a "Service Approved" mitigation bank located outside the CFAs could be acceptable to the Service, depending on location of impacted wetlands relative to the permitted service area of the bank, and whether or not the bank has wetlands having the same hydroperiod as the impacted wetland.

In an effort to reduce correspondence in effect determinations and responses, the Service is providing the Wood Stork Effect Determination Key below. If the use of this key results in a Corps determination of "no effect" for a particular project, the Service supports this determination. If the use of this Key results in a determination of NLAA, the Service concurs with this determination[1]. This Key is subject to revisitation as the Corps and Service deem necessary.

The Key is as follows:

A. Project within 0.76 km (0.47 mile)[2] of an active colony site[3] ..... "*may affect*[4]"

Project impacts Suitable Foraging Habitat (SFH)[5] at a location greater than 0.76 km (0.47 mile) from a colony site..... ....."*go to* B"

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[1] With an outcome of "no effect" or "NLAA" as outlined in this key, and the project has less than 20.2 hectares (50 acres) of wetland impacts, the requirements of section 7 of the Act are fulfilled for the wood stork and no further action is required. For projects with greater than 20.2 hectares (50 acres) of wetland impacts, written concurrence of NLAA from the Service is necessary.

[2] Within the secondary zone (the average distance from the border of a colony to the limits of the secondary zone is 0.76 km (2,500 feet, or 0.47 mi).

[3] An active colony is defined as a colony that is currently being used for nesting by wood storks or has historically over the last 10 years been used for nesting by wood storks.

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

[5] Suitable foraging habitat (SFH) includes wetlands that typically have shallow-open water areas that are relatively calm and have a permanent or seasonal water depth between 5 to 38 cm (2 to 15 inches) deep. Other shallow non-wetland water bodies are also SFH. SFH supports and concentrates, or is capable of supporting and concentrating small fish, frogs, and other aquatic prey. Examples of SFH include, but are not limited to freshwater marshes, small ponds, shallow, seasonally flooded roadside or agricultural ditches, seasonally flooded pastures, narrow tidal creeks or shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs.

Project does not affect SFH……..…..*"no effect*[1]*"*.

B. Project impact to SFH is less than 0.20 hectare (one-half acre)[6]……..……*NLAA*[1]*"*

Project impact to SFH is greater in scope than 0.20 hectare (one-half acre)....……*go to* C

C. Project impacts to SFH not within the CFA (29.9 km, 18.6 miles) of a colony site ……..…….…….…….……*go to* D

Project impacts to SFH within the CFA of a colony site …….…..…...…….*go to* E

D. Project impacts to SFH have been avoided and minimized to the extent practicable; compensation (Service approved mitigation bank or as provided in accordance with Mitigation Rule 33 CFR Part 332) for unavoidable impacts is proposed in accordance with the CWA section 404(b)(1) guidelines; and habitat compensation replaces the foraging value matching the hydroperiod[7] of the wetlands affected and provides foraging value similar to, or higher than, that of impacted wetlands. See Enclosure 3 for a detailed discussion of the hydroperiod foraging values, an example, and further guidance[8]…….. *NLAA*[1]*"*

Project not as above.……... *"may affect*[4]*"*

E. Project provides SFH compensation in accordance with the CWA section 404(b)(1) guidelines and is not contrary to the HMG; habitat compensation is within the appropriate CFA or within the service area of a Service-approved mitigation bank; and habitat compensation replaces foraging value, consisting of wetland enhancement or restoration matching the hydroperiod[7] of the wetlands affected, and provides foraging value similar

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[6] On an individual basis, SFH impacts to wetlands less than 0.20 hectare (one-half acre) generally will not have a measurable effect on wood storks, although we request that the Corps require mitigation for these losses when appropriate. Wood storks are a wide ranging species, and individually, habitat change from impacts to SFH less than one-half acre are not likely to adversely affect wood storks. However, collectively they may have an effect and therefore regular monitoring and reporting of these effects are important.

[7] Several researchers (Flemming et al. 1994; Ceilley and Bortone 2000) believe that the short hydroperiod wetlands provide a more important pre-nesting foraging food source and a greater early nestling survivor value for wood storks than the foraging base (grams of fish per square meter) than long hydroperiod wetlands provide. Although the short hydroperiod wetlands may provide less fish, these prey bases historically were more extensive and met the foraging needs of the pre-nesting storks and the early-age nestlings. Nest productivity may suffer as a result of the loss of short hydroperiod wetlands. We believe that most wetland fill and excavation impacts permitted in south Florida are in short hydroperiod wetlands. Therefore, we believe that it is especially important that impacts to these short hydroperiod wetlands within CFAs are avoided, minimized, and compensated for by enhancement/restoration of short hydroperiod wetlands.

[8] For this Key, the Service requires an analysis of foraging prey base losses and enhancements from the proposed action as shown in the examples in Enclosure 3 for projects with greater than 2.02 hectares (5 acres) of wetland impacts. For projects with less than 2.02 hectares (5 acres) of wetland impacts, an individual foraging prey base analysis is not necessary although type for type wetland compensation is still a requirement of the Key.

to, or higher than, that of impacted wetlands. See Enclosure 3 for a detailed discussion of the hydroperiod foraging values, an example, and further guidance[8]..... *"NLAA[1]"*

Project does not satisfy these elements ..... *"may affect[4]"*

This Key does not apply to Comprehensive Everglades Restoration Plan projects, as they will require project-specific consultations with the Service.

Monitoring and Reporting Effects

For the Service to monitor cumulative effects, it is important for the Corps to monitor the number of permits and provide information to the Service regarding the number of permits issued where the effect determination was: "may affect, not likely to adversely affect." We request that the Corps send us an annual summary consisting of: project dates, Corps identification numbers, project acreages, project wetland acreages, and project locations in latitude and longitude in decimal degrees.

Thank you for your cooperation and effort in protecting federally listed species. If you have any questions, please contact Allen Webb at extension 246.

Sincerely yours,

Paul Souza
Field Supervisor
South Florida Ecological Services Office

Enclosures

cc: w/enclosures (electronic only)
Corps, Jacksonville, Florida (Stu Santos)
EPA, West Palm Beach, Florida (Richard Harvey)
FWC, Vero Beach, Florida (Joe Walsh)
Service, Jacksonville, Florida (Billy Brooks)

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