TECHNICAL REPORT COVERSHEET

Natural Resources Evaluation

Florida Department of Transportation District 1

County Road (CR) 887 (Old US 41) PD&E

Limits of Project: US 41 to Lee County Line and Collier County Line to Bonita Beach Road

Lee and Collier Counties, Florida

Financial Management Number: 435110-1-22-01 & 435347-1-22-01

Federal Aid Project Number: D119-028-B

ETDM Number: 14339

Date: July 2025

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

Table of Contents

Section ***Page***

List of Tables ..... Page

List of Figures ***Page***

List of Appendices

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT), District 1 is conducting a Project Development and Environment (PD&E) Study, in accordance with the National Environmental Policy Act (NEPA), to assess the need for capacity and traffic operational improvements along County Road (CR) 887 (Old US 41) in Collier and Lee counties, Florida. The limits of this study are from State Road 45/US 41/Tamiami Trail extending north to Lee CR 865/Bonita Beach Road, approximately 2.73 miles in length (**Figure 1-1**). The project is within Sections 2, 3, 10, 15, and 16 of Township 48 South, Range 25 East.

The PD&E study consists of two project segments. The limits of Segment 1 extend from US 41 to the Lee County Line in the northwestern corner of unincorporated Collier County, approximately 1.55 miles in length. The limits of Segment 2 extend from the Collier County Line to Bonita Beach Road within the City of Bonita Springs in southern Lee County, approximately 1.18 miles in length (**Figure 1-1**).

Within the project limits, the existing roadway is classified as a two-lane, undivided urban collector with a posted speed limit of 45 miles per hour. The roadway features two twelve-foot travel lanes with alternating center and right turn lanes throughout the length of the corridor as well as an open drainage system. An active rail line operated by Seminole Gulf Railway transects the project corridor at-grade. In general, existing right-of-way (ROW) ranges from 135 feet to 150 feet along Segment 1 and between 90 feet and 110 feet along Segment 2; however, near the Collier County/Lee County Line, ROW is approximately 70 feet. Although the roadway lacks bicycle and transit facilities, there are three non-continuous sidewalk sections along Segment 1 [two occur on the east side of the road and one occurs on the west side] and two sidewalk sections along Segment 2 [east and west sides of the roadway around Bonita Beach Road]. Bicycle and pedestrian activity have been observed within the corridor.

The proposed improvement will expand the roadway to a four-lane divided roadway with 11-foot travel lanes. The Preferred Alternative would require the purchase of additional ROW and would feature a 12-foot (ft) wide shared use path and 7-foot bicycle lanes in both directions. There are no improvements planned for Old 41 north of the proposed New Quadrant Roadway, including the Old 41 and Bonita Beach Road intersection. The proposed New Quadrant Roadway connects Old 41 with Race Track Road which then continues onto Bonita Beach Road for the rest of the project segment. The New Quadrant Roadway will be a 2-lane undivided road with 11-ft travel lanes, a 12-ft shared use path, an 8-ft sidewalk, and a total of 70-ft ROW.

This Natural Resources Evaluation (NRE) documents the natural resources analysis which was performed to support decisions related to the evaluation of the project Preferred Alternative and to summarize potential impacts to wetlands, federal and state protected species, protected habitats, and Essential Fish Habitat (EFH). A project study area consisting of a 300-foot buffer from the existing

roadway centerline was created to assess these impacts. Measures considered to avoid, minimize, and mitigate for potential natural resource impacts resulting from the proposed project are also discussed.

Protected Species

The project study area was evaluated for the presence of federal and state-protected species and their suitable habitat in accordance with 50 Code of Federal Regulations (CFR) Part 402 of the Endangered Species Act of 1973, as amended (ESA), Chapter 5B-40 Florida Administrative Code (F.A.C.): *Preservation of Native Flora of Florida*, Chapter 68A-27 F.A.C.: *Rules Relating to Endangered or Threatened Species*, and the Protected Species and Habitat chapter of the FDOT PD&E Manual.

Literature reviews, agency database searches, and field reviews were conducted to assess federal and state-protected species presence, their habitat, and designated critical habitat occurring or potentially occurring within the project area. Fifteen (15) federally-protected (13 listed) species and fifty (50) state listed species were evaluated based on species ranges including Lee or Collier counties. Two non-listed/managed species, the bald eagle and Florida black bear, are also discussed based on the potential for occurrence within the study area and their protection under other existing regulations. No critical habitat occurs within or adjacent to the project study area. **Table ES-1** lists effect determinations for listed/protected species which may utilize habitats within or adjacent to the study area.

Table ES-1. Summary Information for Federal and State Protected Species for the Project Study Area

Proposed Effect Determination	Listing Status*	Species
Plants		
No effect	USFWS/FDACS – Endangered	Aboriginal Prickly-Apple (*Harrisia aboriginum*), Beautiful Pawpaw (*Deeringothamnus pulchellus*), Florida Prairie-Clover (*Dalea carthagenensis*)
No effect	USFWS – Threatened FDACS – Endangered	Garber's Spurge (*Chamaesyce garberi*)
No adverse effect anticipated	FDACS – Endangered	American Bird's Nest Fern (*Asplenium serratum*), Clamshell Orchid (*Encyclia cochleata= Prosthechea cochleata*), Cowhorn Orchid (*Cyrtopodium punctatum*), Curtiss' Milkweed (*Asclepias curtissi*), Florida Dancing-Lady Orchid (*Oncidium ensatum = Oncidium floridanum*), Florida Peperomia (*Peperomia obtusifolia*), Frosted Orchid (*Pleurothallis gelida = Stelis gelida*), Fuzzy-Wuzzy Airplant (*Tillandsia pruinosa*), Ghost Orchid (*Dendrophylax lindenii*), Giant Wild-Pine (*Tillandsia utriculata*), Hand Fern (*Ophioglossum palmatum*), Hidden Orchid (*Maxillaria crassifolia*), Leafless Orchid (*Campylocentrum pachyrrhizum*), Low Peperomia (*Peperomia humilis*), Many-Flowered Airplant/Catopsis (*Catopsis floribunda*), Meadow Joint-Vetch (*Aeschynomene pratensis*), Narrow Strap Fern (*Campyloneurum angustifolium*), Night-Scented Orchid (*Epidendrum nocturnum*), Sand-Dune Spurge (*Chamaesyce cumulicola=Euphorbia cumulicola*), Sanibel Island Lovegrass (*Eragrostis pectinacea* var. *tracyi*), Scrub Stylisma/Showy Dawnflower (*Stylisma abdita*), Skyblue Clustervine (*Jacquemontia pentanthos*), Small's Flax (*Linum carteri* var. *smallii*), Spreading/Pine Pinweed (*Lechea divaricata*), Stiff-Leaved Wild-

Proposed Effect Determination	Listing Status*	Species
		Pine (*Tillandsia fasciculata*), Swamp Plume Polypody (*Pecluma ptilota = Polypodium ptilodon*), Toothed Lattice-Vein Fern (*Thelypteris serrata*)
No adverse effect anticipated	FDACS – Threatened	Banded Wild-Pine (*Tillandsia flexuosa*), Catesby's Lily (*Lilium catesbaei*), Florida Beargrass (*Nolina atopocarpa*), Florida Beargrass (*Nolina atopocarpa*), Giant Orchid/Non-Crested Eulophia (*Orthochilus ecristata = Eulophia ecristata*), Leafy Beaked Ladies'-Tresses (*Sacoila lanceolata* var. *paludicola = Stenorrhynchos lanceolatum*), Needleroot Airplant Orchid (*Harrisella porrecta = Dendrophylax porrectus*), Nodding/Scrub Pinweed (*Lechea cernua*), Reflexed Wild-Pine (*Tillandsia balbisiana*)
No effect anticipated	FDACS – Endangered	Florida Keys Indigo (*Indigofera mucronata var keyensis = Indigofera trita var scabra*), Fuchs' Bromeliad (*Guzmania monostachia*), Pale Passionflower (*Passiflora pallens*), Southern Ladies'-Tresses (*Spiranthes torta*), Spiny Hackberry (*Celtis pallida*)
No effect anticipated	FDACS – Threatened	Many-Flowered Grass Pink (*Calopogon multiflorus*)
Invertebrates		
N/A	USFWS – Proposed Threatened	Monarch Butterfly (*Danaus Plexippus*)
Reptiles		
No effect	USFWS – Threatened	American Crocodile (*Crocodylus acutus*)
May affect, not likely to adversely affect	USFWS – Threatened	Eastern Indigo Snake (*Drymarchon corais couperi*)
No adverse effect anticipated	FWC - Threatened	Florida Pine Snake (*Pituophis melanoleucus mugitus*), Gopher Tortoise (*Gopher polyphemus*)
Birds		
No effect	USFWS - Threatened	Florida Scrub-Jay (*Aphelocoma coerulescens*)
No effect	USFWS – Endangered	Red-Cockaded Woodpecker (*Picoides borealis*)
May affect, not likely to adversely effect	USFWS – Threatened	Wood Stork (*Mycteria americana*), Eastern Black Rail (*Laterallus jamaicensis jamaicensis*)
No adverse effect anticipated	FWC – Threatened	Florida Burrowing Owl (*Athene cunicularia floridana*), Florida Sandhill Crane (*Antigone canadensis pratensis*), Little Blue Heron (*Egretta caerulea*), Roseate Spoonbill (*Platalea ajaja*), Tricolored Heron (*Egretta tricolor*), Southeastern American Kestrel (*Falco sparverius paulus*)
Mammals		
May affect, not likely to adversely effect	USFWS – Endangered	Florida Bonneted Bat (*Eumops floridanus*)
May affect, not likely to adversely affect	USFWS – Proposed Endangered	Tricolored Bat (*Pipistrellus subflavus*)
No effect	USFWS – Endangered	Florida Panther (*Puma concolor coryi*)
No adverse effect anticipated	FWC – Threatened	Big Cypress Fox Squirrel (*Sciurus niger avicennia*)

USFWS: US Fish and Wildlife Service; FDACS: Florida Department of Agriculture and Consumer Services (Division of Plant Industry); FWC: Florida Fish and Wildlife Conservation Commission

*FWC listing status was not included for species with the same federal listing status due to the State's deferment to federal status under Chapter 68A-27, F.A.C.

Wetlands

Pursuant to Executive Order 11990 entitled "Protection of Wetlands" (May 1977), the US Department of Transportation (USDOT) developed a policy, Preservation of the Nation's Wetlands (USDOT Order 5660.1A), dated August 24, 1978, which requires all federally-funded highway projects to protect wetlands to the fullest extent possible. In accordance with this policy, as well as the Wetlands and Other Surface Waters chapter of the FDOT PD&E Manual, the Preferred Alternative was assessed to determine potential wetland impacts associated with its construction.

The boundaries of all wetlands and other surface waters within the study area were approximated using both desktop and field reviews. No jurisdictional delineations/formal determinations were conducted. Based on the evaluation completed, approximately 41.89 acres of wetlands and other surface waters occur within the study area (31.39 acres of wetlands and 10.50 acres of other surface waters).

Of these 31.39 acres of wetlands, 5.44 acres will be impacted by the Preferred Alternative (3.77 acres direct and 1.67 acres secondary); 2.77 acres are from roadway improvements (2.17 acres direct and 0.60 acres secondary) and 2.67 acres are from stormwater management features (1.60 acres direct and 1.07 acres secondary). Additionally, 5.31 acres of other surface waters will be impacted by the Preferred Alternative, with 5.24 acres from roadway improvements and 0.07 acre from stormwater management features. However, it should be noted that mitigation is not required for impacts to other surface waters. Unavoidable wetland impacts resulting from construction of the project will occur with the Preferred Alternative. Transportation safety standards for additional lanes and widths, side slopes, turn radius, clear zone, sight distance and stormwater treatment requirements necessitate these impacts. Impacted wetlands were quantitatively and qualitatively assessed using the Uniform Mitigation Assessment Method (UMAM) as per Chapter 62-345, F.A.C. The Preferred Alternative evaluation resulted in a UMAM functional loss of 3.22 units (2.12 direct and 1.10 secondary).

Wetland impacts which will result from the construction of this project will be mitigated pursuant to Section 373.4137, Florida Statutes (F.S.), to satisfy all mitigation requirements of Part IV of Chapter 373, F.S., and 33 USC. §1344. The project anticipates using commercially available mitigation credits from agency-approved banks with an appropriate geographic service area to provide compensatory mitigation sufficient to offset unavoidable project impacts to wetlands and wetland-dependent species habitat. The project occurs within the service areas of the Big Cypress Mitigation Bank (MB), Panther Island MB, Panther Island Expansion MB, Corkscrew Regional MB, and Little Pine Island MB. Although credit availability among these banks will likely change in the time between this PD&E study's approval and the project's future environmental permitting efforts, based on a March 19, 2025 review of the US Army Corps of Engineers' (USACE) Regulatory In-Lieu Fee and Bank Information Tracking System (RIBITS), sufficient mitigation credits are available to offset the impacts from the proposed improvements. The exact impact acreage and number of mitigation credits required to fully offset the lost value of functions resulting from the project's wetland impacts will be determined during the design phase and in coordination with the state and federal environmental permitting agencies.

In accordance with Executive Order 11990 and US DOT 5660.1A, and based on the documentation of existing wetland conditions as presented in the NRE, and in consideration of the Preferred Alternative and its effects on wetlands, it is determined that:

- Measures have been taken to minimize harm to wetlands.
- The proposed project will have no significant short-term or long-term adverse impacts to wetlands. The proposed project will have minimal impacts to wetlands in the project study area (i.e., approximately 5.44 of the 31.39 acres or 17.33%) and these impacts will be compensated by mitigation bank credits from established banks within the appropriate geographical service area.
- There is no practicable alternative to construction in wetlands.

FDOT will continue to coordinate, as necessary, with the USFWS, US Army Corps of Engineers (USACE), National Marine Fisheries Service (NMFS), Florida Department of Environmental Protection (FDEP), FWC, FDACS, and the South Florida Water Management District (SFWMD) throughout subsequent phases of this project. Updated information will be provided to these agencies to support the permit approval process for all required state and federal authorizations.

Conceptual wetland impacts have been minimized to the greatest extent practicable. Alternatives which avoided all impacts were not practicable due to the ROW needed to increase roadway capacity and to meet minimum safety requirements. Final determination of jurisdictional boundaries and mitigation requirements will be coordinated between the FDOT and permitting agencies during the design and permitting phases of the project.

Essential Fish Habitat (EFH)

The project study area was reviewed for the presence of EFH in accordance with the Magnuson-Stevens Fishery Conservation and Management Act as amended (MSA) and the EFH chapter of the FDOT PD&E Manual. Due to the absence of marine, estuarine or tidally-influenced features, there is no potential for EFH to occur in the project vicinity; therefore, the project will have no involvement with EFH.

1 PROJECT OVERVIEW

1.1 Project Description

The Florida Department of Transportation, District 1 (FDOT) is conducting a Project Development & Environment (PD&E) study to consider the widening of CR 887 (Old US 41) up to four lanes from US 41 in Collier County to Bonita Beach Road in Lee County in order to address existing congestion and projected travel demand as a result of area-wide growth. The roadway project has been divided into two segments (**Figure 1-1**) and is approximately 2.73 miles in length. Segment 1 (1.55 miles in length) extends from US 41 to the Lee County Line in the northwestern corner of unincorporated Collier County. Segment 2 (1.18 miles in length) extends from the Collier County Line to Bonita Beach Road within the City of Bonita Springs in southern Lee County.

Within the project limits, the existing Old US 41 is classified as a two-lane, undivided major collector with a posted speed limit of 45 miles per hour. The roadway features two twelve-foot travel lanes with alternating left and right turn lanes throughout the length of the corridor as well as an open drainage system. An active rail line operated by Seminole Gulf Railway transects the project corridor at-grade. In general, the existing ROW is 150 feet along Segment 1 and 105 feet along Segment 2. Although the roadway lacks bicycle and transit facilities, there are four non-continuous sidewalk sections along Segment 1 [three occur on the east side of the road and one occurs on the west side] and one section of path on the west side within Segment 2. Bicycle and pedestrian activity have been observed within the corridor.

The proposed improvement will expand the roadway to a four-lane divided roadway with 11-foot travel lanes. The Preferred Alternative would require the purchase of additional ROW includes a shared use path and bicycle lanes in both directions. There are no improvements planned for Old 41 north of the proposed new Quadrant Roadway, including the Old 41 and Bonita Beach Road intersection. The proposed new Quadrant Roadway connects Old 41 with Race Track Road (**Figure 1-2**) which then continues onto Bonita Beach Road for the rest of the project segment. The new Quadrant Roadway will be a 2-lane undivided road with 11-ft travel lanes, a 12-ft shared use path, an 8-ft sidewalk within a total of 70-ft ROW.

Proposed improvements will integrate multimodal transportation opportunities through the addition of bicycle lanes and shared use paths.

Figure 1-1 Project Location Map

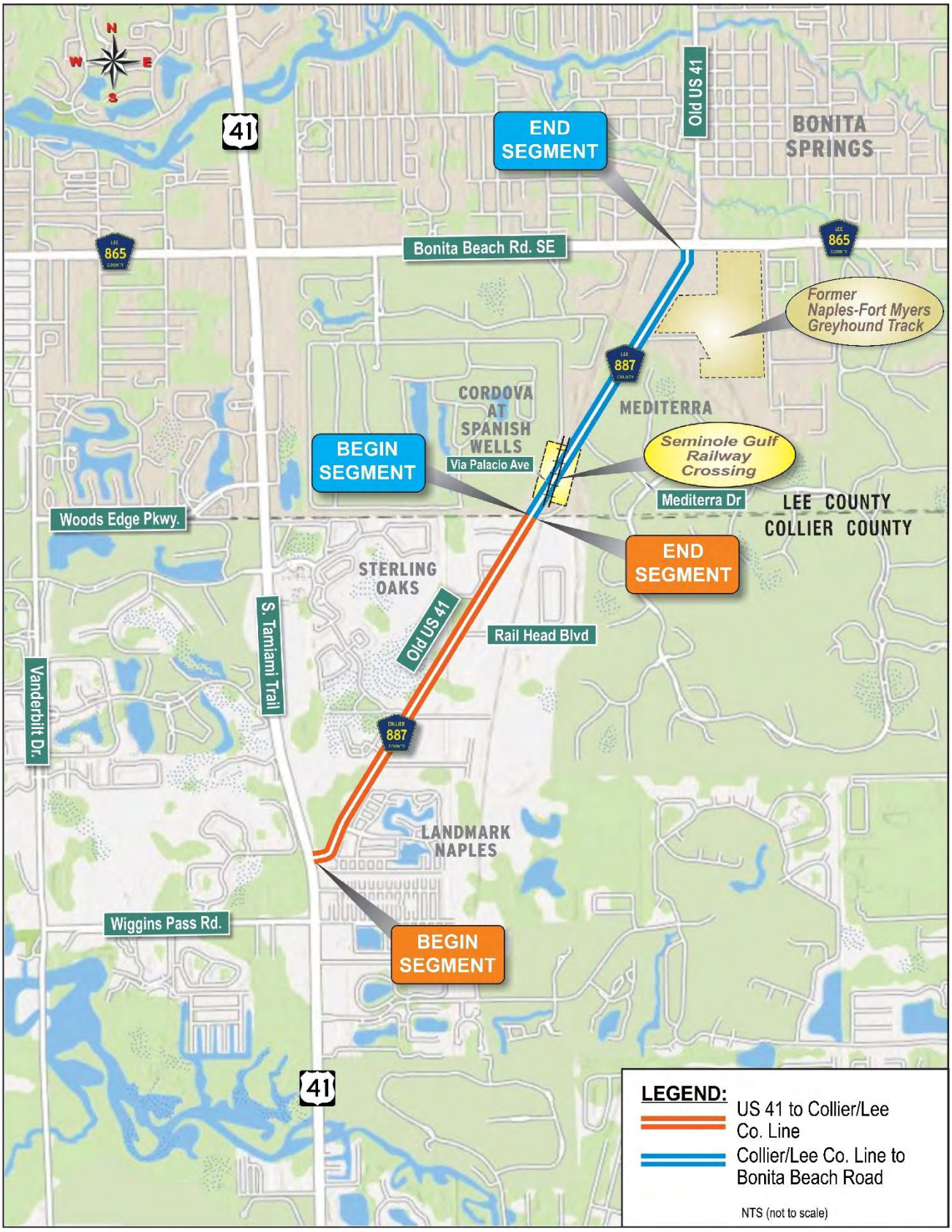


Figure 1-2 Proposed Quadrant Roadway Location Map

1.2 Purpose and Need

The purpose of the project is to address roadway capacity deficiency along CR 887 (Old US 41) from US 41 in Collier County to Bonita Beach Road in Lee County in order to relieve existing congestion and accommodate future travel demand as a result of projected population and employment growth in the area. Other goals of the project include supporting increased industrial and residential development in the area and improving safety conditions for bicyclists and pedestrians. The need for the project is based on the following criteria:

Capacity/Transportation Demand: Improve Operational Conditions

Old US 41 serves as an important facility for commuters, as well as freight traffic, given the number of residential subdivisions and industrial parks present along the corridor and due to the roadway's access to major transportation facilities [including US 41 and CR 865 (Bonita Beach Road) which connects to I-75)].

According to the FDOT District One Regional Transportation Model, the population within the traffic analysis zones (TAZs) encompassing Segment 1 is expected to increase by 51% between 2010 and 2040; employment is expected to grow by 30% during the same time period. Regarding Segment 2, the population is expected to nearly double between 2010 and 2040 (91% increase), and employment is expected to grow by 51% during the same time period.

A traffic operational analysis was conducted to evaluate the overall performance of the study corridor under Existing Year (2019) and Design Year (2045) No-Build AM and PM peak hour conditions. The analysis results for Existing Year (2019) are presented in **Table 1-1**. The results indicate that all the intersections are operating at overall level of service (LOS) D or better during the AM and PM peak hours.

Table 1-1 Existing Year (2019) Intersection Analysis Results

Intersection	AM Peak		PM Peak	
	Delay (s/veh)[1]	LOS	Delay (s/veh)[1]	LOS
Old US 41 at US 41 (Signalized)	33.4	C	34.2	C
Old US 41 at Gulf Coast Dr	14.4	B	2.5	A
Old US 41 at Collier Center Way	2.4	A	2.2	A
Old US 41 at Sun Century Rd/Sterling Oaks Dr	1.3	A	1.0	A
Old US 41 at Rail Head Blvd	2.3	A	2.9	A
Old US 41 at Via Palacio Ave	0.7	A	0.4	A
Old US 41 at Mediterra Dr	0.8	A	1.5	A
Bonita Beach Rd at Old US 41 (Signalized)	33.5	C	44.6	D
Bonita Beach Rd at Race Track Rd (Signalized)	10.3	B	9.4	A
US 41 at Wiggins Pass Road (Signalized)	27.3	C	28.5	C

[1]: Seconds per Vehicle

The analysis results for Design Year (2045) No-Build conditions are presented in **Table 1-2**. The results indicate that all six signalized intersections are expected to operate at overall LOS E or worse during at least one of the peak hours. The poor operations at signalized intersections are expected to negatively impact mobility by increasing congestion and queueing along Old US 41.

Table 1-2 Design Year (2045) No-Build Intersection Analysis Results

Intersection	AM Peak		PM Peak	
	Delay (s/veh)[1]	LOS	Delay (s/veh)[1]	LOS
Old US 41 at US 41 (Signalized)	76.6	E	63.1	E
Old US 41 at Gulf Coast Dr	68.2	F	74.8	F
Old US 41 at Collier Center Way	56.8	F	10.7	B
Old US 41 at Sun Century Rd/Sterling Oaks Dr	39.6	E	2.0	A
Old US 41 at Rail Head Blvd	30.4	D	31.1	D
Old US 41 at Via Palacio Ave	3.9	A	22.7	C
Old US 41 at Mediterra Dr	3.7	A	28.5	D
Bonita Beach Rd at Old US 41 (Signalized)	72.9	E	148.2	F

Intersection	AM Peak		PM Peak	
	Delay (s/veh)[1]	LOS	Delay (s/veh)[1]	LOS
Bonita Beach Rd at Race Track Rd (Signalized)	57.4	**E**	10.8	**B**
US 41 at Wiggins Pass Road (Signalized)	45.9	**D**	112.1	**F**
US 41 at Veterans Memorial Extension (Signalized)	36.2	**D**	85.3	**F**
Old US 41 at Veterans Memorial Extension (Signalized)	113.7	**F**	72.6	**E**

Social Demands/Economic Development: Support Increased Industrial and Residential Development

Numerous residential, commercial, and industrial Planned Unit Developments are located along the extent of the project.

Based on Collier 2040, the most intense employment growth within Collier County is anticipated to occur within the Old US 41 Industrial Freight Activity Center located along Old US 41 within the project corridor. This site is recognized as only one of two sites in Collier County where a potential intermodal facility could be placed. The Collier County Future Land Use Map also depicts residential land uses on the west and southeast sides of Old US 41. According to the United States Census Bureau, Collier County is part of the 10th fastest growing metropolitan area in the country; residential growth is planned to continue along the project corridor in conjunction with heavy industrial development. According to the 2040 Florida Department of Transportation District One Regional Transportation Model, the population of the traffic analysis zones (TAZs) surrounding Segment 1 is projected to grow from 8,733 to 13,145 between 2010 and 2040 (1.4% annual growth rate); employment is expected to increase from 7,284 to 9,460 over the same time period (0.9% annual growth rate).

Likewise, the City of Bonita Springs at the northern project terminus is expected to nearly double in population between 1996 and 2030 as indicated through Lee County's Comprehensive Plan [*Lee Plan*]. *Lee Plan* identifies the City of Bonita Springs as one of the fastest growing communities in Lee County. The City of Bonita Springs Future Land Use Map shows industrial uses between the Seminole Gulf Railway line to the west and Old US 41 to the east, general commercial to the east of the intersection with Bonita Beach Road, and residential development along the remainder of the corridor. According to the 2040 Florida Department of Transportation District One Regional Transportation Model, the population of the TAZs surrounding Segment 2 is projected to grow from 11,966 to 22,868 between 2010 and 2040 (2.2% annual growth rate); employment is expected to increase from 7,069 to 10,707 over the same time period (1.4% annual growth rate).

It should also be noted that Old US 41 functions as an important freight corridor as it runs parallel to I-75 and provides access to other designated regional freight facilities [such as US 41, Bonita Beach Road, and the Old US 41 Industrial Freight Activity Center]. Truck traffic composes 3% of the 2017 Annual Average Daily Traffic (AADT) volume for Segment 1 and 4% of the 2017 AADT volume for Segment 2.

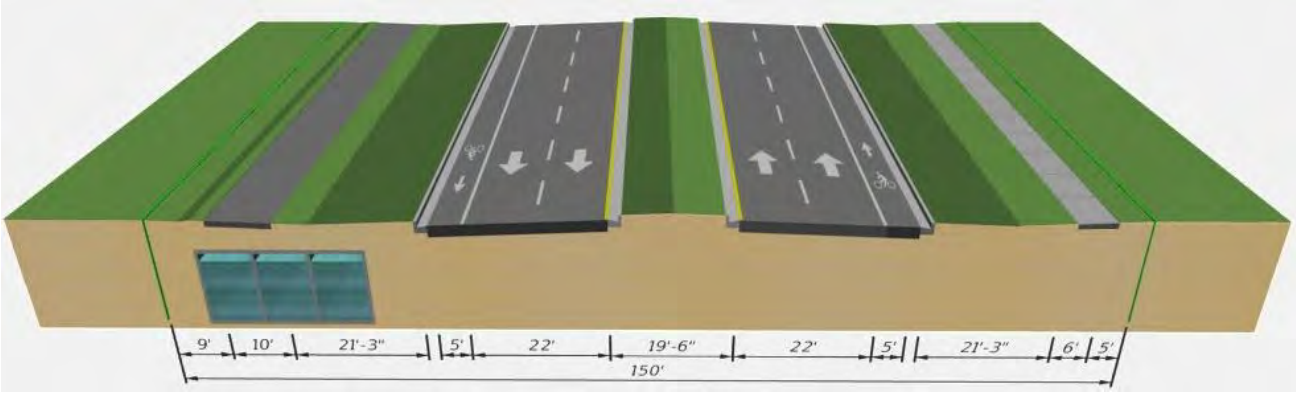
Safety: Improve Safety Conditions for Bicyclists and Pedestrians

Old US 41 lacks bicycle facilities; sidewalks are intermittent. Crosswalks are only present at the project termini. According to the Bicycle and Pedestrian Crashes and Fatalities Map in the Lee County MPO's *Bicycle and Pedestrian Master Plan*, there have been two pedestrian involved crashes between 2000 and 2010 as well as one pedestrian or bicycle fatality between 2000 and 2009 along Segment 2 of the corridor. The Lee County MPO's *2013 Lee Countywide Bicycle and Pedestrian Safety Action Plan* additionally identifies a number of bicycle and pedestrian crashes along Segment 2 between 2007 and 2010. This plan and the Lee County 2040 Transportation Plan identify the intersection of Old US 41 and Bonita Beach Road as a hotspot for non-motorized crashes, the only such hotspot in southern Lee County.

1.3 Description of Preferred Alternative

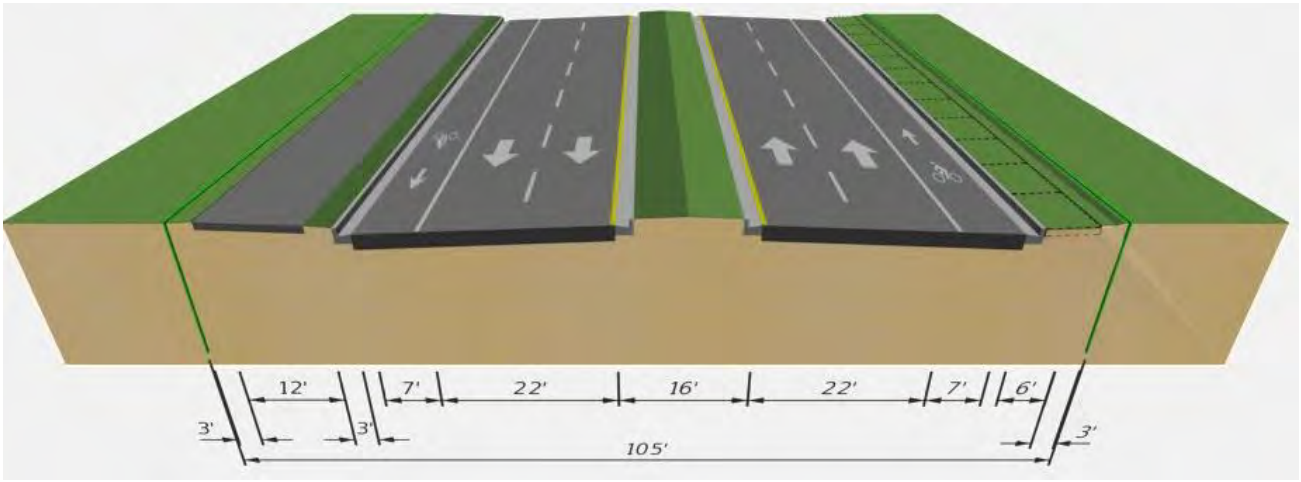
The Preferred Alternative includes widening Old 41 to a four-lane divided roadway with 11-foot travel lanes both northbound and southbound between US 41 and the proposed new Quadrant Roadway. The alternative includes a 5-ft bicycle lane in both directions, a 6-ft sidewalk and a 10-ft shared use path throughout Old 41 in the Collier County portion. See **Figure 1-3** below for the Preferred Alternative Typical Section in Collier County.

Figure 1-3 Preferred Alternative Collier County



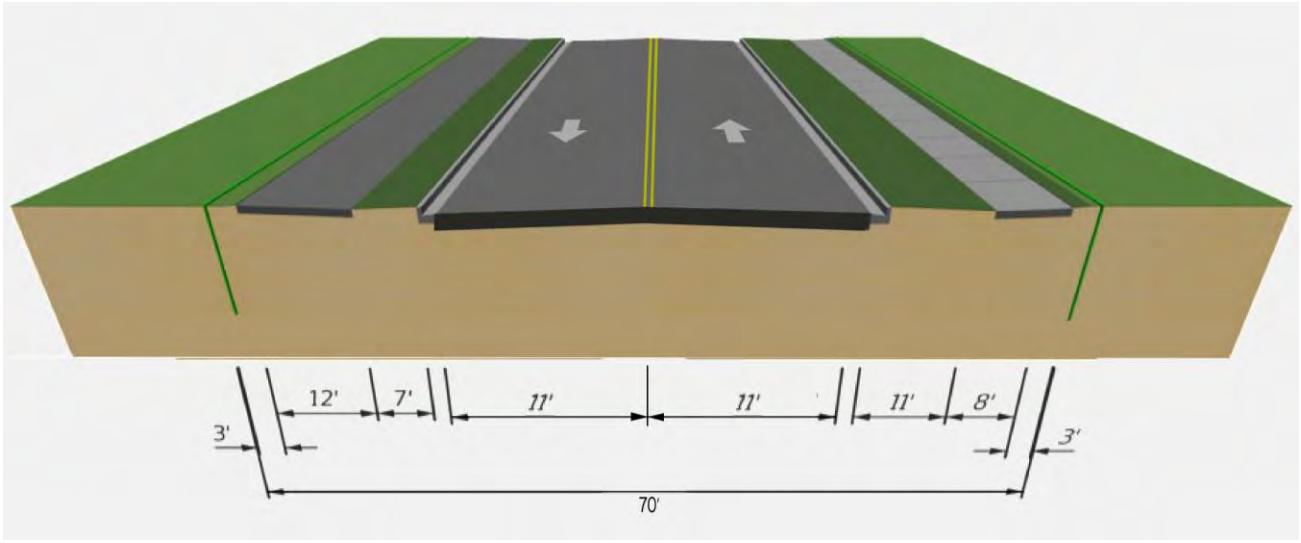
The Preferred Alternative includes a 7-ft bicycle lane in both directions and a 12-ft shared use path south of the new Quadrant Roadway in Bonita Springs (Lee County). There are no improvements planned for Old 41 north of the proposed new Quadrant Roadway, including the Old 41 and Bonita Beach Road intersection. See **Figure 1-4** below for the Preffered Alternative Typical Section in Lee County.

Figure 1-4 Preferred Alternative Lee County



The Preferred Alternative also includes a new Quadrant Roadway that will connect Old 41 with Race Track Road with 11-ft travel lanes, a 12-ft shared use path on the north/west side, and an 8-ft sidewalk on the south/east side within 70-ft of ROW. The design speed is 30 mph. See **Figure 1-5** below for the Preferred Alternative Typical Section for the new Quadrant Roadway.

Figure 1-5 Preferred Alternative new Quadrant Roadway



This new Quadrant Roadway will allow traffic traveling between the southern end of the study and Interstate 75 to bypass the intersection at Old 41 and Bonita Beach Road. The Preferred Alternative includes improvements on Bonita Beach Road east of Race Track Road. The intersection of Race Track Road /Bonita Beach Road would remain as a conventional traffic signal with an additional southbound receiving lane and westbound left turn lane. To accommodate the additional westbound left turn lane length the median opening at Bonita Beach Road/Pine Haven Way would be modified

to a directional median opening allowing only westbound left turns and northbound left turns. Eastbound u-turns would no longer be permitted.

New traffic signals are proposed along Old 41 at Veterans Memorial Boulevard, Rail Head Boulevard, Via Palacio Avenue, Mediterra Drive, and the new Quadrant Roadway to balance safety, access management, and operational needs. Several intersections throughout the study corridor include pavement bulb outs to allow single unit trucks to safely make u-turns.

The existing traffic signal at the US 41/Old 41 intersection would be modified into a Partial Median U-Turn (PMUT) intersection. The PMUT configuration prohibits left turns from northbound/southbound US 41 at Old 41 - these movements would be accomplished via u-turns at new signalized intersections located north/south of the main US 41/Old 41 intersection. Direct left turns from Old 41 onto SB US 41 would be allowed.

The proposed roadway typically stays within the existing ROW throughout the project area, with the exception of a few intersections, including the Seminole Gulf Railroad crossing and the new Quadrant Roadway. Stormwater management and floodplain compensation sites will be located throughout the study area and will require additional ROW.

The Preferred Alternative provides the City of Bonita Springs with the desired new Quadrant Roadway found in their planning documents. The Preferred Alternative will meet the purpose and need of this project by widening the roadway to accommodate future travel demand. The Preferred Alternative also creates the opportunity for complete streets with implementations of shared use paths, sidewalks, and bicycle lanes. **Appendix A** depicts the current concept plans for the Preferred Alternative and includes the locations of the stormwater management and floodplain compensation sites.

2 PROJECT STUDY AREA

The project study area for evaluating potential natural resources impacts consists of a 300-ft buffer around the centerline of the existing roadway. Additional polygons were developed to include roadway alternatives at the northern and southern ends of the project and for the proposed stormwater management and floodplain compensation sites. These polygons were added onto the 300-ft buffer to create the study area (**Figure 2-1**). The study area covers 326.78 acres and the proposed improvements total approximately 83.56 acres.

2.1 Existing Conditions

Approximately 69.90% of the study area is urban or developed. The study area is continuing to be developed as at least three sites are or were under construction during this PD&E study. These areas include the Poker Room at the dog track in the southeast quadrant of the Old US 41 and Bonita Beach Road intersection and the Causeway Commerce Park at the southern terminus of Industrial Road (west of Old US 41 and Bonita Beach Road intersection). Most of the remaining natural areas are severely fragmented systems. Several of these natural areas are protected as conservation easements deeded to the SFWMD. Shopping centers and a mobile home community occur at the Old US 41 and US 41 intersection and industrial and business complexes continue along the east side of the road to the county line. On the west side of the road in this segment (the Collier County segment) is one housing development, two apartment complexes, and a business park. Two golf-course residential communities occur in the Lee County segment (the county line to Bonita Beach Road) with industrial and commercial areas occurring along the west side of the road beginning approximately 0.6 miles south of Bonita Beach Road. Remnant natural areas occur between these urban land uses. The areas of scrub or scrub-like habitat within the study area are no longer fire-maintained likely due to their small size and proximity to urbanized areas.

A large (up to approximately 50-ft wide), permanently inundated ditch occurs on the west side of Old US 41 in the Collier County segment of the project. Within the project limits it occurs from the Old US 41 and US 41 intersection to approximately 300 feet south of Rail Head Boulevard, where it cuts north and continues outside of the study area. The ditch flows southwest within the project limits and flows west under US 41 out of the study area. Within the study area, the ditch flows under cross streets via mitered end sections.

Figure 2-1 Project Study Area

2.1.1 Land Use

A review of existing land use and vegetative cover within the study area was conducted to assess potential habitats within the study area. Land use and cover types within the study area were initially assessed using the SFWMD Florida Land Use, Cover and Forms Classification System (FLUCFCS) data (SFWMD 2016, FDOT 1999). The approximate land use boundaries were referenced onto true color aerial imagery using ArcGIS 10.6 software. The SFWMD FLUCFCS data did not include transportation land uses throughout the study area, so the ROW lines were used to supplement the land use data with transportation land uses. Project scientists then verified existing land use and cover classifications within the study area during field reviews in 2019 and 2021. Following the field reviews, the classification of land use and cover types were updated to reflect field-verified conditions. The resulting land use and cover types are shown in **Table 2-1** and **Appendix B**. A brief description of each land use and cover type and its ability to support federal and state protected species is included in **Appendix C**.

Table 2-1 Land Use and Cover within Project Study Area

Land Use or Cover Type	FLUCFCS Code[1]	Acres of Study Area	Percent of Study Area	Acres of Preferred Alternative	Percent of Preferred Alternative
Uplands					
Low Density Fixed Single Family Units	1110	0.34	0.10%	0.00	0.00%
Medium Density Fixed Single Family Units	1210	14.23	4.35%	0.57	0.67%
Mobile Home Units	1320	10.25	3.14%	0.90	1.06%
Multiple Dwelling Units, Low Rise	1330	5.09	1.56%	0.11	0.13%
Multiple Dwelling Units, High Rise	1340	4.78	1.46%	0.04	0.05%
Commercial and Services	1400	56.96	17.43%	9.28	10.88%
Shopping Centers	1411	6.03	1.85%	1.27	1.49%
Other Light Industry	1550	22.08	6.76%	7.28	8.53%
Golf Course	1820	7.03	2.15%	0.00	0.00%
Race Tracks	1830	34.26	10.48%	5.59	6.55%
Open Land	1900	37.12	11.36%	5.19	6.08%
Shrub and Brushland	3200	5.11	1.56%	0.01	0.01%
Upland Coniferous Forests	4100	0.58	0.18%	0.00	0.00%
Hardwood – Coniferous Mixed	4340	13.66	4.18%	0.29	0.34%
Railroads	8120	1.41	0.43%	0.23	0.27%
Roads and Highways	8140	62.52	19.13%	45.44	52.57%
Communications	8200	1.66	0.51%	0.00	0.00%
Electric Power Facilities	8310	1.78	0.54%	0.02	0.02%
Uplands Sub-total		*284.89*	*87.18%*	*76.22*	*89.36%*
Wetlands and Other Surface Waters					
Other Surface Waters					
Streams and Waterways	5100	8.03	2.46%	5.24	6.14%
Reservoirs	5300	2.47	0.76%	0.07	0.08%
Wetlands					
Mixed Wetland Hardwoods	6170	4.54	1.39%	0.71	0.83%
Exotic Wetland Hardwoods	6190	2.80	0.86%	0.09	0.11%
Wetland Coniferous Forests	6200	3.40	1.04%	0.00	0.00%
Cypress	6210	6.28	1.92%	0.03	0.04%
Wetland Forested Mixed	6300	0.21	0.06%	0.00	0.00%
Vegetated Non-Forested Wetlands	6400	1.89	0.58%	1.90	2.23%
Freshwater Marsh	6410	12.27	3.75%	1.04	1.22%
Wetlands and Other Surface Waters Sub-total		*41.89*	*12.82%*	*9.08*	*10.64%*
Total		**326.78**	**100%**	**85.30**	**100%**

1. (FDOT 1999, SFWMD 2016)

2.1.2 Soils

The US Department of Agriculture, Natural Resources Conservation Service (NRCS) Soil Survey Geographic (SSURGO) Database for Florida (2023) were used to create maps showing the soil series within the study area (provided in **Appendix D)**. **Table 2-2** lists and details the total area of the soils series present within the study area (NRCS 2023). The NRCS' State Hydric Soils List (2025) was reviewed to identify hydric soils within the study area for the purposes of assessing wetland boundaries.

Table 2-2 Soil Types and Coverage within the Project Study Area

Soil Map Unit : Description	Hydric Rating	Acreage within Study Area	Percentage of Study Area
7 : Matlacha Gravelly Fine Sand-Urban Land Complex, 0 to 2 percent slopes	No	2.62	0.80%
32 : Urban Land, 0 to 2 percent slopes*	Unranked	7.27	2.22%
36 : Immokalee Sand-Urban Land Complex, 0 to 2 percent slopes	No	17.05	5.22%
59 : Urban Land, 0 to 2 percent slopes*	Unranked	33.83	10.35%
64 : Brynwood Fine Sand, WET-Urban Land Complex 0 to 2 percent slopes	Yes	75.67	23.16%
101 : Basinger Fine Sand-Urban Land Complex, 0 to 2 percent slopes	Yes	5.05	1.55%
103 : Cypress Lake-Riviera-Copeland Fine Sands, Frequently Ponded-Urban Land Association, 0 to 1 percent slopes	Yes	5.85	1.79%
105 : Copeland Fine Sandy Loam, Ponded-Urban Land Complex, 0 to 1 percent slopes	Yes	10.00	3.06%
110 : Felda Fine Sand-Urban Land Complex, 0 to 2 percent slopes	Yes	2.84	0.87%
111 : Felda Fine Sand, Ponded-Urban Land Complex, 0 to 1 percent slopes	Yes	7.19	2.20%
115 : Holopaw-Basinger-Urban Land Complex, 0 to 2 percent slopes	Yes	2.93	0.90%
117 : Immokalee Fine Sand-Urban Land Complex, 0 to 2 percent slopes	No	98.99	30.29%
118 : Immokalee-Oldsmar, Limestone Substratum-Urban Land Complex, 0 to 2 percent slopes	No	15.75	4.82%
124 : Myakka Fine Sand, Ponded-Urban Land Complex, 0 to 1 percent slopes	Yes	1.98	0.61%
129 : Pineda-Riviera Fine Sands-Urban Land Association, 0 to 2 percent slopes	Yes	6.07	1.86%
132 : Pompano Fine Sand, Ponded-Urban Land Complex, 0 to 1 percent slopes	Yes	0.02	0.01%
133 : Satellite Fine Sand-Urban Land Complex, 0 to 2 percent slopes*	No	18.41	5.63%
134 : Satellite Fine Sand-Urban Land Complex, 0 to 2 percent slopes*	No	11.81	3.61%
137 : Wabasso Sand-Urban Land Complex, 0 to 2 percent slopes	No	3.45	1.06%
Total Hydric Soils		**117.60**	**35.99%**
Total Non-Hydric Soils		**168.08**	**51.44%**
Total Unranked Soils		**41.10**	**12.58%**
Total		**326.78**	**100.00%**

*These soil descriptions have multiple soil Munsell numbers due to the project occurring in two counties.

2.1.3 Conservation Areas

There are five conservation easement areas on properties adjacent to CR 887/Old US 41 that have been deeded to the SFWMD. SFWMD staff have confirmed that these easements are mitigation-related requirements associated with environmental resource permits (ERPs). These easements are depicted in **Figure 2-1** and are as follows:

- Constitution Center, 3.25 acres, ERP #36-04608-P
- Mediterra Conservation Area #12, 14.31 acres, ERP #11-01761-P
- Sterling Oaks, 105.84 acres, ERP #11-01042-S
- Turtle Creek, 36.27 acres, ERP #11-01367-P
- Triangle Parcel, 5.35 acres, ERP #11-02353-P

The Constitution Center's habitat is comprised of upland mixed coniferous forests, hardwoods, and wetland coniferous forests. The habitat at Mediterra Conservation Area consists of wetland coniferous forests. Sterling Oaks is comprised primarily of various wetland types like mixed wetland hardwoods, cypress, vegetated non-forested wetlands, and freshwater marshes. Turtle Creek as well as Triangle Parcel, consist of primarily upland mixed coniferous and hardwood forests. The Preferred Alternative will not result in any impacts to these conservation easements.

The Railhead Scrub Preserve is a 132-acre preserve owned by Collier County. The northern 77-acre parcel occurs approximately 0.7 mile due south of the CSX Rail crossing of CR 887/Old US 41. The southern 55 acres occurs on two parcels approximately 0.5 mile and 0.66 mile due east of the project's southern terminus. The Preserve has also documented the following protected plants: banded wild-pine (*Tillandsia flexuosa*), nodding/scrub pinweed (*Lechea cernua*), reflexed wild-pine (*Tillandsia balbisiana*), sand-dune spurge (*Chamaesyce cumulicola=Euphorbia cumulicola*), scrub stylisma/showy dawnflower (*Stylisma abdita*), catesby's lily (*Lilium catesbaei*), giant wild-pine (*Tillandsia utriculata*) and stiff-leaved wild-pine (*Tillandsia fasciculata var. densispica*). All species are discussed further in section 3. The Preserve is not currently subject to controlled burns. The proposed improvements will not affect the parcels associated with the preserve.

3 PROTECTED SPECIES

Listed species are afforded special protective status by federal and state agencies. This special protection is federally administered by the United States Department of the Interior, US Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration – National Marine Fisheries Services (NOAA-NMFS) pursuant to the Endangered Species Act of 1973 (as amended). The USFWS administers the federal list of animal species (50 CFR 17) and plant species (50 CFR 23).

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

Agencies were able to provide comments in the ETDM Programming Screen regarding wildlife and habitat concerns. FDACs did not have any comments for the project regarding protected species and habitat. The FWC identified key wetlands near the project area as important wildlife habitat and noted the potential presence of 13 protected species. They raised concerns about habitat loss and water quality impacts but stated these could be minimized if construction stays within existing cleared areas, with further coordination and species-specific protections recommended. The USFWS noted the project falls within the range of several federally listed species, including the Florida bonneted bat and Eastern indigo snake, recommended habitat surveys and a Biological Assessment, and highlighted the potential presence of wetlands in the area. SFWMD reiterated previously identified wildlife and habitat resources, anticipated minimal involvement due to the project's urban setting, recommended coordination with FWC, and noted that an ERP will be required.

The following sections describe the methodology used to assess the potential for occurrence of protected species and to identify the effects that construction of the Preferred Alternative may have on protected species in accordance with the Protected Species and Habitat chapter of the FDOT PD&E Manual. Other protected species that are managed under regulations outside of the ESA as amended, or Chapter 68A-27 F.A.C. are also discussed in the following sections.

3.1 Methodology

Literature reviews, agency database searches, and field reviews were conducted to document the potential presence of federal and state-protected species, their habitat and critical habitat within the study area. Information sources and databases included the following:

- American Society of Mammologists *Eumops glaucinus* (1997)
- Atlas of Florida Plants (2025)
- Audubon EagleWatch Public Nest Map (2025)

- Center for Biological Diversity (2025)
- Collier County Railhead Scrub Preserve Land Management Plan (2015)
- Environmental Systems Research Institute (ESRI) World Imagery (2025)
- FDACS Species Lists (2025)
- FDOT ETDM Environmental Screening Tool (2025)
- Federal Register Endangered and Threatened Wildlife and Plants (2020)
- Florida Geographic Data Library (FGDL 2025)
- Florida Natural Areas Inventory (FNAI) (2020, 2025)
- Florida's Native and Naturalized Orchids (FLNO) (2025a-b)
- FWC Florida Species Occurrence (1994, 2005)
- FWC Species Lists and Datasets (2013a-b, 2022, 2024a-b, 2025a-h)
- Google Earth (2025)
- Imagine Our Florida (IOF) Species Profile for Curtiss' Milkweed (2025)
- North American Orchid Conservation Center (NAOCC) Species Profiles (2025a-d)
- NRCS SSURGO Database (NRCS 2023)
- University of Florida Institute of Food and Agricultural Services (UF IFAS) (2025)
- USFWS ECOS database (2025)
- USFWS South Florida Multi-Species Recover Plan (1999)
- USFWS Species Conservation Guidelines (2004a)
- USFWS Species Lists and Datasets (2008, 2013c, 2022, 2025a-d)
- USFWS Various Species' Consultation Keys (2010, 2017, 2019)

Based on the results of database searches and review of aerial photographs, field survey methods for specific habitat types and lists of target species were developed. Documented occurrences of all protected species are identified in **Appendix E**.

Following the desktop analysis, field reconnaissance of the study area was conducted in May and August of 2019, January 2020, and February 2021. The reconnaissance was conducted by qualified field biologists and consisted of vehicular and pedestrian surveys of habitats within the study area. During these surveys, areas of remaining habitat were visually inspected for vegetative type and cover, level of disturbance, management techniques, and overall potential suitability to support protected species and general wildlife. Surveys for listed plant species were performed in all areas of scrub or scrub-like habitat within the study area during each reconnaissance effort.

A list of potentially occurring protected species was developed and each species was assigned a no, low, moderate, or high potential for occurrence within habitats found within the study area. Definitions for potential for occurrence are provided below. The following sections discuss these potentially occurring federal and state protected wildlife and plant species, including the project's anticipated effect determination for each species.

No – Species whose agency consultation area or range may include the project study area, but have no possibility of occurrence in the study area due to the absence of suitable habitat.

Low – Species with a low potential for occurrence within the project ROW are defined as those species that are known to occur in Lee County, Collier County, or the bio-region, but suitable habitat is limited within the study area, or the species is range-limited, rare, or no longer extant.

Moderate – Species with a moderate potential for occurrence are those species known to occur in Lee County, Collier County, or nearby counties, and for which suitable habitat is present within the study area, but no observations or positive indications exist to verify the species' presence.

High – Species with a high potential for occurrence are suspected within the study area based on known ranges and existence of sufficient suitable habitat; are known to occur adjacent to the study area; or have been previously observed or documented in the immediate project vicinity.

3.2 Federally-Listed Species and Designated Critical Habitat

3.2.1 Flora

The study area was evaluated for the potential occurrence of federally-listed plant species. Four federally-listed plant species were considered due to previous documentation of occurrence within Lee and Collier counties and are discussed below. Although formal methodology-based plant surveys were not performed, seasonally appropriate pedestrian plant surveys were conducted and no federally-listed plant species were observed during project field reviews.

Aboriginal Prickly-Apple (*Harrisia aboriginum*)

The aboriginal prickly-apple cactus is listed as endangered by the USFWS and the FDACS. The species was formerly found throughout south Florida and the Keys. It is now found in Charlotte, Sarasota and Lee counties. It has been eliminated from the northern extent of its range in Manatee County. The species occurs in coastal strand vegetation (relatively low, salt-tolerant shrubs and grasses), tropical coastal hammocks with trees including gumbo limbo, wild lime or live oak. No suitable habitat for this species exists within the project study area. The species was not observed during field reviews or documented within the FNAI *Standard Data Report* (**Appendix F**), so there is considered to be **no** potential for species occurrence within the project study area. Therefore, the Preferred Alternative is expected to have **"*no effect*"** on the aboriginal prickly-apple.

Beautiful Pawpaw (*Deeringothamnus pulchellus*)

This beautiful pawpaw is listed as endangered by the USFWS and the FDACS. The species is a perennial shrub endemic to Lee and Charlotte counties, with one disjunct population southeast of Orlando in Orange County. It is found in open slash pine or longleaf pine flatwoods with wiregrass and dwarf live oak understory. Limited slash pine-dominated systems occur along the portions of the project; however, these areas are highly overgrown with weedy species and have not been fire-maintained. The USFWS describes the occurrence of the species in Lee County as limited to the vicinity of Pine Island, approximately 25 miles northwest of the current project area. The species was not observed during field reviews or documented within the FNAI *Standard Data Report*, and based on the suggested range limitation, there is considered to be **no** potential for species occurrence within the project study area. Therefore, the Preferred Alternative is expected to have **"*no effect*"** on the beautiful pawpaw.

Florida Prairie-Clover (*Dalea carthagenensis floridana*)

The Florida prairie-clover is listed as endangered by the USFWS and the FDACS. Only nine extant populations of this species are known and exist within Big Cypress National Preserve, conservation areas in Miami-Dade County, and on private lands within Miami-Dade County. Although the USFWS' ECOS database notes this species as potentially occurring within Collier County, the habitats noted for the species occur in the extreme southern portion of Collier County. The species occurs within pine rocklands, coastal uplands, marl prairie, and along the edges of rockland hammocks. Based on no suitable habitat occurring within the project area, known populations existing well outside of the project study area, the lack of observations during project field reviews, and lack of documentation within the FNAI *Standard Data Report*, there is considered to be **no** potential for Florida prairie-clover occurrence within the project study area. Therefore, the Preferred Alternative is expected to have "***no effect***" on the Florida prairie-clover.

Garber's Spurge (*Chamaesyce garberi*)

Garber's spurge is listed as endangered by the USFWS and the FDACS. This plant is a short-lived, perennial herb known from sandy soils over limestone in pine rocklands, hammock edges, coastal rock barrens, grass prairies, salt flats, beach ridges, and swales in Monroe and Miami-Dade counties. Although the USFWS' ECOS database notes this species as potentially occurring within Collier County, the habitats noted for the species occur in the extreme southern portion of Collier County. Except for man-made roadside swales subject to frequent human disturbance, the habitats noted do not occur within or adjacent to the project limits and the species was not observed during project field reviews or documented within the FNAI *Standard Data Report*. There is considered to be **no** potential for Garber's spurge occurrence within the project study area. Therefore, the Preferred Alternative is expected to have **"*no effect*"** on the Garber's spurge.

3.2.2 Fauna

Ten federally-protected animal species (9 listed species and the bald eagle), as well as two species proposed for listing, were considered due to previous documentation of occurrence within, or with range proximity to Lee and Collier counties and are discussed as follows. Although the USFWS' consultation areas for the Everglade snail kite (*Rostrahamus sociabilis plumbeus*), Audubon's crested caracara (*Polyborus plancus*) and Florida grasshopper sparrow (*Ammodramus savannarum floridanus*) include portions of Lee and Collier counties, the project study area for the Preferred Alternative lies outside of the Service's consultation area for these species. Therefore, these species are not included/discussed further.

Monarch Butterfly (*Danaus Plexippus*)

The monarch butterfly was proposed for protections under the ESA as a threatened species by the USFWS on December 12, 2024. Within North America, the monarch butterfly is a highly migratory species which typically winters in Mexico. This species requires a diversity of blooming nectar resources, but of particular importance is milkweed (*Asclepias spp*.). Milkweed is a microhabitat requirement for this species to both deposit eggs and as a larval nutrition source. Swamp milkweed (*Asclepias incarnata*) was observed sporadically adjacent to various wet roadside ditches and along pasture fences during project field reviews and is possible that this species may be used by the monarch butterfly. Given the occurrence of tropical milkweed within the project study area, and the monarch's mobility, the potential for occurrence of this species within the projected study area is considered high. As this species is currently proposed for listing, consultation for this species is not required at this time. If the listing status of the monarch butterfly is elevated by USFWS to Threatened or Endangered and the Preferred Alternative is located within the consultation area, FDOT commits to re-initiating consultation with the USFWS during the design and permitting phase of the project to determine the appropriate survey methodology and to address USFWS regulations regarding the protection of the monarch butterfly.

American Crocodile (*Crocodylus acutus*)

The American crocodile is listed as endangered by the USFWS and the FWC and the Preferred Alternative is located within its consultation area. This species lives in coastal areas throughout the Caribbean and occurs at the northern end of their range in south Florida. They live in brackish or saltwater areas, and can be found in ponds, coves, and creeks in mangrove swamps. They are occasionally encountered inland in freshwater areas of the southeast Florida coast as a result of local canal systems. The wetlands and surface waters within and adjacent to the project limits are entirely freshwater in nature. The southern terminus of the project is nearly 0.61 miles north of estuarine habitat associated with the Cocohatchee River and its tributaries. The species was not observed during project field reviews or documented within the FNAI *Standard Data Report*. Given the project's lack of direct connectivity to estuarine habitat, there is considered to be **no** potential for American crocodile occurrence within the project study area. Considering these factors, the Preferred Alternative is expected to have **"*no effect*"** on the American crocodile.

Eastern Indigo Snake (*Drymarchon corais couperi*)

The eastern indigo snake is listed as a threatened species by the USFWS and the FWC. The species is distributed throughout the southeastern United States but is subject to loss and degradation of habitat and human intervention. The species is found in a variety of habitats including swamps, wet prairies, xeric pinelands, and scrub areas. It may utilize gopher tortoise burrows for shelter during the winter and to escape the heat during the summer. No individuals of this species were observed during the field surveys; however, areas of suitable habitat for this species occur within and adjacent to the project ROW. Although not observed during field reviews, there is a historical documentation of the species' occurrence approximately 0.9 mile west of the northern project limit along Bonita Beach Road within the FNAI *Standard Data Report.* The species also may occur in the project vicinity based on its range and habitat preferences. However, the potential for occurrence of this species within the project study area is considered to be **low** due to extent of human development and fragmentation of suitable habitat. Gopher tortoise surveys will be performed during the design and permitting phases. The FDOT commits to implementing the most recent version of the USFWS' *Standard Protection Measures for the Eastern Indigo Snake* during construction (**Appendix G**). The USWFS' *Revised Consultation Key for the Eastern Indigo Snake* states that if a project meets the aforementioned parameters, an effect determination of **"*may affect, not likely to adversely affect*"** is prescribed based on the following consultation key couplets (included in **Appendix H)**: A>B>C>D>E>NLAA.

Florida Scrub-Jay (*Aphelocoma coerulescens*)

The Florida scrub-jay is listed as threatened by the USFWS and the FWC. The species is endemic to peninsular Florida from Collier County north to approximately Alachua County. This species inhabits sand pine and xeric oak scrub, and scrubby flatwoods, which are adapted to periodic drought and frequent fires. Three classes of scrub-jay habitat are defined by the USFWS *Species Conservation Guidelines*:

Type I – any upland plant community in which percent cover of the substrate by scrub oak species is 15 percent or more.

Type II – any plant community, not meeting the definition of Type I habitat, in which one or more scrub oak species is represented.

Type III – any upland or seasonally dry wetland within 400 meters (0.25 miles) of any area designated as Type I or Type II habitat.

Three areas of scrub habitat (Type I and II habitat) were observed within the project area, containing sand live oak (*Quercus geminata*). Two native remnant scrub polygons, approximately one acre and three acres in size, occur west of existing CR 887/Old US 41, adjacent to the south side and east sides of the Mercedes-Benz of Bonita Springs automobile dealership (14610 US 41/Tamiami Trail North), approximately 0.28 mile north of the project's southern terminus. One minor roadside scrub area, conservatively estimated at 2.7 acres in size, occurs in the southwest quadrant of the CR 887/Old US

41/Performance Way intersection. This polygon has been set aside as a development-related "native upland preserve".

The nearest documented scrub-jay occurrence is approximately 7.1 miles north of the northern project terminus near Estero in Lee County. However, pedestrian surveys were performed throughout the scrub habitat polygons during project field reviews conducted in May 2019 and September 2019. Although not conforming to official USFWS play-call survey protocol, informal play-calls were conducted during site visits from cell phones at full volume using the species' territorial scold/"hiccup" call available from the Cornell Lab of Ornithology. These informal efforts were conducted during suitable sunny weather conditions with minimal wind to elicit a potential response from any scrub-jays which could inhabit these areas in order to determine whether more formal survey efforts were warranted. No scrub-jays were observed or heard responding to the calls played during either field review. Although suitable habitat is present within the proposed project study area, this habitat is fragmented by human development activities and is not subject to traditional scrub management practices. The lack of fire management is particularly problematic as some of this habitat is highly overgrown by weedy and exotic species. The proximity of these scrub habitat areas to existing businesses and residential areas makes the implementation of prescribed fire difficult and the long-term viability of these areas to support scrub-jays doubtful. These fragmented areas of scrub habitat comprise a total of approximately 6.7 acres. By contrast, the County's Railhead Scrub Preserve is 132 acres in size, consists of more suitable/better quality habitat and is generally subject to less human disturbance. Despite studies by various researchers, the Florida scrub-jay has not been documented to occur within the Preserve (which represents the largest and most suitable area of potential scrub-jay habitat in the project vicinity). None of the scrub habitats discussed (including the Railhead Scrub Preserve) implement fire maintenance, and may not be suitable for scrub-jay. The species was not documented in the project vicinity within the FNAI *Standard Data Report*. Additionally, the Preferred Alternative will not impact the scrub habitats discussed. Therefore, the FDOT has determined that: 1) the potential for species occurrence within the project study area is **low**, 2) formal methodology-based survey efforts are not warranted, and 3) the Preferred Alternative will have **"*no effect*"** on the Florida scrub-jay as it will not result in any impacts to scrub or scrub-like habitat.

Red-Cockaded Woodpecker (*Picoides borealis*)

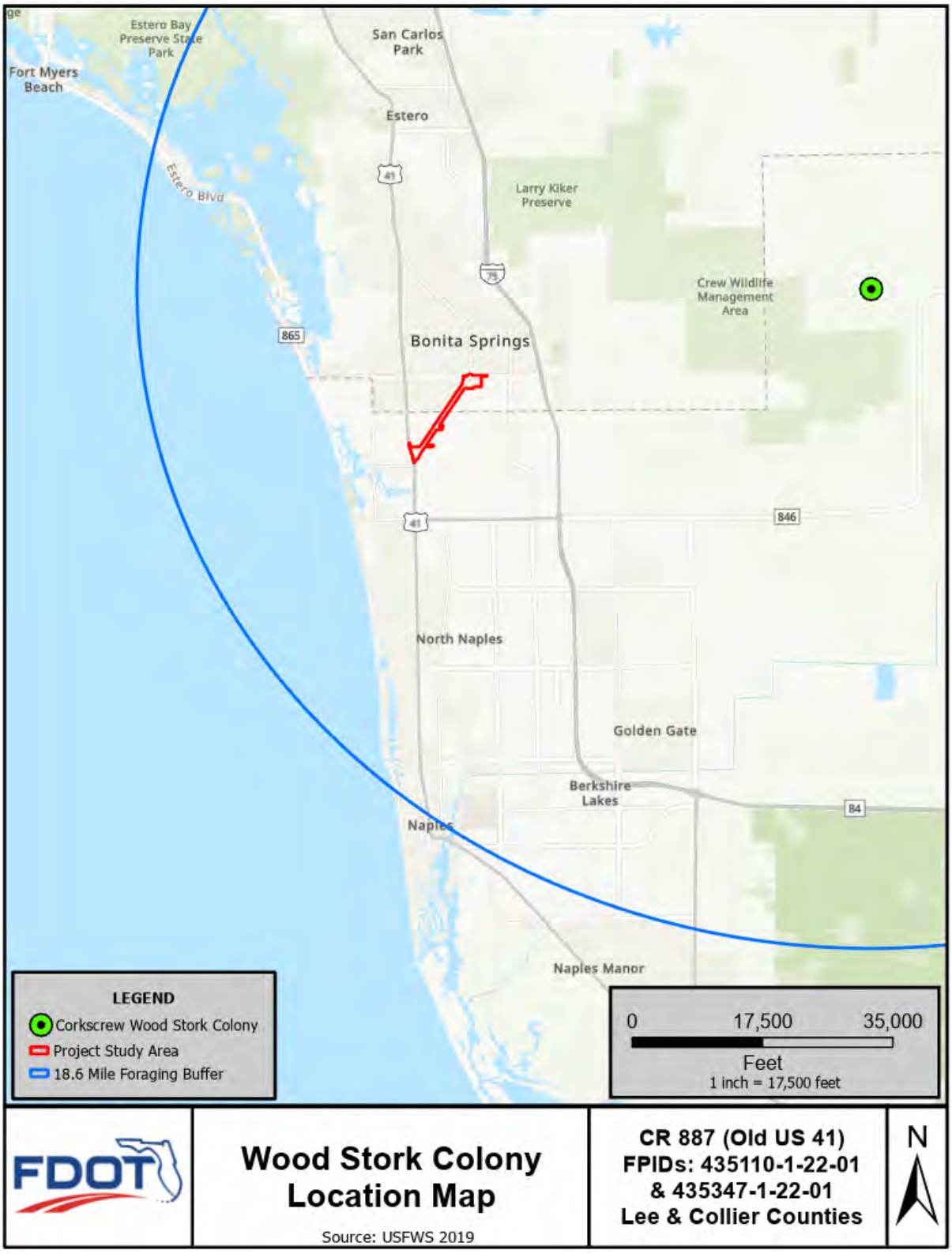
The red-cockaded woodpecker is listed as endangered by the USFWS and the FWC. This species is endemic to the southeastern United States. The species uses mature (usually >60 years old) living pines in which it constructs roosting and nesting holes, often preferring longleaf pines (*Pinus palustris*). Additionally, pine flatwoods and pine forests must be fire-maintained to provide suitable nesting and foraging habitat for the red-cockaded woodpecker and typically at least 10 acres in size. The nearest documented occurrences of the red-cockaded woodpecker are noted approximately four miles southeast of the southern project terminus, just south of the Interstate 75/Immokalee Road interchange. Approximately 0.23 acre of pineland habitats will be impacted by the Preferred Alternative. However, none of the pineland habitats within the study area are of suitable age or size or are fire-maintained; therefore, habitat impacts for this species are not anticipated from the proposed improvements. Considering these factors and that this species was not observed during project field

reviews or documented within the FNAI *Standard Data Report*, there is **no** potential for occurrence of this species within the project study area. The Preferred Alternative will have **"*no effect*"** on the red-cockaded woodpecker as the project will not impact any suitable habitat.

Wood Stork (*Mycteria americana*)

The wood stork is listed as threatened by the USFWS and the FWC. This species is primarily associated with freshwater and estuarine habitats for nesting, roosting, and foraging. Typical foraging sites include freshwater marshes, stock ponds, shallow, seasonally flooded roadside and agricultural ditches, managed impoundments, and depressions in cypress heads and swamp sloughs. Ideal 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 15 inches. As shown in **Figure 3-1**, the proposed project occurs within the 18.6-mile core foraging area radius of one known active wood stork colony (the Corkscrew colony). Although the species is not documented in the project vicinity within the FNAI *Standard Data Report,* wood storks were observed foraging within the ROW during the project field reviews. As such, the species' potential for occurrence within the project study area is **high**.

Figure 3-1 Wood Stork Colony Location Map



As wetland impacts are proposed to exceed five acres, a wood stork foraging habitat assessment was conducted on these waterbodies to determine the net prey biomass which may be lost due to the proposed project. As discussed further in Section 4, the proposed improvements will directly impact 9.08 acres of wetlands and other surface waters. These wetlands and other surface waters were assessed regarding their potential to provide suitable foraging habitat to wood storks. A total of 7.21 acres of short hydroperiod wetlands will be impacted and 1.87 acres of long hydroperiod wetlands will be impacted. Analysis results concluded that the Preferred Alternative would result in the net loss of 16.74 kg total (fish and crayfish) biomass. The results of this analysis are summarized in **Table 3-1.**

Table 3-1 Summary of Impacts to Ditches and Wetlands by Length of Hydroperiod

Hydroperiod Class[1]	Surface Water ID	Total Direct Impact Area (acres)	% Exotics	Foraging Suitability Variable (FSV)	Total Direct Impact Area (m^2)	Total Suitable Direct Impact Area (m^2)	Crayfish & Fish g/m^2	Available Biomass	32.5% Biomass Consumed	Biomass (kg)
Class 3 (120-180 days)	D-1, D-2, D-3, WL-7, WL-10	7.14	0-25	1	28,894.55	28,894.55	1.32	38,140.81	12,395.76	12.40
Class 3 (120-180 days)	P-1	0.07	>90	0.03	283.28	8.50	1.32	11.22	3.65	0.00
Class 4 (180-240 days)	WL-17	1.04	0-25	1	4,208.73	4,208.73	2.34	9,848.43	3,200.74	3.20
Class 5 (240-300 days)	WL-1, WL-4, WL-5, WL-8	0.71	50-75	0.37	2,873.27	1,063.11	2.93	3,114.91	1,012.35	1.01
Class 5 (240-300 days)	WL-9	0.09	>90	0.03	364.22	10.93	2.93	32.01	10.40	0.01
Class 6 (300-330 days)	WL-3, WL-14	0.03	0-25	1	121.41	121.41	2.93	355.72	115.61	0.12
Total Short Hydroperiod (Classes 1, 2, & 3)		7.21	-	-	29,177.83	28,903.05	-	38,152.03	12,399.41	12.40
Total Long Hydroperiod (Classes 4, 5, & 6)		1.87	-	-	7,567.62	5,120.89	-	13,351.07	4,339.10	4.34
Total		**9.08**	**-**	**-**	**36,745.46**	**34,307.23**	**-**	**51,503.10**	**16,738.51**	**16.74**

[1] As defined by the USFWS in the *Wood Stork Foraging Habitat Assessment Methodology*, Parameter 2- Wetland Hydroperiod, Page 3.

The path followed through the USFWS South Florida Ecological Service Office's Effects Determination Key for the Wood Stork (**Appendix H**) was A>B>C>E>MANLAA. As part of this project, impacts to wetlands will be mitigated within the CFA of the affected colony or at a regional mitigation bank that has been approved by the USFWS or pursuant to Section 373.4137, F.S. At the time of this report, available mitigation banks within the CFAs include Big Cypress MB, Phase 1-V, Big Cypress MB, Phase VI, Corkscrew Regional MB, Panther Island MB, Panther Island MB, Expansion, and Cherrylake Wilderness Preserve MB. Additional foraging habitat functional loss will also be offset through the provision of stormwater management features including ditches, ponds and floodplain compensation areas. The amount of additional habitat loss offset (i.e., beyond the provision of compensatory wetland mitigation) will be determined during the project's subsequent design phase. FDOT will provide mitigation for impacts to wood stork Suitable Foraging Habitat within the Service Area of a Service-approved wetland mitigation bank or wood stork conservation bank. Therefore, it

has been determined that the proposed project "***may affect, not likely to adversely affect"*** the wood stork.

Eastern Black Rail (*Laterallus jamaicensis jamaicensis*)

The eastern black rail is listed as threatened by the USFWS. This species is found sporadically throughout the eastern half of the United States, including both coastal and freshwater marsh habitats throughout Florida. The eastern black rail is a wetland dependent subspecies. While it can be found in salt, brackish, and freshwater marshes that are tidally or non-tidally influenced, it has a very specific niche habitat. It requires dense herbaceous vegetation to provide shelter and cover and areas for protected nest sites; it is not found in areas with woody vegetation. Occupied habitat tends to be primarily composed of fine-stemmed emergent plants (rushes, grasses, and sedges) with high stem densities and dense canopy cover. The bird requires shallow water or moist soil for its nesting sites and elevated refugia with dense cover to survive high water events, because juvenile and adult black rails prefer to walk and run rather than fly and chicks are unable to fly. The wetlands and surface waters within and adjacent to the project limits are entirely freshwater in nature. Although areas of freshwater emergent wetlands are present, many of these wetlands either lack dense herbaceous cover, often due to frequent mowing, or are otherwise adjacent to forested and/or shrub-dominated systems. The species was not observed during project field reviews or documented within the FNAI *Standard Data Report*. Given the minimal suitable habitat available, the potential for eastern black rail occurrence within the project study area is considered to be **low**. However, the USFWS has recently published species-specific survey requirements for the black rail. While some of the project wetlands (WL-16, WL-17, and WL-18) may provide suitable nesting habitat for the black rail during part of the year, during the species' South Florida nesting season (February through May), these wetlands have been observed to be entirely dry and are mowed. Therefore, the project will not impact any suitable nesting habitat for the black rail and a survey is not required. While project wetlands may provide foraging habitat for the black rail, the project will provide suitable mitigation for all wetland impacts. Considering these factors, the Preferred Alternative "***may affect, not likely to adversely affect*****"** the eastern black rail.

Florida Bonneted Bat (*Eumops floridanus*)

The Florida bonneted bat is listed as endangered by the USFWS. The species is endemic to South and Central Florida, from Polk and Osceola counties southward. In October 2019, the USFWS released their *Consultation Key for the Florida Bonneted Bat* and *Florida Bonneted Bat Consultation Guidelines*. Although the entire project study area occurs within the Service's consultation area for the species, it lies outside of any critical habitat units for the species.

The Florida bonneted bat is known to roost in a variety of man-made structures and natural roosts including Spanish tile, low shrubbery, palm trees, and in cavities within pine trees and utility poles. They rely on open spaces for foraging and avoid clutter as they are fast fliers but not as agile as smaller bats. Important foraging areas include wetlands and open, fresh water sources such as ponds and streams where they will also fly low to drink water.

Limited roost surveys were conducted in accordance with the USFWS' consultation key during project field reviews conducted in May 2019, August 2019, and February 2021. During the limited roost survey, no use of houses or man-made structures, no evidence of tree snags, or trees with cavities, hollows, deformities, decay, crevices or loose bark of sufficient size to harbor a Florida bonneted bat was noted. Additionally, an acoustic survey was conducted in May 2025, the results of which are provided in **Appendix I**. The results of the survey concluded that 1 call out of the 26,000 recorded bat calls belonged to the Florida bonneted bat. However, no bonneted bat calls were recorded close to sunrise or sunset and no emergence, feeding, or social calls were recorded. Additionally, no signs of use by other bats (guano, staining, or auditory chirps) were observed and there were no observations of the Florida bonneted bat. Therefore, there is no evidence suggesting that roosting is likely to occur near the project. Therefore, there is no evidence suggesting that the Old 41 project area supports high FBB activity/use. However, the potential for Florida bonneted bat occurrence within the project study area is expected to be **high** due to the recorded call.

The proposed improvements would impact 9.01 acres of non-transportation land use that provides potential roosting habitat. Considering this and the results of the 2025 acoustic survey, the USFWS's consultation key (**Appendix H**) applied to this project results in an effect determination of **"*may affect, not likely to adversely affect*"** based on the following key couplets: 1a>2a>3b>6a>7b>10b>12b>MANLAA-P requiring specific Best Management Practices (BMPs) whereby programmatic concurrence is achieved and no additional consultation with the USFWS is necessary as discussed in **Appendix I**. As part of the programmatic concurrence, the FDOT will implement BMPs 1, 5, 7, and 10.

Tricolored Bat

The tricolored bat was proposed for protections under the ESA by the USFWS on September 13, 2022, and is currently proposed for listing as endangered. Typically a cave-dwelling bat, this is one of the smallest bat species in North America. Within the American south, where caves are less common, this species is known to roost in manmade structures such as roadway culverts. Like the Florida bonneted bat, the tricolored bat will also roost within tree cavities. Based on the results of the limited roost surveys conducted (previously discussed in the bonneted bat section), there are no signs of any bat usage in existing man-made structures. Additionally, no evidence of tree snags, or trees with cavities, hollows, deformities, decay, crevices suitable for the tricolored bat were observed within the project's proposed study area. Considering the results of the limited roost surveys, the potential for tricolored bat occurrence within the project footprint is considered **low**. However, the project may result in impacts to the tricolored bat in the form of vegetation removal during construction. The anticipated effect determination is **may affect not likely to adversely affect**. As the timeline for construction is better defined, FDOT will adhere to the applicable commitment below:

- Upon listing of the tricolored bat, if the project contains suitable habitat and requires tree trimming and/or clearing, FDOT will not conduct tree trimming/clearing activities during the tricolored bat pup season (May 1st to July 15th) and when bats may be in torpor (when temperatures are below 45 degrees Fahrenheit).

- Upon listing of the tricolored bat, if the project contains suitable habitat and FDOT needs to trim or clear trees or perform work on bridges/culverts during the maternity season and/or when the temperature is below 45 degrees Fahrenheit, then FDOT will survey the project area for evidence of the tricolored bat. The Indiana Bat and Northern Long-eared Bat Survey Guidance (USFWS), appendix J acoustic survey protocol in the year-round range (mist netting is not being conducted in Florida at this time), will be used for areas with tree trimming/clearing. For bridges and culvers, the Indiana Bat and Northern Long-eared Bat Survey Guidance, appendix K, Assessing Bridges and Culverts for Bats, will be used.
    a. If the surveys result in no tricolored bats detected, then FDOT can proceed with the project activities. Negative results from bridge/culvert surveys are valid for 2 years. Negative results for acoustic surveys are valid for 5 years. However, negative results for either survey may be invalidated if additional tricolored bat survey data is submitted to FWS showing presence of the species within the vicinity of the project area. Additional survey work by FDOT, or application of the avoidance and minimization measures noted in #4, may be required if updated detections are reported, and may result in reinitiation of consultation with FWS.
    b. If the surveys result in positive detections of the tricolored bat, FDOT will implement conservation measures such as: not conducting tree trimming/clearing activities during the tricolored bat pup season (May 1st to July 15th) when pups are not volant and not able to escape disturbance; similarly avoid tree trimming/clearing activities when the temperatures are below 45 degrees Fahrenheit when bats may be in torpor and unresponsive to disturbance.

Florida Panther (*Puma concolor coryi*)

The Florida panther is listed as endangered by the USFWS. Although the Florida panther is known to inhabit portions of Lee and Collier counties, the project study area does not occur within the Service's consultation or designated focus areas for the species. Radio-collar data and ground tracking information indicate that panthers use a mosaic of habitats available to them as resting and denning sites, hunting grounds, and travel corridors. The majority of telemetry locations and natal den sites occur close to or within forested cover types. Dense understory vegetation provides some of the most important feeding, resting, and denning cover for panther.

Although the FDOT is not required to consult for species outside of the Service's designated consultation area, the FDOT notes panther mortality data near the project vicinity. These data show three panther roadway mortalities (from April 2010, April 2016 and January 2019) along I-75 north and south of the Bonita Beach Road interchange. These roadway mortalities range from 1.8 to 2.5 miles east of the project's northern terminus, well within the species' daily and seasonal movement capabilities. However, based on: 1) the apparent movement barriers presented by I-75 and other local roadways, 2) the high extent of local urbanization, and 3) the lack of observations noted during prior desktop and field reviews, the species occurrence within the project study area is considered to be **low**. While there is a Florida panther effect determination key, it does not apply to this project because it is

outside of the consultation area. Therefore, the FDOT believes that the proposed project improvements are anticipated to have "***no effect***" on the Florida panther.

3.2.3 Other Federal Protected Species

Bald Eagle (*Haliaeetus leucocephalus*)

The bald eagle is no longer listed under the ESA, however it remains protected under the federal Bald and Golden Eagle Protection Act (16 U.S.C. § 668 et seq.) and the Migratory Bird Treaty Act (16 U.S.C. § 703 et seq.). A review of the FWC's Bald Eagle database and Audubon's EagleWatch Public Nest Map showed the nearest historical occurrence of a bald eagle nests to be nests CO 001 and CO 047 approximately 0.63 and 0.91 mile south and southeast of the project, respectively. No bald eagles were seen/heard and no eagle nests were observed within 660 feet of the project study area during the project field review. However, there is a potential for the species to use local trees and radio/cell towers (opposite Via Palacio Avenue) for nesting or roosting purposes. The potential for occurrence of this species within the project study area is considered to be **moderate**. If the species is documented during future project phases, the FDOT will coordinate further with the USFWS as applicable.

3.2.4 Critical Habitat

Critical habitat for several coastal/estuarine species is shown for this portion of Lee and Collier counties including the smalltooth sawfish (*Pristis pectinata*), West Indian manatee (*Trichechus manatus latirostris*) and loggerhead sea turtle (*Caretta caretta*). However, these habitats are approximately 2.5 to 3 miles outside (west) of the project study area. Currently, no designated critical habitat for any federally-listed species occurs within or immediately adjacent to the project study area. Therefore, the proposed improvements will not result in the destruction or adverse modification of any designated critical habitat.

3.3 State-Listed Species

3.3.1 Flora

In addition to the species discussed previously in subsection 3.2.1, forty-one (41) additional state-listed plant species were assessed due to previous documentation of occurrence within Lee and Collier counties. Although formal methodology-based plant surveys were not performed, seasonally appropriate pedestrian plant surveys were conducted and two state-listed plant species, the giant wild pine and stiff-leaved wild pine, were observed during project field reviews.

American Bird's Nest Fern (*Asplenium serratum*), Clamshell Orchid (*Encyclia cochleata=Prosthechea cochleata*), Cowhorn Orchid (*Cyrtopodium punctatum*), Florida Dancing-Lady Orchid (*Oncidium ensatum = Oncidium floridanum*), Ghost Orchid (*Dendrophylax lindenii*), Hidden Orchid (*Maxillaria crassifolia*), Leafless Orchid (*Campylocentrum pachyrrhizum*), Low Peperomia (*Peperomia humilis*), Many-Flowered Airplant/Catopsis (*Catopsis floribunda*), Narrow Strap Fern (*Campyloneurum angustifolium*), Night-Scented Orchid (*Epidendrum nocturnum*), and Toothed Lattice-Vein Fern (*Thelypteris serrata*)

These species are listed as endangered by the FDACS and all have similar habitat requirements. All species except the hidden orchid have been documented in both Lee and Collier counties, while the hidden orchid has only been documented in Collier County. The American bird's Nest fern is typically found among fallen logs, stumps, and tree trunks in cypress swamps and tropical rockland hammocks. The clamshell orchid is found in trunks and branches of pond apple (*Annona glabra*), cypress, live oak, and buttonwood (*Conocarpus erectus*) trees in swamps and hammocks. The cowhorn orchid is found in trunks and stumps of cypress trees in swamps, branches of buttonwood trees in coastal hammocks, and occasionally pine rocklands and marl prairies. Florida dancing-lady orchid is found in terrestrial habitats of rich humus in relatively dry hammocks, or as epiphytes at the base of cypress trees in wet forests. The ghost orchid is found on trees in hardwood hammocks, tramways and sloughs, and cypress domes. Although not observed during field reviews and listed only as potentially occurring within the FNAI *Standard Data Report,* the species may occur in the project vicinity based on its range and habitat preferences (particularly cypress domes). The hidden orchid is found on trunks and high branches in cypress swamps and sloughs. The leafless orchid is found on trunks and high branches in cypress swamps and sloughs, primarily in the Fakahatchee and Big Cypress swamps. Low peperomia occurs in in shell mounds and limestone outcrops in mesic hammocks, coastal berms, cypress swamps and rarely on tree trunks, branches, or rotting logs. The many flowered airplant/catopsis is found in humid, shady habitats, rockland hammocks and cypress swamps. The narrow strap fern is found on tree trunks and branches in tropical hardwood hammocks and cypress swamps. The night-scented orchid is mostly found on tree trunks, branches, and stumps in hammocks, swamps, and sloughs. The toothed lattice-vein fern is mostly found in cypress swamps, sloughs and floodplains.

Cypress swamps are present within and adjacent to the project study area. The Preferred Alternative will impact approximately 0.14 acre of cypress swamps (0.03 acre direct and 0.11 acre secondary) However, the project will provide suitable wetland mitigation to offset impacts. Although not observed during field reviews or documented within the FNAI *Standard Data Report*, these species may occur in the project vicinity based on their range and habitat preferences. The potential for occurrence of these species within the project study area is considered to be **moderate** and there is "***no adverse effect anticipated***" for the American bird's nest fern, clamshell orchid, cowhorn orchid, Florida dancing-lady orchid, ghost orchid, hidden orchid, leafless orchid, low peperomia, many-flowered airplant/catopsis, narrow strap fern, night-scented orchid, and toothed lattice-vein fern from the Preferred Alternative.

Banded Wild-Pine (*Tillandsia flexuosa*), Giant Orchid/Non-Crested Eulophia (*Orthochilus ecristata = Eulophia ecristata*), Nodding/Scrub Pinweed (*Lechea cernua*), Reflexed Wild-Pine (*Tillandsia balbisiana*), Sand-Dune Spurge (*Chamaesyce cumulicola=Euphorbia cumulicola*), Scrub stylisma/Showy Dawnflower (*Stylisma abdita*), and Spreading/Pine Pinweed (*Lechea divaricata*)

Curtiss' milkweed, sand-dune spurge, scrub stylisma/showy dawnflower, and spreading/pine pinweed are listed as endangered by the FDACS. The banded wild-pine, giant orchid/non-crested eulophia, nodding/scrub pinweed, and reflexed wild-pine are listed as threatened by the FDACS. All of these species have similar habitat requirements and have been documented in both Lee and Collier counties. Banded wild-pine is typically found in various exposed habitats, often near the coast including terrestrial (xeric hammock [pinelands, scrub], shell mound, rockland hammock, coastal berm, maritime hammock); marine (marine tidal swamp); and estuarine (estuarine tidal swamp) habitats. Curtiss' milkweed is found in scrub and flatwoods scrub habitat, including sites with disturbed soil. This habitat may include along the side of trails and dirt access roads in parks and wild spaces, gopher tortoise burrow aprons, harvester ant sites, and other similar locations. Giant orchid/non-crested eulophia is found in sandhill, scrub, pine flatwoods, pine rocklands, and occasionally in old fields. Nodding/scrub pinweed is native to dry sandy areas, sand pine scrub, scrub, dunes and sandy ridges from central Florida southward. Reflexed wild-pine is found in scrub, pinelands, strand swamp, hammocks, mangrove, and shell ridges/mounds (often in open woods). Sand-dune spurge occurs in sandy oak hammocks, open sandy areas behind mangroves and disturbed sandy sites of conservation concern. Scrub stylisma/showy dawnflower is found in dry sandy soils in scrub and sandhills. Spreading/pine pinweed is found in scrub and scrubby flatwoods. Of the habitats listed above, only pinelands and scrub habitats occur within or adjacent to the project study area. Additionally, all of these species, except for the giant orchid/non-crested eulophia and spreading/pine pinweed, have been confirmed to occur in portions of the nearby Railhead Scrub Preserve.

Although not observed during field reviews or documented within the FNAI *Standard Data Report*, these species may occur in the project vicinity based on its range and habitat preferences. The Preferred Alternative will impact approximately 0.23 acre of coniferous mixed hardwood. The potential for occurrence of these species within the project study area is considered to be **moderate** and there is "***no adverse effect anticipated***" for the banded wild pine, Curtiss' milkweed, giant orchid/non-crested eulophia, nodding/scrub pinweed, reflexed wild-pine, sand-dune spurge, scrub stylisma/showy dawnflower, and spreading/pine pinweed from the Preferred Alternative.

Catesby's Lily (*Lilium catesbaei*) and Florida Beargrass (*Nolina atopocarpa*)

The Catesby's lily and Florida beargrass are listed as threatened by the FDACS. These species are found in both Lee and Collier counties. The Catesby's lily occurs in moist flatwoods, wet prairies and savannas and has been confirmed to occur in mesic flatwoods of the nearby Railhead Scrub Preserve. Florida beargrass is found in grassy areas of mesic and wet flatwoods.

Overgrown moist flatwoods and minor portions of wet prairie habitats occur within or adjacent to the project study area. The Preferred Alternative will impact approximately 1.82 acres of mixed wetland

hardwoods (0.79 acres direct and 1.03 secondary). However, the project will provide suitable wetland mitigation to offset impacts. Although not observed during field reviews or documented within the FNAI *Standard Data Report*, the species may occur in the project vicinity based on its range and habitat preferences. The potential for occurrence of these species within the project study area is considered to be **moderate** and there is "***no adverse effect anticipated***" for the Catesby's lily and Florida beargrass from the Preferred Alternative.

Florida Keys Indigo (*Indigofera mucronata* var *keyensis = Indigofera trita* var *scabra*)

The Florida Keys indigo is listed as endangered by the FDACS. The species is documented from extreme south Florida, including Collier County. This species is found in coastal berms, coastal rock barrens, and sunny edges of rockland hammocks. No suitable habitats occur within and adjacent to the project study area and the species was not observed during field reviews or documented within the FNAI *Standard Data Report*. There is considered to be **no** potential for occurrence of this species within the project study area and there is "***no effect anticipated***" for the Florida Keys indigo from the Preferred Alternative.

Florida Peperomia (*Peperomia obtusifolia*), Frosted Orchid (*Pleurothallis gelida = Stelis gelida*), Fuzzy-Wuzzy Airplant (*Tillandsia pruinosa*), and Hand Fern (*Ophioglossum palmatum*)

These species are listed as endangered by the FDACS and all have similar habitat requirements. These species are all documented in Collier County and the fuzzy-wuzzy airplant and hand fern are also documented in Lee County. Florida Peperomia is found in rockland hammocks, hydric hammocks, and strand swamps; however, the habitats noted for the species generally occur in the extreme southern portion of Collier County. The frosted orchid is found on a variety of trees including oak, pop ash (*Fraxinus caroliniana*), pond apple, and maple (*Acer* spp.) in cypress sloughs. The fuzzy-wuzzy airplant is found in shady, humid hammocks, palustrine (strand swamp) wetlands and on dead trees. The hand fern occurs in boots or old leaf bases, of cabbage palms in maritime hammocks and wet hammocks.

Of the habitats noted, only minor amounts of hydric hammock occur within and adjacent to the project study area. The Preferred Alternative will impact approximately 1.82 acres of mixed wetland hardwoods (0.79 acres direct and 1.03 secondary). However, the project will provide suitable wetland mitigation to offset impacts. The species was not observed during field reviews or documented within the FNAI *Standard Data Report*. The potential for occurrence of these species within the project study area is considered to be **low** and there is "***no adverse effect anticipated***" for the Florida peperomia, frosted orchid, fuzzy-wuzzy airplant, or hand fern from the Preferred Alternative.

Fuchs' Bromeliad (*Guzmania monostachia*), Pale/Pineland Passionflower (*Passiflora pallens*), Southern Ladies'-Tresses (*Spiranthes torta*), and Spiny Hackberry (*Celtis pallida*)

These species are listed as endangered by the FDACS and all have similar habitat requirements. These species are documented in Collier County and the spiny hackberry has also been documented in Lee County. The Fuch's bromeliad is found in terrestrial (rockland hammock), palustrine (slough, strand swamp) and is most commonly noted on pop ash and pond apple trees. The pale/pineland

passionflower occurs in tropical hardwood hammocks in several south Florida counties, including Collier County. Southern ladies'-tresses are mostly found in pine rockland, marl prairie, and edges of rockland hammock. The spiny hackberry is found in shell mounds and middens in tropical coastal hammocks.

No suitable habitats for these species occur within and adjacent to the project study area. The species were not observed during field reviews or documented within the FNAI *Standard Data Report*. There is considered to be **no** potential for occurrence of these species within the project study area and there is "***no effect anticipated***" for the Fuch's bromeliad, pale/pineland passionflower, southern ladies'-tresses, or spiny hackberry from the Preferred Alternative.

Giant Wild-Pine (*Tillandsia utriculata*) and Stiff-Leaved Wild-Pine (*Tillandsia fasciculata var. densispica*)

The giant wild-pine and stiff-leaved wild-pine are listed as endangered by the FDACS and both have similar habitat requirements. These species are documented throughout peninsular Florida, including Lee and Collier counties. Both of these species are found in dry and mesic hammocks, cypress swamps and pinelands. Suitable habitats occur within and adjacent to the project study area. Although they are not documented within the FNAI *Standard Data Report*, both species have been confirmed to occur in xeric upland habitat at the nearby Railhead Scrub Preserve and **were observed** in several locations outside of the Preferred Alternative during field reviews typically growing conspicuously from plant debris on the ground or within oak trees, most commonly within scrub habitat. These observed individuals are not anticipated to be impacted by the Preferred Alternative. The Preferred Alternative will impact approximately 0.14 acre of cypress swamps (0.03 acre direct and 0.11 acre secondary). However, the project will provide suitable wetland mitigation to offset impacts.

The potential for occurrence of these species within the project study area is considered to be **high.** A survey for the giant wild-pine and stiff-leaved wild-pine will be performed during the design phase and coordination with FDACS will occur if impacts to the species are anticipated. As a result, there is "***no adverse effect anticipated***" for the giant wild-pine or the stiff-leaved wild-pine from the Preferred Alternative.

Leafy Beaked Ladies'-Tresses (*Sacoila lanceolata* var. *paludicola = Stenorrhynchos lanceolatum*)

The leafy beaked ladies-tresses orchid is listed as threatened by the FDACS. The species is documented from various counties throughout peninsular Florida, including Lee and Collier counties. This species is found in sandy or organic substrates along highway shoulders, pastures and poorly drained pine flatlands. The Preferred Alternative will impact approximately 5.30 acres of open land that could be suitable for this species.

Although not observed during field reviews or documented within the FNAI *Standard Data Report*, the species may occur in the project vicinity based on its range and habitat preferences. The potential for occurrence of this species within the project study area is considered to be **moderate**. Due to the

lack of observations, there is "***no adverse effect anticipated***" for the leafy beaked ladies-tresses orchid from the Preferred Alternative.

Many-flowered Grass Pink (*Calopogon multiflorus*)

The many-flowered grass pink orchid is listed as threatened by the FDACS. This species is an annual herb typically found in dry to moist flatwoods with longleaf pine, wiregrass (*Aristida stricta*) and saw palmetto (*Serenoa repens*), usually in association with fire-maintained habitats. Although known historically to occur throughout Florida, including Lee and Collier counties, the species is now considered to be rare due to fire suppression and habitat conversion. The minimal flatwood and sandhill habitats occurring within and adjacent to the project study area are highly overgrown due to lack of fire management and provide minimal suitable habitat for the many-flowered grass pink orchid. Therefore, the potential for occurrence is considered to be **low**. This species was not observed during project field reviews and is listed as potentially occurring within the FNAI *Standard Data Report*. Additionally, the Preferred Alternative will not impact any suitable habitat. Therefore, there is "***no effect anticipated***" for the many-flowered grass pink orchid from the Preferred Alternative.

Meadow Joint-Vetch (*Aeschynomene pratensis*)

The meadow joint-vetch is listed as endangered by the FDACS. The species is documented from various counties in south Florida, including Collier County. This species is found in marl prairie, cypress domes, and swales. Of the habitats noted, only cypress swamps and swales occur within and adjacent to the project study area. The Preferred Alternative will impact approximately 0.14 acre of cypress swamps (0.03 acre direct and 0.11 acre secondary) and 5.24 acres of swales. However, the project will provide suitable wetland mitigation to offset impacts. Although not observed during field reviews or documented within the FNAI *Standard Data Report*, the species may occur in the project vicinity based on its range and habitat preferences. The potential for occurrence of this species within the project study area is considered to be **moderate**. Due to the lack of observations, there is "***no adverse effect anticipated***" for the meadow joint-vetch from the Preferred Alternative.

Needleroot Airplant Orchid (*Harrisella porrecta = Dendrophylax porrectus*)

The needleroot airplant orchid is listed as threatened by the FDACS. This species is found throughout peninsular Florida, including Lee and Collier counties. This species is mostly found on smaller branches and twigs of pop-ash, pond apple, bald cypress (*Taxodium distichum*), and eastern red cedar (*Juniperus virginiana*) near swampy areas and in hardwood hammocks. It is also known to colonize neglected citrus groves near these areas. Although not observed during field reviews or documented within the FNAI *Standard Data Report*, the species may occur in the project vicinity based on its habitat preferences. The Preferred Alternative will impact approximately 0.23 acre of coniferous mixed hardwoods. The potential for occurrence of this species within the project study area is considered to be **moderate**. Due to the lack of observations, there is "***no adverse effect anticipated***" for the needleroot airplant orchid from the Preferred Alternative.

Sanibel Island lovegrass (*Eragrostis pectinacea* var. *tracyi*)

The Sanibel Island lovegrass is listed as endangered by the FDACS. The species is found in the southwest Florida coastal counties, including Lee and Collier counties. This species is often associated with drier, compact soils of disturbed beach dunes, maritime hammocks, coastal strands, coastal grasslands, old fields, clearings and other disturbed sites. The FNAI currently contains 14 occurrence records in its database, however, all are pre-1980. The species' habitat is threatened by rapid coastal development. Although this species was not observed during project field reviews or documented within the FNAI *Standard Data Report*, the species may occur in the project vicinity based on its range and habitat preferences. The Preferred Alternative will impact appromately 5.30 acres of open land. The potential for occurrence of this species within the project study area is considered to be **low**. Due to the lack of observations, there is "***no adverse effect anticipated***" for the Sanibel Island lovegrass from the Preferred Alternative.

Skyblue Clustervine (*Jacquemontia pentanthos*), Small's Flax (*Linum carteri var. smallii*), and Swamp Plume Polypody (*Pecluma ptilota = Polypodium ptilodon*)

The skyblue clustervine, Small's flax, and swamp plume polypody are listed as endangered by the FDACS. These species occur in several south Florida counties, including Collier County. Small's flax has also been documented in Lee County. Skyblue clustervine is found in pine rockland, edges of rockland hammock, disturbed openings in hammocks and coastal rock barrens. Of the habitats discussed, only minor portions of oak hammock habitat occur within or adjacent to the project study area. Small's flax are found in pine rockland, pine flatwoods and adjacent disturbed areas. Only minor portions of pine flatwood habitat occur within or adjacent to the project study area. Swamp plume polypody is mostly found in rockland hammocks, strand swamps, and wet woods; often on tree bases and fallen logs. The habitats noted for the species generally occur in the extreme southern portion of Collier County. Of the habitats noted, only minor portions of mesic hammock occur within and adjacent to the project study area. The Preferred Alternative will impact approximately 0.23 acre of coniferous mixed hardwoods. These species were not observed during field reviews or documented within the FNAI *Standard Data Report*. The potential for occurrence of these species within the project study area is considered to be **low**. Due to the lack of observations, there is "***no adverse effect anticipated***" for the skyblue clustervine, Small's flax, or swamp plume polypody from the Preferred Alternative.

3.3.2 Non-Listed Rare Plants

No non-listed rare plants were identified during the ETDM Programming Screen as occurring within the project study area. Additionally, such species were not identified in the FNAI Data Report nor by stakeholders throughout the PD&E study. Considering these factors, there is no potential for the project to impact non-listed rare plants.

3.3.3 Fauna

The nine species discussed in this section are listed by the FWC and included within the FWC's 2016 *Imperiled Species Management Plan* (ISMP). Additional species-specific action plans and permitting guidelines are summarized as applicable.

Florida Pine Snake (*Pituophis melanoleucus mugitus*)

The Florida pine snake currently is listed as threatened. This species occurs throughout Florida and inhabits areas that feature well-drained sandy soils with a moderate to open canopy. Preferred landscapes have a moderate to mostly open canopy cover of primarily pine trees (*Pinus* spp.) and scrubby oaks (*Quercus* spp.). The species is frequently a commensal species with gopher tortoises. Suitable upland habitats are present within and adjacent to the project study area and gopher tortoise habitat and burrows are prevalent in remnant habitat along the Veteran's Memorial Blvd. extension between CR 887/Old US 41 and US 41/SR 45. The potential for occurrence of this species within the project study area is considered to be **moderate**.

Although a species-specific incidental take permit is not anticipated at this time, as discussed in the species' action plan, if a pine snake is captured incidentally as a result from gopher tortoise relocations, they will be released on site or allowed to escape unharmed. Therefore, there is "***no adverse effect anticipated***" for the Florida pine snake from the Preferred Alternative.

Gopher Tortoise (*Gopherus polyphemus*)

The gopher tortoise currently is listed as threatened. This species occurs throughout Florida and requires well-drained and loose sandy soils for burrowing and low-growing herbs and grasses for foraging. The gopher tortoise is found in a wide variety of habitats including scrub, xeric oak hammocks, dry prairies, pine flatwoods, pastures, and lawns.

During project field reviews, 32 potentially occupied gopher tortoise burrows were observed in the small scrub area south of the Mercedes-Benz of Bonita Springs automobile dealership and five additional burrows were observed on the adjacent parcel north of the adjacent stormwater pond, totaling 37 burrows (**Appendix E**). Additionally, there were two occurrences listed in the FNAI report (**Appendix F**). Therefore, the species occurrence is noted as **high**. The FWC generally assumes a 50% burrow occupancy rate, which would equate to approximately 19 tortoises requiring relocation. However, this number may increase or decrease prior to project construction depending on the species' local population dynamics or human interference.

Current FWC guidelines require a gopher tortoise relocation permit for any ground disturbance activity occurring within 25 ft of a potentially occupied gopher tortoise burrow. While more than ten burrows are currently proposed for impact, it is anticipated that the permitting for most (if not all) of these tortoises will be conducted as part of Collier County's Veteran's Memorial Blvd project. While it is anticipated that tortoises will be relocated off-site, they may be relocated on-site by this project and begin to utilize upland habitats within the proposed Old US 41 construction footprint. Considering

this, the project limits will be resurveyed again in accordance with FWC's survey requirements for the species prior to construction to ensure the number and location of affected burrows and tortoises. Following permitting activities and the payment of mitigation fees, impacted tortoises will be relocated to an available FWC-approved/permitted tortoise recipient site by an authorized gopher tortoise agent prior to construction commencement. The FDOT will coordinate further with the FWC as applicable during the design and construction phases. Surveys for gopher tortoise burrows, as well as commensal species, will be conducted during the design phase and permits to relocate tortoises and commensals as appropriate will be obtained from the FWC. The FDOT will also implement FDOT Supplemental Specification SP0070104-3 *Additional Requirements for Gopher Tortoise* during construction (**Appendix G**). Considering these conservation measures, there is "***no adverse effect anticipated*"** for the gopher tortoise.

Florida Burrowing Owl (*Athene cunicularia floridana*)

The Florida burrowing owl is listed as threatened. The range of the burrowing owl is throughout the peninsular Florida in patches and localized areas. The species inhabits open prairies in Florida that have very little understory vegetation and good visibility. These areas include golf courses, airports, pastures, agriculture fields, and vacant lots. Minor areas of vegetated sandy habitats occur adjacent to the project, most notably a portion of remnant scrub/open field habitat along the south side of Performance Way (west of CR 887/Old US 41) and upland portions within the large grassy area along the east side of CR 887/Old US 41 between Compound Road and CR 865/Bonita Beach Road. However, no burrowing owls or owl burrows were observed within or adjacent to the project study area. Due to the limited habitat for this species, lack of documentation within the FNAI Standard Data Report and lack of field observations, the potential occurrence for this species within the project study area is considered to be **low**. However, the species is highly mobile and has the potential to move into or adjacent to the project area in the future. Considering these factors, there is "***no adverse effect anticipated***" for the Florida burrowing owl. Surveys for burrowing owl burrows, as well as commensal species, will be conducted during the design phase and permits to relocate owls and commensals as appropriate will be obtained from the FWC. If the species is documented during future project phases, the FDOT will coordinate further with the FWC and follow the species' Conservation Measures and Permitting Guidelines as applicable.

Florida Sandhill Crane (*Antigone canadensis pratensis*)

The Florida sandhill crane is listed as threatened. This species utilizes shallow, non-forested wetlands to build its nest and open areas such as lawns and crop fields for foraging. Foraging habitat is present along sodded areas within the roadway ROW and wetland portions within the large grassy area along the east side of CR 887/Old US 41 between Compound Road and CR 865/Bonita Beach Road. Although no Florida sandhill cranes were seen/heard and no potential crane nests were observed during the project field reviews, the species has a **high** potential to occur. As discussed further in Section 4, the proposed improvements will result in unavoidable impacts to 2.95 acres of wetlands habitat that may be used by this species for foraging and nesting. However, the upland habitats that may provide foraging habitat and are proposed for impact are not unique or limited in the project

vicinity. Therefore, there is "***no adverse effect anticipated***" for this species by the Preferred Alternative, as the project's implementation of wetland impact avoidance and minimization measures, as well as compensatory mitigation to offset project impacts are anticipated to reduce impacts to the Florida sandhill crane. If the species is documented nesting within the project area during future project phases, the FDOT will coordinate further with the FWC and follow the species' Conservation Measures and Permitting Guidelines as applicable.

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

The little blue heron, roseate spoonbill and tricolored heron are listed as threatened. These species utilize shallow herbaceous or shrub-dominated wetlands for both nesting and foraging habitat. Foraging habitat is present within drainage ditches and swales within the roadway ROW and wetland habitats along the length of the project study area. A review of the FWC's Water Bird Locator database does not show any current or former wading bird colonies or rookeries in the project vicinity. Although no listed wading birds were seen and no potential nests were observed during the project field reviews, these species have a **high** potential to occur. As discussed further in Section 4, the proposed improvements will result in unavoidable impacts to wetlands and other surface water habitats that may be used by these species for foraging and nesting. It is expected that the Preferred Alternative will have "***no adverse effect anticipated***" on the little blue heron, roseate spoonbill and tricolored heron, as the project's implementation of wetland impact avoidance and minimization measures, as well as compensatory mitigation to offset project impacts are anticipated to reduce impacts to these species. If these species are documented nesting within the project area during future project phases, the FDOT will coordinate further with the FWC and follow the species' Conservation Measures and Permitting Guidelines as applicable.

Southeastern American Kestrel (*Falco sparverius paulus*)

The southeastern American kestrel is listed as threatened. The foraging habitats this species frequents include woodlands, sandhill, and fire-maintained savannah pine habitats. However, it will also use alternative habitats which include pastures and open fields located in residential areas. The species prefers open patches of grass or bare ground with unobstructed views to detect prey while hunting. Within these habitats, kestrels will nest in cavities excavated by woodpeckers in large dead trees and occasionally wooden utility poles. Nest boxes are also used by kestrels, which have become an important artificial habitat for the kestrel due to the loss of primary habitats. Potential nesting and foraging habitat for this species exists within the project study area. Although no nesting cavities were observed, one individual kestrel was observed southeast of the Old US 41 and Bonita Beach Road intersection at the north end of the project and there is a **high** potential for occurrence. This observation occurred in February 2021 and it was not conclusively determined to be a resident Southeastern American kestrel or a migratory individual within a different subspecies. If the species is documented nesting within the project area during future project phases, the FDOT will coordinate further with the FWC and follow the species action plan as applicable. Considering this, there is ***"no adverse effect anticipated***" for the southeastern American kestrel.

Big Cypress Fox Squirrel (*Sciurus niger avicennia*)

The Big Cypress fox squirrel is listed as threatened. This subspecies species is found in the Everglades region, from Lee county, to the southern part of Dade County. It utilizes a variety of habitats including cypress, slash pine savanna, mangrove swamps, tropical hardwood forests, live oak woods, coastal broadleaf evergreen hammocks, and suburban habitats including golf courses, city parks, and residential areas. Potential nesting and foraging habitat for this species exists within the project study area. The Preferred Alternative will impact approximately 0.14 acres of cypress swamps (0.03 acre direct and 0.11 acre secondary) and 0.23 acres of coniferous mixed hardwoods. However, the project will provide suitable wetland mitigation to offset impacts. Although not observed during field reviews or documented within the FNAI Standard Data Report, the species may occur in the project vicinity based on its range and habitat preferences. The potential for occurrence of this species within the project study area is considered to be **moderate** and there is "***no adverse effect anticipated***" for the Big Cypress fox squirrel from the Preferred Alternative. If these species are documented nesting within the project during future project phases, the FDOT will coordinate further with the FWC and follow the species' Conservation Measures and Permitting Guidelines as applicable.

3.3.4 Other State Protected Species

Florida Black Bear (*Ursus americanus floridanus*)

The Florida black bear is no longer a state-listed species but is still afforded protection by the Bear Conservation Rule (68A-4.009, F.A.C.). Black bears prefer habitats with a dense understory such as forested wetlands and uplands, natural pinelands, hammocks, scrub, and shrub lands, but will use just about every habitat type in Florida, including swamps. The project occurs within the "abundant" range of the FWC's South Bear Management Unit (i.e., Big Cypress Florida black bear population). Black bear road mortality and nuisance occurrence data were reviewed to assess the level of occurrence within the project limits. Although numerous nuisance reports occur throughout the project limits, no road kills have been documented within the project limits from 1976 through 2023. No bears or bear tracks were observed during field reviews. The potential for occurrence of this species within the project study area is considered to be **high**.

Therefore, the FDOT will implement the FDOT Supplemental Specification SP0070104-1 *Additional Requirements for Florida Black Bear* during construction (**Appendix G**). FDOT will require contractors to remove garbage daily from the construction site or use bear proof containers for securing of food and other debris from the project work area to prevent these items from becoming an attractant to the Florida black bear. Any interaction with nuisance bears will be reported to the FWC Wildlife Altert hotline 888-404-FWCC (3922).

4 WETLANDS AND OTHER SURFACE WATERS

The locations, limits, types, nature, and functions of all surface waters, including wetlands within the project limits were assessed as part of compliance with Presidential Executive Order (EO) 11990, "Protection of Wetlands" and USDOT Order 5660.1A, Preservation of the Nation's Wetlands. These federal policies require avoidance of long and short-term impacts and avoidance of direct and indirect support of new construction in wetlands to the fullest extent practicable. The analysis of protected wetlands and other surface waters occurring within the project area is consistent with the Wetlands and Other Surface Waters Chapter of the FDOT's PD&E Manual.

4.1 Methodology

Wetland and other surface water boundaries were approximated in both desktop and field evaluations in conformance with the federal and state criteria promulgated in the Corps of Engineers Wetlands Delineation Manual (USACE 1987), the Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region: Version 2 (USACE 2010), the Florida Wetlands Delineation Manual (Gilbert et. al 1995) and Rule 62-340, F.A.C., Delineation of the Landward Extent of Wetlands and Surface Waters. Background research conducted to identify the wetland communities occurring within the study area included review of the USFWS National Wetland Inventory (NWI) (2024), Land Use and Cover data from the SFWMD (2016), Soil Survey Geographic (SSURGO) Database for Florida (NRCS 2023), and aerial photography interpretation (ESRI 2025 and Google Earth 2025). Data verification was conducted during field reconnaissance surveys.

Agencies were able to provide comments in the ETDM Programming Screen regarding wetlands and other surface water concerns. The USFWS advised avoiding impacts to wetlands near the project site due to their ecological importance and stated that full compensatory mitigation is required for any unavoidable impacts. The NMFS conducted a site inspection on March 29, 2019 and concluded that the project is not expected to directly or indirectly impact federally managed marine resources, with minimal downstream effects anticipated due to planned stormwater systems and best management practices. SFWMD identified wetlands in the project area and stated that the ERP application must include a detailed environmental evaluation, demonstrate efforts to avoid and minimize impacts, and provide a mitigation plan for any unavoidable impacts. The USACE identified high-quality forested palustrine wetlands along the project corridor that may be impacted, emphasized the need to avoid, minimize, and mitigate those impacts, and requested a wetland survey and jurisdictional determination, noting that the project will require review under the Department of the Army's Individual Permit process. The USEPA expressed concern about potential wetland and surface water impacts from the project, including habitat loss and water quality degradation, and supported avoidance, minimization, and mitigation measures while recommending further actions to protect these resources.

The approximate boundaries of all wetland and other surface water features occurring within the study area were mapped, assigned an identification number, and categorized in accordance with the USFWS NWI GIS data (2021c) and the FLUCFCS designation (SFWMD 2016). Dominant vegetative strata, plant species (Tobe et. al 1998), hydrologic indicators, and soil characteristics were assessed and documented.

Wetlands and other surface water features were designated based upon their status, hydrology, and soils. Vegetated wetland systems were designated as wetlands (WL) and occur sporadically throughout the entirety of the study area. Ditches which are relatively permanent waters, were excavated in hydric soils, and/or contain hydrophytic vegetation were designated as other surface waters (OSW) and were evaluated within the wetland impacts. Maps depicting wetlands and other surface water features occurring within the study area are provided in **Appendix J** and site photos are available in **Appendix K**.

4.2 Existing Surface Waters

The existing conditions of all surface waters (including wetlands) within the study area were assessed using GIS data resources and field verification. A total of 27 systems occur within the study area. These systems occur within the Big Cypress HUC8 watershed. These systems are further described in the following text and **Table 4-1** which includes the acreage of the system occurring within the study area and each system's FLUCFCS Description (FDOT 1999) as well as the NWI classification (Cowardin et al 1979).

Table 4-1 Wetlands and Other Surface Waters in the Study Area

Number	FLUCFCS Classification	FLUCFCS Description	NWI Classification	Acres
Other Surface Waters				
D-1	510	Streams and Waterways	R2EMx	5.11
D-2	510	Streams and Waterways	R4EMx	1.03
D-3	510	Streams and Waterways	R2EMx	0.18
D-4	510	Streams and Waterways	R2EMx	1.71
P-1	530	Reservoirs	L2UB4x	0.07
P-2	530	Reservoirs	L2UB4x	0.95
P-3	530	Reservoirs	L2UB4x	1.44
P-4	530	Reservoirs	L2UB4x	0.01
			Other Surface Waters Total	10.50
Wetlands				
WL-1	617	Mixed Wetland Hardwoods	PFO6	1.21
WL-2	641	Freshwater Marsh	PEM1	1.47
WL-3	621	Cypress	PFO2	1.67
WL-4	617	Mixed Wetland Hardwoods	PFO6	0.76
WL-5	617	Mixed Wetland Hardwoods	PFO6	1.77
WL-6	641	Freshwater Marsh	PEM1	2.58
WL-7	640	Vegetated Non-Forested Wetland	PEM1x	1.53
WL-8	617	Mixed Wetland Hardwoods	PFO6	0.44
WL-9	619	Exotic Wetland Hardwoods	PFO1	2.80
WL-10	640	Vegetated Non-Forested Wetland	PEM1x	0.36
WL-11	617	Mixed Wetland Hardwoods	PFO6	0.36
WL-12	620	Wetland Coniferous Forests	PFO2/4	3.40

Number	FLUCFCS Classification	FLUCFCS Description	NWI Classification	Acres
WL-13	621	Cypress	PFO2	2.36
WL-14	621	Cypress	PFO2	2.09
WL-15	621	Cypress	PFO2	0.16
WL-16	641	Freshwater Marsh	PEM1	2.27
WL-17	641	Freshwater Marsh	PEM1	2.95
WL-18	641	Freshwater Marsh	PEM1	3.00
WL-19	630	Wetland Forested Mixed	PFO1/4	0.21
			Wetlands Total	31.39

Streams and Waterways (FLUCFCS 510)

Streams and Waterways within the study area consist of four hydric stormwater conveyance features (i.e. ditches) identified as D-1, D-2, D-3, and D-4. D-2, D-3, and D-4 are permitted by SFWMD under permit number 11-01984-P.

Within the study area D-1 originates in a canal on the west side of Old US 41 across from Rail Head Blvd. From here it flows southwest, parallel to Old US 41, and flows west under US 41 out of the study area. This system flows under crossroads and driveways via culverts and pipes. D-1 is a relatively permanent water as it was inundated during all field reviews and mosquitofish (*Gambusia affinis*) were observed in the water. The center of this system is typically unvegetated; however, pickerelweed does occur in some areas. Torpedograss and bahiagrass occur on the banks of this system. The soil map units within this system are Urban Land and Immokalee, neither of which are hydric.

D-2 is a roadside ditch that occurs on the east side of Old US 41 north of Mediterra Drive that was excavated in historically hydric soils. This system was saturated during both project field reviews. Torpedograss and bahiagrass are the dominant species of this system. This system is part of the mowed ROW for Old US 41, so vegetation is routinely mowed. The soil map units within this system are Copeland and Brynwood, which are both hydric, and Immokalee which is non-hydric.

D-3 is a roadside ditch that occurs north of Compound Road that flows under Old US 41 via pipes and was excavated in historically hydric soils. This system contains pickerelweed, torpedograss, and bahiagrass. D-3 was saturated during the May 2019 field review and inundated during the August 2019 field review. The soil map units within this system are Brynwood and Felda, which are hydric, and Urban Land that is unranked.

D-4 is a drainage ditch that occurs on undeveloped race track property and was excavated in historically hydric soils. This system contains pickerelweed, torpedograss, and cattails, but landscape red maple is present along the banks. The limits of this system were edited to account for permitted impacts from planned race track development. The soil map unit within this system is Brynwood which is a hydric soil.

Reservoirs (FLUCFCS 530)

P-1, P-2, P-3, and P-4 are stormwater ponds within the study area. P-2, P-3, and P-4 are open water, non-vegetated systems. P-1 is densely vegetated by Brazilian pepper. The soil map units within these systems consist of Immokalee which is non-hydric, urban land which is unranked, and Pineda, Cypress Lake, and Basinger which are hydric.

Mixed Wetland Hardwods (FLUCFCS 617)

WL-1, WL-4, WL-5, WL-8, and WL-11 are the mixed wetland hardwoods in the study area.

WL-1 occurs adjacent to the Veteran's Memorial Extension corridor on the east side of Old US 41. This system is bordered by a residential development to the south and a business park to the north. WL-1 is dominated by dense Brazilian pepper and Carolina willow. This system occurs entirely over Immokalee soil map units which is not a hydric soil.

WL-4, WL-5, and WL-8 are hydrologically contiguous with D-1 and occur just north of Anglewood Court. WL-4 occurs on the east side of Old US 41 and is connected to D-1 via a culvert. WL-5 and WL-8 occur on the west side of Old US 41 on either side of D-1. WL-5 partially occurs within the previously discussed Sterling Oaks conservation easement. WL-11 was historically part of the same system as WL-8; however, this system was fragmented by the construction of the Somerset Palms apartment complex. These systems contain Carolina willow, Brazilian pepper, cabbage palm, and red maple. The soil map units within these systems consist of Immokalee which is non hydric and Cypress Lake which is hydric.

Exotic Wetland Hardwoods (FLUCFCS 619)

WL-9 is the only exotic wetland hardwood system within the project study area. WL-9 occurs on the west side of Old US 41, just north of Rail Head Blvd. It is dominated almost exclusively by the exotic species melaleuca, but also contains scattered red maple, wax myrtle, and slash pine. An area in the middle of this system appears to have recently been cleared and filled in preparation of development. A sign featuring a public hearing announcement regarding this development is visible in photos included in **Appendix K**. Based on recent aerials, the site has not been developed at the time of writing. This system occurs entirely over Immokalee soil map units which are non hydric.

Wetland Coniferous Forest (FLUCFCS 620)

WL-12 is the only system designated as a wetland coniferous forest. This system occurs around the outer edge of WL-13 adjacent to the Mediterra golf course. This system is dominated by bald cypress and slash pine and is part of the Mediterra conservation easement. The soil map units within this system consist of Copeland, Felda, and Brynwood, which are all hydric.

Cypress (FLUCFCS 621)

WL-3, WL-13, WL-14, and WL-15 are the cypress dominated wetlands that occur within the study area and each occurs entirely within a conservation easement. WL-3 occurs within the Sterling Oaks conservation easement. WL-13 and WL-15 occur within the Mediterra conservation easement and WL-14 occurs within the Constitution Center conservation easement. WL-13, WL-14, and WL-15 were historically part of the same forest system but have been fragmented by Old US 41 and the Mediterra housing development and golf course. These systems are dominated by bald cypress but also contain red maple. The soil map units within these systems consist of Copeland, Felda, Cypress Lake, and Brynwood which are hydric, and Immokalee which is non hydric.

Wetland Forested Mixed (FLUCFCS 630)

WL-19 is the only system designated as wetland forested mixed. This is a remnant wetland system that occurs in a small undeveloped area between two shopping centers. The canopy of this system contains swamp bay, water oak, slash pine, and cabbage palm with an understory that contains saplings of the canopy trees and saw palmetto. The soil map units within this system consist of Brynwood which is hydric and Urban Land which is unranked.

Vegetated Non-Forested Wetlands (FLUCFCS 640)

WL-7 and WL-10 are the vegetated non-forested wetlands within the project study area. These systems occur within the maintained Old US 41 ROW. WL-7 and WL-10 are separated by driveway fill used to access a cleared and filled area of future development (previously discussed in the Exotic Wetland Hardwoods section). These wetlands are dominated by starrush whitetop, but also contain bahiagrass and largeflower rosegentian. The soil map units within these systems consist of Immokalee which is non hydric.

Freshwater Marsh (FLUCFCS 641)

WL-2, WL-6, WL-16, WL-17, and WL-18 are the freshwater marshes that occur within the project study area. WL-2 and WL-6 occur within the Sterling Oaks conservation easement and WL-16, WL-17, and WL-18 occur within undeveloped areas of the race track. WL-16, WL-17, and WL-18 are separated by minor roads related to the race track. These freshwater marshes are dominated by starrush whitetop, torpedograss, maidencane, largeflower rosegentian, and eastern false dragonhead. The soil map units within these systems consist of Copeland, Felda, Brynwood, Cypress Lake, which are hydric, Immokalee which is non hydric, and Urban Land, which is unranked.

4.3 Wetlands Impact Analysis

Impacts to wetlands within the study area will result mostly from placement of fill material; however, some excavation (dredging) may be required for stormwater management features. Impacts to project wetlands were assessed using the UMAM.

The UMAM (Chapter 62-345 F.A.C.) was developed by the State of Florida to assess the ecological functions provided by wetlands and the amount of mitigation necessary to offset the loss of functions by a proposed project. UMAM was subsequently adopted by the USACE. The UMAM analysis is based on assessing an area on three criteria: location and landscape support, water environment, and community structure. These criteria are scored with the whole increment values between "10" (indicating the highest quality system) and "0" (indicating no present value). The three criteria are summed and divided by 30 to yield a score for the assessment area between "0" and "1". The difference between the "with project" and "current" condition is calculated to result in the "Delta". The UMAM delta is multiplied by the area of wetland impact to quantify the loss of wetland functions (functional loss).

UMAM was used to analyze the quality of the wetlands which will be impacted by the project. Each individual wetland within the project corridor was evaluated using UMAM and the assessment area was calculated based on the proposed improvements. The wetlands within the project corridor were grouped together based on wetland type, function, overall characteristics, and watershed.

UMAM data sheets were compiled for each wetland type and are provided in **Appendix L**. The functional loss for the surface waters within the project footprint was calculated and a summary table of the functional loss by habitat is included in **Table 4-2**. Maps depicting wetland impacts related to the Preferred Alternative can be viewed in **Appendix J**. The Preferred Alternative will impact 5.44 acres of wetlands (3.77 acres of direct impacts and 1.67 acres of secondary impacts); 2.77 acres are from roadway improvements (2.17 acres direct and 0.60 acres secondary) and 2.67 acres are from stormwater management features (1.60 acres direct and 1.07 acres secondary). Additionally, 5.31 acres of other surface waters will be impacted by the Preferred Alternative, with 5.24 acres from roadway improvements and 0.07 from stormwater management features. These impacts result in a functional loss of 3.22 units.

Table 4-2 Preferred Alternative Wetland Impacts and UMAM Analysis Summary

Impacted Wetlands	FLUCFCS Classification	Impacted Area (Acres)		Delta		Functional Loss		Total Functional Loss
		Direct	Secondary	Direct	Secondary	Direct	Secondary	
WL-1, WL-4, WL-5, and WL-8	617	0.71	1.03	-0.50	-0.07	0.36	1.03	1.39
WL-3, WL-14	621	0.03	0.11	-0.80	-0.07	0.03	0.01	0.04
WL-7, WL-10	640	1.90	0.01	-0.60	-0.07	1.14	0.01	1.15
WL-9	619	0.09	0.34	-0.30	-0.07	0.03	0.03	0.06
WL-17	641	1.04	0.18	-0.53	-0.07	0.56	0.02	0.58
Total		**3.77**	**1.67**	**-**	**-**	**2.12**	**1.1**	**3.22**

4.4 Conceptual Mitigation Plan

Wetland impacts which will result from the construction of this project will be mitigated pursuant to Section 373.4137, F.S., to satisfy all mitigation requirements of Part IV of Chapter 373, F.S. and 33 USC. §1344. In 2008, the USACE and the US Environmental Protection Agency (USEPA) issued regulations governing compensatory mitigation for activities authorized by the Department of the Army (Federal Register 2008). These regulations, as promulgated in 33 CFR Part 332, establish a hierarchy for determining the type and location of compensatory mitigation. Briefly summarized, the rule establishes a preference for the use of mitigation bank credits if a mitigation bank has the appropriate number of and resource type of credits available. If the permitted impacts are not in the service area of an approved mitigation bank, or an in-lieu fee program cannot be used to provide the required compensatory mitigation, the rule establishes a preference for permittee responsible mitigation under a watershed approach.

The project anticipates using commercially available mitigation credits from agency-approved banks with an appropriate geographic service area to provide compensatory mitigation sufficient to offset unavoidable project impacts to wetlands and wetland-dependent species habitat. The project occurs within the service areas of the Big Cypress Mitigation Bank (MB), Panther Island MB, Panther Island Expansion MB, Corkscrew Regional MB, and Little Pine Island MB. As shown in **Table 4-3**, based on a March 19, 2025 review of the US Army Corps of Engineers' (USACE) Regulatory In-Lieu Fee and Bank Information Tracking System (RIBITS), sufficient mitigation credits are available to offset the impacts from the proposed improvements.

Table 4-3 Compensatory Wetland Mitigation Options

Bank Name	Approx. Distance from Impacts	Credit Classification	Assessment Method	Available Credits	Jurisdiction
Big Cypress MB, Phase 1-V	36 miles	Palustrine	Wetland Rapid Assessment Procedure (WRAP)	7.35	Federal
Big Cypress MB, Phase VI	38 miles	Palustrine Emergent / Palustrine Forested	WRAP	0.17 / 14.09	Federal
Corkscrew Regional MB	12 miles	Palustrine Emergent	WRAP	5.91	Federal
Panther Island MB	9 miles	Palustrine	Modified (M)-WRAP	44.50	Federal
Panther Island MB, Expansion	11 miles	Palustrine	M-WRAP	1.67	Federal

The exact number of mitigation credits required to fully offset the lost value of functions resulting from the project's wetland impacts will be determined during the design phase and in coordination with the state and federal environmental permitting agencies.

4.5 Significant Waters and Protection Areas

Significant Waters and Protection Areas include Aquatic Preserves, Outstanding Florida Waters (OFW), Wild and Scenic Rivers, and Class I and Class II waters. There are no significant waters or protection areas within or immediately adjacent to the project study area. The nearest significant waters are Oak Creek (approximately 0.19 mile north of the project on Old US 41) and the Cocohatchee River and tributaries (approximately 0.61 mile south of the project near Pan Am Avenue). Both of these tributary systems are designated as Special Outstanding Florida Waters. Enhancements to water quality resulting from project stormwater treatment facilities may serve to provide a net enhancement to the quality of water reporting to these OFWs.

4.6 Impact Avoidance and Minimization

Pursuant to Executive Order 11990, Protection of Wetlands, federal actions should avoid, to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands and avoid direct or indirect support of construction in wetlands wherever there is a practicable alternative. There is no practicable alternative to the project; however, the proposed project will have no significant short-term or long-term adverse impacts to wetlands. The proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. Additional wetland impact avoidance and minimization measures will be evaluated and documented during the project design phase. These measures may include but are not limited to, consideration of the use of structural elements such as retaining walls, consideration of the placement of stormwater treatment systems, and the use of appropriate best management practices during construction.

5 ESSENTIAL FISH HABITAT ASSESSMENT

EFH and habitat areas of particular concern (HAPC) are designated by the National Oceanic and Atmospheric Administration (NOAA), NMFS and the regional fishery management councils for species managed under the Magnuson-Stevens Fishery Conservation and Management Act as amended (MSA). The MSA established eight Fishery Management Councils (FMC) across the country that are tasked with creating and amending Fishery Management Plans (FMP). The Southeast Region Habitat Conservation Division, Gulf of Mexico Fishery Management Council (GMFMC) GIS data inventories for the Gulf of Mexico EFH and HAPC were evaluated to determine the presence or absence of these resources within the project limits (NMFS 2025).

As discussed in Section 4, wetlands and other surface waters present are entirely freshwater systems. No EFH is present within or in immediate proximity to the project limits. As part of their review of project effects under Efficient Transportation Decision Making (ETDM) project #14339, NMFS staff conducted a site inspection of the project on March 29, 2019. This inspection assessed potential project impacts to living marine resources present at the mouths of the Imperial and Cocohatcheee Rivers and in Fish Trap Bay and Little Hickory Bay [waterbodies that contain estuarine habitats used by federal-managed fish species]. The NMFS stated that it does not appear that there will be any direct or indirect impacts to NMFS trust resources as a result of the project. Considering the lack of any tidal resources within or adjacent to the project study area, there will be no involvement with EFH.

6 PERMITTING AND REVIEW AGENCIES

The USACE and SFWMD regulate impacts to surface waters within the project study area. Other agencies, including the USFWS, NMFS, and the FWC, review and comment on wetland and permit applications. The FWC also issues permits for gopher tortoise relocation/conservation activities and incidental take of state-protected species. In addition, the Florida Department of Environmental Protection (FDEP) regulates stormwater discharges from construction sites. The complexity of the permitting process will depend on the degree of impact to jurisdictional areas. It is anticipated that the following permits will be required for this project:

Permit	Issuing Agency
Section 404 Dredge and Fill Individual Permit	USACE
Environmental Resource Individual Permit	SFWMD
National Pollutant Discharge Elimination System (NPDES)	FDEP
Gopher Tortoise Conservation Permit (as necessary)	FWC
Listed Species Incidental Take Permit (as necessary)	FWC

6.1 Federal Permits

Section 404 Dredge and Fill Permit

As of the date of this report, authority for the Clean Water Act Section 404 permitting process authority has been transferred from the FDEP back to the USACE. Therefore, it is anticipated that an individual permit will be required from the USACE. An individual permit will require compliance with the 404(b)(1) guidelines, including verification that all wetland impacts have first been avoided to the greatest extent possible, that unavoidable impacts have been minimized to the greatest extent possible and lastly, that unavoidable impacts have been mitigated in the form of wetlands creation, restoration and/or enhancement.

6.2 State Permits

Environmental Resource Permit

SFWMD require an Environmental Resource Permit (ERP) when construction on any project results in the creation of a new or modification of an existing surface water management system or results in impacts to waters of the state. It is anticipated that the project will require an Individual ERP. As with Section 404 permits, the complexity associated with the ERP permitting process will depend on the size of the project and/or the extent of wetland impacts.

National Pollutant Discharge Elimination System

40 CFR Part 122 prohibits point source discharges of stormwater to waters of the US without a NPDES permit. Under the State of Florida's delegated authority to administer the NPDES program, construction sites that will result in greater than one (1) acre of disturbance must file for and obtain either coverage under an appropriate generic permit contained in Chapter 62-621, F.A.C., or an individual permit issued pursuant to Chapter 62-620, F.A.C. A major component of the NPDES permit is the development of a Stormwater Runoff Control Concept (SRCC). The SRCC identifies potential

sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from the site and discusses good engineering practices (i.e., best management practices) that will be used to reduce the pollutants.

Gopher Tortoise Conservation Permit

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

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

In accordance with the requirements of Rules 68A-25.002 and 68A-27.004 (F.A.C.), a permit for gopher tortoise capture/release activities must be secured from FWC before initiating any relocation work. A Conservation Permit is available for development projects that require the relocation of gopher tortoises when more than 10 burrows occur in the development site. This permit allows for the relocation either to an on-site preserve or off-site to an FWC-certified Recipient Site. The FWC will require a 100 percent gopher tortoise survey to be conducted within 90 days of construction commencement in order to complete gopher tortoise relocation activities. Based on gopher tortoise observations during the PD&E phase, it is anticipated that a Conservation Permit will be required from the FWC.

Listed Species Incidental Take Permit (as necessary)

Based on field reviews, suitable foraging and nesting habitat exists within the project study area for the Florida pine snake, Florida burrowing owl, Florida sandhill crane, little blue heron, tricolored heron, roseate spoonbill and southern fox squirrel. In accordance with 68A-27.001(4), 68A-27.003(a), 68A-25.002(10), 68A-27.003(2)(a), 68A-27.001(4), 68A-1.004, and 68A-27.005 F.A.C., a permit for removal of these species must be secured from the FWC before initiating incidental take. A Listed Species Incidental Take Permit is available for development projects that require the removal of these species. Although not currently anticipated, the need for an Incidental Take Permit will be determined during further field surveys conducted during the subsequent project design phase.

7 CONCLUSION

7.1 Protected Species and Habitat

The study area was evaluated for the presence of federal and/or state protected species and their suitable habitat in accordance with Section 7 of the ESA and the Protected Species and Habitat Portion of the PD&E Manual. The potentials for occurrence and effect determinations for all species which were evaluated are presented in **Table 7-1**. Multiple protection measures are to be employed to negate and minimize any potential effects to these species. Some of the measures employed are anticipated to include more detailed field surveys and agency coordination during the project's Design phase, relocation of any potentially affected gopher tortoises prior to construction, and the use of Best Management Practices (BMPs) and species-specific standard protection measures (e.g., eastern indigo snake) during construction.

Table 7-1 Potential for Occurrence and Proposed Effect Determination for Federal and State Protected Species for the Project Study Area

Species	Listing Status*	Potential for Occurrence	Proposed Effect Determination
Plants			
Aboriginal Prickly-Apple (*Harrisia aboriginum*)	USFWS/FDACS – Endangered	***No***	***No effect***
Beautiful Pawpaw (*Deeringothamnus pulchellus*)	USFWS/FDACS – Endangered	***No***	***No effect***
Florida Prairie-Clover (*Dalea carthagenensis*)	USFWS/FDACS – Endangered	***No***	***No effect***
Garber's Spurge (*Chamaesyce garberi*)	USFWS – Threatened FDACS – Endangered	***No***	***No effect***
American Bird's Nest Fern (*Asplenium serratum*)	FDACS – Endangered	***Moderate***	***No adverse effect anticipated***
Banded Wild-Pine (*Tillandsia flexuosa*)	FDACS – Threatened	***Moderate***	***No adverse effect anticipated***
Catesby's Lily (*Lilium catesbaei*)	FDACS – Threatened	***Moderate***	***No adverse effect anticipated***
Clamshell Orchid (*Encyclia cochleata= Prosthechea cochleata*)	FDACS – Endangered	***Moderate***	***No adverse effect anticipated***
Cowhorn Orchid (*Cyrtopodium punctatum*)	FDACS – Endangered	***Moderate***	***No adverse effect anticipated***
Curtiss' Milkweed (*Asclepias curtissi*)	FDACS – Endangered	***Moderate***	***No adverse effect anticipated***
Florida Beargrass (*Nolina atopocarpa*)	FDACS – Threatened	***Moderate***	***No adverse effect anticipated***
Florida Dancing-Lady Orchid (*Oncidium ensatum = Oncidium floridanum*)	FDACS – Endangered	***Moderate***	***No adverse effect anticipated***
Florida Keys Indigo (*Indigofera mucronata var keyensis = Indigofera trita var scabra*)	FDACS – Endangered	***No***	***No effect anticipated***
Florida Peperomia (*Peperomia obtusifolia*)	FDACS – Endangered	***Low***	***No adverse effect anticipated***

Species	Listing Status*	Potential for Occurrence	Proposed Effect Determination
Frosted Orchid (*Pleurothallis gelida = Stelis gelida*)	FDACS – Endangered	***Low***	***No adverse effect anticipated***
Fuchs' Bromeliad (*Guzmania monostachia*)	FDACS – Endangered	***No***	***No effect anticipated***
Fuzzy-Wuzzy Airplant (*Tillandsia pruinosa*)	FDACS – Endangered	***Low***	***No adverse effect anticipated***
Ghost Orchid (*Dendrophylax lindenii*)	FDACS – Endangered	***Moderate***	***No adverse effect anticipated***
Giant Orchid/Non-Crested Eulophia (*Orthochilus ecristata = Eulophia ecristata*)	FDACS – Threatened	***Moderate***	***No adverse effect anticipated***
Giant Wild-Pine (*Tillandsia utriculata*)	FDACS – Endangered	***High (Observed)***	***No adverse effect anticipated***
Hand Fern (*Ophioglossum palmatum*)	FDACS – Endangered	***Low***	***No adverse effect anticipated***
Hidden Orchid (*Maxillaria crassifolia*)	FDACS – Endangered	***Moderate***	***No adverse effect anticipated***
Leafless Orchid (*Campylocentrum pachyrrhizum*)	FDACS – Endangered	***Moderate***	***No adverse effect anticipated***
Leafy Beaked Ladies'-Tresses (*Sacoila lanceolata* var. *paludicola = Stenorrhynchos lanceolatum*)	FDACS – Threatened	***Moderate***	***No adverse effect anticipated***
Low Peperomia (*Peperomia humilis*)	FDACS – Endangered	***Low***	***No adverse effect anticipated***
Many-Flowered Airplant/Catopsis (*Catopsis floribunda*)	FDACS – Endangered	***Moderate***	***No adverse effect anticipated***
Many-Flowered Grass Pink (*Calopogon multiflorus*)	FDACS – Threatened	***Low***	***No effect anticipated***
Meadow Joint-Vetch (*Aeschynomene pratensis*)	FDACS – Endangered	***Moderate***	***No adverse effect anticipated***
Narrow Strap Fern (*Campyloneurum angustifolium*)	FDACS – Endangered	***Moderate***	***No adverse effect anticipated***
Needleroot Airplant Orchid (*Harrisella porrecta = Dendrophylax porrectus*)	FDACS – Threatened	***Moderate***	***No adverse effect anticipated***
Night-Scented Orchid (*Epidendrum nocturnum*)	FDACS – Endangered	***Moderate***	***No adverse effect anticipated***
Nodding/Scrub Pinweed (*Lechea cernua*)	FDACS – Threatened	***Moderate***	***No adverse effect anticipated***
Pale Passionflower (*Passiflora pallens*)	FDACS – Endangered	***No***	***No effect anticipated***
Reflexed Wild-Pine (*Tillandsia balbisiana*)	FDACS – Threatened	***Moderate***	***No adverse effect anticipated***
Sand-Dune Spurge (*Chamaesyce cumulicola=Euphorbia cumulicola*)	FDACS – Endangered	***Moderate***	***No adverse effect anticipated***
Sanibel Island Lovegrass (*Eragrostis pectinacea* var. *tracyi*)	FDACS – Endangered	***Low***	***No adverse effect anticipated***
Scrub Stylisma/Showy Dawnflower (*Stylisma abdita*)	FDACS – Endangered	***Moderate***	***No adverse effect anticipated***
Skyblue Clustervine (*Jacquemontia pentanthos*)	FDACS – Endangered	***Low***	***No adverse effect anticipated***
Small's Flax (*Linum carteri* var. *smallii*)	FDACS – Endangered	***Low***	***No adverse effect anticipated***
Southern Ladies'-Tresses (*Spiranthes torta*)	FDACS – Endangered	***No***	***No effect anticipated***
Spiny Hackberry (*Celtis pallida*)	FDACS – Endangered	***No***	***No effect anticipated***
Spreading/Pine Pinweed (*Lechea divaricata*)	FDACS – Endangered	***Moderate***	***No adverse effect anticipated***

Species	Listing Status*	Potential for Occurrence	Proposed Effect Determination
Stiff-Leaved Wild-Pine (*Tillandsia fasciculata* var. *densispica*)	FDACS - Endangered	***High (Observed)***	***No adverse effect anticipated***
Swamp Plume Polypody (*Pecluma ptilota = Polypodium ptilodon*)	FDACS - Endangered	***Low***	***No adverse effect anticipated***
Toothed Lattice-Vein Fern (*Thelypteris serrata*)	FDACS - Endangered	***Moderate***	***No adverse effect anticipated***
Invertebrates			
Monarch Butterfly (*Danaus Plexippus*)	USFWS – Proposed Threatened	***Moderate***	***N/A***
Reptiles			
American Crocodile (*Crocodylus acutus*)	USFWS – Threatened	***No***	***No effect***
Eastern Indigo Snake (*Drymarchon corais couperi*)	USFWS – Threatened	***Low***	***May affect, not likely to adversely affect***
Florida Pine Snake (*Pituophis melanoleucus mugitus*)	FWC - Threatened	***Moderate***	***No adverse effect anticipated***
Gopher Tortoise (*Gopher polyphemus*)	FWC - Threatened	***High (Observed)***	***No adverse effect anticipated***
Birds			
Florida Scrub-Jay (*Aphelocoma coerulescens*)	USFWS - Threatened	***Low***	***No effect***
Red-Cockaded Woodpecker (*Picoides borealis*)	USFWS – Endangered	***No***	***No effect***
Wood Stork (*Mycteria americana*)	USFWS – Threatened	***High (Observed)***	***May affect, not likely to adversely effect***
Eastern Black Rail (*Laterallus jamaicensis jamaicensis*)	USFWS – Threatened	***Low***	***May affect, not likely to adversely effect***
Florida Burrowing Owl (*Athene cunicularia floridana*)	FWC – Threatened	***Low***	***No adverse effect anticipated***
Florida Sandhill Crane (*Antigone canadensis pratensis*)	FWC – Threatened	***High***	***No adverse effect anticipated***
Little Blue Heron (*Egretta caerulea*)	FWC – Threatened	***High***	***No adverse effect anticipated***
Roseate Spoonbill (*Platalea ajaja*)	FWC – Threatened	***High***	***No adverse effect anticipated***
Tricolored Heron (*Egretta tricolor*)	FWC – Threatened	***High***	***No adverse effect anticipated***
Southeastern American Kestrel (*Falco sparverius paulus*)	FWC – Threatened	***High (Potentially observed)***	***No adverse effect anticipated***
Bald Eagle (*Haliaeetus leucocephalus*)	N/A	***Moderate***	***N/A***
Mammals			
Florida Bonneted Bat (*Eumops floridanus*)	USFWS – Endangered	***High***	***May affect, not likely to adversely effect***
Tricolored Bat (*Pipistrellus subflavus*)	USFWS – Proposed Endangered	***Low***	***May affect, not likely to adversely affect***
Florida Panther (*Puma concolor coryi*)	USFWS – Endangered	***Low***	***No effect***
Big Cypress Fox Squirrel (*Sciurus niger avicennia*)	FWC – Threatened	***Moderate***	***No adverse effect anticipated***
Florida Black Bear (*Ursus americana floridana*)	N/A	***High***	***N/A***

7.2 Wetlands Evaluation

Proposed project alternatives were evaluated for impacts to wetlands in accordance with EO 11990 and the Wetlands and Other Surface Waters chapter of the FDOT PD&E Manual. Based on the type and location of project impacts the FDOT has determined that there is no practicable alternative to the proposed construction in wetlands. In accordance with EO 11990, the FDOT has undertaken all actions to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities. The proposed project will not adversely impact wetlands as unavoidable impacts will be mitigated to achieve no net loss of wetland function. The proposed project will have no significant short-term or long-term adverse impacts to wetlands. The proposed project will have minimal impacts to wetlands in the project study area (i.e., approximately 5.44 of the 31.39 acres or 17.33%) and these impacts will be compensated by mitigation bank credits from established banks within the appropriate geographical service area.

Wetland impacts which will result from the construction of this project will be mitigated pursuant to Section 373.4137, F.S. to satisfy all mitigation requirements of Part IV Chapter 373, F.S. and 33 U.S.C. 1344. Compensatory mitigation for this project will be completed through the use of mitigation banks and any other mitigation options that satisfy state and federal requirements. Mitigation banks within the service area of this project with available credits at the time of this report are: Big Cypress MB, Phase 1-V, Big Cypress MB, Phase VI, Corkscrew Regional MB, Panther Island MB, and Panther Island MB, Expansion. Direct impacts associated with the Preferred Alternative total 9.08 acres and include 3.77 acres of wetlands and 5.31 acres of other surface waters. Secondary impacts include a total of 1.67 acres of wetlands.

A UMAM analysis (**Appendix L**) was performed to estimate the functional loss due to wetland impacts from the Preferred Alternative. Construction of the Preferred Alternative results in a loss of 3.22 functional units (2.12 direct and 1.10 secondary).

7.3 Essential Fish Habitat

As discussed in Section 5, wetlands and other surface waters present are entirely freshwater systems. No EFH is present within or in immediate proximity to the project limits. As part of their review of project effects under ETDM project #14339, the NMFS stated that it does not appear that there will be any direct or indirect impacts to NMFS trust resources as a result of the project. Considering the lack of any tidal resources within or adjacent to the project study area, there will be no involvement with EFH.

7.4 Commitments and Implementation Measures

Based on the species resources for this project the FDOT commits to the following:

Commitments

- If the monarch butterfly is listed by USFWS as Threatened or Endangered and the project may affect the species, FDOT commits to re-initiating consultation with USFWS to determine appropriate avoidance and minimization measures for protection of the newly listed species.

- The most recent version of the USFWS *Standard Protection Measures for the Eastern Indigo Snake* will be utilized during construction.
- In accordance with the use of the USFWS' Consultation Key for the Florida Bonneted Bat and Florida Bonneted Bat Consultation Guidelines and the finding of a MANLAA-P effect determination for the Florida bonneted bat, the FDOT will implement bonneted bat BMP #1: If potential roost trees or structures need to be removed, check cavities for bats within 30 days prior to removal of trees, snags, or structures. When possible, remove structure outside of breeding season (e.g., January 1 – April 15). If evidence of use by any bat species is observed, discontinue removal efforts in that area and coordinate with the Service on how to proceed.
- In accordance with the use of the USFWS' Consultation Key for the Florida Bonneted Bat and Florida Bonneted Bat Consultation Guidelines and the finding of a MANLAA-P effect determination for the Florida bonneted bat, the FDOT will implement bonneted bat BMP #5: Conserve open freshwater and wetland habitats to promote foraging opportunities and avoid impacting water quality. Created/restored habitat should be designed to replace the function of native habitat.
- In accordance with the use of the USFWS' Consultation Key for the Florida Bonneted Bat and Florida Bonneted Bat Consultation Guidelines and the finding of a MANLAA-P effect determination for the Florida bonneted bat, the FDOT will implement bonneted bat BMP #7: Avoid or limit widespread application of insecticides (e.g., mosquito control, agricultural pest control) in areas where Florida bonneted bats are known or expected to forage or roost.
- In accordance with the use of the USFWS' Consultation Key for the Florida Bonneted Bat and Florida Bonneted Bat Consultation Guidelines and the finding of a MANLAA-P effect determination for the Florida bonneted bat, the FDOT will implement bonneted bat BMP #10: Protect known Florida bonneted bat roost trees, snags or structures and trees or snags that have been historically used by Florida bonneted bats for roosting, even if not currently occupied, by retaining a 250 foot (76 m) disturbance buffer around the roost tree, snag, or structure to ensure that roost sites remain suitable for use in the future.
- As the timeline for construction is better defined, FDOT will adhere to the applicable commitments below:
    - Upon listing of the tricolored bat, if the project contains suitable habitat and requires tree trimming and/or clearing, FDOT will not conduct tree trimming/clearing activities during the tricolored bat pup season (May 1st to July 15th) and when bats may be in torpor (when temperatures are below 45 degrees Fahrenheit).
    - Upon listing of the tricolored bat, if the project contains suitable habitat and FDOT needs to trim or clear trees or perform work on bridges/culverts during the maternity season and/or when the temperature is below 45 degrees Fahrenheit, then FDOT will survey the project area for evidence of the tricolored bat. The Indiana Bat and Northern Long-eared Bat Survey Guidance (USFWS), *Appendix J* acoustic survey protocol in the year-round range (mist netting is not being conducted in Florida at this time), will be used for areas with tree trimming/clearing. For bridges and culvers, the Indiana Bat and Northern Long-eared Bat Survey Guidance, *Appendix K*, Assessing Bridges and Culverts for Bats, will be used.

    - If the surveys result in no tricolored bats detected, then FDOT can proceed with the project activities. Negative results from bridge/culvert surveys are valid for 2 years. Negative results for acoustic surveys are valid for 5 years. However, negative results for either survey may be invalidated if additional tricolored bat survey data is submitted to FWS showing presence of the species within the vicinity of the project area. Additional survey work by FDOT, or application of the avoidance and minimization measures noted in #4, may be required if updated detections are reported, and may result in reinitiation of consultation with FWS.
    - If the surveys result in positive detections of the tricolored bat, FDOT will implement conservation measures such as: not conducting tree trimming/clearing activities during the tricolored bat pup season (May 1st to July 15th) when pups are not volant and not able to escape disturbance; similarly avoid tree trimming/clearing activities when the temperatures are below 45 degrees Fahrenheit when bats may be in torpor and unresponsive to disturbance.
- FDOT will provide mitigation for impacts to wood stork Suitable Foraging Habitat within the Service Area of a Service-approved wetland mitigation bank or wood stork conservation bank.
- FDOT will require contractors to remove garbage daily from the construction site or use bear proof containers for securing of food and other debris from the project work area to prevent these items from becoming an attractant for the Florida black bear (*Ursus americanus floridanus*). Any interaction with nuisance bears will be reported to the FWC Wildlife Alert hotline 888-404-FWCC (3922).
- A survey for listed plant species giant wild pine and stiff-leaved wild pine will be performed during the design phase and coordination with FDACS and USFWS will occur if impacts to the species are anticipated.

Implementation Measures

- Wetland impacts which will result from the construction of this project will be mitigated pursuant to Section 373.4137, F.S., to satisfy all mitigation requirements of Part IV of Chapter 373, F.S. and 33 USC. §1344. For mitigation of wetland impacts, compensatory mitigation credits sufficient to offset project impacts will be purchased from a USFWS-approved mitigation bank. The specific conservation bank and exact number of credits to be purchased will be specified in the final permitting document.
- Surveys for gopher tortoise burrows, as well as commensal species, will be conducted during the design phase and permits to relocate tortoises and commensals as appropriate will be obtained from the FWC.

8 REFERENCES

Audubon. 2025. Audubon Center for Birds of Prey. EagleWatch Public Nest Map. https://cbop.audubon.org/conservation/about-eaglewatch-program. Accessed March 2025.

Best, T. L., W. M. Kiser, and J. C. Riney. 1997. *Eumops glaucinus*. American Society of Mammalogists 551:1-6.

Center for Biological Diversity. 2025. Natural history for the aboriginal prickly-apple cactus *Harrisia aborigium*.https://www.biologicaldiversity.org/species/plants/Florida_plants/natural_history_aboriginal_prickly_apple.html. Center for Biological Diversity, St. Petersburg, Florida. Accessed July 2025.

Collier County. 2015. Railhead Scrub Preserve Land Management Plan. Conservation Collier Program. Naples, Florida.

Cowardin, L. M., V. Carter, F. C. Golet, and E. T. LaRoe. 1979. *Classification of Deepwater Habitats of the United States*. US Department of the Interior, Fish and Wildlife Service, Office of Biological Services. Technical Publication FWS/OBS-79/31.

ESRI. 2025. Environmental Systems Research Institute. World Imagery. March 2025. ESRI, ArcGIS Online.

ETDM. 2025. Environmental Screening Tool. https://etdmpub.fla-etat.org/est/. Accessed March 2025.

FDACS. 2025. Endangered, Threatened, and Commercially Exploited Plants of Florida website. https://www.freshfromflorida.com/Divisions-Offices/Plant-Industry/Bureaus-and-Services/Bureau-of-Entomology-Nematology-Plant-Pathology/Botany/Florida-s-Endangered-Plants/Endangered-Threatened-and-Commercially-Exploited-Plants-of-Florida. Florida Department of Agriculture and Consumer Services. Accessed March 2025.

FDOT. 1999. Florida Land Use, Cover and Forms Classification System. Florida Department of Transportation. Tallahassee, Florida.

FDOT. 2024. Project Development and Environment (PD&E) Manual, effective July 31, 2024. https://www.fdot.gov/environment/pubs/pdeman/pdeman1.shtm. Chapter 9, Wetlands and Other Surface Waters; Chapter 16 Protected Species and Habitat and Chapter 17 Essential Fish Habitat. Florida Department of Transportation. Tallahassee, Florida. Accessed various dates.

Federal Register. 2008. Compensatory Mitigation for Losses of Aquatic Resources; Final Rule. April 10, 2008. Office of the Federal Register. Washington, D.C.

Federal Register. 2017. Endangered and Threatened Wildlife and Plants; Endangered Species Status for Dalea carthagenensis var. floridana (Florida Prairie-clover), and Threatened Species Status for Sideroxylon reclinatum ssp. austrofloridense (Everglades Bully), Digitaria pauciflora (Florida Pineland Crabgrass), and Chamaesyce deltoidea ssp. pinetorum (Pineland Sandmat. https://www.federalregister.gov/documents/2017/10/06/2017-21617/endangered-and-threatened-wildlife-and-plants-endangered-species-status-for-dalea-carthagenensis-var. Published October 6, 2017. US Fish and Wildlife Service. Washington, D.C.

Federal Register. 2020. Endangered and Threatened Wildlife and Plants; Threatened Species Status for Eastern Black Rail With a Section 4(d) Rule. https://www.federalregister.gov/documents/2020/10/08/2020-19661/endangered-and-threatened-wildlife-and-plants-threatened-species-status-for-eastern-black-rail-with. Published October 8, 2020. US Fish and Wildlife Service. Washington, D.C.

FGDL. 2025. Florida Geographic Data Library. https://www.fgdl.org/metadataexplorer/explorer.jsp. Accessed March 2025.

FLNO. 2025a. Species profile for the Thickroot Orchid, Ribbon Orchid (*Campylocentrum pachyrrhizum*). Florida's Native and Naturalized Orchids. https://www.flnativeorchids.com/natives_gallery/campylocentrum_pachyrrhizum.htm. Accessed March 2025.

FLNO. 2025b. Species profile for the Needleroot Orchid (*Dendrophylax porrectus*). Florida's Native and Naturalized Orchids. https://www.flnativeorchids.com/natives_gallery/harrisella_porrecta.htm. Accessed March 2025.

FNAI. 2000. Field Guide to the Rare Plants of Florida, Florida Natural Areas Inventory. Florida Natural Areas Inventory. Tallahassee, Florida.

FNAI. 2025. Florida Natural Areas Inventory, Tracking List. Florida Natural Areas Inventory. Tallahassee, Florida.

FWC. 1994. Florida Scrub Jay occurrence on Florida 1992 – 1993_SCRUBJAY_1993. Published January 1, 1994. Florida Fish and Wildlife Conservation Commission-Fish and Wildlife Research Institute. Tallahassee, Florida.

FWC. 2005. Red Cockaded Woodpecker Active and Inactive Occurrences in Florida-2005 (RC_WOODPECKER_2005 via FGDL). Published January 1, 2010. Florida Fish and Wildlife Conservation Commission. Tallahassee, Florida.

FWC. 2019. Bear Management Units. https://myfwc.com/wildlifehabitats/wildlife/bear/bmu. Florida Fish and Wildlife Conservation Commission. Tallahassee, Florida. Accessed March 2025.

FWC. 2022. Florida's Endangered and Threatened Species. December 2022. Florida Fish and Wildlife Conservation Commission. Tallahassee, Florida.

FWC. 2023. Gopher Tortoise Permitting Guidelines (Revised April 2023). Florida Fish and Wildlife Conservation Commission. Tallahassee, Florida.

FWC. 2024a. Florida Black Bear Road Mortality Locations 1976 – 2023. Florida Fish and Wildlife Conservation Commission-Fish and Wildlife Research Institute. Tallahassee, Florida.

FWC. 2024b. Florida Black Bear Related Calls 1980-2023. Florida Fish and Wildlife Conservation Commission-Fish and Wildlife Research Institute. Tallahassee, Florida.

FWC. 2025a. Species profile for the American crocodile. https://myfwc.com/wildlifehabitats/profiles/reptiles/american-crocodile/. Florida Fish and Wildlife Conservation Commission. Tallahassee, Florida. Accessed March 2025.

FWC. 2025b. Species profile for the Florida scrub jay. https://myfwc.com/wildlifehabitats/profiles/birds/songbirds/florida-scrub-jay/. Florida Fish and Wildlife Conservation Commission. Tallahassee, Florida. Accessed March 2025.

FWC. 2025c. Species profile for the Florida Burrowing Owl. https://myfwc.com/wildlifehabitats/profiles/birds/owls/burrowing-owl/. Florida Fish and Wildlife Conservation Commission. Tallahassee, Florida. Accessed March 2025.

FWC. 2025d. FWC Water Bird Locator website. http://atoll.floridamarine.org/waterBirds/. Florida Fish and Wildlife Conservation Commission. Tallahassee, Florida. Accessed March 2025.

FWC. 2025e. Species profile for the Southeastern American Kestrel. https://myfwc.com/wildlifehabitats/profiles/birds/raptors-and-vultures/american-kestrel/. Florida Fish and Wildlife Research Institute/Florida Fish and Wildlife Conservation Commission. Tallahassee, Florida. Accessed March 2025.

FWC. 2025f. Species profile for the Big Cypress Fox Squirrel. https://myfwc.com/wildlifehabitats/profiles/mammals/land/big-cypress-fox-squirrel/. Florida Fish and Wildlife Conservation Commission. Tallahassee, Florida. Accessed March 2025.

FWC. 2025g. Eagle Nest Locator website. https://public.myfwc.com/FWRI/EagleNests/nestlocator/. Database current through the 2016-2017 nesting season. Florida Fish and Wildlife Conservation Commission. Tallahassee, Florida. Accessed March 2025.

FWC. 2025h. Species profile for the Florida black bear. https://myfwc.com/wildlifehabitats/profiles/mammals/land/black-bear/. Florida Fish and Wildlife Conservation Commission. Tallahassee, Florida. Accessed March 2025.

Gilbert, K. M., J. D. Tobe, R. W. Cantrell, M. E. Sweeley, and J. R. Cooper. 1995. The Florida Wetlands Delineation Manual.

GMFMC. 1998. Generic Amendment for Addressing Essential Fish Habitat Requirements in the Fishery Management Plans of the Gulf of Mexico. Gulf of Mexico Fishery Management Council. Tampa, Florida.

GMFMC. 2005. Generic Amendment Number 3 for Addressing Essential Fish Habitat Requirements, Habitat Areas of Particular Concern, and Adverse Effects of Fishing in the following Fishery Management Plans of the Gulf of Mexico: Shrimp Fishery of the Gulf of Mexico, United States Waters, Red Drum Fishery of the Gulf of Mexico, Reef Fish Fishery of the Gulf of Mexico, Coastal Migratory Pelagic Resources (Mackerels) in the Gulf of Mexico and South Atlantic, Stone Crab Fishery of the Gulf of Mexico, Spiny Lobster in the Gulf of Mexico and South Atlantic, Coral and Coral Reefs of the Gulf of Mexico. Gulf of Mexico Fishery Management Council. Tampa, Florida.

IOF. 2025. Species Profile for Curtiss' Milkweed. Imagine Our Florida. https://imagineourflorida.org/curtiss-milkweed/. Accessed March 2025.

NAOCC. 2025a. Species Profile for *Oncidium ensatum*. North American Orchid Conservation Center. https://goorchids.northamericanorchidcenter.org/species/oncidium/ensatum/. Accessed March 2025.

NAOCC. 2025b. Species Profile for *Stelis gelida*. North American Orchid Conservation Center. https://goorchids.northamericanorchidcenter.org/species/stelis/gelida/. Accessed March 2025.

NAOCC. 2025c. Species Profile for *Dendrophylax lindenii*. North American Orchid Conservation Center. https://goorchids.northamericanorchidcenter.org/species/dendrophylax/lindenii/. Accessed March 2025.

NAOCC. 2025d. Species Profile for *Sacoila lanceolata*. North American Orchid Conservation Center. http://goorchids.northamericanorchidcenter.org/species/sacoila/lanceolata/. Accessed March 2025.

NMFS. 2025 EFH Test Descriptions and GIS Data Inventory website. https://www.habitat.noaa.gov/protection/efh/newInv/index.html. National Oceanic and Atmospheric Association, National Marine Fisheries Service. Accessed March 2025.

NRCS. 2023. Soil Survey Geographic (SSURGO) Database for Florida. October 2023. US Department of Agriculture, Natural Resources Conservation Service. Gainesville, Florida.

NRCS. 2025. State Hydric Soils List for Florida. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcseprd1316619.html. US Department of Agriculture, Natural Resources Conservation Service. Gainesville, Florida. Accessed March 2025.

SFWMD. 2016. SFWMD Land Cover Land Use 2014-2016. November 7, 2018. South Florida Water Management District. West Palm Beach, Florida.

Tobe, J. D., K. C. Burks, R. W. Cantrell, M. A. Garland, M. E. Sweeley, D. W. Hall, P. Wallace, G. Anglin, G. Nelson, J. R. Cooper, D. Bickner, K. Gilbert, N. Aymond, K. Greenwood, and N. Raymond. 1998. Florida Wetland Plants: An Identification Manual. Florida Department of Environmental Protection. Tallahassee, Florida.

UF IFAS. 2025. Saving Florida's Bromeliads A Plan For Conserving Florida's Native Airplants. University of Florida Institute of Food and Agricultural Services. http://entnemdept.ufl.edu/frank/savebromeliads/floridas-bromeliads/floridas-bromeliads.html. Gainesville, Florida. Accessed March 2025.

USACE. 1987. Corps of Engineers Wetlands Delineation Manual. January 1987. US Army Corps of Engineers, Waterways Experiment Station. Vicksburg, Mississippi.

USACE. 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0). US Army Corps of Engineers, Engineer Research and Development Center. Vicksburg, Mississippi.

USACE. 2025. Regulatory In-Lieu Fee and Bank Information Tracking System. https://ribits.usace.army.mil/ribits_apex/f?p=107:2. US Army Corps of Engineers. Accessed March 2025.

USFWS. 1999. South Florida Multi-Species Recovery Plan, Dated May 18, 1999. US Fish and Wildlife Service, South Florida Ecological Services Field Office. Vero Beach, Florida.

USFWS. 2004A. Species Conservation Guidelines for the Florida Scrub Jay, Draft dated May 28, 2004. US Fish and Wildlife Service, South Florida Ecological Services Field Office, Vero Beach, Florida.

USFWS. 2004B. Species Conservation Guidelines South Florida Red-Cockaded Woodpecker, Draft dated July 12, 2004. US Fish and Wildlife Service, South Florida Ecological Services Field Office, Vero Beach, Florida.

USFWS. 2008. Florida Panther Recovery Plan (*Puma concolor coryi*), Third Revision, Dated November1,2008.https://www.fws.gov/verobeach/MammalsPDFs/FinalizedFloridaPantherRecoveryPlan081218.pdf. US Fish and Wildlife Service. Atlanta, Georgia. Accessed March 2025.

USFWS. 2010. South Florida Programmatic Wood Stork Effect Determination Key, dated May 18, 2010.https://www.fws.gov/verobeach/BirdsPDFs/20100518LetterServicetoCorpsFLProgrammaticStorkRevised1.pdf. US Fish and Wildlife Service, South Florida Ecological Services Office. Vero Beach, Florida. Accessed March 2025.

USFWS. 2013a. Update Addendum to USFWS Concurrence Letter to US Army Corps of Engineers Regarding Use of the Attached Eastern Indigo Snake Programmatic Effect Determination Key. Letter dated August 13, 2013 from Dawn Jennings, US Fish and Wildlife Service, to Colonel Alan M. Dodd, Jacksonville District Corps of Engineers. US Fish and Wildlife Service. Jacksonville, Florida.

USFWS. 2013b. Standard Protection Measures for the Eastern Indigo Snake. US Fish and Wildlife Service. Jacksonville, Florida.

USFWS. 2013c. Endangered and Threatened Wildlife and Plants; Endangered Species Status for the Florida Bonneted Bat; final rule *in* Federal Register 78, No. 191: 61004-61043. US Fish and Wildlife Service.

USFWS. 2022. Florida panther mortality locations February 1972 – December 2022. Published December 22, 2022. Florida Geographic Data Library.

USFWS. 2024. National Wetlands Inventory Polygons in Florida – Surface Waters and Wetlands (Version 2). May 17, 2024. US Fish and Wildlife Service. Washington, D.C.

USFWS. 2025a. IPaC information for Planning and Consultation website. https://ecos.fws.gov/ipac/. US Fish and Wildlife Service. Washington, D.C. Accessed March 2025.

USFWS. 2025b. ECOS Environmental Conservation Online System – Find Endangered Species (search tool). https://www.fws.gov/endangered/. US Fish and Wildlife Service. Washington, D.C. Accessed March 2025.

USFWS. 2025c. Florida Wood Stork Nesting Colonies 2010–2019. Published April 15, 2020. https://www.fws.gov/northflorida/WoodStorks/wood-storks.htm. US Fish and Wildlife

Service North Florida Ecological Services Field Office. Jacksonville, Florida. Accessed March 2025.

USFWS. 2025d. Endangered and Threatened Species: Designation of Critical habitat for Florida Bonneted Bat. https://www.regulations.gov/document?D=FWS-R4-ES-2019-0106-0001. US Fish and Wildlife Service South Florida Ecological Services Field Office. Vero Beach, Florida. Accessed March 2025.

USFWS. 2025e. ECOS Environmental Conservation Online System – USFWS Threatened & Endangered Species Active Critical Habitat Report (online mapper) https://fws.maps.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=794de45b9d774d21aed3bf9b5313ee24. US Fish and Wildlife Service. Washington, D.C. Accessed March 2025.

Wunderlin, R. P., B. F. Hansen, A. R. Franck, and F. B. Essig. 2025. Atlas of Florida Plants. http://florida.plantatlas.usf.edu [S.M. Landry and K.N. Campbell (application development), USF Water Institute.] Institute of Systemic Botany, University of South Florida. Tampa, Florida.

APPENDICES

Appendix A – Preferred Alternative Concept Plans
Appendix B – Land Use Map
Appendix C – Land Use/Code Descriptions
Appendix D – NRCS Soils Map
Appendix E – Species Observations Map
Appendix F – FNAI Data Report
Appendix G – Species Protection Measures
Appendix H – Species Consultation Keys
Appendix I – Florida Bonneted Bat Species Memo
Appendix J – Wetland and Other Surface Waters Map
Appendix K – Site Photos
Appendix L – UMAM Data Sheets

APPENDIX A

Preferred Alternative Concept Plans

COLLIER COUNTY

STATION	PROPOSED CONCRETE SEPARATOR
EXISTING ROW	PROPOSED SIDEWALK/PATH
PROPERTY LINES	PROPOSED PAVEMENT
PROPOSED ROW	PROPOSED MEDIAN
PROPOSED EASEMENT	FUTURE BY-OTHERS
WETLANDS	CONSERVATION EASEMENTS
SURFACE WATERS	

HNTB CORPORATION
MATTHEW J.W. DOCKINS
P.E. LICENSE NUMBER 79350
201 N. FRANKLIN STREET, SUITE 1200
TAMPA, FLORIDA 33602

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CR 887	COLLIER AND LEE	435110-1-22-01 435347-1-22-01

PREFERRED ALTERNATIVE

SHEET NO. 1

\\tmaw00\jobs\85808 D1 US41 PDE\TECHPROD\43511012201\Roadway\old41PLAN01.dgn 3/20/2025 3:00:10 PM

COLLIER COUNTY

100

STATION
EXISTING ROW
PROPERTY LINES
PROPOSED ROW
PROPOSED EASEMENT
WETLANDS
SURFACE WATERS
PROPOSED CONCRETE SEPARATOR
PROPOSED SIDEWALK/PATH
PROPOSED PAVEMENT
PROPOSED MEDIAN
FUTURE BY-OTHERS
CONSERVATION EASEMENTS

HNTB CORPORATION
MATTHEW J.W. DOCKINS
P.E. LICENSE NUMBER 79350
201 N. FRANKLIN STREET, SUITE 1200
TAMPA, FLORIDA 33602

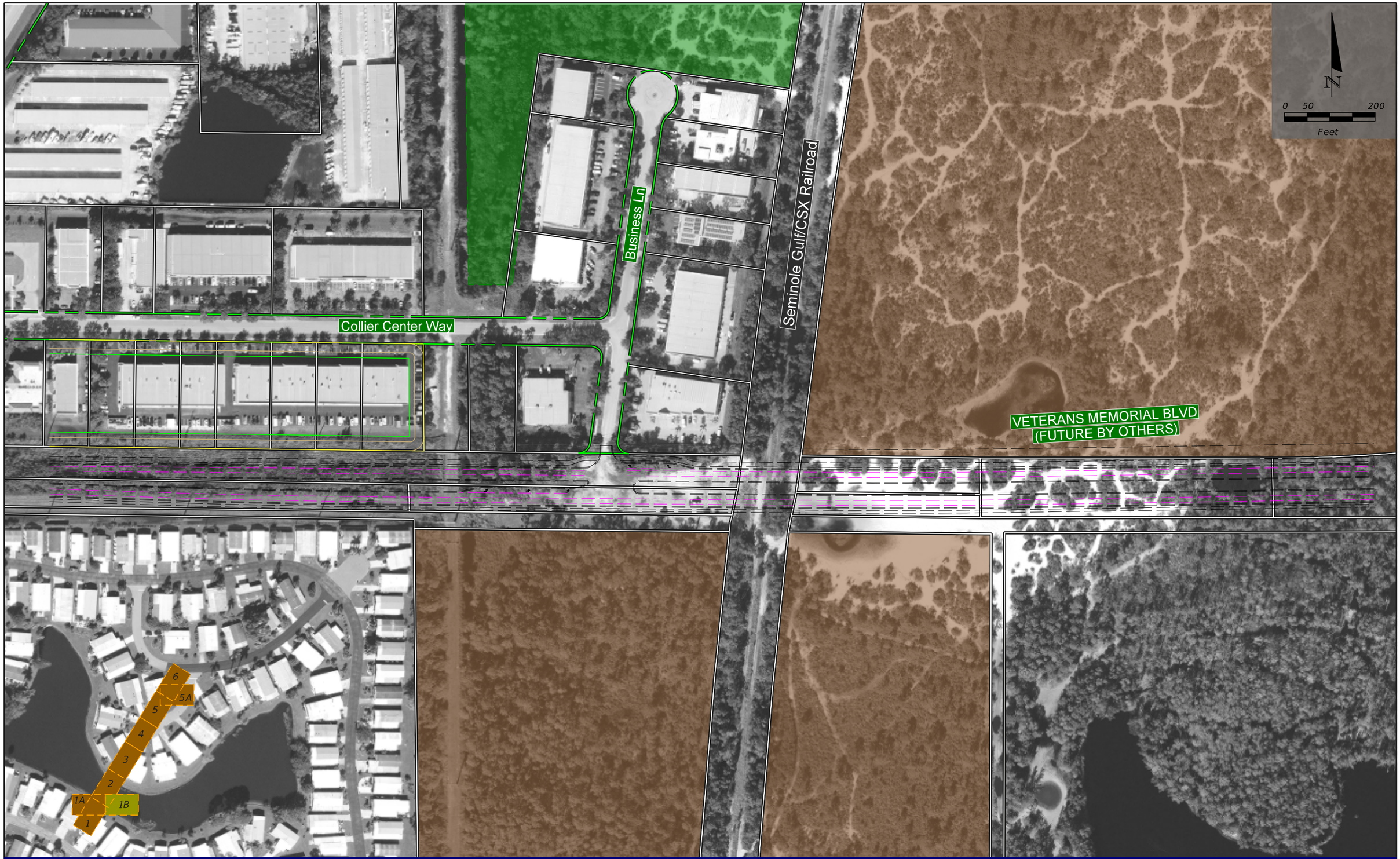
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CR 887	COLLIER AND LEE	435110-1-22-01 435347-1-22-01

PREFERRED ALTERNATIVE

SHEET NO. 1A

\\tmaw00\jobs\85808 D1 US41 PDE\TECHPROD\43511012201\Roadway\old41PLAN01a.dgn 3/20/2025 3:01:24 PM



COLLIER COUNTY

100

STATION
EXISTING ROW
PROPERTY LINES
PROPOSED ROW
PROPOSED EASEMENT
WETLANDS
SURFACE WATERS
PROPOSED CONCRETE SEPARATOR
PROPOSED SIDEWALK/PATH
PROPOSED PAVEMENT
PROPOSED MEDIAN
FUTURE BY-OTHERS
CONSERVATION EASEMENTS

HNTB CORPORATION
MATTHEW J.W. DOCKINS
P.E. LICENSE NUMBER 79350
201 N. FRANKLIN STREET, SUITE 1200
TAMPA, FLORIDA 33602

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CR 887	COLLIER AND LEE	435110-1-22-01 435347-1-22-01

PREFERRED ALTERNATIVE

SHEET NO. 1B

PI STA. = 132+13.87
Δ = 3° 03' 18" (RT)
D = 0° 40' 43"
T = 225.16
L = 450.21
R = 8,443.50
PC STA. = 129+88.71
PT STA. = 134+38.92

PI STA. = 136+64.08
Δ = 3° 03' 18" (LT)
D = 0° 40' 43"
T = 225.16
L = 450.21
R = 8,443.50
PC STA. = 134+38.92
PT STA. = 138+89.13

0 50 200
Feet

Turtle Creek Blvd
Sterling Oaks Dr
CD-02 2 - 36" RCP
OLD US 41
COLLIER 887 COUNTY
Collier Center Way
FPC 1
Sun Century Rd
Anglewood Ct

PI STA. 132+13.87
PI STA. 138+89.13
PI STA. 143+12.54
PI STA. 152+29.32
PC STA. 129+88.71
PRC STA. 131+38.92
PT STA. 136+64.08
N 31° 43' 09" E
N 30° 13' 09" E

125 130 135 140 145 150

1A 1 2 3 4 5 6 5A 1B

COLLIER COUNTY

100
STATION
EXISTING ROW
PROPERTY LINES
PROPOSED ROW
PROPOSED EASEMENT
WETLANDS
SURFACE WATERS
PROPOSED CONCRETE SEPARATOR
PROPOSED SIDEWALK/PATH
PROPOSED PAVEMENT
PROPOSED MEDIAN
FUTURE BY-OTHERS
CONSERVATION EASEMENTS

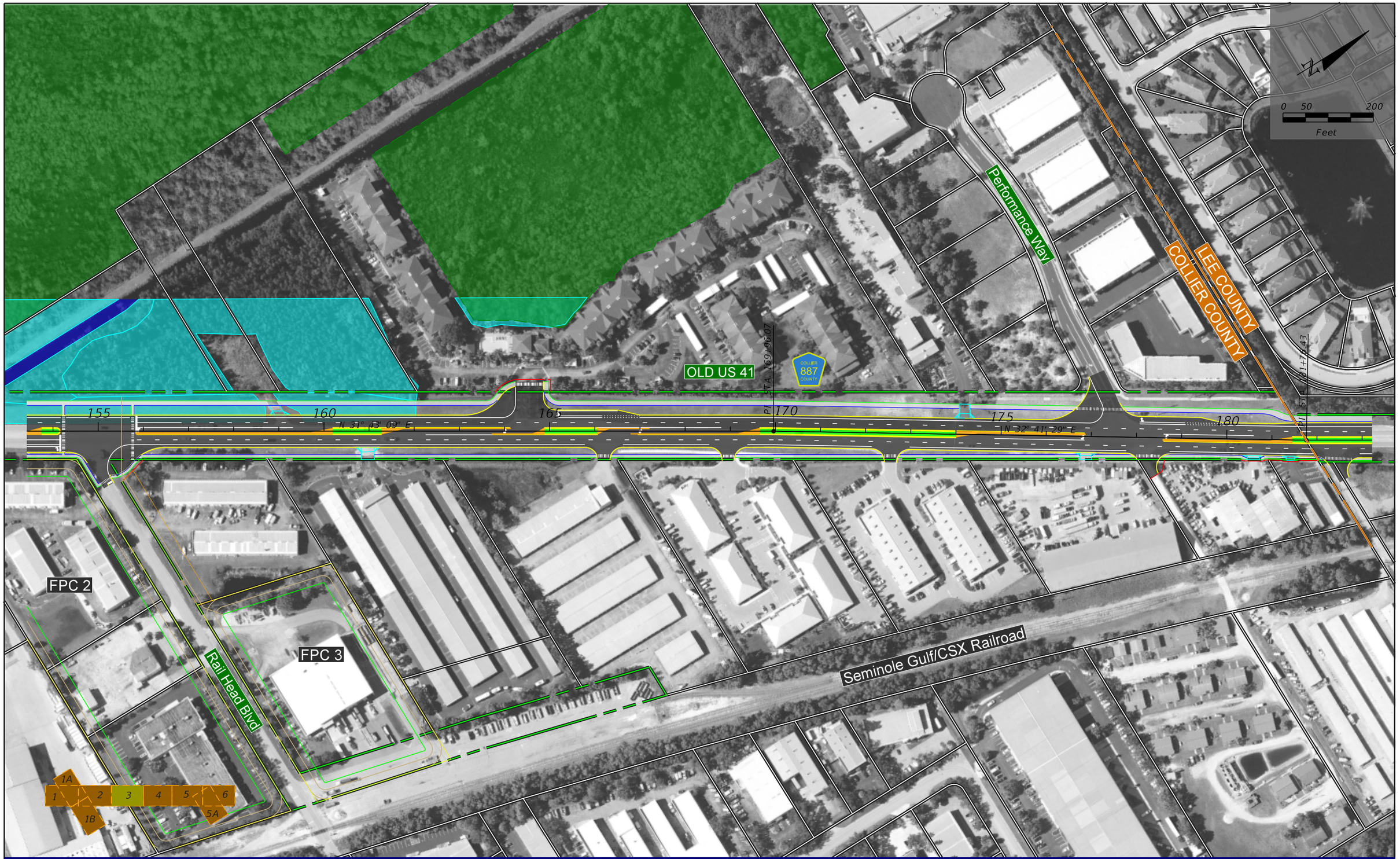
HNTB CORPORATION
MATTHEW J.W. DOCKINS
P.E. LICENSE NUMBER 79350
201 N. FRANKLIN STREET, SUITE 1200
TAMPA, FLORIDA 33602

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CR 887	COLLIER AND LEE	435110-1-22-01 435347-1-22-01

PREFERRED ALTERNATIVE

SHEET NO. 2



COLLIER COUNTY

100 STATION
EXISTING ROW
PROPERTY LINES
PROPOSED ROW
PROPOSED EASEMENT
WETLANDS
SURFACE WATERS
PROPOSED CONCRETE SEPARATOR
PROPOSED SIDEWALK/PATH
PROPOSED PAVEMENT
PROPOSED MEDIAN
FUTURE BY-OTHERS
CONSERVATION EASEMENTS

HNTB CORPORATION
MATTHEW J.W. DOCKINS
P.E. LICENSE NUMBER 79350
201 N. FRANKLIN STREET, SUITE 1200
TAMPA, FLORIDA 33602

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CR 887	COLLIER AND LEE	435110-1-22-01 435347-1-22-01

PREFERRED ALTERNATIVE

SHEET NO. 3

COLLIER COUNTY | LEE COUNTY/CITY OF BONITA SPRINGS

100

- STATION
- EXISTING ROW
- PROPERTY LINES
- PROPOSED ROW
- PROPOSED EASEMENT
- WETLANDS
- SURFACE WATERS
- PROPOSED CONCRETE SEPARATOR
- PROPOSED SIDEWALK/PATH
- PROPOSED PAVEMENT
- PROPOSED MEDIAN
- FUTURE BY-OTHERS
- CONSERVATION EASEMENTS

HNTB CORPORATION
MATTHEW J.W. DOCKINS
P.E. LICENSE NUMBER 79350
201 N. FRANKLIN STREET, SUITE 1200
TAMPA, FLORIDA 33602

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CR 887	COLLIER AND LEE	435110-1-22-01 435347-1-22-01

PREFERRED ALTERNATIVE

SHEET NO. 4

Seminole Gulf/CSX Railroad

CD-03 2 - 36" RCP

0 50 200
Feet

210 215 220 225 230

N 31° 41' 29" E

POT STA. 5+00.00

PT STA. 21+69.53

OLD US 41

887

SMF 2B

PC STA. 7+86.54

Compound Rd

PI STA. 10+06.88

PT STA. 11+90.75

NEW QUADARANT ROADWAY

PT STA. 12+97.66

PI STA. = 10+06.88
Δ = 56° 37' 26" (LT)
D = 14° 00' 31"
T = 220.33
L = 404.20
R = 409.00
PC STA. = 7+86.54
PT STA. = 11+90.75

1A 1 2 3 4 5 6 5A 1B

LEE COUNTY/CITY OF BONITA SPRINGS

100
STATION
EXISTING ROW
PROPERTY LINES
PROPOSED ROW
PROPOSED EASEMENT
WETLANDS
SURFACE WATERS
PROPOSED CONCRETE SEPARATOR
PROPOSED SIDEWALK/PATH
PROPOSED PAVEMENT
PROPOSED MEDIAN
FUTURE BY-OTHERS
CONSERVATION EASEMENTS

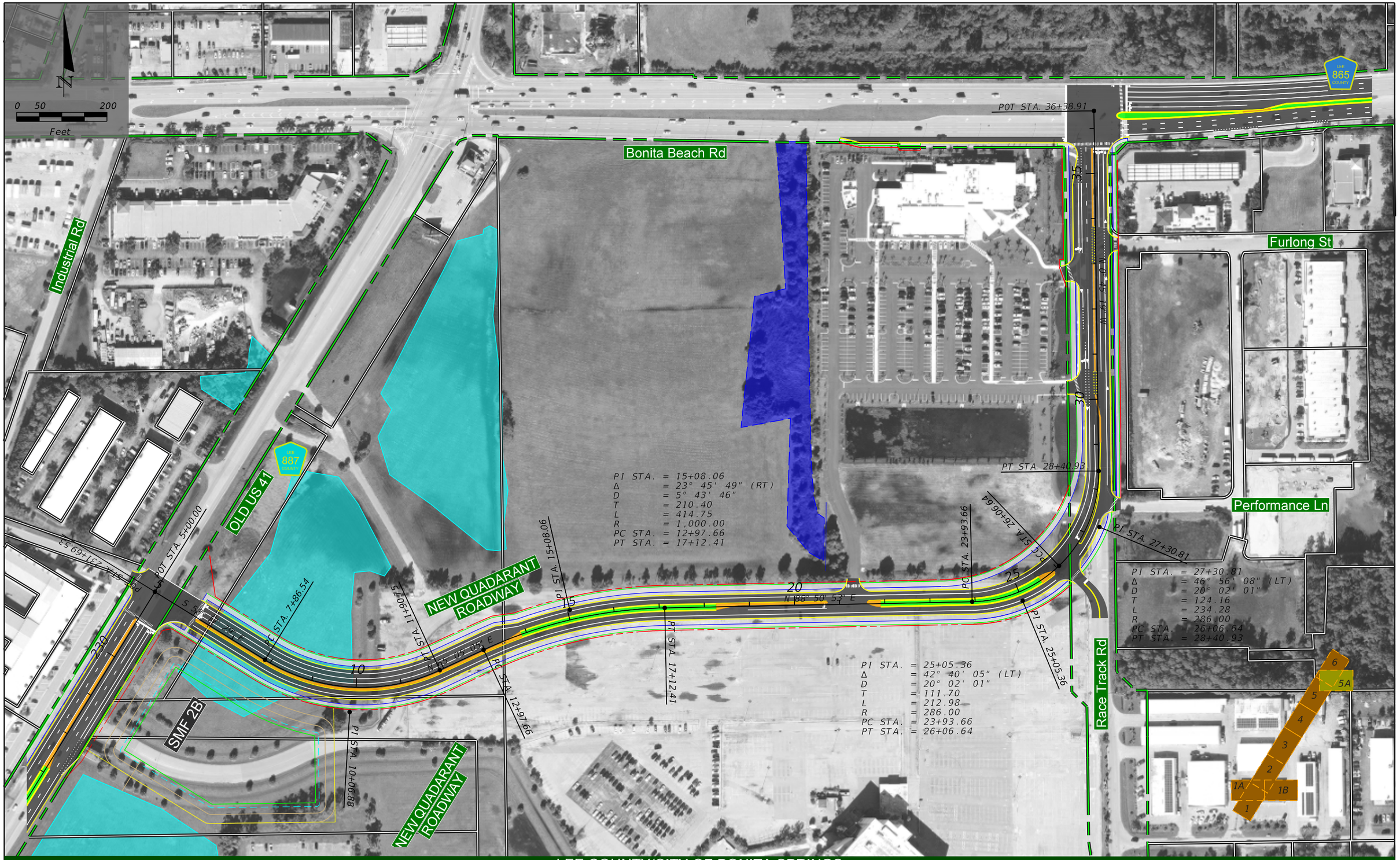
HNTB CORPORATION
MATTHEW J.W. DOCKINS
P.E. LICENSE NUMBER 79350
201 N. FRANKLIN STREET, SUITE 1200
TAMPA, FLORIDA 33602

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CR 887	COLLIER AND LEE	435110-1-22-01 435347-1-22-01

PREFERRED ALTERNATIVE

SHEET NO. 5



LEE COUNTY/CITY OF BONITA SPRINGS

100

- STATION
- EXISTING ROW
- PROPERTY LINES
- PROPOSED ROW
- PROPOSED EASEMENT
- WETLANDS
- SURFACE WATERS
- PROPOSED CONCRETE SEPARATOR
- PROPOSED SIDEWALK/PATH
- PROPOSED PAVEMENT
- PROPOSED MEDIAN
- FUTURE BY-OTHERS
- CONSERVATION EASEMENTS

HNTB CORPORATION
MATTHEW J.W. DOCKINS
P.E. LICENSE NUMBER 79350
201 N. FRANKLIN STREET, SUITE 1200
TAMPA, FLORIDA 33602

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CR 887	COLLIER AND LEE	435110-1-22-01 435347-1-22-01

PREFERRED ALTERNATIVE

SHEET NO. 5A

LEE COUNTY/CITY OF BONITA SPRINGS

STATION
EXISTING ROW
PROPERTY LINES
PROPOSED ROW
PROPOSED EASEMENT
WETLANDS
SURFACE WATERS
PROPOSED CONCRETE SEPARATOR
PROPOSED SIDEWALK/PATH
PROPOSED PAVEMENT
PROPOSED MEDIAN
FUTURE BY-OTHERS
CONSERVATION EASEMENTS

HNTB CORPORATION
MATTHEW J.W. DOCKINS
P.E. LICENSE NUMBER 79350
201 N. FRANKLIN STREET, SUITE 1200
TAMPA, FLORIDA 33602

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

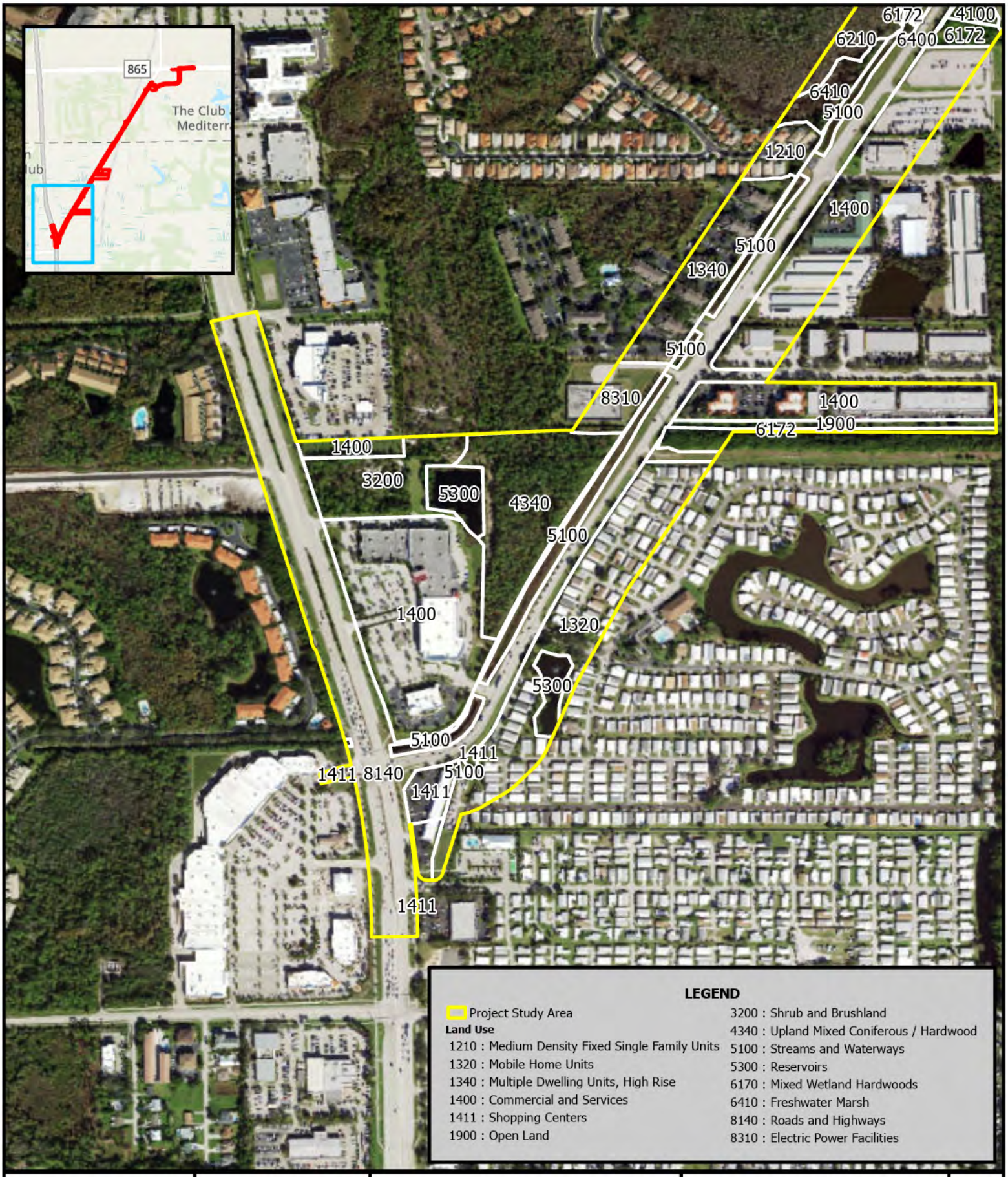
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
CR 887	COLLIER AND LEE	435110-1-22-01 435347-1-22-01

PREFERRED ALTERNATIVE

SHEET NO. 6

APPENDIX B

Land Use Map



FDOT

0 600

Feet

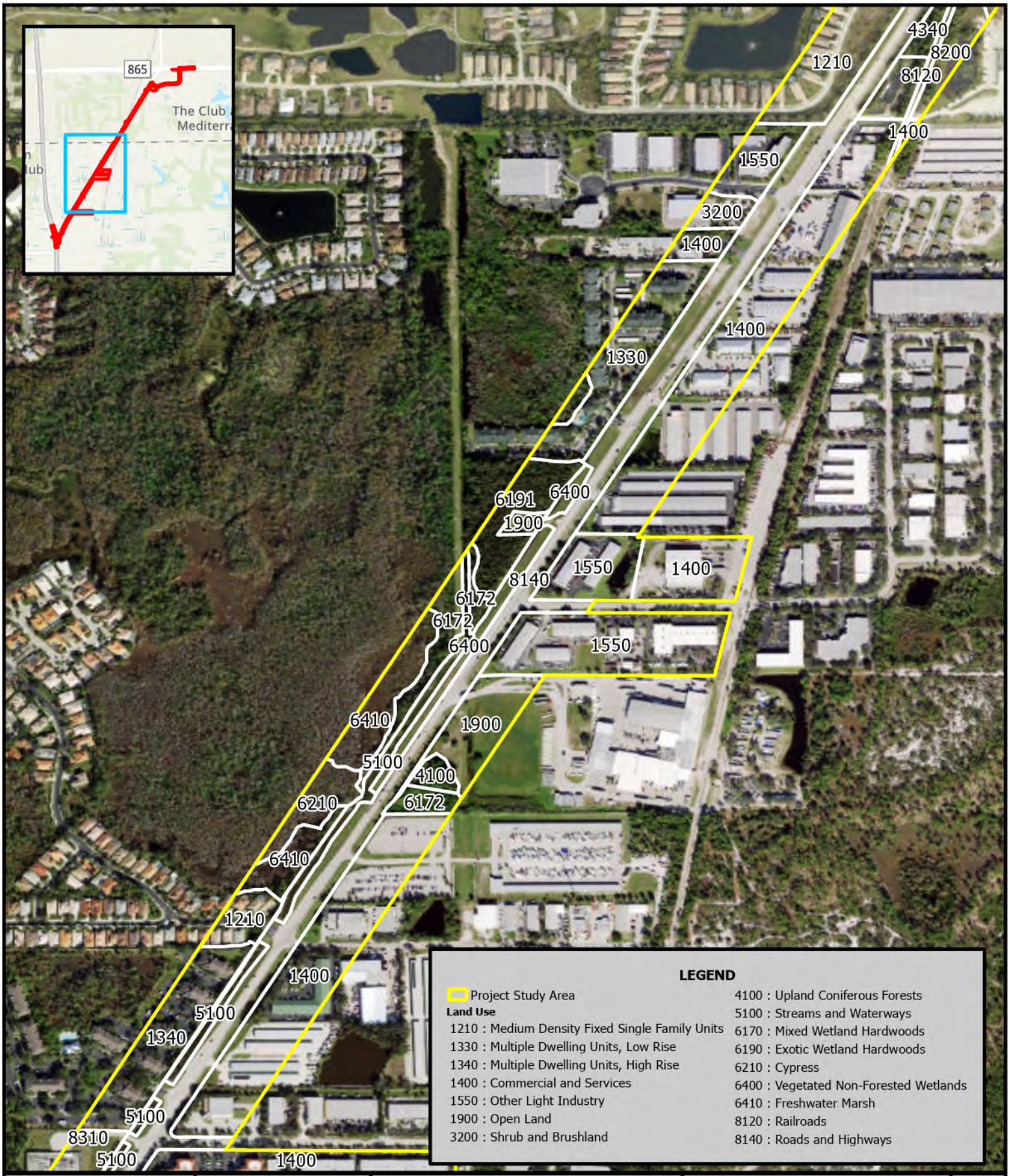
1 inch = 600 feet

FLUCFCS Land Use Map

Source: SFWMD 2016

CR 887 (Old US 41)
FPIDs: 435110-1-22-01
& 435347-1-22-01
Lee & Collier Counties

N



LEGEND

Project Study Area

Land Use

1210 : Medium Density Fixed Single Family Units
1330 : Multiple Dwelling Units, Low Rise
1340 : Multiple Dwelling Units, High Rise
1400 : Commercial and Services
1550 : Other Light Industry
1900 : Open Land
3200 : Shrub and Brushland
4100 : Upland Coniferous Forests
5100 : Streams and Waterways
6170 : Mixed Wetland Hardwoods
6190 : Exotic Wetland Hardwoods
6210 : Cypress
6400 : Vegetated Non-Forested Wetlands
6410 : Freshwater Marsh
8120 : Railroads
8140 : Roads and Highways

FDOT

0 600
Feet
1 inch = 600 feet

FLUCFCS Land Use Map

Source: SFWMD 2016

CR 887 (Old US 41)
FPIDs: 435110-1-22-01
& 435347-1-22-01
Lee & Collier Counties

N

LEGEND

Project Study Area

Land Use

1110 : Low Density Fixed Single Family Units
1210 : Medium Density Fixed Single Family Units
1400 : Commercial and Services
1550 : Other Light Industry
1820 : Golf Course
1900 : Open Land
3200 : Shrub and Brushland
4340 : Upland Mixed Coniferous / Hardwood
5100 : Streams and Waterways
5300 : Reservoirs
6200 : Wetland Coniferous Forests
6210 : Cypress
6410 : Freshwater Marsh
8120 : Railroads
8140 : Roads and Highways
8200 : Communications

FDOT

0 600

Feet

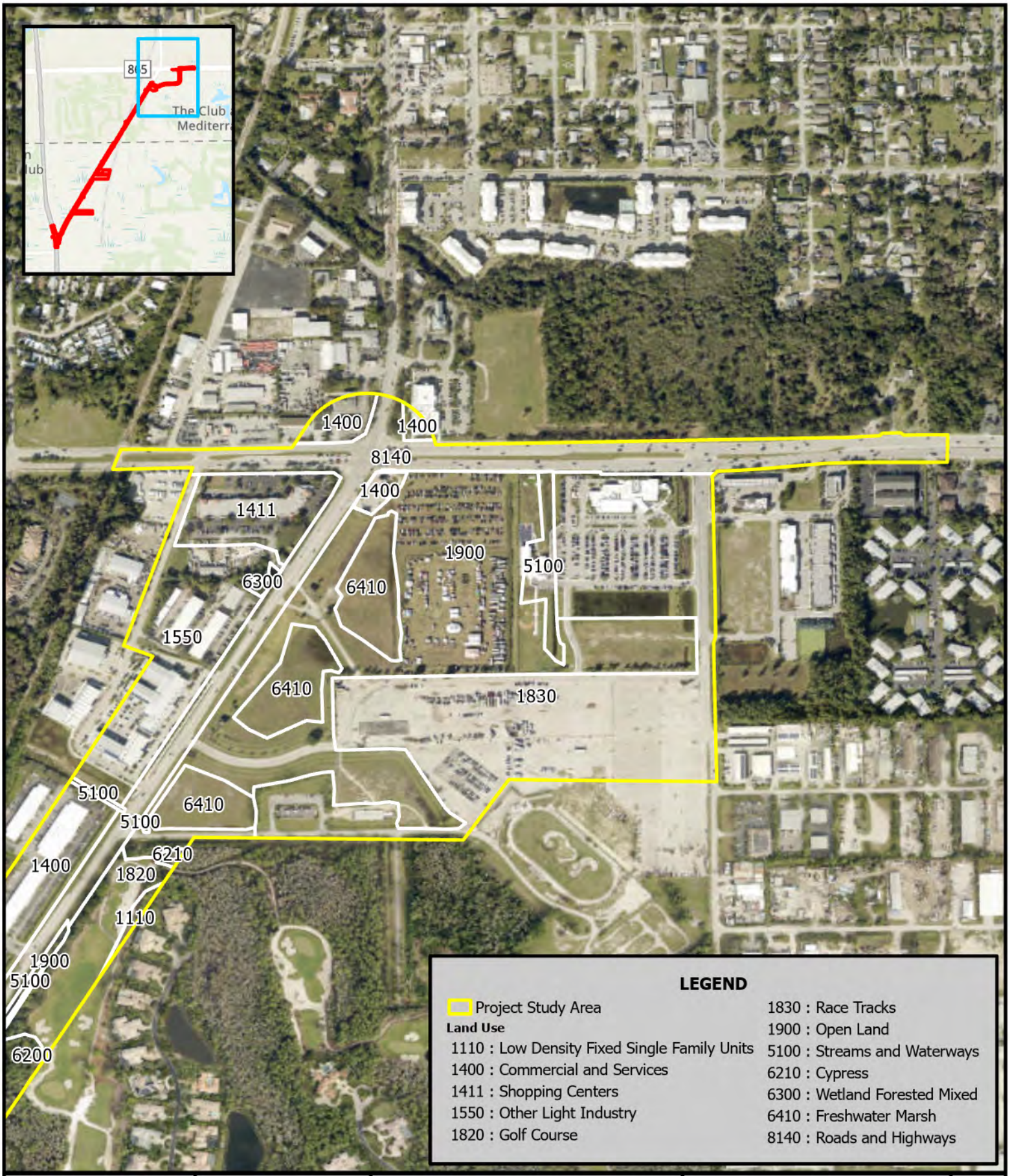
1 inch = 600 feet

FLUCFCS Land Use Map

Source: SFWMD 2016

CR 887 (Old US 41)
FPIDs: 435110-1-22-01
& 435347-1-22-01
Lee & Collier Counties

N



FDOT

0 600

Feet

1 inch = 600 feet

FLUCFCS Land Use Map

Source: SFWMD 2016

CR 887 (Old US 41)
FPIDs: 435110-1-22-01
& 435347-1-22-01
Lee & Collier Counties

N

APPENDIX C

Land Use/Code Descriptions

URBAN AND BUILT-UP (FLUCFCS 100 SERIES)

Urban and Built-up land consists "of areas of intensive use with much of the land occupied by man-made structures", including residential, commercial, recreational, industrial, and institutional developments (FDOT 1999). Urban and Built-up land uses within the study area account for 198.17 acres (approximately 60.64% of the study area) and generally do not provide suitable habitat for protected species.

RANGELAND (FLUCFCS 300 SERIES)

Rangeland is defined as "land where the potential natural vegetation is predominantly grasses, grass-like plants, forbs or shrubs and is capable of being grazed" (FDOT1999). Rangeland land uses within the study area consist exclusively of Shrub and Brushland (FLUCFCS 320).

Shrub and Brushland is the FLUCFCS designation for scrub habitat that occurs within the project study area. This habitat occurs in two locations within the study area and accounts for 5.11 acres or 1.56% of the study area. This habitat is present on the east side of US 41, approximately 1,200 ft north of the US 41 and Old US 41 intersection. This habitat has become a remnant of the original habitat due to fragmentation by US 41, Old US 41, and urban development. Due to the local development, these areas are not fire-maintained. The existing habitats have exposed, sandy soil with intermittently occurring sand live oak (*Quercus geminata*), Chapman's oak (*Q. chapmanii*), wax myrtle (*Morella cerifera*), cabbage palm (*Sabal palmetto*), and saw palmetto (*Serenoa repens*). The habitat west adjacent to US 41 approximately 1.4 miles northeast of the US 41 and Old US 41 intersection is identified as a "Native Upland Preserve" by signs on the property. This habitat is not part of a SFWMD conservation easement but was dedicated as a preserve area during the construction and permitting of the North Naples Research and Technology Park, under the Jurisdiction of Collier County Environmental Services. This habitat is significantly smaller than the first habitat mentioned, being 0.88 acre compared to the 4.23 acres of the larger habitat.

UPLAND FORESTS (FLUCFCS 400 SERIES)

Upland Forests are defined as "upland areas which support a tree canopy closure of ten (10) percent or more" and include both xeric and mesic forest communities (FDOT 1999). Upland Forest land cover within the study area consists of Upland Coniferous Forests (FLUCFCS 410) and Hardwood Coniferous – Mixed (FLUCFCS 434).

Upland Coniferous Forests occur in one location between Anglewood Court and Industrial Park Road, accounting for a total of 0.58 acre or 0.18% of the study area. This forest system has been isolated by surrounding roads, and industrial development and is no longer fire-maintained. The canopy of this system is dominated by slash pine (*Pinus elliotti*) with wax myrtle and Brazilian pepper (*Schinus terebinthifolia*) in the understory.

Hardwood Coniferous – Mixed forests occur in multiple locations within the study area, all of which are fragmented by roadways, housing developments, shopping centers, and railroads. These

systems are no longer fire-maintained. These systems account for a total of 13.66 acres or 4.18% of the study area. The largest of these systems occurs between Old US 41 and the Marketplace Commons Shopping Center. The other Hardwood Coniferous – Mixed forests occur adjacent to the Old US 41 railroad crossing. The canopies of these systems contain a mixture of slash pine, live oak (*Q. caroliniana*), sand live oak, cabbage palm, and wax myrtle. The understories typically contain Brazilian pepper, saw palmetto, and saplings of the canopy species.

WATER (FLUCFCS 500 SERIES)

Water land uses are defined as "all areas within the land mass of the United States that are predominantly or persistently water covered" (FDOT 1999). Water land cover within the study area consists of Streams and Waterways (FLUCFCS 510) and Reservoirs (FLUCFCS 530).

Streams and Waterways within the study area consist of roadside ditches and canals, accounting for a total of 8.03 acres or 2.46% of the study area. One drainage ditch is located south of Bonita Beach Road approximately 700 feet east from Old US 41. The roadside ditches within the study area are all fairly unvegetated, apart from occasional pickerelweed (*Pontederia cordata*), cattails (*Typha* spp.) and bahiagrass (*Paspalum notatum*) and torpedograss (*Panicum repens*) along the banks. These ditches originate in hydric soils and/or are relatively permanent waters. Roadside ditches south of Mediterra Drive drain southwest through the study area while the ditches north of Mediterra Drive drain north through the study area.

Three stormwater ponds occur entirely within the study area and a small portion of another stormwater pond also occurs on the edge of the study area within the Cordova residential development. These four stormwater ponds are all classified as Reservoirs. The stormwater ponds adjacent to the Marketplace Commons Shopping Center, the Landmark Naples residential development, and Cordova residential development are open water, non-vegetated systems. The pond just east of the Old US 41 and US 41 intersection is densely vegetated by Brazilian pepper. Within the study area, these systems account for a total of 2.47 acres or 0.76% of the study area.

WETLANDS (FLUCFCS 600 SERIES)

Wetlands within the study area are comprised of Mixed Wetland Hardwoods (FLUCFCS 617), Exotic Wetland Hardwoods (FLUCFCS 619), Wetland Coniferous Forests (FLUCFCS 620), Cypress wetlands (FLUCFCS 621), Wetland Forested Mixed (FLUCFCS 630), Vegetated Non-Forested Wetlands (FLUCFCS 640), and Freshwater Marshes (FLUCFCS 641).

Mixed Wetland Hardwoods occur within the study area on the east side of Old US 41 south of Collier Center Way, between Anglewood Court and Rail Head Blvd on the east and west side of Old US 41, and west of Arborview Blvd. These areas total 4.54 acres and account for 1.39% of the study area. Within the study area, these wetlands typically have limited canopy cover and contain Carolina willow (*Salix caroliniana*), Brazilian pepper, cabbage palm, and red maple (*Acer rubrum*) with no species typically exhibiting dominance.

Exotic Wetland Hardwoods occur in one location within the project study area on the west side of Old US 41, just north of Rail Head Blvd. This area is 2.80 acres in size and accounts for 0.86% of the study area. It is dominated almost exclusively by the exotic species melaleuca (*Melaleuca quinquenervia*), but also contains scattered red maple, wax myrtle, and slash pine.

Wetland Coniferous Forests occur in one location on the east side of Old US 41 north of Mediterra Drive. This area is 3.40 acres in size and accounts for 1.04% of the study area. This system surrounds a cypress swamp but contains slash pine and cabbage palm as well as bald cypress (*Taxodium distichum*).

Cypress wetlands include the cypress swamp previously mentioned just north of Mediterra Drive but also includes a system on the west side of Old US 41 directly across from the Mediterra system, as well as a system west of the Old US 41 and Anglewood Court and a system just south of Compound Road. These systems total 6.28 acres and account for 1.92% of the study area. The canopies of these systems are dominated by bald cypress, but also include some red maple. The understories contain cabbage palm, Brazilian pepper, and Carolina willow.

One Wetland Forested Mixed wetland occurs within the study area on the west side of Old US 41 approximately 525 ft south of the Old US 41 and Bonita Beach Road intersection, adjacent to shopping centers. This wetland is 0.21 acre in size, accounting for 0.06% of the study area. The canopy of this system contains swamp bay (*Persea palustris*), water oak (*Q. nigra*), slash pine, and cabbage palm with an understory that contains saplings of the canopy trees and saw palmetto.

Vegetated Non-Forested Wetlands occur within the maintained ROW on the west side of Old US 41 between Anglewood Court and Arbor View Blvd. These areas are 1.89 acres in size, accounting for 0.58% of the study area. These wetlands are dominated by starrush whitetop (*Rhynchospora colorata*), but also contain bahiagrass and largeflower rosegentian (*Sabatia grandiflora*).

Freshwater marshes occur adjacent to the Sterling Oaks residential development and in the undeveloped areas adjacent to the race track in the southeast quadrant of the Old US 41 and Bonita Beach Road intersection. These systems total 12.27 acres in size, accounting for 3.75% of the study area. These systems are dominated by starrush whitetop, torpedograss, maidencane (*Panicum hemitomon*), largeflower rosegentian, and eastern false dragonhead (*Physostegia purpurea*).

TRANSPORTATION, COMMUNICATIONS AND UTILITIES (FLUCFCS 800 SERIES)

Within the study area, Transportation, Communications, and Utilities land uses consist of Railroads (FLUCFCS 812), Roads and Highways (FLUCFCS 814); Communications (FLUCFCS 820), and Electric Power Facilities (FLUCFCS 831).

Railroads occur in one location within the study area approximately 1,250 feet north of the Collier County line where an abandoned rail line crosses Old US 41. The Railroad FLUCFCS designation includes the existing railbed of this abandoned rail line. Within the study area this rail bed is 1.41 acres in size and accounts for 0.43% of the study area.

Roads and Highways is the most common Transportation, Communications, and Utilities land use as well as the most common land use within the study area, accounting for 62.52 acres or 19.13% of the study area. The Roads and Highways land use accounts for the existing ROW of Old US 41, US 41, and Bonita Beach Road within the study area. Because this data includes the entirety of existing ROWs, it typically includes unpaved, vegetated areas adjacent to roadways. However, surface waters were further mapped within the existing ROW, so that they may be accurately accounted for in the Uniform Mitigation Assessment Method (UMAM).

Communications occurs in one location north of Channel 30 Drive. This property is associated with the WCKT-FM Lehigh Acres array within the study area. The portion of this property within the study area is 1.66 acres in size and accounts for 0.51% of the study area.

Electric Power Facilities occur in one location within the study area on the west side of Old US 41 across from Collier Center Way. This property is 1.78 acres in size and accounts for 0.54% of the study area.

APPENDIX D

NRCS Soils Map

LEGEND

- Project Study Area

Hydric Rating

- Non-Hydric
- Unranked
- Hydric

Soil Number and Description

- 32: Urban Land
- 101: Basinger Fine Sand-Urban Land Complex
- 103: Cypress Lake Riviera-Copeland Fine Sands
- 117: Immokalee Fine Sand-Urban Land Complex
- 118: Immokalee-Oldsmar, Limestone Substratum-Urban Land Complex
- 129: Pineda Riviera Fine Sands-Urban Land Association
- 133: Satellite Fine Sand-Urban Land Complex

FDOT

0 300 600

Feet

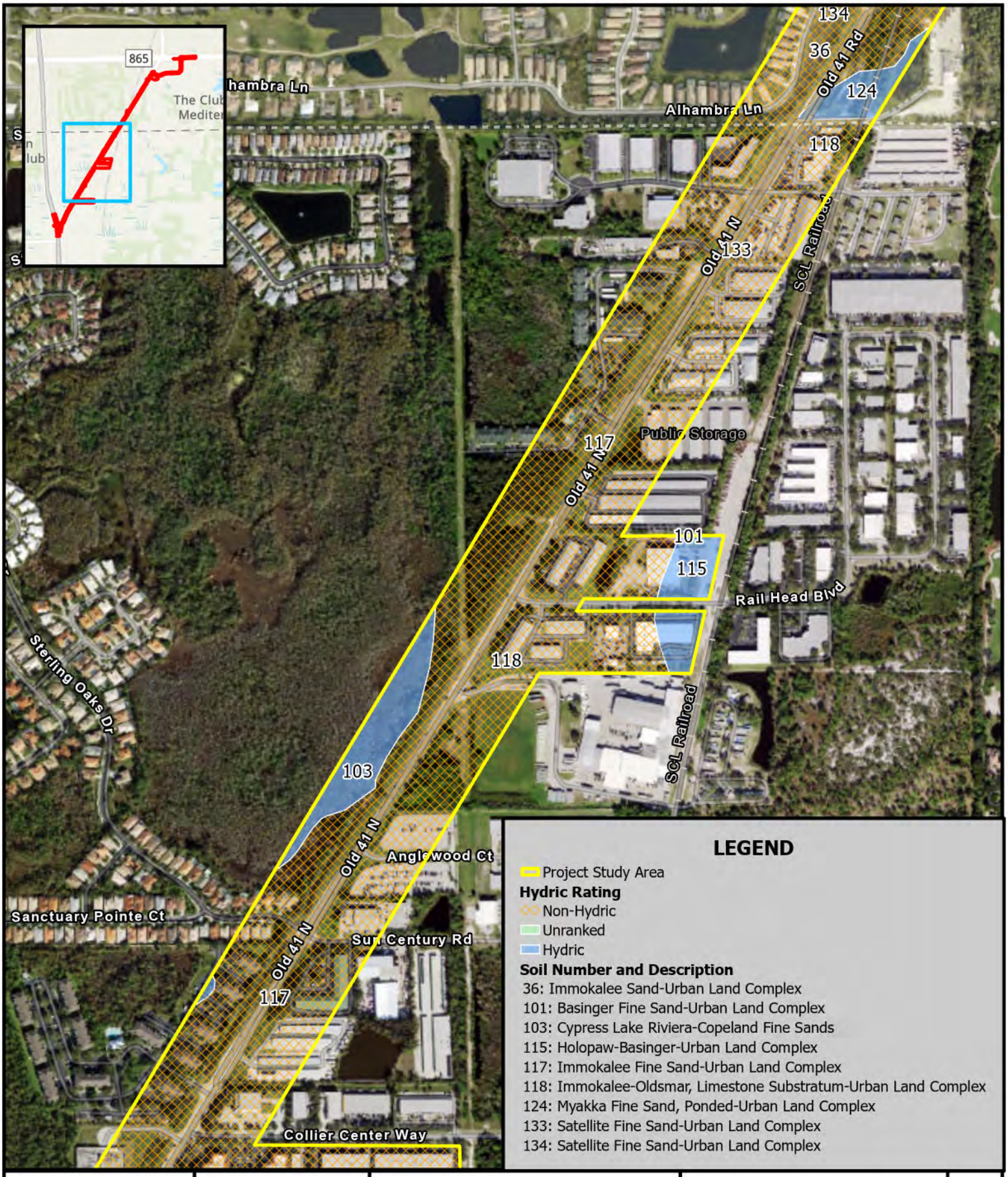
1 inch = 600 feet

NRCS Soils Map

Source: NRCS 2023

CR 887 (Old US 41)
FPIDs: 435110-1-22-01
& 435347-1-22-01
Lee & Collier Counties

N



LEGEND

Project Study Area

Hydric Rating

- Non-Hydric
- Unranked
- Hydric

Soil Number and Description

- 36: Immokalee Sand-Urban Land Complex
- 101: Basinger Fine Sand-Urban Land Complex
- 103: Cypress Lake Riviera-Copeland Fine Sands
- 115: Holopaw-Basinger-Urban Land Complex
- 117: Immokalee Fine Sand-Urban Land Complex
- 118: Immokalee-Oldsmar, Limestone Substratum-Urban Land Complex
- 124: Myakka Fine Sand, Ponded-Urban Land Complex
- 133: Satellite Fine Sand-Urban Land Complex
- 134: Satellite Fine Sand-Urban Land Complex

FDOT

0 300 600

Feet

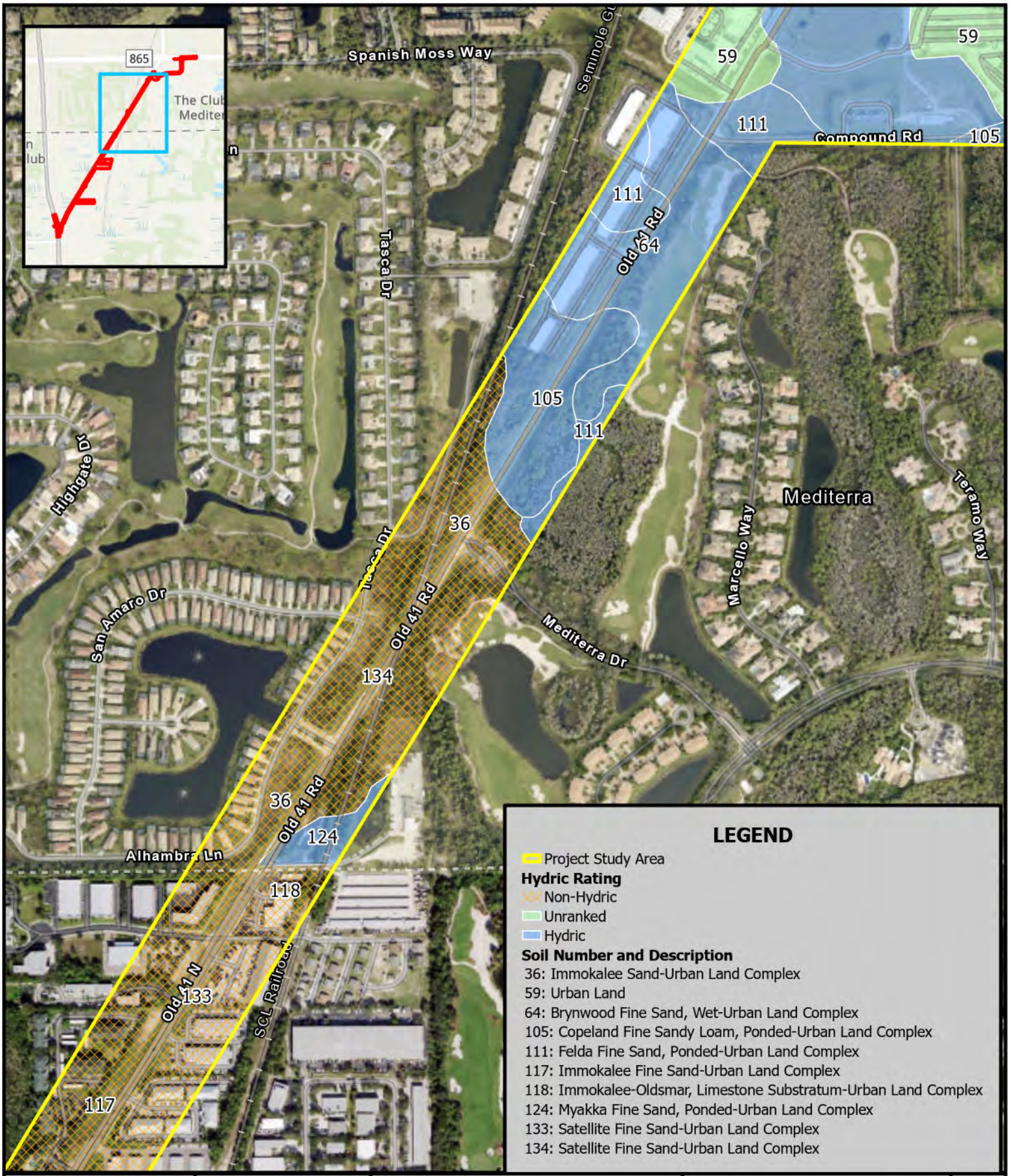
1 inch = 600 feet

NRCS Soils Map

Source: NRCS 2023

CR 887 (Old US 41)
FPIDs: 435110-1-22-01
& 435347-1-22-01
Lee & Collier Counties

N



FDOT

0 300 600

Feet

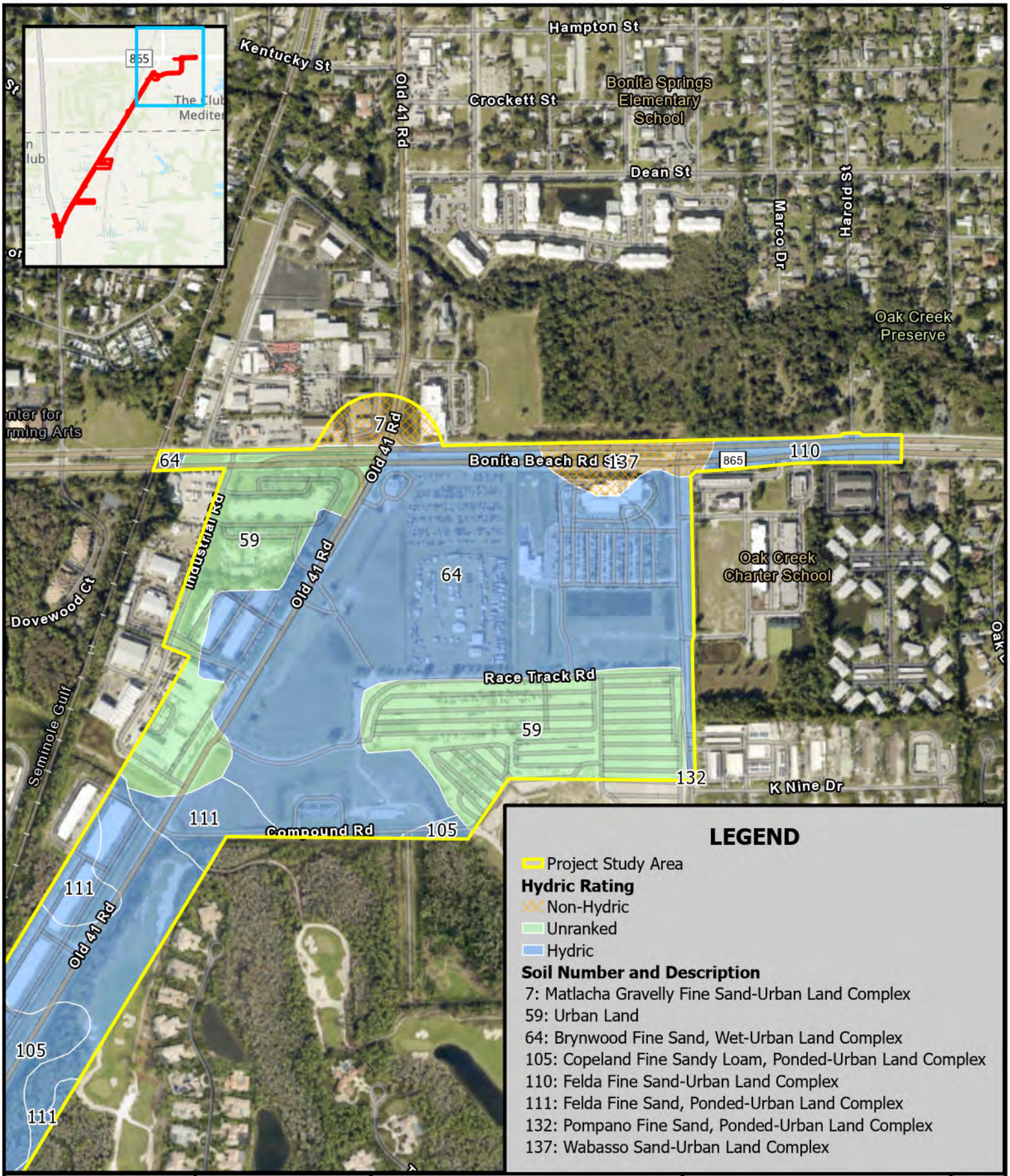
1 inch = 600 feet

NRCS Soils Map

Source: NRCS 2023

CR 887 (Old US 41)
FPIDs: 435110-1-22-01
& 435347-1-22-01
Lee & Collier Counties

N



FDOT

0 300 600

Feet

1 inch = 600 feet

NRCS Soils Map

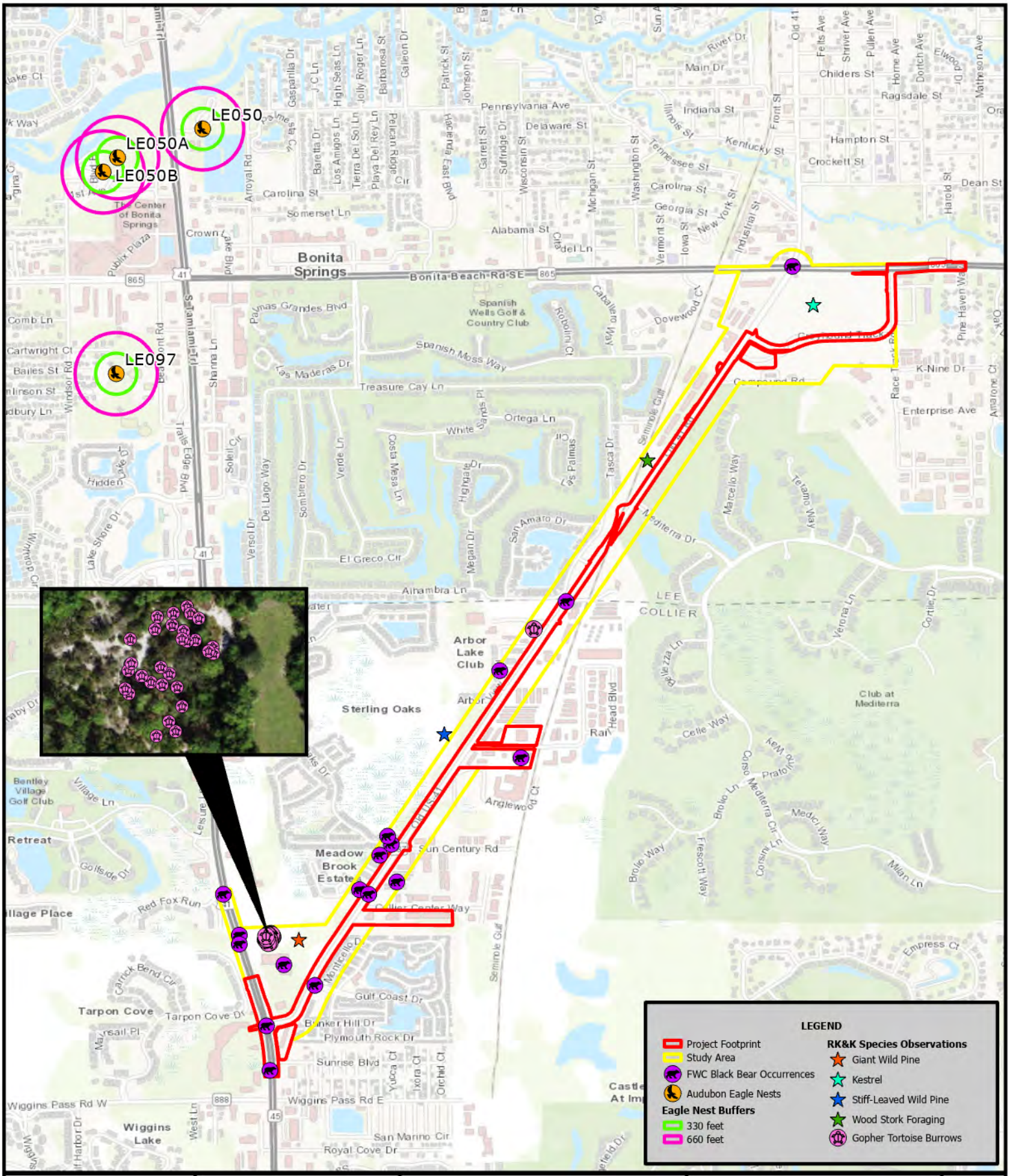
Source: NRCS 2023

CR 887 (Old US 41)
FPIDs: 435110-1-22-01
& 435347-1-22-01
Lee & Collier Counties

N

APPENDIX E

Species Observations Map



FDOT

0 2,000

Feet

1 inch = 2,000 feet

Species Observations Map

Sources: RKK 2019, Audubon 2024, FWC 2023

CR 887 (Old US 41)
FPIDs: 435110-1-22-01 & 435347-1-22-01
Lee & Collier Counties

N

APPENDIX F

FNAI Data Report

FLORIDA
Natural Areas
INVENTORY

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

August 12, 2020

Brett Berube
RK&K
14055 Riveredge Drive, Suite 130
Tampa, FL 33637

Dear Mr. Berube,

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

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

Project: County Road 887 PD&E Study

Date Received: 8/6/2020

Location: Lee County

Based on the information available, this site appears to be located on or very near a significant region of scrub habitat, a natural community in decline that provides important habitat for several rare species within a small area.

Element Occurrences

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

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

*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.*

Florida Resources
and Environmental
Analysis Center

Institute of Science
and Public Affairs

The Florida State University

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.

CLIP

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

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

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

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

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

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

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

Sincerely,

Kerri Brinegar

Kerri Brinegar

GIS / Data Services

Encl

County Road 887 PD&E Study

Site boundaries are approximate.

Lee County

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

FLORIDA Natural Areas INVENTORY

Element Occurrences

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

Conservation Lands

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

Land Acquisition Projects

- Florida Forever Board of Trustees Projects

- FNAI Rare Species Habitat
- FNAI Biodiversity Matrix Square Mile Units
- County Boundary
- Roads
- Water

NOTE

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

0 0.5 1 2 Miles

Map produced by KAB
8/12/2020

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

FLORIDA Natural Areas INVENTORY

County Road 887 PD&E Study

Site boundaries are approximate.

Lee County

CLIP v4.0 Resource Priorities

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

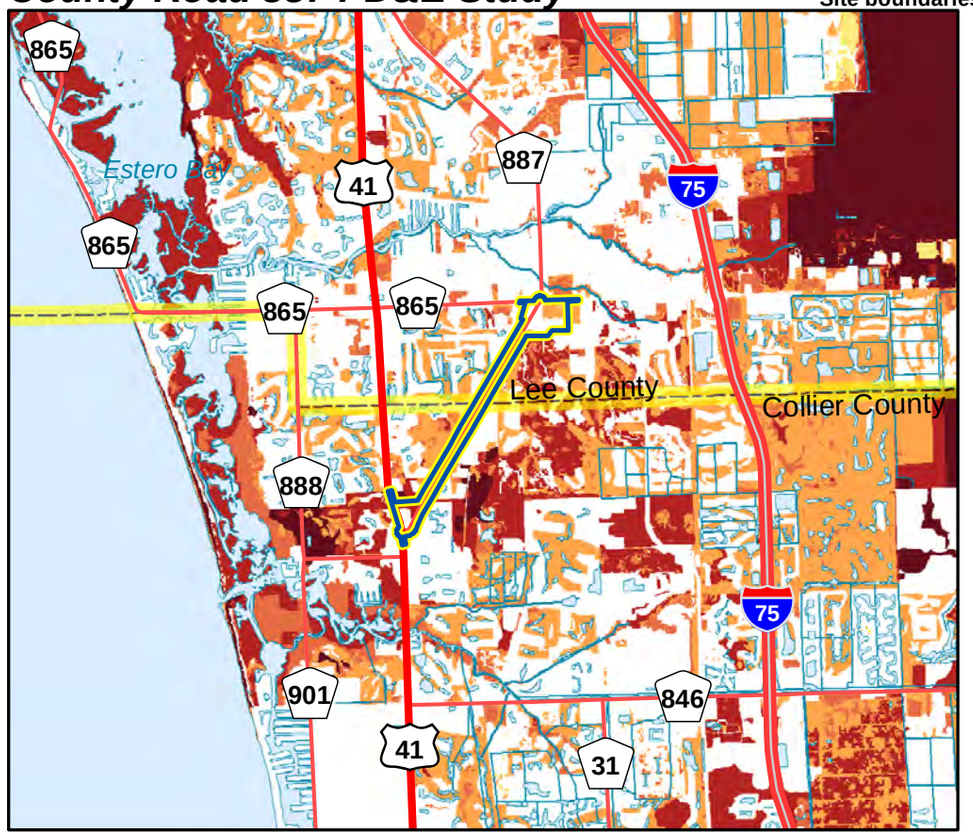
Landscape Resource Category
- Priority 1 - highest
- Priority 2
- Priority 3
- Priority 4
- Priority 5

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

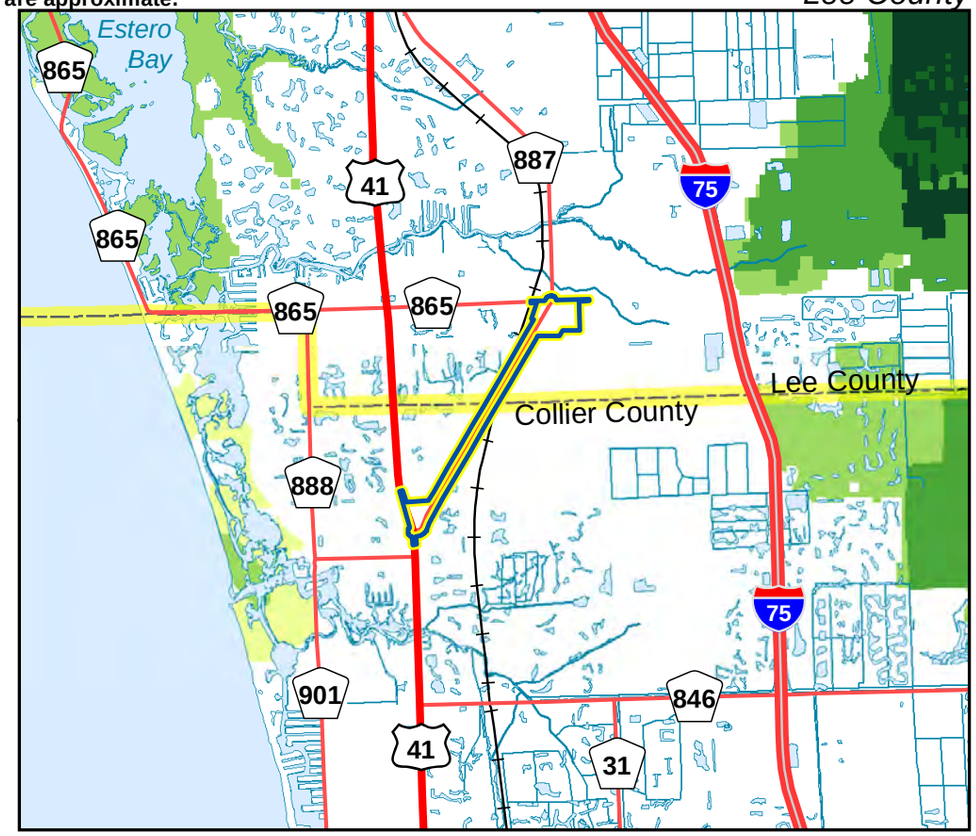
Aggregated CLIP Priorities
- Priority 1 - highest
- Priority 2
- Priority 3
- Priority 4
- Priority 5
- Site Boundary

Map should not be interpreted without accompanying documents.

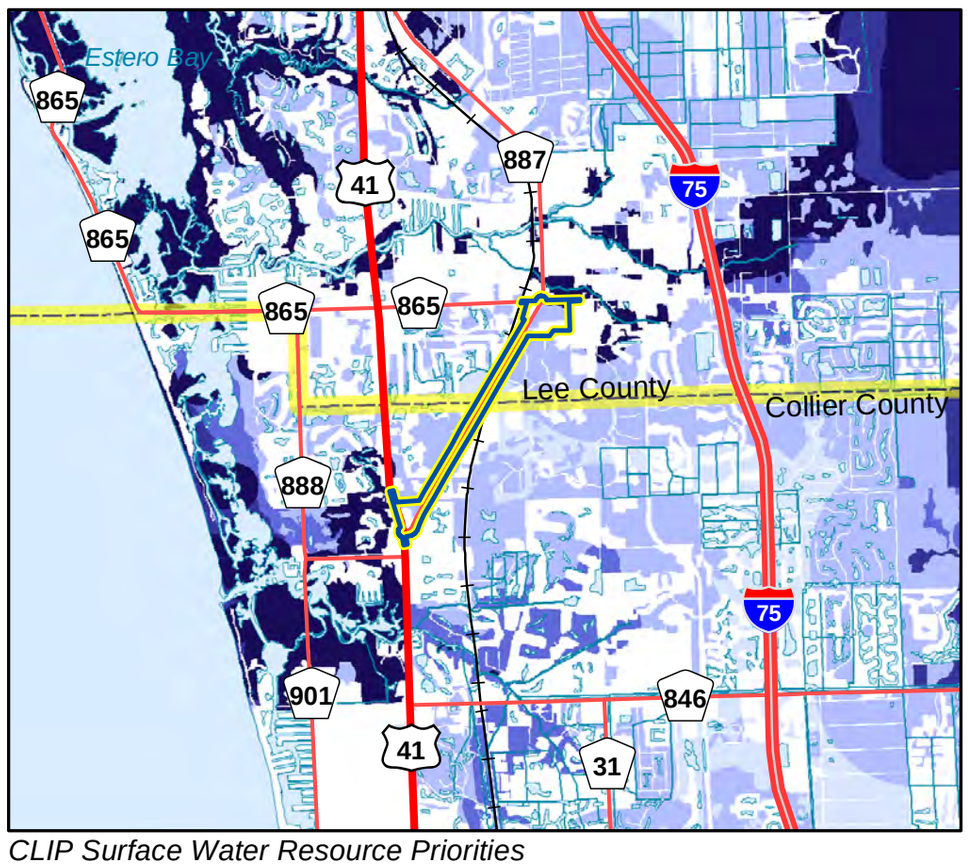
Critical Lands and Waters Identification Project (CLIP) is a cooperative effort between the FSU Florida Natural Areas Inventory, UF Center for Landscape Conservation Planning, and FL Fish & Wildlife Conservation Commission, with additional funding from FL Dept of Environmental Protection and US Fish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



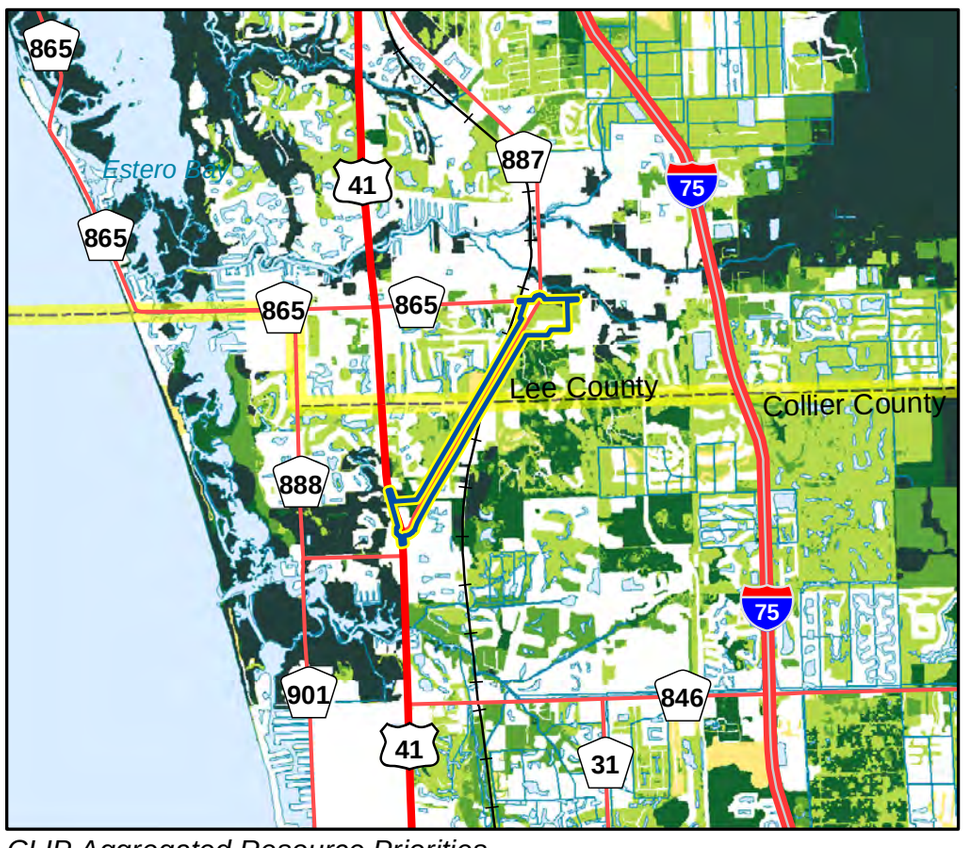
CLIP Biodiversity Resource Priorities



CLIP Landscape Resource Priorities



CLIP Surface Water Resource Priorities



CLIP Aggregated Resource Priorities

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

Map produced by KAB
8/12/2020

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

FNAI ELEMENT OCCURRENCE REPORT on or near

County Road 887 PD&E Study

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
ACROAURE*39	*Acrostichum aureum*	golden leather fern	G5	S3	N	T	2006-01-10	2006-01-10: This natural area is a fragment of flatwoods and tidal marsh that is part of the Estero Bay-Cape Romano Coastal Strip, a poorly-drained low flatwoods plain, with some paleo-dunes, and alot of mangrove swamp (G81BRO02FLUS) (PNDJEN04FLUS).	2006-01-10: Plants in good numbers (30-40) along edge of salt marsh and uplands. Plants look healthy for the most part, some with discoloration in leaves. Area is ecotone of Tidal Marsh and Mesic Flatwoods. Invasive species such as Brazilian Pepper (Schinus terebinthifolius) and Old World Climbing Fern (Lygodium microphyllum) are taking area over and extremely heavy urban development is occuring in adjacent and nearby areas (PNDJEN04FLUS).
ANDRARCT*47	*Andropogon arctatus*	pinewoods bluestem	G3	S3	N	T	1967-10-21	1967-10-21: Pine flatwoods; in seabreezes among Carphephorus, Liatris and Balduina (S67LAKSFFLUS).	1967-10-21: Abundant and showy in seabreezes; specimen taken [fr.] (S67LAKSFFLUS).
BEACDUNE*17	Beach dune		G3	S2	N	N	1999	LOW DUNES CLOSEST TO SHORE.	1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1983) (U05FNA02FLUS). DOMINATED BY SEA OATS & RAILROAD VINE (U82DRP02).
CHAMCUMU*5	*Chamaesyce cumulicola*	sand-dune spurge	G2	S2	N	E	1979-07-28	DRY, SANDY FILL NEAR INLET-[ROAD THROUGH MANGROVES].	FLOWERING ON 28 JULY 1979.
COASSTRA*23	Coastal strand		G3	S2	N	N	1999	BEHIND BEACH DUNE ZONE.	1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1983) (U05FNA02FLUS). SEAGRAPE, SAW PALMETTO, SPANISH-BAYONET, PRICKLY PEAR (O. STRICTA), COIN VINE, CATCLAW, AGAVE, GRAY NICKER, LANTANA SP., SOPHORA TOMENTOSA, SCAEVOLA PLUMIERI, ERNODEA LITTORALIS (U82DRP02).

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

FNAI ELEMENT OCCURRENCE REPORT on or near

County Road 887 PD&E Study

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
COASSTRA*24	Coastal strand		G3	S2	N	N	1999	BEHIND BEACH DUNE ZONE.	1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1983) (U05FNA02FLUS). SEAGRAPE, SAW PALMETTO, SPANISH-BAYONET, PRICKLY PEAR (O. STRICTA), COIN VINE, CATCLAW, AGAVE, GRAY NICKER, LANTANA SP., SOPHORA TOMENTOSA, SCAEVOLA PLUMIERI, ERNODEA LITTORALIS (U82DRP02).
CROTADAM*30	*Crotalus adamanteus*	Eastern Diamondback Rattlesnake	G4	S3	N	N	1992-08-30	Dunes.	2 snakes observed: Aug. 30, 1992, Clausen observed 3 1/2 ft. individual in bird nesting area; June 14, 1979, Sam Ferguson observed snake in parking area (moved to safe location).
DRYMCOUP*122	*Drymarchon couperi*	Eastern Indigo Snake	G3	S2?	T	FT	1980 pre	No general description given	POST-1970: T. CRUTCHFIELD OBSERVED INDIGO SNAKE (P. MOLER INTERVIEW OF 3 NOV 1981: U82MOL01FLUS).
ELYTANGU*5	*Elytraria caroliniensis var. angustifolia*	narrow-leaved Carolina scalystem	G4T2	S2	N	N	1987-06-29	Low grassy hollow in pineland.	Flowers white; specimen fruiting.
GOPHPOLY*1058	*Gopherus polyphemus*	Gopher Tortoise	G3	S3	C	ST	1986-03-29	Scrub	1986-03-29: R.B. Huck, DEP, observation.
GOPHPOLY*1181	*Gopherus polyphemus*	Gopher Tortoise	G3	S3	C	ST	2006-01-10	2006-01-10: This natural area is a fragment of flatwoods and tidal marsh that is part of the Estero Bay-Cape Romano Coastal Strip, a poorly-drained low flatwoods plain, with some paleo-dunes, and alot of mangrove swamp (G81BRO02FLUS) (PNDJEN04FLUS).	2006-01-10: One gopher tortoise encountered near active burrow. Tortoise looked healthy and was medium sized. Upland mesic habitats are extremely infested with a diversity of exotic species and the area is in need of habitat restoration because of its fire suppressed condition. Heavy urban development is occuring in adjacent and nearby areas (PNDJEN04FLUS).
GOPHPOLY*498	*Gopherus polyphemus*	Gopher Tortoise	G3	S3	C	ST	1986-03-29	HAS OPEN SCRUB WITH MINIMAL GROUND COVER.	No EO data given
GOPHPOLY*499	*Gopherus polyphemus*	Gopher Tortoise	G3	S3	C	ST	1986-03-29	ROSEMARY SCRUB AND SAND PINE SCRUB.	No EO data given
GOPHPOLY*502	*Gopherus polyphemus*	Gopher Tortoise	G3	S3	C	ST	1986-03-29	1986-03-29: remnant beach dune of excessivley drained white sand (U88CHR01FLUS).	No EO data given
GOPHPOLY*503	*Gopherus polyphemus*	Gopher Tortoise	G3	S3	C	ST	1986-03-28	ROSEMARY SCRUB.	No EO data given

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

FNAI ELEMENT OCCURRENCE REPORT on or near

County Road 887 PD&E Study

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
HALILEUC*247	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1995-2003: Continuously active. (U03FWC01FLUS). Previous data (note different format) NEST: 1978-1988 ACTIVE. FLEDGED YOUNG 1978-1983, 1987-1988, UNKNOWN 1986.
HALILEUC*741	*Haliaeetus leucocephalus*	Bald Eagle	G5	S3	N	N	2003	No general description given	Nest status 1995-2003: Continuously active. (U03FWC01FLUS). Previous data (note different format) NEST; 1991: ACTIVE BUT PRODUCED 0 YOUNG.
HYDRHAMM*4	Hydric hammock		G4	S4	N	N	1999	PALM HAMMOCK ON BORDER OF MANGROVE SWAMP -- LITTLERELIEF.	1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1971-) (U05FNA02FLUS). SABAL PALMETTO AND MAGNOLIA VIRGINIANA CONSPICUOUS EMERGENTS, SECOND STRATUM DOMINATED BY PERSEA PALUS- TRIS WITH ACER RUBRUM AND BUMELIA SP. THIRD STRATUM IS SEEDLINGS OF CANOPY SPP. WITH ARISAEMA ACUMINATUM AND FERNS. *[COMMENTS]: PROFILE ATTACH ED.
LECHCERN*86	*Lechea cernua*	nodding pinweed	G3	S3	N	T	1986-03-30	1986-03-30: RIDGE REMNANT OF EXCLUSIVELY DRAINED WHITE SAND DOMINATED BY 12-15' Q. GEMINATA, REPLETE WITH TILLANDIA WITH SCATTERED VACCINIUM ARBOREUM AND SERENOA REPENS IN SCRUB LAYER. ASSORTMENT OF GRASSES AND HERBS ESP. LICANIA IN HERB LAYER WITH PATCHES OF WHITE SAND. EDGES BLEND TO COMMUNITIES DOMINATED BY Q. HEMISPHAERICA AND SABAL PALMETTO, PRESUMABLY OVER LIMESTONE ROCK CAP. (U88CHR01FLUS).	No EO data given
LECHCERN*89	*Lechea cernua*	nodding pinweed	G3	S3	N	T	1986-03-29	1986-03-29: LOW OPEN SCRUB WITH MINIMAL GROUND COVER(U88CHR01FLUS).	No EO data given

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

FNAI ELEMENT OCCURRENCE REPORT on or near

County Road 887 PD&E Study

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
LECHCERN*91	*Lechea cernua*	nodding pinweed	G3	S3	N	T	1986-03-29	1986-03-29: ROSEMARY SCRUB AND SAND PINE SCRUB(U88CHR01FLUS).	No EO data given
LECHCERN*95	*Lechea cernua*	nodding pinweed	G3	S3	N	T	1986-03-28	1986-03-28: ROSEMARY SCRUB(U88CHR01FLUS).	No EO data given
LITHCAPI*45	*Lithobates capito*	Gopher Frog	G3	S3	N	N	ZZ	No general description given	SPEC. (LA-60564), COLLECTOR N/A, DATE N/A.
MANGSWAM*12	Mangrove swamp		G5	S4	N	N	1999	MANGROVE SWAMP EXTENDING FULL LENGTH OF BOTH PROPERTIES ON BAY SIDE.	2010: Prior to the 2010 natural community reclassification effort this EO had been known as Estuarine tidal swamp EO number 12 (see U10FNA01FLUS for updated community descriptions). 1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1983) (U05FNA02FLUS). DOMINATED BY RED & BLACK MANGROVES, WITH SOME WHITE MANGROVE. BUTTONWOOD COMMON ABOVE HIGH TIDE LINE.
RYNCNIGE*48	*Rynchops niger*	Black Skimmer	G5	S3	N	ST	1989-01-13	Consolidated substrate	1989/01/13: M.S. Robson, GFC, observed 5 adults. mixed flock.
SCRUB****261	Scrub		G2	S2	N	N	1999	LOW, OPEN SCRUB W/ MINIMAL GROUNDCOVER.	1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1986) (U05FNA02FLUS). 3' ROSEMARY & OAKS. UNUSUAL ASCLEPIAS.
SCRUB****267	Scrub		G2	S2	N	N	1999	No general description given	1999: Update to last obs date was based on interpretation of aerial photography (previous value was empty) (U05FNA02FLUS).

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

FNAI ELEMENT OCCURRENCE REPORT on or near

County Road 887 PD&E Study

Map Label	Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing	Observation Date	Description	EO Comments
SCRUB****567	Scrub		G2	S2	N	N	1999	RIDGE REMNANT OF EXCLUSIVELY DRAINED WHITE SAND DOMINATED BY 12-15' Q. GEMINATA, REPLETE WITH TILLANDIA WITH SCATTERED VACCINIUM ARBOREUM AND SERENOA REPENS IN SCRUB LAYER. ASSORTMENT OF GRASSES AND HERBS ESP. LICANIA IN HERB LAYER WITH PATCHES OF WHITE SAND. EDGES BLEND TO COMMUNITIES DOMINATED BY Q. HEMISPHAERICA AND SABAL PALMETTO, PRESUMABLY OVER LIMESTONE ROCK CAP.	1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1986-03-30) (U05FNA02FLUS).
SETOPALU*10	*Setophaga discolor paludicola*	Florida Prairie Warbler	G5T3	S3	N	N	1983	IN MANGROVES OF BOTH AREAS.	NUMEROUS NESTS IN 1983 (P84ALV01).
STERANTI*124	*Sternula antillarum*	Least Tern	G4	S3	N	ST	1988	No general description given	1988: Nesting began on 15 April and ended on 15 June; 15 nests counted (U97GFC02FLUS).
STYLABDI*10	*Stylisma abdita*	scrub stylisma	G3	S3	N	E	1990-12-24	No general description given	BURCH (326-328) COLLECTED SPECIMENS.
STYLABDI*11	*Stylisma abdita*	scrub stylisma	G3	S3	N	E	1990-11-10	No general description given	BURCH (NO #) COLLECTED SPECIMEN.
STYLABDI*15	*Stylisma abdita*	scrub stylisma	G3	S3	N	E	1990-09-29	No general description given	BURCH (NO #) COLLECTED SPECIMEN.
STYLABDI*17	*Stylisma abdita*	scrub stylisma	G3	S3	N	E	1990-09-23	No general description given	BURCH (NO #) COLLECTED SPECIMEN.
STYLABDI*19	*Stylisma abdita*	scrub stylisma	G3	S3	N	E	1990-08-27	No general description given	No EO data given
THALMAXI*44	*Thalasseus maximus*	Royal Tern	G5	S3	N	N	1991-06-13	Unconsolidated substrate	1991-06-13: M.S. Robson, GFC - 250 loafing.
THALSAND*22	*Thalasseus sandvicensis*	Sandwich Tern	G5	S2	N	N	1991-06-13	Consolidated substrate	1991-06-13: M.S. Robson, GFC observed 30 terns. 1989-01-13: M.S. Robson observed 5 adults feeding.
VIREALTI*17	*Vireo altiloquus*	Black-whiskered Vireo	G5	S3	N	N	1983	IN MANGROVES (& HAMMOCK?) OF BOTH AREAS.	NUMEROUS NESTS IN 1983 (P84ALV01).

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

Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Matrix Unit ID: 38351					
Documented					
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Scrub		G2	S2	N	N
Likely					
Haliaeetus leucocephalus	Bald Eagle	G5	S3	N	N
Mangrove swamp		G5	S4	N	N
Mesic flatwoods		G4	S4	N	N
Mycteria americana	Wood Stork	G4	S2	T	FT
Sciurus niger avicennia	Mangrove Fox Squirrel	G5T2	S2	N	ST
Stylisma abdita	scrub stylisma	G3	S3	N	E
Thalasseus sandvicensis	Sandwich Tern	G5	S2	N	N
Potential					
Andropogon arctatus	pinewoods bluestem	G3	S3	N	T
Aphelocoma coerulescens	Florida Scrub-Jay	G2?	S2	T	FT
Ardea herodias occidentalis	Great White Heron	G5T2	S2	N	N
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	ST
Calopogon multiflorus	many-flowered grass-pink	G2G3	S2S3	N	T
Chamaesyce cumulicola	sand-dune spurge	G2	S2	N	E
Crocodylus acutus	American Crocodile	G2	S2	T	FT
Drymarchon couperi	Eastern Indigo Snake	G3	S3	T	FT
Dryobates borealis	Red-cockaded Woodpecker	G3	S2	E	FE
Elytraria caroliniensis var. angustifolia	narrow-leaved Carolina scalystem	G4T2	S2	N	N
Eragrostis pectinacea var. tracyi	Sanibel lovegrass	G5T1	S1	N	E
Eretmochelys imbricata	Hawksbill Sea Turtle	G3	S1	E	FE
Eumops floridanus	Florida bonneted bat	G1	S1	E	FE
Gymnopogon chapmanianus	Chapman's skeletongrass	G3	S3	N	N
Heterodon simus	Southern Hognose Snake	G2	S2S3	N	N
Lechea cernua	nodding pinweed	G3	S3	N	T
Lechea divaricata	pine pinweed	G2	S2	N	E
Linum carteri var. smallii	Small's flax	G2T2	S2	N	E
Lithobates capito	Gopher Frog	G3	S3	N	N
Matelea floridana	Florida spiny-pod	G2	S2	N	E
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3?	S3?	N	N
Nemastylis floridana	celestial lily	G2	S2	N	E
Pteroglossaspis ecristata	giant orchid	G2G3	S2	N	T
Puma concolor coryi	Florida Panther	G5T1	S1	E	FE
Rallus longirostris scottii	Florida Clapper Rail	G5T3?	S3?	N	N
Rivulus marmoratus	Mangrove Rivulus	G4G5	S3	SC	N
Rostrhamus sociabilis	Snail Kite	G4G5	S2	E	FE
Rynchops niger	Black Skimmer	G5	S3	N	ST
Sceloporus woodi	Florida Scrub Lizard	G2G3	S2S3	N	N
Setophaga discolor paludicola	Florida Prairie Warbler	G5T3	S3	N	N
Sternula antillarum	Least Tern	G4	S3	N	ST
Trichechus manatus	West Indian Manatee	G2	S2	T	FT
Ursus americanus floridanus	Florida Black Bear	G5T4	S4	N	N
Vireo altiloquus	Black-whiskered Vireo	G5	S3	N	N

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

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

Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Matrix Unit ID: 38713					
Likely					
Mesic flatwoods		G4	S4	N	N
Mycteria americana	Wood Stork	G4	S2	T	FT
Sandhill upland lake		G3	S2	N	N
Sciurus niger avicennia	Mangrove Fox Squirrel	G5T2	S2	N	ST
Scrub		G2	S2	N	N
Stylisma abdita	scrub stylisma	G3	S3	N	E
Potential					
Andropogon arctatus	pinewoods bluestem	G3	S3	N	T
Aphelocoma coerulescens	Florida Scrub-Jay	G2?	S2	T	FT
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	ST
Calopogon multiflorus	many-flowered grass-pink	G2G3	S2S3	N	T
Chamaesyce cumulicola	sand-dune spurge	G2	S2	N	E
Crocodylus acutus	American Crocodile	G2	S2	T	FT
Dendrophylax lindenii	ghost orchid	G2G4	S2	N	E
Drymarchon couperi	Eastern Indigo Snake	G3	S3	T	FT
Dryobates borealis	Red-cockaded Woodpecker	G3	S2	E	FE
Elytraria caroliniensis var. angustifolia	narrow-leaved Carolina scalystem	G4T2	S2	N	N
Eumops floridanus	Florida bonneted bat	G1	S1	E	FE
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Heterodon simus	Southern Hognose Snake	G2	S2S3	N	N
Lechea cernua	nodding pinweed	G3	S3	N	T
Lechea divaricata	pine pinweed	G2	S2	N	E
Linum carteri var. smallii	Small's flax	G2T2	S2	N	E
Lithobates capito	Gopher Frog	G3	S3	N	N
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3?	S3?	N	N
Nemastylis floridana	celestial lily	G2	S2	N	E
Nolina atopocarpa	Florida beargrass	G3	S3	N	T
Puma concolor coryi	Florida Panther	G5T1	S1	E	FE
Rostrhamus sociabilis	Snail Kite	G4G5	S2	E	FE
Sceloporus woodi	Florida Scrub Lizard	G2G3	S2S3	N	N
Setophaga discolor paludicola	Florida Prairie Warbler	G5T3	S3	N	N
Ursus americanus floridanus	Florida Black Bear	G5T4	S4	N	N
Matrix Unit ID: 38714					
Likely					
Mesic flatwoods		G4	S4	N	N
Mycteria americana	Wood Stork	G4	S2	T	FT
Sciurus niger avicennia	Mangrove Fox Squirrel	G5T2	S2	N	ST
Scrub		G2	S2	N	N
Stylisma abdita	scrub stylisma	G3	S3	N	E
Potential					
Andropogon arctatus	pinewoods bluestem	G3	S3	N	T
Aphelocoma coerulescens	Florida Scrub-Jay	G2?	S2	T	FT

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

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

Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	ST
Calopogon multiflorus	many-flowered grass-pink	G2G3	S2S3	N	T
Chamaesyce cumulicola	sand-dune spurge	G2	S2	N	E
Drymarchon couperi	Eastern Indigo Snake	G3	S3	T	FT
Dryobates borealis	Red-cockaded Woodpecker	G3	S2	E	FE
Elytraria caroliniensis var. angustifolia	narrow-leaved Carolina scalystem	G4T2	S2	N	N
Eumops floridanus	Florida bonneted bat	G1	S1	E	FE
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Heterodon simus	Southern Hognose Snake	G2	S2S3	N	N
Lechea cernua	nodding pinweed	G3	S3	N	T
Lechea divaricata	pine pinweed	G2	S2	N	E
Linum carteri var. smallii	Small's flax	G2T2	S2	N	E
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3?	S3?	N	N
Nemastylis floridana	celestial lily	G2	S2	N	E
Nolina atopocarpa	Florida beargrass	G3	S3	N	T
Puma concolor coryi	Florida Panther	G5T1	S1	E	FE
Rostrhamus sociabilis	Snail Kite	G4G5	S2	E	FE
Sceloporus woodi	Florida Scrub Lizard	G2G3	S2S3	N	N
Ursus americanus floridanus	Florida Black Bear	G5T4	S4	N	N

Matrix Unit ID: 38715

Likely

Elytraria caroliniensis var. angustifolia	narrow-leaved Carolina scalystem	G4T2	S2	N	N
Mesic flatwoods		G4	S4	N	N
Mycteria americana	Wood Stork	G4	S2	T	FT
Sciurus niger avicennia	Mangrove Fox Squirrel	G5T2	S2	N	ST
Scrub		G2	S2	N	N
Stylisma abdita	scrub stylisma	G3	S3	N	E

Potential

Andropogon arctatus	pinewoods bluestem	G3	S3	N	T
Aphelocoma coerulescens	Florida Scrub-Jay	G2?	S2	T	FT
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	ST
Calopogon multiflorus	many-flowered grass-pink	G2G3	S2S3	N	T
Chamaesyce cumulicola	sand-dune spurge	G2	S2	N	E
Drymarchon couperi	Eastern Indigo Snake	G3	S3	T	FT
Dryobates borealis	Red-cockaded Woodpecker	G3	S2	E	FE
Eumops floridanus	Florida bonneted bat	G1	S1	E	FE
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Heterodon simus	Southern Hognose Snake	G2	S2S3	N	N
Lechea cernua	nodding pinweed	G3	S3	N	T
Lechea divaricata	pine pinweed	G2	S2	N	E
Linum carteri var. smallii	Small's flax	G2T2	S2	N	E
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3?	S3?	N	N
Nemastylis floridana	celestial lily	G2	S2	N	E
Nolina atopocarpa	Florida beargrass	G3	S3	N	T
Pteroglossaspis ecristata	giant orchid	G2G3	S2	N	T
Puma concolor coryi	Florida Panther	G5T1	S1	E	FE
Rostrhamus sociabilis	Snail Kite	G4G5	S2	E	FE

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

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

Florida Natural Areas Inventory

Biodiversity Matrix Report

Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Sceloporus woodi	Florida Scrub Lizard	G2G3	S2S3	N	N
Setophaga discolor paludicola	Florida Prairie Warbler	G5T3	S3	N	N
Ursus americanus floridanus	Florida Black Bear	G5T4	S4	N	N

Matrix Unit ID: 39078

Documented-Historic

Elytraria caroliniensis var. angustifolia	narrow-leaved Carolina scalystem	G4T2	S2	N	N

Likely

Mesic flatwoods		G4	S4	N	N
Mycteria americana	Wood Stork	G4	S2	T	FT
Sciurus niger avicennia	Mangrove Fox Squirrel	G5T2	S2	N	ST
Stylisma abdita	scrub stylisma	G3	S3	N	E

Potential

Andropogon arctatus	pinewoods bluestem	G3	S3	N	T
Athene cunicularia floridana	Florida Burrowing Owl	G4T3	S3	N	ST
Calopogon multiflorus	many-flowered grass-pink	G2G3	S2S3	N	T
Drymarchon couperi	Eastern Indigo Snake	G3	S3	T	FT
Dryobates borealis	Red-cockaded Woodpecker	G3	S2	E	FE
Eumops floridanus	Florida bonneted bat	G1	S1	E	FE
Gopherus polyphemus	Gopher Tortoise	G3	S3	C	ST
Heterodon simus	Southern Hognose Snake	G2	S2S3	N	N
Lechea cernua	nodding pinweed	G3	S3	N	T
Linum carteri var. smallii	Small's flax	G2T2	S2	N	E
Mustela frenata peninsulae	Florida Long-tailed Weasel	G5T3?	S3?	N	N
Nemastylis floridana	celestial lily	G2	S2	N	E
Nolina atopocarpa	Florida beargrass	G3	S3	N	T
Puma concolor coryi	Florida Panther	G5T1	S1	E	FE
Rostrhamus sociabilis	Snail Kite	G4G5	S2	E	FE
Sceloporus woodi	Florida Scrub Lizard	G2G3	S2S3	N	N
Setophaga discolor paludicola	Florida Prairie Warbler	G5T3	S3	N	N
Ursus americanus floridanus	Florida Black Bear	G5T4	S4	N	N

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

Elements and Element Occurrences

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

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

Element Ranking and Legal Status

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

FNAI GLOBAL ELEMENT RANK

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

FNAI STATE ELEMENT RANK

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

FEDERAL LEGAL STATUS

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

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

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

STATE LEGAL STATUS

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

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

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

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

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

Element Occurrence Ranking

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

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

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

FNAI also uses the following EO ranks:

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

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

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

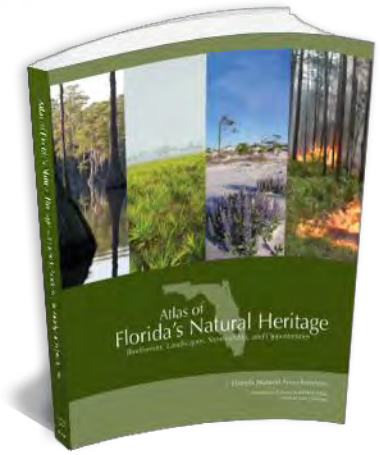
The rank of X is assigned to EOs for which there is documented destruction of habitat or environment, or persuasive evidence of eradication based on adequate survey (i.e., thorough or repeated survey efforts by one or more experienced observers at times and under conditions appropriate for the Element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

ON SALE NOW

Atlas of Florida's Natural Heritage

Biodiversity, Landscapes, Stewardship, and Opportunities

The Florida Natural Areas Inventory is pleased to announce the publication of the ***Atlas of Florida's Natural Heritage: Biodiversity, Landscapes, Stewardship, and Opportunities***. This high-quality, full-color *Atlas* is sure to become a standard reference for anyone involved in the conservation, management, study, or enjoyment of Florida's rich natural resources. We hope the *Atlas* will inspire, educate, and raise awareness of and interest in biodiversity and conservation issues.



Learn more about the Atlas, view sample pages and order your copy today at:
https://www.fnai.org/atlas.cfm

Follow our blog – *FNAI News & Notes*:

http://fnai.blogspot.com/

and

FOLLOW US ON facebook

APPENDIX G

Standard Protection Measures

STANDARD PROTECTION MEASURES FOR THE EASTERN INDIGO SNAKE

U.S. Fish and Wildlife Service

May 2024

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

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

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

STANDARD PROTECTION MEASURES

BEFORE AND DURING CONSTRUCTION ACTIVITIES:

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

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

- Prior to the onset of construction activities, the project proponent or designated agent will conduct a meeting with all construction staff (annually for multi-year projects) to discuss identification of the snake, its protected status, what to do if a snake is observed within the project area, and applicable penalties that may be imposed if state and/or federal regulations are violated. An educational pamphlet including color photographs of the snake will be given to each staff member in attendance and additional copies will be provided to the construction superintendent to make available in the onsite construction office. Photos of eastern indigo snakes may be accessed on USFWS, Florida Fish and Wildlife Conservation Commission and/or Georgia Department of Natural Resources websites.
- Each day, prior to the commencement of maintenance or construction activities, the Contractor shall perform a thorough inspection for the species of all worksite equipment.
- If an eastern indigo snake (alive, dead or skin shed) is observed on the project site during construction activities, all such activities are to cease until the established procedures are implemented according to the Plan, which includes notification of the appropriate USFWS Office. The contact information for the USFWS is provided below and on the referenced posters and pamphlets.
- During initial site clearing activities, an onsite observer is recommended to determine whether habitat conditions suggest a reasonable probability of an eastern indigo snake sighting (example: discovery of snake sheds, tracks, lots of refugia and cavities present in the area of clearing activities, and presence of gopher tortoises and burrows).
- Periodically during construction activities, the project area should be visited to observe the condition of the posters and Plan materials and replace them as needed. Construction personnel should be reminded of the instructions (above) as to what is expected if any eastern indigo snakes are seen.
- For erosion control use biodegradable, 100% natural fiber, net-free rolled erosion control blankets to avoid wildlife entanglement.

POST CONSTRUCTION ACTIVITIES:

Whether or not eastern indigo snakes are observed during construction activities, a monitoring report should be submitted to the appropriate USFWS Field Office within 60 days of project completion (See USFWS Field Office Contact Information).

USFWS FIELD OFFICE CONTACT INFORMATION

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

POSTER & PAMPHLET INFORMATION

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

POSTER CONTENT (ENGLISH):

ATTENTION

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

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

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

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

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

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

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

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

• Stop land disturbing activities and immediately notify supervisor/applicant, and a USFWS Ecological Services Field Office, with the location information and condition of the snake.

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

• Thoroughly soak the dead snake in water and then freeze the specimen. The appropriate wildlife agency will retrieve the dead snake.

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

in the throat area. They are not typically aggressive.

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

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

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

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

Florida Office: (352) 448-9151

Georgia Office: (706) 613-9493

POSTER CONTENT (SPANISH):

ATENCIÓN

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Oficina de Florida: (352) 448-9151

Oficina de Georgia: (706) 613-9493

LEGAL REQUIREMENTS AND RESPONSIBILITY TO THE PUBLIC – LAWS TO BE OBSERVED - COMPLIANCE WITH FEDERAL ENDANGERED SPECIES ACT AND OTHER WILDLIFE REGULATIONS (GOPHER TORTOISE).

(REV 6-15-17) (FA 6-20-17) (1-19)

SUBARTICLE 7-1.4 is expanded by the following new Subarticle:

7-1.4.1 Additional Requirements for Gopher Tortoises (Gopherus Polyphemus): Certain gopher tortoise burrows are to remain within the project area, as shown in the Plans, and must be protected. Avoid ground disturbing impacts within a 25 foot radius of each burrow. Install and maintain silt fence in accordance with Section 104 as a means of burrow avoidance, ensuring that it opens towards the offsite project limits, does not herd tortoises toward an obstacle, and that burrows are not fully encircled. Install fence prior to any other construction activity. Replace fence in the same location as the original fence. Remove fence upon completion of construction.

Silt fence intended for burrow avoidance may also be used as silt fence for erosion control but shall not be considered as the only silt fence needed for erosion control purposes within the project limits.

Follow the gopher tortoise species requirements posted in the URL address in 7-1.4 when gopher tortoises are observed or previously unidentified burrows are discovered.

LEGAL REQUIREMENTS AND RESPONSIBILITY TO THE PUBLIC – LAWS TO BE OBSERVED - COMPLIANCE WITH FEDERAL ENDANGERED SPECIES ACT AND OTHER WILDLIFE REGULATIONS (BEAR).
(REV 6-6-17) (FA 6-13-17) (1-19)

SUBARTICLE 7-1.4 is expanded by the following:

The Department has determined that Florida black bears (*Ursus americanus floridanus*) occur in the project area. Unless stored overnight in a sealed, manufacturer-labeled bear-resistant container or in a locked metal container, remove garbage and food debris from the construction site daily to eliminate possible sources of food that could encourage and attract bears. Human bear conflicts are to be reported to the FWC Hotline at 1-888-404-3922.

APPENDIX H

Species Consultation Keys

United States Department of the Interior

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

August 1, 2017

Donnie Kinard
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Subject: Consultation Key for the Eastern Indigo Snake – Revised

Dear Mr. Kinard:

This letter revises and replaces the January 25, 2010, and August 13, 2013, letters to the U.S. Army Corps of Engineers (Corps) regarding the use of the eastern indigo snake programmatic effect determination key (Key) for projects occurring within the South Florida Ecological Service's Office (SFESO) jurisdiction. This revision supersedes all prior versions of the Key in the SFESO area. The purpose of this revision is to clarify portions of the previous keys based on questions we have been asked, specifically related to habitat and refugia used by eastern indigo snakes (*Drymarchon corais couperi*), in the southern portion of their range and within the jurisdiction of the SFESO. This Key is provided pursuant to the Service's authorities under the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C.1531 *et seq.*). This Key revision has been assigned Service Consultation Code: 41420-2009-I-0467-R001.

The purpose of this Key is to assist the Corps (or other Federal action agency) in making appropriate effects determinations for the eastern indigo snake under section 7 of the Act, and streamline informal consultation with the SFESO for the eastern indigo snake when the proposed action can be walked through the Key. The Key is a tool available to the Corps (or other Federal action agency) for the purposes of expediting section 7 consultations. There is no requirement to use the Key. There will be cases when the use of the Key is not appropriate. These include, but are not limited to: where project specific information is outside of the scope of the Key or instances where there is new biological information about the species. In these cases, we recommend the Corps (or other Federal action agency) initiates traditional consultation pursuant to section 7 of the Act, and identify that consultation is being requested outside of the Key.

This Key uses project size and home ranges of eastern indigo snakes as the basis for making determinations of "may affect, but is not likely to adversely affect" (NLAA) and "may affect. and is likely to adversely affect" (may affect). Suitable habitat for the eastern indigo snake consists of a mosaic of habitats types, most of which occur throughout South Florida. Information on home ranges for individuals is not available in specific habitats in South Florida. Therefore, the SFESO uses the information from a 26-year study conducted by Layne and Steiner (1996) at Archbold Biological Station, Lake Placid, Florida, as the best available

information. Layne and Steiner (1996) determined the average home range size for a female eastern indigo snake was 46 acres and 184 acres for a male.

Projects that would remove/destroy less than 25 acres of eastern indigo snake habitat are expected to result in the loss of a portion of an eastern indigo snakes home range that would not impair the ability of the individual to feed, breed, and shelter. Therefore, the Service finds that take would not be reasonably certain to occur due to habitat loss. However, these projects have the potential to injure or kill an eastern indigo snake if the individual is crushed by equipment during site preparation or other project aspects. The Service's *Standard Protection Measures for the Eastern Indigo Snake* (Service 2013 or most current version) and the excavation of underground refugia (where a snake could be buried, trapped and/or injured), when implemented, are designed to avoid these forms of take. Consequently, projects less than 25 acres that include the Service's *Standard Protection Measures for the Eastern Indigo Snake* (Service 2013 or most current version) and a commitment to excavate underground refugia as part of the proposed action would be expected to avoid take and thus, may affect, but are not likely to adversely affect the species.

If a proposed project would impact less than 25 acres of vegetated eastern indigo snake habitat (not urban/ human-altered) completely surrounded by urban development, and an eastern indigo snake has been observed on site, the Key should not be used. The Service recommends formal consultation for this situation because of the expected increased value of the vegetated habitat within the individual's home range.

Projects that would remove 25 acres or more of eastern indigo snake habitat could remove more than half of a female eastern indigo snakes home range. This loss of habitat within a home range would be expected to significantly impair the ability of that individual to feed, breed, and shelter. Therefore, the Service finds take through habitat loss would be reasonably certain to occur and formal consultation is appropriate. Furthermore, these projects have the potential to injure or kill an eastern indigo snake if the individual is crushed by equipment during site preparation or other project aspects. The Service's *Standard Protection Measures* for the *Eastern Indigo Snake* (Service 2013 or most current version) and the excavation of underground refugia (where a snake could be buried, trapped and/or injured), when implemented, are designed to avoid these forms of take.

Eastern indigo snakes use a variety of habitat and are difficult to detect. Therefore, site specific information on the land use, observations of eastern indigo snakes within the vicinity, as well as other factors, as appropriate, will all be considered by the Service when making a final recommendation on the appropriate effects determination and whether it is appropriate to conclude consultation with the Corps (or other Federal action agency) formally or informally for projects that will impact 25 acres or more of habitat. Accordingly, when the use of the Key results in a determination of "may affect," the Corps (or other Federal action agency) is advised that consultation may be concluded informally or formally, depending on the project specific effects to eastern indigo snakes. Technical assistance from the Service can assist you in making a determination prior to submitting a request for consultation. In circumstances where the Corps (or other Federal action agency) desires to proceed with a consultation request prior to receiving

additional technical assistance from the Service, we recommend the agency documents the biological rationale for their determination and proceed with a request accordingly.

If the use of the Key results in a determination of "no effect," no further consultation is necessary with the SFESO. If the use of the Key results in a determination of "NLAA," the SFESO concurs with this determination based on the rationale provide above, and no further consultation is necessary for the effects of the proposed action on the eastern indigo snake. For "no effect" or "NLAA" determinations, the Service recommends that the Corps (or other Federal action agency) documents the pathway used to reach your no effect or NLAA determination in the project record and proceed with other species analysis as warranted.

Eastern Indigo Snake Programmatic Effect Determination Key
Revised July 2017
South Florida Ecological Service Office

Scope of the Key

This Key should be used only in the review of permit applications for effects determinations for the eastern indigo snake (*Drymarchon corais couperi*) within the South Florida Ecological Service's Office (SFESO) area (Broward, Charlotte, Collier, De Soto, Glades, Hardee, Hendry, Highlands, Lee, Indian River, Martin, Miami-Dade, Monroe, Okeechobee, Osceola, Palm Beach, Polk, Sarasota, and St. Lucie Counties). There is no designated critical habitat for the eastern indigo snake.

This Key is subject to revision as the Corps (or other Federal action agency) and Service deem necessary and in particular whenever there is new information on eastern indigo snake biology and effects of proposed projects.

The Key is a tool available to the Corps (or other Federal action agency) for the purposes of expediting section 7 consultations. There is no requirement to use the Key. There will be cases when the use of the Key is not appropriate. These include, but are not limited to: where project specific information is outside of the scope of the Key or instances where there is new biological information about the species. In these cases, we recommend the Corps (or other Federal action agency) initiates traditional consultation pursuant to section 7 of the Act, and identify that consultation is being requested outside of the Key.

Habitat

Habitat use varies seasonally between upland and wetland areas, especially in the more northern parts of the species' range. In southern parts of their range eastern indigo snakes are habitat generalists which use most available habitat types. Movements between habitat types in northern areas of their range may relate to the need for thermal refugia (protection from cold and/or heat).

In northern areas of their range eastern indigo snakes prefer an interspersion of tortoise-inhabited sandhills and wetlands (Landers and Speake 1980). In these northern regions eastern indigo

snakes most often use forested areas rich with gopher tortoise burrows, hollowed root channels, hollow logs, or the burrows of rodents, armadillos, or land crabs as thermal refugia during cooler seasons (Lawler 1977; Moler 1985a; Layne and Steiner 1996). The eastern indigo snake in the northern region is typically classified as a longleaf pine savanna specialist because here, in the northern four-fifths of its range, the eastern indigo snake is typically only found in vicinity of xeric longleaf pine–turkey oak sandhills inhabited by the gopher tortoise (Means 2006).

In the milder climates of central and southern Florida, comprising the remaining one fifth of its range, thermal refugia such as those provided by gopher tortoise burrows may not be as critical to survival of indigo snakes. Consequently, eastern indigo snakes in these regions use a more diverse assemblage of habitats such as pine flatwoods, scrubby flatwoods, floodplain edges, sand ridges, dry glades, tropical hammocks, edges of freshwater marshes, muckland fields, coastal dunes, and xeric sandhill communities; with highest population concentrations of eastern indigo snakes occurring in the sandhill and pineland regions of northern and central Florida (Service 1999). Eastern indigo snakes have also been found on agricultural lands with close proximity to wetlands (Zeigler 2006).

In south Florida, agricultural sites (*e.g.*, sugar cane fields and citrus groves) are occupied by eastern indigo snakes. The use of sugarcane fields by eastern indigo snakes was first documented by Layne and Steiner in 1996. In these areas there is typically an abundance of wetland and upland ecotones (due to the presence of many ditches and canals), which support a diverse prey base for foraging. In fact, some speculate agricultural areas may actually have a higher density of eastern indigo snakes than natural communities due to the increased availability of prey. Gopher tortoise burrows are absent at these locations but there is an abundance of both natural and artificial refugia. Enge and Endries (2009) reporting on the status of the eastern indigo snake included sugarcane fields and citrus groves in a Global Information Systems (GIS)-base map of potential eastern indigo snake habitat. Numerous sightings of eastern indigo snakes within sugarcane fields have been reported within south Florida (Florida Fish and Wildlife Conservation Commission Indigo Snake Database [Enge 2017]). A recent study associated with the Comprehensive Everglades Restoration Plan (CERP) (A-1 FEB Project formerly A-1 Reservoir; Service code: 41420-2006-F-0477) documented eastern indigo snakes within sugarcane fields. The snakes used artificial habitats such as piles of limerock, construction debris, and pump stations. Recent studies also associated with the CERP at the C-44 Project (Service code: 41420-2009-FA-0314), and C-43 Project (Service code: 41420-2007-F-0589) documented eastern indigo snakes within citrus groves. The snakes used artificial habitats such as boards, sheets of tin, construction debris, pipes, drain pipes in abandoned buildings and septic tanks.

In extreme south Florida (*i.e.*, the Everglades and Florida Keys), eastern indigo snakes also utilize tropical hardwood hammocks, pine rocklands, freshwater marshes, abandoned agricultural land, coastal prairie, mangrove swamps, and human-altered habitats. Though eastern indigo snakes have been found in all available habitats of south Florida it is thought they prefer hammocks and pine forests since most observations occur there and use of these areas is disproportionate compared to the relatively small total area of these habitats (Steiner *et al.* 1983).

Even though thermal stress may not be a limiting factor throughout the year in south Florida, eastern indigo snakes still seek and use underground refugia. On the sandy central ridge of central Florida, eastern indigo snakes use gopher tortoise burrows more (62 percent) than other underground refugia (Layne and Steiner 1996). Other underground refugia used include armadillo (*Dasypus novemcinctus*) burrows near citrus groves, cotton rat (*Sigmodon hispidus*) burrows, and land crab (*Cardisoma guanhumi*) burrows in coastal areas (Layne and Steiner 1996; Wilson and Porras 1983). Natural ground holes, hollows at the base of trees or shrubs, ground litter, trash piles, and crevices of rock-lined ditch walls are also used (Layne and Steiner 1996). These refugia are used most frequently where tortoise burrows are not available, principally in low-lying areas off the central and coastal ridges.

Minimization Measures

The Service developed protection measures for the eastern indigo snake "Standard Protection Measures for the Eastern Indigo Snake" (Service 2013) located at: https://www.fws.gov/verobeach/ReptilesPDFs/20130812_EIS%20Standard%20Protection%20Measures_final.pdf. These protections measures (or the most updated version) are considered a minimization measure for projects proposed within eastern indigo snake habitat.

Determinations

If the use of this Key results in a determination of "**no effect**," no further consultation is necessary with the SFESO.

If the use of this Key results in a determination of "**NLAA**," the SFESO concurs with this determination and no further consultation is necessary for the effects of the proposed action on the eastern indigo snake.

For no effect or NLAA determinations, the Corps (or other Federal action agency) should make a note in the project file indicating the pathway used to reach your no effect or NLAA determination.

If a proposed project would impact less than 25 acres of vegetated eastern indigo snake habitat (not urban/ human-altered) completely surrounded by urban development, and an eastern indigo snake has been observed on site, the subsequent Key should not be used. The Service recommends formal consultation for this situation because of the expected increased value of the vegetated habitat within the individual's home range.

If the use of this Key results in a determination of "**may affect**," consultation may be concluded informally or formally depending on project effects to eastern indigo snakes. Technical assistance from the Service can assist you in making a determination prior to submitting a request for consultation. In circumstances where the Corps desires to proceed with a consultation request prior to receiving additional technical assistance from the Service, we recommend the Corps document the biological rationale for their determination and proceed with a request accordingly.

A. Project is not located in open water or salt marsh.....go to B

Project is located solely in open water or salt marsh.....**no effect**

B. Permit will be conditioned for use of the Service's most current guidance for Standard Protection Measures For The Eastern Indigo Snake (currently 2013) during site preparation and project construction.....go to C

Permit will not be conditioned as above for the eastern indigo snake, or it is not known whether an applicant intends to use these measures and consultation with the Service is requested.....**may affect**

C. The project will impact less than 25 acres of eastern indigo snake habitat (*e.g.*, sandhill, scrub, pine flatwoods, pine rocklands, scrubby flatwoods, high pine, dry prairie, coastal prairie, mangrove swamps, tropical hardwood hammocks, hydric hammocks, edges of freshwater marshes, agricultural fields [including sugar cane fields and active, inactive, or abandoned citrus groves], and coastal dunes).....go to D

The project will impact 25 acres or more of eastern indigo snake habitat (*e.g.*, sandhill, scrub, pine flatwoods, pine rocklands, scrubby flatwoods, high pine, dry prairie, coastal prairie, mangrove swamps, tropical hardwood hammocks, hydric hammocks, edges of freshwater marshes, agricultural fields [including sugar cane fields and active, inactive, or abandoned citrus groves], and coastal dunes).....**may affect**

D. The project has no known holes, cavities, active or inactive gopher tortoise burrows, or other underground refugia where a snake could be buried, trapped and/or injured during project activities.....**NLAA**

The project has known holes, cavities, active or inactive gopher tortoise burrows, or other underground refugia where a snake could be buried, trapped and /or injured.....go to E

E. Any permit will be conditioned such that all gopher tortoise burrows, active or inactive, will be excavated prior to site manipulation in the vicinity of the burrow[1]. If an eastern indigo snake is encountered, the snake must be allowed to vacate the area prior to additional site manipulation in the vicinity. Any permit will also be conditioned such that holes, cavities, and snake refugia other than gopher tortoise burrows will be inspected each morning before planned site manipulation of a particular area, and, if occupied by an eastern indigo snake, no work will commence until the snake has vacated the vicinity of proposed work.....**NLAA**[2]

Permit will not be conditioned as outlined above.....**may affect**

End Key

---

[1] If excavating potentially occupied burrows, active or inactive, individuals must first obtain state authorization via a Florida Fish and Wildlife Conservation Commission Authorized Gopher Tortoise Agent permit. The excavation method selected should also minimize the potential for injury of an indigo snake. Applicants should follow the excavation guidance provided within the most current Gopher Tortoise Permitting Guidelines found at http://myfwc.com/gophertortoise.

[2] Please note, if the proposed project will impact less than 25 acres of vegetated eastern indigo snake habitat (not urban/ human-altered) completely surrounded by urban development, and an eastern indigo snake has been observed on site, NLAA is not the appropriate conclusion. The Service recommends formal consultation for this situation because of the expected increased value of the vegetated habitat within the individual's home range

Working with the Fish and Wildlife Foundation of Florida, the Service has established a fund to support conservation and recovery for the eastern indigo snake. Any project that has the potential to affect the eastern indigo snake and/or its habitat is encouraged to make a voluntary contribution to this fund. If you would like additional information about how to make a contribution and how these monies are used to support eastern indigo snake recovery please contact Ashleigh Blackford, Connie Cassler, or José Rivera at 772-562-3559.

This revised Key is effective immediately upon receipt by the Corps. Should circumstances change or new information become available regarding the eastern indigo snake and/or implementation of the Key, the determinations herein may be reconsidered and this Key further revised or amended.

Thank you for your continued cooperation in the effort to conserve fish and wildlife resources. If you have any questions or comments regarding this Key, please contact the SFESO at 772-562-3909.

Sincerely,

Roxanna Hinzman
Field Supervisor
South Florida Ecological Services

Cc:
Corps, Jacksonville, Florida (Dale Beter, Muriel Blaisdell, Ingrid Gilbert, Angela Ryan, Irene Sadowski, Victoria White, Alisa Zarbo)
Service, Athens, Georgia (Michelle Elmore)
Service, Jacksonville, Florida (Annie Dziergowski)
Service, Panama City, Florida (Sean Blomquist)

LITERATURE CITED

Enge K. M. 2017. Personal communication. Email from Kevin Enge, Florida Fish and Wildlife Conservation Commission, Gainesville, Florida to Steve Mortellaro, U.S. Fish and Wildlife Service, Vero Beach, Florida, July 5, 2017. Locations of Eastern Indigo Snake (*Drymarchon couperi*).

Enge K. M. and M. J. Endries. 2009. Status of the Eastern Indigo Snake (*Drymarchon couperi*) in Florida. Southeast Partners in Amphibian and Reptile Conservation Meeting.

Landers, J. L. and D.W. Speake. 1980. Management Needs of Sandhill Reptiles in Southern Georgia. Proceedings Annual Conference of Southeastern Association of Fish and Wildlife Agencies. 34: 515-529.

Layne, J.N., and T.M. Steiner. 1996. Eastern indigo snake (Drymarchon corais couperi): summary of research conducted on Archbold Biological Station. Report prepared under Order 43910-6-0134 to the U.S. Fish and Wildlife Service; Jackson, Mississippi.

Lawler, H.E. 1977. The status of *Drymarchon corais couperi* (Holbrook), the eastern indigo snake, in the southeastern U.S.A. *Herpetological Review* 8(3):76-79.

Means, D. B. 2006. Vertebrate faunal diversity of longleaf pine ecosystems. In *The Longleaf Pine Ecosystem* pp. 157-213. Springer New York.

Molar, P.E. 1985a. Distribution of the eastern indigo snake, *Drymarchon corais couperi*, in Florida. *Herpetological Review* 16(2):37-38.

Moler, P.E. 1985b. Home range and seasonal activity of the eastern indigo snake, Drymarchon corais couperi, in northern Florida. Final performance report, Study E-1-06, III-A-5. Florida Game and Fresh Water Fish Commission; Tallahassee, Florida.

Steiner, T.M., O.L. Bass, Jr., and J.A. Kushlan. 1983. Status of the eastern indigo snake in Southern Florida National Parks and vicinity. South Florida Research Center Report SFRC-83-01, Everglades National Park; Homestead, Florida.

U.S. Fish and Wildlife Service (Service). 1999. South Florida multi-species recovery plan. 23 pp.

U.S. Fish and Wildlife Service (Service). 2013. Standard Protection Measures for the Eastern Indigo Snake. August 12, 2013. U.S. Fish and Wildlife Service, South Florida Ecological Services Office; Vero Beach, Florida.

Wilson, L.D. and L. Porras. 1983. The ecological impact of man on the south Florida herpetofauna. *University of Kansas Museum of Natural History Special Publication* 9:1–89.

Zeigler, M. 2006. Personal communication. Citrus grove operations manager. Meeting with the U.S. Fish and Wildlife Service on August 1, 2006. Agricultural Resource Management; Vero Beach, Florida.

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"

[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

---

[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)

LITERATURE CITED

Ceilley, D.W. and S.A. Bortone. 2000. A survey of freshwater fishes in the hydric flatwoods of flint pen strand, Lee County, Florida. Proceedings of the 27th Annual Conference on Ecosystems Restoration and Creation, 70-91. Hillsborough Community College; Hillsborough County, Florida.

Flemming, D.M., W.F. Wolff, and D.L. DeAngelis. 1994. Importance of landscape heterogeneity to wood storks. Florida Everglades Management 18: 743-757.

Kahl, M.P., Jr. 1964. Food ecology of the wood stork (*Mycteria americana*) in Florida. Ecological Monographs 34:97-117.

Ogden, J.C. 1991. Nesting by wood storks in natural, altered, and artificial wetlands in central and northern Florida. Colonial Waterbirds 14:39-45.

Ogden, J.C., J.A. Kushlan, and J.T. Tilmant. 1976. Prey selectivity by the wood stork. Condor 78(3):324-330.

Ogden, J.C. 1996. Wood Stork *in* J.A. Rodgers, H. Kale II, and H.T. Smith, eds. Rare and endangered biota of Florida. University Press of Florida; Gainesville, Florida.

Rodgers, J.A. Jr., A.S. Wenner, and S.T. Schwikert. 1987. Population dynamics of wood storks in northern and central Florida, USA. Colonial Waterbirds 10:151-156.

Rodgers, J.A., Jr., S.T. Schwikert, and A. Shapiro-Wenner. 1996. Nesting habitat of wood storks in north and central Florida, USA. Colonial Waterbirds 19:1-21.

U.S. Fish and Wildlife Service. 1990. Habitat management guidelines for the wood stork in the southeast region. Prepared by John C. Ogden for the Southeast Region U.S. Fish and Wildlife Service; Atlanta, Georgia.

U.S. Fish and Wildlife Service. 1999. South Florida multi-species recovery plan. Fish and Wildlife Service; Atlanta, Georgia. Available from: http://verobeach.fws.gov/Programs/Recovery/vbms5.html.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960
October 22, 2019

Shawn Zinszer
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Subject: Consultation Key for the Florida bonneted bat; 04EF2000-2014-I-0320-R001

Dear Mr. Zinszer:

This letter replaces the December 2013, Florida bonneted bat guidelines provided to the U.S. Army Corps of Engineers (Corps) to assist your agency with effect determinations within the range of the Florida bonneted bat (*Eumops floridanus*). This October 2019 revision supersedes all prior versions. The enclosed *Florida Bonneted Bat Consultation Guidelines* and incorporated *Florida Bonneted Bat Consultation Key* (Key) are provided pursuant to the U.S. Fish and Wildlife Service's (Service) authorities under the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C.1531 *et seq.*). This letter, guidelines, and Key have been assigned Service Consultation Code: 41420- 04EF2000-2014-I-0320-R001.

The purpose of the guidelines and Key is to aid the Corps (or other Federal action agency) in making appropriate effect determinations for the Florida bonneted bat under section 7 of the Act, and streamline informal consultation with the Service for the Florida bonneted bat when the proposed action is consistent with the Key. There is no requirement to use the Key. There will be cases when the use of the Key is not appropriate. These include, but are not limited to: where project specific information is outside of the scope of the Key, applicants do not wish to implement the identified survey or best management practices, or if there is new biological information about the species. In these cases, we recommend the Corps (or other Federal action agency) initiate traditional consultation pursuant to section 7 of the Act, and identify that consultation is being requested outside of the Key.

This Key uses type of habitat (*i.e*, roosting or foraging), survey results, and project size as the basis for making determinations of "may affect, but is not likely to adversely affect" (MANLAA) and "may affect, and is likely to adversely affect" (LAA). The Key is structured to focus on the type(s) of habitat that will be affected by a project. When proposed project areas provide features that could support roosting of Florida bonneted bats, it is considered roosting habitat. If evaluation of roosting habitat determines that roosting is not likely, then the area is subsequently evaluated for its value to the species as foraging habitat.

Roosting habitat

The guidelines describe the features of roosting habitat. When a project is proposed in roosting habitat, the likelihood that roosting is occurring is evaluated through surveys (*i.e.*, full acoustic or limited roost). When a roost is expected and the proposed activity will affect that roost, formal consultation is required. This is because the proposed activity is expected to take individuals through the destruction of the roost and the appropriate determination is that the project may affect, and is likely to adversely affect (LAA) the species. When roosting is expected, but all impacts to the roost can be avoided, and only foraging habitat (without roost structure) will be affected, the Service finds that it is reasonable to conclude that the proposed action is not likely to impair feeding, breeding, or sheltering. Thus, the proposed project may affect, but is not likely to affect the Florida bonneted bat (MANLAA).

The exception to this logic path is if the proposed action will affect more than 50 acres of foraging habitat in proximity to the roost. Under this scenario, we anticipate that the loss of the larger amount of foraging habitat near the roost could significantly impair feeding of young and overall breeding (*i.e.*, LAA). Consequently, these projects would require formal consultation to analyze the effect of the incidental take.

If the roost surveys demonstrate that roosting is not likely, the project is then evaluated for its effects to foraging habitat. Our evaluation of these actions is described below. The exception is for projects less than or equal to 5 acres if a limited roost survey is conducted. Limited roost surveys rely on peeping and visual surveys to determine whether roosting is likely. On these small projects, this survey strategy is believed to be more economical and is considered a reasonable effort to evaluate the potential for roosting. The Service acknowledges that this approach is less reliable in evaluating the likelihood of roosting when it is not combined with acoustic surveys. Therefore, when limited roost surveys are conducted for projects that are less than or equal to 5 acres in size and the determination is that roosting is not likely, we conclude that the proposed project may affect, but is not likely to adversely affect the species (MANLAA).

Foraging habitat

The guidelines describe the features of foraging habitat. Data informing the home range size of the Florida bonneted bats is limited. Global Positioning System (GPS) and radio-telemetry data for Florida bonneted bats documents that they move large distances and likely have large home ranges. Data from recovered GPS satellite tags on Florida bonneted bats tagged at Babcock-Webb Wildlife Management Area (BWWMA) found the maximum distance detected from a capture site was 24.2 mi (38.9 km); the greatest path length travelled in a single night was 56.3 mi (90.6 km) (Ober 2016; Webb 2018a-b). At BWWMA, researchers found that most individual locations were within one mile of the roost (point of capture) (Ober 2015). Additional data collected during the month of December documented the mean maximum distance Florida bonneted bats (n=8) with tags traveled from the roost was 9.5 mi (Webb 2018b).

The Service recognizes that the movement information comes from only one site (BWWMA and vicinity), and data are from small numbers (n=20) of tagged individuals for only short periods of time (Webb 2018a-b). We expect that across the Florida bonneted bat's range differences in

habitat quality, prey availability, and other factors will result in variable habitat use and home range sizes between locations. Foraging distances and home range sizes in high quality habitats are expected to be smaller while foraging distances and home range sizes in low quality habitat would be expected to be larger. Regardless, we use these studies as our best available information to evaluate when changes to foraging habitat may have an effect on the species ability to feed, breed, and shelter and subsequently result in incidental take. When considering where most of the nightly activity was observed, we calculate a foraging area centered on a roost with a 1 mile radius would include approximately 2,000 acres, and a foraging area centered on a 9.5 mile radius would encompass approximately 181,000 acres, on any given night.

Given the Service's limited understanding of how the Florida bonneted bat moves throughout its home range and selects foraging areas, we choose to use 50 acres of habitat as a conservative estimate to when loss of foraging habitat may affect the fitness of an individual to the extent that it would impair feeding and breeding. Projects that would remove, destroy or convert less than 50 acres of Florida bonneted bat foraging habitat are expected to result in a loss of foraging opportunities; however, this decrease is not expected to significantly impair the ability of the individual to feed and breed. Consequently, projects impacting less than 50 acres of foraging habitat that implement the identified best management practices in the Key would be expected to avoid take, and the appropriate determination is that the project may affect, but is not likely to adversely affect the species (MANLAA).

Next, the Service incorporated the level of bat activity into our Key to evaluate when a foraging area may have greater value to the species. When surveys document high bat activity, we deduce that this area has increased value and importance to the species. Thus, when high bat activity is detected in parcels with greater than 50 acres of foraging habitat, we anticipate that the loss, destruction, or conversion of this habitat could significantly impair the ability of an individual to feed and breed (*i.e.*, LAA); thus formal consultation is warranted.

If surveys do not indicate high bat activity, we anticipate that loss of this additional foraging habitat may affect, but is not likely to adversely affect the species (MANLAA). This is because although the acreage is large, the area does not appear to be important at the landscape scale of nightly foraging. Therefore, its loss is not anticipated to significantly impair the ability of an individual to feed or breed.

The exception to this approach is for projects greater than 50 acres when they occur in potential roosting habitat that is not found to support roosting or high bat activity. Under this scenario, the Service concludes that the loss of the large acreage of suitable roosting habitat has the potential to significantly impair the ability of an individual to breed or shelter (*i.e.*, LAA) because the species is cavities for roosting are expected to be limited range wide and the project will impair these limited opportunities for roosting.

Determinations

The Corps (or other Federal action agency) may reach one of several determinations when using this Key. Regardless of the determination, when acoustic bat surveys have been conducted, the Service requests that these survey results are provided to our office to increase our knowledge of

the species and improve our consultation process. Surveys results and reports should be transmitted to the Service at FBBsurveyreport@fws.gov or mail electronic file to U.S. Fish and Wildlife Service, Attention Florida bonneted bat surveys, 1339 20th Street, Vero Beach, Florida 32960. When formal consultation is requested, survey results and reports should be submitted with the consultation request to verobeach@fws.gov.

No effect: If the use of the Key results in a determination of "no effect," no further consultation is necessary with the Service. The Service recommends that the Corps (or other Federal action agency) documents the pathway used to reach the determination in the project record and proceeds with other species analyses as warranted.

May Affect, Not Likely to Adversely Affect (MANLAA): In this Key we have identified two ways that consultation can conclude informally, MANLAA-P and MANLAA-C.

> **MANLAA-P**: If the use of the Key results in a determination of "MANLAA- P," the Service concurs with this determination based on the rationale provide above, and no further consultation is necessary for the effects of the proposed action on the Florida bonneted bat. The Service recommends that the Corps (or other Federal action agency) documents the pathway used to reach the determination in the project record and proceeds with other species analyses as warranted.
>
> **MANLAA-C**: If the use of the Key results in a determination of MANLAA-C, further consultation with the Service is required to confirm that the Key has been used properly, and the Service concurs with the evaluation of the survey results. Survey results should be submitted with the consultation request.

May Affect, Likely to Adversely Affect (LAA) - When the determination in the Key is "LAA" technical assistance with the Service and modifications to the proposed action may enable the project to be reevaluated and conclude with a MANLAA-C determination. Under other circumstance, "LAA" determinations will require formal consultation.

Working with the Fish and Wildlife Foundation of Florida, the Service has established a fund to support conservation and recovery for the Florida bonneted bat. Any project that has the potential to affect the Florida bonneted bat and/or its habitat is encouraged to make a voluntary contribution to this fund. If you would like additional information about how to make a contribution and how these monies are used to support Florida bonneted bat recovery please contact Ashleigh Blackford, Connie Cassler, or José Rivera at 772-562-3909.

This revised Key is effective immediately upon receipt by the Corps. Should circumstances change or new information become available regarding the Florida bonneted bat and/or implementation of the Key, the determinations herein may be reconsidered and this Key further revised or amended. We have established an email address to collect comments on the Key and the survey protocols at: FBBguidelines@fws.gov.

Thank you for your continued cooperation in the effort to conserve fish and wildlife resources. If you have any questions regarding this Key, please contact the South Florida Ecological Services Office at 772-562-3909.

Sincerely,

Roxanna Hinzman
Field Supervisor
South Florida Ecological Services

Enclosure

Cc: electronic only
Corps, Jacksonville, Florida (Dale Beter, Muriel Blaisdell, Ingrid Gilbert, Alisa Zarbo, Melinda Charles-Hogan, Susan Kaynor, Krista Sabin, John Fellows)

LITERATURE CITED

Ober, H. 2015. Annual report to USFWS for calendar year 2015. Permit number TE23583B-1. University of Florida, Department of Wildlife Ecology and Conservation, North Florida Research and Education Center. Quincy, Florida.

Ober, H. 2016. Annual report to USFWS for calendar year 2016. Permit number TE23583B-1. University of Florida, Department of Wildlife Ecology and Conservation, North Florida Research and Education Center. Quincy, Florida.

Webb, E.N. 2018a. Email to Paula Halupa *et al.* University of Florida, Department of Wildlife Ecology and Conservation. Gainesville, Florida. April 1, 2018.

Webb, E.N. 2018b. Presentation given at Florida bonneted bat working group meeting at The Conservancy of Southwest Florida. University of Florida, Department of Wildlife Ecology and Conservation. Gainesville, Florida. May 24, 2016.

U.S. Fish and Wildlife Service
South Florida Ecological Services Office

FLORIDA BONNETED BAT CONSULTATION GUIDELINES

October - 2019

The U.S. Fish and Wildlife Service's South Florida Ecological Services Field Office (Service) developed the Florida Bonneted Bat Consultation Guidelines (Guidelines) to assist in avoiding and minimizing potential negative effects to roosting and foraging habitat, and assessing effects to the Florida bonneted bat (*Eumops floridanus*) from proposed projects. The Consultation Key within the Guidelines assists applicants in evaluating their proposed projects and identifying the appropriate consultation paths under sections 7 and 10 of the Endangered Species Act of 1973 (Act), as amended (87 Stat. 884; 16 U.S.C. 1531 *et seq.*). These Guidelines are primarily for use in evaluating regulatory projects where development and land conversions are anticipated. These Guidelines focus on conserving roosting structures in natural and semi-natural environments. The following Consultation Area map (Figure 1 and Figure 2, Appendix A), Consultation Flowchart (Figure 3), Consultation Key, Survey Framework (Appendices B-C), and **Best Management Practices (BMPs)** (Appendix D) are based upon the best available scientific information. As more information is obtained, these Guidelines will be revised as appropriate. If you have comments, or suggestions on these Guidelines or the Survey Protocols (Appendix B and C), please email your comments to FBBguidelines@fws.gov. These comments will be reviewed and incorporated in an annual review.

Terms in **bold** are further defined in the Glossary.

Wherever possible, proposed development projects within the Consultation Area should be designed to avoid and minimize take of Florida bonneted bats and to retain their habitat. Applicants are encouraged to enter into early technical assistance/consultation with the Service so we may provide recommendations for avoiding and minimizing adverse effects. Although these Guidelines focus on the effects of a proposed action (*e.g.*, development) on natural habitat, (*i.e.*, non-urban), Appendix E also provides Best Management Practices for Land Management Projects.

If you are renovating an existing artificial structure (*e.g.*, building) within the urban environment with or without additional ground disturbing activities, these Guidelines do not apply. The Service is developing separate guidelines for consultation in these situations. Until the urban guidelines are complete, please contact the Service for additional guidance.

The final listing rule for the Florida bonneted bat (Service 2013) describes threats identified for the species. Habitat loss and degradation, as well as habitat modification, have historically affected the species. Florida bonneted bats are different from most other Florida bat species because they are reproductively active through most of the year, and their large size makes them capable of foraging long distances from their roost (Ober *et al.* 2016). Consequently, this species is vulnerable to disturbances around the roost during a greater portion of the year and considerations about foraging habitat extend further than the localized roost.

Use of Consultation Area, Flowchart, and Key

Figure 1 shows the Consultation Area for the Florida bonneted bat where this consultation guidance applies. For information on how the Consultation Area was delineated see Appendix A. The Consultation Flowchart (Figure 3) and Consultation Key direct project proponents through a series of couplets that will provide a conclusion or determination for potential effects to the Florida bonneted bat. *Please Note: If additional listed species, or candidate or proposed species, or designated or proposed critical habitat may be affected, a separate evaluation will be needed for these species/critical habitats.*

Currently, the Consultation Flowchart (Figure 3) and Consultation Key cannot be used for actions proposed within the urban development boundary in Miami-Dade and Broward County. The urban development boundary is part of the Consultation Area, but it is excluded from these Guidelines because Florida bonneted bats use this area differently (roosting largely in artificial structures), and small natural foraging areas are expected to be important. Applicants with projects in this area should contact the Service for further guidance and individual consultation.

Determinations may be either "no effect," "may affect, but is not likely to adversely affect" (**MANLAA**), or "may affect, and is likely to adversely affect" (**LAA**). An applicant's willingness and ability to alter project designs could sufficiently minimize effects to Florida bonneted bats and allow for a **MANLAA** determination for this species (informal consultation). The Service is available for early technical assistance/consultation to offer recommendations to assist in project design that will minimize effects. When take cannot be avoided, applicants and action agencies are encouraged to incorporate compensation to offset adverse effects. The Service can assist with identifying compensation options (*e.g.,* conservation on site, conservation off-site, contributions to the Service's Florida bonneted bat conservation fund, *etc*.).

Using the Key and Consultation Flowchart

- "No effect" determinations do not need Service concurrence.
- "May affect, but is not likely to adversely affect" **MANLAA**. Applicants will be expected to incorporate the appropriate BMPs to reach a **MANLAA** determination.
    - **MANLAA-P** (in blue in Consultation Flowchart) have programmatic concurrence through the transmittal letter of these Guidelines, and therefore no further consultation with the Service is necessary unless assistance is needed in interpreting survey results.
    - **MANLAA-C** (in black in Consultation Flowchart) determinations require further consultation with the Service.
- "May affect, and is likely to adversely affect" (**LAA**) determinations require consultation with the Service. Project modifications could change the **LAA** determinations in numbers 5, 8, 9, 11, 12, and 17 to **MANLAA**. When take cannot be avoided, **LAA** determinations will require a biological opinion.
- The Service requests copies of surveys used to support all determinations. If a survey is required by the Consultation Key and the final determination is "no effect" or "MANLAA-P", send the survey to FBBsurveyreport@fws.gov , or mail electronic file to U.S. Fish and Wildlife Service, Attention Florida bonneted bat surveys, 1339 20th Street, Vero Beach, Florida 32960. If a survey is required by the Consultation Key and the determination is "MANLAA-C" or "LAA", submit the survey in the consultation request.

For the purpose of making a decision at Couplet 2: If any potential roosting structure is present, then the habitat is classified as **potential roosting habitat**, and the left half of the flowchart should be followed (see Figure 3). We recognize that roosting habitat may also be used by Florida bonneted bats for foraging. If the project site only consists of **foraging habitat** (*i.e.*, no suitable roosting structures), then the right side of the flowchart should be followed beginning at step 13.

For couplets 11 and 12: **Potential roosting habitat** is considered **Florida bonneted bat foraging habitat** when a determination is made that roosting is not likely.

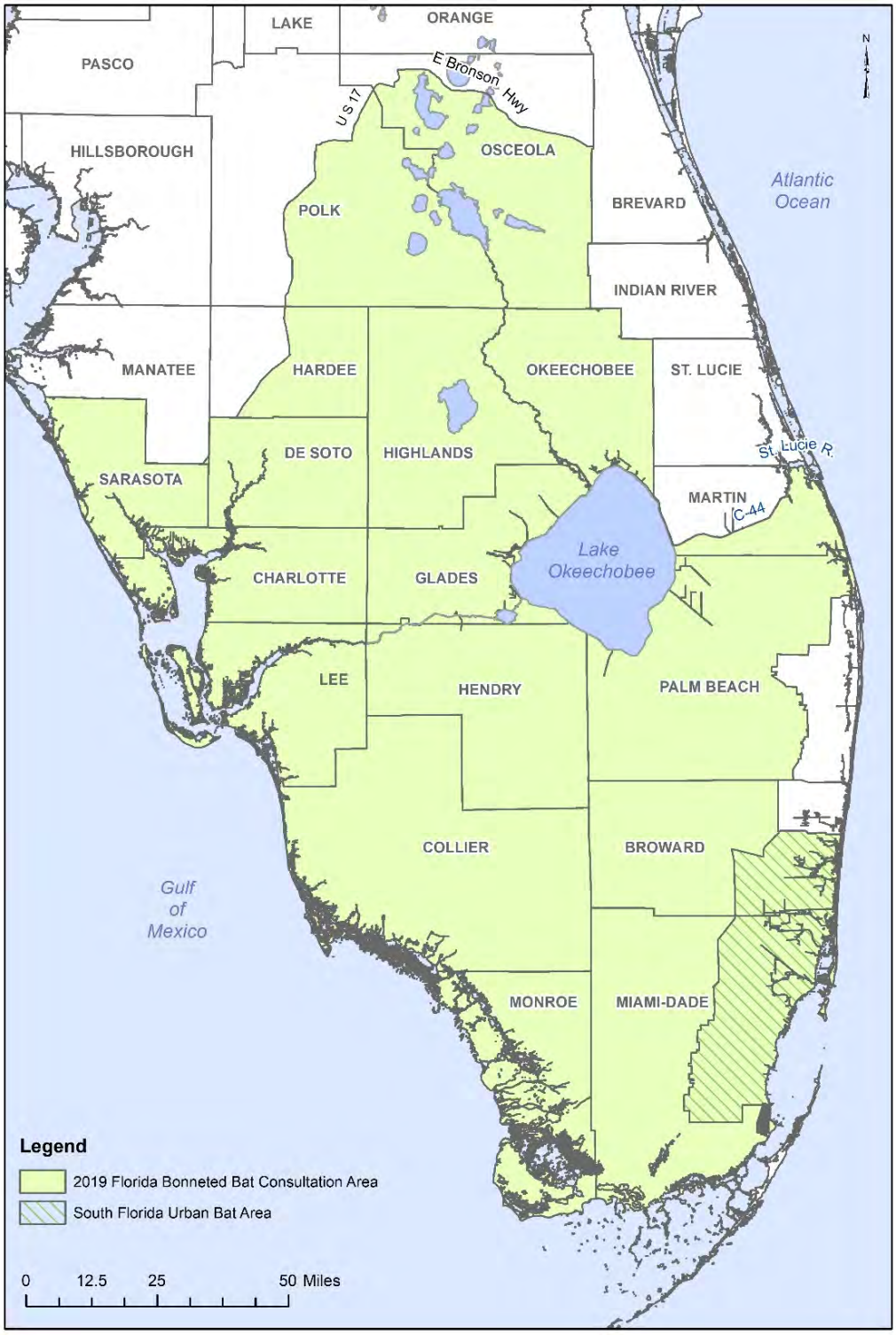


Figure 1. Florida Bonneted Bat Consultation Area. Hatched area (Figure 2) identifies the urban development boundary in Miami-Dade and Broward County. Applicants with projects in this area should contact the Service for specific guidance addressing this area and individual consultation. The Consultation Key should not be used for projects in this area.

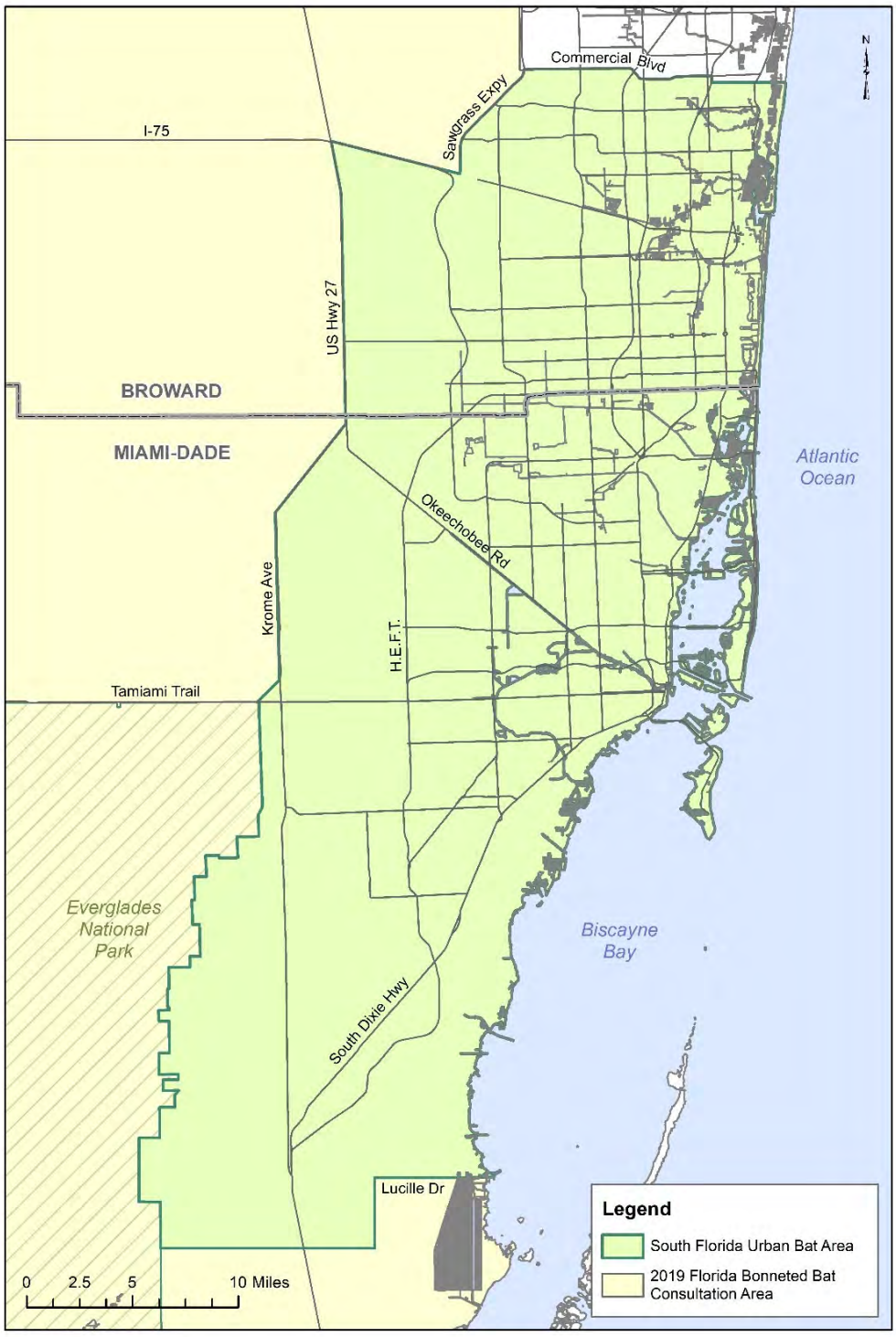


Figure 2. Urban development boundary in Miami-Dade and Broward County. The Consultation Key should not be used for projects in this area. Applicants with projects in this South Florida Urban Bat Area should contact the Service for specific guidance addressing this area and individual consultation.

Florida Bonneted Bat Consultation Key[#]

Use the following key to evaluate potential effects to the Florida bonneted bat (FBB) from the proposed project. Refer to the Glossary as needed.

1a. Proposed project or land use change is partially or wholly within the Consultation Area (Figure 1)..... **Go to 2**
1b. Proposed project or land use change is wholly outside of the Consultation Area (Figure 1)..... **No Effect**

2a. Potential FBB roosting habitat exists within the project area..... **Go to 3**
2b. No potential FBB roosting habitat exists within the project area..... **Go to 13**

3a. Project size/footprint* ≤ 5 acres (2 hectares)..... **Conduct Limited Roost Survey (Appendix C)** then **Go to 4**
3b. Project size/footprint* > 5 acres (2 hectares)..... **Conduct Full Acoustic/Roost Surveys (Appendix B)** then **Go to 6**

4a. Results show FBB roosting is likely ..... **Go to 5**
4b. Results do not show FBB roosting is likely..... **MANLAA-P if BMPs (Appendix D) used and survey reports are submitted. Programmatic concurrence.**

5a. Project will affect roosting habitat..... **LAA[+] Further consultation with the Service required.**
5b. Project will not affect roosting habitat..... **MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.**

6a. Results show some FBB activity..... **Go to 7**
6b. Results show no FBB activity..... **No Effect**

7a. Results show FBB roosting is likely..... **Go to 8**
7b. Results do not show FBB roosting is likely..... **Go to 10**

8a. Project will not affect roosting habitat..... **Go to 9**
8b. Project will affect roosting habitat..... **LAA[+] Further consultation with the Service required.**

9a. Project will affect* > 50 acres (20 hectares) (wetlands and uplands) of foraging habitat..... **LAA[+] Further consultation with the Service required.**
9b. Project will affect* ≤ 50 acres (20 hectares) (wetlands and uplands) of foraging habitat..... **MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.**

10a. Results show high FBB activity/use..... **Go to 11**
10b. Results do not show high FBB activity/use..... **Go to 12**

11a. Project will affect* > 50 acres (20 hectares) (wetlands and uplands) of FBB habitat (roosting and/or foraging)..... **LAA[+] Further consultation with the Service required.**
11b. Project will affect* ≤ 50 acres (20 hectares) (wetlands and uplands) of FBB habitat (roosting and/or foraging)..... **MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.**

12a. Project will affect* > 50 acres (20 hectares) (wetlands and uplands) of FBB habitat..... **LAA[+] Further consultation with the Service required.**
12b. Project will affect* ≤ 50 acres (20 hectares) (wetlands and uplands) of FBB habitat..... **MANLAA-P if BMPs (Appendix D) used and survey reports are submitted. Programmatic concurrence.**

13a. FBB foraging habitat exists within the project area and foraging habitat will be affected…..……..**Go to 14**

13b. FBB foraging habitat exists within the project area and foraging habitat will not be affected **OR** no FBB foraging habitat exists within the project area…..……..**No Effect**

14a. Project size* > 50 acres (20 hectares) (wetlands and uplands) ……..…….**Go to 15**

14b. Project size* ≤ 50 acres (20 hectares) (wetlands and uplands) ……...….. **MANLAA-P if BMPs (Appendix D) used. Programmatic concurrence.**

15a. Project is within 8 miles (12.9 kilometers) of high quality potential roosting areas^……..……**Conduct Full Acoustic Survey (Appendix B) and Go to 16**

15b. Project is not within 8 miles (12.9 kilometers) of high quality potential roosting area^…….....….**MANLAA-P if BMPs (Appendix D) used. Programmatic concurrence.**

16a. Results show some FBB activity……...…….....**Go to 17**

16b. Results show no FBB activity……..…….…....**No Effect**

17a. Results show high FBB activity/use……...…...…....**LAA[+] Further consultation with the Service required.**

17b. Results do not show high FBB activity/use……..……... **MANLAA-P if BMPs (Appendix D) used and survey reports submitted. Programmatic concurrence.**

[#] If you are within the urban environment and you are renovating an existing artificial structure (with or without additional ground disturbing activities), these Guidelines do not apply. The Service is developing separate guidelines for consultation in these situations. Until the urban guidelines are complete, please contact the Service for additional guidance

*****Includes wetlands and uplands that are going to be altered along with a 250- foot (76.2- meter) buffer around these areas if the parcel is larger than the altered area.

[+]Project modifications could change the **LAA** determinations in numbers 5, 8, 9, 11, 12, and 17 to **MANLAA** determinations.

^Determining if **high quality potential roosting areas** are within 8 mi (12.9 km) of a project is intended to be a desk-top exercise looking at most recent aerial imagery, not a field exercise.

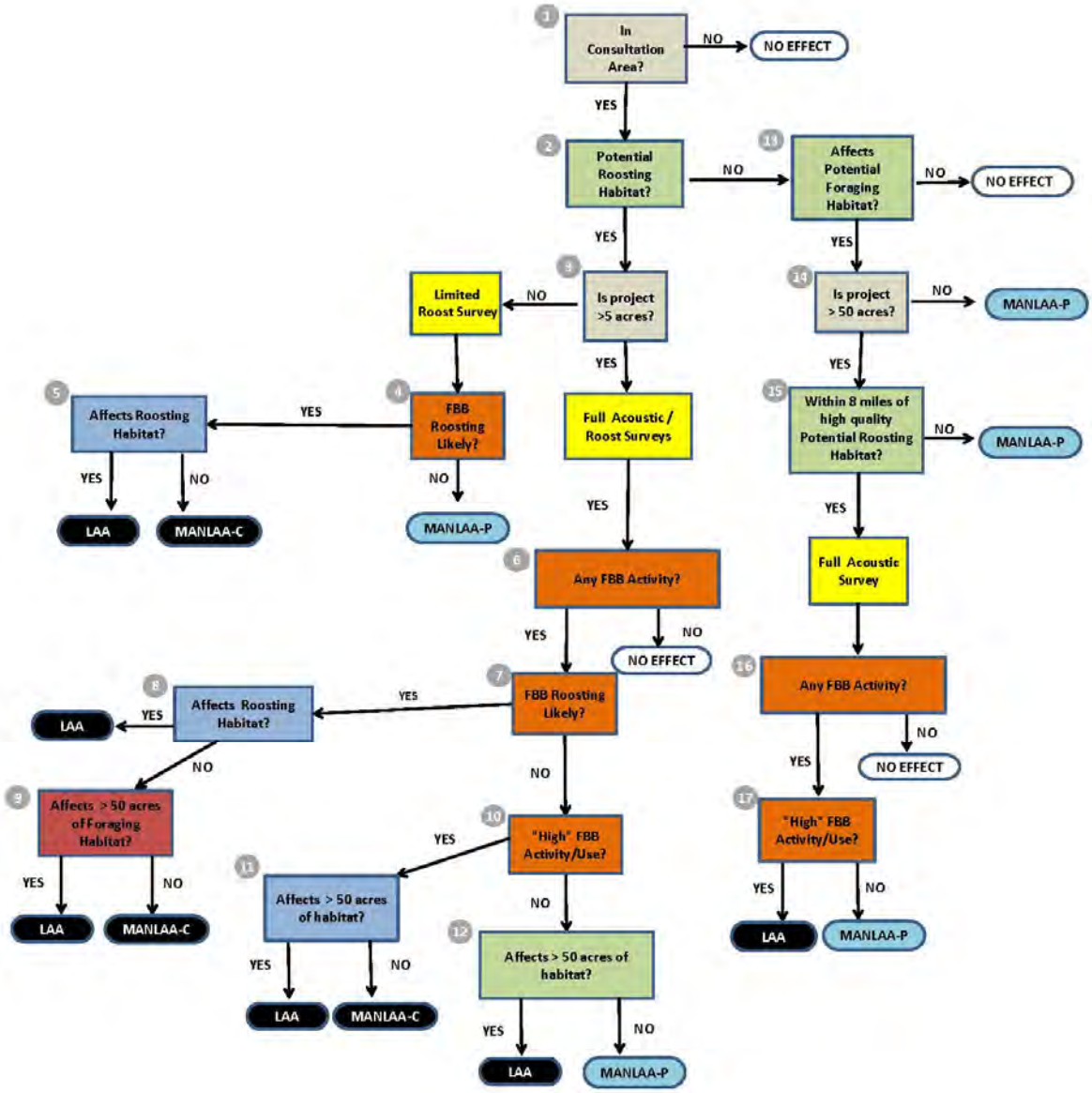


Figure 3. Florida bonneted bat Consultation Flowchart. "**No effect**" determinations do not need Service concurrence. "May affect, but not likely to adversely affect", **MANLAA-P,** in blue have programmatic concurrence through the transmittal letter of these Guidelines, and therefore no further consultation with the Service is necessary unless assistance is needed in interpreting survey results. **MANLAA-C** determinations in black require further consultation with the Service. Applicants are expected to incorporate the appropriate **BMPs** to reach a **MANLAA** determination. "May affect, and is likely to adversely affect", **LAA, (**also in black) determinations require consultation with the Service. Further consultation with the Service may identify project modifications that could change the **LAA** determinations in numbers 5, 8, 9, 11, 12, and 17 to **MANLAA** determinations. The Service requests Florida bonneted bat survey reports for all determinations.

GLOSSARY

BMPs – Best Management Practices. Recommendations for actions to conserve roosting and foraging habitat to be implemented before, during, and after proposed development, land use changes, and land management activities.

FBB Activity – Florida bonneted bat (FBB) activity is when any Florida bonneted bat calls are recorded during an acoustic survey or human observers see or hear Florida bonneted bats on a site.

FORAGING HABITAT - Comprised of relatively open (*i.e.,* uncluttered or reduced numbers of obstacles, such as fewer tree branches and leaves, in the flight environment) areas to find and catch prey, and sources of drinking water. In order to find and catch prey, Florida bonneted bats forage in areas with a reduced number of obstacles. This includes: open fresh water, permanent or seasonal freshwater wetlands, within and above wetland and upland forests, wetland and upland shrub, and agricultural lands (Bailey *et al.* 2017). In urban and residential areas drinking water, prey base, and suitable foraging can be found at golf courses, parking lots, and parks in addition to relatively small patches of natural habitat.

FULL ACOUSTIC/ROOST SURVEY - This is a comprehensive survey that will involve systematic acoustic surveys (*i.e.,* surveys conducted 30 minutes prior to sunset to 30 minutes after sunrise, over multiple consecutive nights). Depending upon acoustic results and habitat type, targeted roost searches through thorough visual inspection using a tree-top camera system or observations at emergence (*e.g.,* looking and listening for bats to come out of tree cavities around sunset) or more acoustic surveys may be necessary. See Appendix B for a full description.

HIGH FBB ACTIVITY/USE - High Florida bonneted bat (FBB) activity/use or importance of an area can be defined using several parameters (*e.g*., types of calls, numbers of calls). An area will be considered to have high FBB activity/use if **ANY** of the following are found: (a) multiple FBB feeding buzzes are detected; (b) FBB social calls are recorded; (c) large numbers of Florida bonneted bat calls (9 or more) are recorded throughout one night. Each of these parameters is considered to indicate that an area is actively used and important to FBBs, however, the Service will further evaluate the activity/use of the area within the context of the site (*i.e.,* spatial distribution of calls, site acreage, habitat on site, as well as adjacent habitat) and provide additional guidance.

HIGH QUALITY POTENTIAL ROOSTING AREAS - Sizable areas (>50 acres) [20 hectares] that contain large amounts of high-quality, natural roosting structure – (*e.g.,* predominantly native, mature trees; especially pine flatwoods or other areas with a large number of cavity trees, tree hollows, or high woodpecker activity).

LAA - May Affect, and is Likely to Adversely Affect. The appropriate conclusion if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not: discountable, insignificant, or

beneficial [see definition of "may affect, but is not likely to adversely affect" (**MANLAA**)]. In the event the overall effect of the proposed action is beneficial to the listed species, but also is likely to cause some adverse effects, then the proposed action is "likely to adversely affect" the listed species. If incidental take is anticipated to occur as a result of the proposed action, an "is likely to adversely affect" (**LAA**) determination should be made. An "is likely to adversely affect" determination requires the initiation of formal section 7 consultation.

LIMITED ROOST SURVEY - This is a reduced survey that may include the following methods: acoustics, observations at emergence (*e.g.,* looking and listening for bats to come out of tree cavities around sunset), and visual inspection of trees with cavities or loose bark using tree-top cameras (or combination of these methods). Methods are fairly flexible and dependent upon composition and configuration of project site and willingness and ability of applicant and partners to conserve roosting structures on site. See also Appendix C for a full description.

MANLAA - May Affect, but is Not Likely to Adversely Affect. The appropriate conclusion when effects on listed species are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect, or evaluate insignificant effects; or (2) expect discountable effects to occur. To use these Guidelines and Consultation Key applicants must incorporate the appropriate **BMPs** (Appendix D) to reach a **MANLAA** determination.

In this Consultation Key we have identified two ways that consultation can conclude informally, **MANLAA-P and MANLAA-C**:

> **MANLAA-P**: programmatic concurrence is provided through the transmittal letter of these Guidelines, no additional consultation is required with the Service for Florida bonneted bats. All survey results must be submitted to Service.
>
> **MANLAA-C**: further consultation with the Service is required to confirm that the Consultation Key has been used properly, and the Service concurs with the evaluation of the survey results. Request for consultation must include survey results.

NO EFFECT - The appropriate conclusion when the action agency determines its proposed action will not affect listed species or designated critical habitat.

POTENTIAL ROOSTING HABITAT - Includes forest and other areas with tall, mature trees or other areas with suitable roost structures (*e.g.,* utility poles, artificial structures). Forest is defined as all types including: pine flatwoods, scrubby flatwoods, pine rocklands, royal palm hammocks, mixed or hardwood hammocks, cypress, sand pine scrub, or other forest types. (Forrest types currently include exotic forests such as melaleuca, please contact the Service for additional guidance as needed). More specifically, this includes habitat in which suitable structural features for breeding and sheltering are present. In general, roosting habitat contains one or more of the following structures: tree snags, and trees with cavities, hollows, deformities, decay, crevices, or loose bark. Structural characteristics are of primary importance.

Florida bonneted bats have been found roosting in habitat with the following structural features, but may also occur outside of these parameters:

- trees greater than 33 feet (10 meters) in height, greater than 8 inches (20 centimeters) in diameter at breast height (DBH), with cavity elevations higher than 16 feet (5 meters) above ground level (Braun de Torrez 2019);
- areas with a high incidence of large or mature live trees with various deformities (*e.g.,* large cavities, hollows, broken tops, loose bark, and other evidence of decay) (*e.g.,* pine flatwoods);
- rock crevices (*e.g.,* limestone in Miami-Dade County); and/or
- artificial structures, mimicking natural roosting conditions (*e.g.,* bat houses, utility poles, buildings), situated in natural or semi-natural habitats.

In order for a building to be considered a roosting structure, it should be a minimum of 15 feet high and contain one or more of the following features: chimneys, gaps in soffits, gaps along gutters, or other structural gaps or crevices (outward entrance approximately 1 inch (2.5 centimeters) in size or greater. Structures similar to the above (*e.g.,* bridges, culverts, minimum of 15 feet high) are expected to also provide roosting habitat, based upon the species' morphology and behavior (Keeley and Tuttle 1999). Florida bonneted bat roosts will be situated in areas with sufficient open space for these bats to fly (*e.g.,* open or semi-open canopy, canopy gaps, above the canopy, and edges which provide relatively uncluttered conditions [*i.e.,* reduced numbers of obstacles, such as fewer tree branches and leaves, in the flight environment]).

For the purpose of this Consultation Key*: Roosting habitat refers to habitat with structures that can be used for daytime and maternity roosting. Roosting at night between periods of foraging can occur in a broader range of structure types. For the purposes of this guidance we are focusing on day roosting habitat.*

ROOSTING IS LIKELY– Determining likelihood of roosting is challenging. The Service has provided the following definition for the express purpose of these Guidelines. Researchers use additional cues to assist in locating roosts. As additional indicators are identified and described we expect our Guidelines will be improved.

In this Consultation Key the Service will consider the following evidence indicative that roosting is likely nearby (*i.e.,* reasonably certain to occur) if **ANY** of the following are documented: (a) Florida bonneted bat calls are recorded within 30 minutes before sunset to 1½ hours following sunset or within 1½ hours before sunrise; (b) emergence calls are recorded; (c) human observers see (or hear) Florida bonneted bats flying from or to potential roosts; (d) human observers see and identify Florida bonneted bats within a natural roost or artificial roost; and/or (e) other bat sign (*e.g*., guano, staining, etc.) is found that is identified to be Florida bonneted bat through additional follow-up.

In addition to the aforementioned events, researchers consider roosting likely in an area when (1) large numbers of Florida bonneted bat calls are recorded throughout the night (*e.g.,* ≥ 25 files per night at a single acoustic station when 5 second file lengths are recorded); (2) large numbers of FBB calls are recorded over multiple nights (*e.g.,* an average of ≥ 20 files per night from a single detector when 5 second file lengths are recorded); or (3) social calls are recorded. Because social calls and large numbers of calls recorded over one or more nights can be indicative of high

FBB activity/use or when roosting is likely, the Service is choosing not to use these as indicators to make the determination that roosting is likely. Instead we are relying on the indicators that are only expected to occur at or very close to a roost location [(a)-(e) above].

TAKE - to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct. [ESA §3(19)] Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined by the Service as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. [50 CFR §17.3].

Literature Cited

Bailey, A.M., H.K. Ober, A.R. Sovie, and R.A. McCleery. 2017. Impact of land use and climate on the distribution of the endangered Florida bonneted bat. Journal of Mammalogy. 98:1586-1593.

Braun de Torrez, E. 2019. Email from biologist E. Braun de Torrez, Florida Fish and Wildlife Conservation Commission to biologist, S. Sneckenberger, U.S. Fish and Wildlife Service. July 24, 2019. Gainesville, Florida.

Keeley, B.W., and M.D. Tuttle. 1999. Bats in American bridges. Bat Conservation International, Inc. Austin, Texas.

Ober, H.K., E.C. Braun de Torrez, J.A. Gore, A.M. Bailey, J.K. Myers, K.N. Smith, and R.A. McCleery. 2016. Social organization of an endangered subtropical species, Eumops floridanus, the Florida bonneted bat. Mammalia 2016:1-9.

U.S. Fish and Wildlife Service. 2013. Endangered and threatened wildlife and plants; endangered species status for the Florida bonneted bat. Federal Register 78:61004-61043.

APPENDIX I

Florida Bonneted Bat Species Memo

OLD 41 PD&E STUDY
US 41 TO BONITA BEACH ROAD
(FPID NO. 435110-1, 435347-1)

FLORIDA BONNETED BAT
ACOUSTIC MONITORING AND ANALYSIS

JUNE 2025

Prepared for:

Florida Department of Transportation
District One
801 North Broadway Avenue
Bartow, FL 33830

Prepared by:

Johnson Engineering, LLC
An Apex Company
2122 Johnson Street
Fort Myers, FL 33901
(239) 334-0046

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 May 26, 2022, and executed by FHWA and FDOT.

TABLE OF CONTENTS

LIST OF FIGURES AND TABLES

LIST OF APPENDICES

1.0 INTRODUCTION / PROJECT BACKGROUND

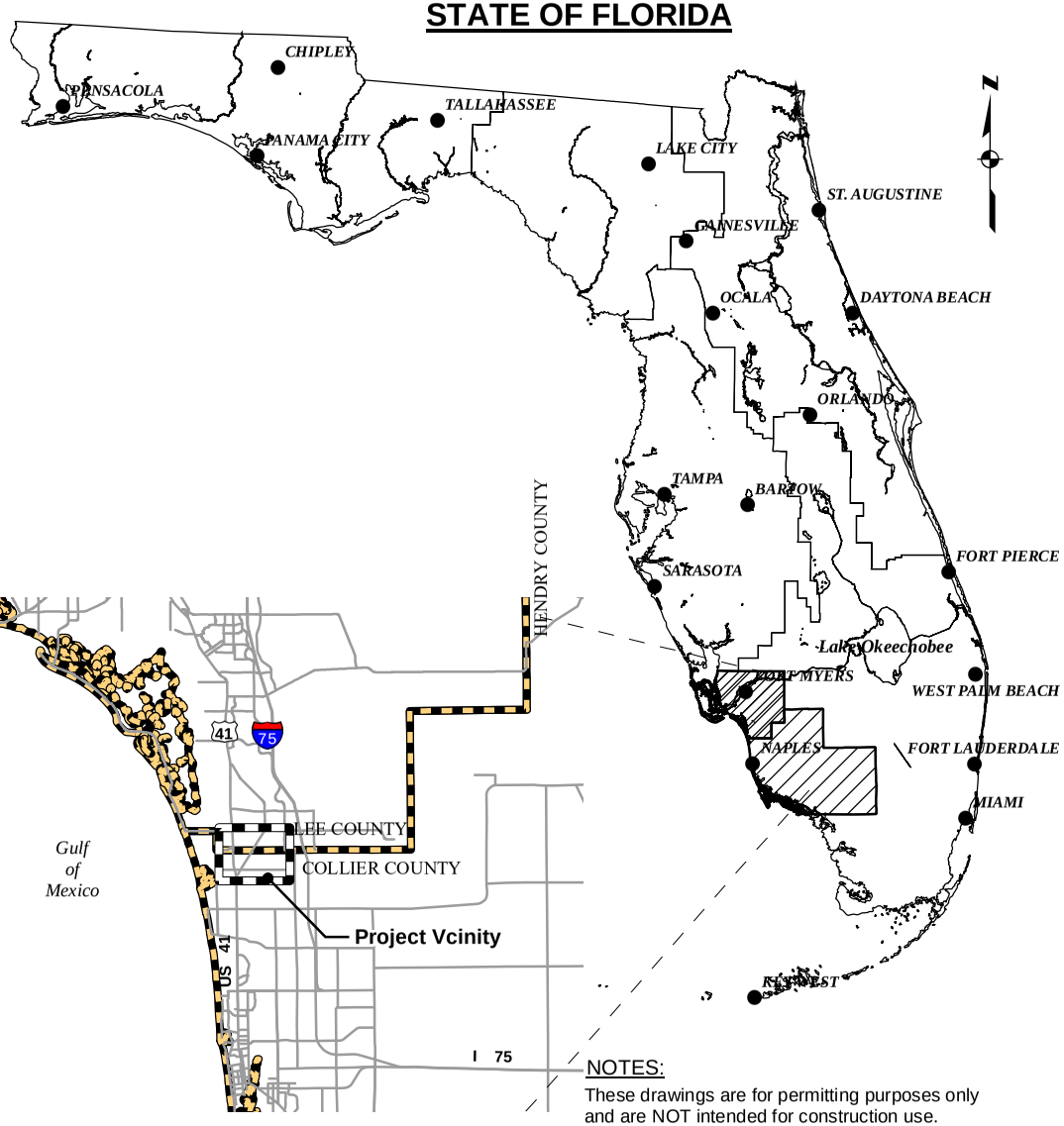
1.1 Project Information

Florida Department of Transportation, District One (FDOT) is conducting a Project Development and Environmental (PD&E) Study for proposed improvements to approximately 3.36 miles of Old 41 Road in accordance with the requirements of the National Environmental Policy Act (NEPA). The project corridor is located south of Bonita Beach Road, and north of the intersection of Old 41 Road and US 41 in Collier and Lee Counties in Sections 2, 3, 10, 15, and 16, Township 48S, Range 25E with central coordinates of 26.315166°, -81.789892°.

1.2 Florida Bonneted Bat

In 2013, the US Fish and Wildlife Service (USFWS) listed the Florida bonneted bat [*Eumops floridanus* (FBB)] as endangered under the Endangered Species Act (ESA) (USFWS, 2013). USFWS established a consultation area for the FBB around known and suspected roosting areas. The project is located within the USFWS consultation area for the FBB. The USFWS designated approximately 1,160,625 acres as critical habitat for the FBB. The proposed critical habitat includes nine units covering portions of 13 counties throughout south and south-central Florida. At its closest point, the northern project limit is located approximately 2.9 miles west of FBB Critical Habitat Unit 5. The USFWS 2024 Florida Bonneted Bat Consultation Guidelines (guidelines) established "Assumed Presence Polygons" where repeated acoustic surveys have yielded detections of FBB. The project area is within an Assumed Presence Polygon. This acoustic survey for FBB was conducted to help determine presence of FBB in the project area.

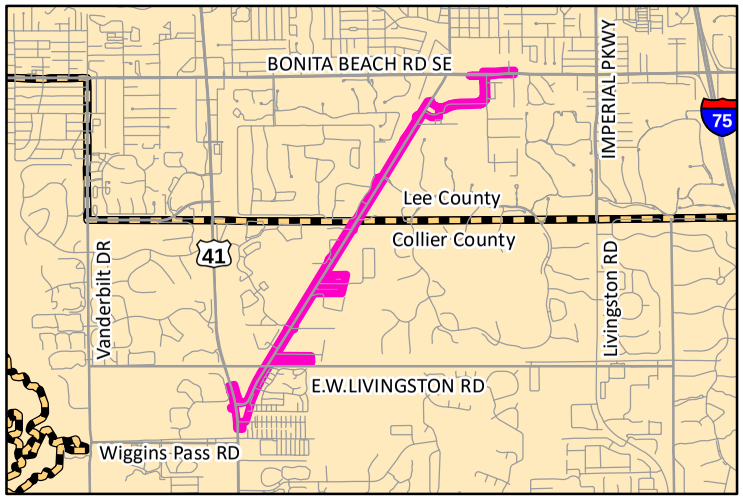
STATE OF FLORIDA



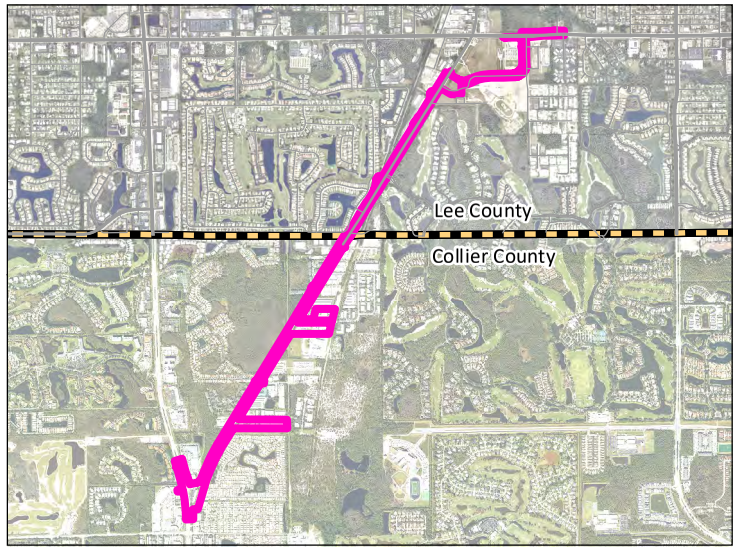
Lee / Collier County
N.T.S.

NOTES:
These drawings are for permitting purposes only and are NOT intended for construction use.

Section 10, Township 48 South, Range 25 East
Latitude: 26.314371, Longitude: -81.790318



STREET MAP
N.T.S.



VICINITY AERIAL
N.T.S.

Notes: Aerial
Photo Date
2024 Lee County
2025 Collier County

O:\2025\25008473\Environmental\Exhibits\LocMap-Lee-Collier.mxd

FDOT Old 41 Road
Lee/Collier Counties

JOHNSON ENGINEERING, LLC
2122 JOHNSON STREET
FORT MYERS, FLORIDA 33901
PHONE (239) 334-0046
E.B. #642 & L.B. #642

Location Map

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
June 2025	25008473		Not to Scale	1

2.0 METHODOLOGY

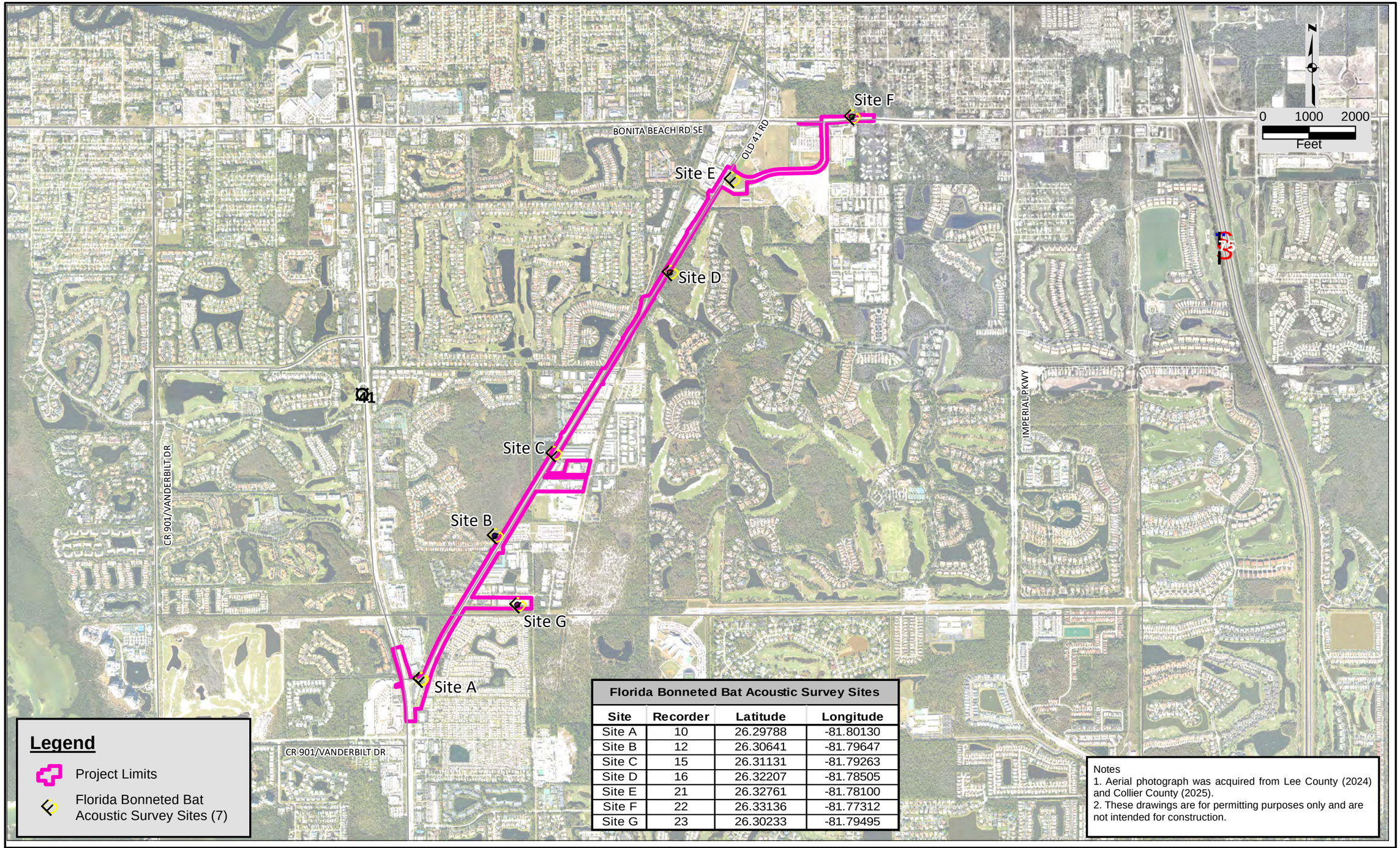
2.1 Acoustic Survey

The 2024 FBB Guidelines establish standard FBB survey protocol for determining presence or absence, roost identification, or foraging activity. Ecologists conducting this acoustic survey have attended multiple seminars by a variety of organizations and industry leaders to obtain training on equipment and methodologies used to collect and analyze acoustic FBB call data. Johnson Engineering ecologists have conducted numerous acoustic bat surveys since the FBB's listing using Wildlife Acoustics SM3BAT and SM4BAT full spectrum ultrasonic bat detectors and stay abreast of the latest survey guidelines by regularly participating in the Florida Fish and Wildlife Conservation Commission (FWC) Working Group meetings for the FBB.

For linear projects, the Guidelines require collecting acoustic data for a minimum of nine (9) detector nights with appropriate weather per 0.6 miles (1 km) with detectors placed to survey all suitable habitats. If any of the following weather conditions exist at an acoustic survey site during acoustic sampling, the time and duration of such conditions will be noted, and the acoustic sampling effort will be repeated for that night:

- Temperatures fall below 60°F (15.5°C) during the first 5 hours of the survey period;
- Precipitation, including rain and/or fog, that exceeds 30 minutes or continues intermittently during the first 5 hours of the survey period;
- Sustained wind speeds greater than 9 miles/hour (4 meters/second; 3 on Beaufort scale) for 30 minutes or more during the first 5 hours of the survey period

The acoustic FBB survey for the Old 41 project was conducted using seven (7) full spectrum SM4BAT FS (Wildlife Acoustics) bioacoustic recorders equipped with SMM-U2 ultrasonic microphones. **Figure 2** provides an aerial photograph depicting the deployment location for each acoustic recorder. All microphones were mounted on metal conduit to elevate the microphone above the shrub level and attached to a tree or fence post in a fashion that reduces clutter and nearby interference.



Florida Bonneted Bat Acoustic Survey Sites

Site	Recorder	Latitude	Longitude
Site A	10	26.29788	-81.80130
Site B	12	26.30641	-81.79647
Site C	15	26.31131	-81.79263
Site D	16	26.32207	-81.78505
Site E	21	26.32761	-81.78100
Site F	22	26.33136	-81.77312
Site G	23	26.30233	-81.79495

Legend

- Project Limits
- Florida Bonneted Bat Acoustic Survey Sites (7)

Notes
1. Aerial photograph was acquired from Lee County (2024) and Collier County (2025).
2. These drawings are for permitting purposes only and are not intended for construction.

\\ftms01\Drawings\2025\25008473\Environmental\Exhibits\FBB Site Map.mxd Date: 6/11/2025 Time: 10:11:43 AM User: Brian.Marino

FDOT Old 41 Road
Lee/Collier Counties

JOHNSON ENGINEERING, LLC
2122 JOHNSON STREET
FORT MYERS, FLORIDA 33901
PHONE (239) 334-0046
E.B. #642 & L.B. #642

Florida Bonneted Bat Acoustic Survey Site Locations

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
June 2025	25008473	-	As Shown	2

As shown in **Table 2-1**, each microphone was calibrated prior to deployment in accordance with manufacturer guidelines to ensure proper microphone sensitivity. The location of the recorders and ultrasonic microphones was established to survey the Project and focus on habitats most likely to be utilized by FBB based on their proximity to potential foraging and roosting habitat. The deployment schedule was summarized in a methodology memorandum (**Appendix A**) and provided to USFWS for review prior to deployment.

Table 2-1. Ultrasonic Microphone Calibration

Calibration Date	Recorder Number	Microphone	Calibration Reading (dB)	Calibration Threshold (dB)	Pass / Fail
4/28/2025	10	MU213632	-26.59	-47.00	Pass
4/28/2025	12	MU207242	-20.88	-47.00	Pass
4/28/2025	15	MU209608	-28.11	-47.00	Pass
4/28/2025	16	MU209618	-28.93	-47.00	Pass
4/28/2025	21	MU213644	-24.20	-47.00	Pass
4/28/2025	22	MU208798	-26.14	-47.00	Pass
4/28/2025	23	MU208859	-25.88	-47.00	Pass

Acoustic recorders were deployed on May 22, 2025, and began recording approximately 30 minutes before sunset until 30 minutes after sunrise at the seven survey sites. Photo documentation of all detector deployments at the project site is provided in **Appendix B**. The recorders were retrieved on June 1, 2025, for a total of 10 nights, equating to 70 calendar nights. All ten nights were within designated weather parameters, equating to 70 suitable detector nights. **Table 2-2** provides a summary of the acoustic deployment. Nightly weather conditions observed during the survey period are provided in **Appendix C**.

Table 2-2. Acoustic Deployment Summary

Site	Recorder	Latitude	Longitude	Deployed	Retrieved	Calendar Nights	Weather Nights
A	10	26.29788	-81.8013	5/22/2025	6/1/2025	10	10
B	12	26.30641	-81.79647	5/22/2025	6/1/2025	10	10
C	15	26.31131	-81.79263	5/22/2025	6/1/2025	10	10
D	16	26.32207	-81.78505	5/22/2025	6/1/2025	10	10
E	21	26.32761	-81.781	5/22/2025	6/1/2025	10	10
F	22	26.33136	-81.77312	5/22/2025	6/1/2025	10	10
G	23	26.30233	-81.79495	5/22/2025	6/1/2025	10	10
				TOTAL		**70**	**70**

2.2 Acoustic Data Analysis

Calls were recorded using the full spectrum WAV file format in accordance with recommendations by the equipment manufacturer. Following data collection, all call sequences were processed and analyzed with Kaleidoscope Pro™ software. Calls were verified manually through visual comparison with a known library of bat calls. The bottom call frequency range of the FBB is unique to this species and lies between 10-18 kilohertz (kHz). This unique frequency range is a valuable aid in identifying the presence of FBBs.

Full spectrum WAV format data files were recorded on Secure Digital (SD) memory cards, downloaded and retained on a file server. Data files were processed to WAV and Zero Crossing (ZC) format using Kaleidoscope Pro™ (K-Pro) software provided by Wildlife Acoustics. The program settings resulted in recordings of 0.1 to 15 seconds in length and all recordings were reviewed for detection and subsequent identification of bat species recorded.

3.0 RESULTS AND DISCUSSION

3.1 Summary of Acoustic Survey Results

The acoustic survey made a total of 43,440 recordings, classifying 16,615 of those recordings as noise. A total of 26,825 call sequences were classified as bat calls by the K-Pro software representing call sequences from 13 different bat species (as identified by the K-Pro software). **Table 3-1** provides a summary of the acoustic survey results. Based on call characteristics as analyzed by K-Pro software, bat species identified during data analysis are summarized in **Table 3-2.** Sonograms from each of the species recorded are provided in **Appendix D**. Additionally, sonograms from all recordings classified as bats or NoID with minimum frequencies below 18 kHz are provided in **Appendix E**.

The acoustic survey revealed one potential FBB call recorded from Site D on May 25, 2025, at 01:36:41 in the morning (more than five hours after sunset and more than five hours before sunrise). The sonogram shape and frequency of this call is not indicative of typical FBB calls and the recording includes other calls identified as hoary bat (*Lasiurus cinereus*), northern yellow bat (*Lasiurus intermedius*), and Seminole bat (*Lasiurus seminolus*) by the K-Pro software.

Table 3-1. Acoustic Survey Summary

Site	Latitude	Longitude	Recordings	Noise	Calls	FBB Calls
A	26.29788	-81.8013	5,636	609	5,027	0
B	26.30641	-81.79647	9,203	7,564	1,639	0
C	26.31131	-81.79263	533	74	459	0
D	26.32207	-81.78505	9,829	619	9,210	1
E	26.32761	-81.781	7,397	6,660	737	0
F	26.33136	-81.77312	3,500	581	2,919	0
G	26.30233	-81.79495	7,342	508	6,834	0
	TOTAL		**43,440**	**16,615**	**26,825**	**1**

Table 3-2. Species Recorded According to Kaleidoscope Pro Auto Identification

Common Name	*Scientific Name*
Rafinesque's big-eared bat*	*Corynorhinus refinesquii*
Big brown bat	*Eptesicus fuscus*
Florida bonneted bat	*Eumops floridanus*
Seminole/Eastern red bat**	*Lasiurus seminolus or L. borealis*
Northern yellow bat	*Lasiurus intermedius*
Southeastern myotis	*Myotis austroriparius*
Evening bat	*Nycticeius humeralis*
Tricolored bat	*Perimyotis subflavus*
Brazilian free-tailed bat	*Tadarida brasiliensis*
Hoary bat	*Lasiurus cinereus*
Silver-haired bat***	*Lasionycteris noctivagans*
Gray bat***	*Myotis grisescens*

Notes:

* Recorded as Townsend's big-eared bat [(*Corynorhinus townsendii*), CORTOW], which do not typically occur in southwest Florida. However, CORTOW calls are indistinguishable from CORRAF, which do occasionally occur in southwest Florida.

** Eastern red bat calls and Seminole bat calls are nearly indistinguishable from each other.

*** Silver-haired bats and gray bats were included as suggested by USFWS, but rarely occur in southwest Florida.

3.2 Effect Determination

FDOT uses the USFWS 2019 FBB Consultation Key to establish an effect determination for the FBB. The USFWS 2019 Guidelines state that Potential Roosting Habitat includes forest and other areas with tall, mature trees or other areas with suitable roost structures (*e.g.,* utility poles, artificial structures). More specifically, this includes habitat in which suitable structural features for breeding and sheltering are present. In general, roosting habitat contains one or more of the following structures: tree snags, and trees with cavities, hollows, deformities, decay, crevices, or

loose bark. The Old 41 project corridor includes habitat and structures that could potentially provide roosting habitat for FBB.

The 2019 Guidelines state that FBB roosting is likely if any of the following are documented:

a. Florida bonneted bat calls are recorded within 30 minutes before sunset to 1½ hours following sunset or within 1½ hours before sunrise; or
b. Emergence calls are recorded; or
c. Human observers see (or hear) Florida bonneted bats flying from or to potential roosts; or
d. Human observers see and identify Florida bonneted bats within a natural roost or artificial roost; and/or
e. other bat sign (*e.g.*, guano, staining, etc.) is found that is identified to be Florida bonneted bat through additional follow-up.

No FBB calls were recorded before sunset, within 1 ½ hours after sunset, or within 1 ½ hours before sunrise. No emergence calls were recorded and no human observations of FBB were made. Finally, no signs of use by other bats (guano, staining, or auditory chirps) were observed during our environmental surveys associated with the Old 41 project. Therefore, there is no evidence suggesting that roosting is likely to occur near the project.

The 2019 Guidelines state that an area will be considered to have high FBB activity/use if ANY of the following are found:

a. Multiple FBB feeding buzzes are detected; or
b. FBB social calls are recorded; or
c. Large numbers of Florida bonneted bat calls (9 or more) are recorded throughout one night.

Analysis of the FBB calls did not reveal any feeding buzzes or social calls. Only one FBB call was recorded during the survey. Therefore, there is no evidence suggesting that the Old 41 project area supports high FBB activity/use.

The USFWS developed a 2019 FBB "Florida Bonneted Bat Consultation Key" (Key) to assist regulatory agency reviewers in making effect determinations for projects located in the FBB consultation area. The Key was utilized to determine the potential impact of the proposed development on FBB and is included as **Appendix F**. As stated above, the acoustic survey resulted in one potential FBB call. With this information, the Key leads through couplets 1a, 2a,

3b, 6a, 7b, 10b, to **12b** with a determination of May Affect, not Likely to Adversely Affect (MANLAA-P) requiring specific Best Management Practices (BMPs) whereby programmatic concurrence is achieved and no additional consultation with the USFWS is necessary as discussed below.

The BMPs required to reach a MANLAA-P determination for couplet 12b include BMP number 1 and any three BMPs out of BMPs 3 – 13. Below is a discussion on how the Old 41 project will comply with the applicable BMPs.

1. If potential roost trees or structures need to be removed, check cavities for bats within 30 days prior to removal of trees, snags, or structures. When possible, remove structure outside of breeding season (*e.g.*, January 1 – April 15). If evidence of use by any bat species is observed, discontinue removal efforts in that area and coordinate with the Service on how to proceed.

   Response: Prior to removal of suitable trees, snags, or structures from the project area, a qualified ecologist will conduct a roost survey of the project area. The roost survey will be conducted no more than 30 days prior to initiation of clearing activities.

5. Conserve open freshwater and wetland habitats to promote foraging opportunities and avoid impacting water quality. Created/restored habitat should be designed to replace the function of native habitat.

   Response: The Old 41 project will include the construction of stormwater management lakes that will improve water quality and increase the availability of freshwater foraging opportunities to FBB and other bat species.

7. Avoid or limit widespread application of insecticides (e.g., mosquito control, agricultural pest control) in areas where Florida bonneted bats are known or expected to forage or roost.

   Response: The Old 41 project will not require the widespread application of insecticides. Based on the low number of FBB calls recorded during the survey, the Old 41 project area is not an area where FBB are known or expected to forage.

10. Protect known Florida bonneted bat roost trees, snags or structures and trees or snags that have been historically used by Florida bonneted bats for roosting, even if not currently

occupied, by retaining a 250 foot (76 m) disturbance buffer around the roost tree, snag, or structure to ensure that roost sites remain suitable for use in the future.

Response: The Old 41 project does not include known or suspected FBB roost structures. If a FBB roost is discovered near the project area, a 250-foot disturbance buffer will be established around the roost tree, snag, or structure and USFWS staff will be contacted to discuss proceeding.

3.3 Summary and Conclusions

The FBB survey was conducted in accordance with the Guidelines from May 22, 2025 through June 1, 2025 for a total of 10 calendar nights and 70 detector nights with favorable weather. Approximately 26,825 calls were recorded during the survey, one of which was identified as FBB. The 2019 FBB Consultation Key leads to couplet 12b with a determination of "May Affect, not Likely to Adversely Affect" programmatic (MANLAA-P) requiring specific BMPs as discussed.

4.0 REFERENCES

Belwood, J.J. 1992. Florida mastiff bat *Eumops glaucinus floridanus*. Pages 216-223 in S.R. Humphrey (ed.), Rare and endangered biota of Florida. Vol. I. Mammals. University Press of Florida. Gainesville, Florida.

U.S. Fish and Wildlife Service. 2013. Endangered and Threatened Wildlife and Plants; Endangered Species Status for the Florida Bonneted Bat; Final Rule. 78 Fed. Reg. § 61004 (final rule October 2, 2013) (to be codified at 50 C.F.R. part 17).

U.S. Fish and Wildlife Service. 2019. Florida Bonneted Bat Consultation Guidelines. 29 pp. U.S. Fish and Wildlife Service South Florida Ecological Services Office. Vero Beach, FL.

U.S. Fish and Wildlife Service. 2024. Florida Bonneted Bat Consultation Guidelines. 33 pp. U.S. Fish and Wildlife Service South Florida Ecological Services Office. Vero Beach, FL.

APPENDIX A

Methodology Memorandum

April 30, 2025

To: Zakia Williams
Fish and Wildlife Biologist
US Fish and Wildlife Service, Florida Ecological Services Office
7915 Baymeadows Way
Suite 200
Jacksonville, FL32256-7517

Copy: Emily Barnett, Florida Department of Transportation (FDOT)
Nikki Gilmer, FDOT
Jeffrey James, FDOT
Tori Kuba, Environmental Science Associates

From: Laura Herrero, Johnson Engineering

Subject: **Letter of Authorization No. 14**
Districtwide Environmental Species Services for District 1
Contract No. BEF40
FPID No. 412446-2-12-01

Florida Bonneted Bat Acoustic Monitoring and Analysis
Survey Methodology Memorandum
Old US 41 PD&E Study from US 41 in Collier County to Bonita Beach Road in Lee County, Florida
FPID's: 435110-1-22-01 & 435347-1-22-01

The Florida bonneted bat (*Eumops floridanus*) was federally designated as an endangered species by the U.S. Fish and Wildlife Service (USFWS) in 2013 (Federal Register 2013) and is protected by the Endangered Species Act, as amended (16 U.S. Code (U.S.C.) 1531-1544, 87 Stat. 884). Based on the availability of potential roosting and foraging habitat and the project's size being greater than five acres, a species-specific Florida bonneted bat acoustic survey was determined to be necessary for this project.

Project Description

The Florida Department of Transportation (FDOT) District One is conducting a Project Development and Environment (PD&E) Study, in accordance with the National Environmental Policy Act (NEPA), to evaluate various alternatives to accommodate population growth and travel demand, reduce congestion, and enhance safety for a two-lane section of CR 887 (Old US 41 Rd) extending 3.7 miles from US 41 (southern terminus) to Bonita Beach Rd (northern terminus). Alternatives to be evaluated include the potential widening of the roadway up to four lanes, as well as safety considerations for bicyclists and pedestrians, such as marked bicycle lanes, sidewalks, and/or a shared-use path. The project corridor is located in Sections 2, 3, 10, 15, and 19 of Township 48 South in Range 25 East in Collier and Lee Counties, Florida (**Figure 1**).

Preliminary Data Collection

A literature and Geographic Information System (GIS) database search was conducted for the project area to determine if the Florida bonneted bat was previously documented within the project limits and if suitable roosting or foraging habitat was available. The literature and database search included the following: 2017-2019 South Florida Water Management District (SFWMD) Land Use Land Cover spatial data, 2023 USFWS National Wetlands Inventory spatial data, 2019 and 2024 USFWS Florida Bonneted Bat Consultation Guidelines, USFWS Florida Bonneted Bat Consultation Area spatial data, and current aerial imagery.

Based on this preliminary protected species data collection effort, Florida bonneted bat findings include the following:

- The project falls within the USFWS Florida bonneted bat Consultation Area (CA);
- The project falls within a USFWS Florida bonneted bat assumed presence polygon;
- The project does not fall within the species' Critical Habitat (CH); and
- Potentially suitable foraging and roosting habitat was identified within the project boundary.

Proposed Field Survey Methodology

The acoustic survey methodology outlined in the 2024 USFWS Florida Bonneted Bat Consultation Guidelines (USFWS 2024) for linear projects that contain potential roosting and foraging habitat will be followed. Based on the guidelines, the Old 41 Rd project corridor will require surveys for a minimum of nine (9) detector nights per 0.6 miles. A total of seven (7) acoustic monitoring stations were developed based on the guidelines, project length, and evaluation of habitat within the project area. The proposed 7 acoustic monitoring station locations are depicted in the attached figure (**Figure 2**).

To maximize the detection of Florida bonneted bats, each monitoring station will be placed in an area that could be used as a potential flight path for the Florida bonneted bat. This includes targeting areas which may provide potential roosting or foraging habitat such as a cluster of tall pine trees, royal palms, or other tall trees, areas with snags, and available fresh water sources. At each monitoring station, a Wildlife Acoustics Song Meter SM4BAT Full Spectrum acoustic detector will be deployed by Johnson Engineering (JE) ecologists who are trained and experienced in setting up, operating, and maintaining bat acoustic detection equipment. The detectors will be set to record 15-second file lengths and have a two-second trigger window based on training received from industry experts and the current 2024 USFWS Florida Bonneted Bat Consultation Guidelines. Each detector will be set to automatically begin collecting data continuously from 30 minutes before sunset to 30 minutes after sunrise for a minimum of nine (9) consecutive nights at each station. If any of the following weather conditions exist during acoustic sampling, the time and duration will be noted and the acoustic sampling effort for that night repeated:

- Temperatures fall below 60°F during the first five (5) hours of the survey period;
- Precipitation, including rain and/or fog, that exceeds 30 minutes or continues intermittently during the first five (5) hours of the survey period; or
- Sustained wind speeds greater than nine (9) miles per hour for 30 minutes or more during the first five (5) hours of the survey period.

Per the 2024 guidelines, should it take longer than 14 days to attain the 9 consecutive valid nights, the Florida bonneted bat recovery lead will be contacted.

At each monitoring station, an omnidirectional Wildlife Acoustic SMM-U2 External Ultrasonic Microphone, placed on metal conduit approximately 10 to 15 feet in height, will be deployed. Acoustic recorders will be placed every 0.6 miles and maintain a minimum distance of 300 meters between deployed detectors. The microphone will be situated in an area clear of vegetation at least two (2) meters in all directions and be fully free of vegetative or other clutter from ground to sky where practical. Microphones will be directed away from surrounding vegetation, electrical wires, transmission lines, echo-producing surfaces, and potential external noise sources where practical. Metadata for each detector, consistent with the Acoustic Detector Deployment Example Data Sheet included in the 2024 USFWS Florida Bonneted Bat Consultation Guidelines, will be documented.

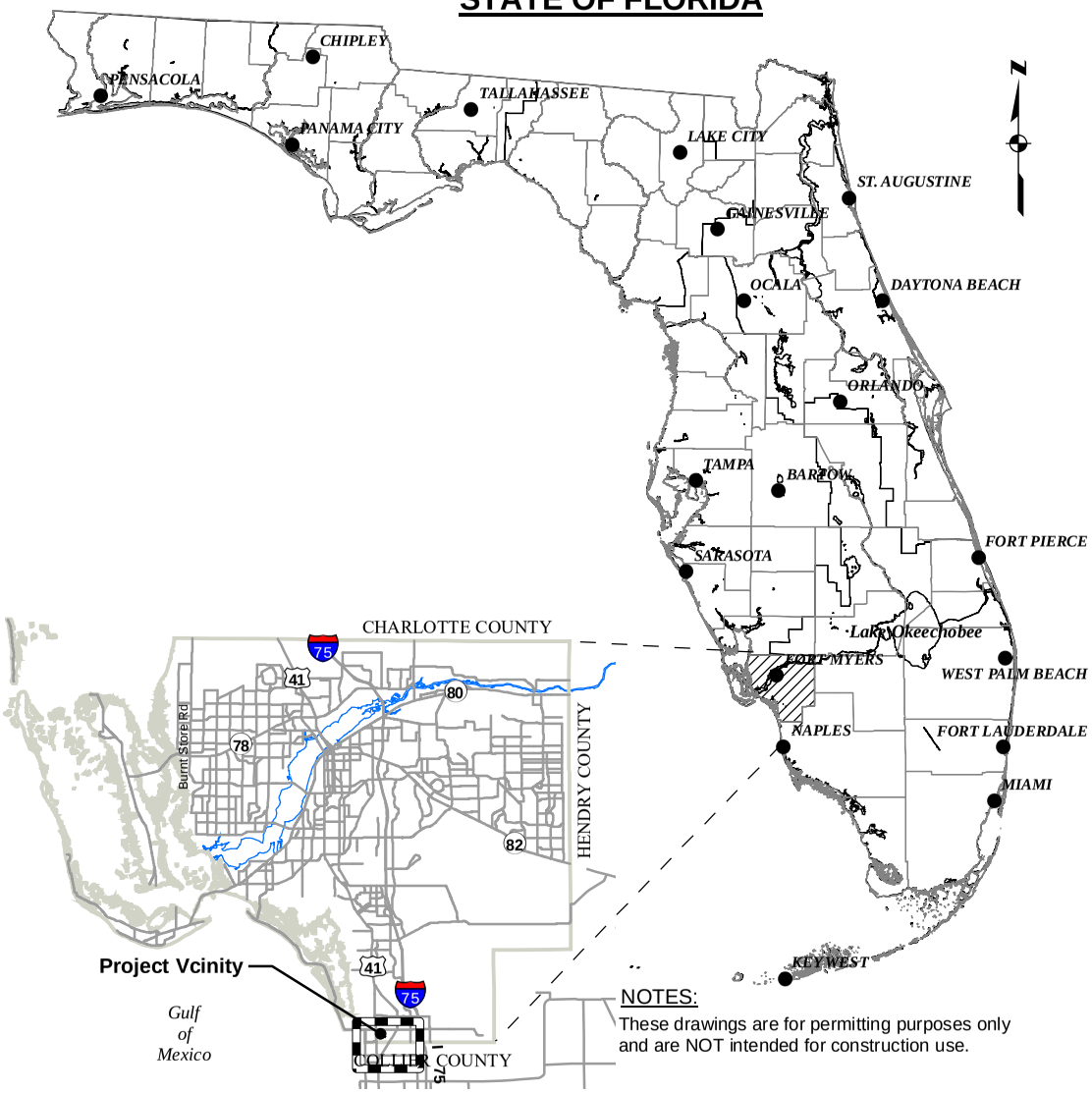
The Waveform Audio (WAV) files recorded at each monitoring station will be analyzed using Wildlife Acoustics Kaleidoscope Pro's latest version. The auto-identification parameters utilized via Kaleidoscope Pro include Bats of North America, region Florida, and the sensitivity setting utilized will be zero balanced (neutral). The species to be selected in the auto identification classifier include: big brown bat (*Eptesicus fuscus*), Florida bonneted bat, eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), northern yellow bat (*Lasiurus intermedius*), Seminole bat (*Lasiurus seminolus*), southeastern myotis (*Myotis austroriparius*), evening bat (*Nycticeius humeralis*), tri-colored bat (*Perimyotis subflavus*), velvety free-tailed bat (*Molossus molossus*), gray myotis (*Myotis grisescens*), and Brazilian free-tailed bat (*Tadarida brasiliensis*).

The bat acoustic data will be retrieved, saved, analyzed, and interpreted by JE ecologists who have taken one or more bat acoustic courses/workshops and who have also previously reviewed Florida bonneted bat echolocations using Kaleidoscope Pro. All echolocations auto identified by Kaleidoscope Pro as being created by a Florida bonneted bat will be visually reviewed and manually verified by experienced biologists. Additionally, all echolocations auto identified by Kaleidoscope Pro as No ID, along with echolocations having Alternate 1 or Alternate 2 identifications of Florida bonneted bat will be manually verified. Parameters used to manually verify a sequence of echolocations as coming from a Florida bonneted bat include the following:

- Whether the characteristic frequency of echolocations fall within the documented range for the Florida bonneted bat,
- Whether there are three or more echolocations where the time between echolocations remains consistent across the sequence of echolocations,
- Whether the minimum frequency remains consistent across the sequence of echolocations,
- Whether the slope and bandwidth remains consistent from echolocation to echolocation, and
- Whether there is good signal to noise ratio as evidenced by a crisp, clean oscillogram.

The results of the Florida bonneted bat call analysis will be assembled as required and uploaded into the NABat database. A technical memorandum documenting the summary of the project, survey methods used, and survey results will be prepared following the survey. This will include an effect determination, explanation, and best management practices (BMPs) to be incorporated as described in the 2019 USFWS Florida Bonneted Bat Guidelines.

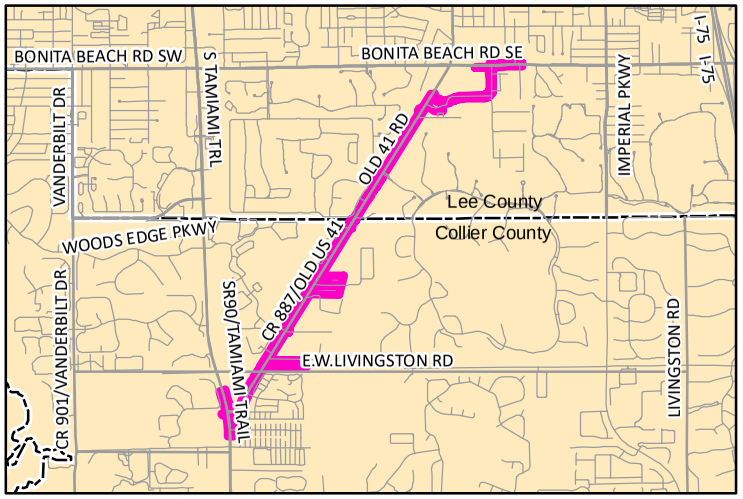
STATE OF FLORIDA



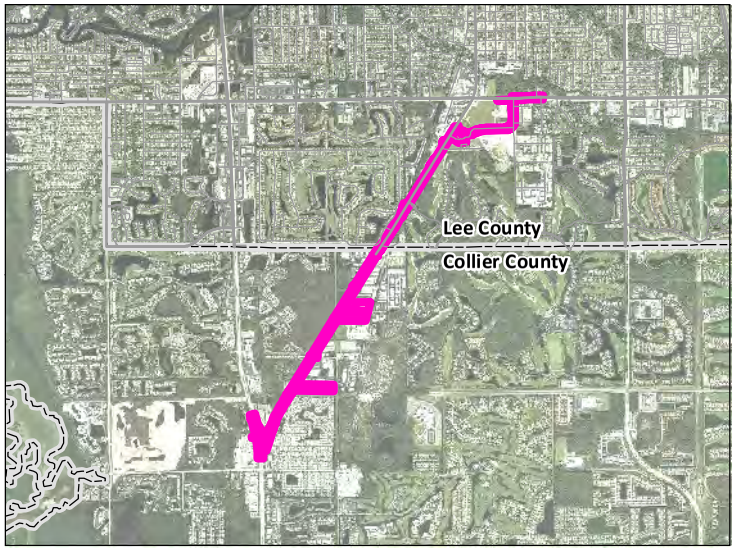
LEE COUNTY
N.T.S.

NOTES:
These drawings are for permitting purposes only and are NOT intended for construction use.

Section 2,3,10,15, Township 48 South, Range 25 East
Latitude: 26.315845°, Longitude: -81.789447°



STREET MAP
N.T.S.



VICINITY AERIAL
N.T.S.

Notes: Aerial Photo 2024

O:\2018\20181289-000\Environmental\Old 41 PD & E\Exhibits\LocMap.mxd

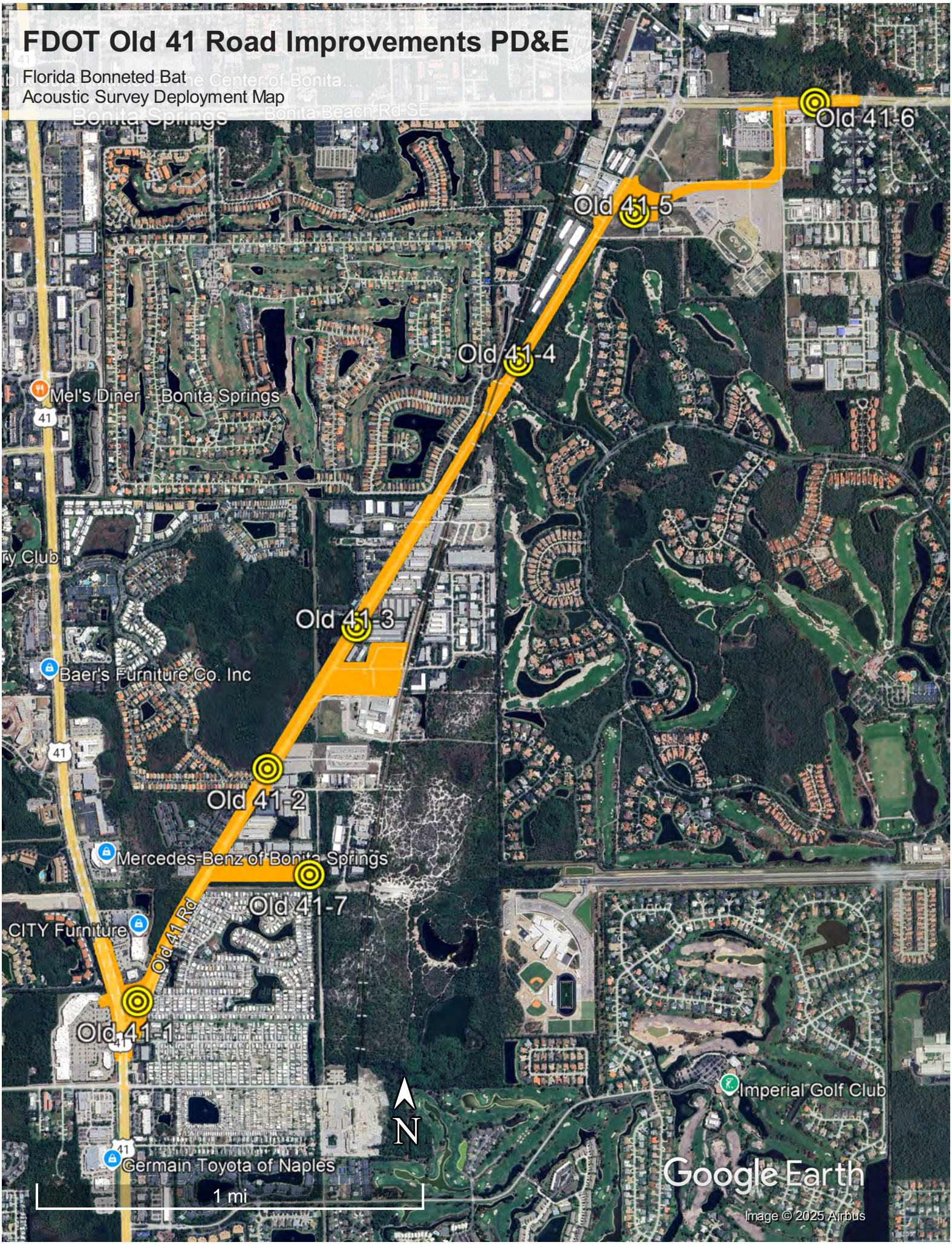
Old 41 PD & E
Lee and Collier County, Florida

JOHNSON ENGINEERING
— An Apex Company —

JOHNSON ENGINEERING, LLC
2122 JOHNSON STREET
FORT MYERS, FLORIDA 33901
PHONE (239) 334-0046
E.B. #642 & L.B. #642

Location Map

DATE	PROJECT NO.	FILE NO.	SCALE	SHEET
April 2024	20181289-000		Not to Scale	Figure 1


FDOT Old 41 Road Improvements PD&E
Florida Bonneted Bat
Acoustic Survey Deployment Map
Old 41-6
Old 41-5
Old 41-4
Old 41-3
Old 41-2
Old 41-7
Old 41-1
Old 41 Rd
Mel's Diner - Bonita Springs
Baer's Furniture Co. Inc
Mercedes-Benz of Bonita Springs
CITY Furniture
Imperial Golf Club
Germain Toyota of Naples
Bonita Springs
Bonita Beach Rd SE
N
1 mi
Google Earth
Image © 2025 Airbus

APPENDIX B

Photo Documentation

Recorder 10 deployed at Site A on a willow tree.

Recorder 12 deployed at Site B on a small pine tree. The microphone is in front of surrounding vegetation.

Panoramic photo of Site A looking southeast across Old 41 Road.

Panoramic photo of Site B looking southeast across Old 41 Road.

Recorder 15 deployed at Site C on a sign post.

Recorder 16 deployed at Site D on a chain link fence.

Panoramic photo of Site C looking southeast across Old 41.

Panoramic photo of Site D looking northwest across Old 41.

Recorder 21 deployed at Site E on a small cabbage palm.

Recorder 22 deployed at Site f on a small pine tree.

Panoramic photo of Site E looking east over open field.

Panoramic photo of Site F looking south across Bonita Beach Road.

Recorder 23 deployed at Site G on an earleaf acacia.

Typical deployment of Wildlife Acoustics SM4BAT-FS recorder.

Panoramic photo of Site G looking north toward commercial/industrial center.

This cell intentionally left blank.

APPENDIX C

Weather Data

Date	Time	Temp.	Wind Direction	Wind Speed	Precip.	Condition	Sunset	Sunrise
5/22/2025	19:53	83 °F	E	16 mph	0.0 in	Fair	20:12	6:38
5/22/2025	20:53	80 °F	ESE	7 mph	0.0 in	Fair	20:12	6:38
5/22/2025	21:53	80 °F	SE	6 mph	0.0 in	Fair	20:12	6:38
5/22/2025	22:53	79 °F	SE	5 mph	0.0 in	Fair	20:12	6:38
5/22/2025	23:53	78 °F	ESE	5 mph	0.0 in	Fair	20:12	6:38
5/23/2025	0:53	77 °F	ESE	3 mph	0.0 in	Fair	20:12	6:38
5/23/2025	1:53	76 °F	NE	5 mph	0.0 in	Fair	20:12	6:38
5/23/2025	2:53	76 °F	NE	6 mph	0.0 in	Fair	20:12	6:38
5/23/2025	3:53	74 °F	E	3 mph	0.0 in	Fair	20:12	6:38
5/23/2025	4:53	0 °F		0 mph	0.0 in	N/A	20:12	6:38
5/23/2025	5:53	74 °F	ENE	5 mph	0.0 in	Fair	20:12	6:38
5/23/2025	6:53	73 °F	NE	6 mph	0.0 in	Fair	20:12	6:38
5/23/2025	6:55	73 °F	NE	6 mph	0.0 in	Fair	20:12	6:38
5/23/2025	7:53	0 °F	E	5 mph	0.0 in	Fair	20:12	6:38
5/23/2025	19:53	82 °F	E	13 mph	0.0 in	Cloudy	20:12	6:37
5/23/2025	20:53	79 °F	SE	8 mph	0.0 in	Fair	20:12	6:37
5/23/2025	21:53	79 °F	CALM	0 mph	0.0 in	Fair	20:12	6:37
5/23/2025	22:53	79 °F	N	3 mph	0.0 in	Fair	20:12	6:37
5/23/2025	23:53	76 °F	E	5 mph	0.0 in	Fair	20:12	6:37
5/24/2025	0:53	74 °F	E	5 mph	0.0 in	Fair	20:12	6:37
5/24/2025	1:53	74 °F	E	6 mph	0.0 in	Fair	20:12	6:37
5/24/2025	2:53	74 °F	CALM	0 mph	0.0 in	Fair	20:12	6:37
5/24/2025	3:53	74 °F	CALM	0 mph	0.0 in	Fair	20:12	6:37
5/24/2025	4:53	74 °F	CALM	0 mph	0.0 in	Fair	20:12	6:37
5/24/2025	5:53	73 °F	SE	5 mph	0.0 in	Fair	20:12	6:37
5/24/2025	6:53	73 °F	CALM	0 mph	0.0 in	Fair	20:12	6:37
5/24/2025	7:53	75 °F	NE	5 mph	0.0 in	Fair	20:12	6:37
5/24/2025	19:53	86 °F	NNE	9 mph	0.0 in	Smoke	20:13	6:37
5/24/2025	20:53	80 °F	ENE	17 mph	0.0 in	Smoke	20:13	6:37
5/24/2025	21:53	78 °F	ESE	9 mph	0.0 in	Partly Cloudy	20:13	6:37
5/24/2025	22:53	77 °F	ESE	5 mph	0.0 in	Fair	20:13	6:37
5/24/2025	23:53	77 °F	SE	3 mph	0.0 in	Haze	20:13	6:37
5/25/2025	0:53	77 °F	SW	5 mph	0.0 in	Fair	20:13	6:37
5/25/2025	1:53	74 °F	E	5 mph	0.0 in	Fair	20:13	6:37
5/25/2025	2:53	73 °F	ENE	3 mph	0.0 in	Fair	20:13	6:37
5/25/2025	3:53	73 °F	ENE	5 mph	0.0 in	Fair	20:13	6:37
5/25/2025	4:53	73 °F	ENE	3 mph	0.0 in	Fair	20:13	6:37
5/25/2025	5:53	71 °F	CALM	0 mph	0.0 in	Fair	20:13	6:37
5/25/2025	6:53	72 °F	CALM	0 mph	0.0 in	Fair	20:13	6:37
5/25/2025	7:53	76 °F	SE	3 mph	0.0 in	Fair	20:13	6:37

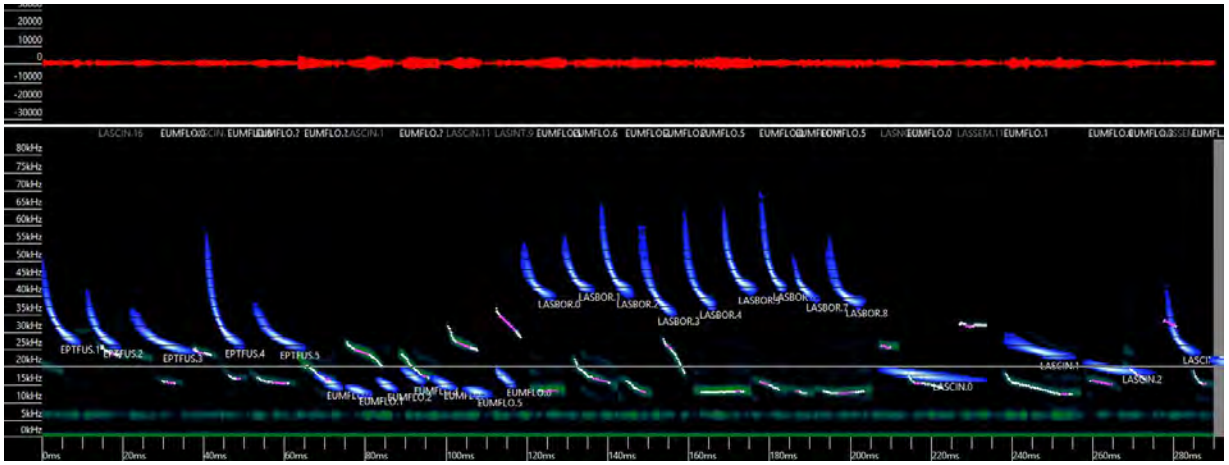
Date	Time	Temp.	Wind Direction	Wind Speed	Precip.	Condition	Sunset	Sunrise
5/25/2025	19:53	82 °F	ESE	6 mph	0.0 in	T-Storm	20:14	6:37
5/25/2025	20:53	80 °F	S	12 mph	0.0 in	Fair	20:14	6:37
5/25/2025	21:53	78 °F	SSE	5 mph	0.0 in	Fair	20:14	6:37
5/25/2025	22:53	78 °F	CALM	0 mph	0.0 in	Partly Cloudy	20:14	6:37
5/25/2025	23:53	76 °F	E	5 mph	0.0 in	Mostly Cloudy	20:14	6:37
5/26/2025	0:53	76 °F	CALM	0 mph	0.0 in	Fair	20:14	6:37
5/26/2025	1:53	76 °F	SSE	6 mph	0.0 in	Fair	20:14	6:37
5/26/2025	2:53	74 °F	CALM	0 mph	0.0 in	Fair	20:14	6:37
5/26/2025	3:53	74 °F	E	5 mph	0.0 in	Fair	20:14	6:37
5/26/2025	4:53	75 °F	CALM	0 mph	0.0 in	Fair	20:14	6:37
5/26/2025	5:53	73 °F	E	3 mph	0.0 in	Fair	20:14	6:37
5/26/2025	6:53	73 °F	E	3 mph	0.0 in	Fair	20:14	6:37
5/26/2025	7:53	77 °F	CALM	0 mph	0.0 in	Fair	20:14	6:37
5/26/2025	19:53	84 °F	SE	9 mph	0.0 in	Fair	20:14	6:36
5/26/2025	20:53	82 °F	ESE	7 mph	0.0 in	Fair	20:14	6:36
5/26/2025	21:53	82 °F	CALM	0 mph	0.0 in	Fair	20:14	6:36
5/26/2025	22:53	80 °F	SSE	5 mph	0.0 in	Fair	20:14	6:36
5/26/2025	23:53	79 °F	ESE	5 mph	0.0 in	Mostly Cloudy	20:14	6:36
5/27/2025	0:53	76 °F	E	3 mph	0.0 in	Fair	20:14	6:36
5/27/2025	1:53	77 °F	CALM	0 mph	0.0 in	Fair	20:14	6:36
5/27/2025	2:53	76 °F	SE	3 mph	0.0 in	Fair	20:14	6:36
5/27/2025	3:53	76 °F	ESE	3 mph	0.0 in	Fair	20:14	6:36
5/27/2025	4:53	75 °F	CALM	0 mph	0.0 in	Fair	20:14	6:36
5/27/2025	5:53	74 °F	SE	5 mph	0.0 in	Fair	20:14	6:36
5/27/2025	6:53	75 °F	CALM	0 mph	0.0 in	Fair	20:14	6:36
5/27/2025	19:53	87 °F	W	7 mph	0.0 in	Mostly Cloudy	20:14	6:36
5/27/2025	20:29	83 °F	N	3 mph	0.0 in	Cloudy	20:14	6:36
5/27/2025	20:48	82 °F	E	9 mph	0.0 in	Partly Cloudy	20:14	6:36
5/27/2025	20:53	81 °F	ENE	8 mph	0.0 in	Fair	20:14	6:36
5/27/2025	21:53	80 °F	E	7 mph	0.0 in	Fair	20:14	6:36
5/27/2025	22:53	80 °F	ESE	6 mph	0.0 in	Mostly Cloudy	20:14	6:36
5/27/2025	23:53	79 °F	E	5 mph	0.0 in	Fair	20:14	6:36
5/28/2025	0:53	78 °F	E	6 mph	0.0 in	Partly Cloudy	20:14	6:36
5/28/2025	1:53	77 °F	E	3 mph	0.0 in	Fair	20:14	6:36
5/28/2025	2:53	76 °F	CALM	0 mph	0.0 in	Fair	20:14	6:36
5/28/2025	3:53	75 °F	E	5 mph	0.0 in	Fair	20:14	6:36
5/28/2025	4:53	75 °F	ENE	3 mph	0.0 in	Fair	20:14	6:36
5/28/2025	5:53	75 °F	E	3 mph	0.0 in	Fair	20:14	6:36
5/28/2025	6:53	75 °F	ESE	3 mph	0.0 in	Fair	20:14	6:36

Date	Time	Temp.	Wind Direction	Wind Speed	Precip.	Condition	Sunset	Sunrise
5/28/2025	19:53	86 °F	WSW	8 mph	0.0 in	Fair	20:15	6:36
5/28/2025	20:53	85 °F	SSW	6 mph	0.0 in	Fair	20:15	6:36
5/28/2025	21:08	84 °F	SW	6 mph	0.0 in	Thunder in the	20:15	6:36
5/28/2025	21:53	80 °F	N	8 mph	0.0 in	Thunder	20:15	6:36
5/28/2025	22:02	80 °F	N	8 mph	0.0 in	Thunder in the	20:15	6:36
5/28/2025	22:10	80 °F	NNE	6 mph	0.0 in	Partly Cloudy	20:15	6:36
5/28/2025	22:53	79 °F	CALM	0 mph	0.0 in	Partly Cloudy	20:15	6:36
5/28/2025	23:53	79 °F	CALM	0 mph	0.0 in	Mostly Cloudy	20:15	6:36
5/29/2025	0:53	78 °F	SE	3 mph	0.0 in	Fair	20:15	6:36
5/29/2025	1:53	79 °F	SE	5 mph	0.0 in	Fair	20:15	6:36
5/29/2025	2:53	78 °F	SE	3 mph	0.0 in	Fair	20:15	6:36
5/29/2025	3:53	77 °F	SE	5 mph	0.0 in	Fair	20:15	6:36
5/29/2025	4:53	76 °F	ESE	3 mph	0.0 in	Fair	20:15	6:36
5/29/2025	5:53	74 °F	CALM	0 mph	0.0 in	Fair	20:15	6:36
5/29/2025	6:53	74 °F	E	3 mph	0.0 in	Fair	20:15	6:36
5/29/2025	19:53	86 °F	S	7 mph	0.0 in	Partly Cloudy	20:15	6:36
5/29/2025	20:53	83 °F	SW	6 mph	0.0 in	Fair	20:15	6:36
5/29/2025	21:53	83 °F	W	3 mph	0.0 in	Fair	20:15	6:36
5/29/2025	22:53	79 °F	ESE	5 mph	0.0 in	Fair	20:15	6:36
5/29/2025	23:53	80 °F	CALM	0 mph	0.0 in	Fair	20:15	6:36
5/30/2025	0:53	78 °F	E	3 mph	0.0 in	Fair	20:15	6:36
5/30/2025	1:53	77 °F	ESE	3 mph	0.0 in	Fair	20:15	6:36
5/30/2025	2:53	76 °F	SE	6 mph	0.0 in	Fair	20:15	6:36
5/30/2025	3:53	76 °F	SE	3 mph	0.0 in	Fair	20:15	6:36
5/30/2025	4:53	77 °F	SSE	6 mph	0.0 in	Fair	20:15	6:36
5/30/2025	5:53	76 °F	SSE	3 mph	0.0 in	Fair	20:15	6:36
5/30/2025	6:53	77 °F	ESE	3 mph	0.0 in	Fair	20:15	6:36
5/30/2025	19:53	85 °F	W	8 mph	0.0 in	Fair	20:16	6:35
5/30/2025	20:53	84 °F	W	6 mph	0.0 in	Fair	20:16	6:35
5/30/2025	21:53	83 °F	W	6 mph	0.0 in	Fair	20:16	6:35
5/30/2025	22:53	82 °F	W	3 mph	0.0 in	Fair	20:16	6:35
5/30/2025	23:53	80 °F	WSW	6 mph	0.0 in	Fair	20:16	6:35
5/31/2025	0:53	80 °F		0 mph	0.0 in	Fair	20:16	6:35
5/31/2025	1:53	80 °F	SSW	5 mph	0.0 in	Fair	20:16	6:35
5/31/2025	2:53	79 °F	SW	5 mph	0.0 in	Fair	20:16	6:35
5/31/2025	3:30	79 °F	W	3 mph	0.0 in	Mostly Cloudy	20:16	6:35
5/31/2025	3:46	79 °F	SW	6 mph	0.0 in	Partly Cloudy	20:16	6:35
5/31/2025	3:53	79 °F	WSW	6 mph	0.0 in	Partly Cloudy	20:16	6:35
5/31/2025	4:53	82 °F	W	5 mph	0.0 in	Fair	20:16	6:35
5/31/2025	5:53	80 °F	WSW	5 mph	0.0 in	Fair	20:16	6:35
5/31/2025	6:53	81 °F	WSW	6 mph	0.0 in	Mostly Cloudy	20:16	6:35

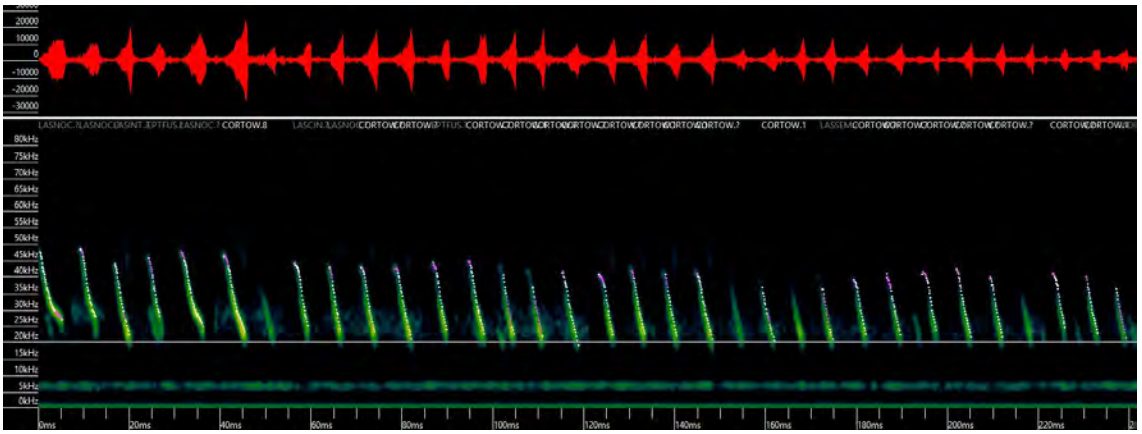
Date	Time	Temp.	Wind Direction	Wind Speed	Precip.	Condition	Sunset	Sunrise
5/31/2025	19:53	82 °F	WSW	7 mph	0.0 in	Fair	20:16	6:35
5/31/2025	20:53	80 °F	W	7 mph	0.0 in	Fair	20:16	6:35
5/31/2025	21:53	80 °F	W	3 mph	0.0 in	Fair	20:16	6:35
5/31/2025	22:53	81 °F	W	5 mph	0.0 in	Fair	20:16	6:35
5/31/2025	23:53	81 °F	W	6 mph	0.0 in	Fair	20:16	6:35
6/1/2025	0:53	79 °F	WSW	5 mph	0.0 in	Fair	20:16	6:35
6/1/2025	1:53	79 °F	WSW	5 mph	0.0 in	Fair	20:16	6:35
6/1/2025	2:53	81 °F	W	6 mph	0.0 in	Fair	20:16	6:35
6/1/2025	3:17	81 °F	W	7 mph	0.0 in	Thunder in the	20:16	6:35
6/1/2025	3:32	80 °F	W	13 mph	0.0 in	Mostly Cloudy	20:16	6:35
6/1/2025	3:53	77 °F	WNW	6 mph	0.0 in	Partly Cloudy	20:16	6:35
6/1/2025	4:53	74 °F	W	7 mph	0.0 in	Partly Cloudy	20:16	6:35
6/1/2025	5:53	74 °F	SW	9 mph	0.0 in	Mostly Cloudy	20:16	6:35
6/1/2025	6:53	77 °F	WSW	9 mph	0.0 in	Fair	20:16	6:35

APPENDIX D

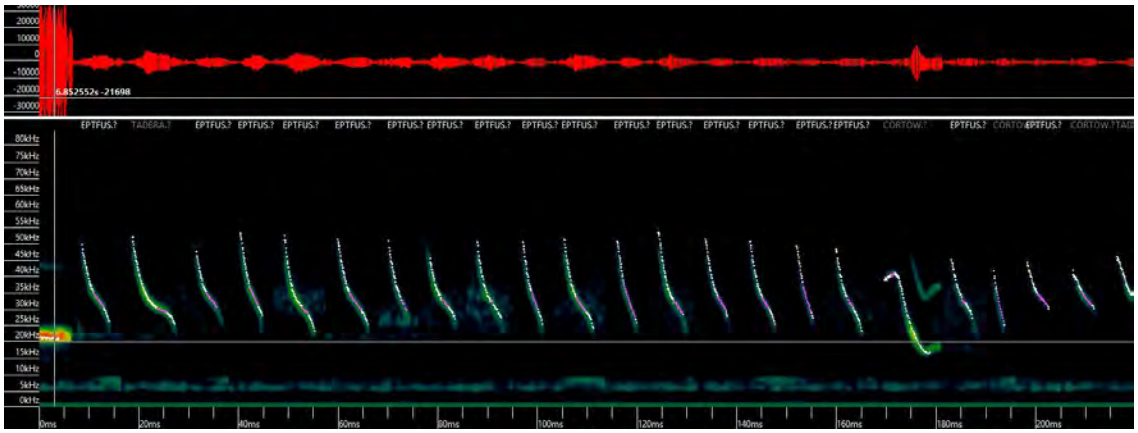
Representative Calls



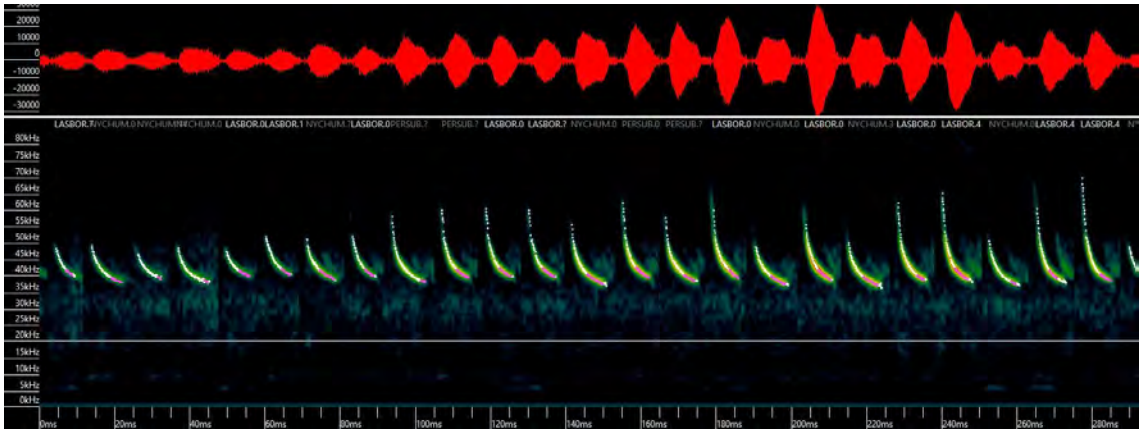
Compressed FBB call taken from Site D on May 25, 2025 at 01:36:41. However the call includes other species like hoary bat and northern yellow bat.



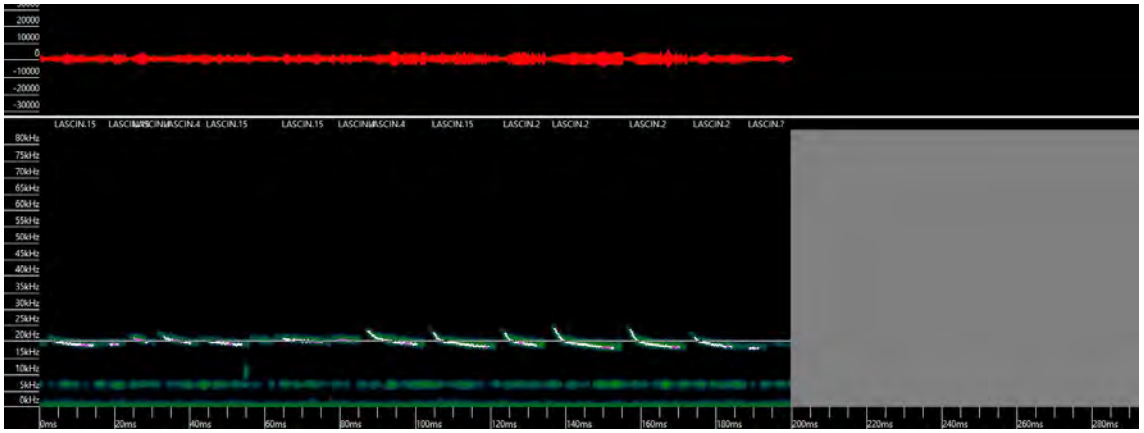
Compressed call of Rafinesque's big-eared bat (*Corynorhinus rafinesquii*) (classified by K-Pro as CORTOW)taken from Site D on May 5, 2025 at 00:00:19.



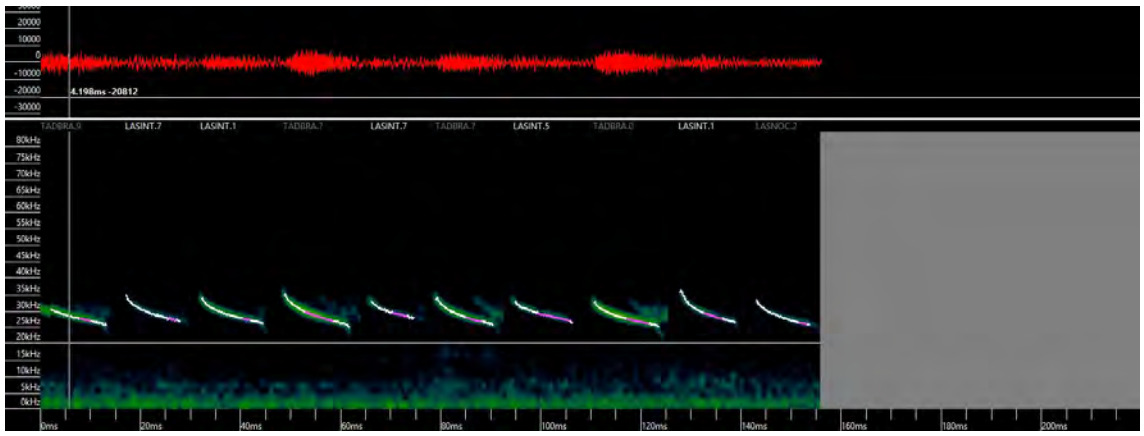
Compressed call of a big brown bat (*Eptesicus fuscus*) taken from Site G on May 28, 2025 at 04:43:41.



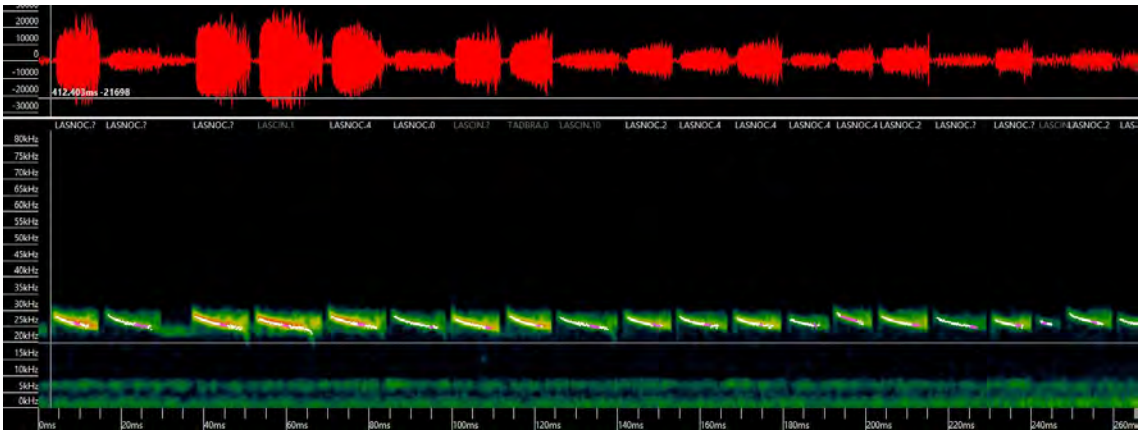
Compressed call of an eastern red bat (*Lasiurus borealis*) taken from Site E on June 1, 2025 at 03:07:03.



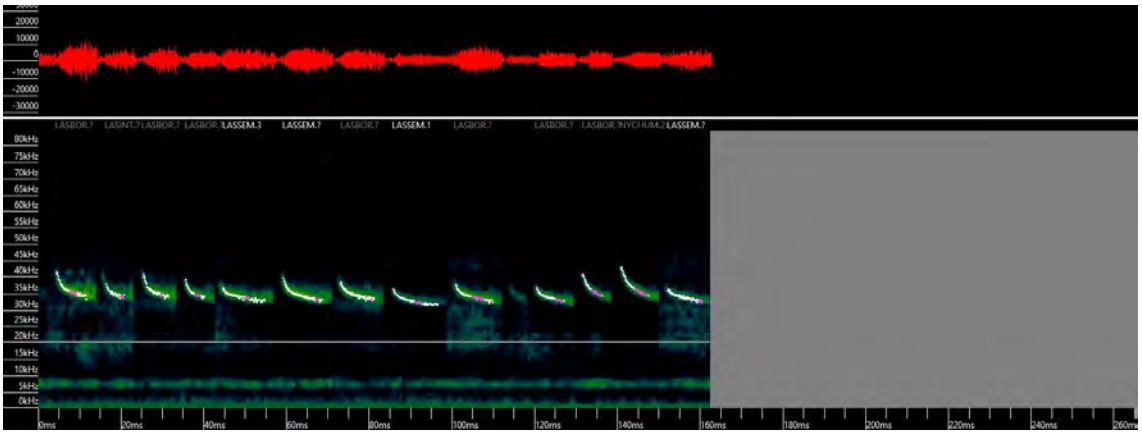
Compressed call of a hoary bat (*Lasiurus cinereus*) taken from Site D on May 24, 2025 at 23:37:06.



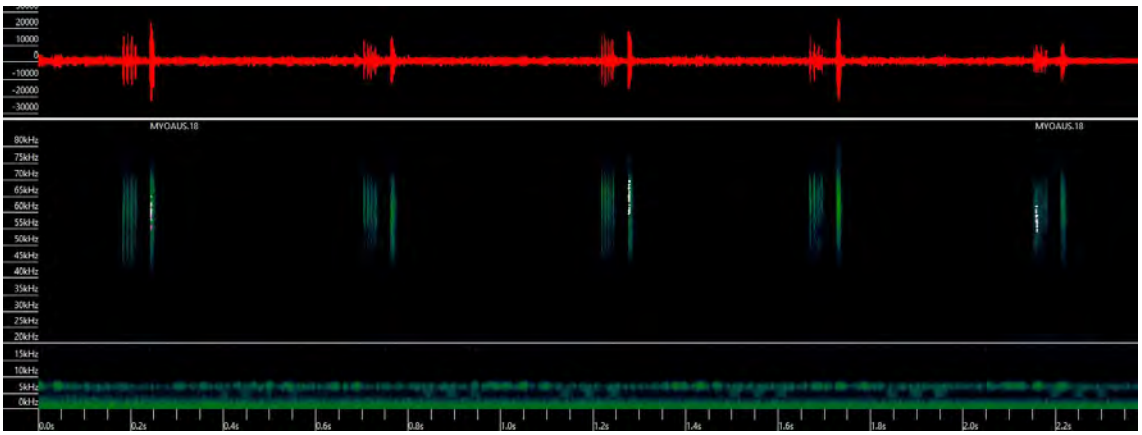
Compressed call of northern yellow bat (*Lasiurus intermedius*) taken from Site F on May 22, 2025 at 21:03:55.



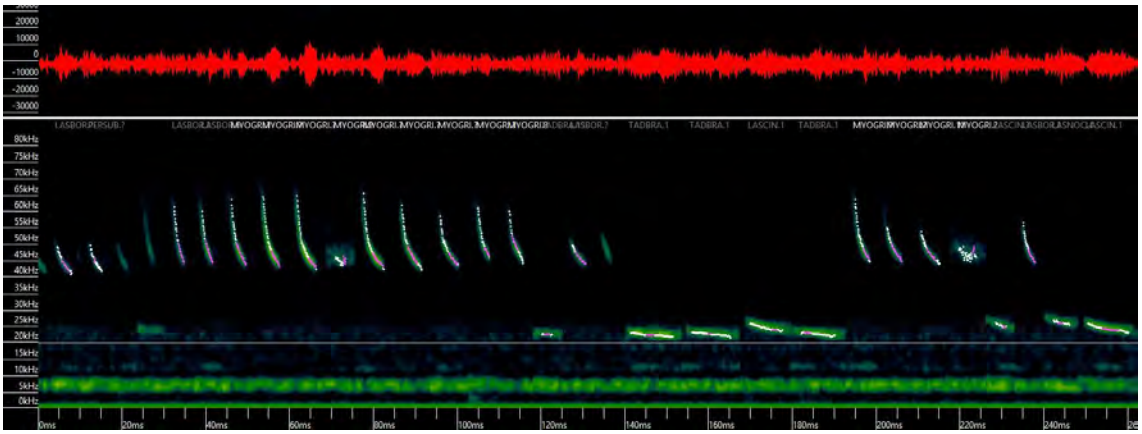
Compressed call of silver-haired bat (*Lasionycteris noctivagans*) taken from Site A on May 30, 2025 at 21:33:09.



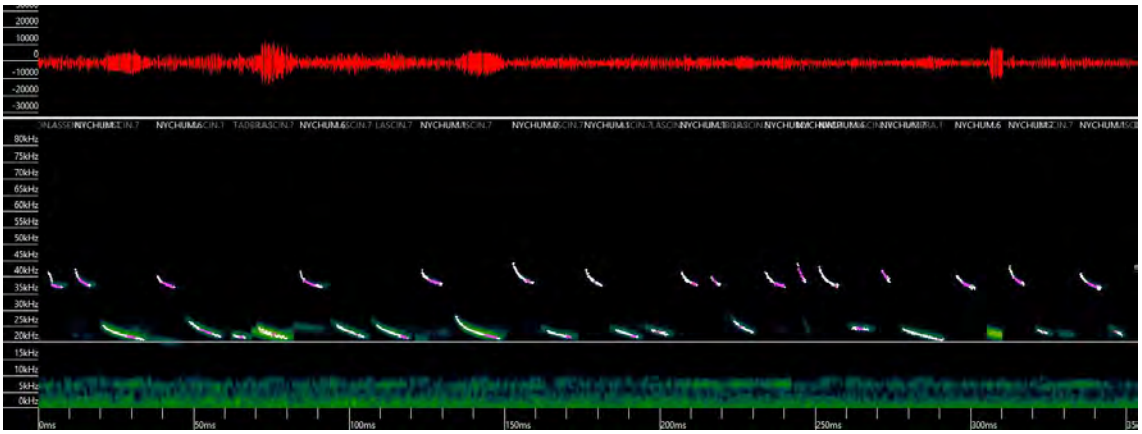
Compressed call of Seminole bat (*Lasiurus seminolus*) taken from Site B on June 1, 2025 at 01:16:35.



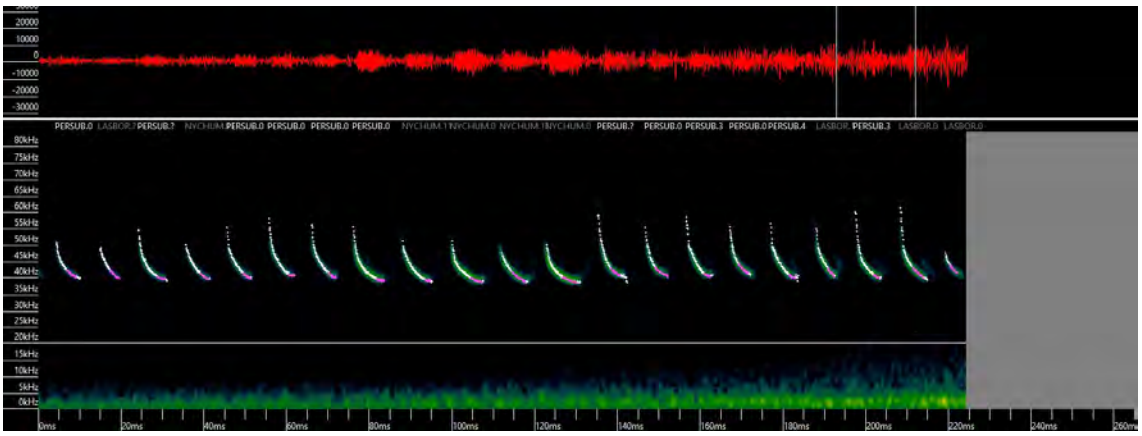
Expanded call of southeastern bat (*Myotis austroriparius*) taken from Site B on May 30, 2025 at 00:32:52. The southeastern bat is not common to southwest Florida.



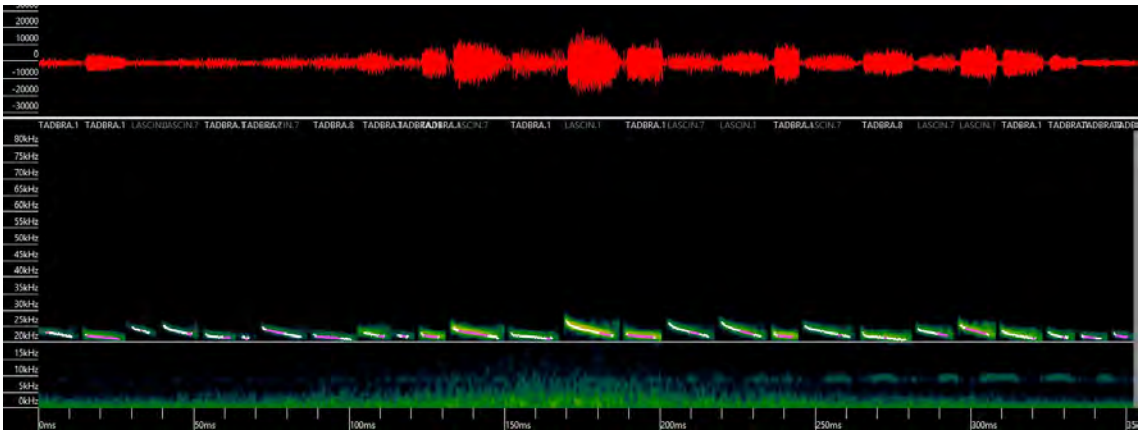
Compressed call of gray bat (*Myotis grisescens*) taken from Site G on June 1, 2025 at 00:46:16. The gray bat is not common to southwest Florida.



Compressed call of evening bat (*Nycticeius humeralis*) taken from Site C on May 27, 2025 at 20:41:14.



Compressed call of tricolored bat (*Perimyotis subflavus*) taken from Site D on May 28, 2025 at 05:30:42.



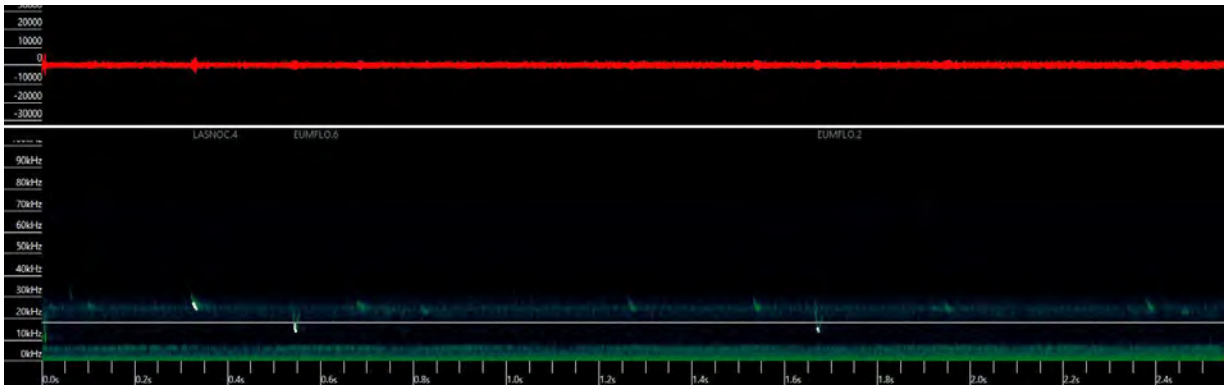
Compressed call of Mexican free-tailed bat (*Tadarida brasiliensis*) taken from Site C on May 26, 2025 at 20:34:21.

This cell intentionally left blank.

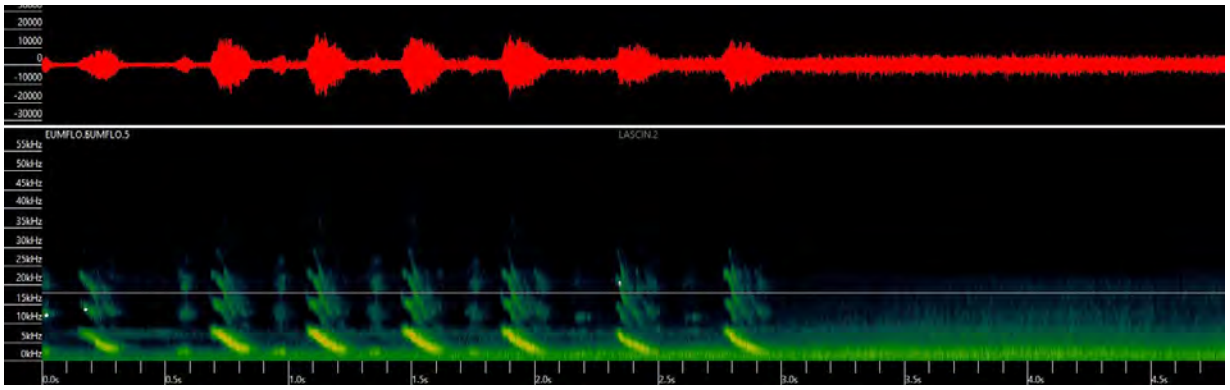
This cell intentionally left blank.

APPENDIX E

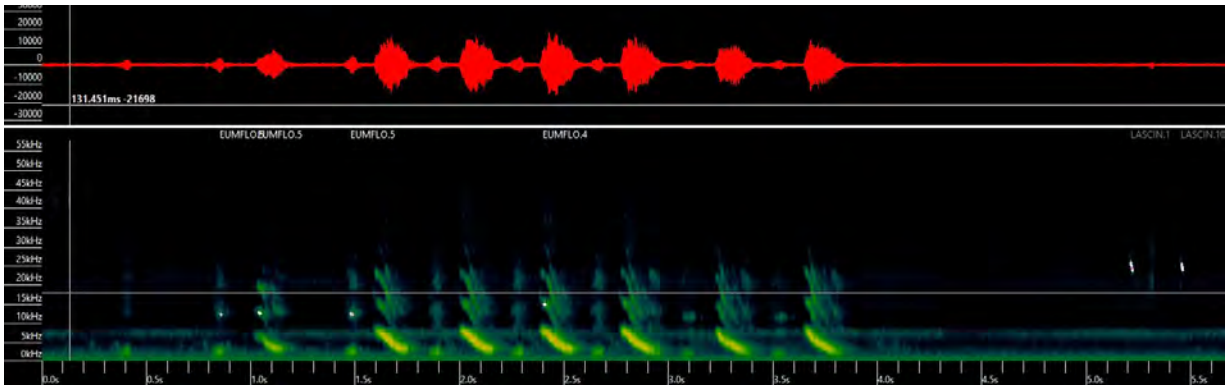
Sonograms Below 18 kHz



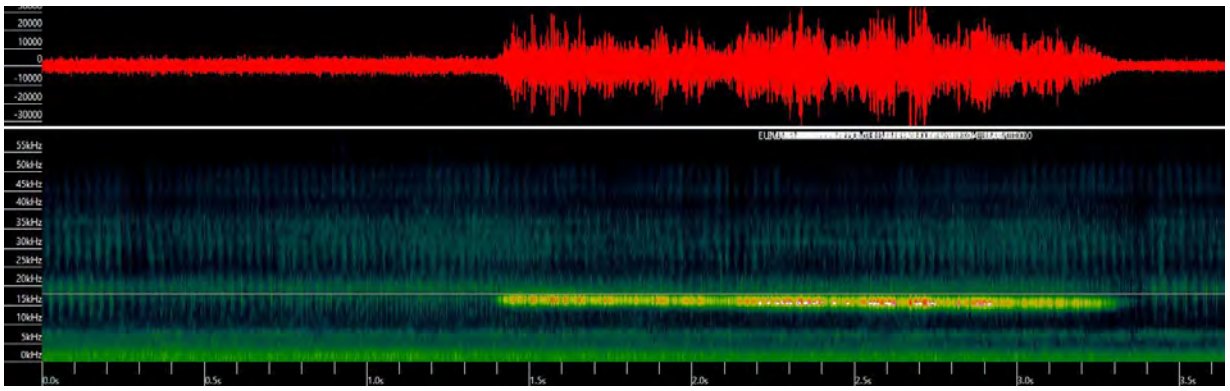
File Name: OLD41A_20250524_054354_000



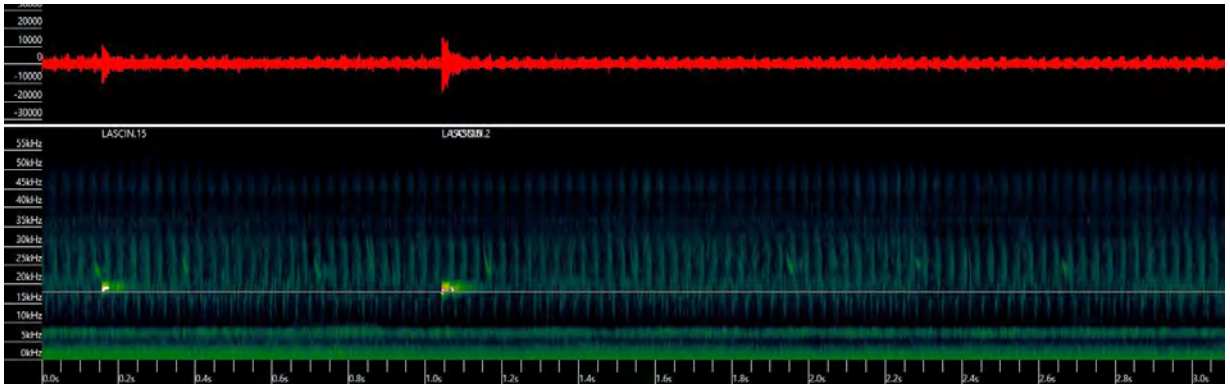
File Name: OLD41B_20250524_060341_000



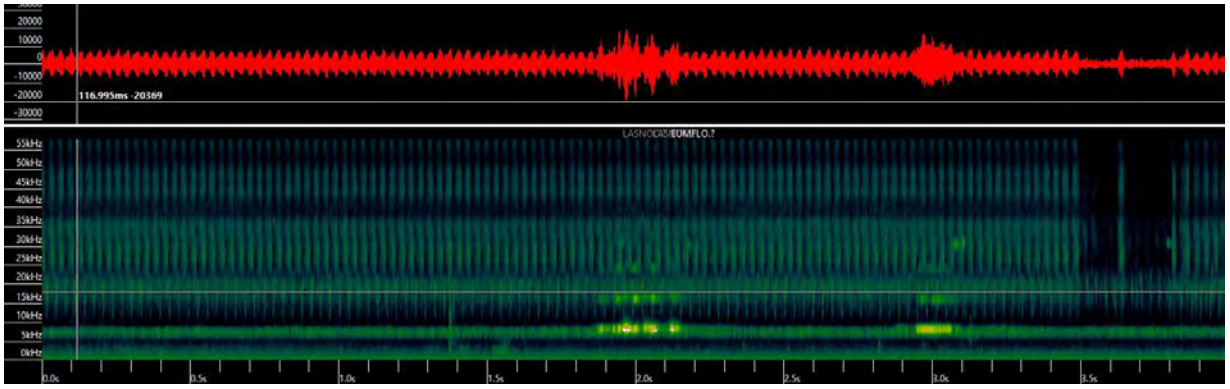
File Name: OLD41B_20250524_060359_000



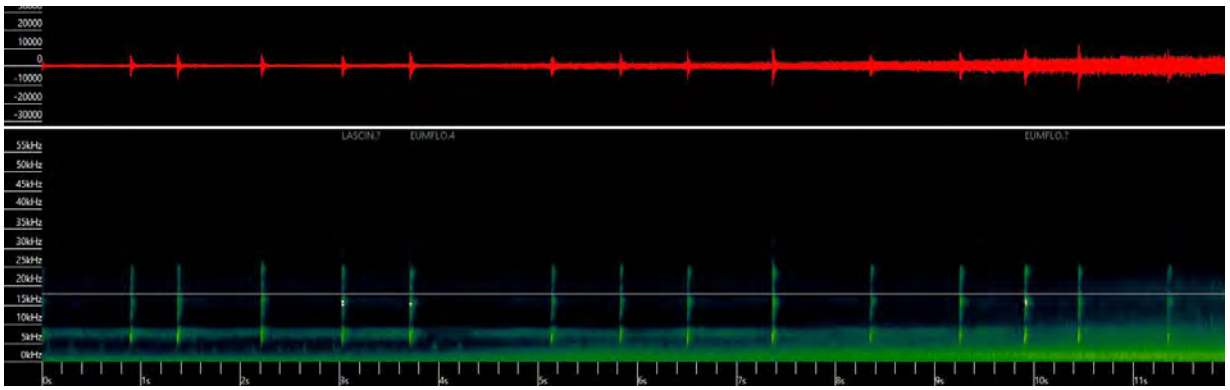
File Name: OLD41B_20250524_222013_000



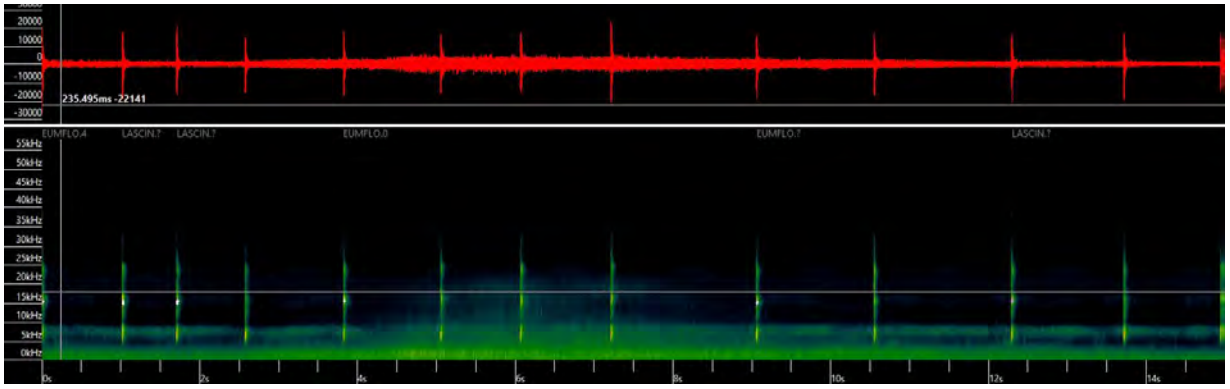
File Name: OLD41B_20250526_212538_000



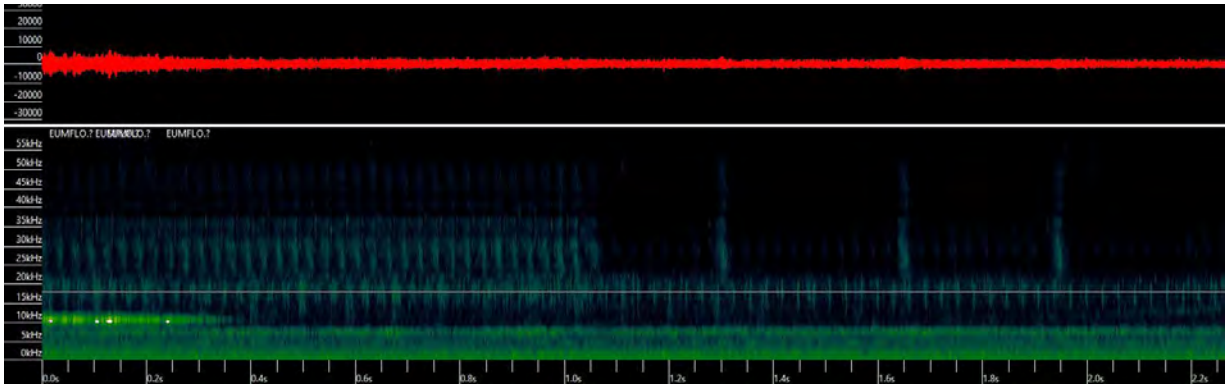
File Name: OLD41B_20250527_212018_000



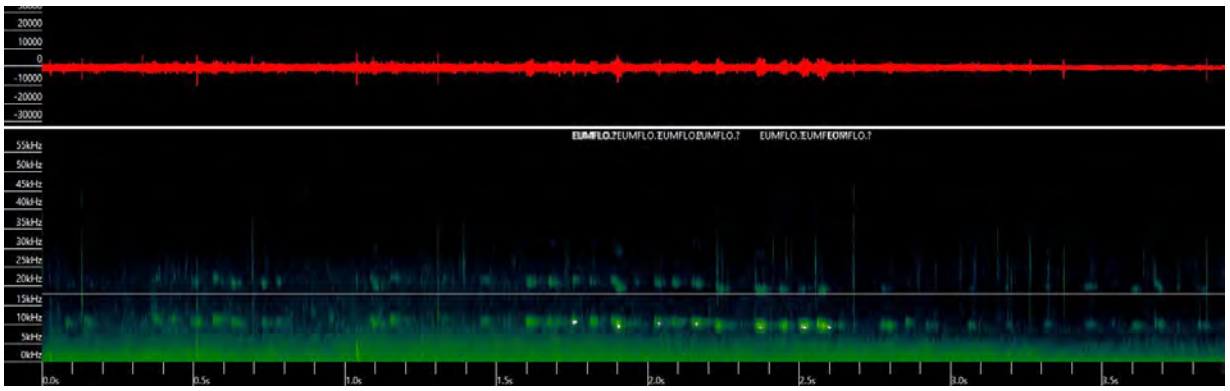
File Name: OLD41B_20250529_062003_000



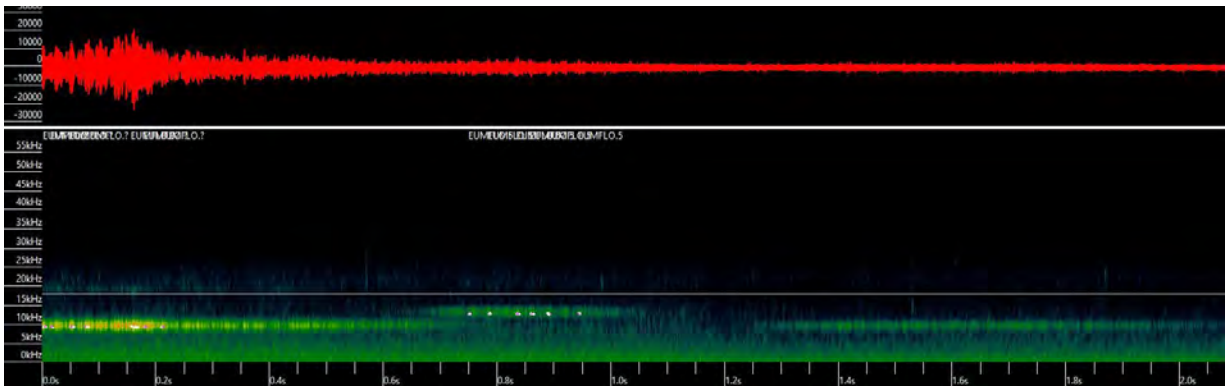
File Name: OLD41B_20250529_062245_000



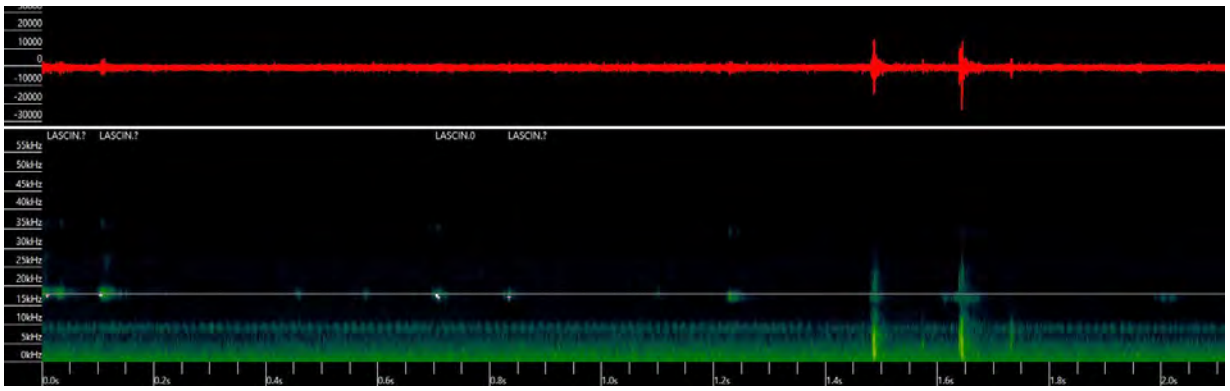
File Name: OLD41B_20250530_232126_000



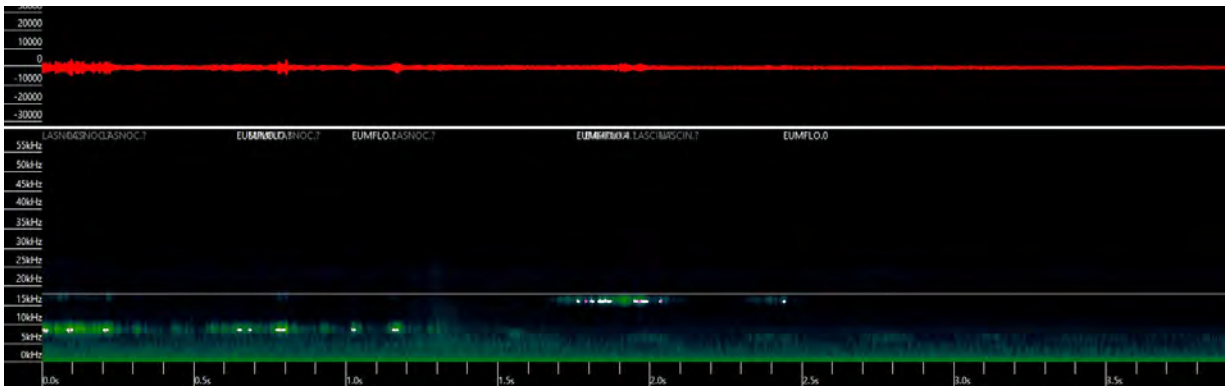
File Name: OLD41C_20250522_200413_000



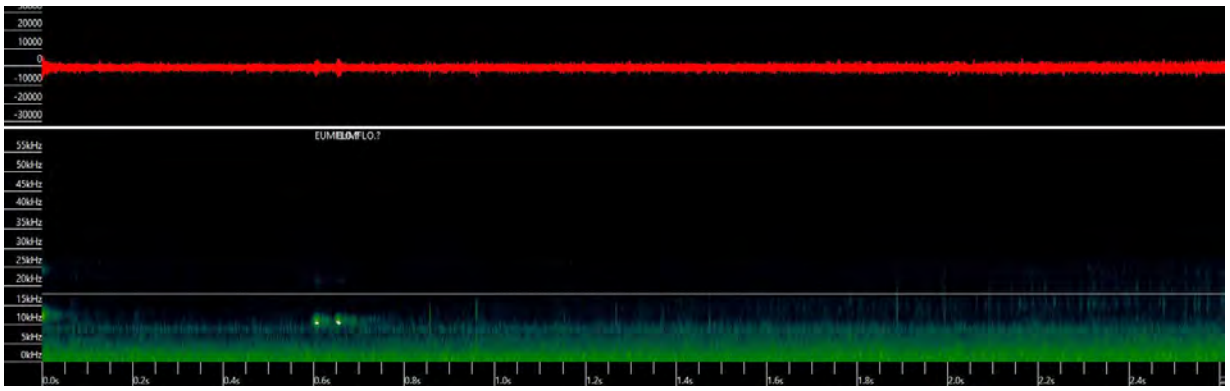
File Name: OLD41C_20250522_203319_000



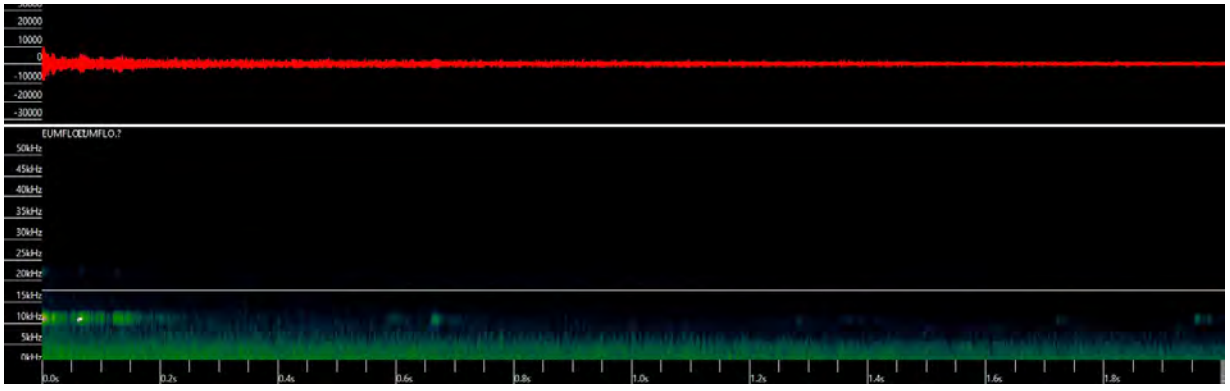
File Name: OLD41C_20250527_201947_000



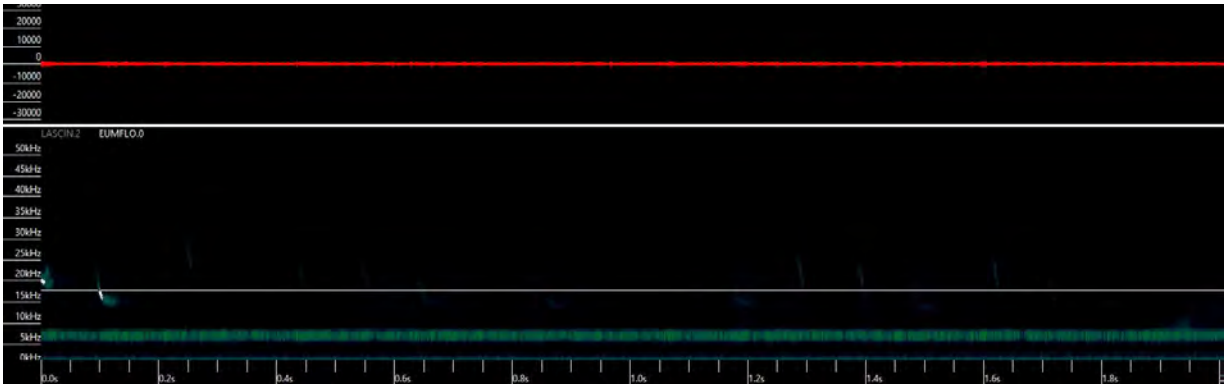
File Name: OLD41C_20250528_201241_000



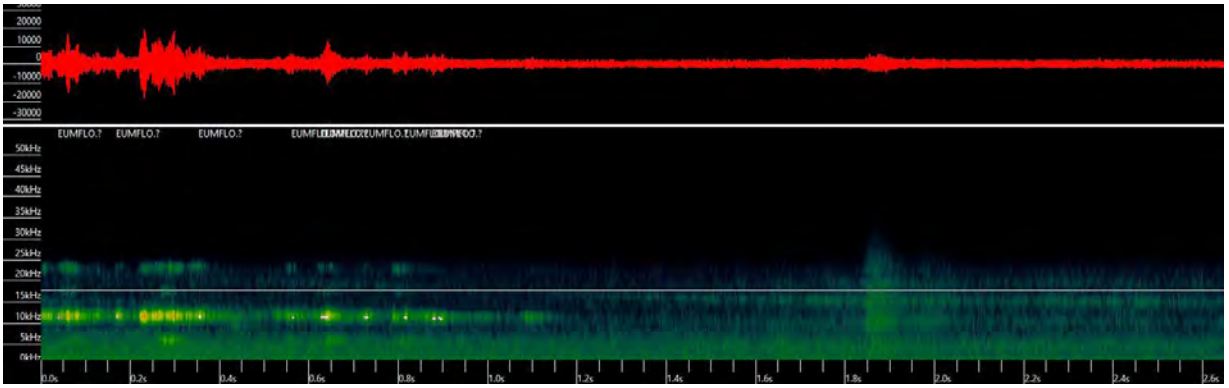
File Name: OLD41C_20250529_200006_000



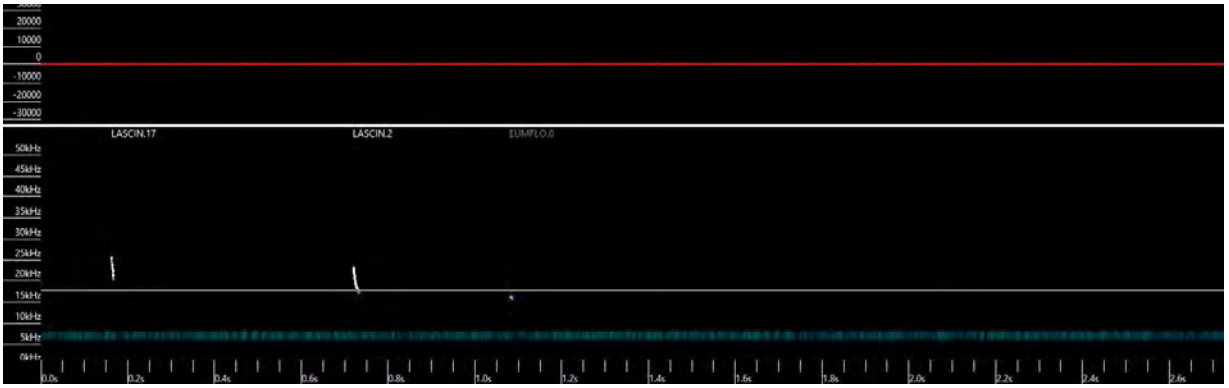
File Name: OLD41D_20250526_063216_000



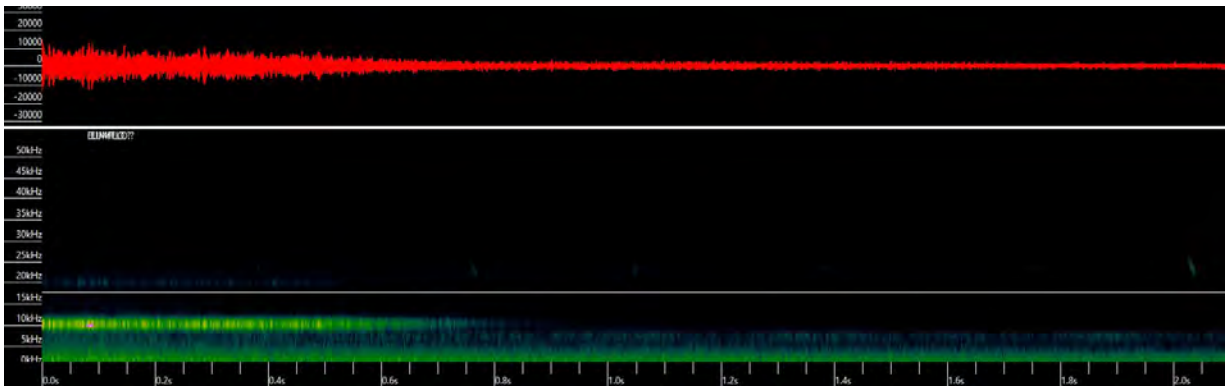
File Name: OLD41D_20250526_215704_000



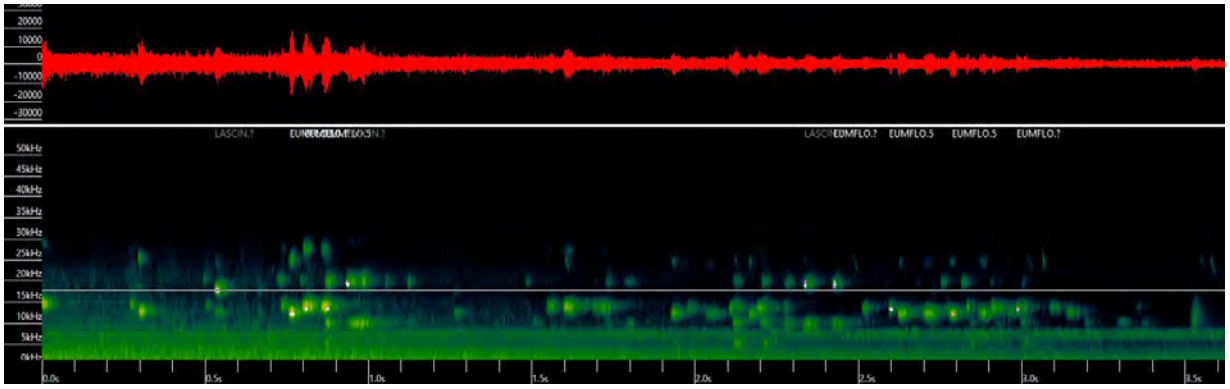
File Name: OLD41D_20250529_065803_000



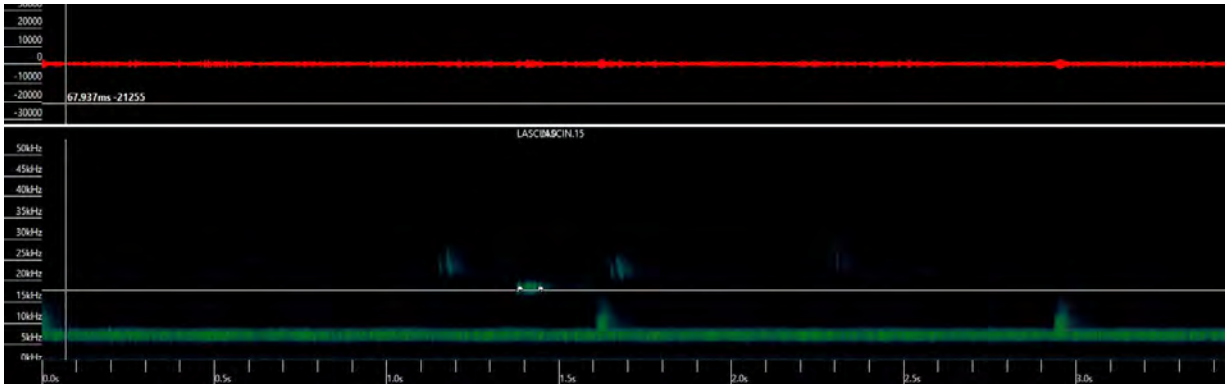
File Name: OLD41D_20250531_012633_000



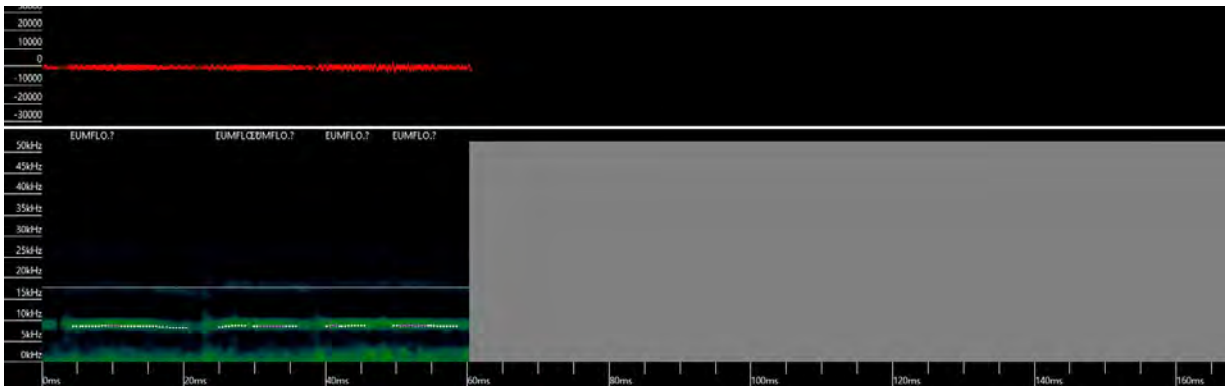
File Name: OLD41D_20250531_060004_000



File Name: OLD41D_20250531_223047_000

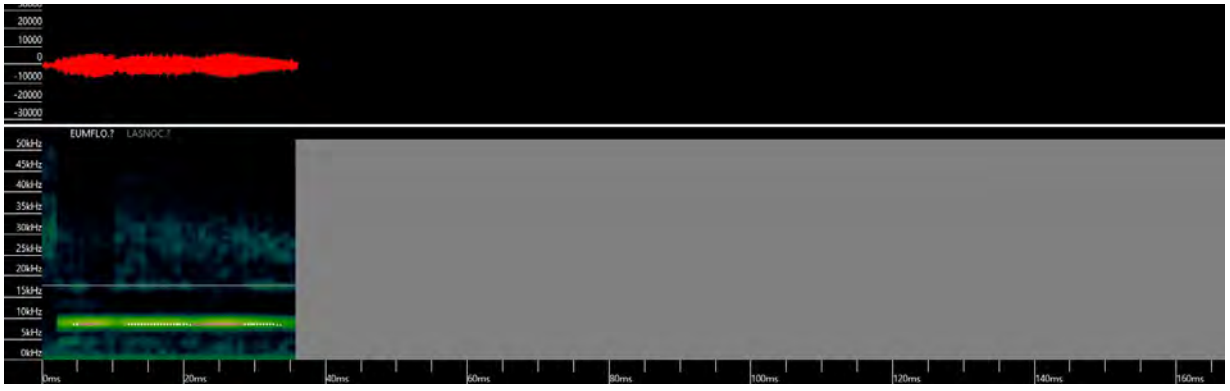


File Name: OLD41D_20250601_005016_000

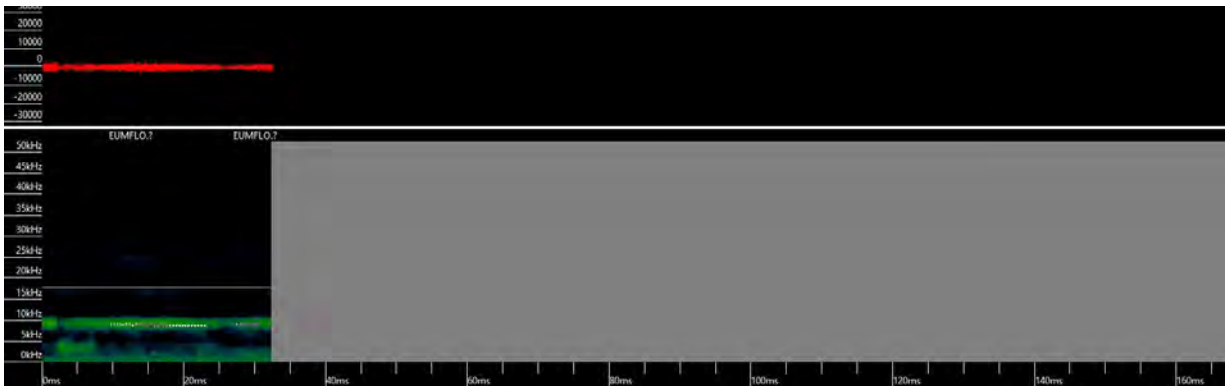


File Name: OLD41E_20250524_065119_000

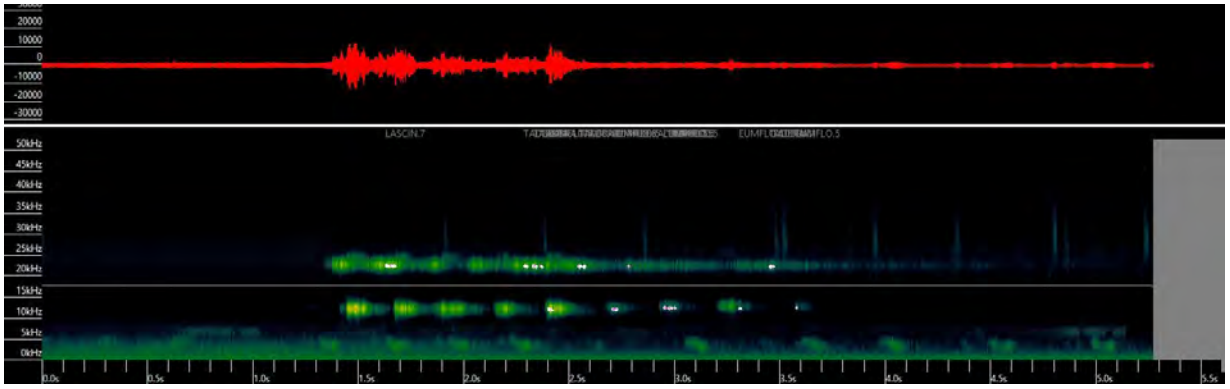
File Name: OLD41E_20250527_045001_000



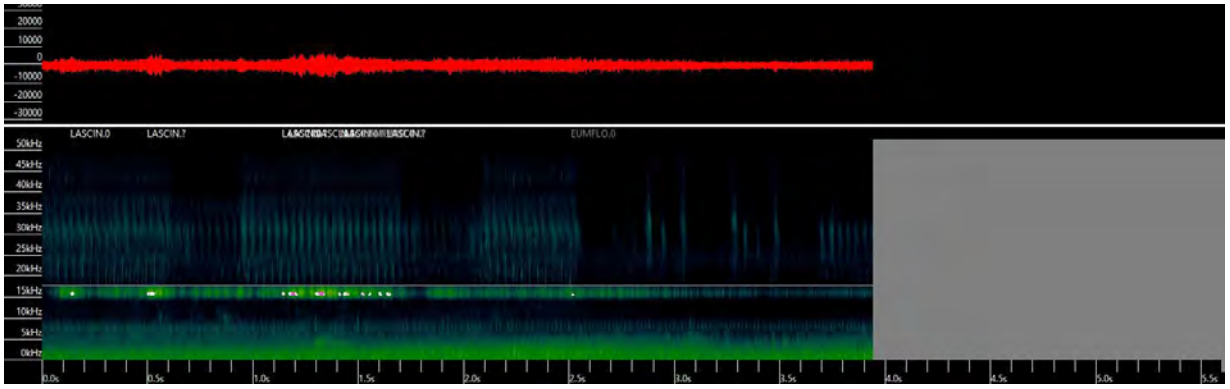
File Name: OLD41E_20250527_052302_000



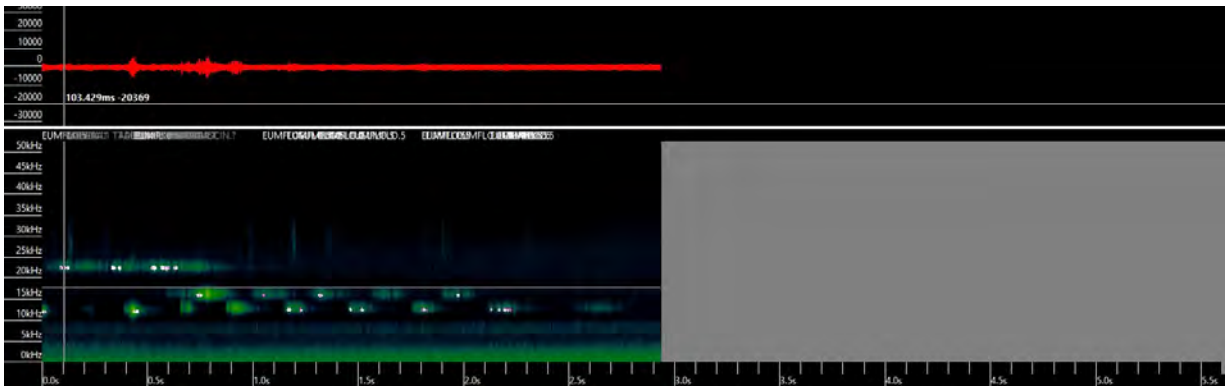
File Name: OLD41E_20250527_061402_000



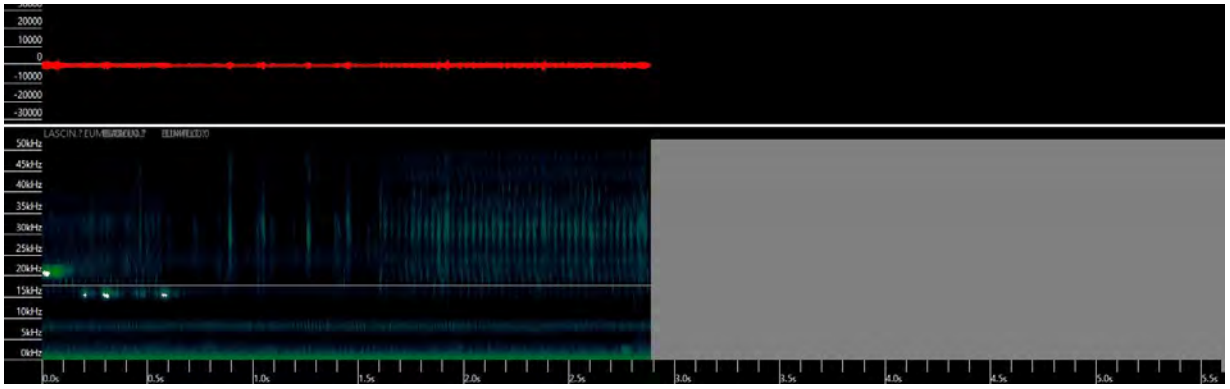
File Name: OLD41E_20250528_063209_000



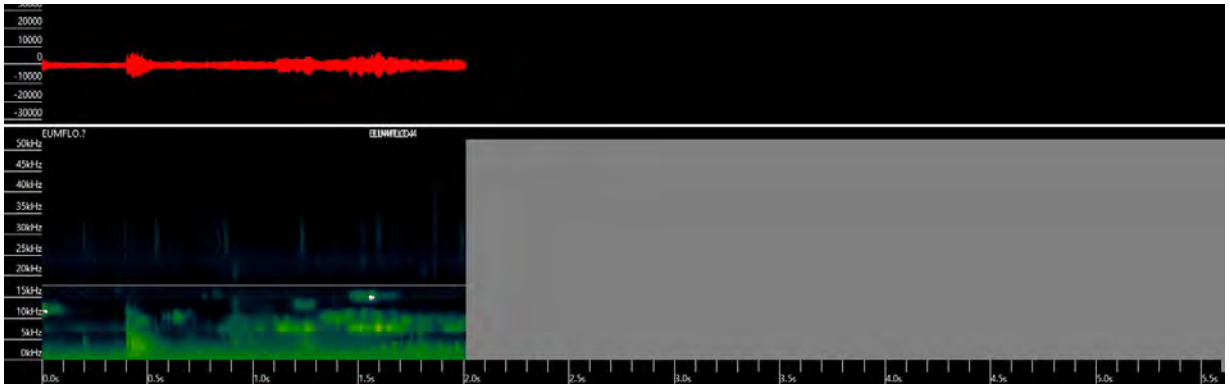
File Name: OLD41E_20250529_054236_000



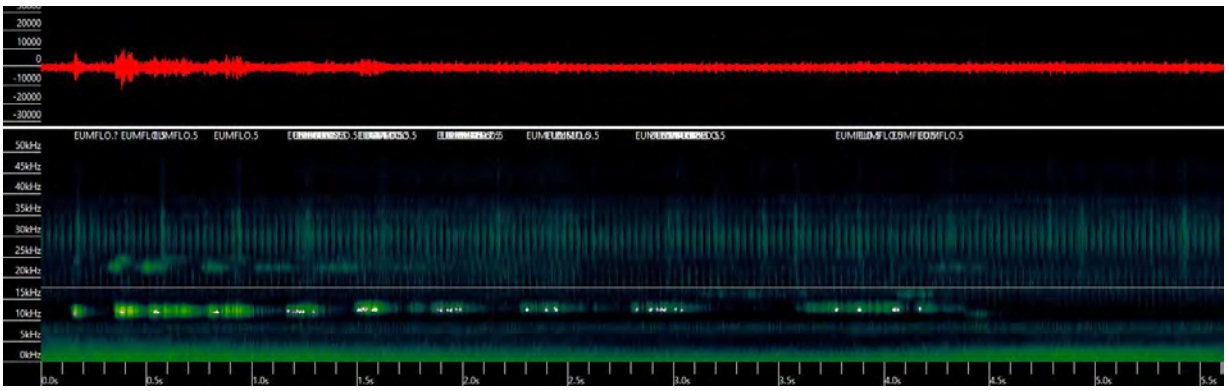
File Name: OLD41E_20250529_065037_000



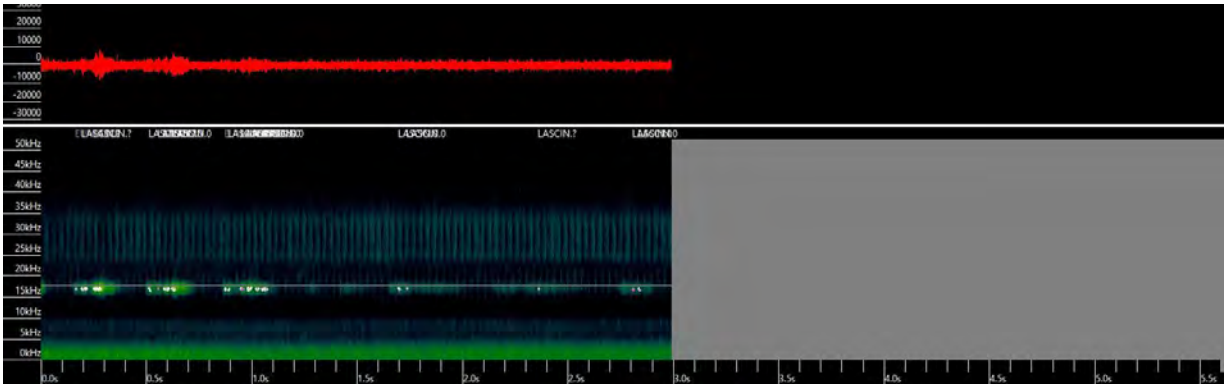
File Name: OLD41E_20250529_065849_000



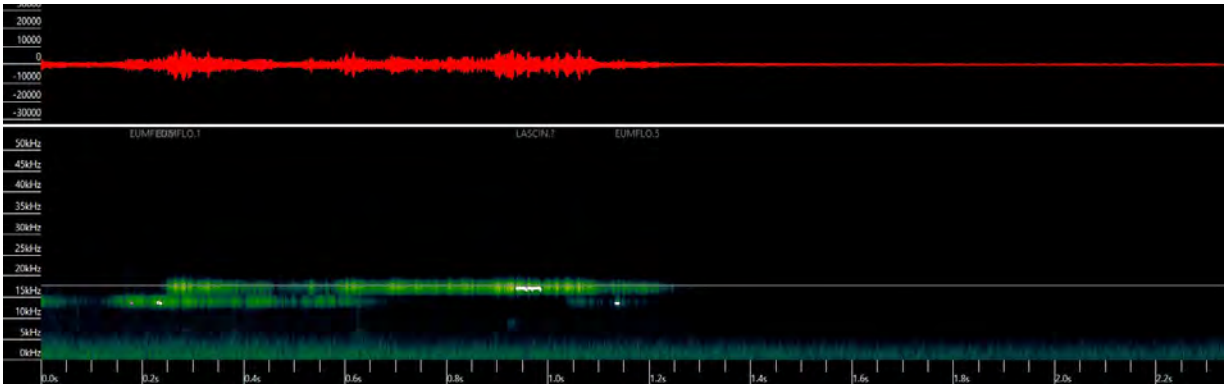
File Name: OLD41E_20250530_062303_000



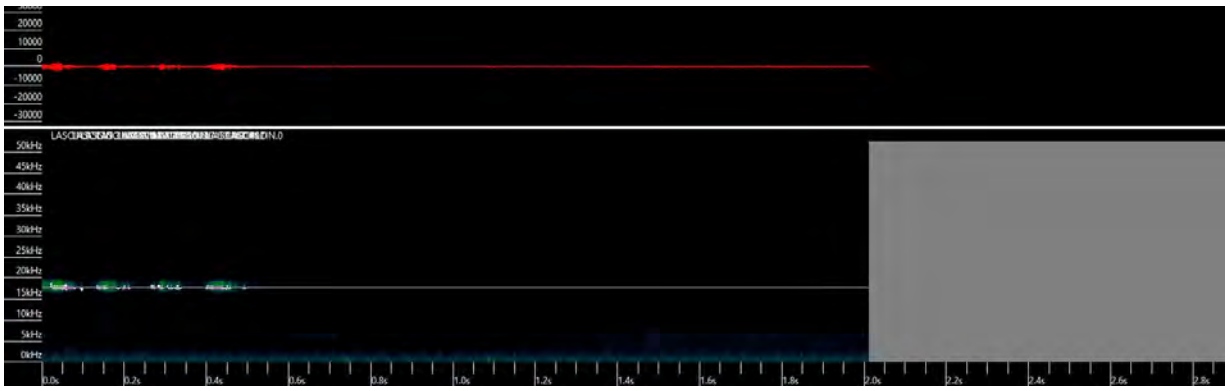
File Name: OLD41E_20250530_063336_000



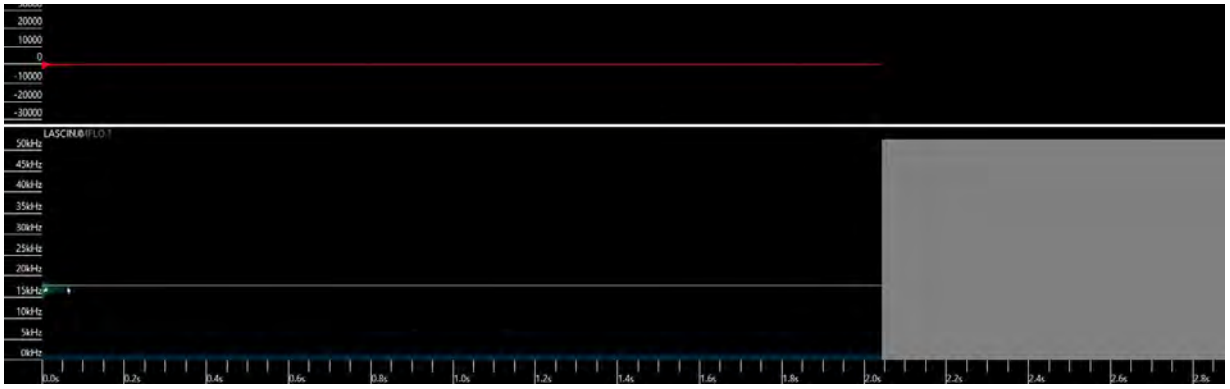
File Name: OLD41E_20250530_063832_000



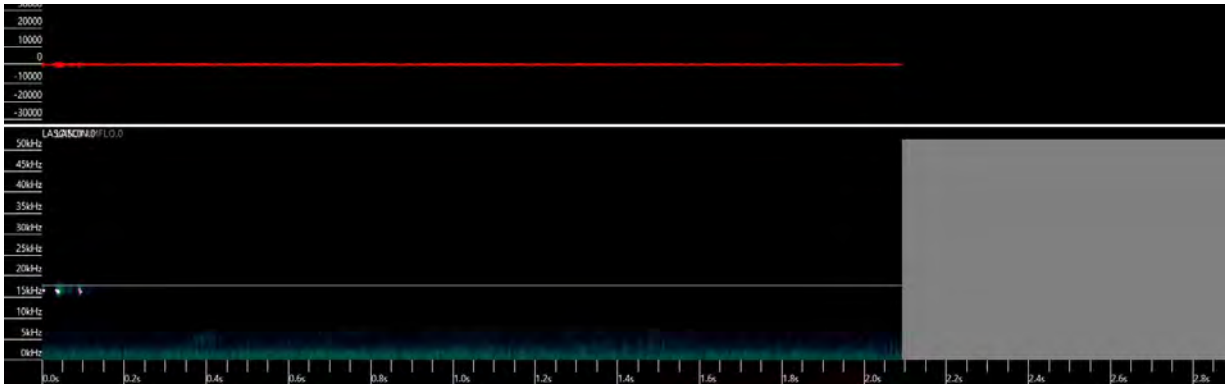
File Name: OLD41F_20250522_201356_000



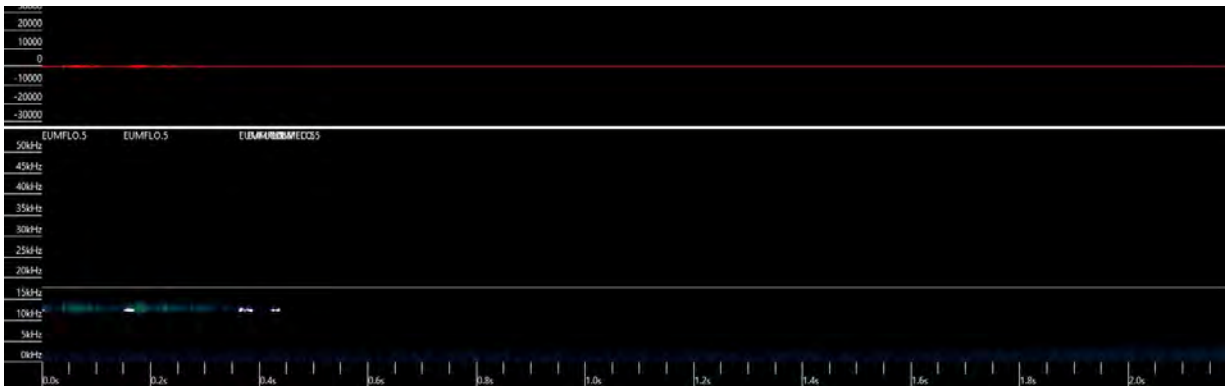
File Name: OLD41F_20250522_211831_000



File Name: OLD41F_20250522_234950_000

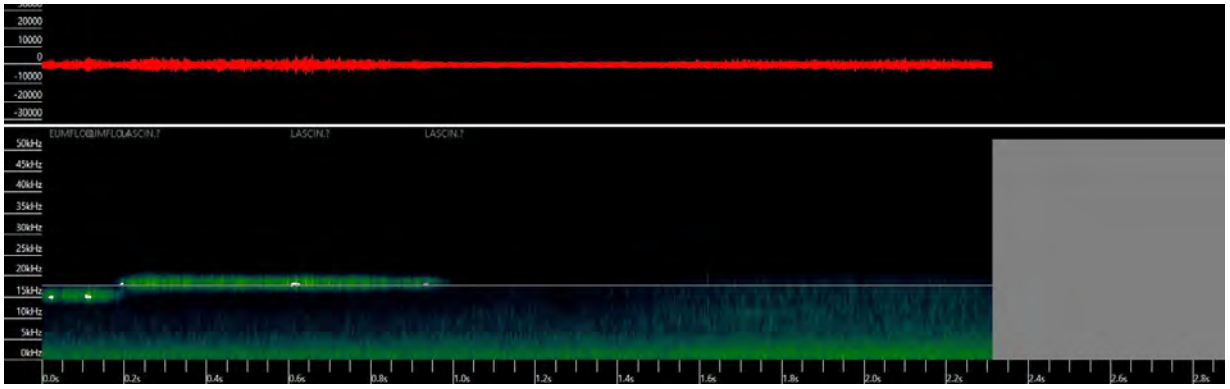


File Name: OLD41F_20250522_235002_000

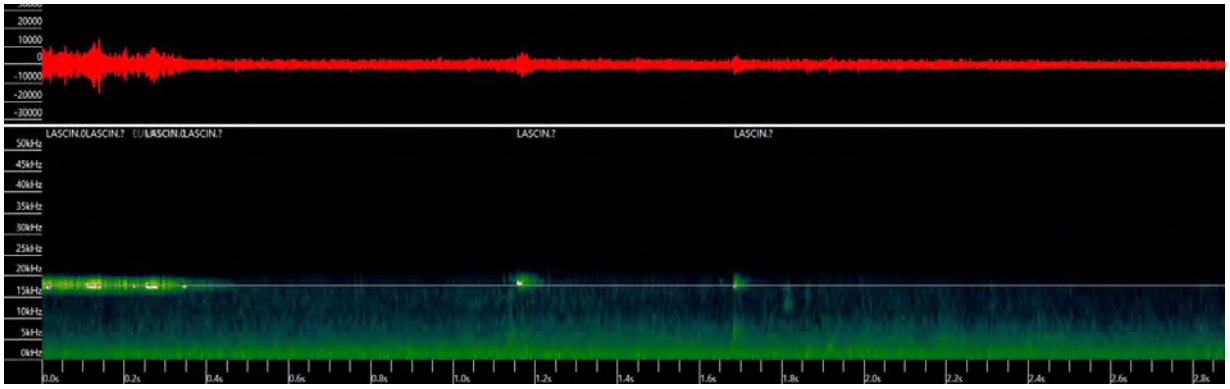


File Name: OLD41F_20250523_011018_000

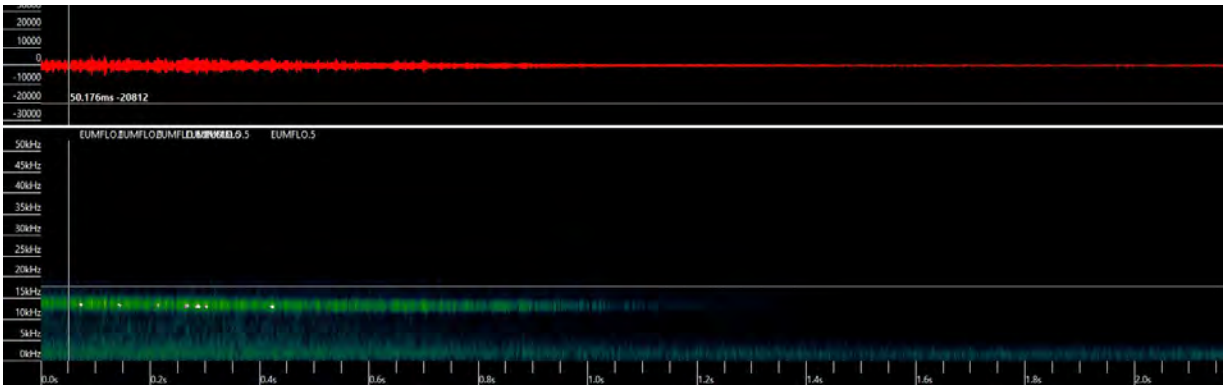
File Name: OLD41F_20250523_022639_000



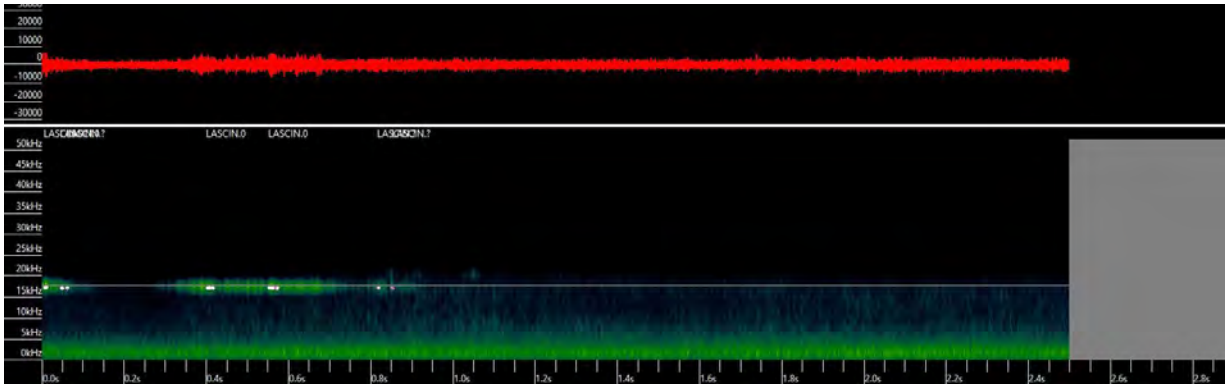
File Name: OLD41F_20250523_044908_000



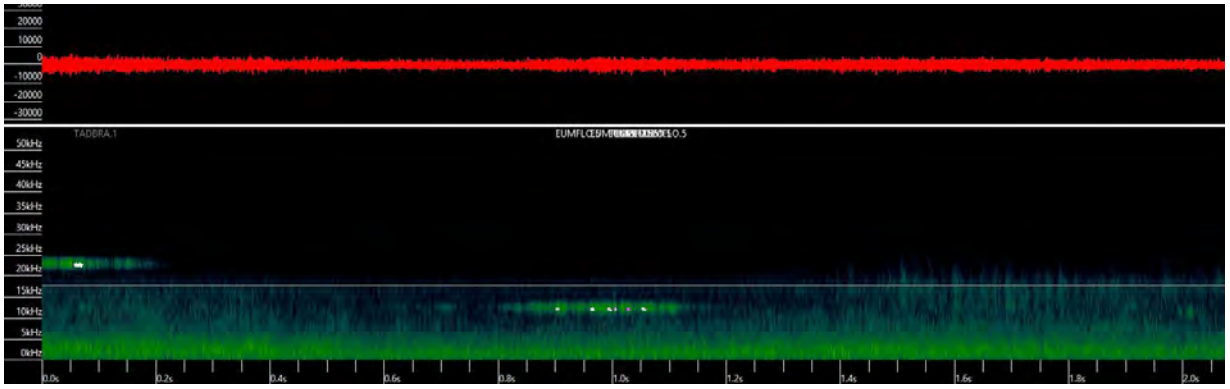
File Name: OLD41F_20250523_054501_000



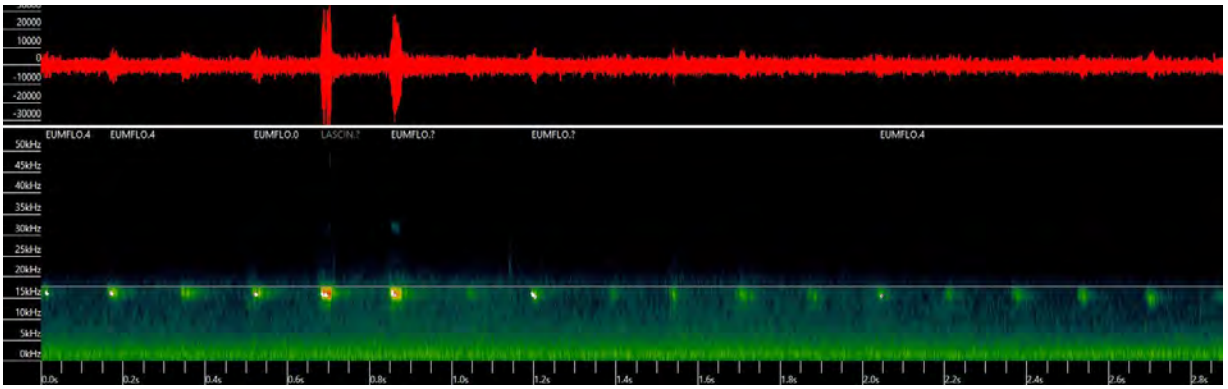
File Name: OLD41F_20250523_055430_000



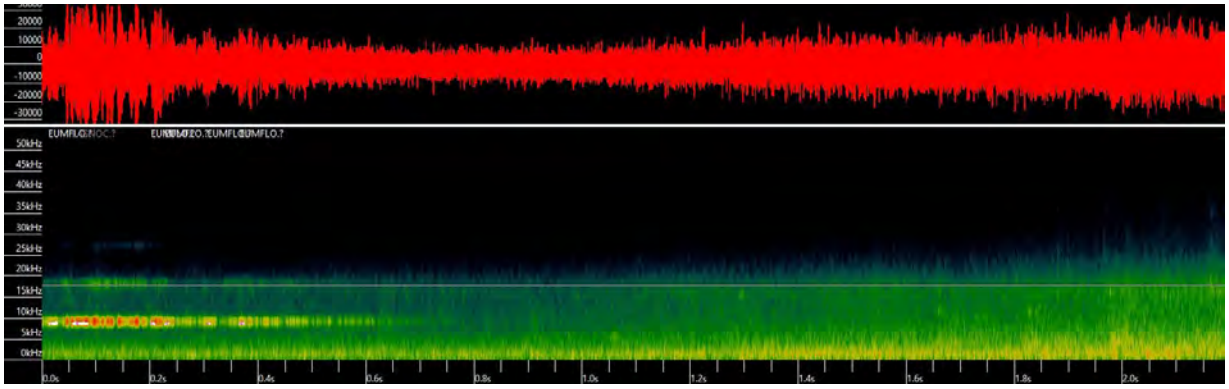
File Name: OLD41F_20250523_060313_000



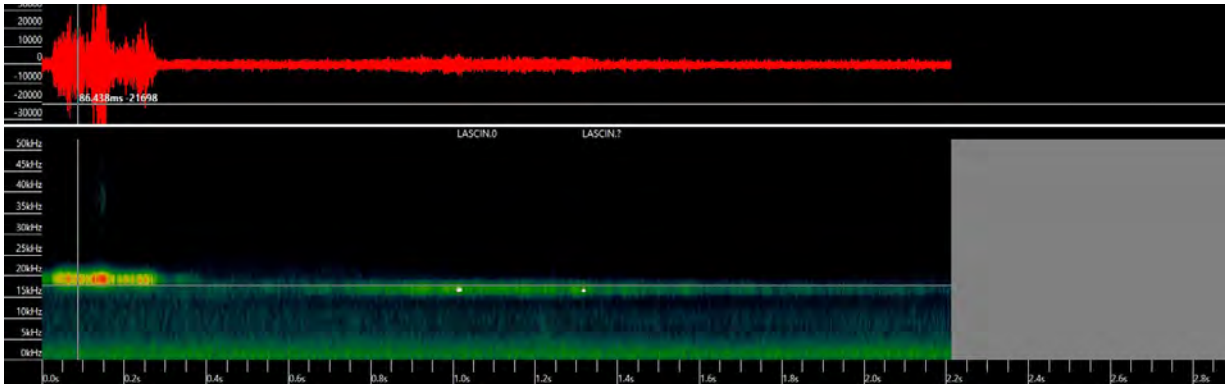
File Name: OLD41F_20250523_062117_000



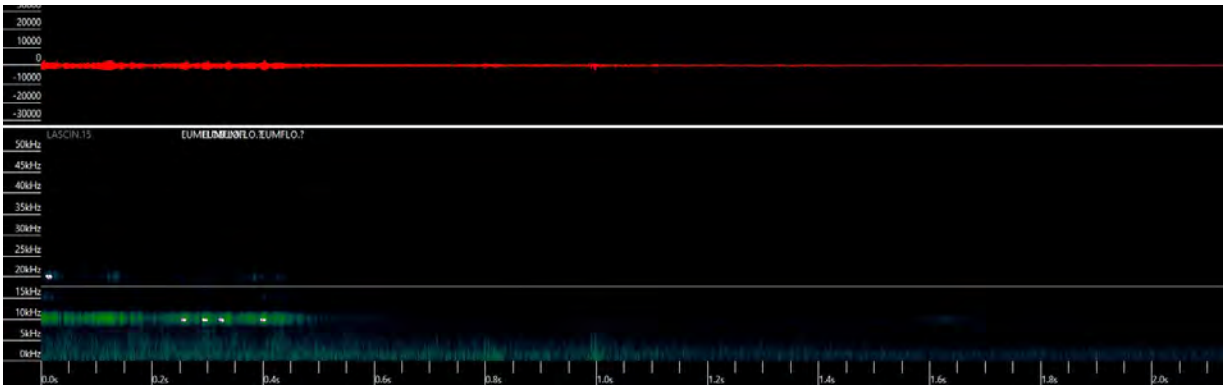
File Name: OLD41F_20250523_063330_000



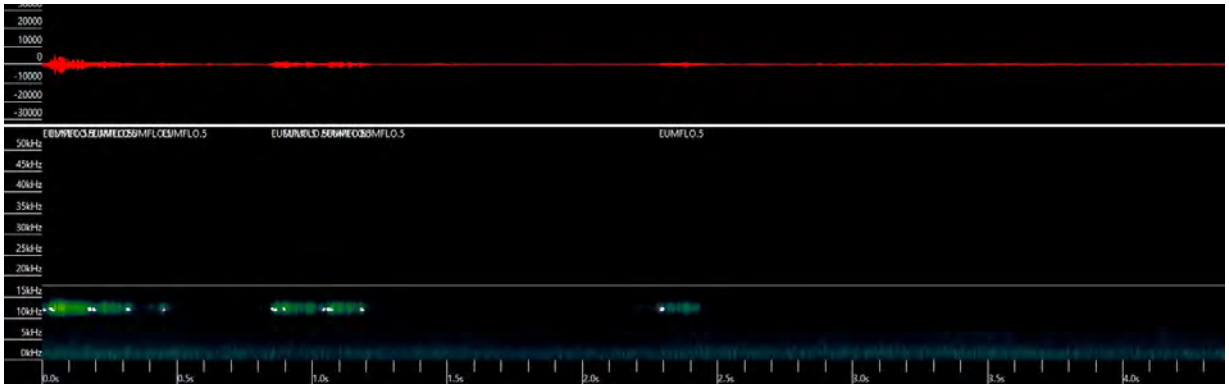
File Name: OLD41F_20250523_065612_000



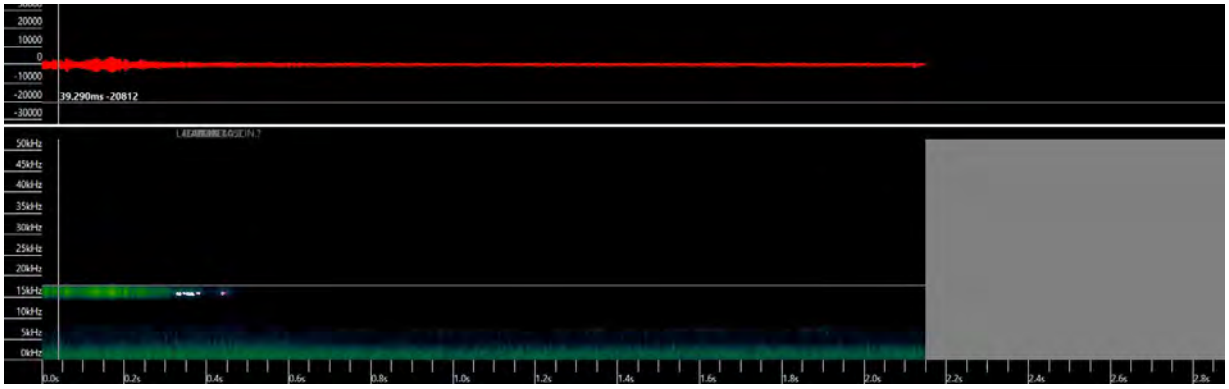
File Name: OLD41F_20250523_195102_000



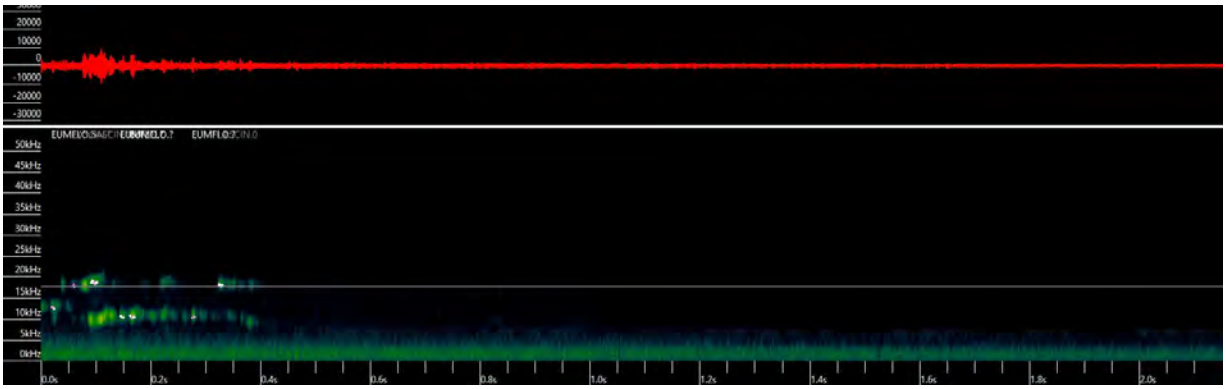
File Name: OLD41F_20250523_200146_000



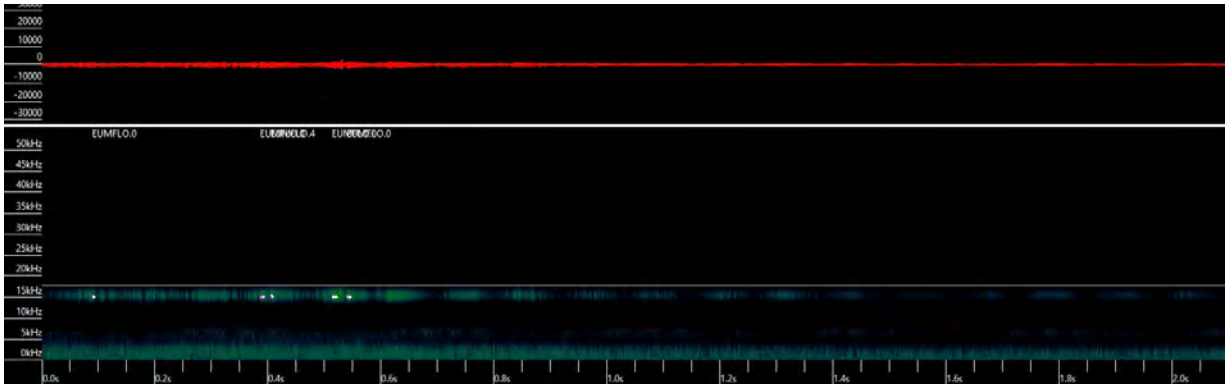
File Name: OLD41F_20250523_221322_000



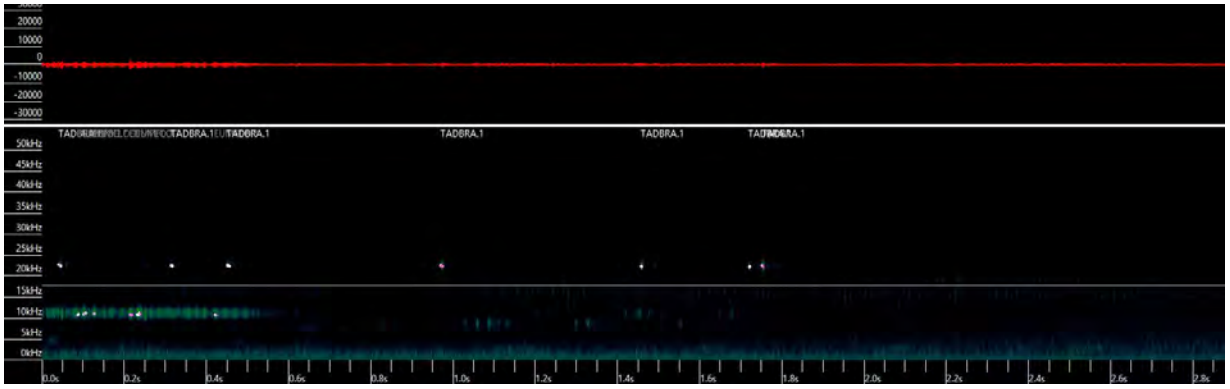
File Name: OLD41F_20250523_222654_000



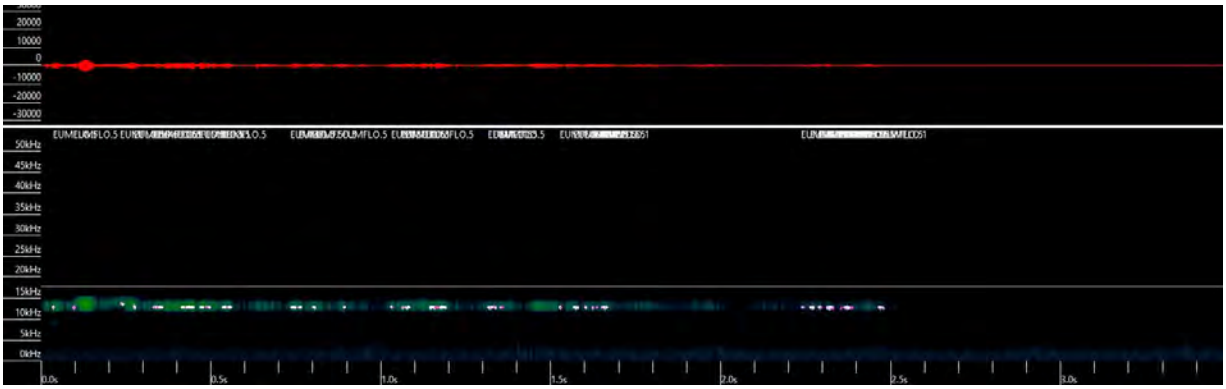
File Name: OLD41F_20250523_230529_000



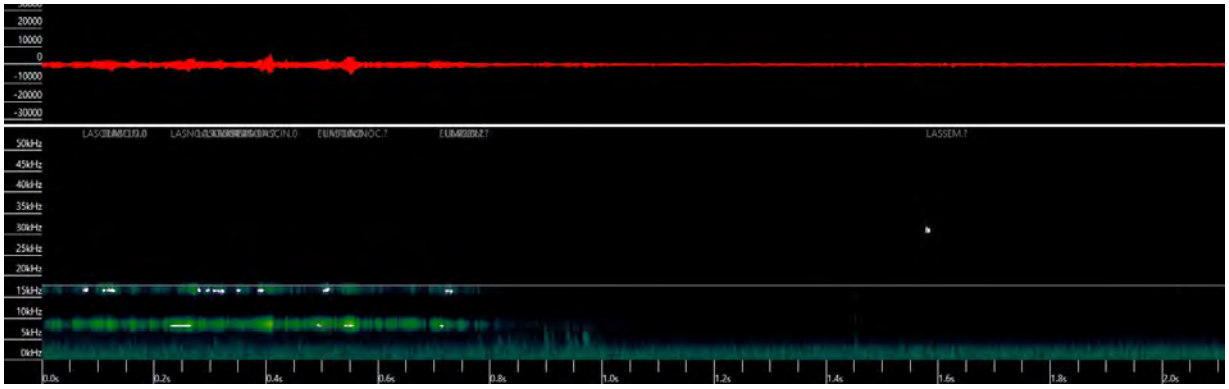
File Name: OLD41F_20250523_235703_000



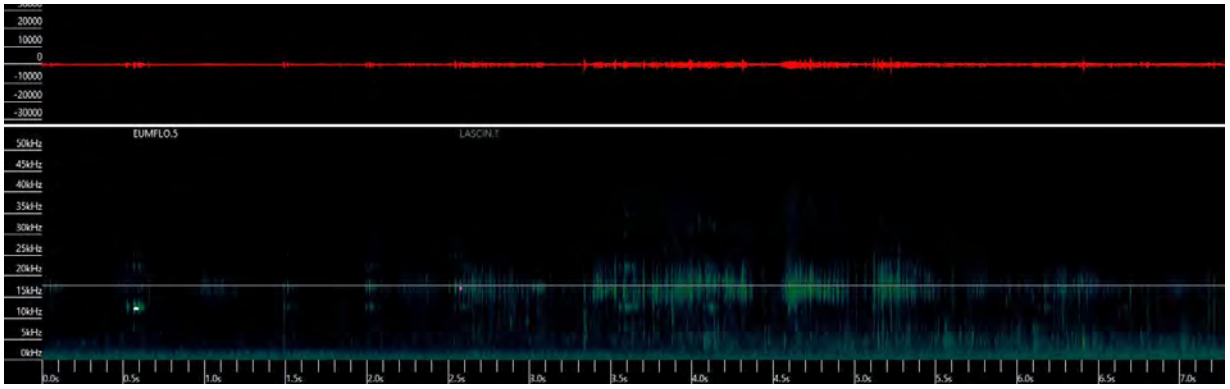
File Name: OLD41F_20250524_060817_000



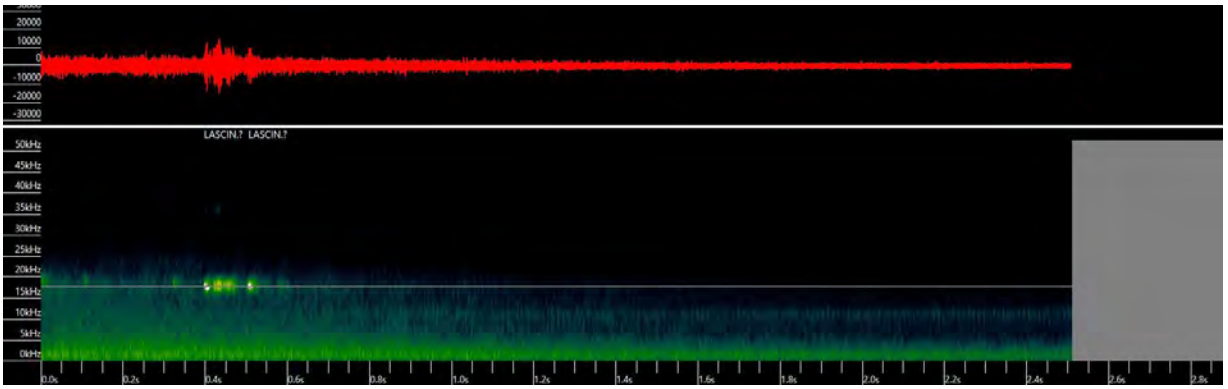
File Name: OLD41F_20250524_062918_000



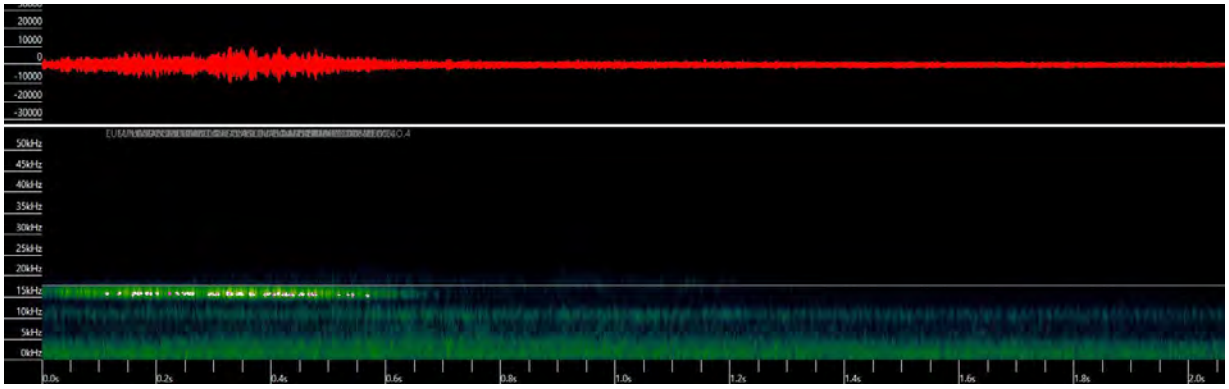
File Name: OLD41F_20250524_063101_000



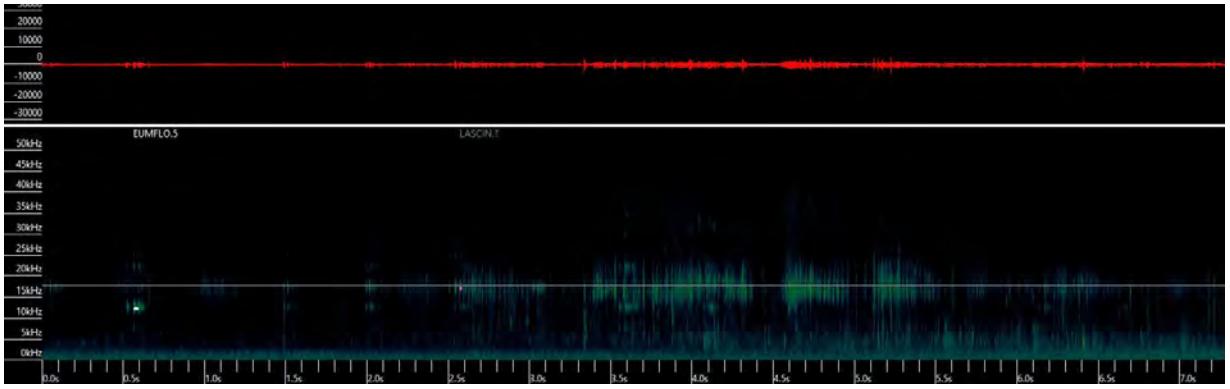
File Name: OLD41F_20250524_064020_000



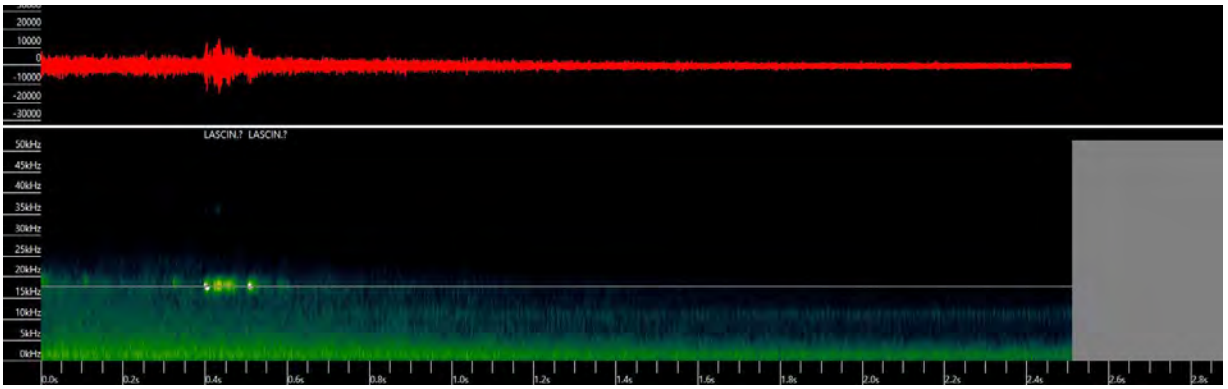
File Name: OLD41F_20250524_200812_000



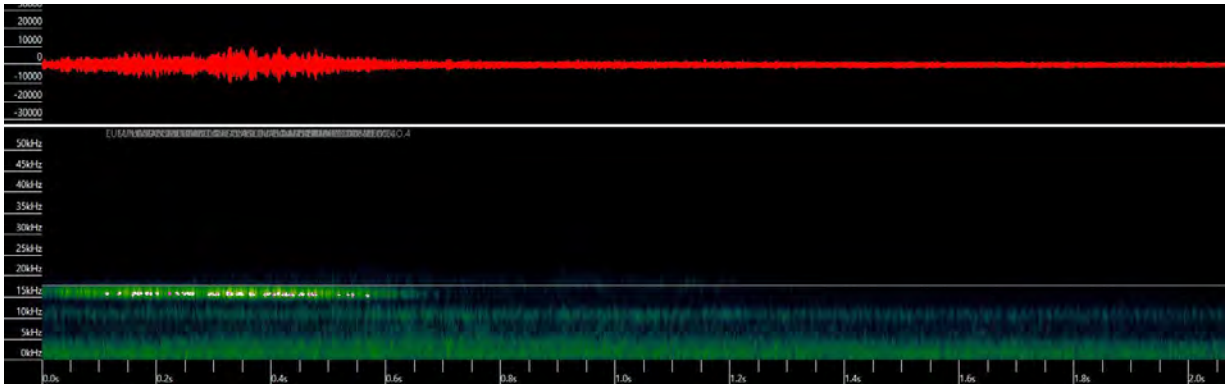
File Name: OLD41F_20250524_203828_000



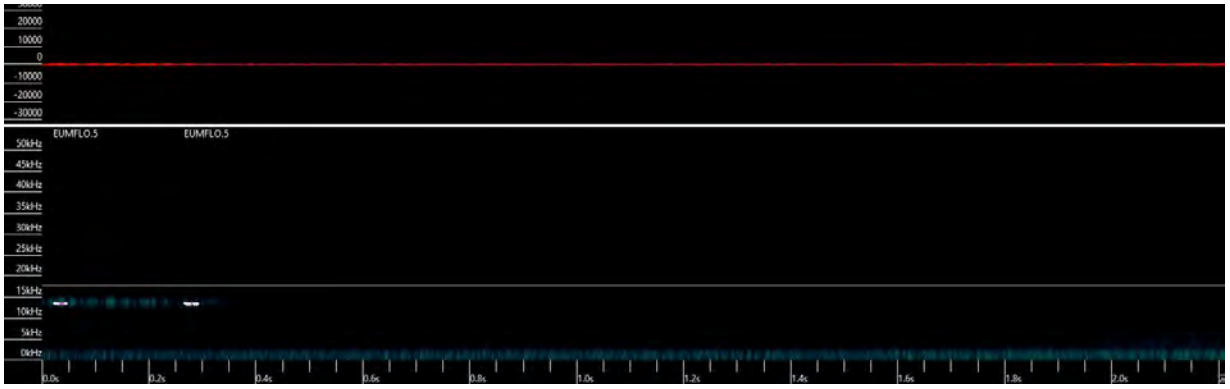
File Name: OLD41F_20250524_064020_000



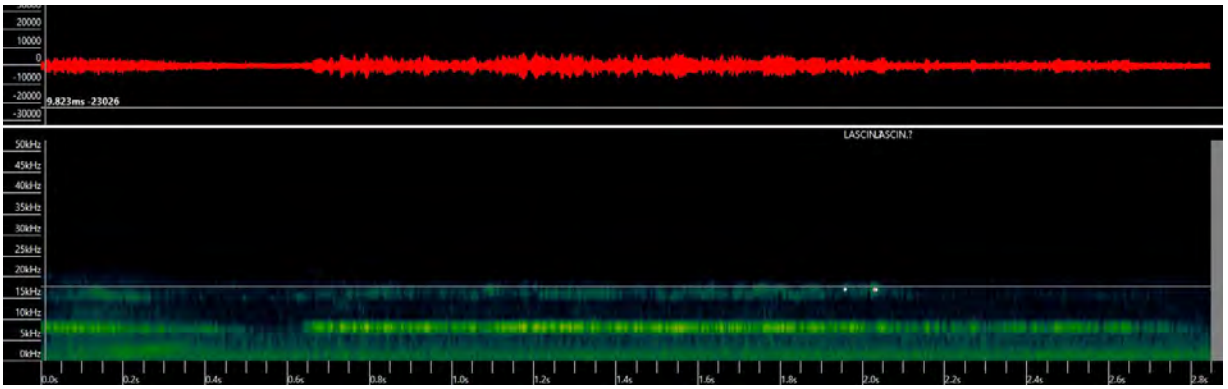
File Name: OLD41F_20250524_200812_000



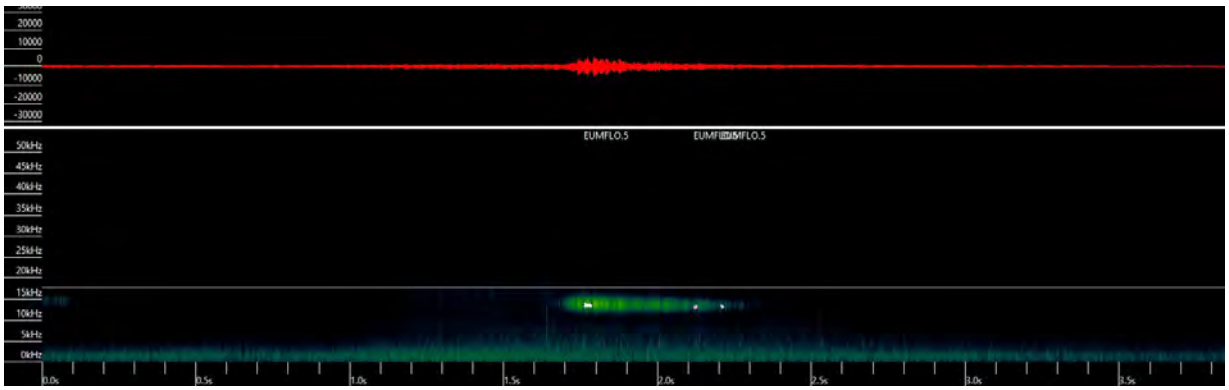
File Name: OLD41F_20250524_203828_000



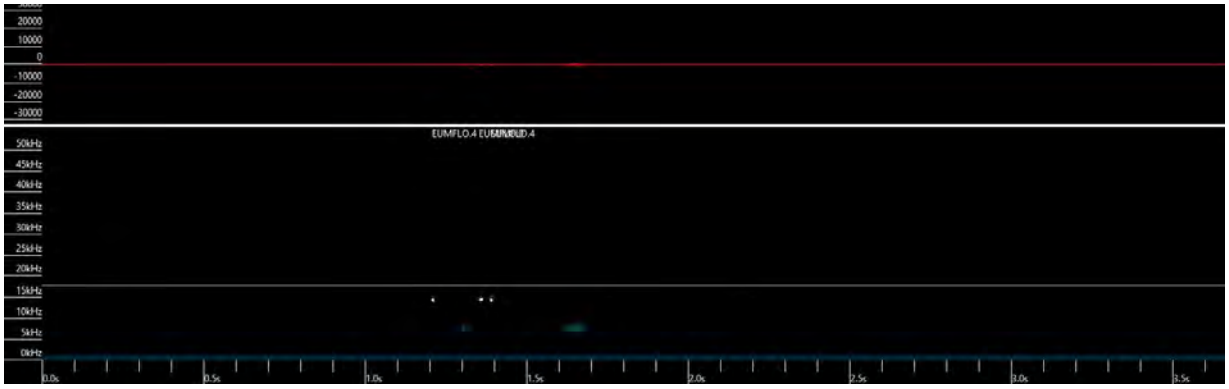
File Name: OLD41F_20250524_214646_000



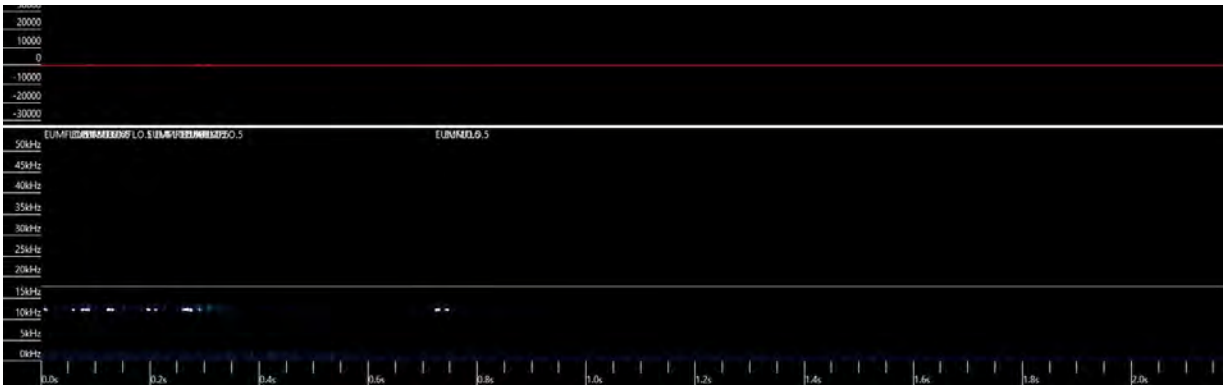
File Name: OLD41F_20250524_220222_000



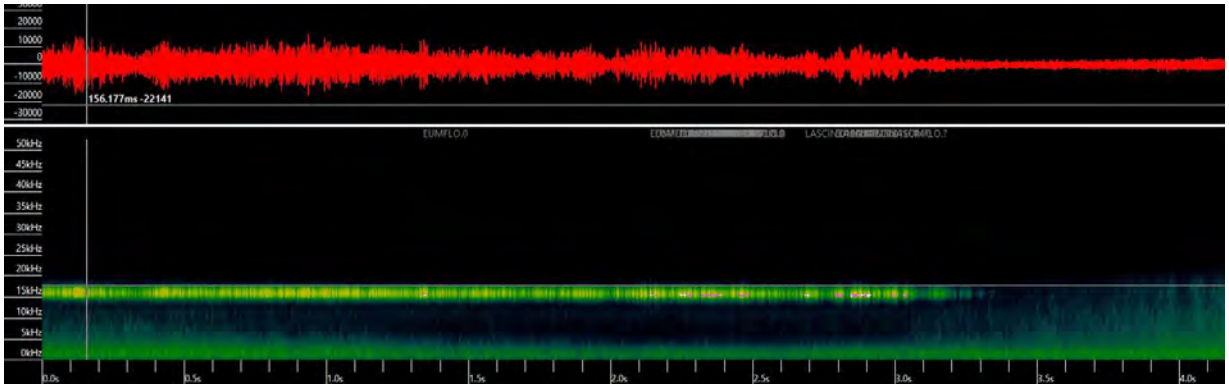
File Name: OLD41F_20250524_232041_000



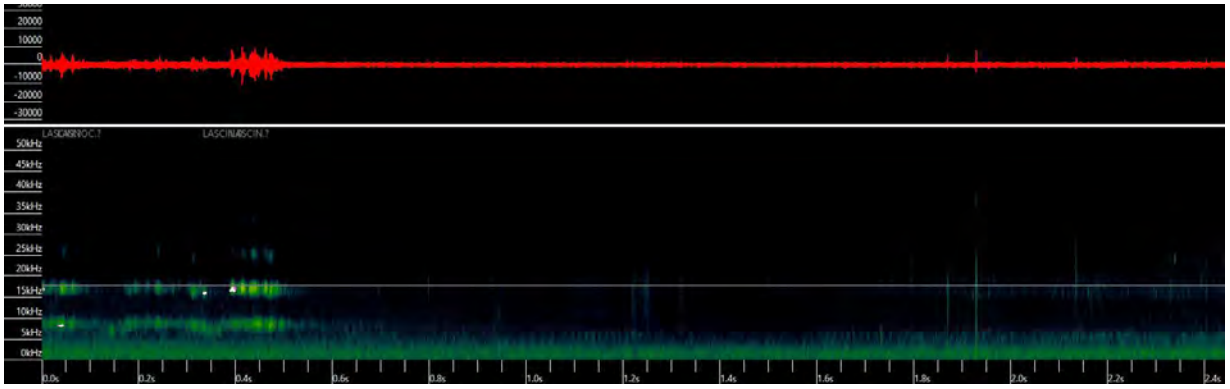
File Name: OLD41F_20250525_005710_000



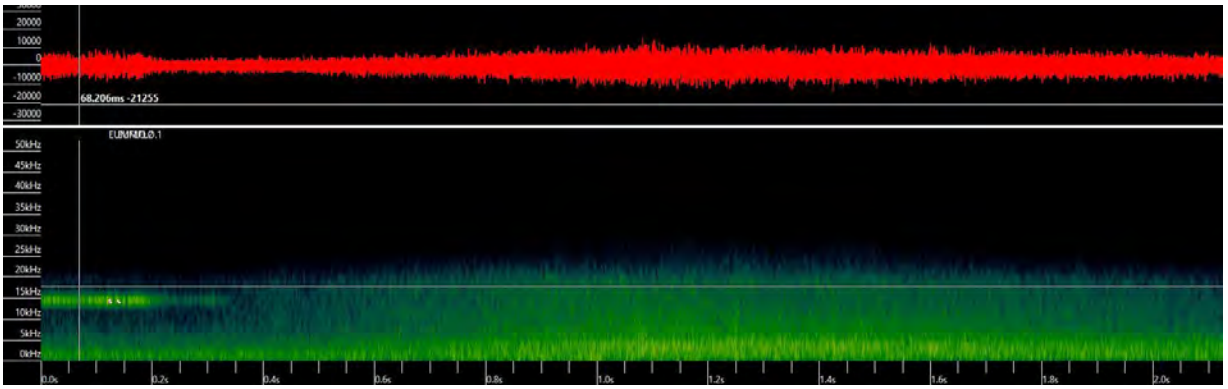
File Name: OLD41F_20250525_015610_000



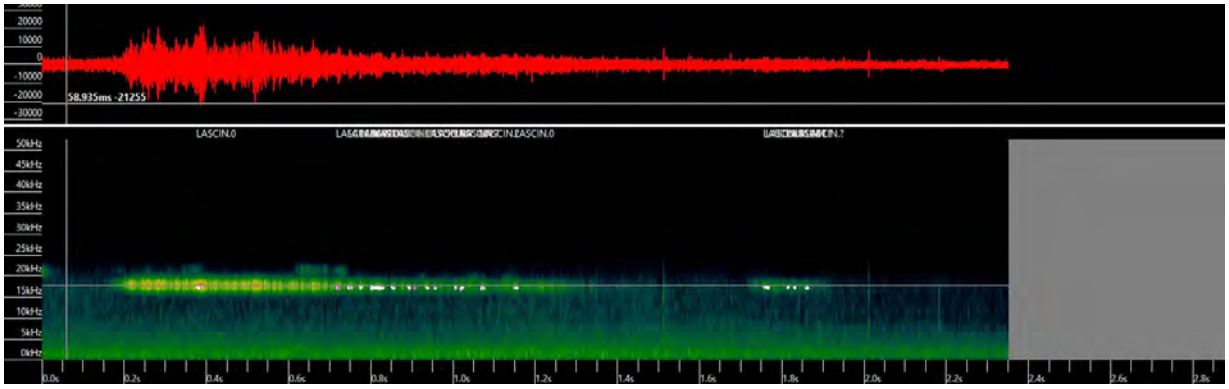
File Name: OLD41F_20250525_202150_000



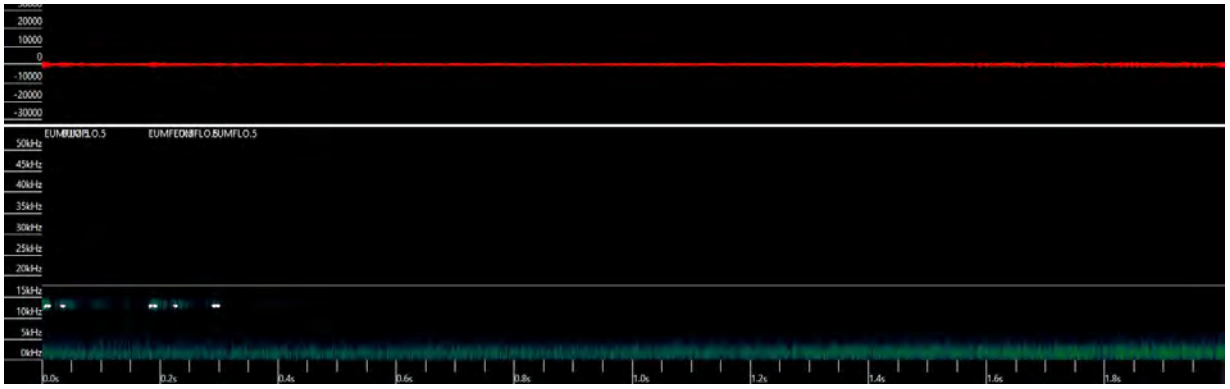
File Name: OLD41F_20250525_211916_000



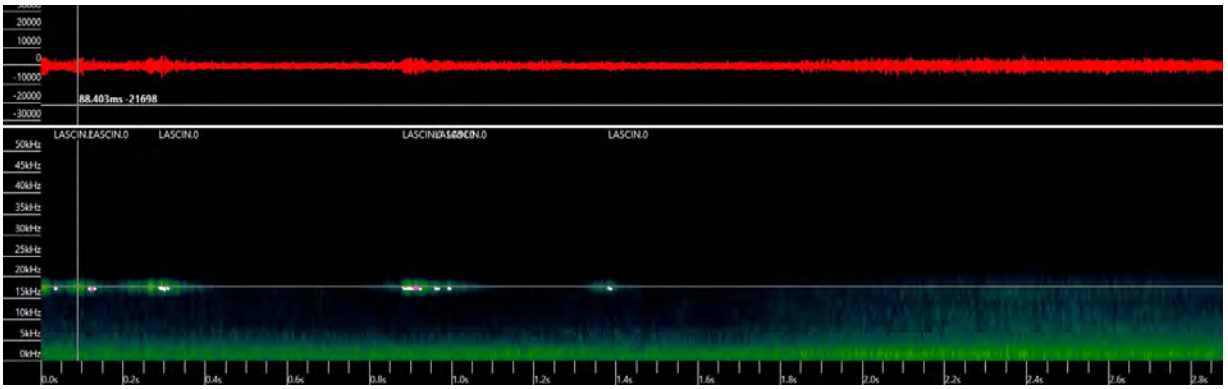
File Name: OLD41F_20250525_212449_000



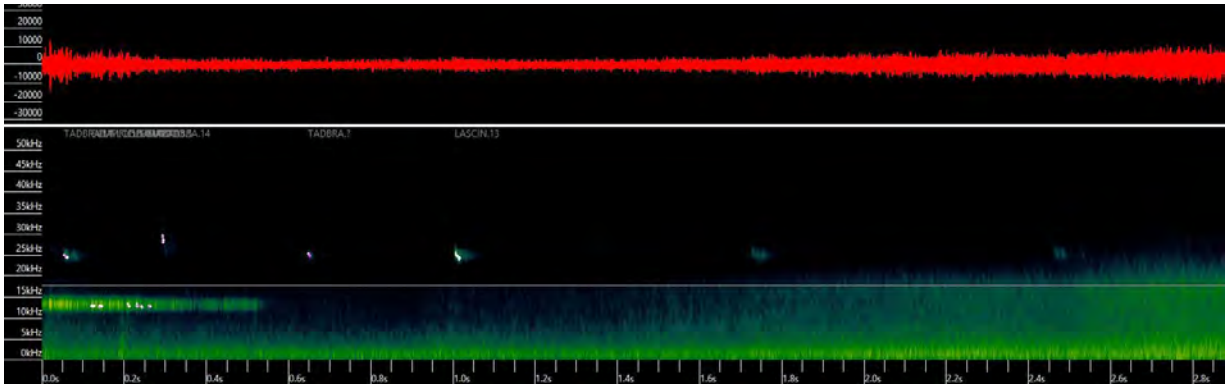
File Name: OLD41F_20250525_220010_000



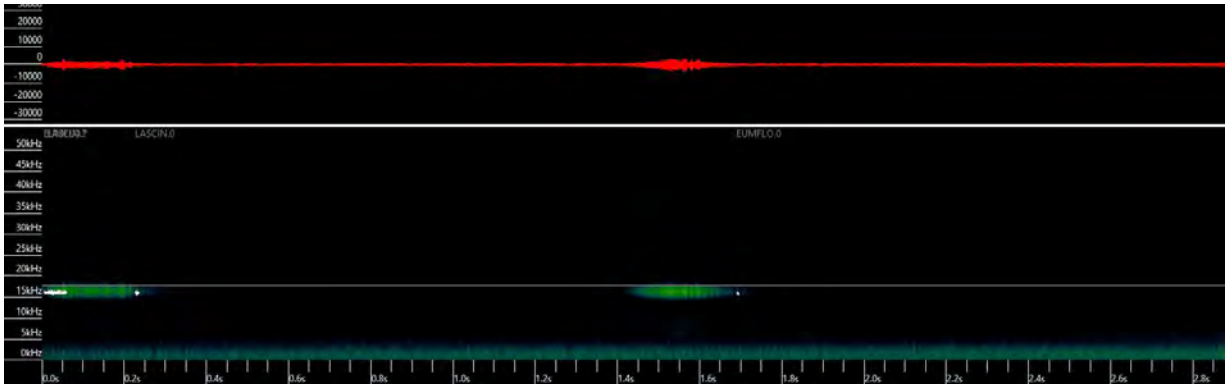
File Name: OLD41F_20250525_223712_000



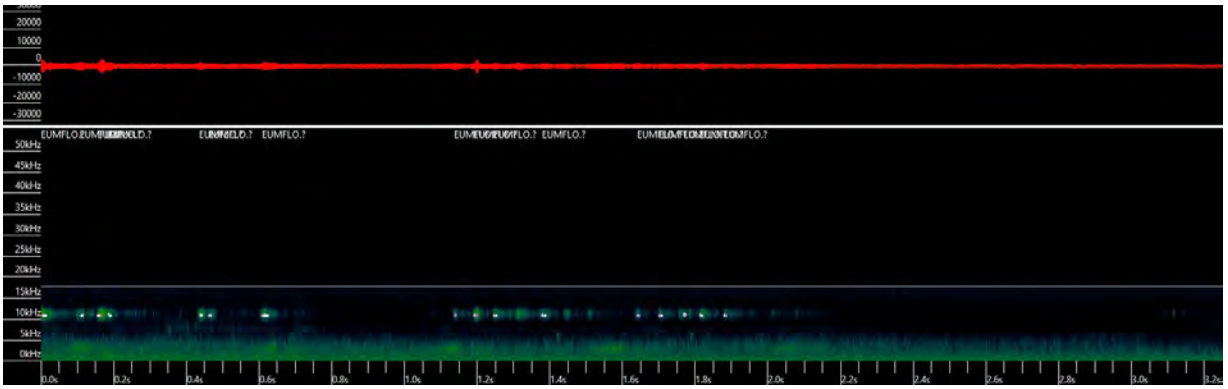
File Name: OLD41F_20250525_230953_000



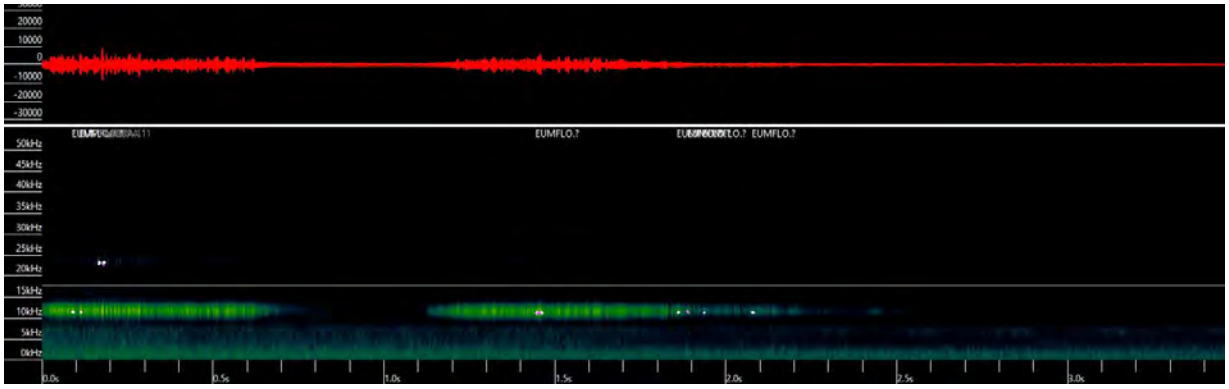
File Name: OLD41F_20250526_053723_000



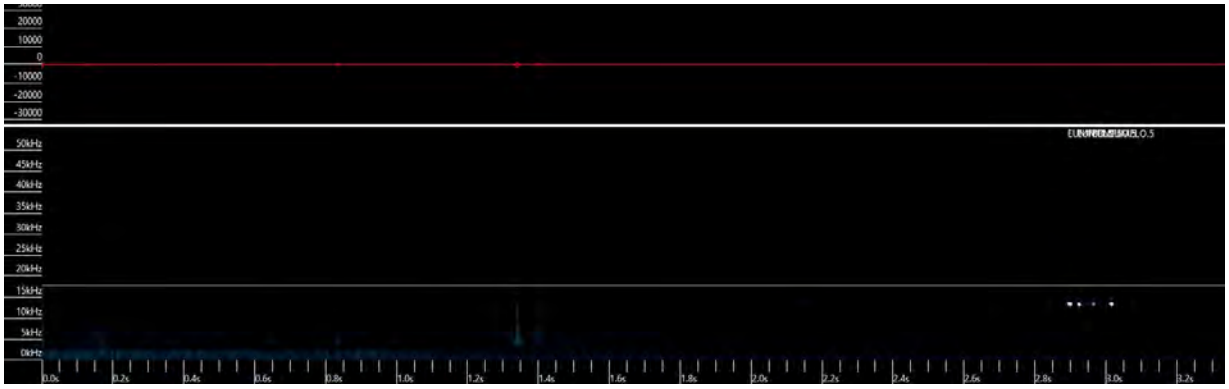
File Name: OLD41F_20250526_060001_000



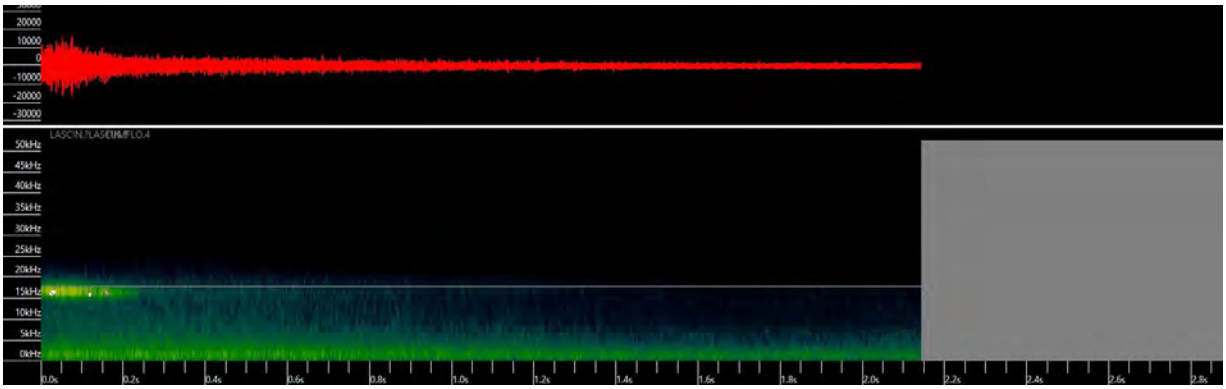
File Name: OLD41F_20250526_062946_000



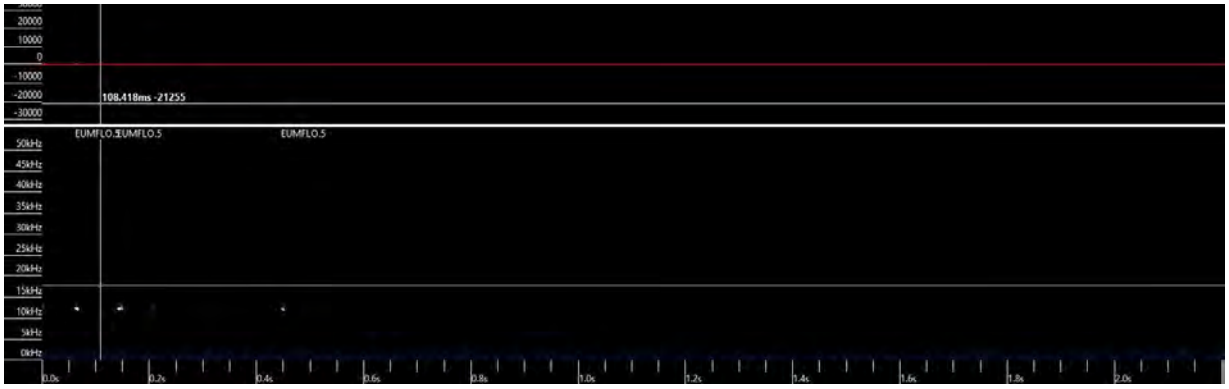
File Name: OLD41F_20250526_211635_000



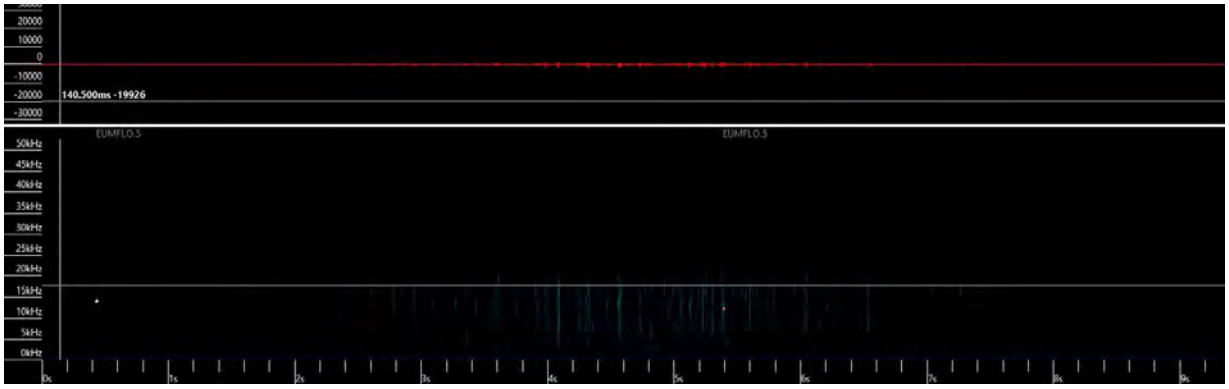
File Name: OLD41F_20250526_212211_000



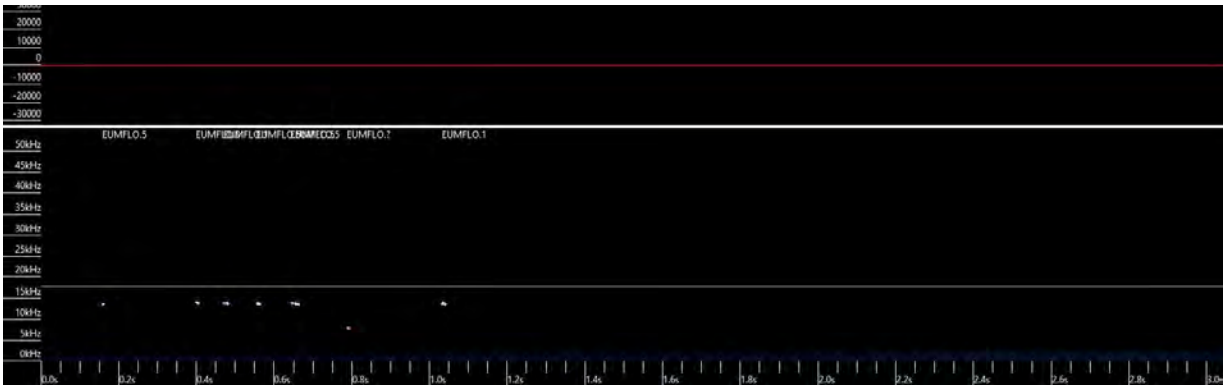
File Name: OLD41F_20250526_214441_000



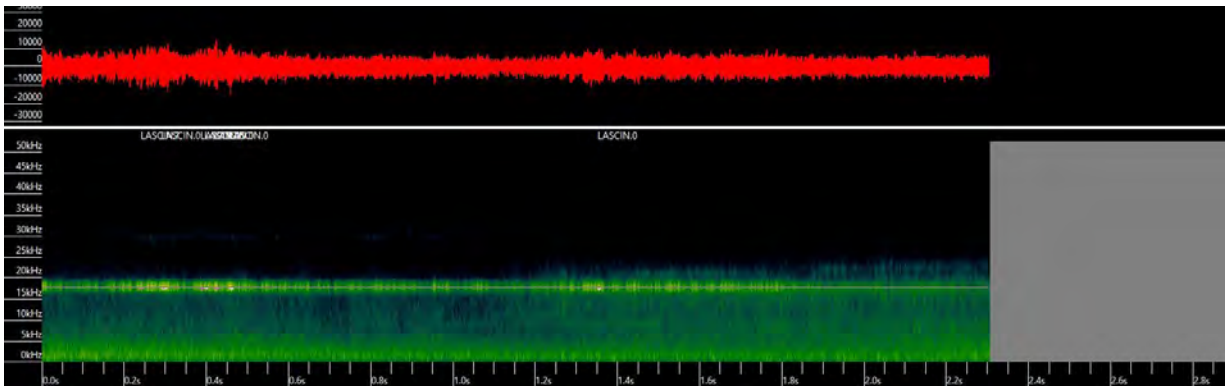
File Name: OLD41F_20250526_214441_000



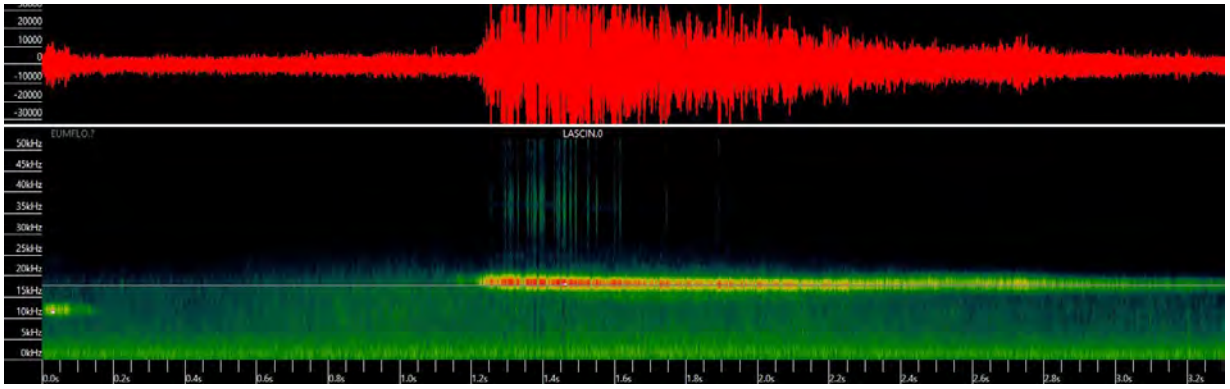
File Name: OLD41F_20250527_053745_000



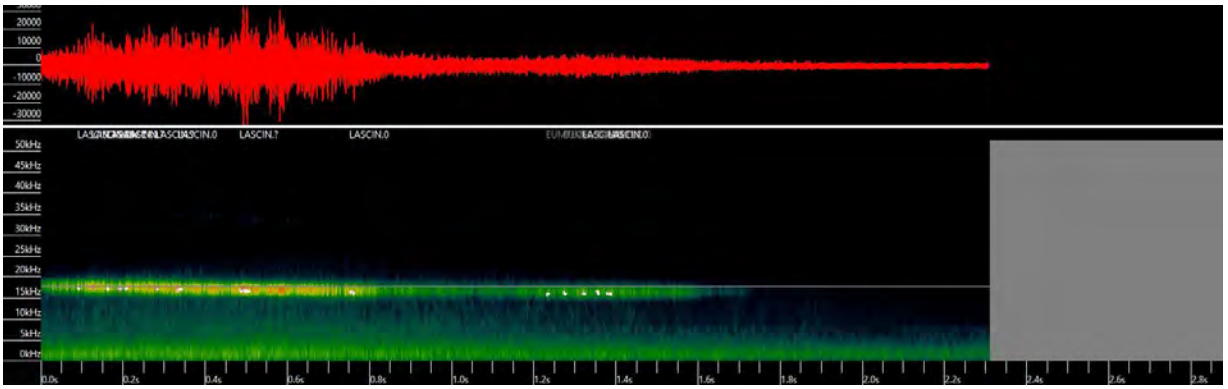
File Name: OLD41F_20250527_055520_000



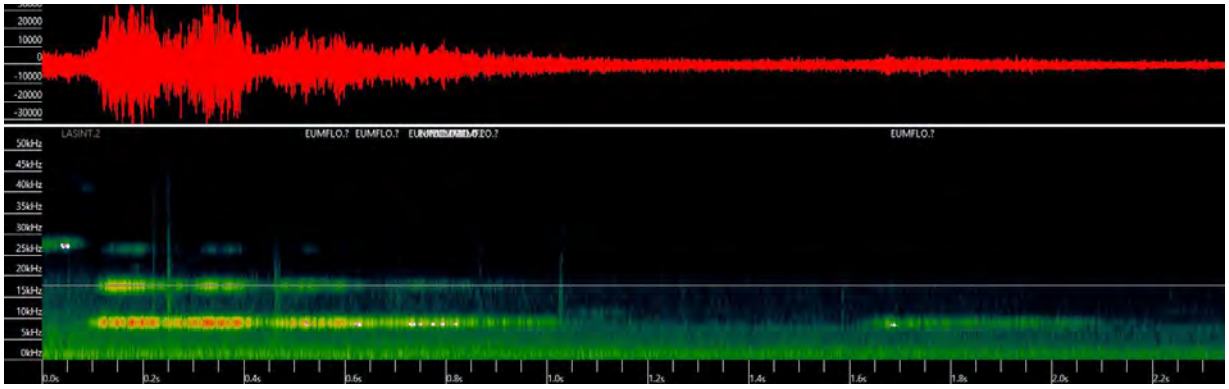
File Name: OLD41F_20250527_064113_000



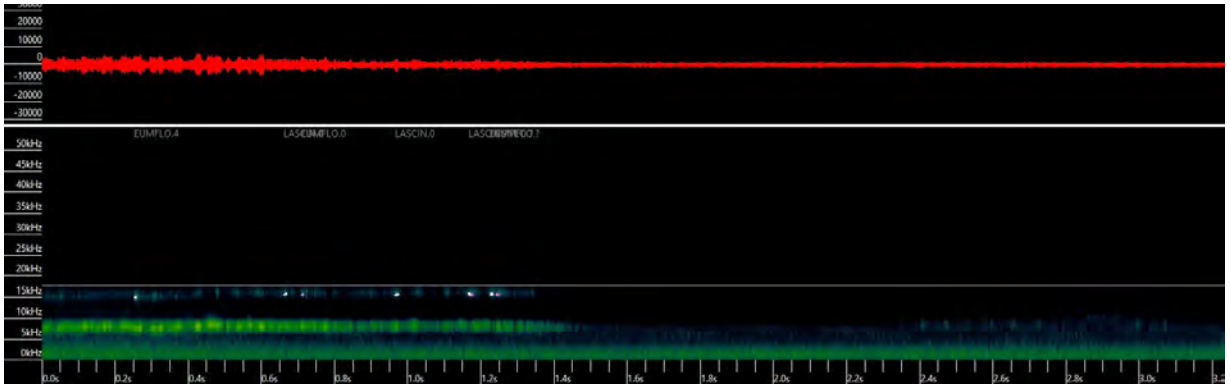
File Name: OLD41F_20250527_064757_000



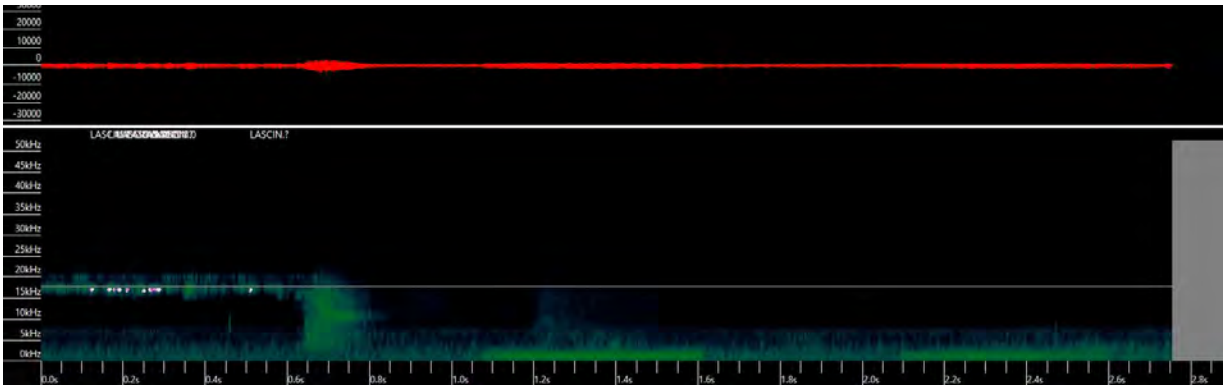
File Name: OLD41F_20250527_204836_000



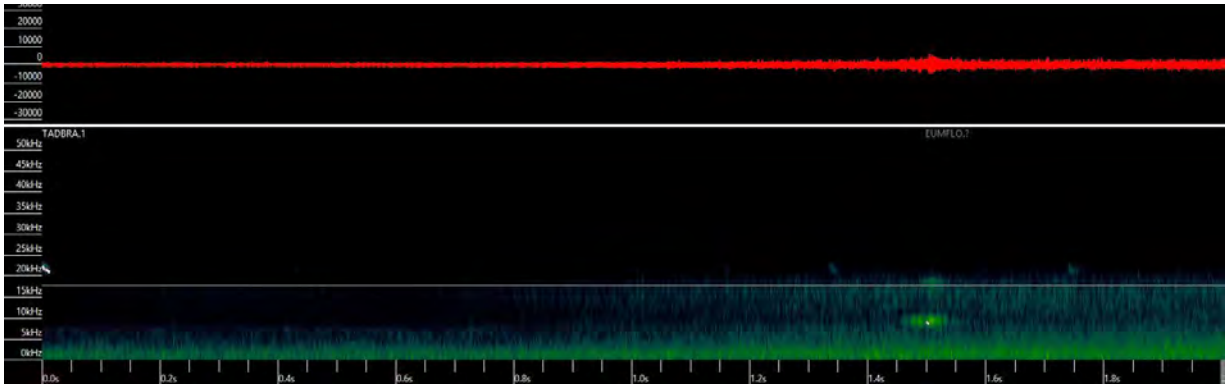
File Name: OLD41F_20250527_205306_000



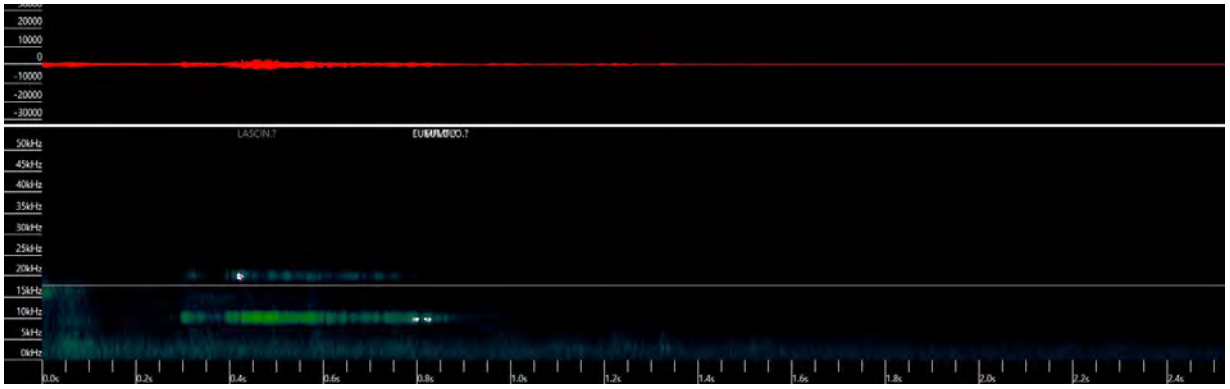
File Name: OLD41F_20250527_215103_000



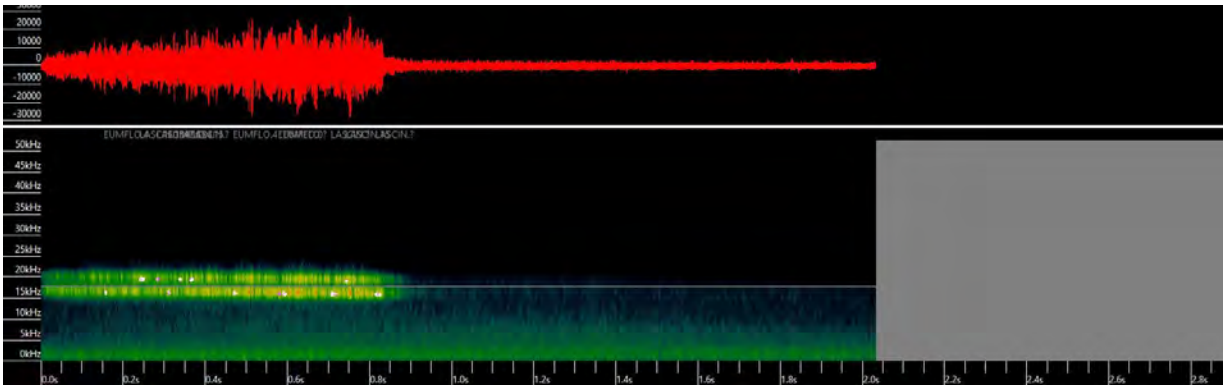
File Name: OLD41F_20250527_232539_000



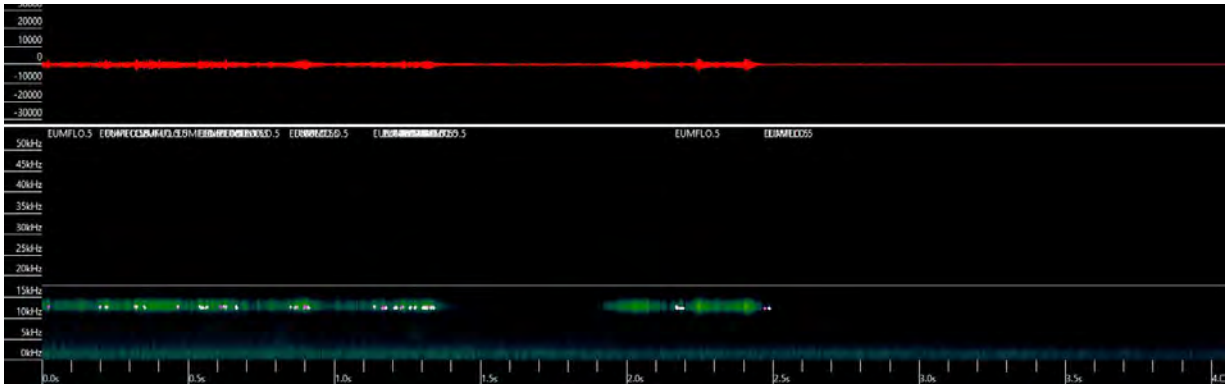
File Name: OLD41F_20250528_000232_000



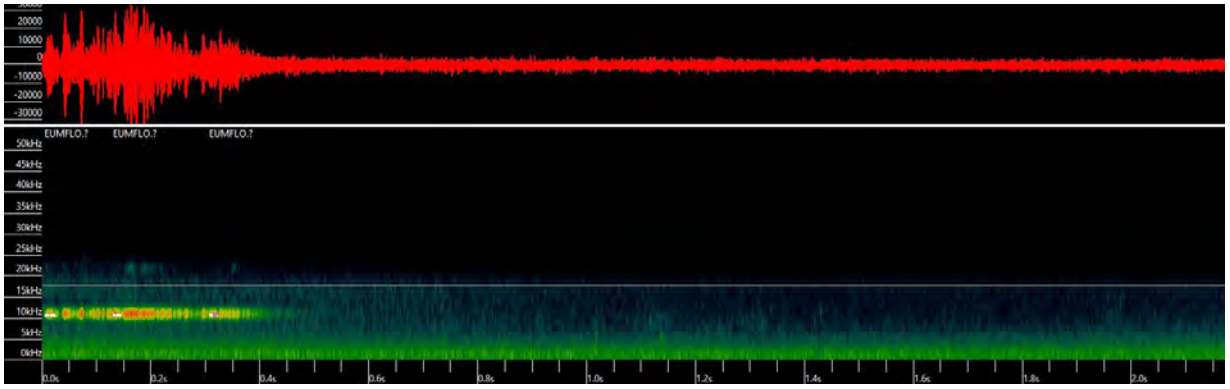
File Name: OLD41F_20250528_021757_000



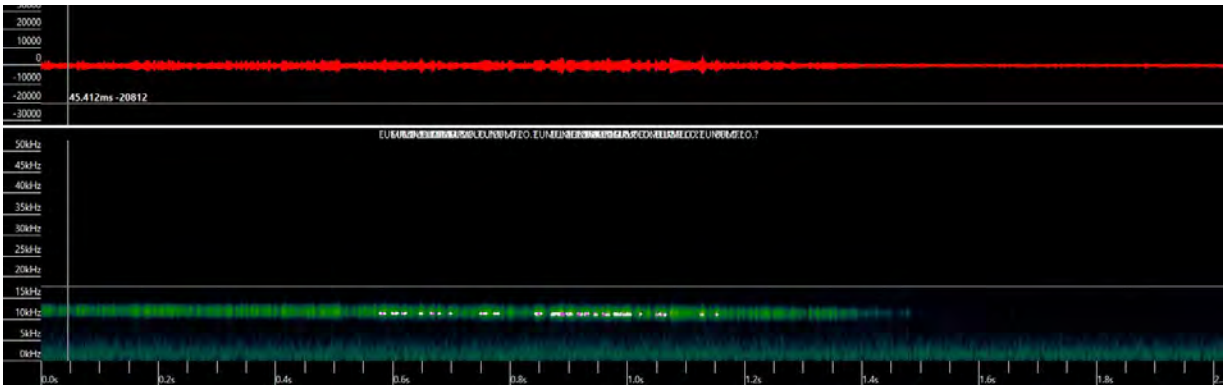
File Name: OLD41F_20250528_051608_000



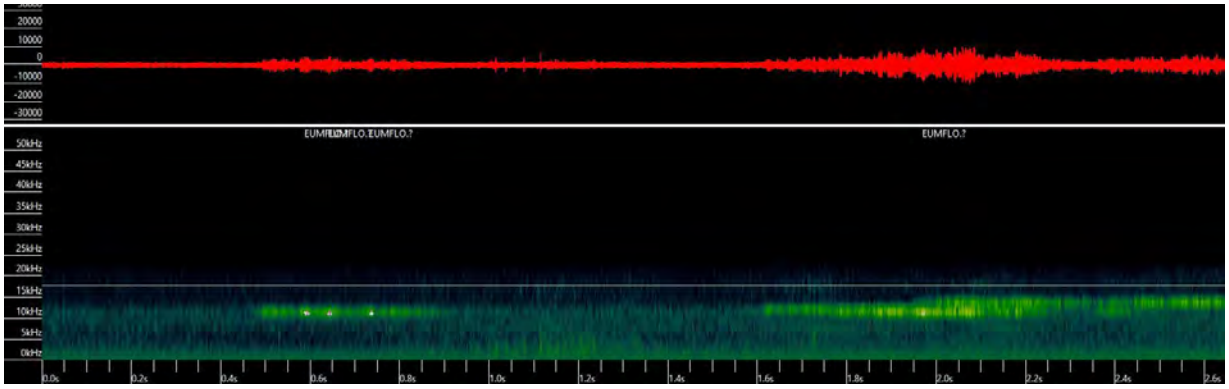
File Name: OLD41F_20250528_053243_000



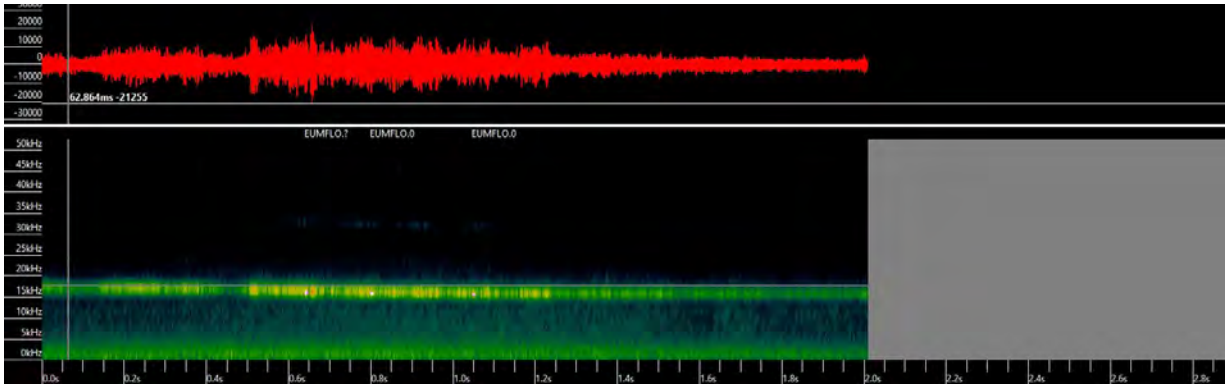
File Name: OLD41F_20250528_064505_000



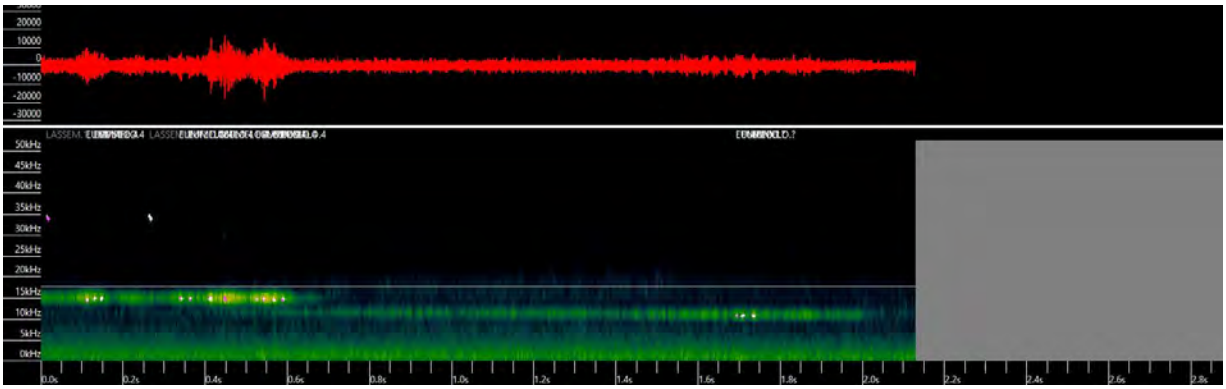
File Name: OLD41F_20250528_065037_000



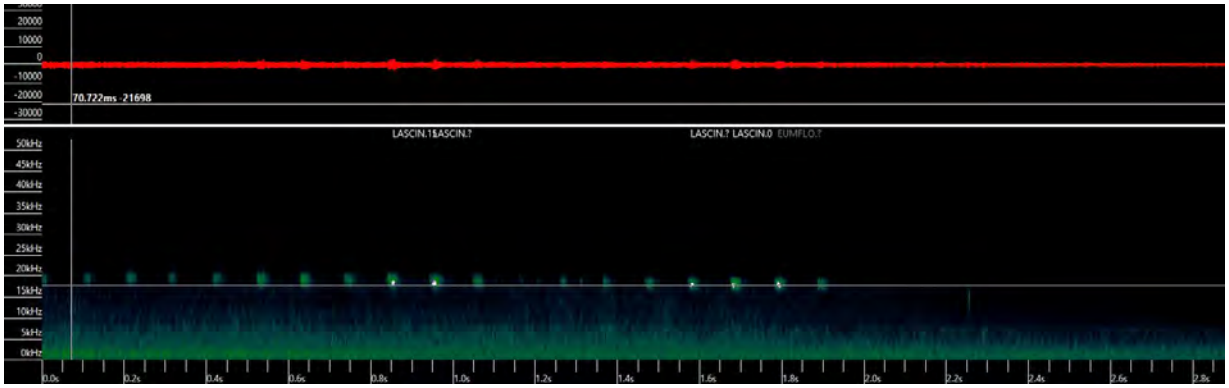
File Name: OLD41F_20250528_200253_000



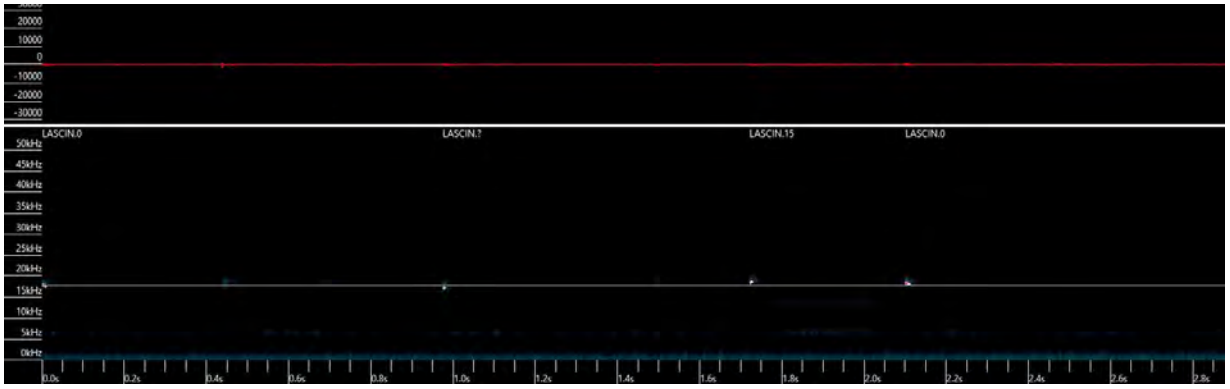
File Name: OLD41F_20250528_201430_000



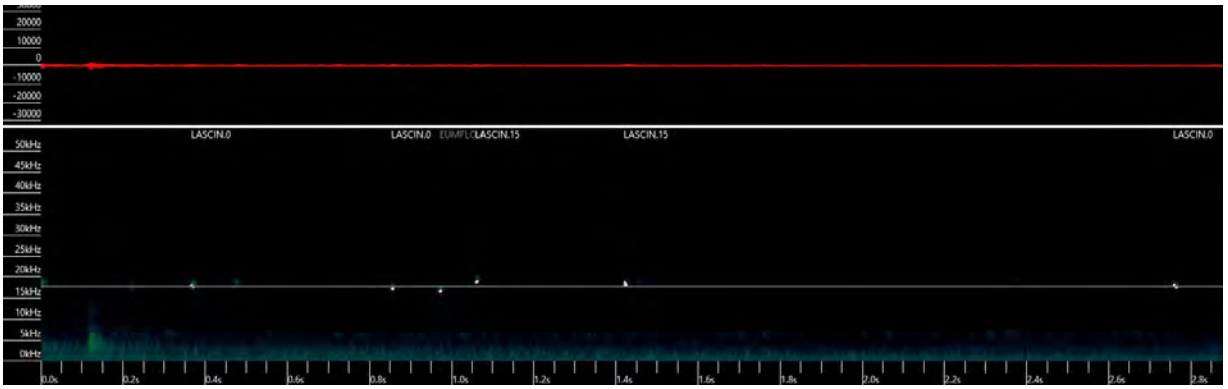
File Name: OLD41F_20250528_203328_000



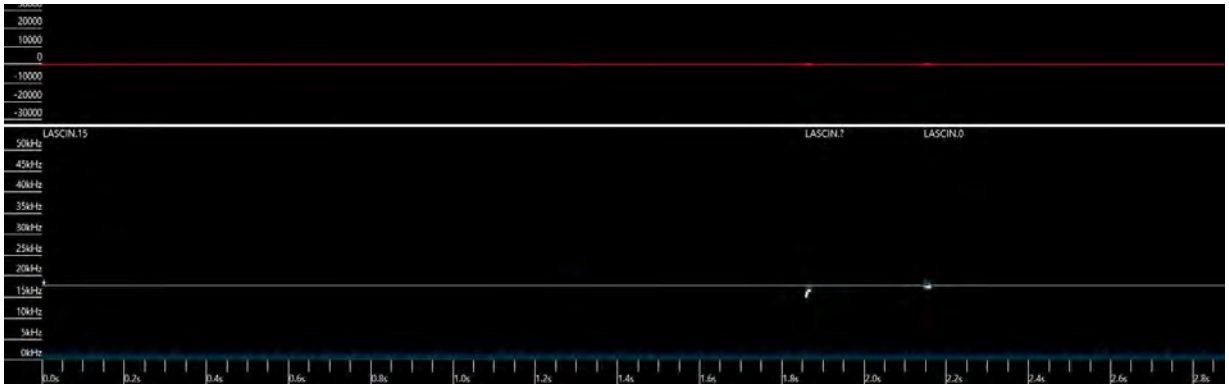
File Name: OLD41F_20250529_003239_000



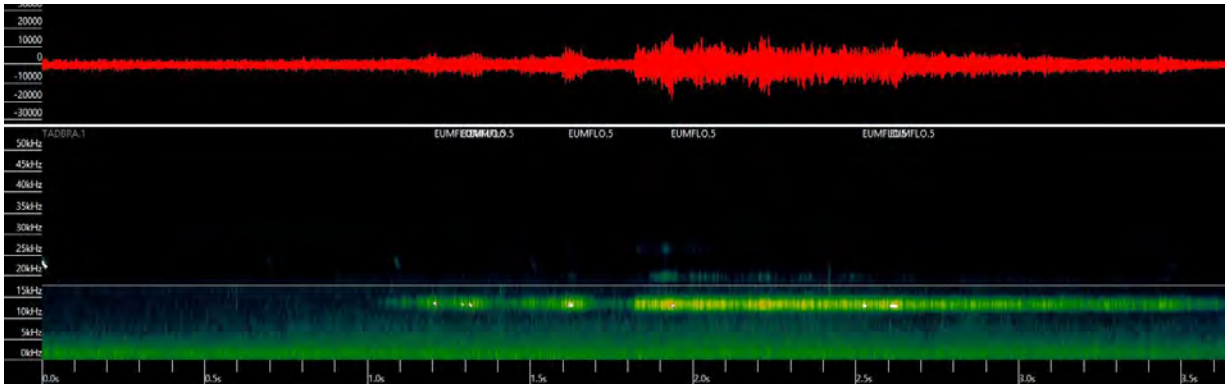
File Name: OLD41F_20250529_030735_000



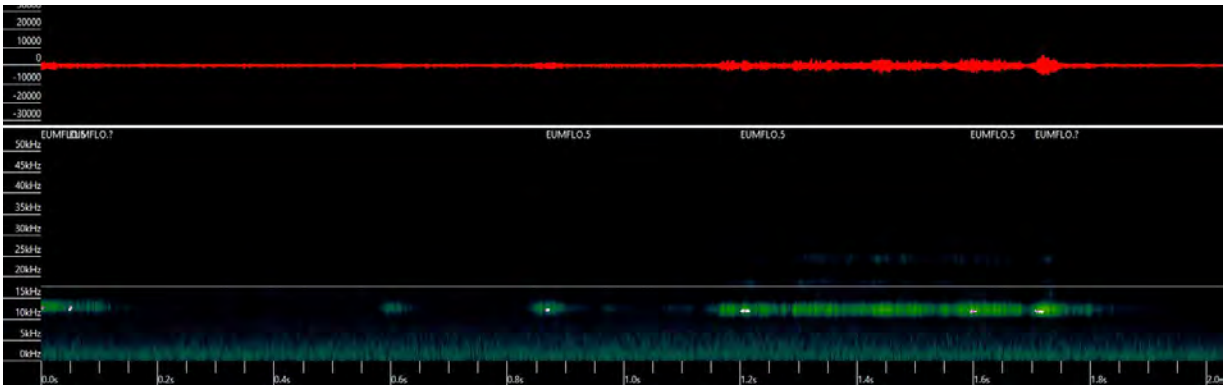
File Name: OLD41F_20250529_041535_000



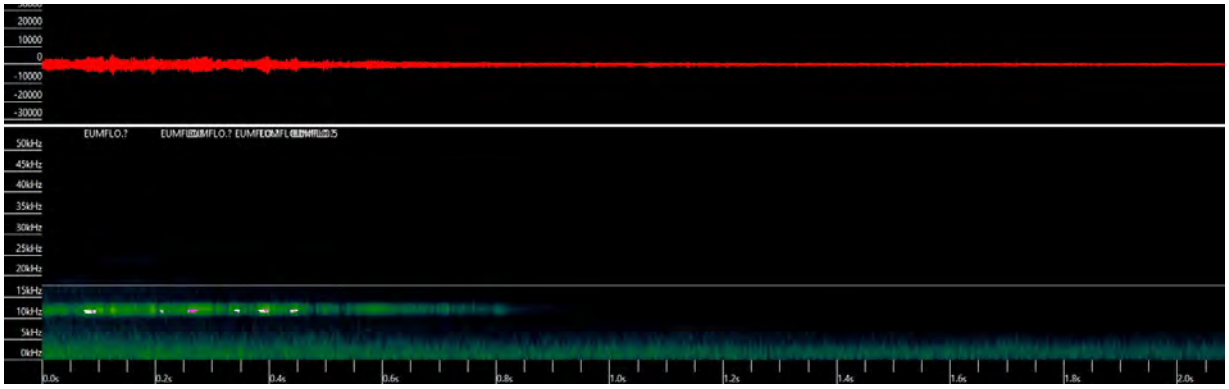
File Name: OLD41F_20250529_053701_000



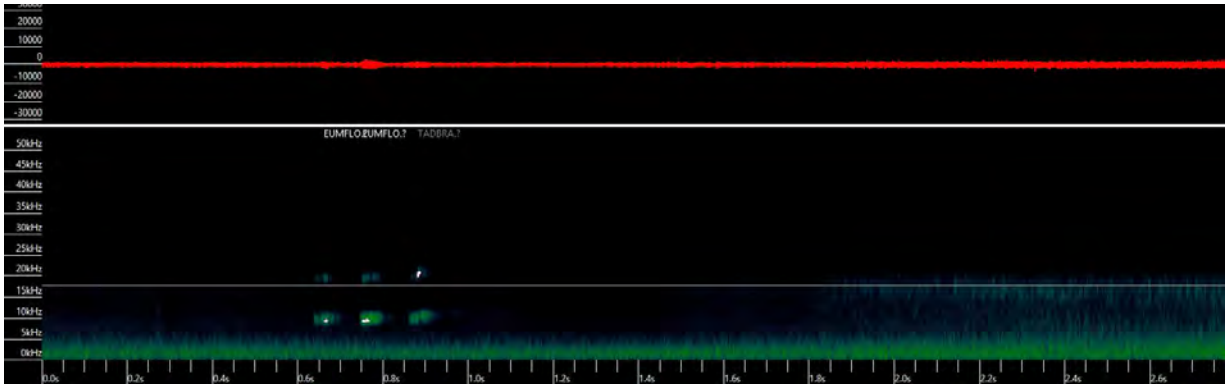
File Name: OLD41F_20250529_053803_000



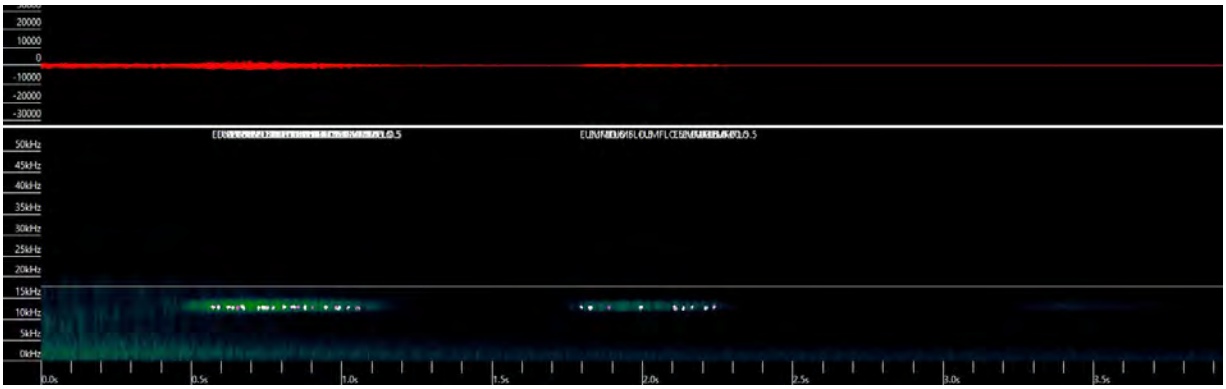
File Name: OLD41F_20250529_053817_000



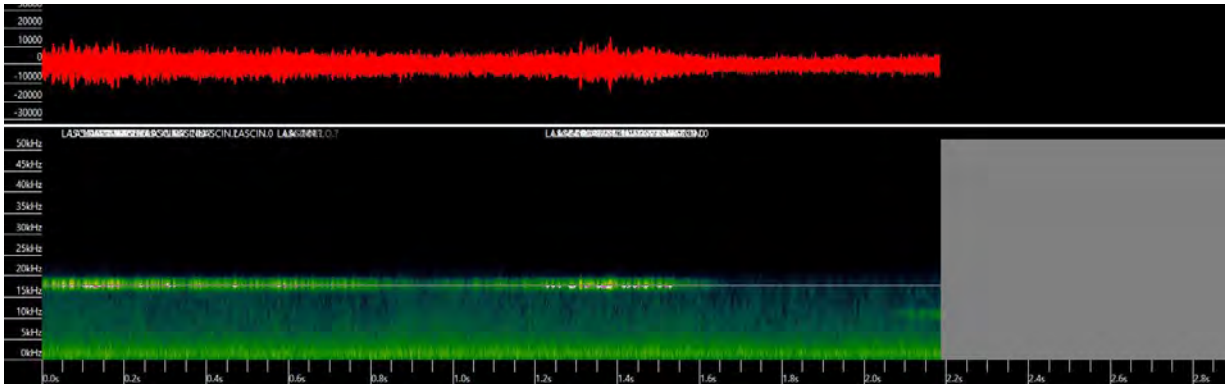
File Name: OLD41F_20250529_053828_000



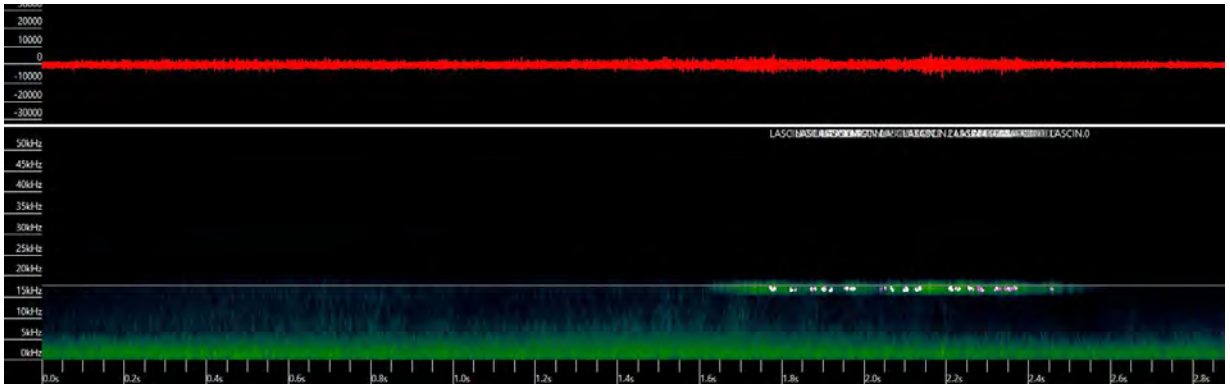
File Name: OLD41F_20250529_055031_000



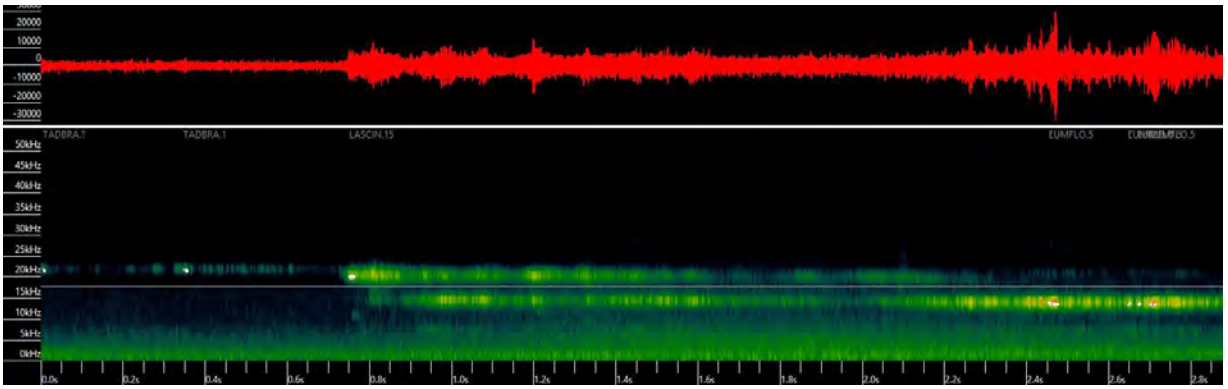
File Name: OLD41F_20250529_060003_000



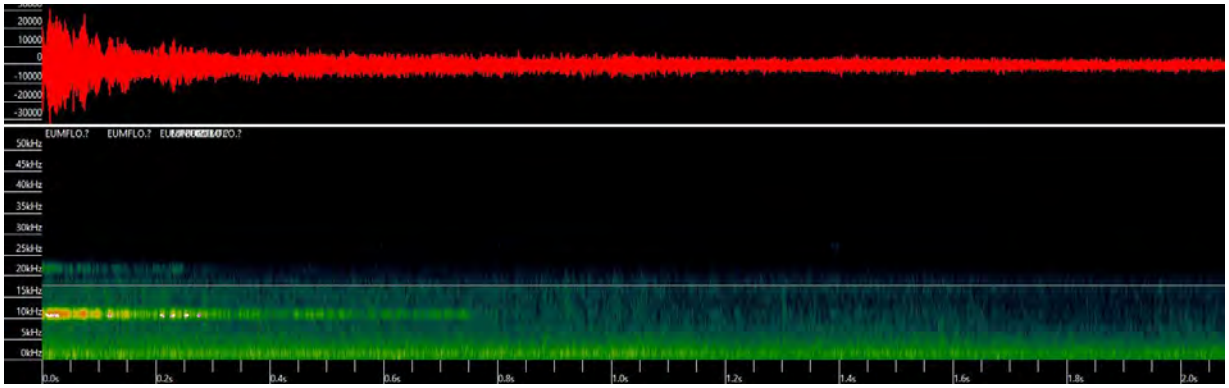
File Name: OLD41F_20250529_062611_000



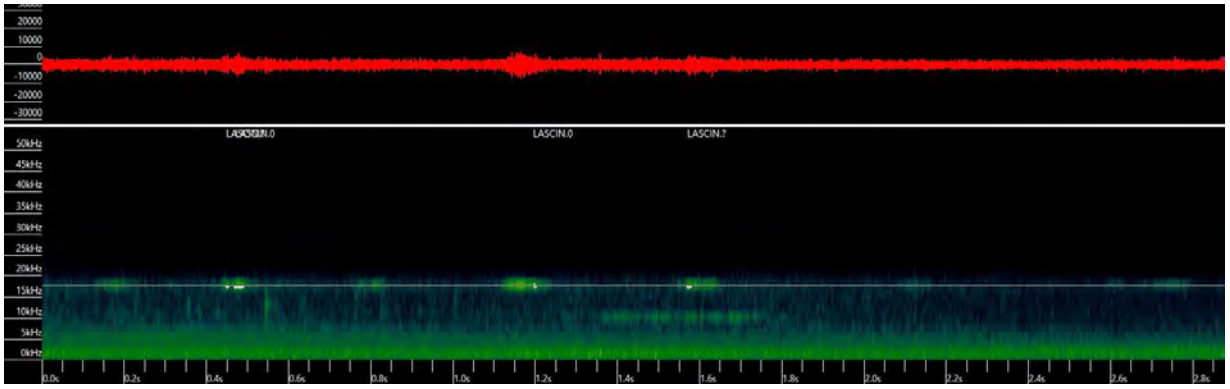
File Name: OLD41F_20250529_062650_000



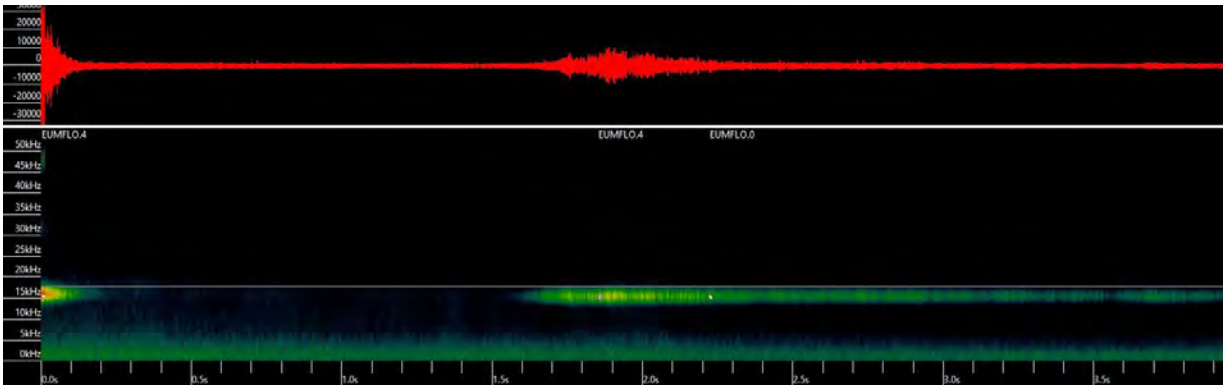
File Name: OLD41F_20250529_063027_000



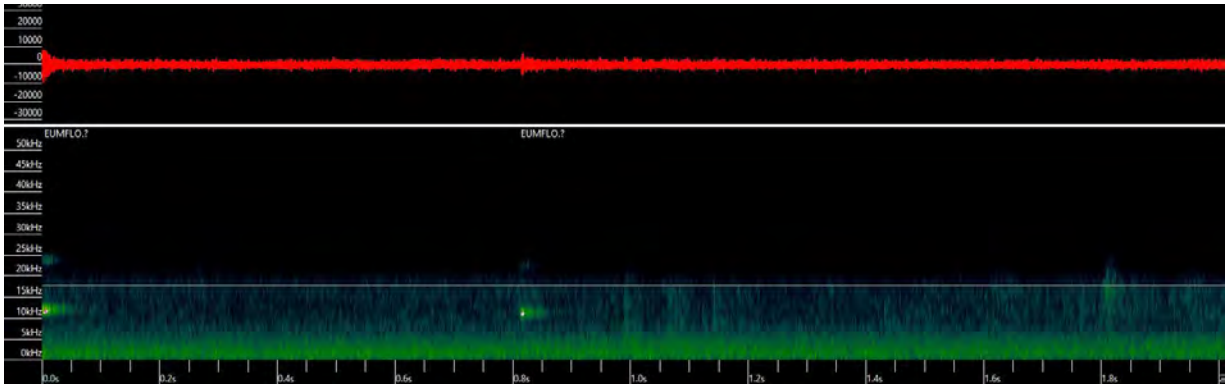
File Name: OLD41F_20250529_064157_000



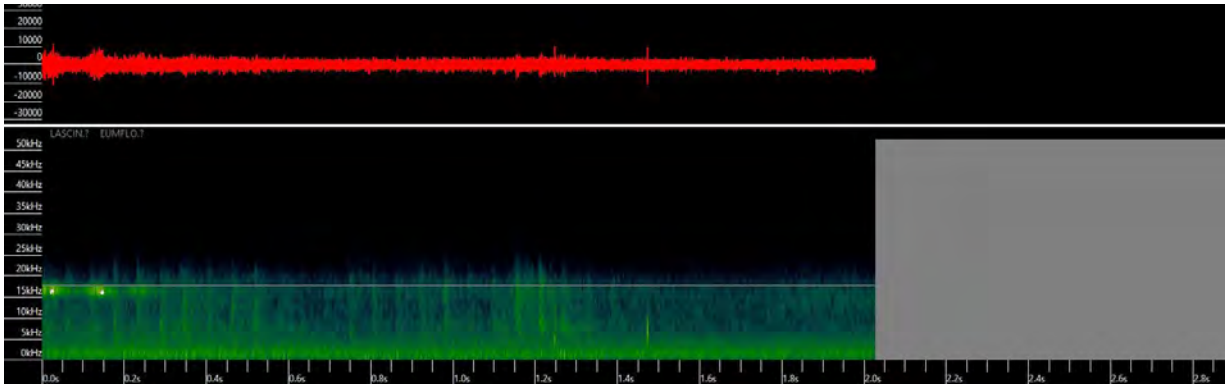
File Name: OLD41F_20250529_064543_000



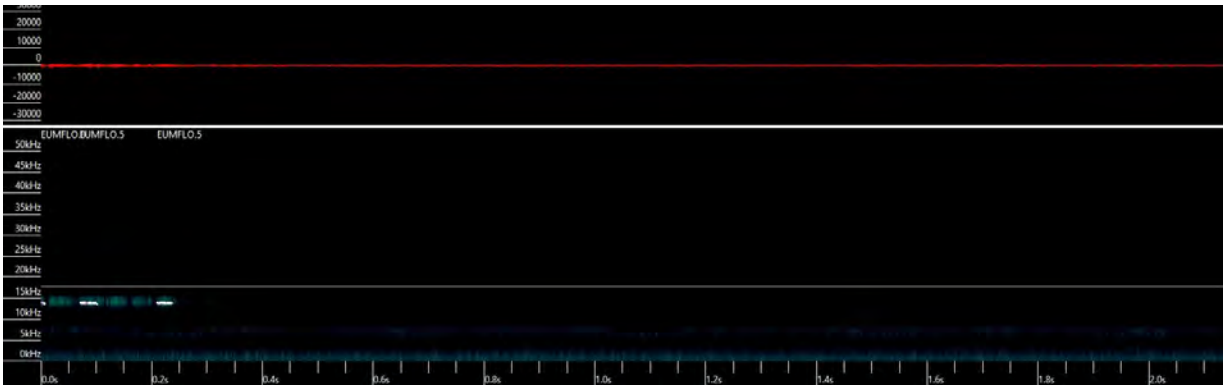
File Name: OLD41F_20250529_065453_000



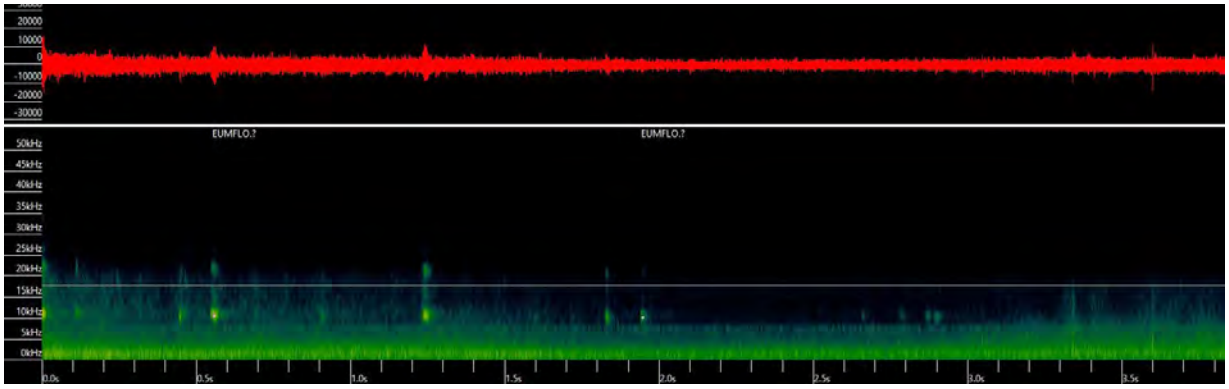
File Name: OLD41F_20250529_065608_000



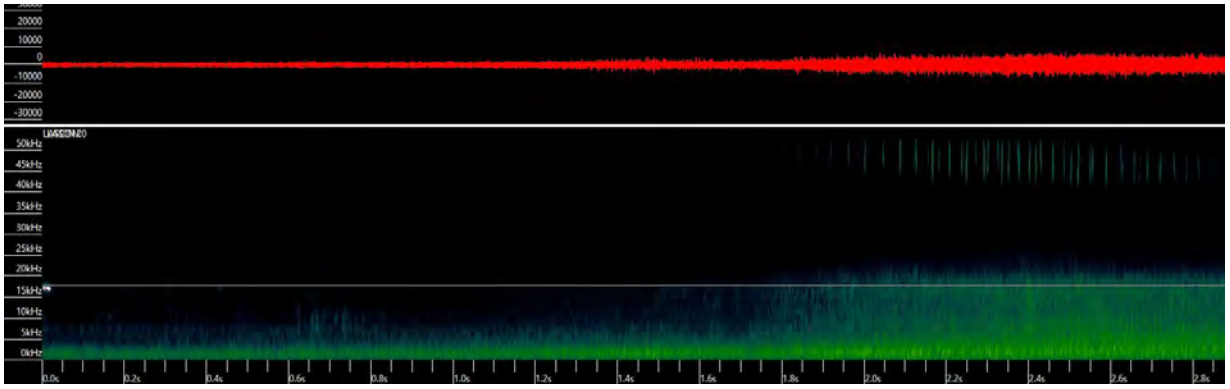
File Name: OLD41F_20250529_070024_000



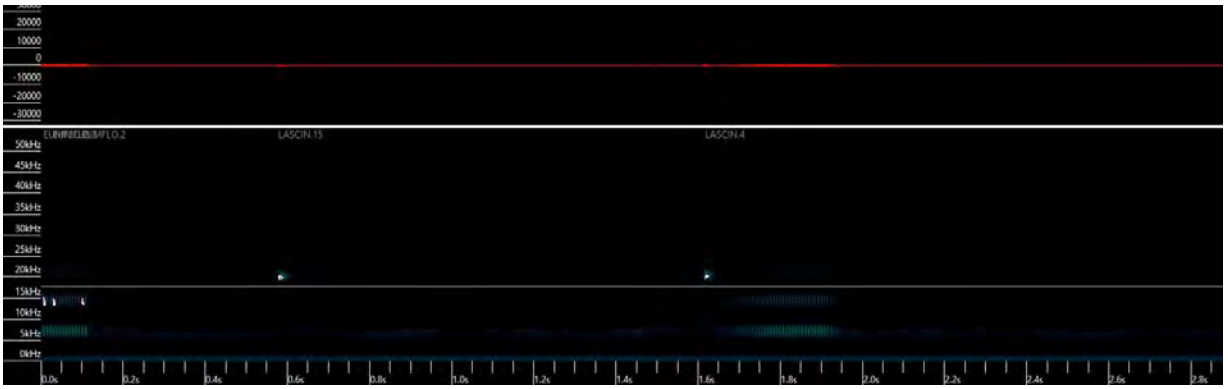
File Name: OLD41F_20250529_212148_000



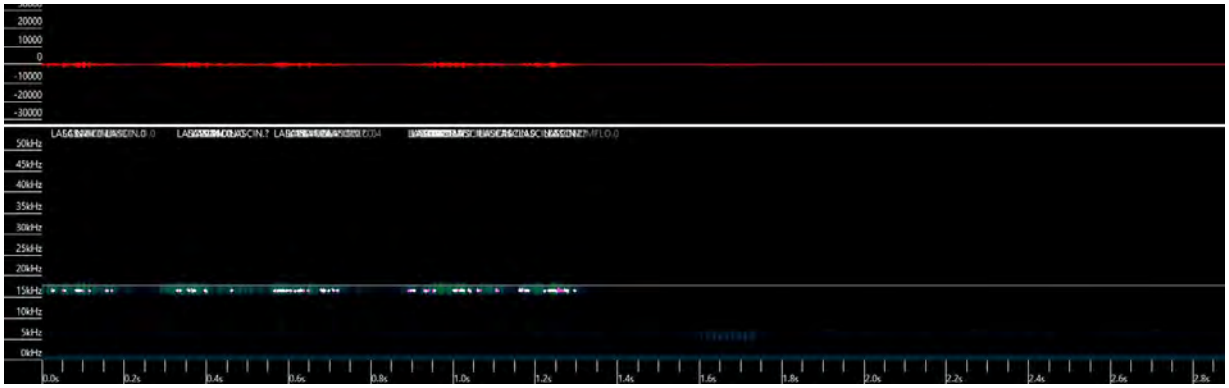
File Name: OLD41F_20250529_214832_000



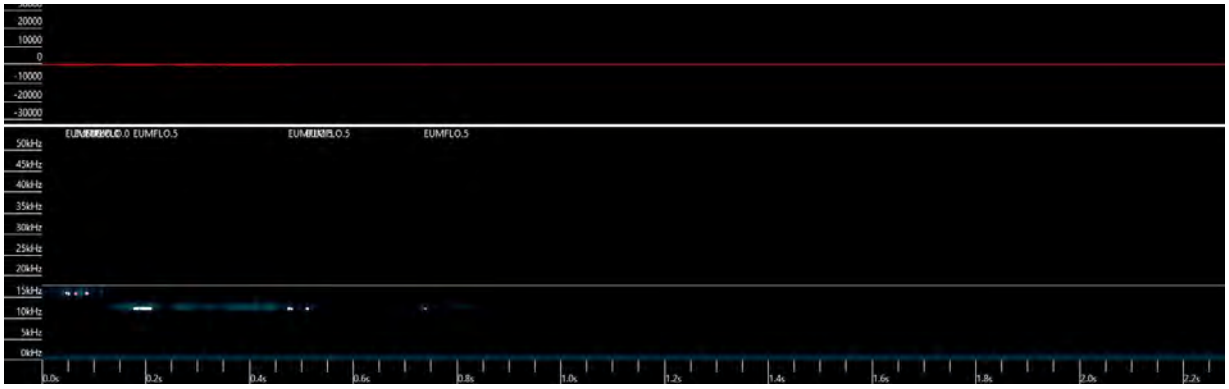
File Name: OLD41F_20250529_221748_000



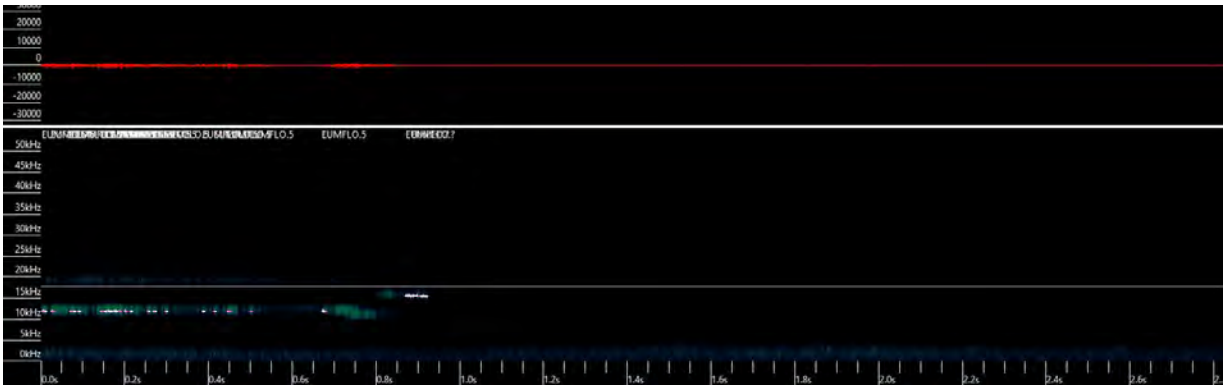
File Name: OLD41F_20250529_234055_000



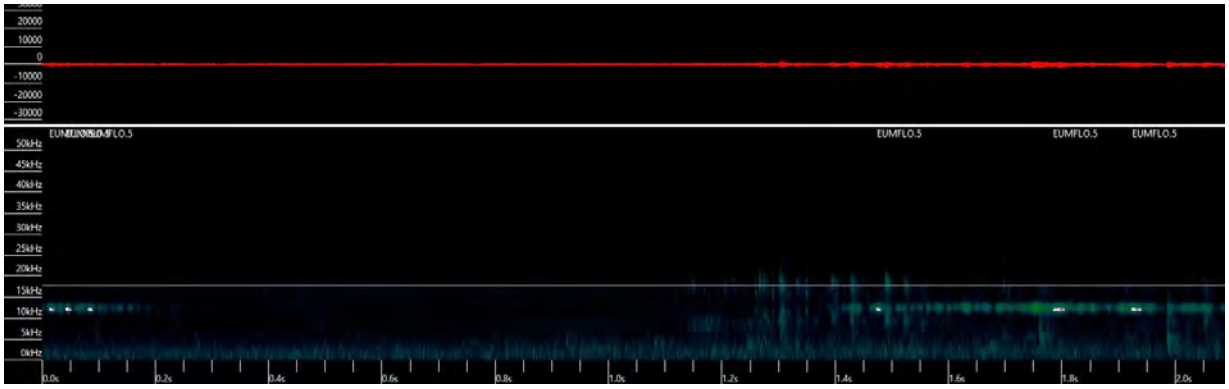
File Name: OLD41F_20250530_020000_000



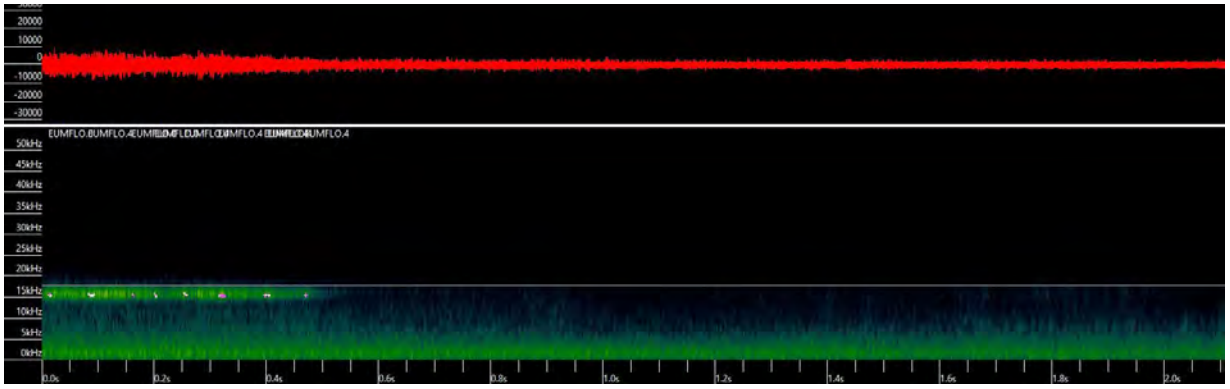
File Name: OLD41F_20250530_051555_000



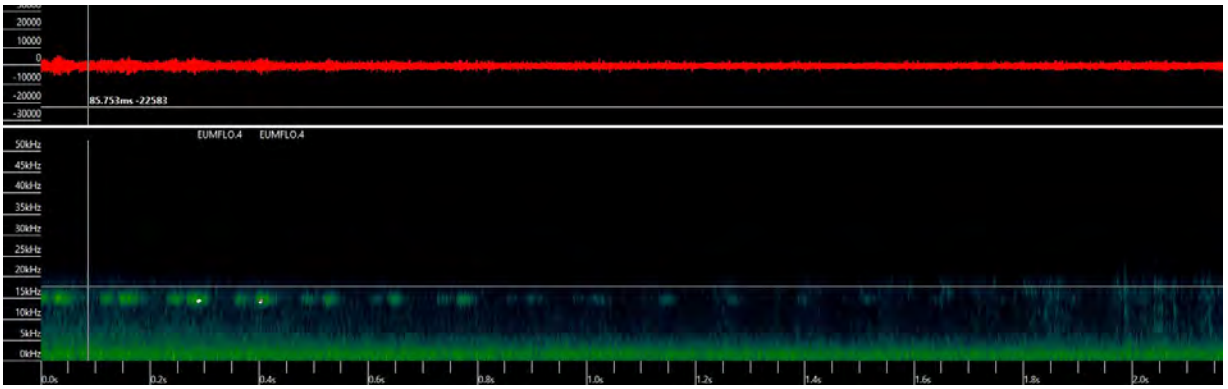
File Name: OLD41F_20250530_063341_000



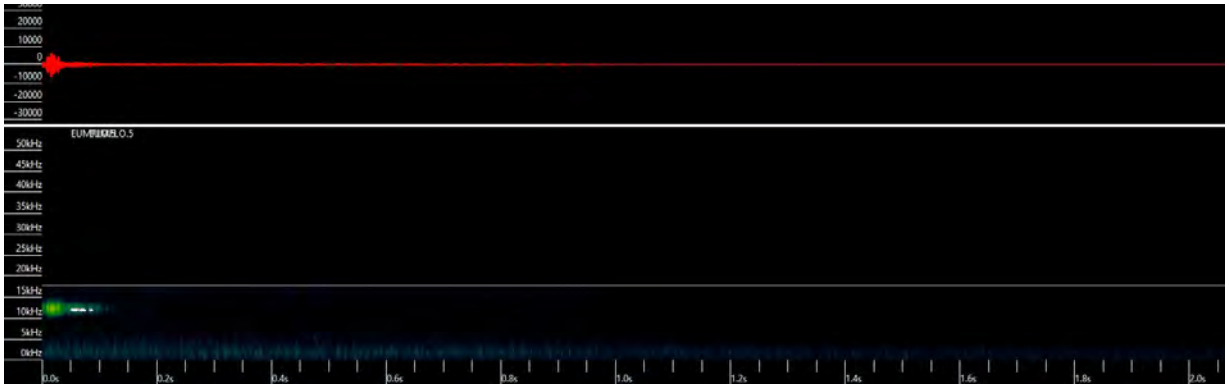
File Name: OLD41F_20250530_065317_000



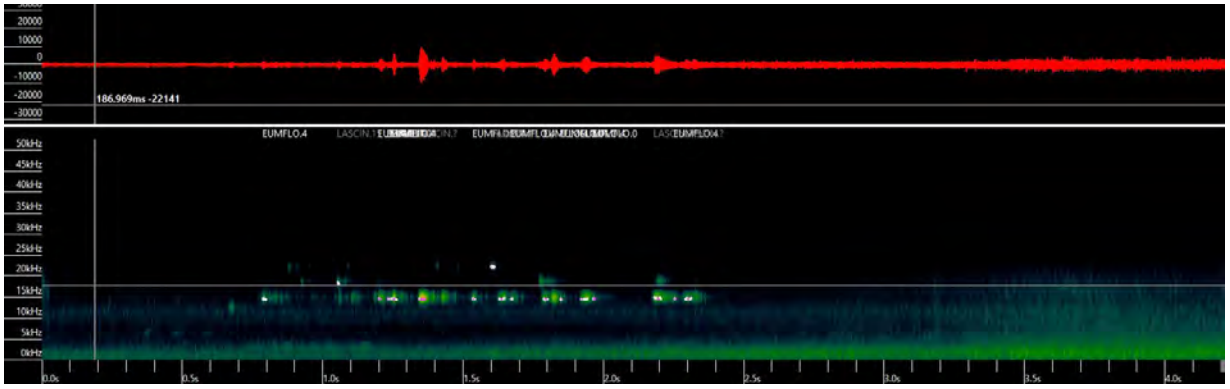
File Name: OLD41F_20250530_065627_000



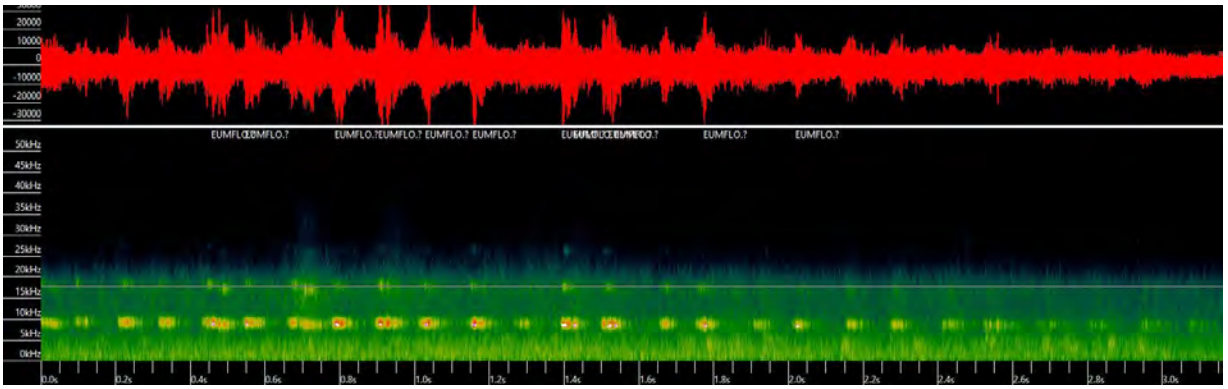
File Name: OLD41F_20250530_070200_000



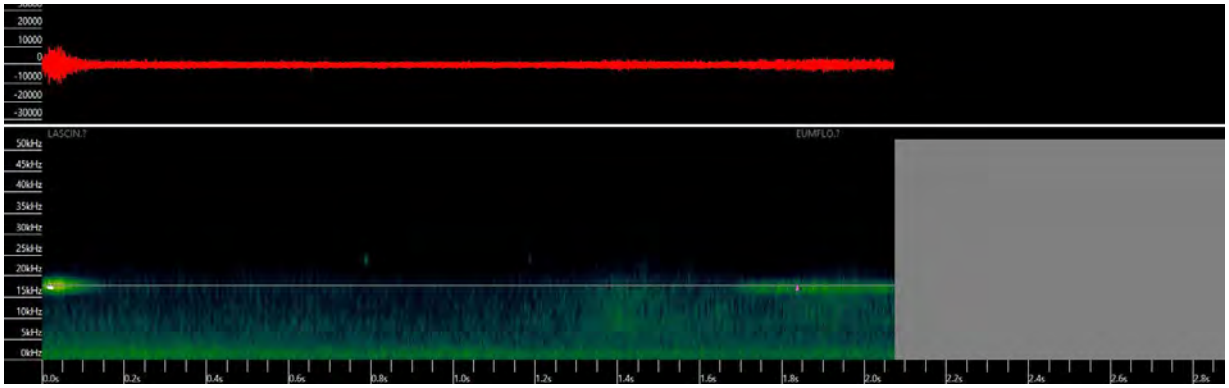
File Name: OLD41F_20250530_200732_000



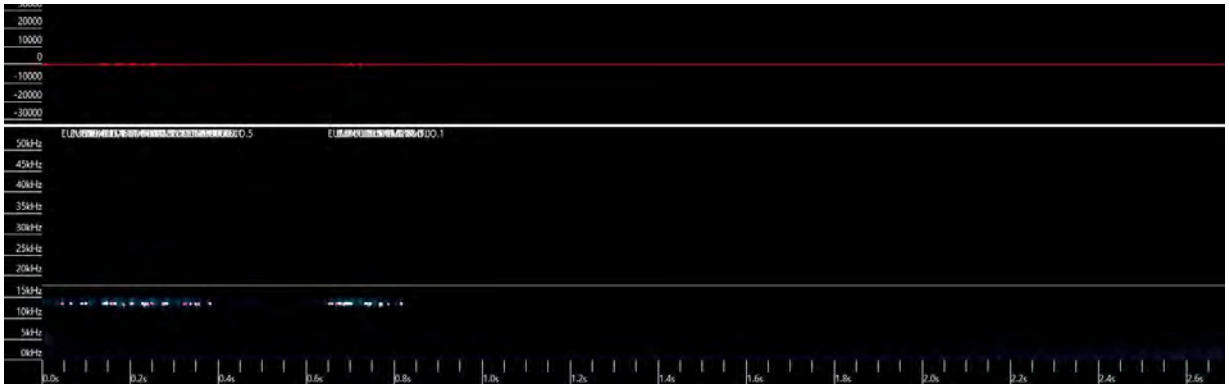
File Name: OLD41F_20250530_201628_000



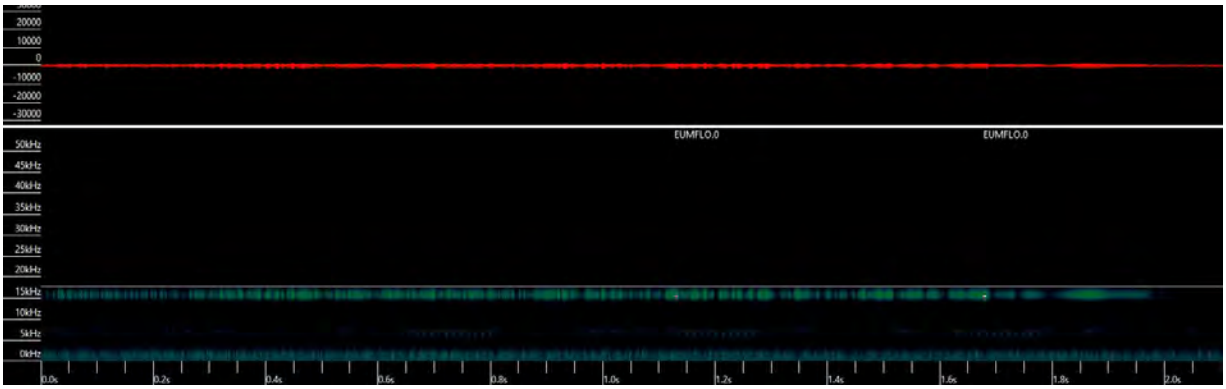
File Name: OLD41F_20250530_210923_000



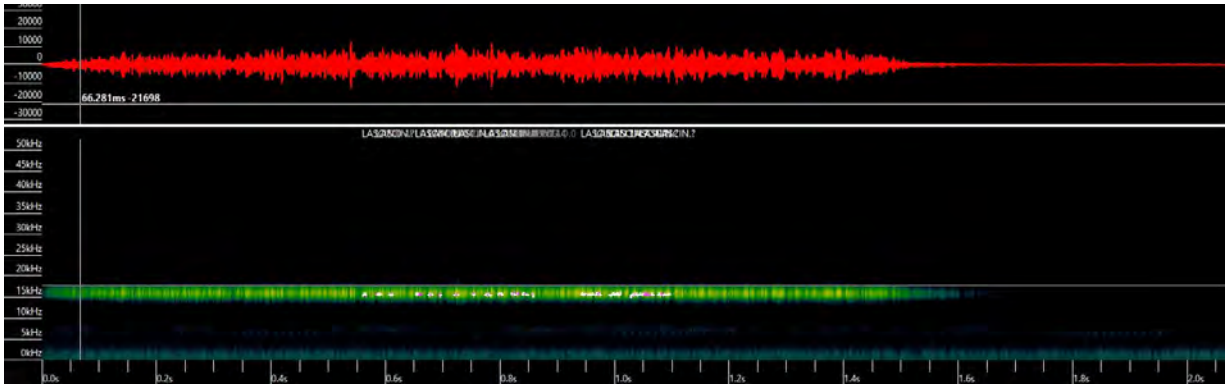
File Name: OLD41F_20250530_213306_000



File Name: OLD41F_20250530_231504_000

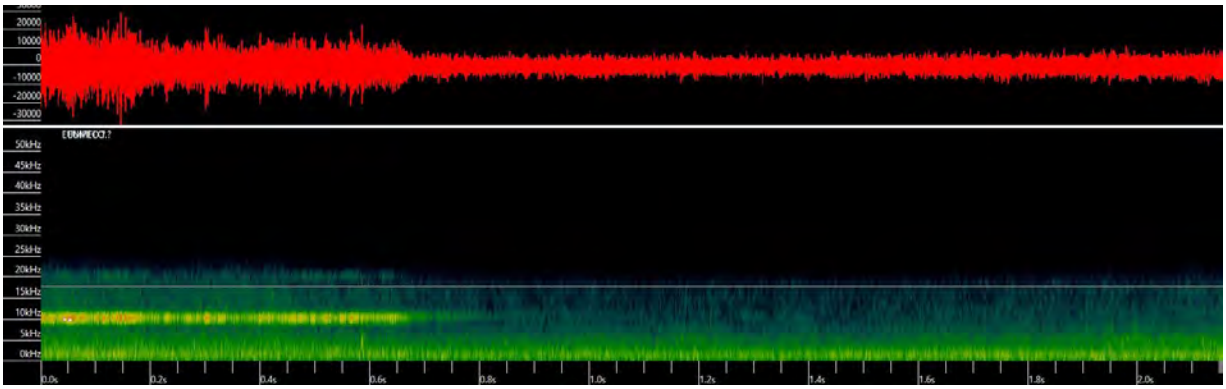


File Name: OLD41F_20250531_015845_000

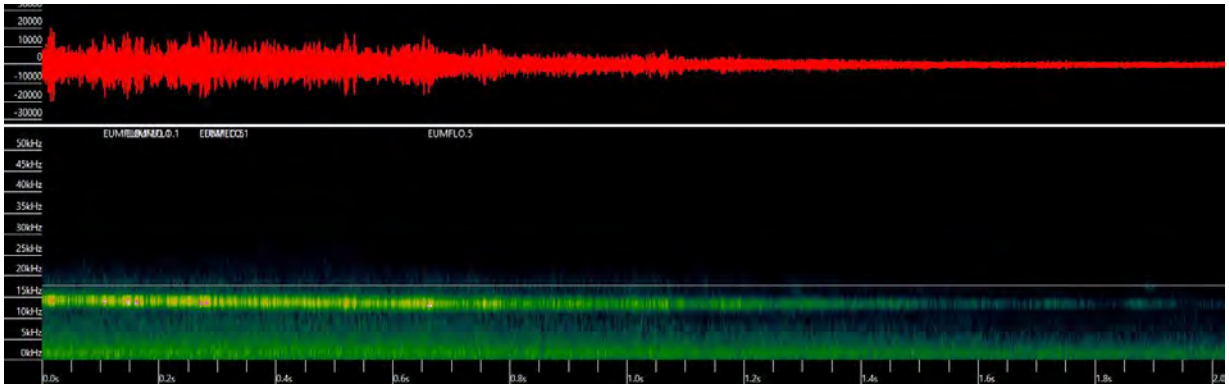


File Name: OLD41F_20250531_020112_000

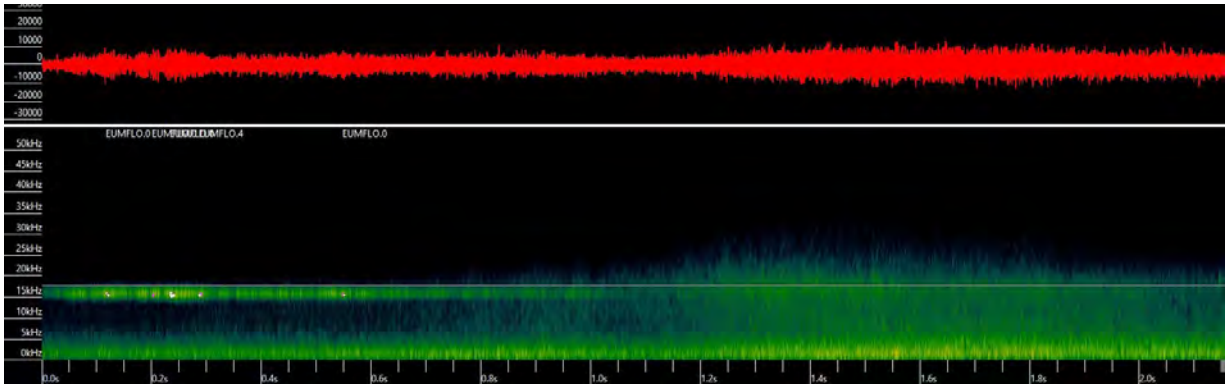
File Name: OLD41F_20250531_053620_000



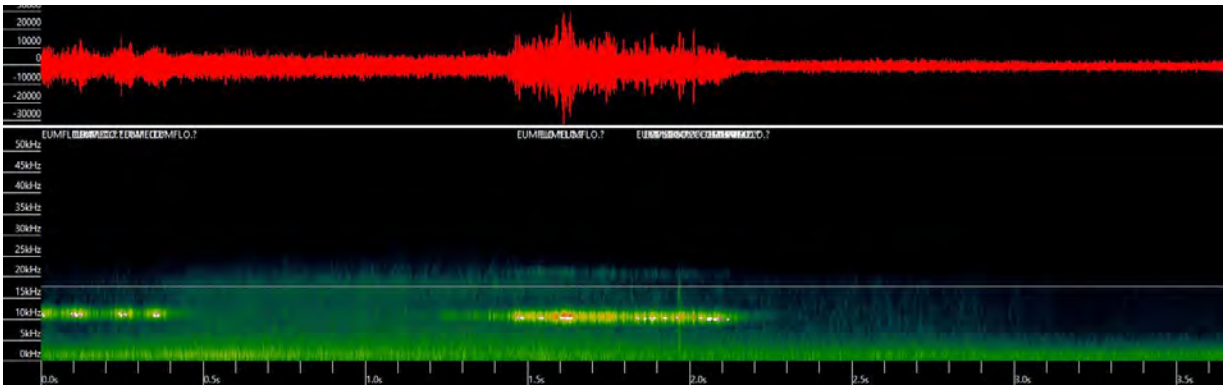
File Name: OLD41F_20250531_064044_000



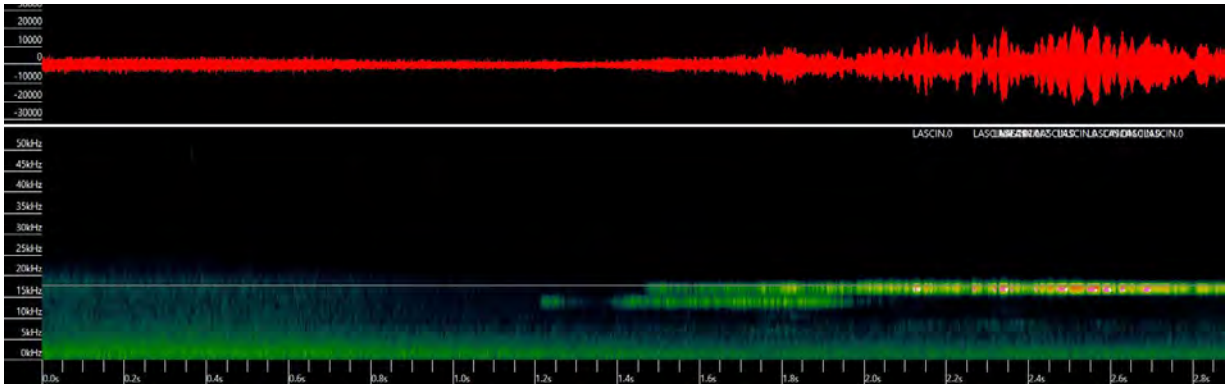
File Name: OLD41F_20250531_064102_000



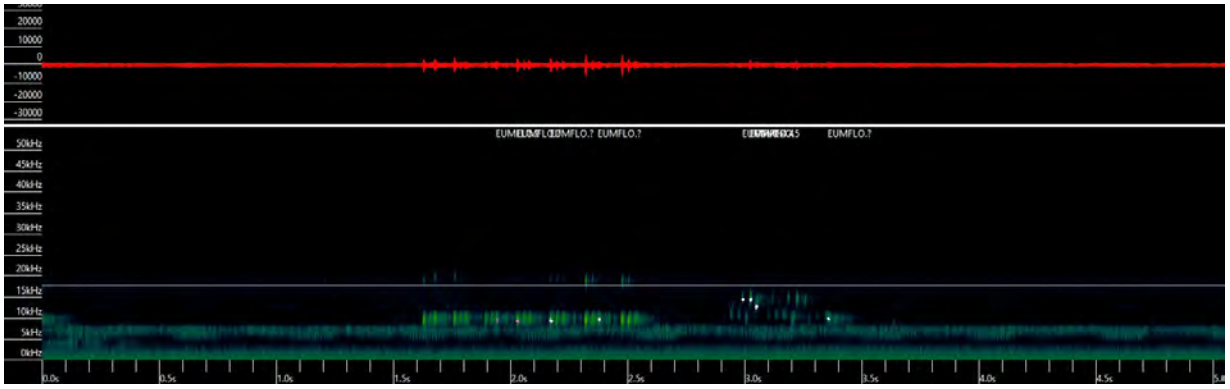
File Name: OLD41F_20250531_065556_000



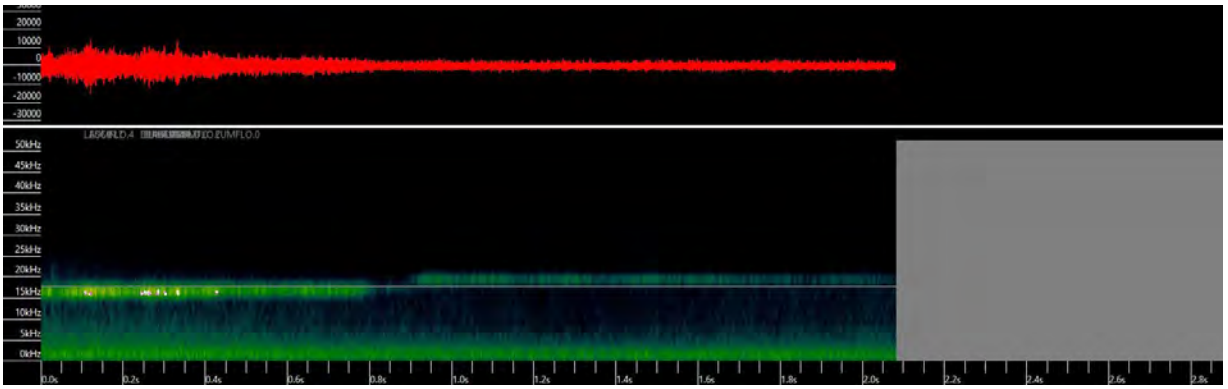
File Name: OLD41F_20250531_195428_000



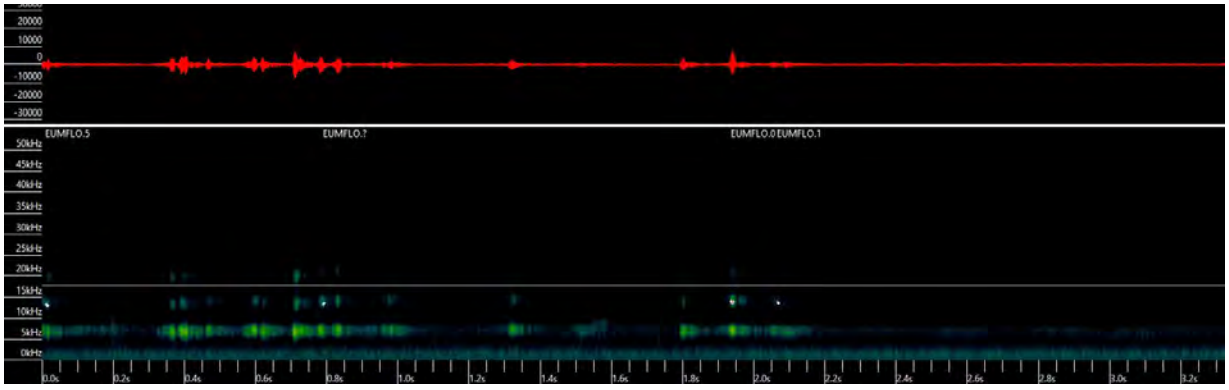
File Name: OLD41F_20250531_214629_000



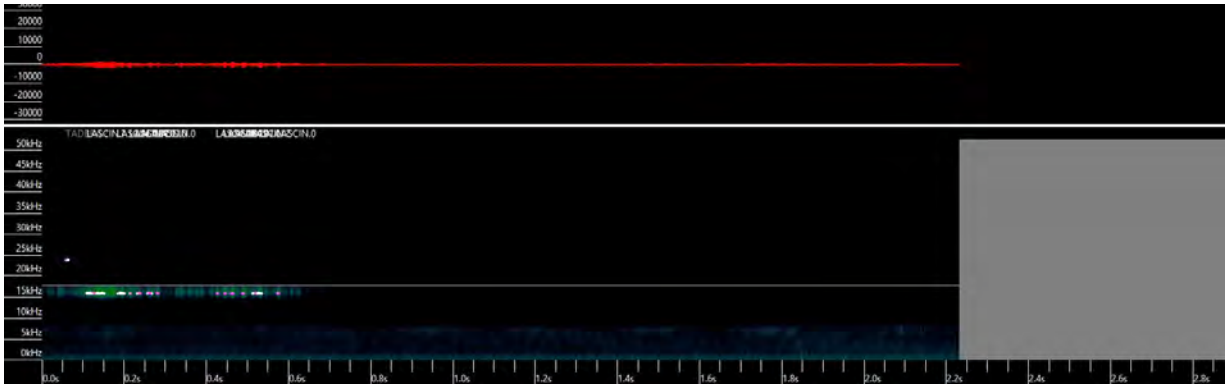
File Name: OLD41F_20250531_221139_000



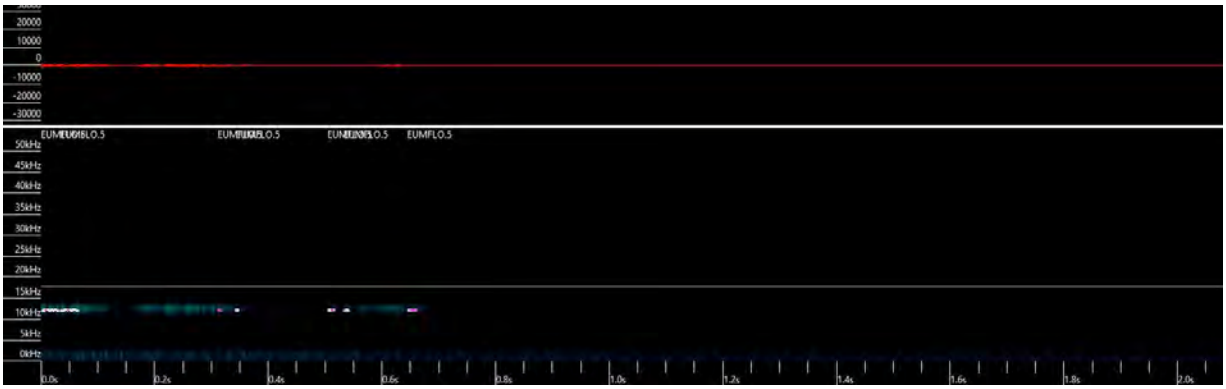
File Name: OLD41F_20250531_222502_000



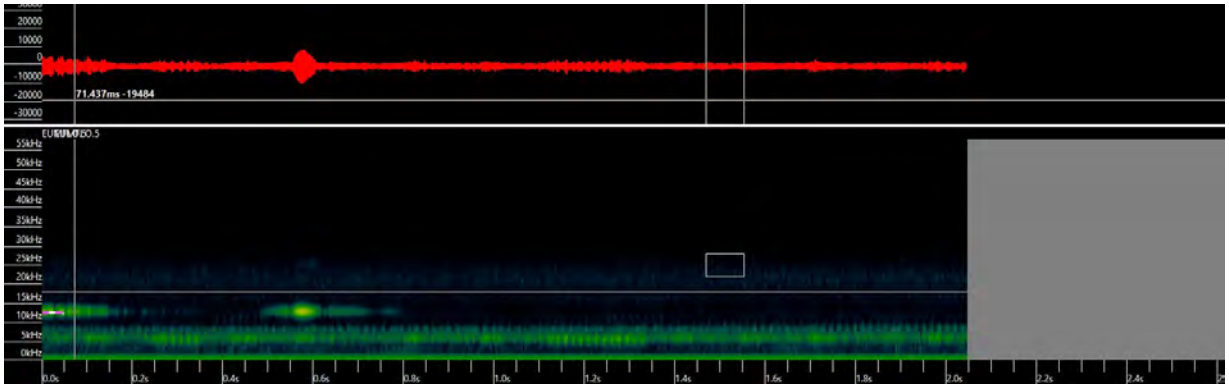
File Name: OLD41F_20250531_223717_000



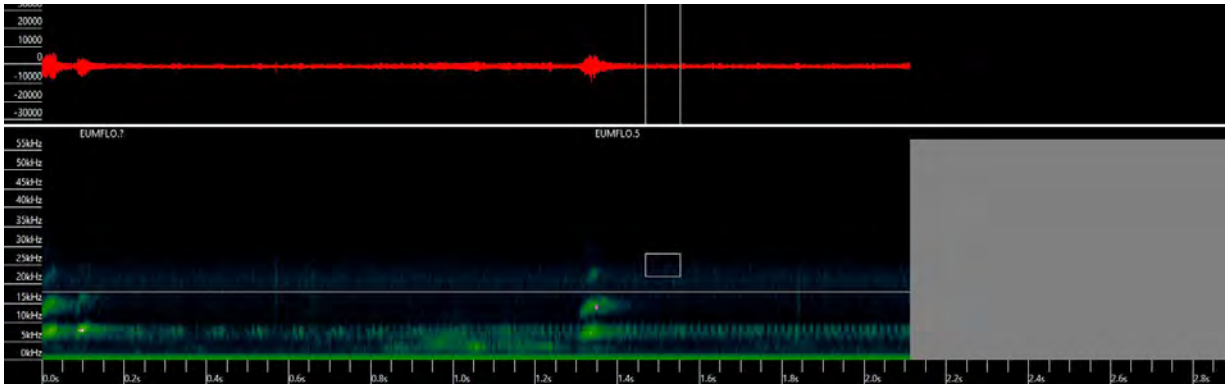
File Name: OLD41F_20250601_013813_000



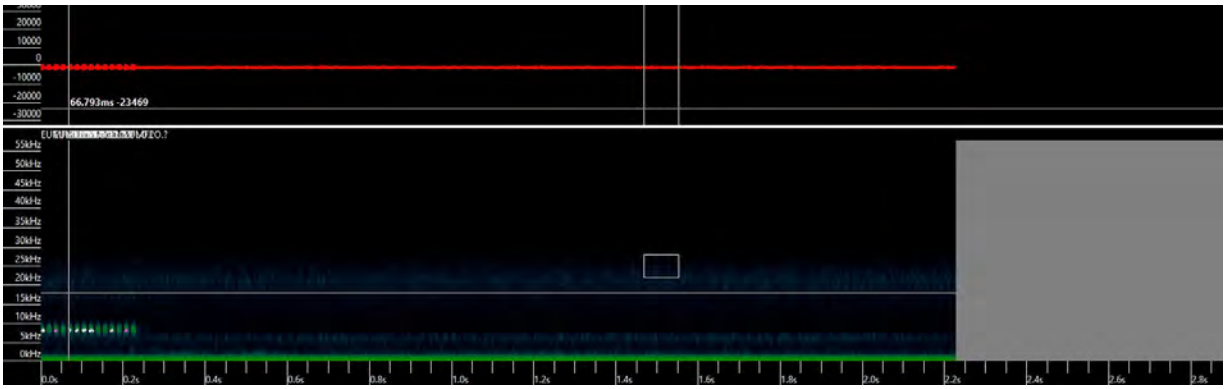
File Name: OLD41F_20250601_061124_000



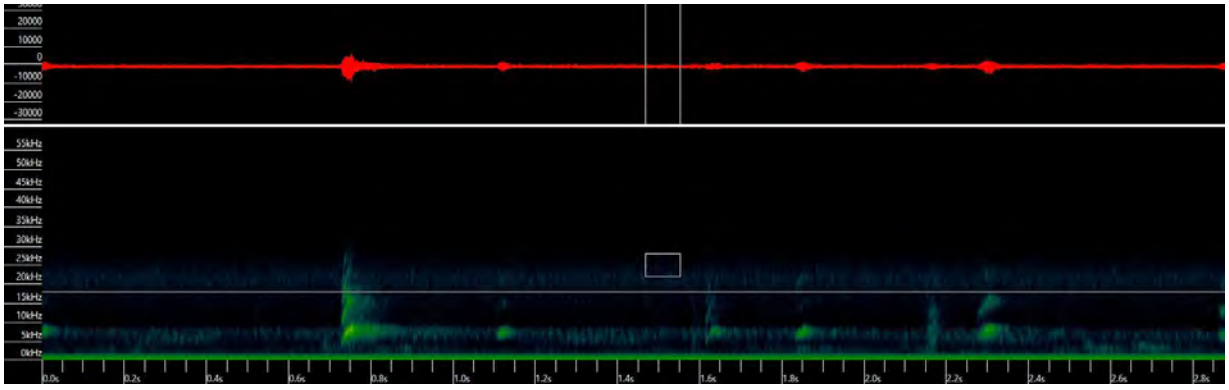
File Name: OLD41G_20250523_051931_000



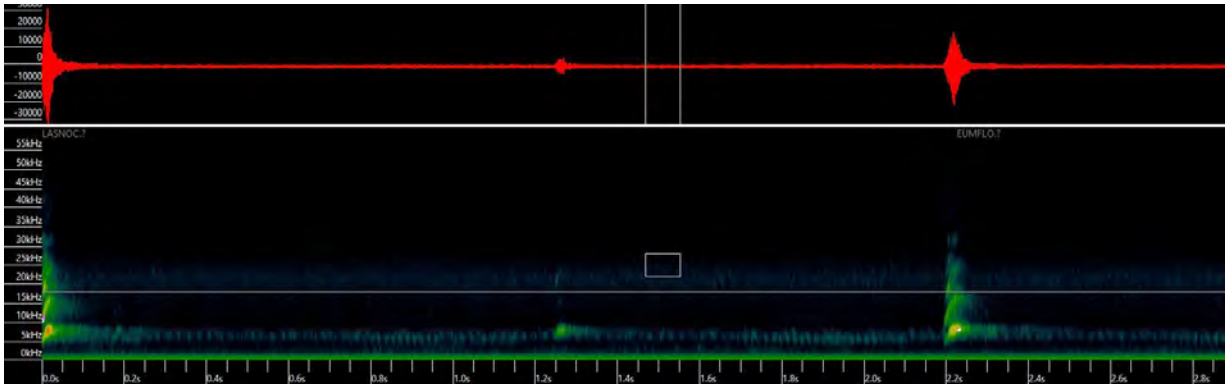
File Name: OLD41G_20250523_063210_000



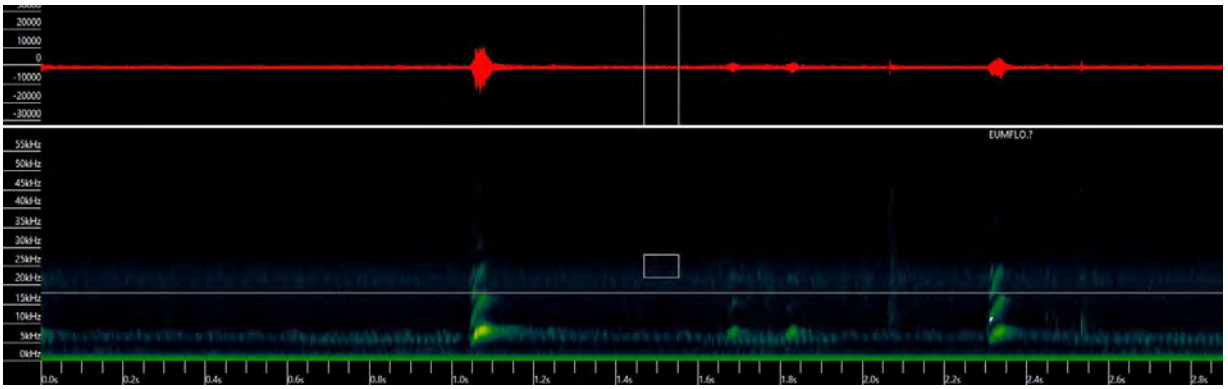
File Name: OLD41G_20250523_065332_000



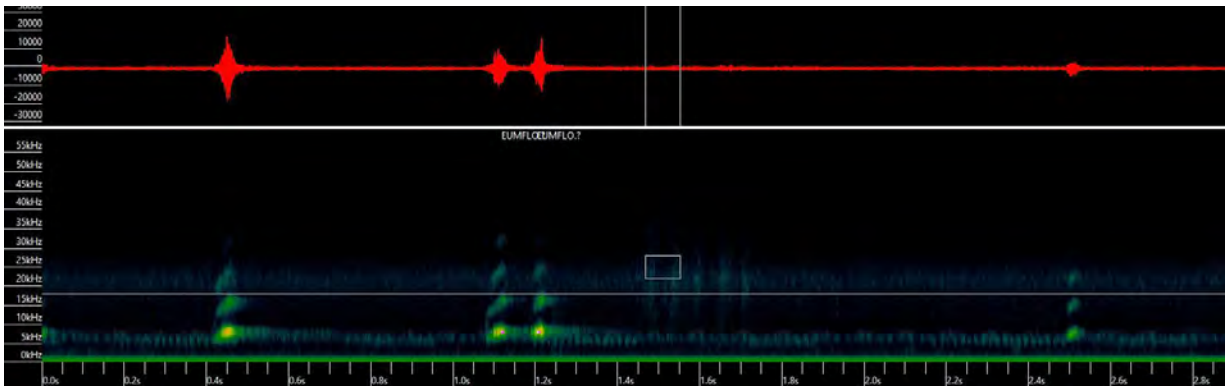
File Name: OLD41G_20250524_062757_000



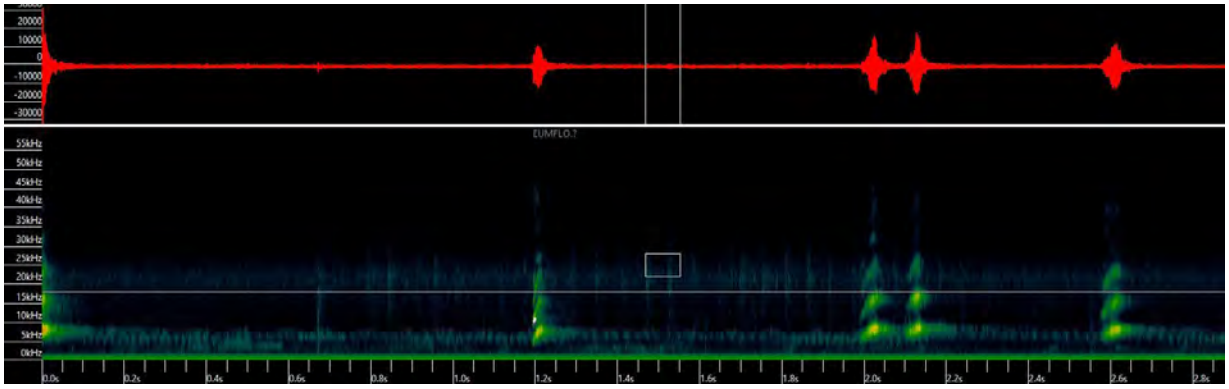
File Name: OLD41G_20250524_062852_000



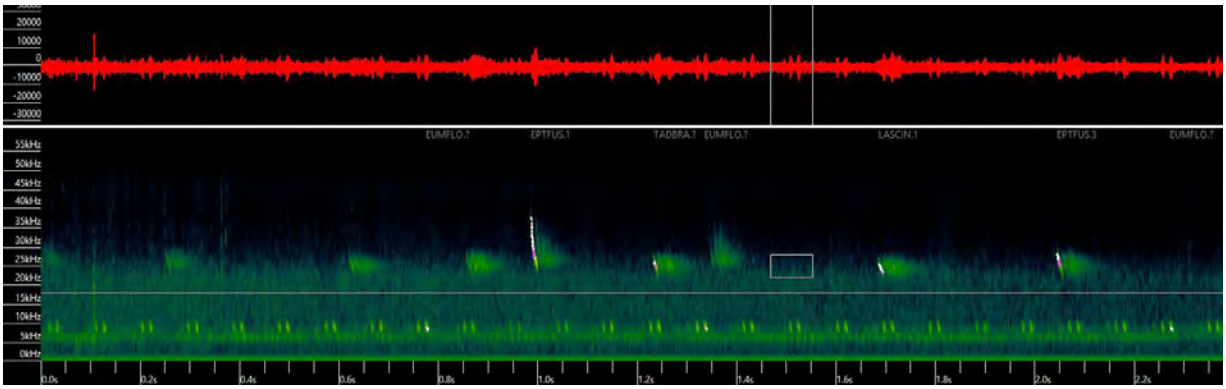
File Name: OLD41G_20250524_062911_000



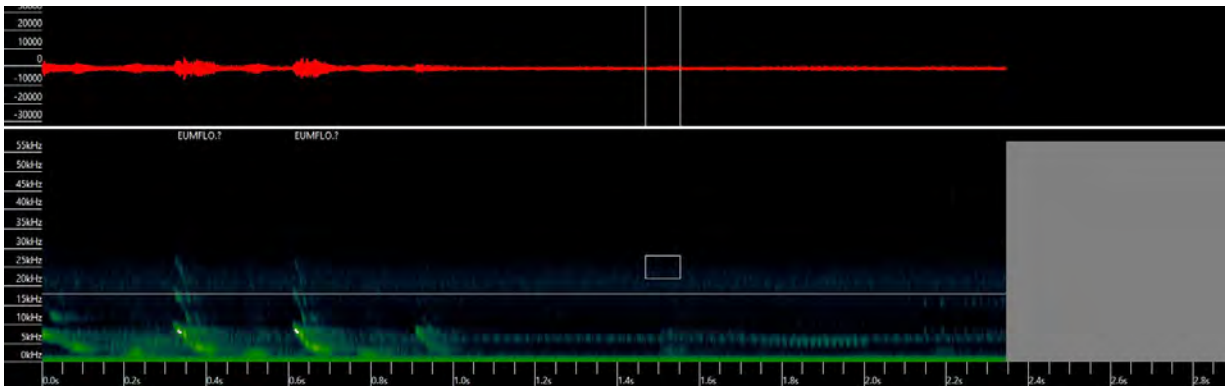
File Name: OLD41G_20250524_062928_000



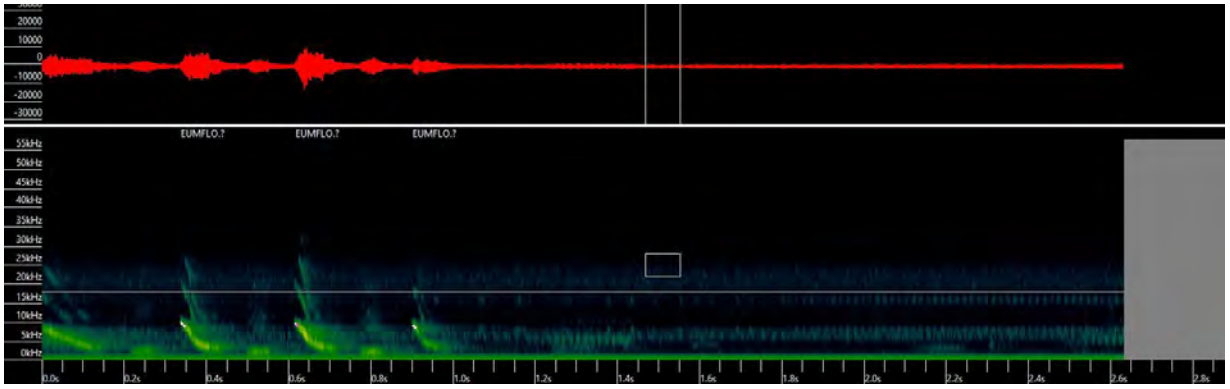
File Name: OLD41G_20250524_062947_000



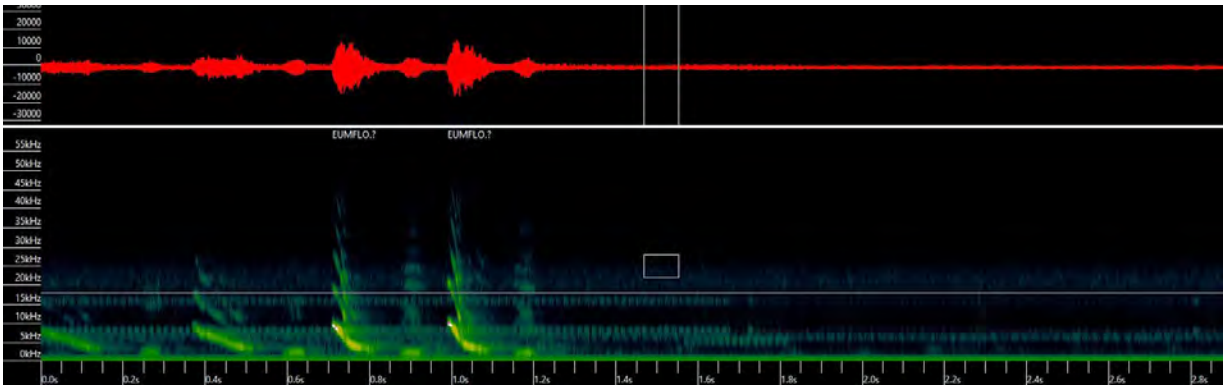
File Name: OLD41G_20250524_213905_000



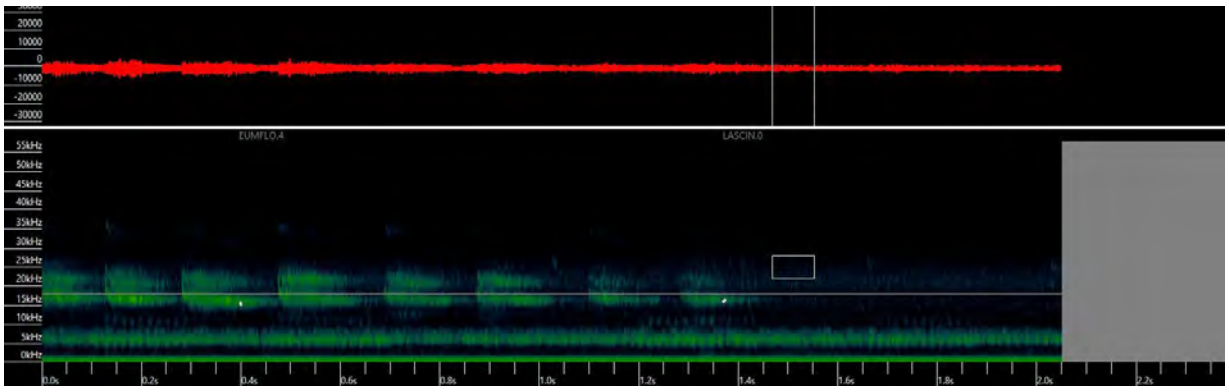
File Name: OLD41G_20250526_064444_000



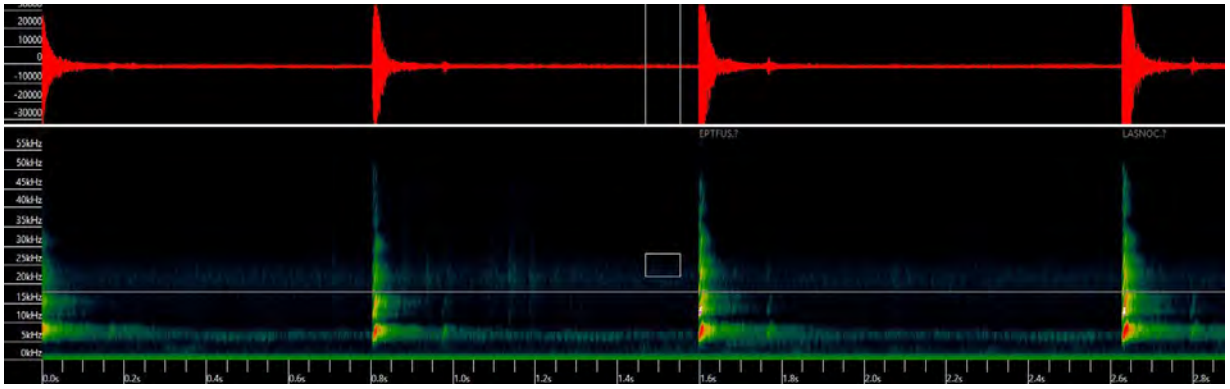
File Name: OLD41G_20250526_064510_000



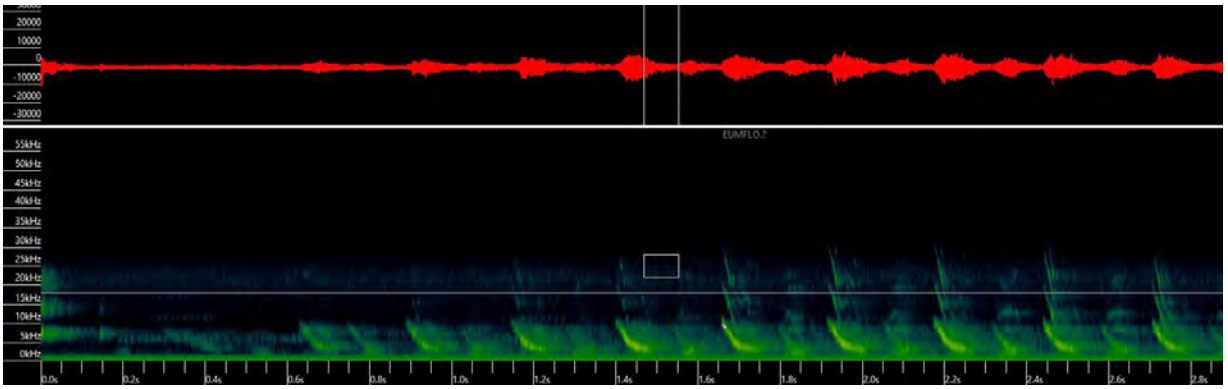
File Name: OLD41G_20250526_064624_000



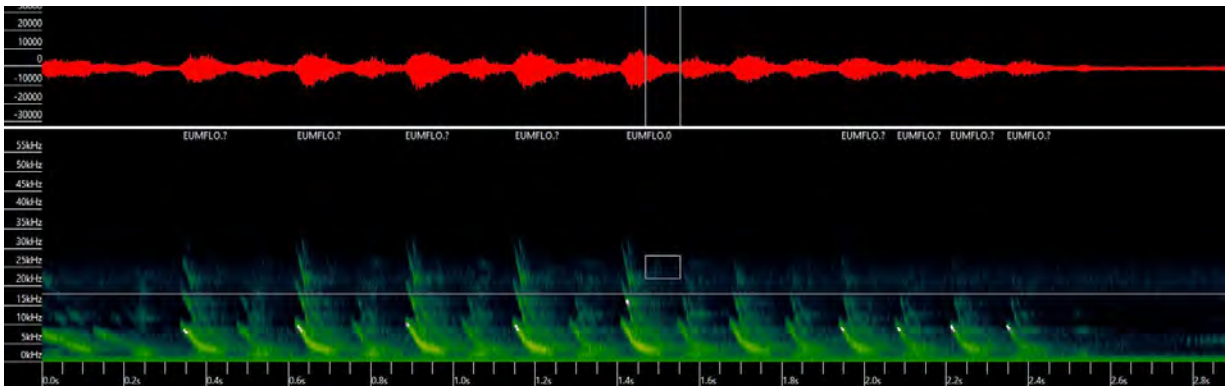
File Name: OLD41G_20250529_051542_000



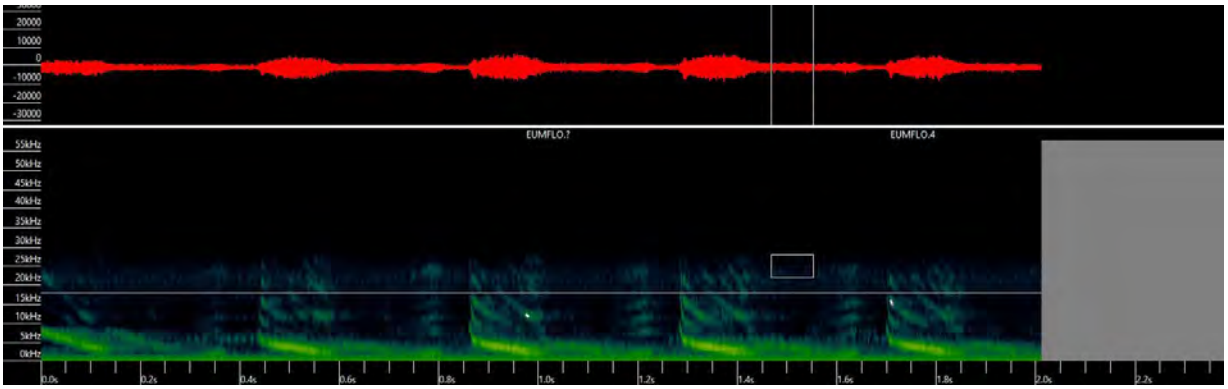
File Name: OLD41G_20250530_062403_000



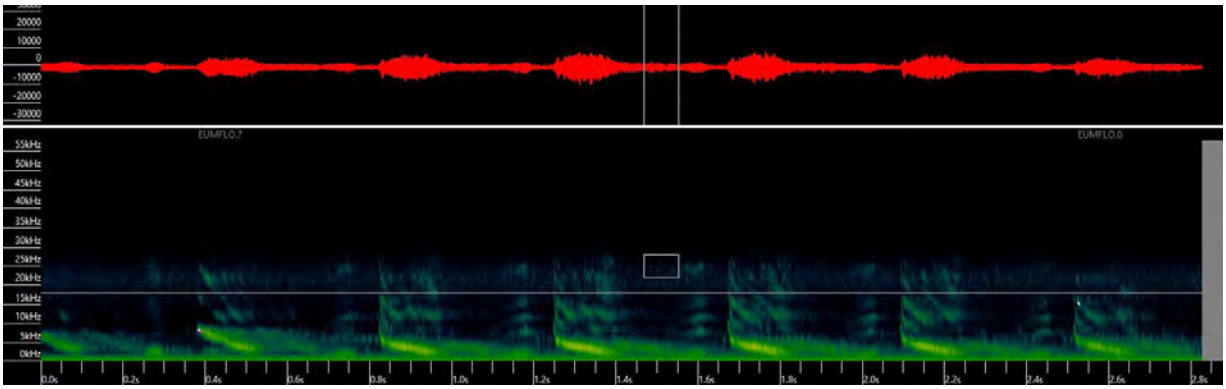
File Name: OLD41G_20250530_063429_000



File Name: OLD41G_20250530_063503_000



File Name: OLD41G_20250530_063534_000



File Name: OLD41G_20250530_063548_000

This cell intentionally left blank.

APPENDIX F

Florida Bonneted Bat Consultation Key

Florida Bonneted Bat Consultation Key[#]

Use the following key to evaluate potential effects to the Florida bonneted bat (FBB) from the proposed project. Refer to the Glossary as needed.

1a. Proposed project or land use change is partially or wholly within the Consultation Area (Figure 1).....**Go to 2**
1b. Proposed project or land use change is wholly outside of the Consultation Area (Figure 1).....**No Effect**

2a. Potential FBB roosting habitat exists within the project area.....**Go to 3**
2b. No potential FBB roosting habitat exists within the project area.....**Go to 13**

3a. Project size/footprint* ≤ 5 acres (2 hectares)..... **Conduct Limited Roost Survey (Appendix C)** then **Go to 4**
3b. Project size/footprint* > 5 acres (2 hectares).....**Conduct Full Acoustic/Roost Surveys (Appendix B)** then **Go to 6**

4a. Results show FBB roosting is likely .....**Go to 5**
4b. Results do not show FBB roosting is likely.....**MANLAA-P if BMPs (Appendix D) used and survey reports are submitted. Programmatic concurrence.**

5a. Project will affect roosting habitat.....**LAA[+] Further consultation with the Service required.**
5b. Project will not affect roosting habitat..... **MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.**

6a. Results show some FBB activity.....**Go to 7**
6b. Results show no FBB activity.....**No Effect**

7a. Results show FBB roosting is likely.....**Go to 8**
7b. Results do not show FBB roosting is likely.....**Go to 10**

8a. Project will not affect roosting habitat.....**Go to 9**
8b. Project will affect roosting habitat.....**LAA[+] Further consultation with the Service required.**

9a. Project will affect* > 50 acres (20 hectares) (wetlands and uplands) of foraging habitat.....**LAA[+] Further consultation with the Service required.**
9b. Project will affect* ≤ 50 acres (20 hectares) (wetlands and uplands) of foraging habitat..... **MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.**

10a. Results show high FBB activity/use.....**Go to 11**
10b. Results do not show high FBB activity/use.....**Go to 12**

11a. Project will affect* > 50 acres (20 hectares) (wetlands and uplands) of FBB habitat (roosting and/or foraging)..... **LAA[+] Further consultation with the Service required.**
11b. Project will affect* ≤ 50 acres (20 hectares) (wetlands and uplands) of FBB habitat (roosting and/or foraging)..... **MANLAA-C with required BMPs (Appendix D). Further consultation with the Service required.**

12a. Project will affect* > 50 acres (20 hectares) (wetlands and uplands) of FBB habitat..... **LAA[+] Further consultation with the Service required.**
12b. Project will affect* ≤ 50 acres (20 hectares) (wetlands and uplands) of FBB habitat..... **MANLAA-P if BMPs (Appendix D) used and survey reports are submitted. Programmatic concurrence.**

13a. FBB foraging habitat exists within the project area and foraging habitat will be affected…..……..**Go to 14**

13b. FBB foraging habitat exists within the project area and foraging habitat will not be affected **OR** no FBB foraging habitat exists within the project area….……....**No Effect**

14a. Project size* > 50 acres (20 hectares) (wetlands and uplands) ……..…….....**Go to 15**

14b. Project size* ≤ 50 acres (20 hectares) (wetlands and uplands) ……...….. **MANLAA-P if BMPs (Appendix D) used. Programmatic concurrence.**

15a. Project is within 8 miles (12.9 kilometers) of high quality potential roosting areas^……..…..…**Conduct Full Acoustic Survey (Appendix B) and Go to 16**

15b. Project is not within 8 miles (12.9 kilometers) of high quality potential roosting area^…….....….**MANLAA-P if BMPs (Appendix D) used. Programmatic concurrence.**

16a. Results show some FBB activity……...…….…....**Go to 17**

16b. Results show no FBB activity……..…….…....**No Effect**

17a. Results show high FBB activity/use……...…...…....**LAA**[+] **Further consultation with the Service required.**

17b. Results do not show high FBB activity/use……..... **MANLAA-P if BMPs (Appendix D) used and survey reports submitted. Programmatic concurrence.**

[#] If you are within the urban environment and you are renovating an existing artificial structure (with or without additional ground disturbing activities), these Guidelines do not apply. The Service is developing separate guidelines for consultation in these situations. Until the urban guidelines are complete, please contact the Service for additional guidance

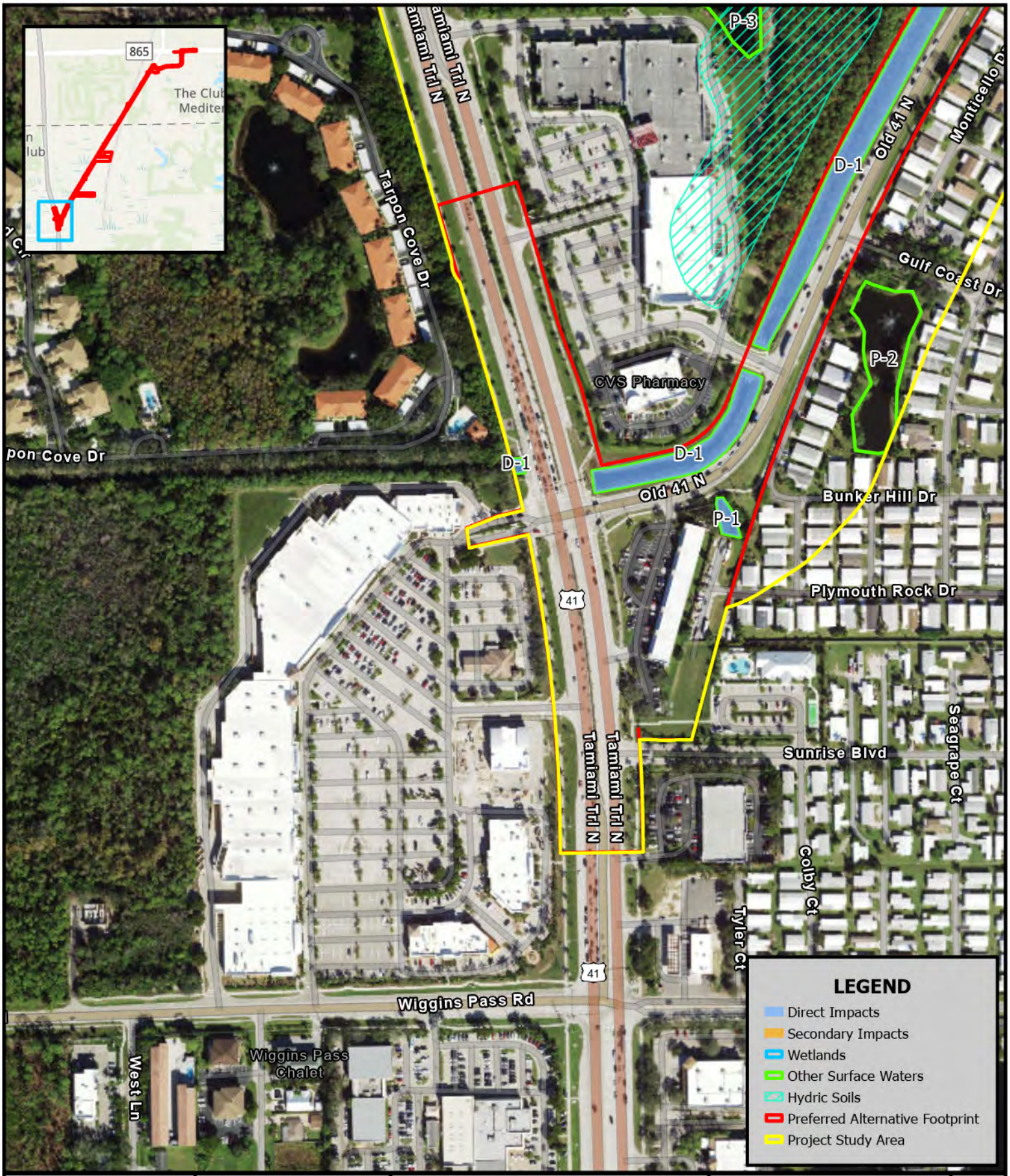
*****Includes wetlands and uplands that are going to be altered along with a 250- foot (76.2- meter) buffer around these areas if the parcel is larger than the altered area.

[+]Project modifications could change the **LAA** determinations in numbers 5, 8, 9, 11, 12, and 17 to **MANLAA** determinations.

^Determining if **high quality potential roosting areas** are within 8 mi (12.9 km) of a project is intended to be a desk-top exercise looking at most recent aerial imagery, not a field exercise.

APPENDIX J

Wetland and Other Surface Waters Map



FDOT

0 300

Feet

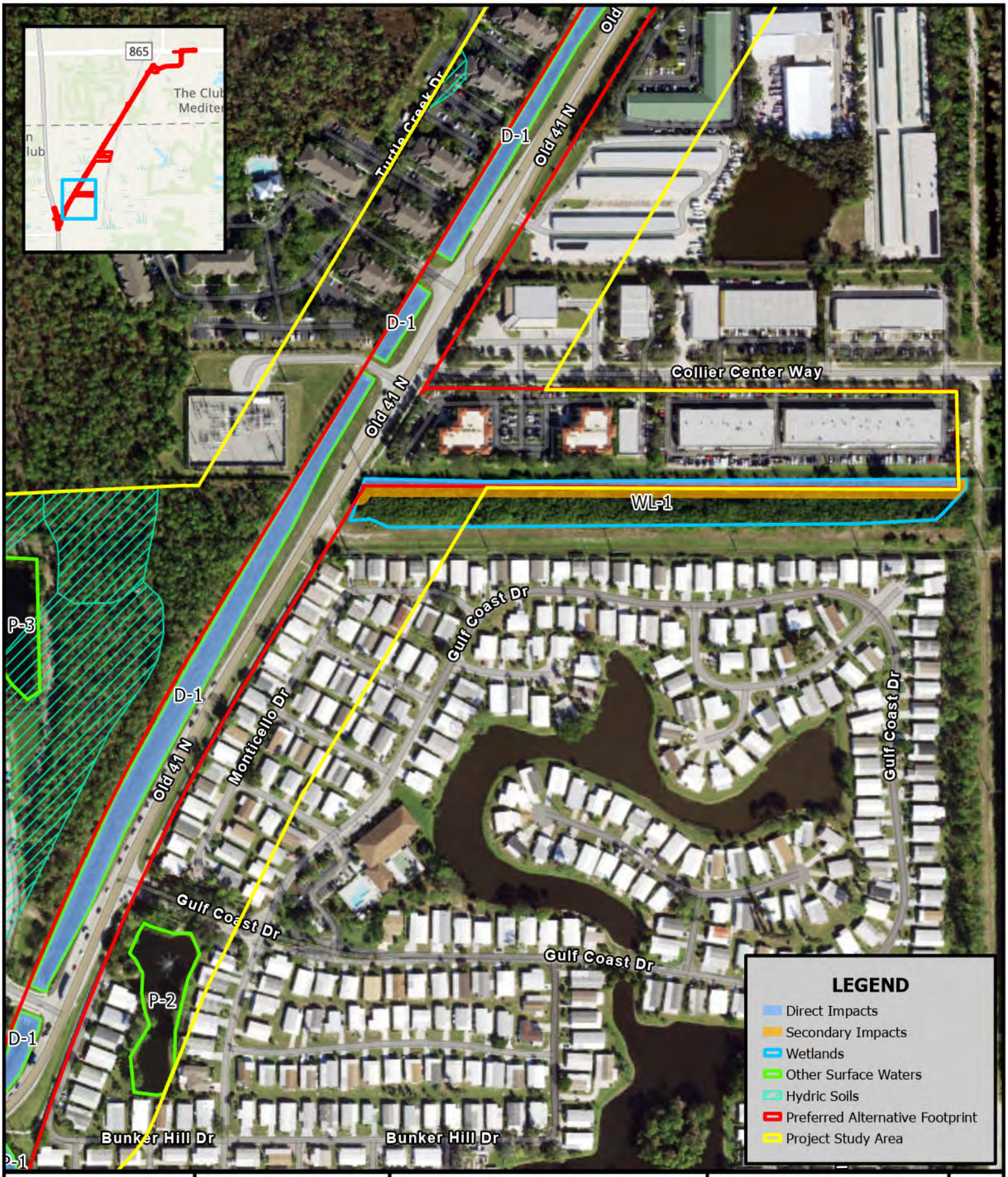
1 inch = 300 feet

Wetlands & Other Surface Waters Map

Sources: RKK 2021, SFWMD 2016

CR 887 (Old US 41)
FPIDs: 435110-1-22-01 & 435347-1-22-01
Lee & Collier Counties

N



FDOT

0 300

Feet

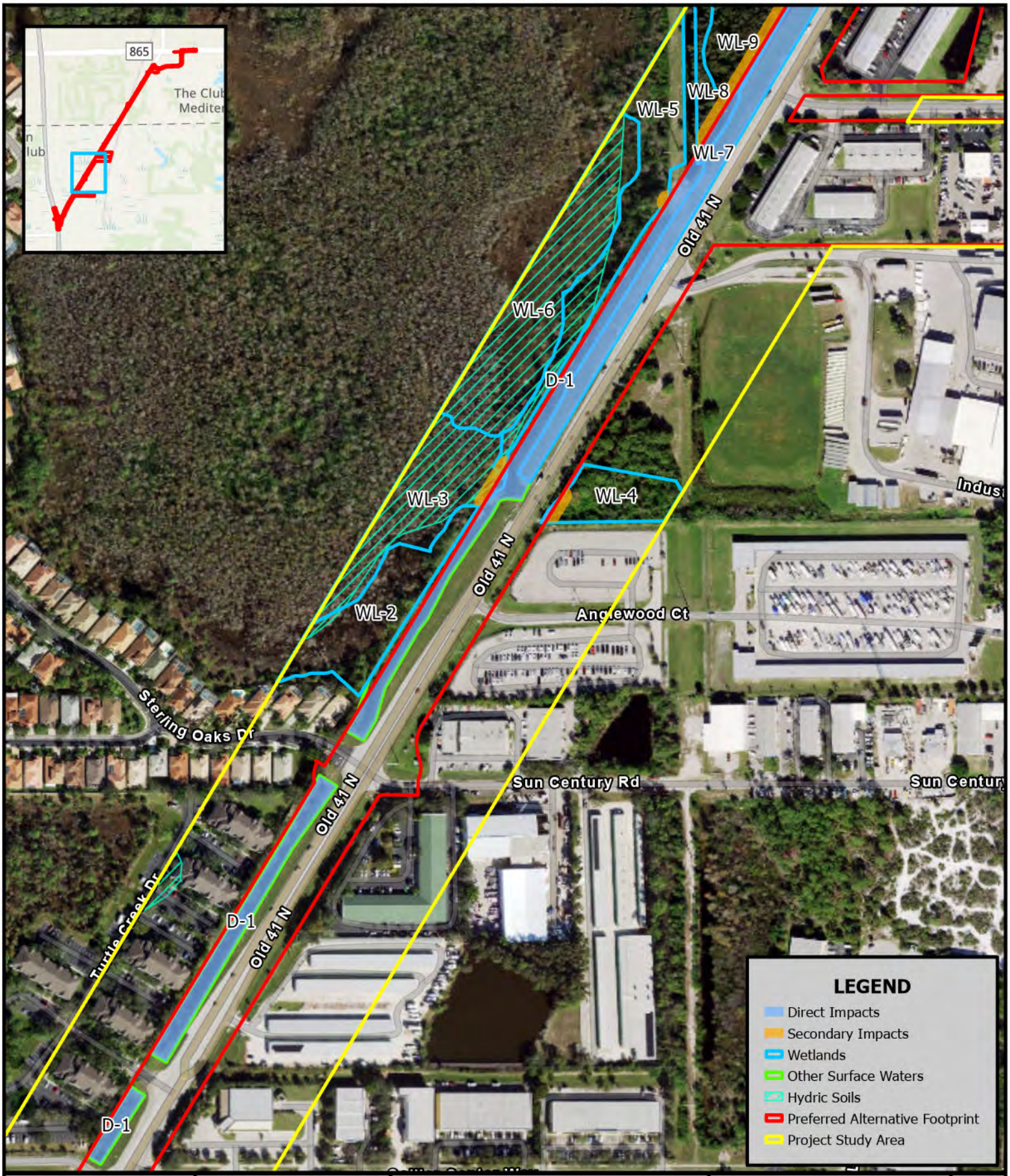
1 inch = 300 feet

Wetlands & Other Surface Waters Map

Sources: RKK 2021, SFWMD 2016

CR 887 (Old US 41)
FPIDs: 435110-1-22-01 & 435347-1-22-01
Lee & Collier Counties

N



FDOT

0 300

Feet

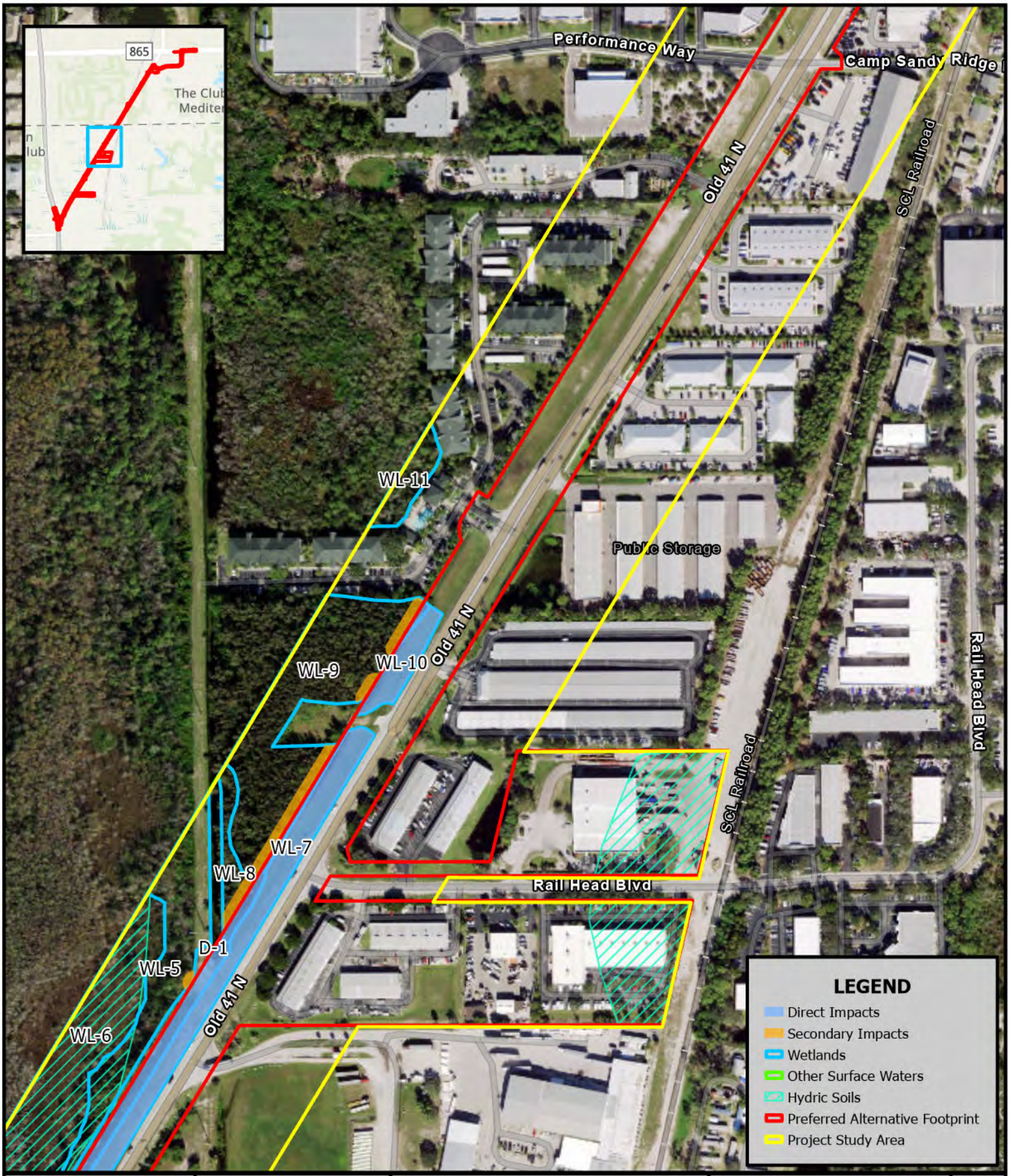
1 inch = 300 feet

Wetlands & Other Surface Waters Map

Sources: RKK 2021, SFWMD 2016

CR 887 (Old US 41)
FPIDs: 435110-1-22-01 & 435347-1-22-01
Lee & Collier Counties

N



FDOT

0 300

Feet

1 inch = 300 feet

Wetlands & Other Surface Waters Map

Sources: RKK 2021, SFWMD 2016

CR 887 (Old US 41)
FPIDs: 435110-1-22-01 & 435347-1-22-01
Lee & Collier Counties

N

FDOT

0 300

Feet

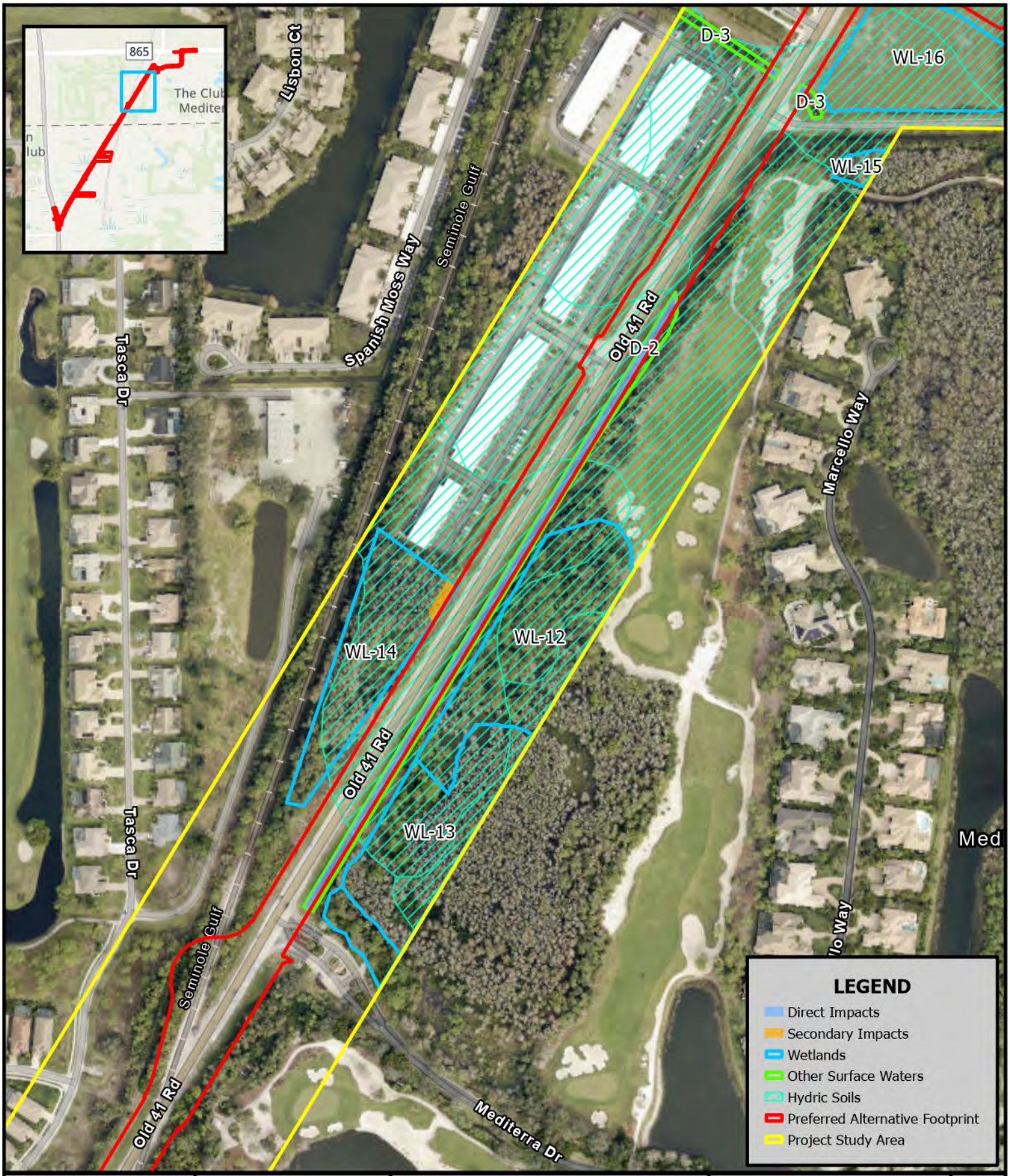
1 inch = 300 feet

Wetlands & Other Surface Waters Map

Sources: RKK 2021, SFWMD 2016

CR 887 (Old US 41)
FPIDs: 435110-1-22-01 & 435347-1-22-01
Lee & Collier Counties

N



FDOT

0 300

Feet

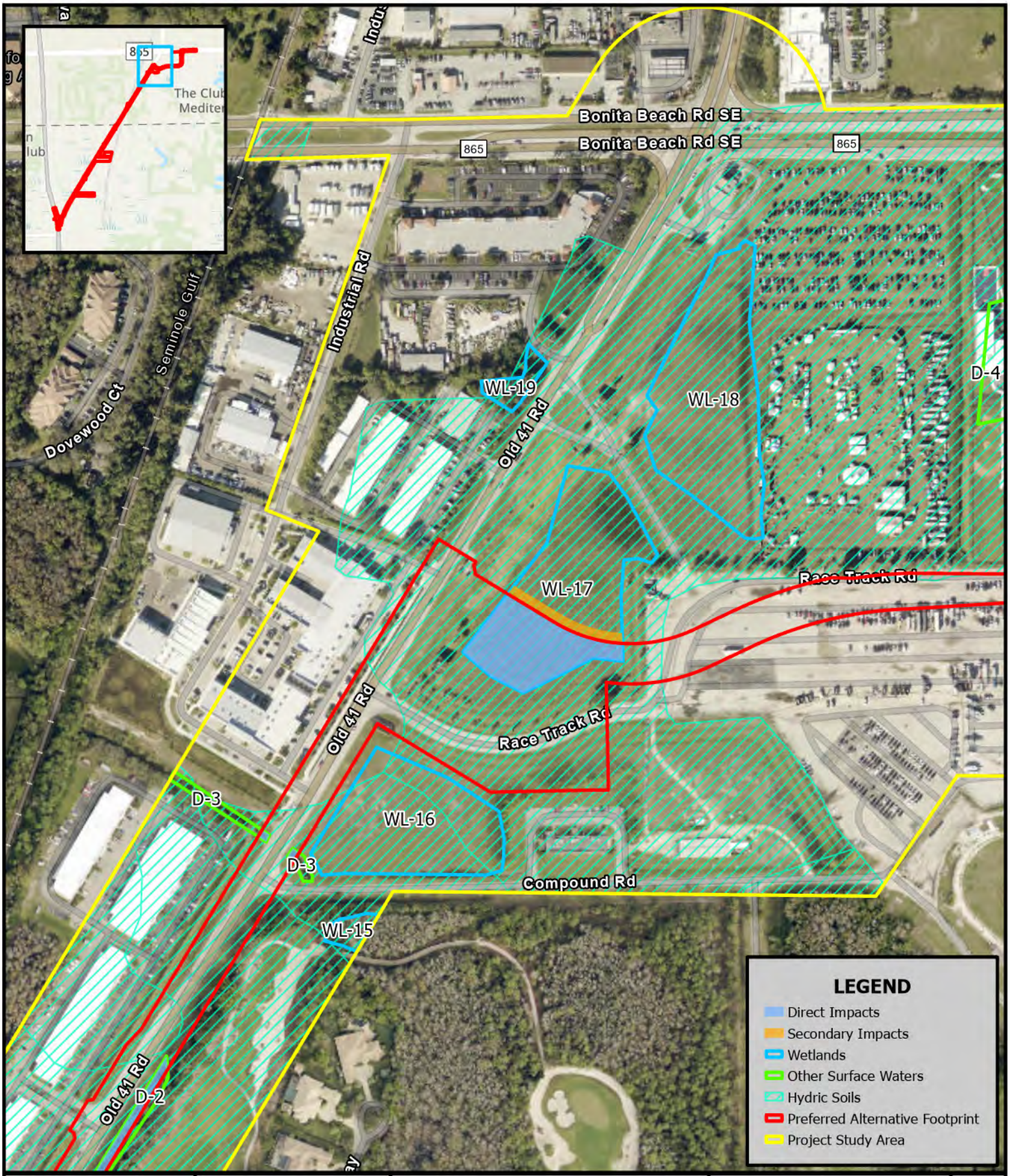
1 inch = 300 feet

Wetlands & Other Surface Waters Map

Sources: RKK 2021, SFWMD 2016

CR 887 (Old US 41)
FPIDs: 435110-1-22-01 & 435347-1-22-01
Lee & Collier Counties

N



FDOT

0 300

Feet

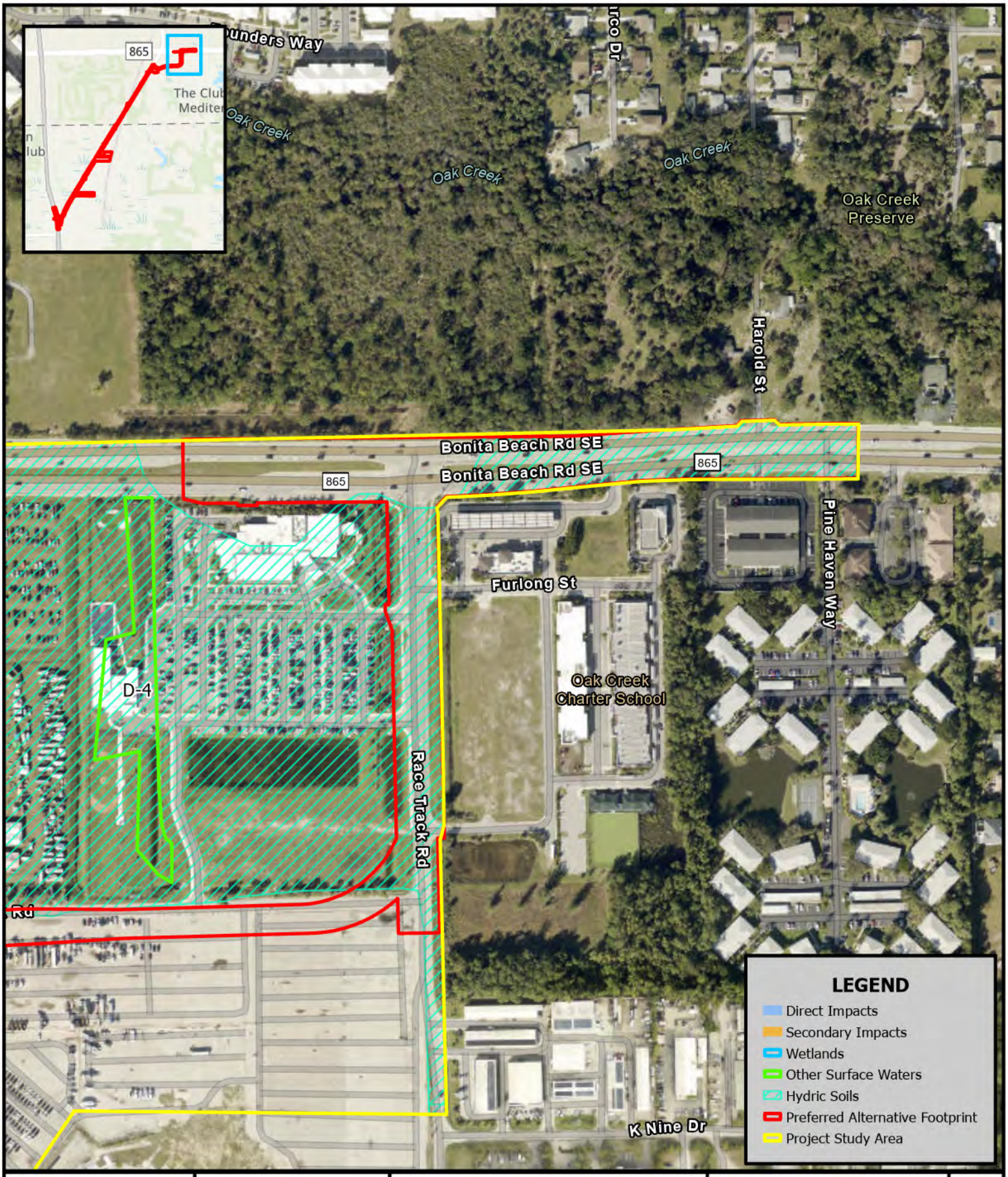
1 inch = 300 feet

Wetlands & Other Surface Waters Map

Sources: RKK 2021, SFWMD 2016

CR 887 (Old US 41)
FPIDs: 435110-1-22-01 & 435347-1-22-01
Lee & Collier Counties

N



FDOT

0 300

Feet

1 inch = 300 feet

Wetlands & Other Surface Waters Map

Sources: RKK 2021, SFWMD 2016

CR 887 (Old US 41)
FPIDs: 435110-1-22-01 & 435347-1-22-01
Lee & Collier Counties

N

APPENDIX K

Site Photos

Photo 1: D-1, north of Gulf Coast Dr

Photo 2: WL-1, south of Collier Center Way

Photo 3: WL-3, north of Anglewood Court

Photo 4: WL-4, south of Industrial Park Rd

Photo 5: Culvert set draining into D-1, north of Industrial Park Rd

Photo 6: WL-5, south of Industrial Park Rd

Photo 7: Culvert set draining into D-1 (foreground), facing north, WL-8 (background on right) north of Industrial Park Rd

Photo 8: WL-7, facing north

Photo 9: WL-10, south of Arbor View Blvd

Photo 10: WL-9 with development announcement sign visible, south of Arbor View Blvd

Photo 11: D-2 (foreground) and WL-12 and WL-13 tree (background), north of Mediterra Dr

Photo 12: WL-14, north of Mediterra Dr

Photo 13: WL-17, facing north

Photo 14: Observed Giant Wild Pine

Photo 15: Observed Stiff-leaved Wild Pine

Photo 16: Native Upland Preserve with Signage, south of Performance Way

Photo 17: Native Upland Preserve, south of Performance Way

Photo 18: Typical Potentially Occupied Gopher Tortoise Burrow

Photo 19: Observed gopher tortoise

Photo 20: Scrub Habitat, South of Mercedes Benz Dealership

APPENDIX L

UMAM Data Sheets

PART I – Qualitative Description
(See Rule 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
County Road 887 (Old US 41)		WL1, WL4, WL5, WL8

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
6170 – Mixed Wetland Hardwoods	NWI – PFO6	Impact	0.71 acre direct 1.03 acre secondary (1.74 acres total)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e. OFW, AP, other local/state/federal designation of importance)
Southern Florida/Big Cypress Swamp/03090204	Class III	

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

Vegetated wetland hardwoods adjacent to Old US 41. Roadside stormwater features occur adjacent to all systems.

Assessment area description

Forested wetland systems containing invasive Brazilian pepper with cabbage palm and red maple.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Old US 41, Sterling Oaks, Railhead Scrub Preserve	Common for the area

Functions	Mitigation for previous permit/other historic use
Offers habitat and foraging for multiple species, enhances water quality, serves as a fire buffer.	N/A

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
This area is anticipated to provide habitat and foraging for: small mammals, wading birds, amphibians, reptiles, and fish	Wood Stork – FT, possible foraging and roosting habitat Eastern Black Rail – FT, possible foraging and roosting habitat

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

None

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
Brett Berube	February 2021

PART II – Quantification of Assessment Area (impact or mitigation)
(See Rules 62-345.500 and .600, F.A.C.)

Site/Project Name County Road 887 (Old US 41)	Application Number	Assessment Area Name or Number WL1, WL4, WL5, WL8 (direct)
Impact or Mitigation Impact	Assessment conducted by: Brett Berube	Assessment date: February 2021

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

.500(6)(a) Location and Landscape Support	w/o pres or current: 6	with: 0	Occurs adjacent to Old 41 and its associated stormwater features. Does not receive significant support from upstream but is a buffer between Old 41 and other wetlands.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 6	with: 0	Water environment has been disturbed by the construction of Old 41
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 3	with: 0	Communities contain high levels of invasives (Brazilian pepper)

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres: 0.5	with: 0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.5 x 0.71 = 0.36

Delta = [with-current]
-0.5

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.300(2) [effective date 02-04-2004]
Incorporated by reference in paragraph 62-345.300(3)(b), F.A.C.

PART II – Quantification of Assessment Area (impact or mitigation)
(See Rules 62-345.500 and .600, F.A.C.)

Site/Project Name County Road 887 (Old US 41)	Application Number	Assessment Area Name or Number WL1, WL4, WL5, WL8 (secondary)
Impact or Mitigation Impact	Assessment conducted by: Brett Berube	Assessment date: February 2021

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

.500(6)(a) Location and Landscape Support	w/o pres or current: 6	with: 5	Occurs adjacent to Old 41 and its associated stormwater features. Does not receive significant support from upstream but is a buffer between Old 41 and other wetlands.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 6	with: 5	Water environment has been disturbed by the construction of Old 41
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 3	with: 3	Communities contain high levels of invasives (Brazilian pepper). Community structure won't be impacted by secondary impacts.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres: 0.5	with: 0.4333

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.06667 x 1.03 = 0.07

Delta = [with-current]
-0.06667

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Rule 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
County Road 887 (Old US 41)		WL9

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
6190 – Exotic Wetland Hardwoods	NWI – PFO1	Impact	0.09 acre direct 0.34 acre secondary (0.43 acre total)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e. OFW, AP, other local/state/federal designation of importance)
Southern Florida/Big Cypress Swamp/03090204	Class III	

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

Wetland bounded by Arbor Lake Club, power easement, and Old 41

Assessment area description

Exotic wetland dominated by melaleuca.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Old US 41, Somerset Palms, Sterling Oaks	Common for the area

Functions	Mitigation for previous permit/other historic use
Offers habitat and foraging for multiple species, enhances water quality, serves as a fire buffer.	N/A

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
This area is anticipated to provide habitat and foraging for: small mammals, wading birds, amphibians, reptiles, and fish	Wood Stork – FT, possible foraging and roosting habitat

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

none

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
Brett Berube	February 2021

PART II – Quantification of Assessment Area (impact or mitigation)
(See Rules 62-345.500 and .600, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
County Road 887 (Old US 41)		WL9 (direct)
Impact or Mitigation	Assessment conducted by:	Assessment date:
Impact	Brett Berube	February 2021

Scoring Guidance
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support w/o pres or current: 3 with: 0	System is entirely bounded by development and not able to provide or receive support with other systems.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current: 4 with: 0	The water environment has been disturbed from the construction of Old 41, a power easement, and Somerset Palms. Additionally, the presence of melaleuca has significantly altered the water environment from a natural condition.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current: 2 with: 0	System nearly solely contains the invasive melaleuca.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.30	0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.3 x 0.09 = 0.03

Delta = [with-current]
-0.30

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART II – Quantification of Assessment Area (impact or mitigation)
(See Rules 62-345.500 and .600, F.A.C.)

Site/Project Name County Road 887 (Old US 41)	Application Number	Assessment Area Name or Number WL9 (secondary)
Impact or Mitigation Impact	Assessment conducted by: Brett Berube	Assessment date: February 2021

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

.500(6)(a) Location and Landscape Support	w/o pres or current: 3	with: 2
System is entirely bounded by development and not able to provide or receive support with other systems.		
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 4	with: 3
The water environment has been disturbed from the construction of Old 41, a power easement, and Somerset Palms. Additionally, the presence of melaleuca has significantly altered the water environment from a natural condition.		
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 2	with: 2
System nearly solely contains the invasive melaleuca. Community structure won't be impacted by secondary impacts.		

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.30	0.2333

Delta = [with-current]
-0.06667

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = 0.06667 x 0.34 = 0.03

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.300(2) [effective date 02-04-2004]
Incorporated by reference in paragraph 62-345.300(3)(b), F.A.C.

PART I – Qualitative Description
(See Rule 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
County Road 887 (Old US 41)		WL3, WL14

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
6210 – Cypress	NWI – PFO2	Impact	0.03 acre direct 0.11 acre secondary (0.14 acre total)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e. OFW, AP, other local/state/federal designation of importance)
Southern Florida/Big Cypress Swamp/03090204	Class III	

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

Located between depressional wetlands and Old 41

Assessment area description

Cypress swamps with some red maple.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Old US 41, Constitution Center Conservation Easement	Common for the area

Functions	Mitigation for previous permit/other historic use
Offers habitat and foraging for multiple species, enhances water quality, serves as a fire buffer.	N/A

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
This area is anticipated to provide habitat and foraging for: small mammals, wading birds, amphibians, reptiles, and fish	Wood Stork – FT, possible foraging and roosting habitat

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

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
Brett Berube	February 2021

PART II – Quantification of Assessment Area (impact or mitigation)
(See Rules 62-345.500 and .600, F.A.C.)

Site/Project Name County Road 887 (Old US 41)	Application Number	Assessment Area Name or Number WL3, WL14 (direct)
Impact or Mitigation Impact	Assessment conducted by: Brett Berube	Assessment date: February 2021

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

.500(6)(a) Location and Landscape Support w/o pres or current: 8 with: 0	System is partially bounded by Old 41, but it is able to provide downstream support to wetlands which are part of a conservation easement. Also does not have any adjacent high quality uplands that would provide support.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current: 8 with: 0	The water environment is nearly as expected but has been slightly disturbed in the areas of proposed impacts due to presence of roadside stormwater management features.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current: 8 with: 0	Species are nearly optimal for cypress swamps, but recruitment is not as expected and management practices do not appear effective due to dense understory vegetation.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.8	0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.8 x 0.03 = 0.03

Delta = [with-current]
-0.8

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART II – Quantification of Assessment Area (impact or mitigation)
(See Rules 62-345.500 and .600, F.A.C.)

Site/Project Name County Road 887 (Old US 41)	Application Number	Assessment Area Name or Number WL3, WL14 (secondary)
Impact or Mitigation Impact	Assessment conducted by: Brett Berube	Assessment date: February 2021

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

.500(6)(a) Location and Landscape Support	w/o pres or current: 8	with: 7	System is partially bounded by Old 41, but it is able to provide downstream support to wetlands which are part of a conservation easement. Also does not have any adjacent high quality uplands that would provide support.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 8	with: 7	The water environment is nearly as expected but has been slightly disturbed in the areas of proposed impacts due to presence of roadside stormwater management features.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 8	with: 8	Species are nearly optimal for cypress swamps, but recruitment is not as expected and management practices do not appear effective due to dense understory vegetation. Community structure won't be impacted by secondary impacts.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.8	0.7333

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.06667 x 0.11 = 0.01

Delta = [with-current]
-0.06667

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART I – Qualitative Description
(See Rule 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
County Road 887 (Old US 41)		WL7, WL10

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
6400 – Vegetated Non-Forested Wetlands	NWI – PEM1x	Impact	1.90 acre direct 0.01 acre secondary (1.91 acres total)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e. OFW, AP, other local/state/federal designation of importance)
Southern Florida/Big Cypress Swamp/03090204	Class III	

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

Narrow strips of non-forested wetlands occurring largely within the Old 41 ROW. Forested wetlands occur adjacent to the systems.

Assessment area description

Non-forested wetlands occurring within maintained FDOT ROW.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Old US 41	Common for the area

Functions	Mitigation for previous permit/other historic use
Offers habitat and foraging for multiple species, enhances water quality, serves as a fire buffer.	N/A

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
This area is anticipated to provide habitat and foraging for: small mammals, wading birds, amphibians, reptiles, and fish	Wood Stork – FT, foraging and roosting habitat

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

Wood stork observed foraging

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
Brett Berube	February 2021

PART II – Quantification of Assessment Area (impact or mitigation)
(See Rules 62-345.500 and .600, F.A.C.)

Site/Project Name County Road 887 (Old US 41)	Application Number	Assessment Area Name or Number WL7, WL10(direct)
Impact or Mitigation Impact	Assessment conducted by: Brett Berube	Assessment date: February 2021

Scoring Guidance
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

.500(6)(a) Location and Landscape Support	w/o pres or current: 6	with: 0
Occurs within maintained FDOT ROW, but does serve as a buffer for downstream wetlands.		
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 6	with: 0
Systems were saturated during review, but the water environment is disturbed by Old 41 and off-tracking vehicles that produce ruts.		
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 6	with: 0
Systems do not contain invasive species, but are adjacent to systems with invasive systems and species within these systems are routinely mowed and not able to mature.		

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres: 0.6	with: 0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.60 x 1.90 = 1.14

Delta = [with-current]
-0.60

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.300(2) [effective date 02-04-2004]
Incorporated by reference in paragraph 62-345.300(3)(b), F.A.C.

PART II – Quantification of Assessment Area (impact or mitigation)
(See Rules 62-345.500 and .600, F.A.C.)

Site/Project Name County Road 887 (Old US 41)	Application Number	Assessment Area Name or Number WL7, WL10(secondary)
Impact or Mitigation Impact	Assessment conducted by: Brett Berube	Assessment date: February 2021

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

.500(6)(a) Location and Landscape Support	w/o pres or current: 6	with: 5	Occurs within maintained FDOT ROW, but does serve as a buffer for downstream wetlands.
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 6	with: 5	Systems were saturated during review, but the water environment is disturbed by Old 41 and off-tracking vehicles that produce ruts.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 6	with: 6	Systems do not contain invasive species, but are adjacent to systems with invasive systems and species within these systems are routinely mowed and not able to mature. Community structure won't be impacted by secondary impacts.

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.6	0.5333

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.06667 x 0.01 = 0.01

Delta = [with-current]
-0.06667

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.300(2) [effective date 02-04-2004]
Incorporated by reference in paragraph 62-345.300(3)(b), F.A.C.

PART I – Qualitative Description
(See Rule 62-345.400, F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
County Road 887 (Old US 41)		WL17

FLUCCs code	Further classification (optional)	Impact or Mitigation Site?	Assessment Area Size
6410 – Freshwater Marsh	NWI – PEM1	Impact	1.04 acre direct 0.18 acre secondary (1.22 acres total)

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e. OFW, AP, other local/state/federal designation of importance)
Southern Florida/Big Cypress Swamp/03090204	Class III	

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

Adjacent to dog track roads and Old 41. Appears to drain south to the cypress swamps on Mediterra property.

Assessment area description

Depressional marsh wetlands which are mowed during the dry season. Occur on undeveloped dog track property.

Significant nearby features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Old US 41, dog track, Mediterra	Common for the area

Functions	Mitigation for previous permit/other historic use
Offers habitat and foraging for multiple species, enhances water quality, serves as a fire buffer.	N/A

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
This area is anticipated to provide habitat and foraging for: small mammals, wading birds, amphibians, reptiles, and fish	Wood Stork – FT, possible foraging and roosting habitat Black rail - – FT, possible foraging habitat

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

none

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
Brett Berube	February 2021

PART II – Quantification of Assessment Area (impact or mitigation)
(See Rules 62-345.500 and .600, F.A.C.)

Site/Project Name County Road 887 (Old US 41)	Application Number	Assessment Area Name or Number WL17 (direct)
Impact or Mitigation Impact	Assessment conducted by: Brett Berube	Assessment date: February 2021

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

.500(6)(a) Location and Landscape Support	w/o pres or current: 5	with: 0
System is effectively isolated from adjacent wetlands by Old 41, dog track roads, and other dog track facilities. There are no high quality uplands adjacent to provide support to this system.		
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 5	with: 0
System water environment is disturbed due to rutting that occurs from vehicles driving through during the dry season. Vegetation debris is also disposed of within these areas altering the water environment.		
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 6	with: 0
Community structure is appropriate, but is routinely mowed and not able to reach maturity.		

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres: 0.5333	with: 0

Delta = [with-current]
-0.5333

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = 0.5333 x 1.04 = 0.56

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

PART II – Quantification of Assessment Area (impact or mitigation)
(See Rules 62-345.500 and .600, F.A.C.)

Site/Project Name County Road 887 (Old US 41)	Application Number	Assessment Area Name or Number WL17 (secondary)
Impact or Mitigation Impact	Assessment conducted by: Brett Berube	Assessment date: February 2021

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

.500(6)(a) Location and Landscape Support	w/o pres or current: 5	with: 4
System is effectively isolated from adjacent wetlands by Old 41, dog track roads, and other dog track facilities. There are no high quality uplands adjacent to provide support to this system.		
.500(6)(b)Water Environment (n/a for uplands)	w/o pres or current: 5	with: 4
System water environment is disturbed due to rutting that occurs from vehicles driving through during the dry season. Vegetation debris is also disposed of within these areas altering the water environment.		
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community	w/o pres or current: 6	with: 6
Community structure is appropriate, but is routinely mowed and not able to reach maturity. Community structure won't be impacted by secondary impacts.		

Score = sum of above scores/30 (if uplands, divide by 20)	current or w/o pres	with
	0.5333	0.46667

Delta = [with-current]
-0.06667

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

If mitigation
Time lag (t-factor) =
Risk factor =

For impact assessment areas
FL = delta x acres = 0.06667 x 0.18 = 0.02

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

Form 62-345.300(2) [effective date 02-04-2004]
Incorporated by reference in paragraph 62-345.300(3)(b), F.A.C.