

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
TECHNICAL REPORT COVERSHEET

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ENVIRONMENTAL
MANAGEMENT
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Natural Resource Evaluation Addendum

Florida Department of Transportation

District One

SR 72 at SR 70 Project Development and Environment Study

Limits of Project: SR 72 from CR 661 to SR 70, and SR 70 from CR 661 to the Peace River Bridge

DeSoto County, Florida

Financial Management Number: 443123-1

ETDM Number: N/A

Date: February 2026

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

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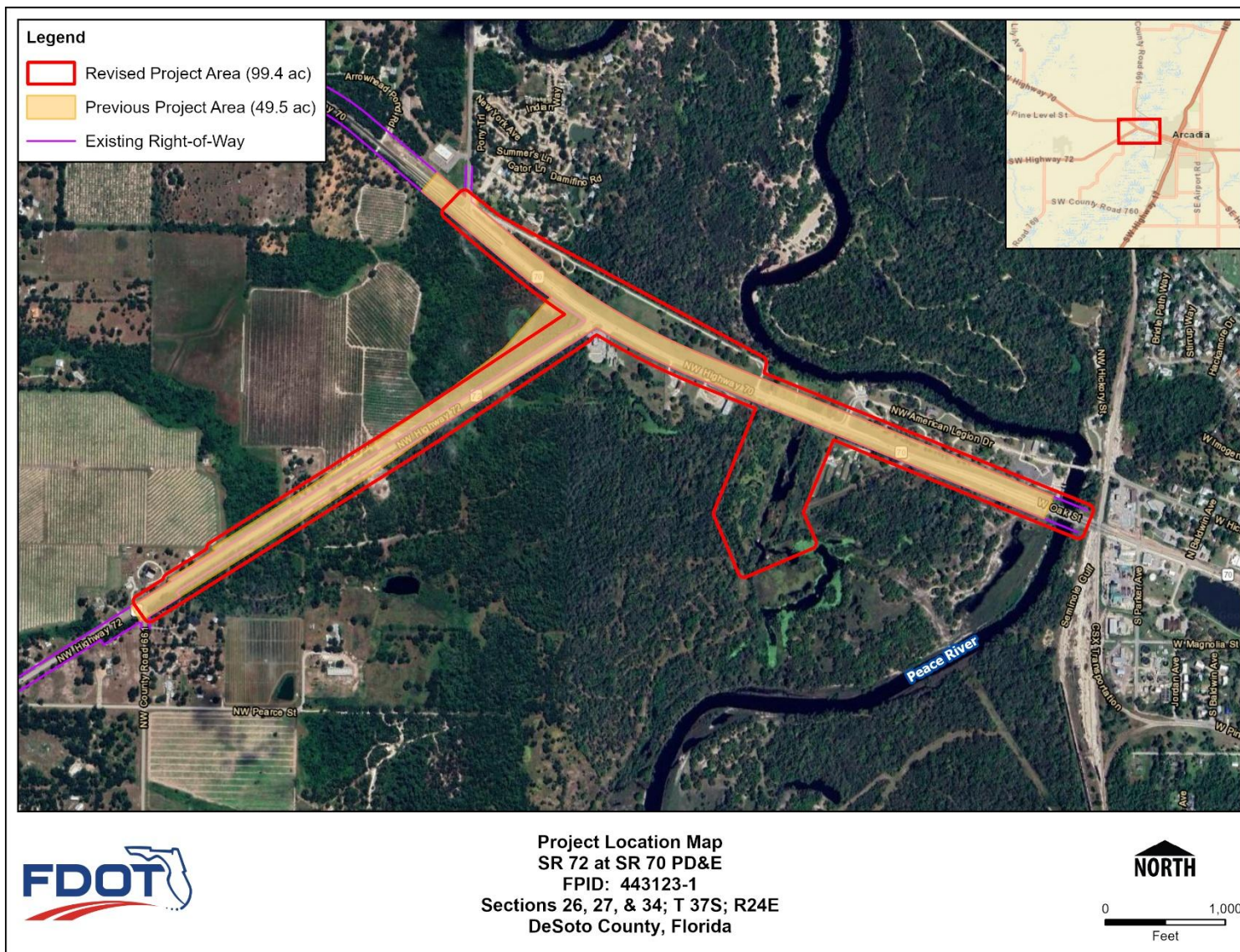
1.0 ADDENDUM OVERVIEW

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 proposed roadway improvements west of Arcadia in DeSoto County, Florida. The NRE was sent to the following agencies: U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FWC), and National Marine Fisheries Service (NMFS). The NRE was sent to all agencies on November 15, 2023; concurrence was received from the USFWS on November 28, 2023. The proposed alternative design has been shifted to the northeast to minimize impacts to the wetlands in the southwest quadrant of the SR 70 and SR 72 intersection. This will reduce Right-of-Way (R/W) impacts in this quadrant and increases R/W impacts in the southeast quadrant of the intersection as well as on the north side of SR 70.

Additionally, channel maintenance to the Peace River Relief Channel includes excavation south of the relief bridge, clearing the area between north of the relief bridge and the excavation area, and proposed grading along the relief channel from upstream to downstream. The proposed maintenance has the potential to include in-water work depending on the water elevation at the time of the channel maintenance. Due to these design changes, the revised project area (99.4 acres) increased to more than twice the size of the previously evaluated project area (49.5 acres), resulting in an additional 49.9 acres proposed for impact that were not evaluated during the 2023 NRE. The revised project area includes SR 72 from CR 661 to SR 70, and SR 70 from CR 661 to east of the Peace River bridge, as depicted in **Figure 1-1**.

A desktop review of the revised project area was conducted using the same methods and sources discussed in the 2023 NRE report, as well as updated Google Earth aerial imagery, dated June 2024. Results of the desktop review were ground-truthed during field reviews in April 2025. This addendum to the NRE documents protected species and habitat, wetlands, and other surface waters within the revised project area where they differ from those documented in the 2023 NRE report. As with the previously evaluated project area, the revised project area does not fall within Essential Fish Habitat (EFH). As such, there is no involvement with EFH.

Figure 1-1 Project Location



2.0 EXISTING ENVIRONMENTAL CONDITIONS

2.1 DRAINAGE AND TOPOGRAPHY

Drainage and topography within the revised project area are not meaningfully different from the project area evaluated in the 2023 NRE report. A map of USGS topographic contours within the revised project area is provided in **Appendix A**.

2.2 EXISTING LAND USE

The map of existing land use classifications within the 300 feet of the revised project area is provided in **Appendix A**. **Table 2-1** provides a summary of land use cover types and prevalence within 300 feet of the entire revised study area.

EXISTING ENVIRONMENTAL CONDITIONS

Section 2.0

Table 2-1 Existing Land Use Within 300 Feet of Revised Project Area

FLUCCS CODE	FLUCCS DESCRIPTION	2023 NRE		NRE ADDENDUM		CHANGE FROM 2023	
		ACRES IN 300 FT BUFFER	ACRES IN PROJECT AREA	ACRES IN 300 FT BUFFER	ACRES IN PROJECT AREA	ACRES IN 300 FT BUFFER	ACRES IN PROJECT AREA
UPLANDS							
1100	RESIDENTIAL LOW DENSITY < 2 DWELLING UNITS PER ACRE	19.1	0.8	14.3	2.3	-4.8	+1.5
1400	COMMERCIAL AND SERVICES	8.7	0.0	13.4	2.3	+4.7	+2.3
1500	INDUSTRIAL	0.0	0.0	2.3	0.0	+2.3	0.0
1800	RECREATIONAL	10.7	0.1	46.7	21.8	+36.0	+21.7
1900	OPEN LAND	42.0	22.0	32.4	23.4	-9.6	+1.4
2200	TREE CROPS	14.2	2.3	12.7	2.1	-1.5	-0.2
4340	UPLAND HARDWOOD - CONIFEROUS MIX	43.9	3.8	63.0	11.6	+19.1	+7.8
8120	RAILROADS	0.0	0.0	1.4	0.0	+1.4	0.0
8140	ROADS AND HIGHWAYS	11.8	10.6	12.2	10.6	+0.4	0.0
TOTAL UPLANDS		150.4	39.6	198.4	74.1	+48.0	+34.5
OTHER SURFACE WATERS							
5100	FRESHWATER DITCHES	0.9	0.9	1.4	1.3	+0.5	+0.4
5300	RESERVOIRS	0.6	0.0	0.2	0.0	-0.4	0.0
5100	STREAMS AND WATERWAYS	4.1	0.2	0.0	0.0	-4.1	-0.2
TOTAL OTHER SURFACE WATERS		5.6	1.1	1.6	1.3	-4.0	+0.2

EXISTING ENVIRONMENTAL CONDITIONS

Section 2.0

Table 2-1 Continued

FLUCCS CODE	FLUCCS DESCRIPTION	2023 NRE		NRE ADDENDUM		CHANGE FROM 2023	
		ACRES IN 300 FT BUFFER	ACRES IN PROJECT AREA	ACRES IN 300 FT BUFFER	ACRES IN PROJECT AREA	ACRES IN 300 FT BUFFER	ACRES IN PROJECT AREA
WETLANDS							
5100	STREAMS AND WATERWAYS	0.0	0.0	15.3	6.7	+15.3	+6.7
6150	STREAM AND LAKE SWAMPS (BOTTOMLAND)	2.7	0.2	2.4	0.3	-0.3	+0.1
6170	MIXED WETLAND HARDWOODS	26.9	6.5	32.3	8.8	+5.4	+2.3
6180	WILLOW AND ELDERBERRY	0.0	0.0	4.8	4.8	+4.8	+4.8
6410	FRESHWATER MARSHES	5.3	0.5	3.3	0.6	-2.0	+0.1
6430	WET PRAIRIES	6.9	1.7	8.6	2.8	+1.7	+1.1
6440	EMERGENT AQUATIC VEGETATION	0.7	0.0	0.0	0.0	-0.7	0.0
TOTAL WETLANDS		42.4	8.9	66.7	24.0	+24.3	+15.1
GRAND TOTAL		198.3	49.5	266.7	99.4	+68.4	+49.9

Appendix B contains detailed descriptions of upland and wetland communities within the revised project area. **Section 4.0** contains an impact assessment, including functional loss analysis. A map depicting approximate boundaries of wetlands and other surface waters is included in **Appendix A**. Representative photographs are included in **Appendix C**.

Field reviews confirmed community boundaries, dominant vegetation, and nuisance and exotic vegetation coverage in natural communities within the revised project area. Surveys also determined the presence or potential for the occurrence of protected species. Species not included in the 2023 NRE report, or for which the effect determination has changed, are discussed in greater detail in **Section 3.0**.

2.3 SOILS

Review of the revised project area and 300-foot buffer using United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey identified 14 soil types within 15 map units, which are listed in **Table 2-2** below. Of these, Bradenton-Felda-Chobee complex, occasionally flooded (7*) is dominant, making up approximately 54% of the project area. A map of Web Soil Survey results within the project area is included in **Appendix A**.

Table 2-2 NRCS Soils Within 300 Feet of Revised Project Area

MAP UNIT SYMBOL	MAP UNIT NAME	HYDRIC RATING (%)	2023 NRE ACRES		ADDENDUM ACRES		CHANGE FROM 2023	
			300 FT BUFFER	PROJECT AREA	300 FT BUFFER	PROJECT AREA	300 FT BUFFER	PROJECT AREA
4*	Basinger fine sand, frequently flooded	100	17.0	3.5	18.2	5.4	+1.2	+1.9
7*	Bradenton-Felda-Chobee complex, occasionally flooded	97	99.3	28.0	137.6	53.7	+38.3	+25.7
8*	Bradenton-Felda-Chobee complex, frequently flooded	100	15.0	3.0	31.1	20.1	+16.1	+17.1
9	Cassia fine sand, 0 to 2 percent slopes	0	5.8	2.1	4.7	2.5	-1.1	+0.4
13	EauGallie fine sand, 0 to 2 percent slopes	3	0.0	0.0	1.0	0.0	+1.0	0.0
15*	Felda fine sand, 0 to 2 percent slopes	89	0.6	0.0	3.8	0.8	+3.2	+0.8
18*	Floridana mucky fine sand, frequently ponded, 0 to 1 percent slopes	100	10.3	2.7	10.2	1.4	-0.1	-1.3
20	Immokalee fine sand, 0 to 2 percent slopes	6	8.6	3.1	11.8	4.6	+3.2	+1.5
24	Myakka fine sand, 0 to 2 percent slopes	5	0.2	0.0	0.8	0.0	+0.6	0.0
25	Ona fine sand, 0 to 2 percent slopes	5	5.1	1.5	3.1	0.4	-2.0	-1.1
36	Smyrna fine sand, 0 to 2 percent slopes	6	3.9	1.5	3.9	1.8	0.0	+0.3
37	Tavares fine sand, 0 to 5 percent slopes	0	2.9	0.0	3.6	0.1	+0.7	+0.1
41	Wabasso fine sand, 0 to 2 percent slopes	10	8.8	1.2	9.1	1.7	+0.3	+0.5
42	Zolfo fine sand, 0 to 2 percent slopes	3	18.1	2.9	19.6	4.5	+1.5	+1.6
99	Water	N/A	2.7	0.0	8.3	2.5	+5.6	+2.5
TOTAL ACRES			198.3	49.5	266.7	99.4	+68.4	+49.9

* indicates map unit with majority hydric components

3.0 PROTECTED SPECIES AND HABITAT

The revised project area was assessed for the presence of suitable habitat for federal- and/or state-listed species in accordance with 50 Code of Federal Regulation (CFR) Part 402 of the ESA of 1973, as amended, Chapters 5B-40 and 68A-27 F.A.C., and the *Protected Species and Habitat* chapter of the FDOT PD&E Manual.

3.1 METHODOLOGY

Desktop reviews were conducted in February 2025 to identify state and federally protected species occurring or potentially occurring within the revised project area. Available data and recent aerial imagery were reviewed to determine habitat types occurring within and adjacent to the project area, as discussed in **Section 2.0**. Information sources and databases utilized include but were not limited to the following:

- USFWS Information for Planning and Consulting (IPaC)
- Florida Natural Areas Inventory (FNAI) Biodiversity Matrix
- Audubon EagleWatch Bald Eagle Nest Locator Map
- Florida Department of Environmental Protection Map Direct
 - Florida wood stork foraging areas (October 7, 2021)
- Florida Fish and Wildlife Conservation Commission (FWC) GIS Data Library
 - Florida panther telemetry, mortality, and confirmed human-panther interactions
 - manatee synoptic survey locations and manatee carcass recovery locations
 - wading bird rookeries
- Global Biodiversity Information Facility (GBIF)
- University of South Florida (USF) Atlas of Florida Plants

Based on the results of database searches, field survey methods for specific habitat types and lists of target species were developed. Refer to **Figure 3-1** for a depiction of the documented species occurrence results from the database searches.

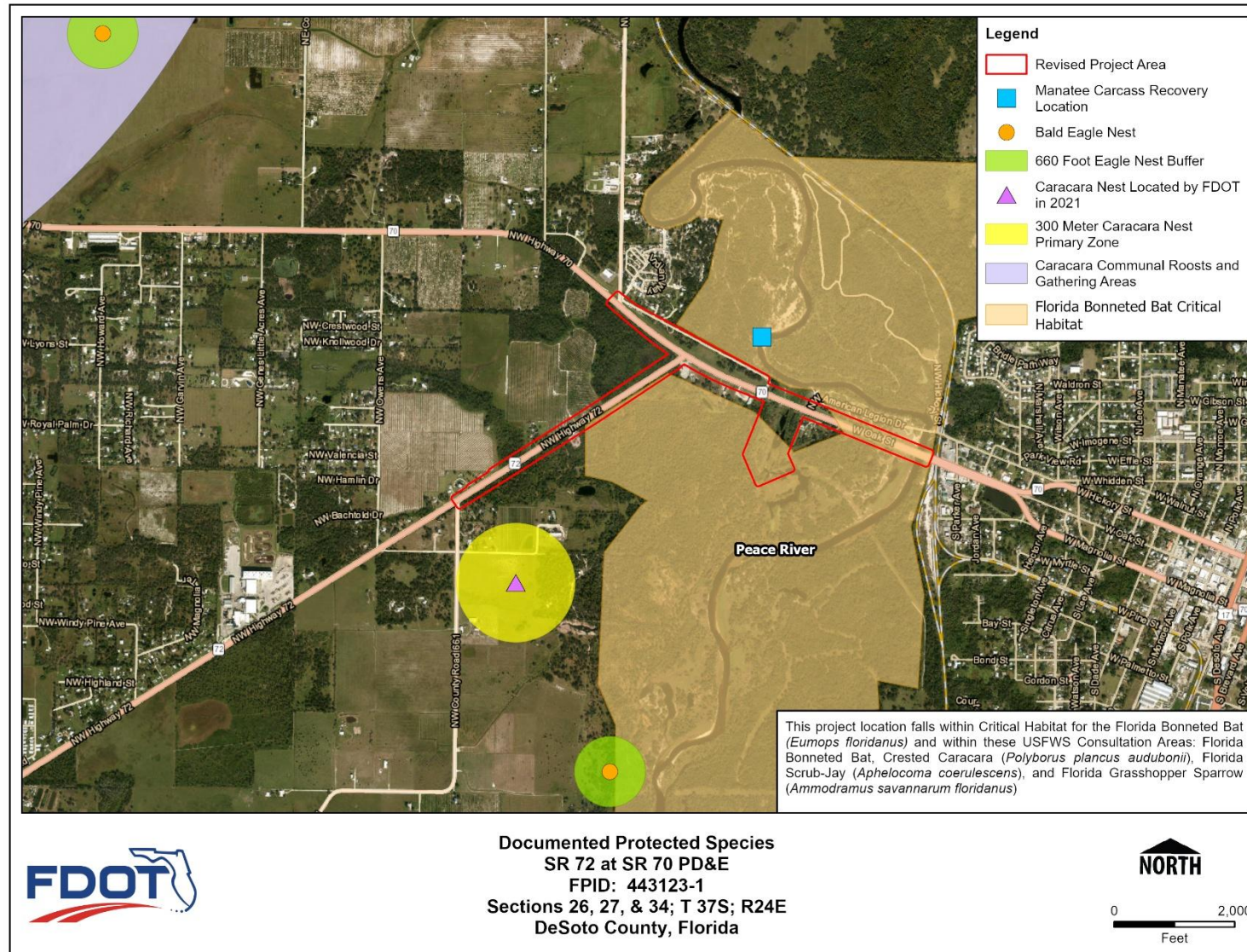
Based on this evaluation, the revised project area contains federally designated critical habitat for the Florida bonneted bat (*Eumops floridanus*), while the 2023 NRE project area did not. One (1) federally listed wildlife species (eastern black rail, *Laterallus jamaicensis jamaicensis*) and one (1) species proposed for federal listing (monarch butterfly, *Danaus Plexippus*) were added to the wildlife species discussed in the

2023 NRE report. A total of eight (8) federally listed wildlife species, five (5) state listed wildlife species, four (4) non-listed protected wildlife species, and two (2) wildlife species proposed for federal listing were identified as potentially occurring within the revised project area based on designated consultation areas and/or documented range falling within the project area. **Table 3-1** lists these wildlife species, including two (2) wildlife species for which additional survey data was obtained for this NRE Addendum and an additional two (2) wildlife species not included in the 2023 NRE report.

Five (5) state listed plant species were identified as potentially occurring within the revised project area based on known species distribution and suitable habitat within the revised project area. These plant species are provided in **Table 3-2**. Additional listed plant species documented within DeSoto County, including the federally listed endangered pygmy fringetree (*Chionanthus pygmaeus*), were not included due to a lack of suitable habitat within the revised project area. There were no changes to the plant species or effect determinations included in the 2023 NRE.

Field reviews of the revised project area took place in April 2025 and consisted of vehicular surveys, roadside observations, and pedestrian surveys to document any protected plant and wildlife species or indicators of their presence (e.g., vocalizations, tracks, scat, burrows, etc.) within or immediately adjacent to the revised project area.

Figure 3-1 Documented Protected Species



Based on the above methods, a list of potentially occurring protected species was developed, and each species was assigned a low, moderate, or high likelihood for occurrence within habitats found within the study area. Definitions for likelihood of occurrence are provided below:

No — Species with no likelihood of occurrence within the project limits are defined as those species that are known to occur in DeSoto County or the bioregion, but suitable habitat is not present within the project limits.

Low — Species with a low likelihood of occurrence within the study area are defined as those species that are known to occur in DeSoto County or the bioregion, but preferred habitat is limited within the study area, or the species is rare or has been extirpated.

Moderate — Species with a moderate likelihood for occurrence are those species known to occur in DeSoto or nearby counties, and for which suitable habitat is present within the study area, but no observations or positive indications exist to verify their presence.

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

Table 3-1 Potentially Occurring Protected and Proposed Wildlife Species

Species		Potential for Occurrence				Protected Status ¹	2023 NRE Effect Determination	Current NRE Effect Determination
		No	Low	Med	High			
Audubon's crested caracara	<i>Polygorus plancus audubonii</i>	x				FED-T	NE	NE
bald eagle	<i>Haliaeetus leucocephalus</i>		x			NL; MBTA; BGEPA; State Eagle Rule	N/A	N/A
eastern black rail	<i>Laterallus jamaicensis jamaicensis</i>	x				FED-T	-	NE ³
eastern indigo snake	<i>Drymarchon corais couperi</i>		x			FED-T	MANLAA	MANLAA ³
Florida bonneted bat	<i>Eumops floridanus</i>		x			FED-E	NE	NE
Florida panther	<i>Puma concolor coryi</i>		x			FED-E	NE	NE
Florida sandhill crane	<i>Grus canadensis</i>		x			FL-T	NEA	NEA
Florida scrub-jay	<i>Ampelocoma coerulescens</i>	x				FED-T	NE	NE
gopher tortoise	<i>Gopherus polyphemus</i>		x			FL-T	NAEA	NAEA
little blue heron	<i>Egretta caerulea</i>		x			FL-T	NAEA	NAEA
monarch butterfly	<i>Danaus Plexippus</i>		x			NL; proposed FED-T	-	N/A ³
osprey	<i>Pandion haliaetus</i>		x			NL; MBTA; ISMP	N/A	N/A
roseate spoonbill	<i>Platalea ajaja</i>		x			FL-T; ISMP	NEA	NEA
snowy egret	<i>Egretta thula</i>		x			NL; ISMP	N/A	N/A
tricolored bat	<i>Perimyotis subflavus</i>				x	NL; proposed FED-E	N/A	Anticipated MANLAA ³
tricolored heron	<i>Egretta tricolor</i>		x			FL-T; ISMP	NAEA	NAEA
West Indian manatee	<i>Trichechus manatus</i>		x			FED-T	NE	MANLAA ³
white ibis	<i>Eudocimus albus</i>		x			NL; ISMP	N/A	N/A
wood stork	<i>Mycteria americana</i>		x			FED-T	MANLAA	MANLAA

1 – **FED** = Federally Listed; **FL** = State Listed; **T** = Threatened; **E** = Endangered; **NL** = Not Listed; **ISMP** = Imperiled Species Management Plan (FWC); **MBTA** = Migratory Bird Treaty Act (USFWS); **BGEPA** = Bald and Golden Eagle Protection Act (USFWS)

2 – **NE** = No Effect; **MANLAA** = May Affect, Not Likely to Adversely Affect; **NEA** = No Effect Anticipated; **NAEA** = No Adverse Effect Anticipated

3 – Updated since 2023 NRE report: eastern black rail and monarch butterfly added in 2025; supplemental acoustic surveys for Florida bonneted bat completed in 2025; tricolored bat effect determination updated from N/A to Anticipated MANLAA in 2025

Table 3-2 Potentially Occurring Protected Plant Species

Species		Potential for Occurrence				Protected Status ¹	Notes	Effect ²
		No	Low	Medium	High			
cardinal airplant	<i>Tillandsia fasciculata</i>		x			FL-E	not observed	NEA
Florida loosestrife	<i>Lythrum flagellare</i>		x			FL-E	not observed	NEA
giant airplant	<i>Tillandsia utriculata</i>		x			FL-E	not observed	NEA
Jameson's waterlily	<i>Nymphaea jamesoniana</i>		x			FL-E	not observed	NEA
northern needleleaf	<i>Tillandsia balbisiana</i>		x			FL-T	not observed	NEA

1 – **FL** = State Listed; **T** = Threatened; **E** = Endangered

2 – **NEA** = No Effect Anticipated

There were no changes to Table 3-2 from the 2023 NRE report to the 2025 NRE Addendum

3.2 SURVEY RESULTS

No protected wildlife or plant species were observed within the revised project area during April 2025 field reviews. All wildlife and plant species identified in the 2023 NRE report as potentially occurring within the project area, based on potential availability of suitable habitat and known ranges, have potential to occur within the revised project area as well. The descriptions of these species provided in the 2023 NRE report are still relevant to the revised project. Two (2) wildlife species for which additional survey data was obtained for this NRE Addendum and two (2) wildlife species not included in the 2023 NRE report are discussed below.

3.3 FEDERALLY LISTED WILDLIFE SPECIES

3.3.1 Florida Bonneted Bat

The Florida bonneted bat is federally listed as Endangered and Critical Habitat has been designated by the USFWS. The 2023 NRE determination that the project would have no effect on the Florida bonneted bat has not changed; the revised project will have no effect on this species. However, the revised project may affect, but is not likely to adversely affect the Critical Habitat within the revised project area. The potential for this species to occur within the project area is moderate. This species requires a suitable habitat for roosting and for foraging. Roosting habitat includes any forested area containing mature, tall trees. This species has also been known to utilize artificial structures including buildings, bridges, utility poles, and bat houses for roosting. Foraging habitat must contain sources of drinking water as well as relatively open areas to find and catch prey.

The project area is within the USFWS Consultation Area and overlaps federally designated Critical Habitat for the Florida bonneted bat (**Figure 3-1**). The project area overlaps 27.1 acres (0.10%) of Critical Habitat Unit 2. Suitable foraging or roosting habitat is present in approximately 11.1 acres of the overlap, which equals 0.04% of Critical Habitat Unit 2. Channel maintenance to the Peace River Relief Channel is proposed within designated Critical Habitat, and suitable foraging and roosting habitat within these areas will be minimally impacted. No adverse modifications or destruction of habitat are anticipated as a result of project activities. The project may affect, but is not likely to adversely affect Critical Habitat for the Florida bonneted bat.

In accordance with the USFWS *Florida Bonneted Bat Consultation Guidelines* (October 2019), an acoustic survey was conducted February 8 – 16, 2023. Florida bonneted bats were not detected within the project area evaluated in the 2023 NRE report. A supplemental acoustic survey was conducted June 9 – 23, 2025. This supplemental survey covered portions of the revised project area that were

not included in the previous survey, specifically Wetland 6 south of SR 70 and Wetland 7 (the Peace River). Refer to the *Florida Bonneted Bat Acoustic Survey Technical Report* in **Appendix E**. Florida bonneted bats were not detected, therefore, pursuant to the *Florida Bonneted Bat Consultation Key* (2019), the project will have no effect on the Florida bonneted bat (1a > 2a > 3b > 6b).

3.3.2 Eastern Black Rail

The eastern black rail is federally listed as Threatened. The Eastern Black Rail was not included in the 2023 NRE but it is now evaluated in the 2026 addendum. The potential for this species to occur within the project area is low. This species is difficult to detect as it utilizes habitat with vegetation so dense it blocks the view of the ground beneath. Suitable habitat contains dense grasses, rushes, and sedges with little to no woody vegetation. Hydrology includes moist to saturated soils with areas of very shallow water. According to the USFWS, wetland types include tidal marshes, marl prairie, inland wet prairies, and managed wetlands. The wet prairie and freshwater marsh habitats present within the project area do not meet these vegetation density and hydrology criteria. The project will have no effect on this species.

3.3.3 Eastern Indigo Snake

Eastern indigo snakes are federally listed as Threatened. These large, black, non-venomous snakes occur in a variety of habitats including wetland and upland ecotones. Within the revised project area, suitable habitat includes the edges of forested and herbaceous wetlands, floodplain edges, and agricultural lands (tree crops), comprising approximately 21.3 acres total. This species feeds on snakes, frogs, salamanders, toads, small mammals, birds, and young turtles. No individuals were observed during the field surveys. Furthermore, no gopher tortoise burrows, either potentially occupied or abandoned, were identified within the project area. Therefore, the probability of occurrence for this species within the study area is low.

The most recent version of the USFWS “*Standard Protection Measures for the Eastern Indigo Snake*” will be utilized during construction. Since standard protection guidelines will be incorporated in the final project design and implemented during construction, pursuant to the USFWS *Eastern Indigo Snake Programmatic Effect Determination Key* (2017), this project is not likely to adversely affect the eastern indigo snake (A < B < C < D < E).

3.3.4 West Indian Manatee

The West Indian manatee is federally listed as Threatened and Critical Habitat has been designated by the USFWS. The 2023 NRE determination that the project would have no effect on the West Indian

manatee has changed; the revised project may affect, but is not likely to adversely affect on this species. Manatees are mammals found in marine, estuarine, and freshwater waterbodies, where they feed on underwater vegetation. The project area falls within the USFWS consultation area for the West Indian manatee, but not within the designated critical habitat. The Peace River, which is accessible to manatees, is included in the revised project area. The proposed scope of work has the potential to include in-water work for channel maintenance to the Peace River, which may affect but is not likely to adversely affect the manatee.

3.4 WILDLIFE SPECIES PROPOSED FOR FEDERAL LISTING

3.4.1 Monarch Butterfly

The monarch butterfly is not currently protected at the federal or state level but is proposed for federal listing as Threatened. The monarch butterfly was not included in the 2023 NRE but it is now evaluated in the 2026 addendum. The potential for this species to occur within the project area is low. Caterpillars of the species feed on milkweed (*Asclepias* sp.) leaves; adults feed on nectar from flowering plants including milkweed. Adult monarch butterflies migrate long distances between summer breeding habitat and overwintering habitat. Suitable habitat varies but must contain flowering plants for nectar and milkweed on which to lay eggs. Neither monarch butterflies nor milkweed was observed during field review, but flowering plant species are present in the revised project area. Should the monarch butterfly become listed by the USFWS, the FDOT commits to re-initiating consultation with the USFWS to determine the appropriate survey methodology and to address the USFWS regulations regarding the protection of the monarch butterfly.

3.4.2 Tricolored Bat

The tricolored bat is not currently protected at the federal or state level but is proposed for federal listing as Endangered. The USFWS Information for Planning and Consultation (IPaC) report did not list the tricolored bat as potentially occurring within the project area. However, potential for this species to occur within the project area is high based on the results of acoustic surveys in 2023 and 2025. Therefore, the species was included in the 2023 NRE and in this NRE Addendum. Tricolored bats hibernate in caves, tunnels, and abandoned mines in the winter, and roost in mature hardwood trees during spring, summer, and fall. They hunt insects at night over waterbodies and at forested edges. The project limits contain suitable roosting habitat (mature hardwood forests) and hunting habitat (open water and forested edges) for this species

During both the 2023 and 2025 Florida bonneted bat acoustic surveys discussed in **Section 3.3.1**, acoustic software identified WAV files containing tricolored bat echolocations. A total of 54 recordings were identified as tricolored bat calls via manual vetting in 2023, but the survey was conducted

outside of the dates accepted by the USFWS for tricolored bat surveys. A total of 1,920 recordings were identified as tricolored bat calls using AutoID in 2025, but these files were not manually verified by biologists. Additional data analysis would be required to confirm that these were tricolored bat recordings but given the high number of recorded calls it is presumed that the species does exist in the project study area.

Pursuant to *FDOT Tricolored Bat Consultation Guidance* (January 2025) the anticipated effect determination for this species is a may affect, not likely to adversely affect. In the 2023 NRE report, written prior to the FDOT guidance, the effect determination for this species was not applicable (N/A). As the timeline for construction is better defined, the 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 culverts, 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, which includes avoidance of tree trimming/clearing during tricolored bat pup season or when bats may be in torpor, 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.

4.0 WETLAND EVALUATION

4.1 METHODOLOGY

A variety of resources including the USFWS National Wetlands Inventory (NWI) data, NRCS Web Soil Survey data, aerial imagery, Digital Elevation Model (DEM) imagery, and field surveys were employed to identify the wetland communities that occur within the project area. The results of desktop review were ground truthed during field reviews in February 2023 and April 2025.

Wetland boundaries were delineated using the USACE *Wetland Delineation Manual* (1987), the USACE *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region* (2010), the FDEP *The Florida Wetlands Delineation Manual* (1995), and *Rule 62-340, F.A.C., Delineation of the Landward Extent of Wetlands and Surface Waters*. GPS points utilizing Avenza™ mobile phone application were taken along each delineated boundary.

Distinction between wetland habitat and other surface water systems was required for this project primarily due to the linear and generally man-made features which are present along much of the study area. Man-made systems such as excavated ditch systems are identified as other surface waters, which may or may not be jurisdictional. Shallow swale systems associated with the roadway are not considered wetlands or other surface waters, and therefore, were not evaluated or recorded during field surveys.

4.2 SURVEY RESULTS

The results of field surveys conducted in April 2025 are included in **Table 4-1**. Approximately 24.10 acres of wetlands and 1.27 acres of other surface waters were identified and delineated within the revised project area. Wetland areas within the revised project area are of high to moderate quality with some indicators of disturbance and low to moderate coverage of nuisance and exotic species present. **Appendix B** contains detailed descriptions of wetland communities and **Appendix C** contains representative photographs. Surface waters within the project area consist of excavated ditches.

4.3 WETLAND IMPACTS

The 2023 NRE report assessed wetland impacts based on the entire project area being a primary impact area and the 25-foot buffer around the project area being a secondary impact area. Six (6) wetlands and four (4) surface waters overlapped the assessment area and the total proposed impacts

included 8.88 acres of primary impacts to wetlands, 2.69 acres of secondary impacts to wetlands, and 0.89 acres secondary impacts to surface waters.

For purpose of this NRE Addendum, wetland impacts are based on the entire revised project area being a primary impact area and the 25-foot buffer around the revised project area being a secondary impact area. The exception to this is Wetland 7 (the Peace River), where no in-water work is proposed. Actual impacts may be lower based on the final project design. **Table 4-1** lists the primary and secondary impacts to wetlands and other surface waters within the revised project area.

Table 4-1 Impacts to Wetlands and Surface Waters

ID	CLASSIFICATION		2023 NRE IMPACTS (ACRES)		NRE ADDENDUM IMPACTS (ACRES)		CHANGE FROM 2023 NRE IMPACTS (ACRES)**	
	FLUCCS	USFWS*	PRIMARY	SECONDARY	PRIMARY	SECONDARY	PRIMARY	SECONDARY
Wetland 1	Stream (Bottomland) (6150)	R3UB2	0.04	0.05	0.27	0.03	+0.23	-0.02
Wetland 2	Mixed Wetland Hardwoods (6170)	PFO1	0.60	0.28	1.14	0.27	+0.54	-0.01
Wetland 3	Mixed Wetland Hardwoods (6170)	PFO1	0.46	0.20	0.87	0.17	+0.41	-0.03
Wetland 4	Mixed Wetland Hardwoods (6170)	PFO1	5.63	0.94	4.45	1.20	-1.18	+0.26
Wetland 5	Mixed Wetland Hardwoods (6170)	PFO1	0.43	0.80	3.01	0.80	+2.58	no change
Wetland 6	Wet Prairie (6430)	PEM1	1.72	0.42	2.85	0.44	+1.13	+0.02
	Willow and Elderberry (6180)	PSS1	<i>not included in 2023</i>		4.79	0.00	+4.79	-
	Streams and Waterways (5100)	R2UB2	<i>not included in 2023</i>		5.69	0.17	+5.69	+0.17
Wetland 7	Streams and Waterways (5100)	R2UB2	<i>not included in 2023</i>		0.00	0.00	-	-
Surface Water 1	Ditch (5100)	-	0.05	-	0.05	-	no change	-
Surface Water 2	Ditch (5100)	-	0.09	-	0.09	-	no change	-
Surface Water 3	Ditch (5100)	-	0.25	-	0.25	-	no change	-
Surface Water 4	Ditch (5100)	-	0.50	-	0.50	-	no change	-
Surface Water 5	Ditch (5100)	-	<i>not included in 2023</i>		0.03	-	+0.03	-
Surface Water 6	Ditch (5100)	-	<i>not included in 2023</i>		0.35	-	+0.35	-
TOTAL WETLAND IMPACTS			8.88	2.69	23.07	3.08	+14.19	+0.39
TOTAL SURFACE WATER IMPACTS			0.89	-	1.27	-	+0.38	-

* **R3UB2** = Riverine, Upper Perennial, Unconsolidated Bottom, Sand; **PFO1** = Palustrine, Forested, Broad-Leaved Deciduous; **PEM1** = Palustrine, Emergent, Persistent; **PSS1** = Palustrine, Scrub-Shrub, Broad-Leaved Deciduous; **R2UB2** = Riverine, Lower Perennial, Unconsolidated Bottom, Sand

** Change was calculated by subtracting the impact acres in the 2023 NRE report from the impact acres in the NRE Addendum. Compared to the 2023 NRE report, the NRE Addendum includes one (1) new wetland and two (2) new surface waters, as well as expanded areas of Wetland 6.

4.4 UNIFORM MITIGATION ASSESSMENT METHOD (UMAM)

Wetlands in the revised project area were assessed using the Uniform Mitigation Assessment Method (UMAM) pursuant to Chapter 62-345 F.A.C., as described in the 2023 NRE report. **Table 4-2** summarizes the functional analysis for each wetland in the project area including functional loss and required mitigation credits. UMAM forms are included in **Appendix D**. A total of 16.4 functional loss units were assessed for the revised Preferred Alternative compared to 6.4 functional loss units assessed in the 2023 NRE.

Table 4-2 Functional Analysis Summary for Wetlands in the Project Area

WETLAND ID		Wetland 1	Wetland 2	Wetland 3	Wetland 4	Wetland 5	Wetland 6			Wetland 7
WETLAND CLASSIFICATION	FLUCCS	6150	6170	6170	6170	6170	6430	6180	5100	5100
	USFWS	R3UB2	PFO1	PF01	PFO1	PFO1	PEM1	PSS1	R2UB2	R2UB2
UMAM SCORE	CURRENT CONDITIONS	0.8	0.7	0.8	0.7	0.8	0.7	0.7	0.7	0.8
	WITH PRIMARY IMPACT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
	WITH SECONDARY IMPACT	0.8	0.7	0.8	0.7	0.7	0.6	-	0.6	-
IMPACTS (ACRES)	PRIMARY	0.27	1.14	0.87	4.45	3.01	2.85	4.79	5.69	0.00
	SECONDARY	0.03	0.27	0.17	1.20	0.80	0.44	0.00	0.17	0.00
FUNCTIONAL LOSS	WITH PRIMARY IMPACT	-0.2	-0.8	-0.7	-3.3	-2.3	-1.9	-3.2	-3.8	-
	WITH SECONDARY IMPACT	0.0	0.0	0.0	-0.1	0.0	0.0	-	0.0	-
MITIGATION CREDITS REQUIRED	PER WETLAND	0.2	0.8	0.7	3.3	2.3	8.9			-
	PER WETLAND CLASSIFICATION	0.2	7.2				1.9	3.2	3.8	

4.5 WETLAND MITIGATION

Based on the current wetland impact calculations, which consider the entire revised project area a primary impact area and the 25-foot buffer around the revised project area a secondary impact area, 9.2 freshwater forested wetland mitigation credits and 6.0 freshwater herbaceous wetland mitigation credits will be required to offset primary and secondary impacts, compared to 5.3 freshwater forested wetland mitigation credits and 1.1 freshwater herbaceous wetland mitigation credits calculated in the 2023 NRE report. Actual impacts, and therefore required mitigation credits, may be lower based on the final project design.

The project area is located within the Peace River comprehensive watershed and the Peace River drainage basin as designated by the SWFWMD. Additionally, the project area is within the service area of the Tippen Bay Wetland Mitigation Bank, Peace River Mitigation Bank, Tippen Bay Wetland Mitigation Bank, Horse Creek Mitigation Bank, and Boran Ranch Mitigation Bank.

SWFWMD mitigation credits are currently available for Tippen Bay Wetland Mitigation Bank, Peace River Mitigation Bank, and Horse Creek Mitigation Bank; Boran Ranch Mitigation Bank is sold out of credits. Tippen Bay Wetland Mitigation Bank has 44 freshwater forested wetland mitigation credits and 38 freshwater herbaceous wetland mitigation credits available. Peace River Mitigation Bank and Horse Creek Mitigation Bank have a combined total of more than 60 freshwater forested wetland mitigation credits available. Additionally, Horse Creek Mitigation Bank has more than 60 freshwater herbaceous wetland mitigation credits available, and seven (7) federal credits. Each federal credit from Horse Creek Mitigation Bank offsets 7.14 kilograms of short hydroperiod biomass for wood stork SFH.

Availability of mitigation bank credits change over time and should be confirmed during later phases of the project. Efforts will be made to fully mitigate impacts within the same drainage basin as the impacts occurred, thereby avoiding unacceptable cumulative impacts.

4.6 ESSENTIAL FISH HABITAT

According to the Inland EFH Mapper published by NOAA, EFH has not been designated within the revised project area. Therefore, an EFH Assessment is not required and consultation with NMFS is not required. There is no involvement with EFH.

5.0 ANTICIPATED PERMITS

5.1 COORDINATION WITH THE PERMITTING AGENCIES

This project is anticipated to require the following permits:

5.1.1 *United States Army Corps of Engineers*

- Section 404 – Impacts to Waters of the United States (WOTUS) will require a permit from the USACE pursuant to Section 404 of the Clean Water Act (CWA).

5.1.2 *Southwest Florida Water Management District (SWFWMD)*

- Environmental Resource Permit (ERP) - Wetland impacts will require an ERP, issued by SWFWMD under the authority of Part IV of Chapter 373, Florida Statutes (F.S.).

5.1.3 *Florida Department of Environmental Protection (FDEP)*

- National Pollutant Discharge Elimination System (NPDES) Permit - Construction activities that disturb 1.0 acre or more of land, or discharge stormwater to surface waters of the state, require an NPDES permit, issued by FDEP under the authority of section 403.0885, Florida Statutes F.S.

6.0 IMPLEMENTATION MEASURES AND COMMITMENTS

6.1 IMPLEMENTATION MEASURES

These three (3) implementation measures are the same as in the 2023 NRE report.

- 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.
- Should any protected plant species be identified within the project limits during later project phases, the FDOT will report them to the Florida Department of Agriculture and Consumer Services (FDACS).
- Unavoidable wetland impacts will be mitigated to satisfy all mitigation requirements of Part IV, Chapter 373, F.S. and 33 U.S.C.S 1344 by purchase of mitigation bank credits, or creation, restoration, or enhancement of wetlands.

6.2 COMMITMENTS

The following two (2) commitments (concerning the wood stork and the Eastern indigo snake) are the same as in the 2023 NRE report.

- The 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.
- The most recent version of the USFWS “*Standard Protection Measures for the Eastern Indigo Snake*” will be utilized during construction.

The following commitment concerning the tricolored bat has been updated since the 2023 NRE report.

- Should the tricolored bat become listed by the USFWS, the FDOT will adhere to the applicable commitment below, pursuant to *FDOT Tricolored Bat Consultation Guidance* (January 2025).
 - 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 culverts, 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, which includes avoidance of tree trimming/clearing during tricolored bat pup season or when bats may be in torpor, 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.”

The following two (2) commitments (concerning the Monarch Butterfly and the West Indian Manatee) are new and not previously discussed in the 2023 NRE report.

- The monarch butterfly is not currently protected but is a candidate for federal listing. Should this species become listed during later project phases, the FDOT will initiate consultation with the USFWS.

- The West Indian Manatee has the potential to be affected during channel maintenance to the Peace River Relief Channel. Should water in the Peace River Relief Channel rise to an elevation requiring in-water work, the FDOT commits to using the *Standard Manatee Conditions for In-Water Work*.

REFERENCES

- Audubon Eagle Watch Program. *Bald Eagle Nest Locator Map*. Accessed February 2025. <<https://cbop.audubon.org/conservation/about-eaglewatch-program>>
- Avenza Systems. *Avenza Maps Plus* (version 5.0.1). [Mobile App]. Apple App Store. <<https://apps.apple.com/app/apple-store/id388424049>>.
- Cowardin et. al. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Department of the Interior Fish and Wildlife Service. Washington, D.C.
- Esri. ArcGIS Pro (3.5.0). [Desktop App]. *Google Earth Base Map*.
- Federal Geographic Data Committee. 2013. *Classification of Wetlands and Deepwater Habitats of the United States*. Accessed June 2025. <<https://www.fgdc.gov/standards/projects/wetlands/nwcs-2013>>
- Florida Association of Environmental Soil Scientists. 2007. *Hydric Soils of Florida Handbook*, 4th Edition, Gainesville, FL.
- Florida Department of Environmental Protection Open Data Administrator. *Florida Wood Stork Foraging Areas*. (October 7, 2021). Downloaded July 2023. <<https://geodata.dep.state.fl.us/datasets/FDEP::florida-wood-stork-foraging-areas/about>>
- Florida Department of State. *The Uniform Mitigation Assessment Method*. Chapter 62-345 F.A.C. <<https://www.flrules.org>>
- Florida Department of Transportation. January 1999. *Florida Land Use, Cover and Forms Classification System*. Surveying and Mapping Thematic Mapping Section. Tallahassee, Florida. 91 pp.
- Florida Department of Transportation. January 2025. *FDOT Tricolored Bat Consultation Guidance*. <fdot.blob.core.windows.net/tcbconsultationguidance2025>
- Florida Department of Transportation. October 2024. *Black Rail ESA determination guidelines*. <[fdotwww.blob.core.windows.net/sitefinity/docs/default-source/environment/pubs/protected-species/final_black-rail-esa-determination-guidelines_2024\(4\)_fwsinput.pdf?sfvrsn=2720de1d_2](https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/environment/pubs/protected-species/final_black-rail-esa-determination-guidelines_2024(4)_fwsinput.pdf?sfvrsn=2720de1d_2)>
- Florida Fish and Wildlife Conservation Commission. *Species Profiles*. Accessed April 2025. <<https://myfwc.com/wildlifehabitats/profiles>>.
- Gilbert, K.M., Tobe, J.D., Cantrell, R.W., Sweeley, M.E., Cooper, J.R. 1995. *The Florida Wetlands Delineation Manual*. Florida Department of Environmental Protection. 198 pp.
- Google Earth Pro version 7.3.3.9345. (June 2024) Desktop Application. Accessed May and June 2025.

REFERENCES

- Southwest Florida Water Management District. *Land_Use_Land_Cover_2020*. Downloaded May 2025. <<http://www.swfwmd.state.fl.us/data/gis>>.
- Tobe, J. D., Burks, K.C., Cantrell, R.W., Garland, M.A., Sweeley, M.E., Hall, D.W., Raymond, N. 1998. *Florida Wetland Plants An Identification Manual*. Florida Department of Environmental Protection. Tallahassee, Florida.
- University of Florida Institute of Systemic Botany. *Atlas of Florida Plants*. Accessed May 2025. <<http://www.florida.plantatlas.usf.edu>>.
- U.S. Army Corps of Engineers (Jacksonville District). 1987. *Corps of Engineers' Wetlands Delineation Manual, Technical Report Y-87-10*. US Army Corps of Engineers. Jacksonville, Florida. 319 pp.
- U.S. Army Corps of Engineers Wetlands Regulatory Assistance Program. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region*, Version 2.0. 169 pp.
- U.S. Army Corps of Engineers and State of Florida. April 2013. *Effect Determination Key for the Manatee in Florida*.
- U.S. Department of Agriculture. *Web Soil Survey*. Natural Resources Conservation Service. Accessed May 2025. <<https://websoilsurvey.nrcs.usda.gov/app>>.
- U.S. Department of Agriculture, Natural Resources Conservation Service. 2016. *Field Indicators of Hydric Soils in the United States*, Version 8.0. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.
- U.S. Fish and Wildlife Service. *National Wetlands Inventory*. Downloaded October 6, 2023. <www.fws.gov/wetlands/Data/State-Downloads.html>.
- U.S. Fish and Wildlife Service. *Information for Planning and Consultation*. Accessed February 2025 and November 2025. <<https://ipac.ecosphere.fws.gov/>>
- U.S. Fish and Wildlife Service South Florida Ecological Services Office. October 2019. *Florida Bonneted Bat Consultation Guidelines*. <https://www.fws.gov/sites/default/files/documents/20191023_2019_FBB%20Consultation%20GuidelinesFinal.pdf>
- U.S. Fish and Wildlife Service, Florida Ecological Services Field Office. 2024. *Florida bonneted bat (Eumops floridanus) final critical habitat*. U.S. Department of the Interior, U.S. Fish and Wildlife Service, Southeast Region. Florida
- U.S. Fish and Wildlife Service. *WOST_ColoniesActive_2010_2019_FL*. Downloaded April 10, 2020. <website no longer available>.

REFERENCES

- U.S. Fish and Wildlife Service. September 13, 2022. *Proposal to List the Tricolored Bat as Endangered*. <<https://www.fws.gov/press-release/2022-09/proposal-list-tricolored-bat-endangered>>.
- U.S. Geological Survey. The National Map. *Contours*. Downloaded May 2025. <<https://viewer.nationalmap.gov/basic>>.
- Yarlett, Lewis L. 1996. *Common Grasses of Florida and the Southeast*. The Florida Native Plant Society. Spring Hill, Florida. 167 pp.

APPENDIX A

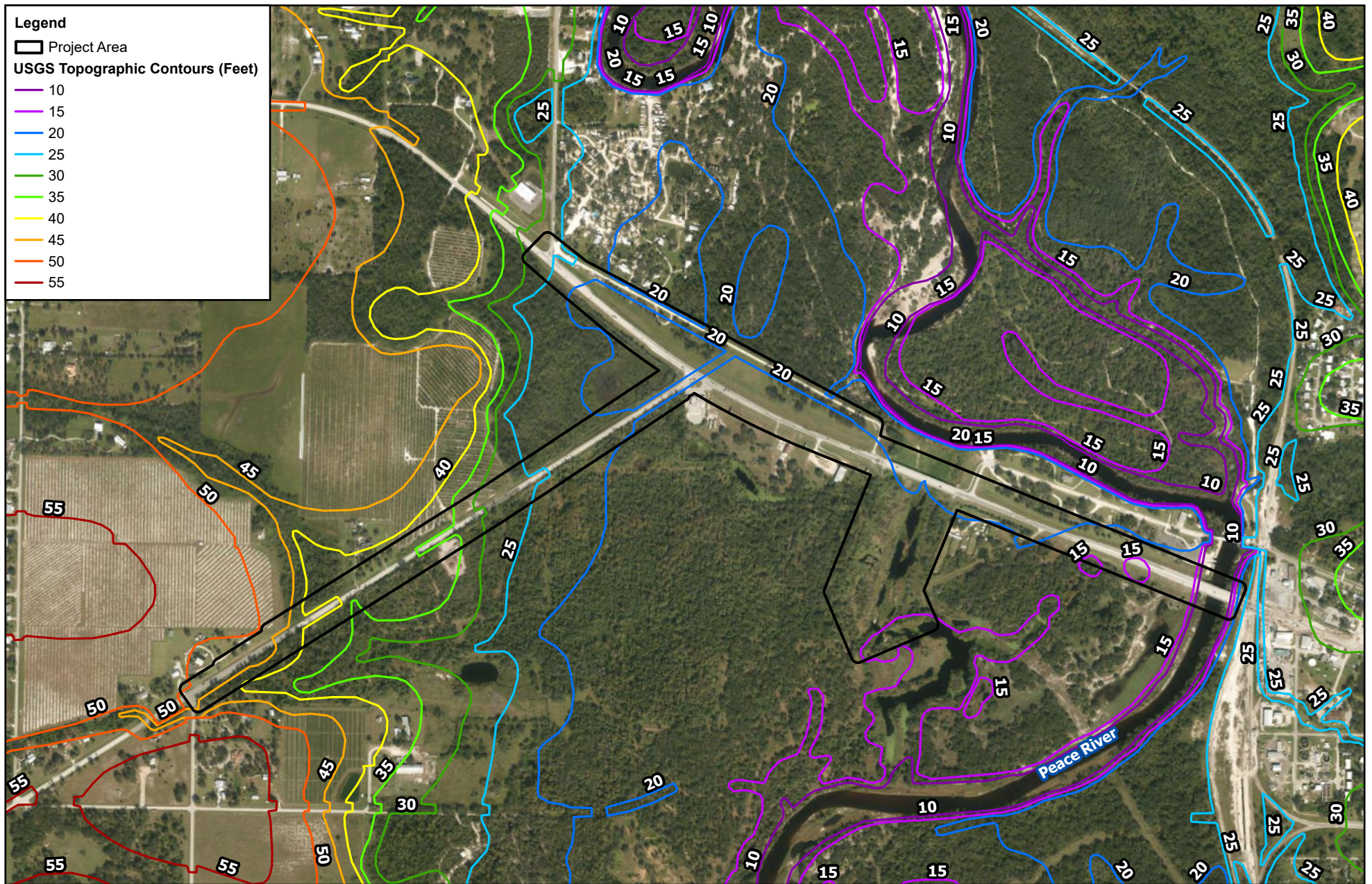
ADDITIONAL FIGURES

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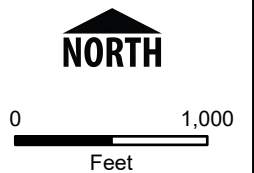
 Project Area

USGS Topographic Contours (Feet)

- 10
- 15
- 20
- 25
- 30
- 35
- 40
- 45
- 50
- 55



USGS Topographic Contours
SR 72 at SR 70 PD&E
FPID: 443123-1
Sections 26, 27, & 34; T 37S; R24E
DeSoto County, Florida



Legend

 Project Area

 300 Foot Buffer

Land Use (FLUCCS)

 FRESHWATER MARSHES (6410)

 MIXED WETLAND HARDWOODS (6170)

 OPEN LAND (1900)

 RECREATIONAL (1800)

 RESIDENTIAL LOW DENSITY < 2 DWELLING UNITS PER ACRE (1100)

 ROADS AND HIGHWAYS (8140)

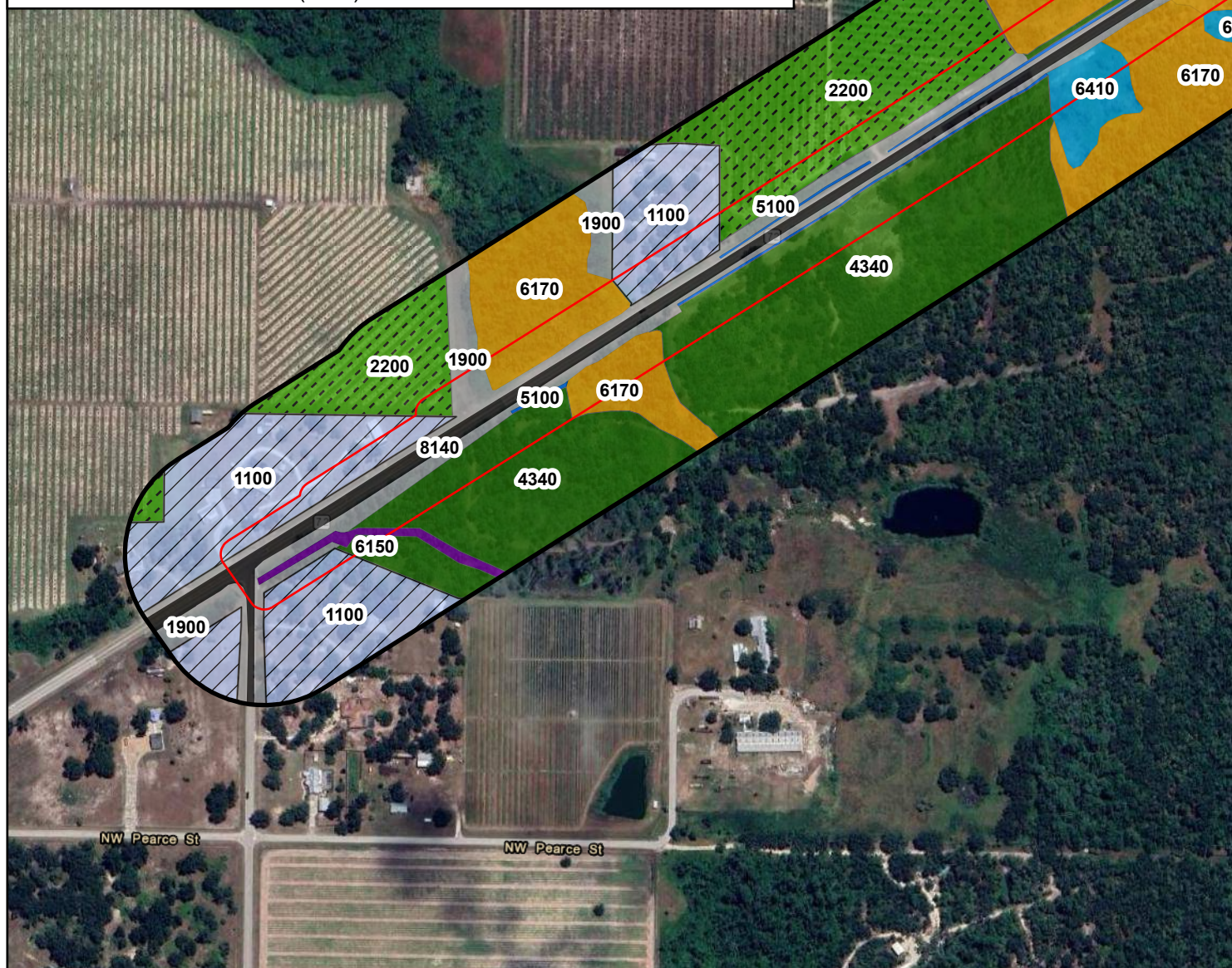
 STREAM AND LAKE SWAMPS (BOTTOMLAND) (6150)

 TREE CROPS (2200)

 UPLAND CUT DITCH (5100)

 UPLAND HARDWOOD - CONIFEROUS MIX (4340)

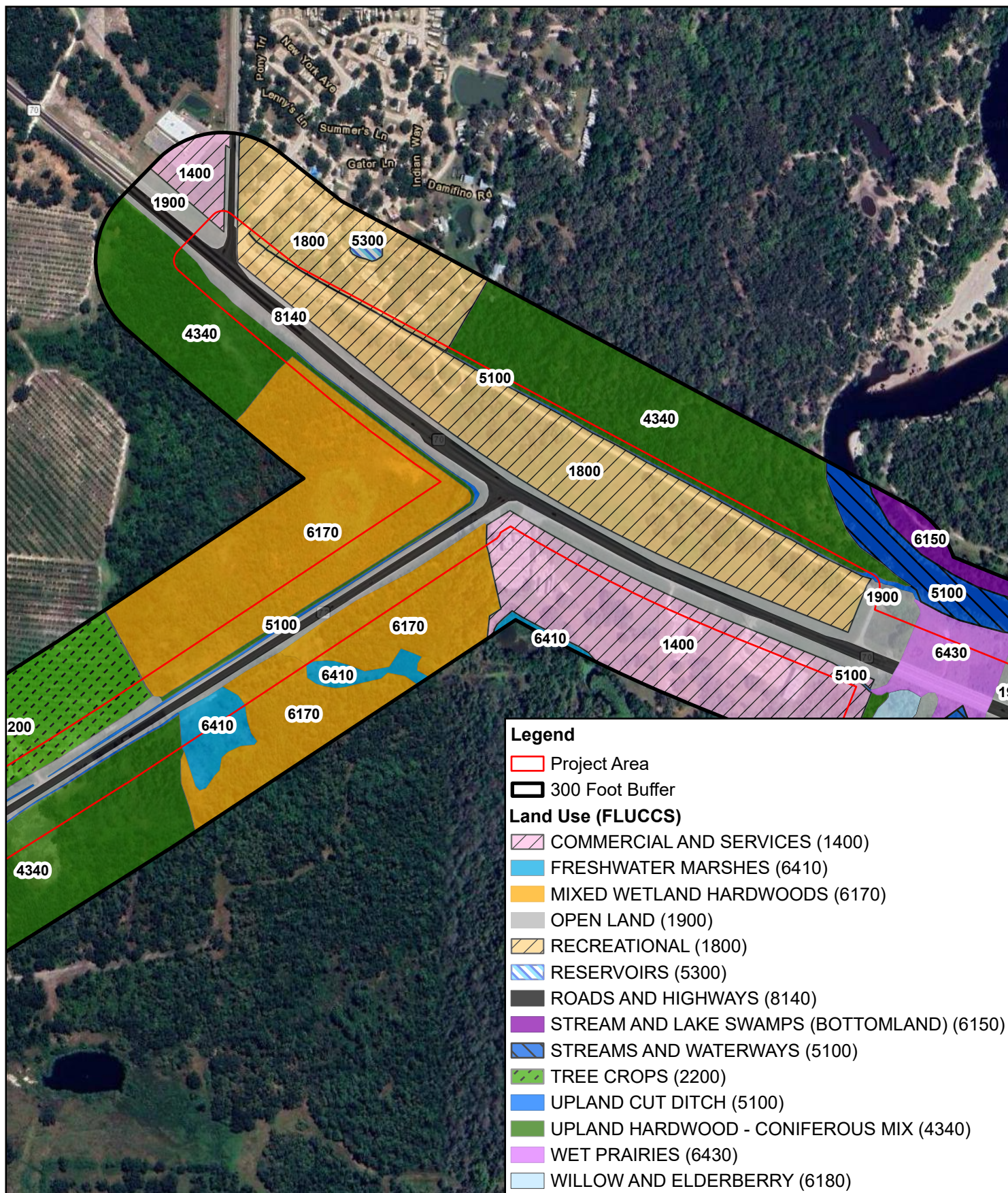
 MOBILE HOME UNITS (1120)



Existing Land Use (FLUCCS)
 SR 72 at SR 70 PD&E
 FPID: 443123-1
 Sections 26, 27, & 34; T 37S; R24E
 DeSoto County, Florida


 NORTH

0 500
 Feet



Existing Land Use (FLUCCS)
 SR 72 at SR 70 PD&E
 FPID: 443123-1
 Sections 26, 27, & 34; T 37S; R24E
 DeSoto County, Florida



0 500
 Feet

Legend

 Project Area

 300 Foot Buffer

Land Use (FLUCCS)

 COMMERCIAL AND SERVICES (1400)

 FRESHWATER MARSHES (6410)

 OPEN LAND (1900)

 RECREATIONAL (1800)

 ROADS AND HIGHWAYS (8140)

 STREAM AND LAKE SWAMPS (BOTTOMLAND) (6150)

 STREAMS AND WATERWAYS (5100)

 UPLAND CUT DITCH (5100)

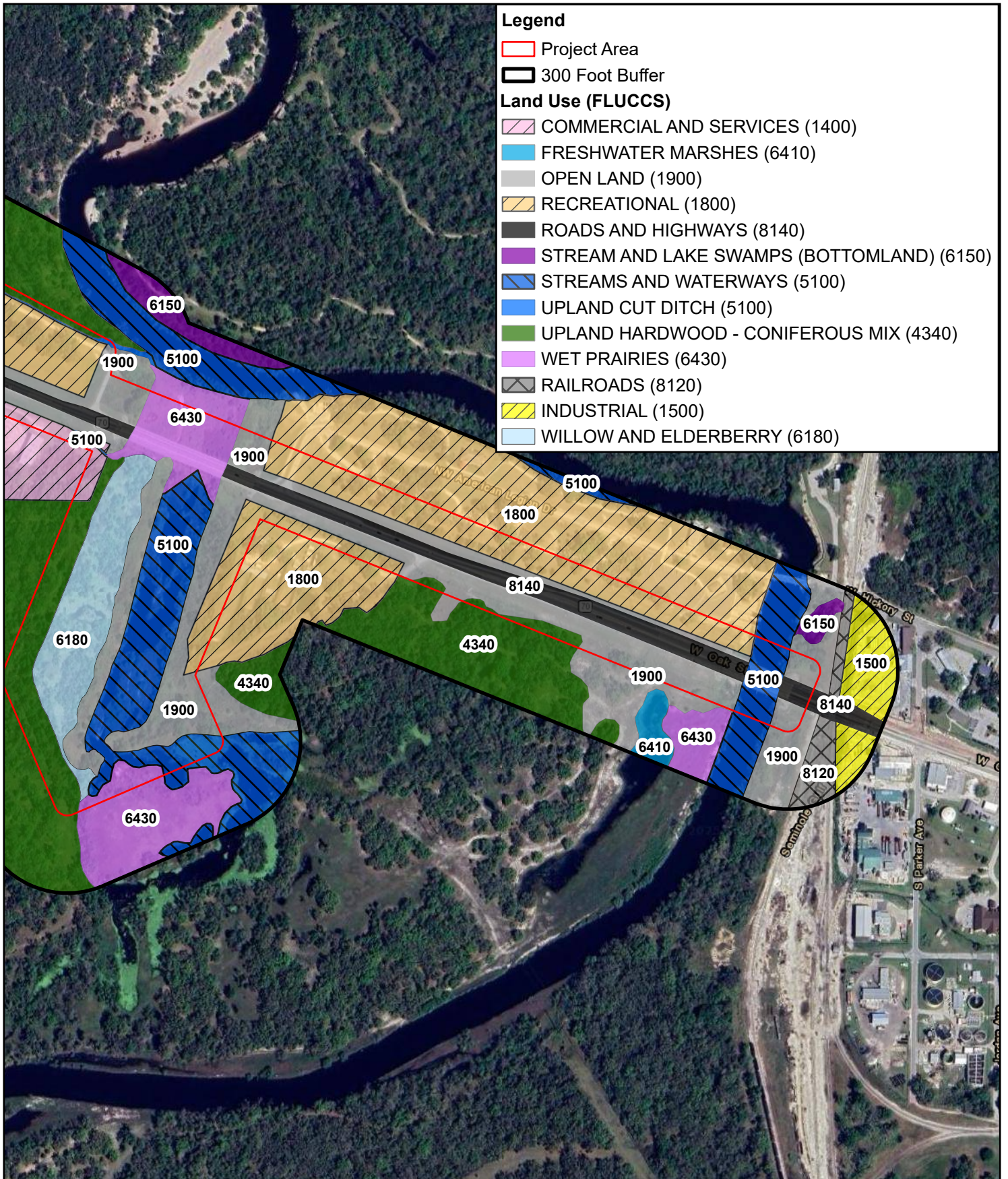
 UPLAND HARDWOOD - CONIFEROUS MIX (4340)

 WET PRAIRIES (6430)

 RAILROADS (8120)

 INDUSTRIAL (1500)

 WILLOW AND ELDERBERRY (6180)



Existing Land Use (FLUCCS)

SR 72 at SR 70 PD&E

FPID: 443123-1

Sections 26, 27, & 34; T 37S; R24E

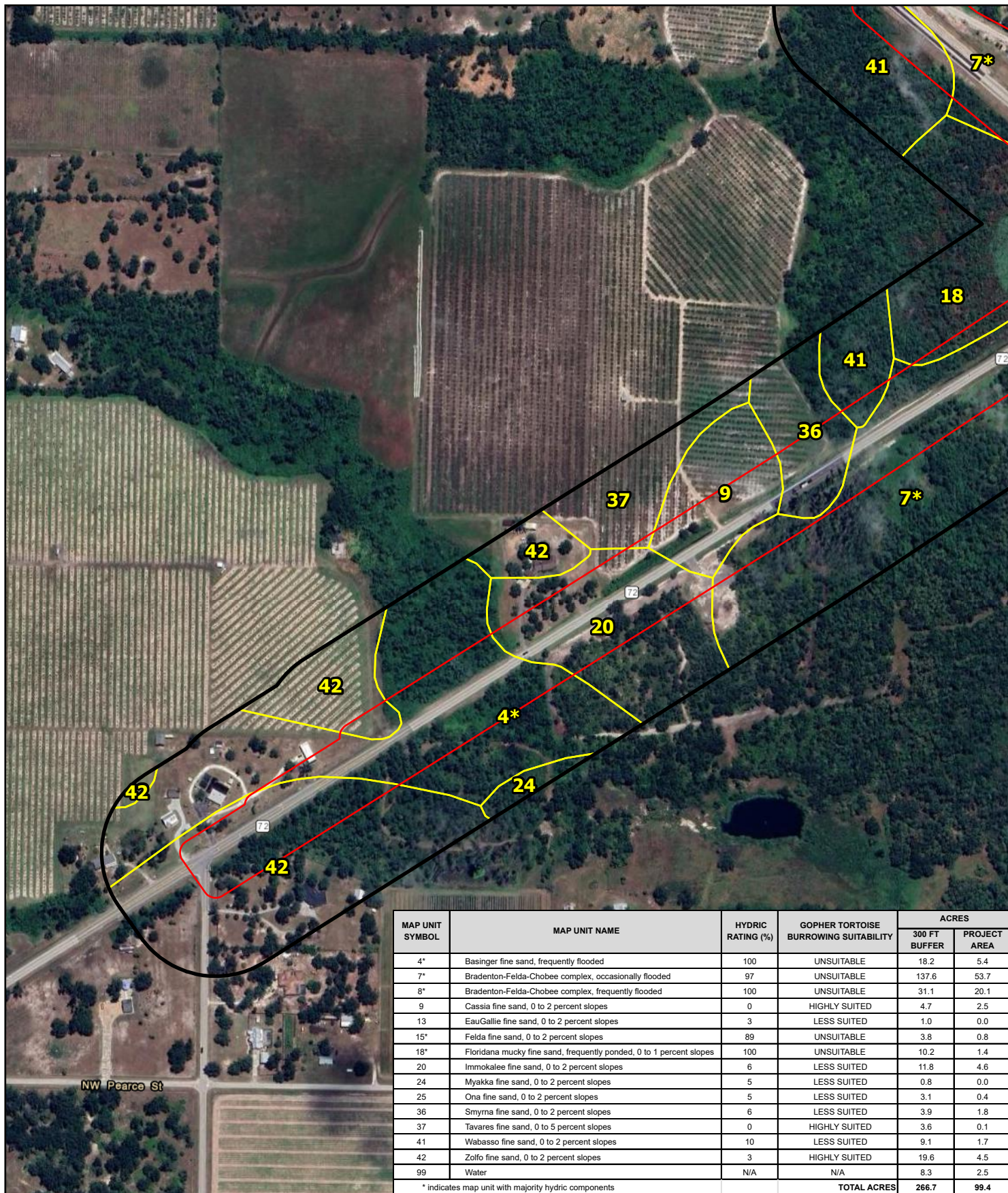
DeSoto County, Florida

Page 3 of 3



NORTH

0 500
Feet

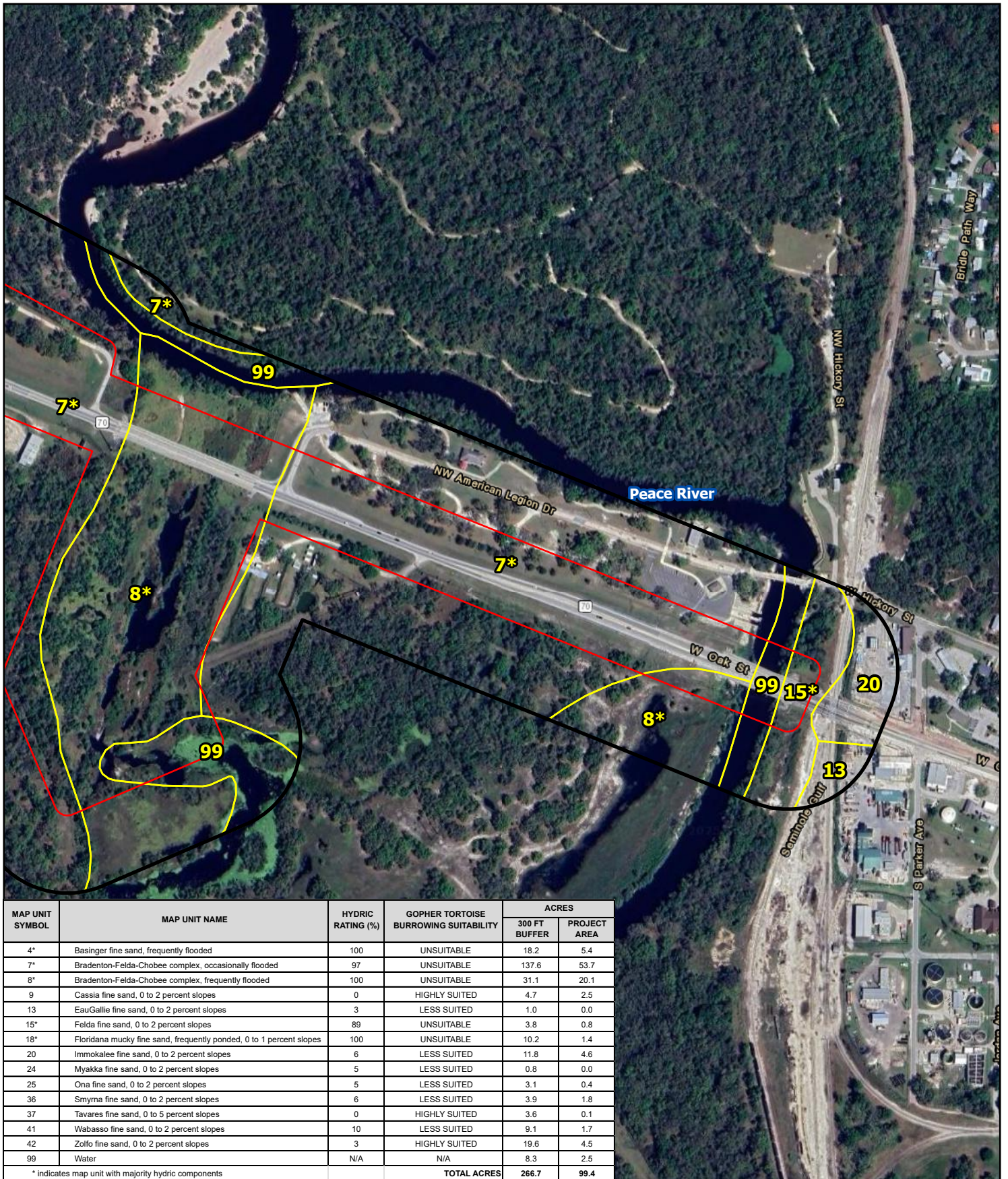


Legend

- Project Area
- NRCS Soils
- 300 Foot Buffer

NRCS Soils
SR 72 at SR 70 PD&E
FPID: 443123-1
Sections 26, 27, & 34; T 37S; R24E
DeSoto County, Florida





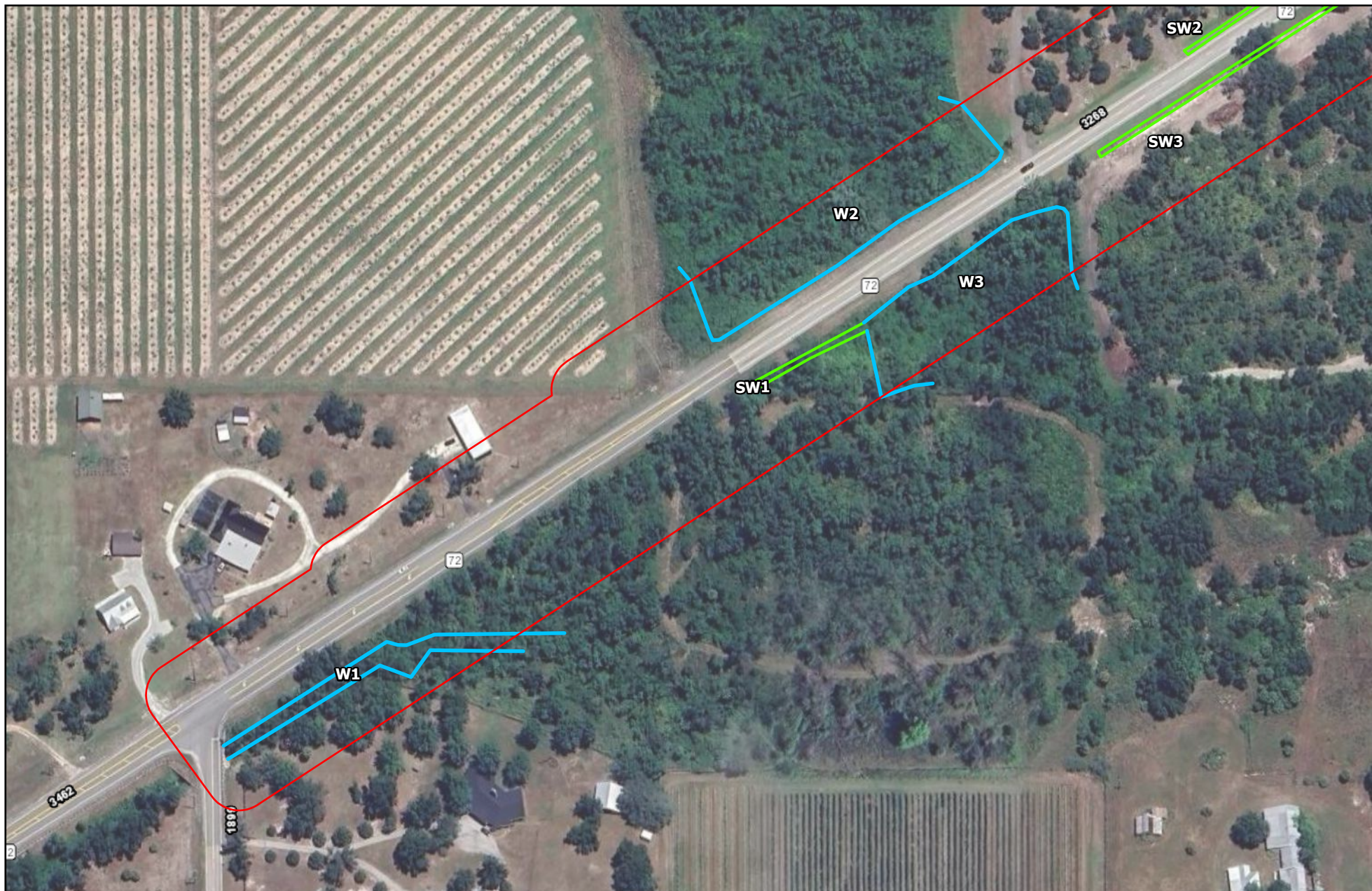
Legend

- Project Area
- NRCS Soils
- 300 Foot Buffer

NRCS Soils
SR 72 at SR 70 PD&E
FPID: 443123-1

Sections 26, 27, & 34; T 37S; R24E
DeSoto County, Florida





Legend

- Project Area
- Approximate Boundaries**
- Other Surface Water
- Wetland

Wetlands and Other Surface Waters
SR 72 at SR 70 PD&E
FPID: 443123-1
Sections 26, 27, & 34; T 37S; R24E
DeSoto County, Florida





Legend

- Project Area
- Approximate Boundaries**
- Other Surface Water
- Wetland

Wetlands and Other Surface Waters
SR 72 at SR 70 PD&E
FPID: 443123-1
Sections 26, 27, & 34; T 37S; R24E
DeSoto County, Florida



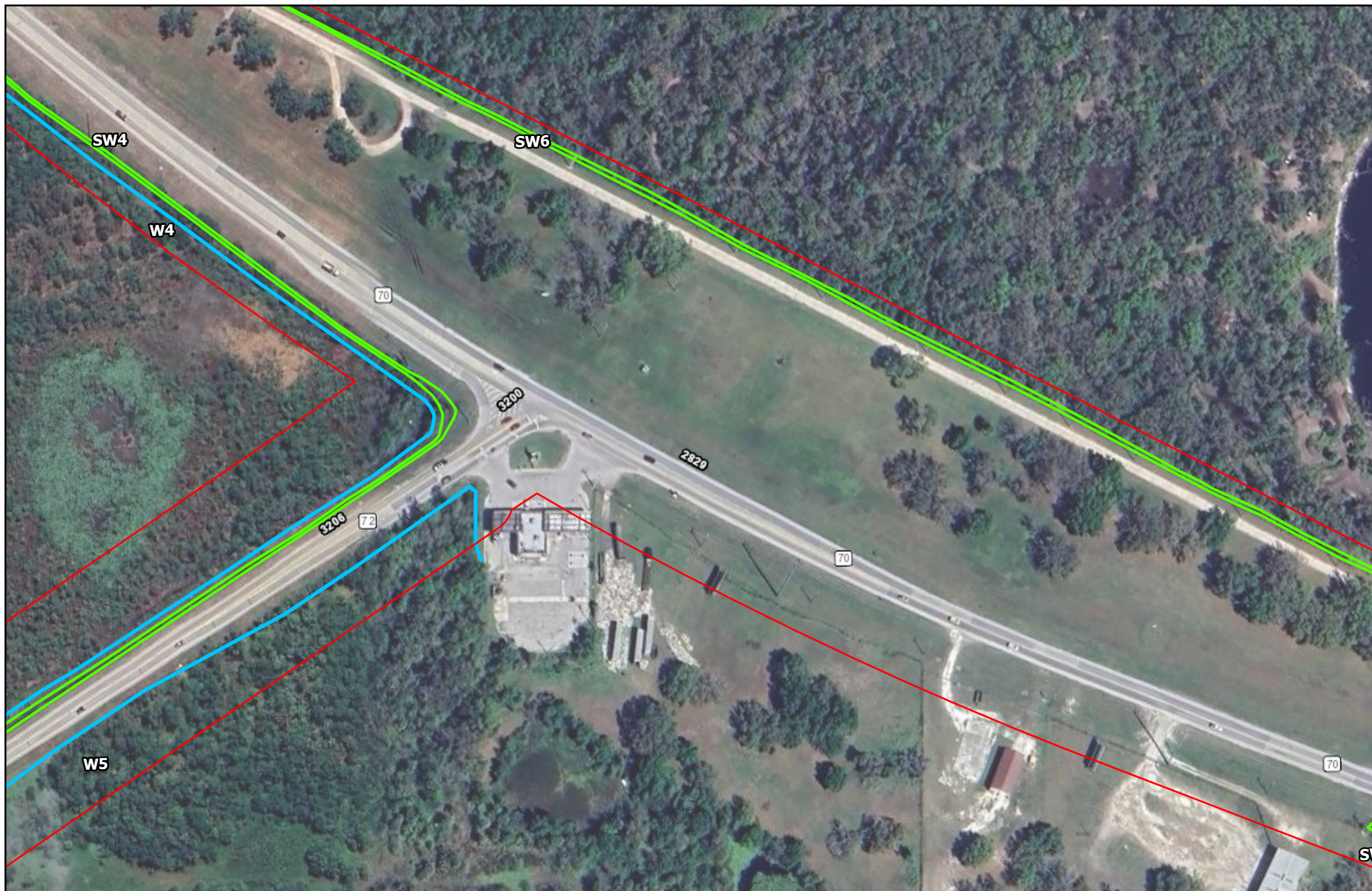


Legend

- Project Area
- Approximate Boundaries**
- Other Surface Water
- Wetland

Wetlands and Other Surface Waters
SR 72 at SR 70 PD&E
FPID: 443123-1
Sections 26, 27, & 34; T 37S; R24E
DeSoto County, Florida



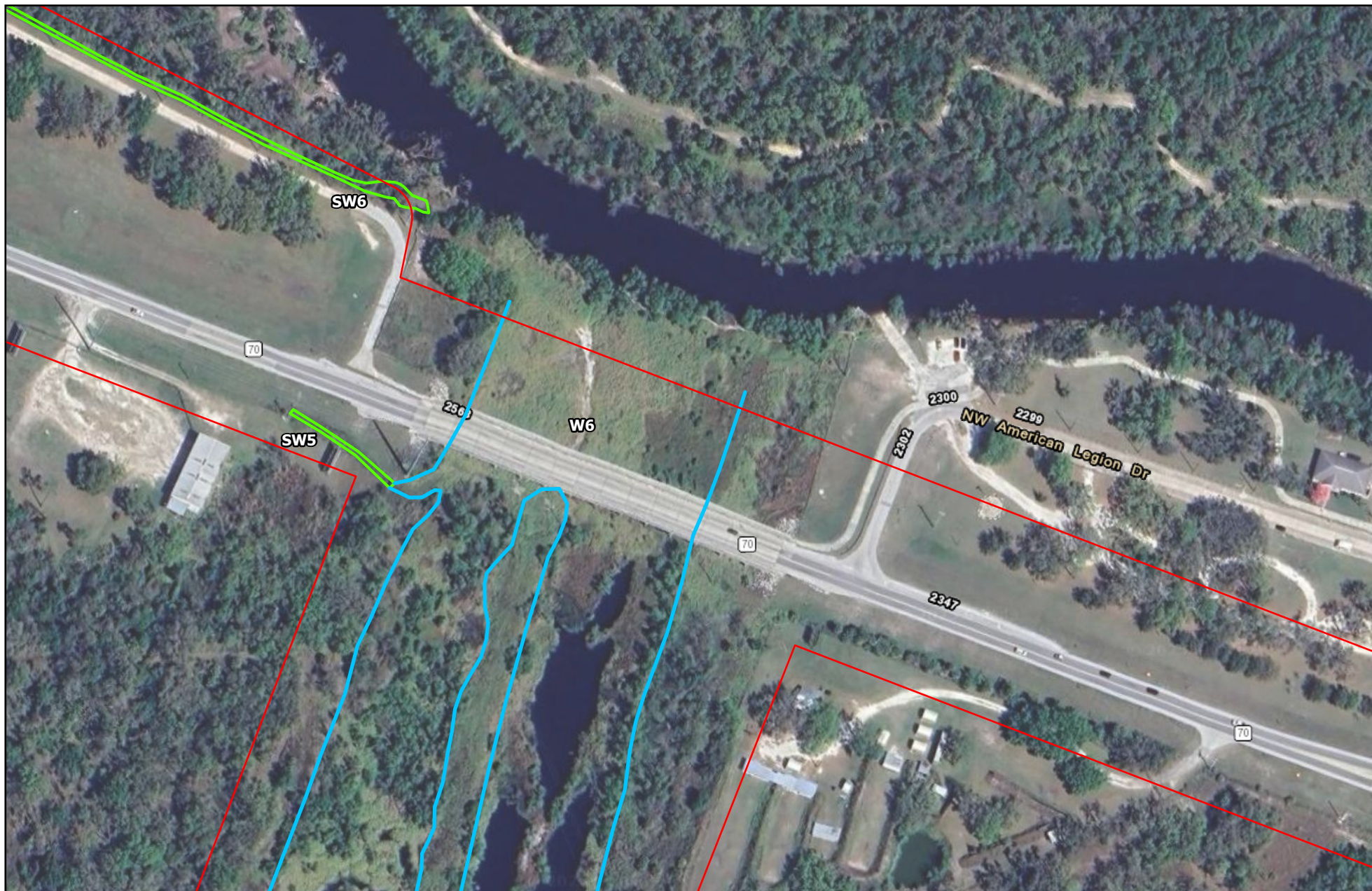


Legend

- Project Area
- Approximate Boundaries**
- Other Surface Water
- Wetland

Wetlands and Other Surface Waters
SR 72 at SR 70 PD&E
FPID: 443123-1
Sections 26, 27, & 34; T 37S; R24E
DeSoto County, Florida





Legend

- Project Area
- Approximate Boundaries**
- Other Surface Water
- Wetland

Wetlands and Other Surface Waters
SR 72 at SR 70 PD&E
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DeSoto County, Florida

Page 5 of 7

NORTH

0 200
Feet



Legend

- Project Area
- Approximate Boundaries**
- Other Surface Water
- Wetland

Wetlands and Other Surface Waters
SR 72 at SR 70 PD&E
FPID: 443123-1
Sections 26, 27, & 34; T 37S; R24E
DeSoto County, Florida





Legend

- Project Area
- Approximate Boundaries**
- Other Surface Water
- Wetland

Wetlands and Other Surface Waters
SR 72 at SR 70 PD&E
FPID: 443123-1
Sections 26, 27, & 34; T 37S; R24E
DeSoto County, Florida



APPENDIX B

EXISTING LAND USE DESCRIPTIONS

EXISTING UPLAND COMMUNITIES WITHIN THE PROJECT AREA

The following upland communities are present in the revised project area and described in Appendix B of the original NRE report: Open Land (FLUCCS 1900), Roads and Highways (FLUCCS 8140), Upland Hardwoods – Coniferous Mix (FLUCCS 4340), Tree Crops (FLUCCS 2200), and Residential Low Density (FLUCCS 1100).

Recreational (FLUCCS 1800)

Recreational land use within the project area includes the Arcadia Peace River Campground, DeSoto Veterans Memorial Park, and DeSoto Gun Club. The campground property within the project area contains a paved pedestrian trail along the perimeter of an upland area maintained by mowing. Trees within the area are mostly live oak (*Quercus virginiana*), with scattered cabbage palm (*Sabal palmetto*), water hickory (*Carya aquatica*), and bald cypress (*Taxodium distichum*). DeSoto Veterans Memorial Park is bordered by the Peace River to the east and north. The park contains some green space but has largely been developed, with amenities including a paved roadway and parking lot, restroom facilities, a boat ramp, and a pedestrian path. Picnic tables are interspersed under live oaks along part of the roadway with parking spaces. The DeSoto Gun Club was not accessible at the time of review. Protected species were not observed in any of these recreational areas.

EXISTING WETLAND AND SURFACE WATER COMMUNITIES WITHIN THE PROJECT AREA

The following wetland communities are present in the revised project area and were described in Appendix B of the original NRE report: Mixed Wetland Hardwoods (FLUCCS 6170), Wet Prairie (FLUCCS 6430), Ditches (FLUCCS 5100), Stream and Lake Swamps (Bottomland) (FLUCCS 6150).

Streams and Waterways (FLUCCS 5100)

This land use type is represented by the east lobe of Wetland 6 and by Wetland 7, which is the Peace River. Wetland 6 is part of the Peace River floodplain. The east lobe is bordered by Carolina willow (*Salix caroliniana*) and other shrubs. The interior contains open water with no emergent vegetation. Small islands within the interior support vegetation including Carolina willow shrubs. Wetland 7, the Peace River, consists of open water with no emergent vegetation. The river banks beneath and adjacent to the SR 70 bridge and stabilized with riprap and pavement; a paved boat ramp and additional riprap are present on the west bank of the river. Shrubs and trees including Carolina willow, buttonbush (*Cephalanthus occidentalis*), and the Category I invasive species Brazilian pepper (*Schinus terebinthifolia*) are present along the east bank. Protected species were not observed during the field review but both of these wetlands may be utilized by wildlife to cross under SR 70.

Willow and Elderberry (FLUCCS 6180)

This land use type is represented by the west lobe of Wetland 6, which is part of the Peace River floodplain. The west lobe is a shrub-scrub wetland habitat separated from the east lobe by an upland berm. Groundcover is dominated by the Category I invasive species paragrass (*Urochloa mutica*) and the subcanopy is dominated by Carolina willow. At the time of field review, soils were dry at the wetland edges and moist in the interior with patches of saturated soil. Protected species were not observed, but wildlife likely utilize Wetland 6 to cross beneath SR 70.

APPENDIX C

REPRESENTATIVE PHOTOGRAPHS OF WETLANDS AND OTHER SURFACE WATERS



Photo 1 – view west along Surface Water 6 (FLUCCS 5100), an excavated ditch in the northwest portion of the project area. The west portion of the ditch runs through maintained uplands and crosses under roadways via culverts and connects to wetlands west of the project area.



Photo 2 – view east along Surface Water 6 (FLUCCS 5100), located between shrubby-forested uplands to the north and a mowed area adjacent to a paved walking path to the south. Surface Water 6 runs along the north boundary parallel to the paved pathway and ends at the Peace River.



Photo 3 – view east toward the east lobe of Wetland 6 (FLUCCS 5100) south of SR 70, consisting of open water interspersed with vegetated islands.



Photo 4 – view north within the west lobe of Wetland 6 (FLUCCS 6180) south of SR 70. Carolina willow (*Salix caroliniana*) dominates the subcanopy and canopy while paragrass (*Urochloa mutica*) dominates groundcover.



Photo 5 – view north from the SR 70 bridge crossing the Peace River, Wetland 7 (FLUCCS 5100), bounded by a recreational area with a boat ramp to the west. At the time of field review, waters adjacent to the project area were being utilized for wading, kayaking, and fishing.



Photo 6 – view south toward the SR 70 bridge crossing the Peace River, Wetland 7 (FLUCCS 5100). The river is shallow and sandy at this location, with banks that are largely altered by previous construction. Portions of the river banks contain trees and shrubs including Brazilian pepper (*Schinus terebinthifolia*), Carolina willow, and buttonbush (*Cephalanthus occidentalis*).

APPENDIX D

UMAM FORMS

PART II – Quantification of Assessment Area (impact or mitigation)
(See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name (FPID: 443123-1) SR 72 at SR 70 PD&E Study	Application Number	Assessment Area Name or Number Wetland 1 (Primary Impact)
Impact or Mitigation Impact	Assessment conducted by: Rebecca Barkdoll	Assessment date: 2/15/2023; REVISED 4/23/2025

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 water functions	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 with 7 0	Generally the stream is bordered to the north and west by mowed ROW and paved roadway (SR 72), to the southwest by residential neighborhoods, and to the southeast by forested uplands. Wildlife access is hindered from the north and west by paved roadway (SR 72) but possible from the east and south. The stream receives stormwater input from roadside ditches and conveys it toward the Peace River. The stream banks are forested upland; invasive exotic plant species were observed north of the stream.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current with 10 0	The stream receives stormwater runoff from a roadside ditch. At the time of field review, the stream contained shallow flowing water and the steep banks showed signs of erosion. Very few plants were observed in the water but they were hydrologically appropriate. Wildlife including fish were not observed but the stream may provide habitat and foraging area for fish, wading birds, and other water-dependent species.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current with 7 0	The stream contains mostly open water with sprigs of two plant species including wild taro, a Category I invasive species; the banks are forested-shrubby with a thick layer of vines

Score = sum of above scores/30 (if uplands, divide by 20)
current with
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 = -0.2

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 Sections 62-345.500 and .600, F.A.C.)

Site/Project Name (FPID: 443123-1) SR 72 at SR 70 PD&E Study	Application Number	Assessment Area Name or Number Wetland 1 (Secondary Impact)
Impact or Mitigation Impact	Assessment conducted by: Rebecca Barkdoll	Assessment date: 2/15/2023; REVISED 4/23/2025

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 with 7 7	Generally the stream is bordered to the north and west by mowed ROW and paved roadway (SR 72), to the southwest by residential neighborhoods, and to the southeast by forested uplands. Wildlife access is hindered from the north and west by paved roadway (SR 72) but possible from the east and south. The stream receives stormwater input from roadside ditches and conveys it toward the Peace River. The stream banks are forested upland; invasive exotic plant species were observed north of the stream. Wetland 1 is already bordered by mowed ROW and paved road to the west; secondary impacts resulting from roadway improvements will be minimal.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current with 10 10	The stream receives stormwater runoff from a roadside ditch. At the time of field review, the stream contained shallow flowing water and the steep banks showed signs of erosion. Very few plants were observed in the water but they were hydrologically appropriate. Wildlife including fish were not observed but the stream may provide habitat and foraging area for fish, wading birds, and other water-dependent species.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current with 7 7	The stream contains mostly open water with sprigs of two plant species including wild taro,a Category I invasive species; the banks are forested-shrubby with a thick layer of vines.

Score = sum of above scores/30 (if uplands, divide by 20)
current with
or w/o pres with
0.8 0.8

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.0

Delta = [with-current]
0

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 Sections 62-345.500 and .600, F.A.C.)

Site/Project Name (FPID: 443123-1) SR 72 at SR 70 PD&E Study	Application Number	Assessment Area Name or Number Wetland 2 (Primary Impact)
Impact or Mitigation Impact	Assessment conducted by: Rebecca Barkdoll	Assessment date: 2/17/2023; REVISED 4/23/2025

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 water functions	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 with 6 0	Wildlife access to Wetland 2 is limited by cropland (southwest), residential low density (northeast), and the SR 72 roadway (southeast). Wetland 2 is connected to Wetland 3 via a culvert under SR 72.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current with 8 0	Hydrology appears appropriate; the wetland likely receives runoff from bordering cropland, residential lawns, and the roadway. Water from Wetland 2 is conveyed to Wetland 3 via a culvert under SR 72.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current with 8 0	Only the shrubby outer edge of Wetland 2 falls within the project footprint; appropriate vegetation was observed in the transition zone; Fallen trees and shrubs were observed near the culvert, most likely as a result of Hurricane Ian (September 2022).

Score = sum of above scores/30 (if uplands, divide by 20)
current with
or w/o pres with
0.7 0.0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = -0.8

Delta = [with-current]
-0.7

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 Sections 62-345.500 and .600, F.A.C.)

Site/Project Name (FPID: 443123-1) SR 72 at SR 70 PD&E Study	Application Number	Assessment Area Name or Number Wetland 2 (Secondary Impact)
Impact or Mitigation Impact	Assessment conducted by: Rebecca Barkdoll	Assessment date: 2/17/2023; REVISED 4/23/2025

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 water functions	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 6	Secondary impacts are unlikely to degrade the location and landscape support for Wetland 2 as it is already bordered by cropland (southwest), residential low density (northeast), and the paved roadway and mowed ROW (southeast).
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current 8 with 8	Secondary impacts are unlikely to degrade the water environment. Current hydrology appears appropriate; the wetland likely receives runoff from bordering cropland, residential lawns, and roadway. Wetland 2 connects to Wetland 3 via a culvert under the roadway (SR 72).
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current 8 with 7	Only the shrubby outer edge of Wetland 2 falls within the project footprint; appropriate vegetation was observed in the transition zone; Fallen trees and shrubs were observed near the culvert, most likely as a result of Hurricane Ian (September 2022). Secondary impacts may include the introduction of weedy or invasive species into the wetland interior

Score = sum of above scores/30 (if uplands, divide by 20)
current or w/o pres 0.7 with 0.7

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.0

Delta = [with-current]
0.0

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 Sections 62-345.500 and .600, F.A.C.)

Site/Project Name (FPID: 443123-1) SR 72 at SR 70 PD&E Study	Application Number	Assessment Area Name or Number Wetland 3 (Primary Impacts)
Impact or Mitigation Impact	Assessment conducted by: Rebecca Barkdoll	Assessment date: 2/15/2023; REVISED 4/23/2025

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 water functions	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 Wetland 3 is bordered to the northwest by the mowed ROW and paved road, but is accessible to wildlife from the east, south, and southwest. A culvert under the road connects Wetland 2 to Wetland 3, which drains to the Peace River.	w/o pres or current 8 with 0
.500(6)(b)Water Environment (n/a for uplands) Hydrology appears appropriate for this forested wetland; soils were saturated at the wetland edge and standing open water was observed at the culvert under SR 72 at the time of field review. A roadside ditch directs stormwater runoff from the roadway and ROW into Wetland 3; water coming from Wetland 2 likely contains runoff from cropland and residential areas adjacent to that wetland. Piles of sand were observed in the transition zone, maybe deposited by flooding related to Hurricane Ian (September 2022).	w/o pres or current 8 with 0
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community Only the shrubby transition zone of Wetland 3 falls within the project footprint; appropriate vegetation was observed in the transition zone; Fallen shrubs were observed along the wetland edge, most likely as a result of Hurricane Ian (September 2022). Vines were abundant in the subcanopy	w/o pres or current 8 with 0

Score = sum of above scores/30 (if uplands, divide by 20)
current
or w/o pres
0.8
with
0.0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = -0.7

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 Sections 62-345.500 and .600, F.A.C.)

Site/Project Name (FPID: 443123-1) SR 72 at SR 70 PD&E Study	Application Number	Assessment Area Name or Number Wetland 3 (Secondary Impacts)
Impact or Mitigation Impact	Assessment conducted by: Rebecca Barkdoll	Assessment date: 2/15/2023; REVISED 4/23/2025

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 water functions	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 with 8 8	Wetland 3 is bordered to the northwest by the mowed ROW and paved road, but is accessible to wildlife from the east, south, and southwest. A culvert under the road connects Wetland 2 to Wetland 3, which drains to the Peace River.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current with 8 8	Hydrology appears appropriate for this forested wetland; soils were saturated at the wetland edge and standing open water was observed at the culvert under SR 72 at the time of field review. A roadside ditch directs stormwater runoff from the roadway and ROW into Wetland 3; water coming fro Wetland 2 likely contains runoff from cropland and residential areas adjacent to that wetland.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current with 8 7	Only the shrubby transition zone of Wetland 3 falls within the project footprint; appropriate vegetation was observed in the transition zone; Fallen shrubs were observed along the wetland edge, most likely as a result of Hurricane Ian (September 2022). Vines were abundant in the subcanopy. Secondary impacts may include the introduction of weedy or invasive species into the wetland interior.

Score = sum of above scores/30 (if uplands, divide by 20)
current with
or w/o pres with
0.8 0.8

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.0

Delta = [with-current]
0.0

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 Sections 62-345.500 and .600, F.A.C.)

Site/Project Name (FPID: 443123-1) SR 72 at SR 70 PD&E Study	Application Number	Assessment Area Name or Number Wetland 4 (Primary Impacts)
Impact or Mitigation Impact	Assessment conducted by: Rebecca Barkdoll	Assessment date: 2/17/2023; REVISED 4/23/2025

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 water functions	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	Wetland 4 is bordered by mowed ROW and paved roadway to the northeast and southeast, limiting wildlife access. It is adjacent to an orange grove to the southwest and upland forest to the northwest.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current 8 with 0	Appropriate hydrology was observed at the time of field review with dry to moist soil at the edges and transition zone and saturated soil and standing water in the interior. Wetland 4 receives stormwater runoff from the adjacent roadways and cropland. Trash was observed throughout the transition zone, having apparently washed in from the roadway and ROW.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current 8 with 0	Appropriate vegetation was observed in each zone of Wetland 4. Vines were abundant in the interior subcanopy and canopy, including the Category I invasive species small leaf climbing fern. Fallen shrubs and trees were observed throughout the wetland, most likely as a result of Hurricane Ian (September 2022).

Score = sum of above scores/30 (if uplands, divide by 20)
current or w/o pres 0.7 with 0.0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = -3.3

Delta = [with-current]
-0.7

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 Sections 62-345.500 and .600, F.A.C.)

Site/Project Name (FPID: 443123-1) SR 72 at SR 70 PD&E Study	Application Number	Assessment Area Name or Number Wetland 4 (Secondary Impacts)
Impact or Mitigation Impact	Assessment conducted by: Rebecca Barkdoll	Assessment date: 2/17/2023; REVISED 4/23/2025

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) Condition is optimal and fully supports wetland/surface water functions	Moderate(7) Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal (4) Minimal level of support of wetland/surface water functions	Not Present (0) Condition is insufficient to provide wetland/surface water functions
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.500(6)(a) Location and Landscape Support w/o pres or current 6 with 6	Wetland 4 is bordered by mowed ROW and paved roadway to the northeast and southeast, limiting wildlife access. It is adjacent to an orange grove to the southwest and upland forest to the northwest. The project will result in less wetland area overall, but will have little to no secondary impact on the overall location and landscape.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current 8 with 7	Appropriate hydrology was observed at the time of field review with dry to moist soil at the edges and transition zone and saturated soil and standing water in the interior. Wetland 4 receives stormwater runoff from the adjacent roadways and cropland. Trash was observed throughout the transition zone, having apparently washed in from the roadway and ROW.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current 8 with 7	Appropriate vegetation was observed in each zone of Wetland 4. Vines were abundant in the interior subcanopy and canopy, including the Category I invasive species small leaf climbing fern. Fallen shrubs and trees were observed throughout the wetland, most likely as a result of Hurricane Ian (September 2022).

Score = sum of above scores/30 (if uplands, divide by 20)
current or w/o pres 0.7 with 0.7

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = -0.1

Delta = [with-current]
-0.1

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 Sections 62-345.500 and .600, F.A.C.)

Site/Project Name (FPID: 443123-1) SR 72 at SR 70 PD&E Study	Application Number	Assessment Area Name or Number Wetland 5 (Primary Impacts)
Impact or Mitigation Impact	Assessment conducted by: Rebecca Barkdoll	Assessment date: 2/15/2023; REVISED 4/23/2025

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) Condition is optimal and fully supports wetland/surface water functions	Moderate(7) Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal (4) Minimal level of support of wetland/surface water functions	Not Present (0) Condition is insufficient to provide wetland/surface water functions
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.500(6)(a) Location and Landscape Support w/o pres or current 7 with 0	Wildlife access is limited by the roadway to the northwest and a gas station and parking lot to the northeast. Forested uplands and wetlands are adjacent to the southwest and southeast.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current 8 with 0	Only the edge of Wetland 5 is included in the project footprint. Piles of sand were observed at the edges and in the transition zone, likely deposited by flooding related to Hurricane Ian (September 2022). Hydrology otherwise seemed appropriate with dry to moist soils at the time of field review. A roadside ditch directs stormwater runoff from the roadway and ROW into Wetland 5 and a few pieces of trash were observed along the wetland edge.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current 8 with 0	Category I invasive species Peruvian primrose willow was observed in Wetland 5 beyond the project area and caesarweed was observed in the transition zone. Other canopy, subcanopy, and groundcover species are appropriate for the wetland zonation.

Score = sum of above scores/30 (if uplands, divide by 20)
current or w/o pres 0.8 with 0.0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = -2.3

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 Sections 62-345.500 and .600, F.A.C.)

Site/Project Name (FPID: 443123-1) SR 72 at SR 70 PD&E Study	Application Number	Assessment Area Name or Number Wetland 5 (Secondary Impacts)
Impact or Mitigation Impact	Assessment conducted by: Rebecca Barkdoll	Assessment date: 2/15/2023; REVISED 4/23/2025

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 water functions	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 with 7 7	Wildlife access is limited by the roadway to the northwest and a gas station and parking lot to the northeast. Forested uplands and wetlands are adjacent to the southwest and southeast. The project will have little to no secondary impact on the overall location and landscape.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current with 8 8	Only the edge of Wetland 5 is included in the project footprint. Piles of sand were observed at the edges and in the transition zone, likely deposited by flooding related to Hurricane Ian (September 2022). Hydrology otherwise seemed appropriate with dry to moist soils at the time of field review. A roadside ditch directs stormwater runoff from the roadway and ROW into Wetland 5 and a few pieces of trash were observed along the wetland edge. The project will have little to no secondary impact on the water environment.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current with 8 7	Category I invasive species Peruvian primrose willow was observed in Wetland 5 beyond the project area and caesarweed was observed in the transition zone. Other canopy, subcanopy, and groundcover species are appropriate for the wetland zonation. Secondary impacts may include movement of invasive species into the wetland interior due to edge effect.

Score = sum of above scores/30 (if uplands, divide by 20)
current with
or w/o pres with
0.8 0.7

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.0

Delta = [with-current]
0.0

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 Sections 62-345.500 and .600, F.A.C.)

Site/Project Name (FPID: 443123-1) SR 72 at SR 70 PD&E Study	Application Number	Assessment Area Name or Number Wetland 6 - FLUCCS 6430 (Primary Impacts)
Impact or Mitigation Impact	Assessment conducted by: Rebecca Barkdoll	Assessment date: 2/15/2023; REVISED 4/23/2025

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 water functions	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 SR 70 crosses over Wetland 6, which is bordered by open land, upland forest, and a gun range. Wildlife can access Wetland 6 from all sides but are likely deterred by noise from the gun range (to the east) and roadway. w/o pres or current with 8 0	
.500(6)(b)Water Environment (n/a for uplands) Wetland 6 is part of the Peace River floodplain. Piles of white sand were observed throughout the project area, possibly as a result of Hurricane Ian (September 2022). Standing water was observed directly under the SR 70 bridge and soils were moist elsewhere at the time of field review. w/o pres or current with 8 0	
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community Wetland 6 is dominated by two Category I invasive species (torpedograss and paragrass) north of SR 70 and in the west lobe south of SR 70. Carolina willow shrubs grow along the edges and a few individuals have established in the interior. w/o pres or current with 4 0	

Score = sum of above scores/30 (if uplands, divide by 20)
current with
or w/o pres with
0.7 0.0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = -1.9

Delta = [with-current]
-0.7

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 Sections 62-345.500 and .600, F.A.C.)

Site/Project Name (FPID: 443123-1) SR 72 at SR 70 PD&E Study	Application Number	Assessment Area Name or Number Wetland 6 - FLUCCS 6430 (Secondary Impacts)
Impact or Mitigation Impact	Assessment conducted by: Rebecca Barkdoll	Assessment date: 2/15/2023; REVISED 4/23/2025

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) Condition is optimal and fully supports wetland/surface water functions	Moderate(7) Condition is less than optimal, but sufficient to maintain most wetland/surface water functions	Minimal (4) Minimal level of support of wetland/surface water functions	Not Present (0) Condition is insufficient to provide wetland/surface water functions
--	---	--	--	---

.500(6)(a) Location and Landscape Support w/o pres or current 8 with 8	SR 70 crosses over Wetland 6, which is bordered by open land, upland forest, and a gun range. Wildlife can access Wetland 6 from all sides but are likely deterred by noise from the gun range (to the east) and roadway.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current 8 with 6	Wetland 6 is part of the Peace River floodplain. Piles of white sand were observed throughout the project area, possibly as a result of Hurricane Ian (September 2022). Standing water was observed directly under the SR 70 bridge and soils were moist elsewhere at the time of field review.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current 4 with 4	The project will have little to no secondary impact on Wetland 6, which is dominated by two Category I invasive species (torpedograss and paragrass).

Score = sum of above scores/30 (if uplands, divide by 20)
current or w/o pres 0.7 with 0.6

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.0

Delta = [with-current]
-0.1

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 Sections 62-345.500 and .600, F.A.C.)

Site/Project Name (FPID: 443123-1) SR 72 at SR 70 PD&E Study	Application Number	Assessment Area Name or Number Wetland 6 - FLUCCS 6180 (Primary Impacts)
Impact or Mitigation Impact	Assessment conducted by: Rebecca Barkdoll	Assessment date: 4/23/2025

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 water functions	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 The west lobe of Wetland 6 south of SR 70 is bordered by open land, upland forest, and wet prairie. Wildlife can access this lobe from all sides and from the Peace River. w/o pres or current with 8 0	
.500(6)(b)Water Environment (n/a for uplands) The west lobe of Wetland 6 is part of the Peace River floodplain and water levels vary based on rainfall and flooding. At the time of review, soils were moist throughout. w/o pres or current with 8 0	
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community Wetland 6 groundcover is dominated by two Category I invasive species (torpedograss and paragrass) the west lobe south of SR 70. The subcanopy is dominated by Carolina willow shrubs. w/o pres or current with 4 0	

Score = sum of above scores/30 (if uplands, divide by 20)
current with
or w/o pres
0.7 0.0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = -3.2

Delta = [with-current]
-0.7

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 Sections 62-345.500 and .600, F.A.C.)

Site/Project Name (FPID: 443123-1) SR 72 at SR 70 PD&E Study	Application Number	Assessment Area Name or Number Wetland 6 - FLUCCS 5100 (Primary Impacts)
Impact or Mitigation Impact	Assessment conducted by: Rebecca Barkdoll	Assessment date: 4/23/2025

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 water functions	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 with 8 0	The east lobe of Wetland 6 south of SR 70 is bordered by a utility corridor, open land, and a gun range. Wildlife can access Wetland 6 from all sides but are likely deterred by noise from the gun range (to the east) and roadway. The east lobe of Wetland 6 continues south beyond the project area and connects to the Peace River.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current with 8 0	The east lobe of Wetland 6 contains open water interspersed with upland islands.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current with 4 0	The east lobe of Wetland 6 contains mostly open water with little to no emergent vegetation. Torpedograss, paragrass, and Carolina willow shrubs are present along the edges of the east lobe.

Score = sum of above scores/30 (if uplands, divide by 20)
current with
or w/o pres with
0.7 0.0

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = -3.8

Delta = [with-current]
-0.7

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 Sections 62-345.500 and .600, F.A.C.)

Site/Project Name (FPID: 443123-1) SR 72 at SR 70 PD&E Study	Application Number	Assessment Area Name or Number Wetland 6 - FLUCCS 5100 (Secondary Impacts)
Impact or Mitigation Impact	Assessment conducted by: Rebecca Barkdoll	Assessment date: 4/23/2025

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 water functions	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 8	The east lobe of Wetland 6 south of SR 70 is bordered by a utility corridor, open land, and a gun range. Wildlife can access Wetland 6 from all sides but are likely deterred by noise from the gun range (to the east) and roadway. The east lobe of Wetland 6 continues south beyond the project area and connects to the Peace River.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current 8 with 6	The east lobe of Wetland 6 contains open water interspersed with upland islands.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current 4 with 4	The project will have little to no secondary impact on Wetland 6, which is dominated by two Category I invasive species (torpedograss and paragrass).

Score = sum of above scores/30 (if uplands, divide by 20)
current or w/o pres 0.7 with 0.6

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.0

Delta = [with-current]
-0.1

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 Sections 62-345.500 and .600, F.A.C.)

Site/Project Name (FPID: 443123-1) SR 72 at SR 70 PD&E Study	Application Number	Assessment Area Name or Number Wetland 7 (Primary Impact)
Impact or Mitigation Impact	Assessment conducted by: Rebecca Barkdoll	Assessment date: 4/23/2025

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 water functions	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 with 7 0	The Peace River within the project area has been impacted by previous construction of a vehicular bridge (SR 72) including installation of concrete pilings and riprap. The area surrounding the project area is generally developed with some green space interspersed. The Peace River at this location is accessible from portions of the river north and south of the project area, and the river itself acts as a wildlife crossing for species able to traverse the water. The river banks are upland, portions of which are paved in association with the vehicular bridge and with an adjacent boat ramp and recreation area. Unpaved portions are include forested upland and wet prairie. Invasive species are present in these areas.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current with 10 0	The Peace River within the project area consists of open, flowing water. Wildlife including fish were not observed but the river provides habitat and foraging area for fish, wading birds, and other water-dependent species.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current with 7 0	The river consists of open, flowing water with no emergent vegetation or benthic resources observed within the project area; the banks are forested-shrubby. Human impact on the area from recreational use may hinder growth of emergent vegetation and development of benthic resources, but the overall community structure is appropriate for a river system.

Score = sum of above scores/30 (if uplands, divide by 20)
current with
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 = 0.0

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 Sections 62-345.500 and .600, F.A.C.)

Site/Project Name (FPID: 443123-1) SR 72 at SR 70 PD&E Study	Application Number	Assessment Area Name or Number Wetland 7 (Secondary Impact)
Impact or Mitigation Impact	Assessment conducted by: Rebecca Barkdoll	Assessment date: 4/23/2025

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 with 7 7	The Peace River within the project area has been impacted by previous construction of a vehicular bridge (SR 72) including installation of concrete pilings and riprap. The area surrounding the project area is generally developed with some green space interspersed. Secondary impacts from the project will have little effect on the location and landscape support.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current with 10 10	The Peace River within the project area consists of open, flowing water. The project will be designed to minimize secondary impacts to downstream water quality.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current with 7 7	The river consists of open, flowing water with no emergent vegetation or benthic resources observed within the project area; the overall community structure is appropriate for a river system.

Score = sum of above scores/30 (if uplands, divide by 20)
current with
or w/o pres
0.8 0.8

If preservation as mitigation,
Preservation adjustment factor =
Adjusted mitigation delta =

For impact assessment areas
FL = delta x acres = 0.0

Delta = [with-current]
0

If mitigation
Time lag (t-factor) =
Risk factor =

For mitigation assessment areas
RFG = delta/(t-factor x risk) =

APPENDIX E

FLORIDA BONNETED BAT ACOUSTIC SURVEY TECHNICAL REPORT

Florida Bonneted Bat Acoustic Survey

Technical Report

**State Road (SR) 72 from County Road (CR) 661 to SR 70 &
SR 70 from CR 661 to Peace River Bridge
DeSoto County, Florida**

**Florida Department of Transportation (FDOT) District 1
FPID No. 443123-2-22-01**

September 2025

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Attachment 3	Nightly Weather Data
Attachment 4	Florida Bonneted Bat Recording Inventory Table and Representative Spectrograms
Attachment 5	Florida Bonneted Bat Consultation Key

1.0 Introduction

1.1 Project Information

The Florida Department of Transportation (FDOT), District One, is conducting a Project Development and Environment (PD&E) study to evaluate proposed roadway improvements west of Arcadia in DeSoto County, Florida. The project area includes State Road (SR) 72 from County Road (CR) 661 to SR 70, and SR 70 from CR 661 to the Peace River Bridge (**Figure 1**). The purpose of the PD&E study is to evaluate Alternatives to address the safe operation of the SR 72 and SR 70 intersection and facilities within the area.

An initial FBB acoustic survey was completed for this project from February 8, 2023, through February 16, 2023, at two (2) survey stations (Stations 1 and 2; **Figure 1**). Four (4) nights of acoustic data, per station, recorded during acceptable weather conditions, were analyzed. Upon manual review, there were no FBB calls identified during the 2023 surveys, and absence was confirmed. In accordance with the *Florida Bonneted Bat Consultation Guidelines (2019 Guidelines)*, a follow-up acoustic survey was conducted from June 9, 2025 to June 23, 2025 to add one (1) additional night of data to the original two (2) survey stations (Stations 1 and 2) and add two (2) additional survey stations (Stations 3 and 4) to the project area (**Figure 1**). This report documents the methodology and results of the 2025 follow-up acoustic survey.

The total project acreage is 49.60 acres; **Table 1** provides the Florida Land Use, Cover and Forms Classification System (FLUCFCS) classification, United States Fish and Wildlife Service (USFWS) classification (where applicable), and the total acreage and percent coverage of each land use type within the project area.

1.2 Florida Bonneted Bat

The Florida bonneted bat (*Eumops floridanus* [FBB]) is designated by the USFWS as federally endangered under the *Endangered Species Act of 1973*, as amended (*ESA*). The FBB is the largest bat in Florida and is distinguished from other Florida bats by its larger size and the large ears being joined at the midline of the head.

Foraging habitat for the FBB is diverse and includes open fresh water, permanent or seasonal freshwater wetlands, wetland and upland forests, wetland and upland shrub, and agricultural lands. In urban and residential areas, drinking water, prey base, and open habitat for foraging can be found in relatively small patches of natural or semi-natural habitat. The FBB roosts in live or dead trees and tree snags. Potential suitable roosting habitat includes:

- Trees and tree snags of any species that are at least 33 feet (10 meters) in height with a diameter at breast height (DBH) of at least 8 inches (20 centimeters) and cavity elevations higher than 16 feet (5 meters) above ground level

Figure 1 Florida Bonneted Bat Acoustic Detector Location Map



Table 1 Land Use/Cover within the Project Area

FLUCFCS Classification	FLUCFCS Description	USFWS Classification	Acres in Project Area	Percent of Project Area
110	Residential Low Density <2 dwelling units/acre	N/A	0.80	1.61%
140	Commercial and Services	N/A	<0.01	<0.01%
180	Recreational	N/A	0.10	0.20%
190	Open Lands	N/A	22.00	44.36%
220	Tree Crops	N/A	2.30	4.64%
434	Upland Hardwood-Coniferous Mix	N/A	3.80	7.66%
814	Roads and Highways	N/A	10.60	21.38%
Total Uplands			39.60	79.85%
510	Streams and Waterways (naturalized)	N/A	0.20	0.40%
510	Streams and Waterways (upland cut ditch)	N/A	0.90	1.81%
530	Reservoirs	N/A	<0.01	<0.01%
615	Stream and Lake Swamps (bottomlands)	R3UB2	0.20	0.40%
617	Mixed Wetland Hardwoods	PFO1	6.50	13.10%
641	Freshwater Marshes	PEM1	0.50	1.01%
643	Wet Prairies	PEM1	1.70	3.43%
644	Emergent Aquatic Vegetation	PEM1	<0.01	<0.01%
Total Wetlands and Other Surface Waters			10.00	20.15%
Total			49.60	100.00%

PEM1: Palustrine, Emergent, Persistent

PFO1: Palustrine, Forested, Broad-leaved Deciduous

R3UB2: Riverine, Upper Perennial, Unconsolidated Bottom, Sand

- Artificial structures over 15 feet (4.5 meters) in height that may mimic natural roost conditions (*e.g.*, bat houses, utility poles, buildings over one story high) that are situated in natural or semi-natural habitats that contain cavities, crevices, or structural gaps with an outward entrance of at least 1 inch (2.5 centimeters)
- Areas with a high incidence of large or mature live trees with various deformities such as large cavities, hollows, broken tops, loose bark, and other evidence of decay
- Rock crevices such as limestone in Miami-Dade County
- Bridges and culverts with potential crevices at least 15 feet (4.5 meters) high

USFWS established a consultation area for the FBB based on presence data, key habitat features, reasonable flight distances, and home range sizes. The project area is located in the USFWS FBB Consultation Area and potential FBB roosting and foraging habitat will be impacted by the project. As a result, according to the *2019 Guidelines*, an acoustic survey is required to determine presence or absence of the FBB.

2.0 Survey Methodology

2.1 Acoustic Survey Methodology

The *2019 Guidelines* and coordination with the USFWS (**Attachment 1**), were utilized to establish a standard FBB survey protocol specific to this project to determine presence/absence, identify potential roosts, and identify potential foraging activities. Environmental scientists conducted an acoustic survey to determine the presence/absence of the FBB from June 9, 2025, through June 23, 2025, in accordance with the *2019 Guidelines*. Environmental scientists have attended multiple seminars and trainings by a variety of organizations and industry leaders to obtain expertise that was used to collect and analyze acoustic data during the FBB surveys.

Optimal acoustic detector locations were chosen based on the *2019 Guidelines* criteria for linear projects (a minimum of 1 detector per 0.6 mile [1 kilometer]), approval from the USFWS (**Attachment 1**), desktop analysis, existing land use, and target areas with potential roosting habitat to be impacted by the proposed project. Additionally, based on the *2019 guidelines*, five (5) detector nights are required for every 0.6 mile (1 kilometer) of suitable habitat within the project area and weather conditions must meet specific criteria. Therefore, with approval from the USFWS, the initial two (2) survey stations (Stations 1 & 2) established during the 2023 surveys collected one (1) additional night of data under suitable weather conditions and the additional two (2) survey stations (Stations 3 & 4) collected five (5) nights of data under suitable weather conditions. Photographic documentation of each deployed detector is provided in **Attachment 2**.

Wildlife Acoustics Song Meter SM4 BAT full spectrum acoustic recorders equipped with SMM U2 Ultrasonic Microphones were utilized to record bat calls. Prior to and immediately following deployment, all microphones and recorders were calibrated with the Wildlife Acoustics Ultrasonic Calibrator for Ultrasonic Microphones. All microphones were mounted on metal conduit to elevate the microphones at least 20 feet above the ground and as high above the shrub and canopy stratum as possible. Passive sampling was conducted from approximately 30 minutes before sunset to approximately 30 minutes after sunrise at each deployment location for at least 15 consecutive nights to obtain the required nights of suitable weather conditions. Suitable weather conditions consist of:

- Temperatures above 65° F during the first five (5) hours of survey
- No precipitation, including rain and/or fog, exceeding 30 minutes, or continuing intermittently during the first five (5) hours of survey
- Sustained winds ≤ 9 miles/hour (4 meters/second; 3 on Beaufort scale) for 30 minutes or more during the first five (5) hours of survey

The National Oceanic and Atmospheric Administration (NOAA) National Weather Service station Punta Gorda, Charlotte County Airport [Station ID KPGD] was utilized to ensure survey nights met suitable weather requirements.

2.2 Acoustic Data Analysis

Calls were recorded using the full spectrum WAV file format in accordance with recommendations by the equipment manufacturer and 2019 *Guidelines*. Following data collection, all call sequences and recordings were processed and subsequently analyzed using Kaleidoscope Pro™ ([KPro] version 5.7.0) software. The bottom call frequency range of the FBB is unique to this species and lies between 10 – 17 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 128 gigabyte (GB) SanDisk (SD) memory cards, downloaded, and original WAV files were retained on an external hard drive.

Data files were then processed to WAV format Outputs using KPro. KPro Outputs were set to isolate “Noise” files containing only uninteresting signals such as ambient background noise, rain and wind, vehicular traffic noises such as braking and music, or unwanted biological signals such as insects. The remaining call sequences were analyzed with AutoID to compare to call sequences of known bat species found in south Florida. The USFWS *Florida Bonneted Bat Regulatory Survey Data Submission Protocol* was used to determine the species that should be included in the KPro AutoID analysis. Based on the project location in DeSoto County, a species list was developed that included ten (10) species with the potential to occur within the project area, including the FBB (Table 2).

Table 2 USFWS Bat Species List for DeSoto County, Florida

Scientific Name	Common Name	USFWS Abbreviation	KPro AutoID Abbreviation
<i>Corynorhinus rafinesquii</i> ¹	Rafinesque’s big-eared bat	CORA	CORTOW
<i>Eptesicus fuscus</i>	big brown bat	EPFU	EPTFUS
<i>Eumops floridanus</i>	Florida bonneted bat	EUFL	EUMFLO
<i>Lasiurus borealis</i> / <i>Lasiurus seminolus</i> ²	eastern red bat/ Seminole bat	LABOLASE	LASBOR
<i>Lasiurus intermedius</i>	northern yellow bat	LAIN	LASINT
<i>Myotis austroriparius</i>	southeastern myotis	MYAU	MYOAUS
<i>Nycticeius humeralis</i>	evening bat	NYHU	NYCHUM
<i>Perimyotis subflavus</i>	tricolored bat	PESU	PERSUB
<i>Tadarida brasiliensis</i>	Brazilian free-tailed bat	TABR	TADBRA

¹Rafinesque's big-eared bat is not an option to check in KPro, because Rafinesque's big-eared bat is acoustically indistinguishable from Townsend's big-eared bat (*Corynorhinus townsendii*) and Townsend's big-eared bat does not occur in Florida, this species was used to identify potential Rafinesque’s big-eared bat calls with KPro AutoID.

²Files that KPro AutoID as LASBOR represent calls that could be either the eastern red bat or Seminole bat as they are considered acoustically indistinguishable.

All calls with a frequency at 20 kHz and below, including minimum frequency, maximum frequency, and mean frequency, were manually vetted to confirm or refute the species identified by AutoID. Additionally, all calls AutoID as FBB (EUMFLO), including Alternate AutoID 1 and 2, were also manually vetted. Manual vetting included a comparison of call recordings to the built-in reference files of KPro and known unique characteristics of each species' acoustic calls.

3.0 Results

3.1 Acoustic Processing Results

The deployment schedule for the acoustic survey is provided in **Table 3**. Passive sampling resulted in one (1) night of data with suitable weather conditions for Detectors 1 and 2 and five (5) nights of data with suitable weather conditions for Detectors 3 and 4 included in the analysis. **Attachment 3** provides nightly weather data, which identifies the nights that met suitable weather requirements.

Table 3 Acoustic Detector Deployment Schedule

Detector	Date Deployed	Date Retrieved	Detector Type	Serial Number	Microphone Type	Serial Number	Nights to be Analyzed with Suitable Weather Conditions
1	6/9/2025	6/23/2025	SM4BAT-FS ¹	S4U10660	SMM-U2 ¹	MU209861	1
2	6/9/2025	6/23/2025	SM4BAT-FS ¹	S4U10688	SMM-U2 ¹	MU209911	1
3	6/9/2025	6/23/2025	SM4BAT-FS ¹	S4U10605	SMM-U2 ¹	MU209950	5
4	6/9/2025	6/23/2025	SM4BAT-FS ¹	S4U10657	SMM-U2 ¹	MU209924	5

¹Wildlife Acoustics

*Note: Per coordination and approved methodology, only one additional night of data for Detectors 1 and 2 were required, while Detectors 3 and 4 required five nights of data.

After manual vetting, there were no calls automatically classified as a FBB recording that were confirmed to be FBB calls. A total of 10,903 recordings were collected from the four (4) acoustic monitoring locations. The KPro software and manual vetting resulted in classifying 4,304 of those recordings as noise. A summary of the acoustic survey results is provided in **Table 4** for all nights of survey included in the analysis. The remaining 6,599 recordings represent nine (9) different bat species found in south Florida: big brown bat (*Eptesicus fuscus*), Florida bonneted bat, eastern red bat (*Lasiurus borealis*), Seminole bat (*Lasiurus seminolus*), northern yellow bat (*Lasiurus intermedius*), southeastern myotis (*Myotis austroriparius*), evening bat (*Nycticeius humeralis*), tricolored bat (*Perimyotis subflavus*), and Brazilian free-tailed bat (*Tadarida brasiliensis*) (**Table 5**). There were 503 recordings that were classified with no identification (No ID) by the AutoID software as there was not enough data available to make a positive ID. It is important to note that all recordings at or below 20 kHz, including No IDs, were manually vetted.

There were 20 recordings that were AutoID as FBB by the KPro software (**Table 6**). During manual vetting, the recordings that were identified as FBB by AutoID were determined to be recordings of noise, produced by an organism that is not a bat, or the Brazilian free-tailed bat. The full inventory of recordings AutoID as FBB are provided in **Attachment 4**.

Table 4 Acoustic Survey Summary

Detector	Latitude (°N)	Longitude (°W)	Total Recordings	Noise	Total Potential Bat Recordings	Total Confirmed FBB Recordings
1	27.22049257000	-81.89695160000	1,315	845	470	0
2	27.22444683000	-81.89074466000	506	144	362	0
3	27.22296267000	-81.88349706000	6,018	3,140	2,878	0
4	27.22173991000	-81.87744491000	3,064	175	2,889	0
Total			10,903	4,304	6,599	0

Table 5 Summary of Recordings by Species

Detector	CORTOW Recordings*	EPTFUS Recordings*	FBB Recordings (AutoID)	FBB Recordings (Manual)	LASBOR Recordings*	LASINT Recordings*	MYOAUS Recordings*	NYCHUM Recordings*	PERSUB Recordings*	TADBRA Recordings*	No ID*	Noise*	Total Recordings
1	0	6	0	0	12	12	1	104	27	258	50	845	1,315
2	0	2	3	0	12	2	0	40	11	281	11	144	506
3	0	9	3	0	56	63	5	183	1,714	546	299	3,140	6,018
4	0	23	14	0	14	41	3	94	168	2,389	143	175	3,064
Total	0	40	20	0	94	118	9	421	1,920	3,474	503	4,304	10,903

*Note: The number of recordings by species was determined through KPro AutoID analysis. The abbreviations used for each species are those used in the KPro AutoID software.

Table 6 Inventory Summary Table of Florida Bonneted Bat Recording Files

Detector	Total FBB Recordings by AutoID	Noise	Not Bat	No ID	TADBRA*	Confirmed FBB Recordings
1	0	0	0	0	0	0
2	3	1	2	0	0	0
3	3	0	3	0	0	0
4	14	11	1	0	2	0
Total	20	12	6	0	2	0

*Note: The abbreviation used in the KPro AutoID software.

4.0 Conclusions/Effect Determination

4.1 *Acoustic Survey Conclusions*

As a result of manual vetting, no FBB recordings were detected during acoustic surveys and the species is assumed to be absent from the project action area. Of greatest interest to USFWS in searching for a roost site is the time of emergence from the roost, shortly after sunset, and returning to the same roost, before sunrise. Calls recorded within 90 minutes after sunset or 90 minutes before sunrise may suggest possible FBB roosting in an area. Additionally, USFWS defines “High FBB Activity/Use” to include any of the following: (a) multiple feeding buzzes are detected; (b) FBB social calls are recorded; (c) large numbers of FBB calls (9 or more) are recorded throughout one night. Based on the results of the acoustic survey, the results do not show FBB roosting is likely, nor do they show high FBB activity/use.

4.2 *Effect Determination*

The USFWS developed a *Florida Bonneted Bat Consultation Key* (Key) in 2019 to assist regulatory agencies in making effect determinations for projects located in the FBB Consultation Area. **Attachment 5** provides the path taken through the Key based on the acoustic survey results (1a > 2a > 3b > 6b > No Effect). Based on the Key, it has been determined that the proposed project will have *no effect* on the FBB.

5.0 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.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. U.S. Department of the Interior, Fish and Wildlife Service, Office of Biological Services. Technical Publication FWS/OBS-79/31. 131 pp.
- Florida Department of Transportation (FDOT). 1999. *Florida Land Use, Cover and Forms Classification System: Handbook* (3rd edition). Florida Department of Transportation Surveying and Mapping Office, Geographic Mapping Section. Tallahassee, Florida: 91 pp.
- U.S. Fish and Wildlife Service (USFWS). 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).
- USFWS. 2019. *Florida Bonneted Bat Consultation Guidelines*. October 2019. U.S. Fish and Wildlife Service, Florida Ecological Services Office. Vero Beach, Florida. 34 pp.
- USFWS. 2023. *Florida Bonneted Bat Regulatory Survey Data Submission Protocol: Using Kaleidoscope Pro*. U.S. Fish and Wildlife Service, Florida Ecological Services Office. Vero Beach, Florida: 23 pp.

Attachment 1
USFWS Coordination

Catie Neal

From: Gilmer, Nikki <Nikki.Gilmer@dot.state.fl.us>
Sent: Thursday, June 5, 2025 1:32 PM
To: Catie Neal
Cc: James, Jeffrey W; Barnett, Emily; Hardeman, Victoria; Bateman, Patrick
Subject: Fw: [EXTERNAL] Re: REVIEW: Florida Bonneted Bat Survey Plan for SR 72 from CR 661 to SR 70, DeSoto County, FPID 443123-2
Attachments: SR 70 from CR 661 to SR 70.jpg;
Florida_Bonneted_Bat_Consultation_Area_-7198788015614250949.kmz

Caution: External email.

Catie,

USFWS has approved the methodology memo, see email below.

Thanks,

[Nikki Gilmer](#)

ETDM Coordinator & Environmental Project Manager
Florida Department of Transportation | District One
801 North Broadway Ave | Bartow, FL 33830
Phone: (863) 519-2375 Email: nikki.gilmer@dot.state.fl.us



From: Williams, Zakia <zakia_williams@fws.gov>
Sent: Thursday, June 5, 2025 1:28 PM
To: Gilmer, Nikki <Nikki.Gilmer@dot.state.fl.us>
Subject: Fw: [EXTERNAL] Re: REVIEW: Florida Bonneted Bat Survey Plan for SR 72 from CR 661 to SR 70, DeSoto County, FPID 443123-2

EXTERNAL SENDER: Use caution with links and attachments.

Afternoon Nikki,

The survey methodology looks good and FDOT can begin surveying. The project does occur with the FBB CA, please see attachment. I have also attached the KMZ for the FBB CA. I am not sure which version of the shapefile that you all have but this one is labeled 2019. Please let me know if you have any further questions.

2



From: James, Jeffrey W <Jeffrey.James@dot.state.fl.us>

Sent: Tuesday, May 20, 2025 1:55 PM

To: Williams, Zakia <zakia_williams@fws.gov>

Cc: Gilmer, Nikki <Nikki.Gilmer@dot.state.fl.us>; Barnett, Emily <Emily.Barnett@dot.state.fl.us>; Hardeman, Victoria <Victoria.Hardeman@dot.state.fl.us>; Bateman, Patrick <Patrick.Bateman@dot.state.fl.us>; Catie Neal <cneal@kcaeng.com>

Subject: REVIEW: Florida Bonneted Bat Survey Plan for SR 72 from CR 661 to SR 70, DeSoto County, FPID 443123-2

Zakia,

Please see the attached Survey Methodology for Florida Bonneted Bat for review. Thank you in advance for your review.

If you have any questions or require additional information, please let me know.

Jeffrey W. James

Environmental Manager

Florida Department of Transportation, District 1

801 North Broadway Avenue

P.O. Box 1249

Bartow, FL 33831-1249

(863) 519-2625

Jeffrey.James@dot.state.fl.us



FLORIDA BONNETED BAT ACOUSTIC SURVEY PLAN

**Florida Department of Transportation
District One**

**SR 72 from CR 661 to SR 70
&
SR 70 from CR 661 to Peace River Bridge
DeSoto County, Florida**

Financial Project ID: 443123-2-22-01

May 2025

To: Zakia Williams, USFWS

From: Nikki Gilmer, FDOT District One

CC: Emily Barnett, FDOT District One
Jeffrey James, FDOT District One
Patrick Bateman, FDOT District One
Catie Neal, KCA

Date: May 22, 2025

RE: SR 72 FROM CR 661 TO SR 70 & SR 70 FROM CR 661 TO PEACE RIVER BRIDGE
FINANCIAL PROJECT ID: 443123-2-22-01
FLORIDA BONNETED BAT ACOUSTIC SURVEY PLAN

Introduction

The Florida Department of Transportation (FDOT), District One, is conducting a Project Development and Environment (PD&E) study to evaluate proposed roadway improvements west of Arcadia in DeSoto County, Florida. The project area includes State Road (SR) 72 from County Road (CR) 661 to SR 70, and SR 70 from CR 661 to the Peace River bridge (**Figure 1**). The purpose of the PD&E study is to evaluate Alternatives to address the safe operation of the SR 72 and SR 70 intersection and facilities within the area.

The endangered Florida bonneted bat (*Eumops floridanus* [FBB]) is thought to utilize habitats such as hardwood forests, pinelands, and mangrove swamps, as well as man-dominated land uses such as golf courses and neighborhoods. They are known to roost in both natural and artificial structures. The project area is within the US Fish and Wildlife Service (USFWS) consultation area for the FBB and contains potential foraging and roosting habitat including forested uplands and forested wetlands. In accordance with the *Florida Bonneted Bat Consultation Guidelines* (Guidelines, USFWS 2019), an initial FBB acoustic survey was completed for this project from February 8 through February 16, 2023, at two (2) survey stations (**Figure 1**). Four (4) nights of acoustic data, per station, recorded during acceptable weather conditions, were analyzed. However, upon manual review, there were no FBB calls identified, and negative absence was confirmed.

Methodology

Based on the *Guidelines*, the project will require a minimum of five (5) detector nights per 0.6 miles on a linear project. Communication with the USFWS in early 2025 (**Attachment 1**) determined that one (1) additional night per Stations 1 and 2, are required in order to confirm the presence or absence of roosting FBBs within the project area as only four (4) valid nights per station were obtained previously. Additionally, to cover the rest of the project area, an additional detector station is needed. Although the addition of only one (1) additional detector was discussed, the FDOT is proposing two (2) additional stations (Stations 3 & 4) in order to ensure that all potential bat presence from the Peace River Relief is able to be detected during the survey. The FDOT will conduct an additional acoustic survey pursuant to the 2019 *Guidelines*. Stations 3 & 4 will require an additional five (5) nights of data and one (1) additional night of data during

Figure 1 – Florida Bonneted Bat Acoustic Detector Location Map



acceptable weather conditions for each Station 1 and 2 will also be recorded and analyzed. The approximate locations for proposed detector placement along the project corridor are depicted in **Figure 1**.

These locations are proposed and may be adjusted during deployment to accommodate environmental conditions. Detectors are proposed to be placed with a maximum distance of 0.6 miles with no less than 300 meters in between. Acoustic deployment data sheets to be utilized are included in **Attachment 2**.

Passive sampling will be conducted from approximately 30 minutes before sunset to approximately 30 minutes after sunrise at each survey site for five (5) nights at Stations 3 & 4 and one (1) at Stations 1 & 2, during acceptable weather conditions: temperatures above 65°F during the first five (5) hours of survey; no precipitation, including rain and/or fog, exceeding 30 minutes or continuing intermittently during the first five (5) hours of survey; and sustained winds ≤ 9 miles/hour (4 meters/second; 3 on Beaufort scale). The nearest NOAA National Weather Service Station (Punta Gorda, Charlotte County Airport [KPGD]) will be utilized to ensure survey nights meet survey requirements.

Calls will be recorded using Wildlife Acoustics Song Meter SM4BAT full spectrum acoustic recorders and the full spectrum WAV file format in accordance with recommendations by the equipment manufacturer. Full spectrum WAV format data files will be recorded on 128 gigabyte (GB) SanDisk (SD) memory cards, downloaded and original WAV files retained. Data files will then be processed to WAV and Zero Crossing (ZC) format using Kaleidoscope Pro™ software provided by Wildlife Acoustics. The program settings result in recordings of 0.1 to 5 seconds in length and all recordings will be reviewed for detection and subsequent identification of bat species recorded.

Following data collection, all call sequences will be processed and subsequently analyzed using Kaleidoscope Pro™ software. All low frequency calls at or below 20 kHz will be 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 10-17 kilohertz (kHz). This unique frequency range is a valuable aid in identifying the presence of FBBs.

Conclusion

The Florida Bonneted Bat Acoustic Survey Report from the original 2023 survey is included in **Attachment 3**.

We would ask that you review the attached information, and if you agree with the survey strategy discussed above, provide us with your approval. If you have questions or would like to discuss this project or the information contained within this memorandum, please do not hesitate to contact me at <Emily.Barnett@dot.state.fl.us>.

Attachment 1

USFWS Coordination Summary

Re: [EXTERNAL] 443123-2 SR 72 Project and FBB Survey Requirements - USFWS/FDOT Coordination Meeting Notes

From Wrublik, John <john_wrublik@fws.gov>
Date Thu 4/17/2025 8:51 AM
To Barnett, Emily <emily.barnett@dot.state.fl.us>

EXTERNAL SENDER: Use caution with links and attachments.

Thanks Emily, and I am in agreement with the meeting notes you provided.

John

John M. Wrublik
U.S. Fish and Wildlife Service
777 37th Street, Suite D-101
Vero Beach, Florida 32960
Office: (772) 226-8130
email: John_Wrublik@fws.gov

NOTE: This email correspondence and any attachments to and from this sender is subject to the Freedom of Information Act (FOIA) and may be disclosed to third parties.

From: Barnett, Emily
Sent: Thursday, April 17, 2025 8:43 AM
To: Wrublik, John
Subject: [EXTERNAL] 443123-2 SR 72 Project and FBB Survey Requirements - USFWS/FDOT Coordination Meeting Notes

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Good morning, John,

I was forwarded your retirement email – congratulations! It has been a pleasure working with you and I appreciate all the help you've given us on D1 projects, especially lately. I am sorry to hear you won't be at the Service, but I wish you the best and hope you enjoy it!

I was hoping you would be willing to read through the meeting notes I jotted down from our April 2 meeting regarding our SR 72 project and just confirm that you still agree with what we discussed/and your recommendations haven't changed. I am sure you are inundated with requests and last-minute items to complete before the end of the day tomorrow, so I understand if you are unable to get to this request.

Next steps for surveying/resurveying for the 443123-2 SR 72 Project:

- In terms of the 0.6 mile requirement for the stations, this means there should be a station proposed every 0.6 miles

- We (FDOT/Emily) discussed the 4 nights per station done previously and noted that we did not catch this prior to submitting to the USFWS. The USFWS/John confirmed that the guidelines are 5 nights per station, but getting one more valid night on those two previous stations while we had detectors deployed to the new survey area we will be surveying would be acceptable and that it would be acceptable to get 5 valid nights (2019 survey methodology) for the new survey area.
- FDOT/Emily discussed that this project will impact enough CH area to meet the percentage threshold listed in the 2024 guidelines, but not the 2019 guidelines and that we were unsure how to handle this. USFWS/John indicated that it would be best to follow the CH key in the 2024 guidelines, which would get us to 3b → further consultation with the Service required and that once our new survey results were submitted to the USFWS in the NRE addendum, FDOT and USFWS would coordinate the further consultation.

Thanks,
Emily Barnett
Environmental Project Manager
Florida Department of Transportation, District One
801 North Broadway Avenue
Bartow, Florida 33830
(863) 519-2805
Emily.Barnett@dot.state.fl.us



Attachment 2

Acoustic Deployment Datasheets

FBB Acoustic Deployment Data Sheet

Take a GPS Point so you have Lat/Long

Date of Deployment _____

Project Name _____

Must follow the following format: FBB_[YYYY]_[CNTY]_[Company]_[Name of Project]

Location Name	Latitude	Longitude	Altitude (m)	Area (km²)	Population	Year
1	10.00	10.00	1000	100	1000	2000
2	20.00	20.00	2000	200	2000	2000
3	30.00	30.00	3000	300	3000	2000
4	40.00	40.00	4000	400	4000	2000
5	50.00	50.00	5000	500	5000	2000
6	60.00	60.00	6000	600	6000	2000
7	70.00	70.00	7000	700	7000	2000
8	80.00	80.00	8000	800	8000	2000
9	90.00	90.00	9000	900	9000	2000
10	100.00	100.00	10000	1000	10000	2000

Must have unique name for each detector location (ex. FBB_Station 1)

Deployment

Personnel

Lat/Long (Point taken)

Y/N) _____

GRTS Cell ID (In

office w lat/long) _____

Detector Used

Microphone Used

Microphone Orientation

e|n|ne|nw|s|se|sw|vert|w

Microphone Height (m)

Distance to Nearest

Clutter (m)

Recommend noting where and what the nearest clutter is and take a point to measure in GIS

Clutter Type

Building | Other | Rock | Vegetation | Water

Distance to Nearest Water

(m)

Recommend noting where and what the nearest water is and take point to measure in GIS if close - if not close make note of where to measure to in GIS to determine in office

Water Type

What is being referenced in above

Percent Clutter

Percent clutter surrounding microphone

Broad Habitat Type

Broad habitat type surrounding microphone

agriculture | barren land | forest-conifer | forest-deciduous | forested
wetland | grassland | shrubland | urban | water | wetland

Notes

Attachment 3

2023 Acoustic Survey Report



ACOUSTIC SURVEY REPORT

*FLORIDA BONNETED BAT (*Eumops floridanus*)*

FDOT Florida Highway 70 and 72 Roundabout

Report Completed for
Quest Ecology
735 Lakeview Drive
Wimauma, FL 33598

PROJECT NO.: 31405652.000
DATE: FEBRUARY 27, 2023

WSP USA INC.
6026 NW 1ST PLACE
GAINESVILLE, FLORIDA, USA 32607
+1 352 336-5600
WSP.COM



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APPENDIX B	WEATHER REPORTS

1 INTRODUCTION

The Florida Department of Transportation (FDOT) Highway 70 and 72 roundabout (Project) is a planned road expansion and roundabout installation for the intersection of Florida Highway 70 and 72, approximately 2 miles west of the city of Arcadia (Figure 1). The Project involves the expansion of roadways and installation of a roundabout within an approximately 0.7-mile construction area (Site), impacting areas of forested and non-forested wetlands and uplands.

The Site is within the US Fish and Wildlife Service (USFWS) consultation area for the endangered Florida bonneted bat (*Eumops floridanus*) and contains potential foraging and roosting habitat including forested uplands and forested wetlands. Neighboring properties contain a mixture of open pastureland and forested areas. Pastureland, especially improved and woodland pasture, is considered Florida bonneted (FBB) foraging habitat, and this land use type typically represents between 0.55 and 27 percent of a FBB's foraging area (Ober 2015, 2016).

In accordance with the *Florida Bonneted Bat Consultation Key* contained within the October 2019 *Florida Bonneted Bat Consultation Guidelines* (Guidelines) prepared by the USFWS South Florida Ecological Services Field Office, due to the Project's location within the consultation area and presence of potential roosting and foraging habitat, acoustic surveys are required prior to construction. Full acoustic surveys are conducted 30 minutes prior to sunset to 30 minutes after sunrise, over multiple nights, to identify potential roosting or foraging use of the Site. As described in Appendix B of the Guidelines, acoustic surveys for linear projects require a minimum of 5 detector nights per 0.6 miles. Based on the length of the Project (0.7 miles), a minimum of 6 detector nights would be needed. Two survey stations were established to collect a minimum of 6 detector nights (Figure 2).

2 ACOUSTIC SURVEY METHODS

Bats produce echolocation calls while in flight to navigate through their environment and find prey (Bohn and Gillam 2018, Marks and Marks 2006). Species presence and activity levels can be assessed with automated ultrasonic recording systems, which are particularly useful for detecting the FBB as their calls are of high intensity and at lower frequencies (typically around 14 kHz) compared to other Florida bat species (Braun de Torrez et al. 2016, Bailey et al. 2017, Bat Survey Solutions 2020). This combination of echolocation call characteristics makes the FBB easier to distinguish from other bat species, and detectable from a greater distance (lower frequencies suffer less atmospheric attenuation than higher frequencies) (Bohn and Gillam 2018).

WSP conducted the acoustic survey from February 8th until February 16th, 2023 at two survey locations (Figure 2). Echolocation calls were recorded using two AnaBat Chorus automated ultrasonic recording systems (song meters). Microphones were placed on extendable poles 16 feet above the ground surface and at an approximate angle of 90° above horizontal facing the area of potential roosting or foraging habitat (See Appendix B – Station Photographs). In accordance with the Guidelines, the song meters were programmed to start recording 30 minutes prior to sunset through 30 minutes after sunrise. Each microphone was calibrated prior to deployment and verified for accuracy upon survey completion. Recording settings were as specified in the Guidelines:

- Gain = 12 dB
- 16k High Filter = Off
- Sample Rate = 192 kHz
- Min Duration = 1.5 ms
- Max Duration = None
- Min Trigger Frequency = 6 kHz
- Trigger Level = 12 dB
- Trigger Window = 2 seconds
- Max Length = 15 seconds
- File Type = Uncompressed WAV files

If any of the following weather conditions occurred during the acoustic survey, the sampling effort was voided for that night:

- temperatures fall below 65°F (18.3°C) during the first 5 hours of survey period;
- precipitation, including rain and/or fog, that exceeds 30 minutes or continues intermittently during the first 5 hours of the survey period; and
- 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.

To determine valid detector nights, hourly weather data was obtained from the nearest USFWS approved National Oceanic and Atmospheric Administration (NOAA) weather station (Punta Gorda Charlotte County Airport, FL US, Station WBAN: 12812, Lat: 26.91847°, Long: -81.99391°, Elevation: 6.1 meters). A summary of weather data during the survey period is provided in Appendix B; details on the song meter locations, recording durations, and habitat type are provided below (Table 1).

Table 1: Song Meter Location Habitat Descriptions and Sampling Dates

Recording Device*	Habitat Description	Targeted Potential FBB Habitat	Start Date (Sunset)	End Date (Sunrise)	Valid Detector Nights
Station #1	Upland forest with open areas of less dense forests	Foraging and Roosting Habitat	February 8 th , 2023	February 16 th , 2023	4*
Station #2	Bordering a freshwater wetland with a mixture of herbaceous/shrub vegetation and a perimeter of trees.				4*
Total:					8

* Lower number of valid detector nights were due to unfavorable weather.

3 ACOUSTIC FILE ANALYSIS

Bats produce a variety of calls depending on their activity. Bats can change the frequency, shape, pulse and call duration, and bandwidth of the call depending on the situation (Britzke et al 2013, Bat Survey Solutions 2020). When a bat is flying through the environment “searching” for prey or navigating it is producing search phase or commuting calls. Search phase calls are consistently spaced and usually long duration with little frequency modulation (small bandwidth) (Bat Survey Solutions 2020). These types of calls are the most species-distinctive and are the basis for identifying echolocation calls to species (Bohn and Gillam 2018). When a bat is closer to objects or foraging within a cluttered environment, it may switch to an approach call. This type of call has a high bandwidth (steep slope), and the time between pulses becomes shorter (Bat Survey Solutions 2020). If a bat detects prey (or water), it will switch to a feeding/drinking buzz, which has rapid short pulses, and a drop in frequency and intensity. The high number of pulses in a short period of time sounds like a “buzz” when played in real time. Foraging intensity can be approximated from the relative number of feeding buzzes recorded. Once the bat has consumed the prey it will usually return to a search phase call. When a bat is recorded near a roost or a high activity area (i.e. an entrance to a cave) it will produce a social/directive call. These calls are not true echolocation calls (the bat is not listening for the echo) but instead are used to communicate to other bats of the same or different species (Bat Survey Solution 2020). This includes mothers communicating with young, warnings to other bats to stay away from perceived foraging areas, etc. Social calls can be indicative of a roost nearby and can be used to help identify potential roost sites.

All acoustic files were inspected using the Sonobat Bat Call Analysis software (Sonobat 2022). Species were identified based upon call characteristics. The FBB has a search phase characteristic frequency (flattest point of the call) around 14kHz (10-19 kHz range). The calls have a variable to flat frequency modulation (bandwidth) with long calls having high intensity at the beginning and tapering off (carrot-shaped oscillogram) (Bohn and Gillam 2018, Sonobat 2017, Bat Survey Solutions 2020). FBB social calls have usually lower frequency (8 – 12 kHz) and are longer duration (greater than

30 ms) than echolocation pulses (predominantly 10 – 19 kHz, and less than 15 ms) (Bohn and Gillam 2018, Sonobat 2017, Bat Survey Solutions 2020). Calls of the Brazilian free-tailed bat (*Tadarida brasiliensis*) are most similar to the FBB, but Brazilian free-tailed bats do not typically produce search phase calls with average characteristic frequencies below 25 kHz (Range 16.6-37.4kHz) (Sonobat 2017, Bat Survey Solutions 2020).

The proximity to a roost site can be determined by the number of social calls recorded and the time of the recording. Social calls usually occur around roost sites and the FBB typically emerges from roosts between 20 minutes to 1 hour (average 40 minutes) after sunset (Bohn and Gillam 2018, Braun de Torrez et al 2016, Marks and Marks 2006), thus detecting social calls within 1 hour after sunset could indicate a roost near the song meter. Each song meter contains an internal clock and each audio file name contains the unique identification of the song meter, the date, and the time.

The raw audio files were scrubbed for background noise, each audio file was analyzed using Sonobat's species identifier, and then calls were manually vetted. Using the Sonobat software, each file is summarized (file name, date, time, latitude/longitude, recording device, etc.) within a vetting table and manually identified to species with additional categories including the presence of social or feeding calls.

4 RESULTS

Although potential foraging and roosting habitat occurs on and near the Site, no verified FBB calls were detected over the 8 detector nights (8 calendar days) of acoustic surveys. After analysis through Sonobat's auto-classification, 35 calls were identified as FBB but upon manual review all of these calls were identified as either noise (from nearby road), bird calls, or insect calls (Figures 3-7).

In order to correctly identify a bat call to species, a series of regularly spaced search phase calls within the frequency spectrum for a particular species is required. Figure 3 shows the search phase calls for a FBB recorded at Babcock-Webb Wildlife Management Area (WMA).

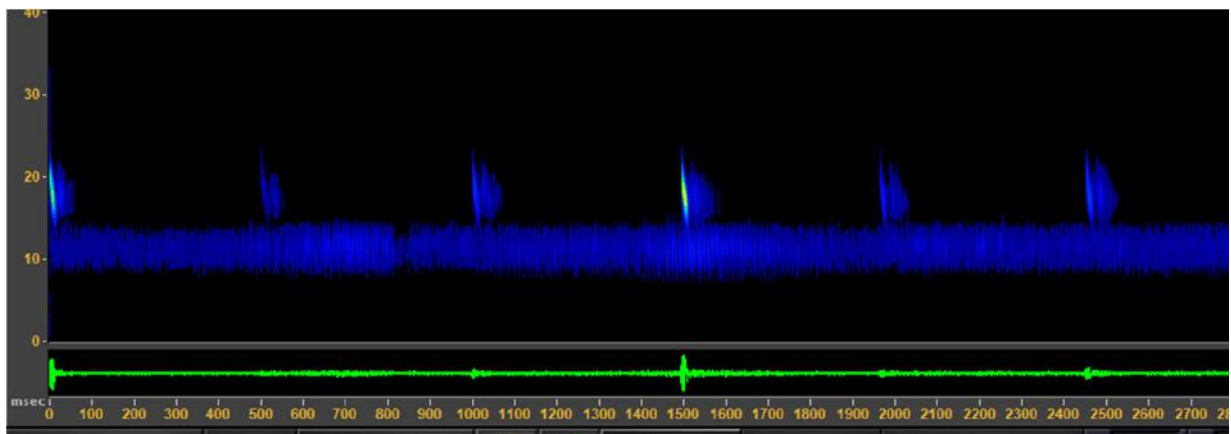


Figure 3: Screen shot of a sonogram illustrating regularly spaced search phase calls required to identify recordings to species. Time is along the x-axis in milliseconds and shows a FBB call every 500 msec. This call was recorded at the Babcock-Webb WMA by WSP in 2020.

A FBB search phase call has a characteristic frequency average between 9.8 and 19.4 kHz. The characteristic frequency is defined as the frequency of the call at its lowest slope. Figure 4 provides a sonogram of a single time expanded FBB call recorded at Babcock-Webb WMA. It shows a gentle slope from high frequency (Hif) to low frequency (Lof) with a characteristic frequency (f_c) of 16.3 kHz. It also shows an oscillogram (green lines) which indicates distribution of the power in the call. FBB calls are usually power-forward with wide oscillograms near the beginning of the call and thinner oscillograms near the end of the call (Figure 4); these oscillograms are usually referred to as carrot-shaped.

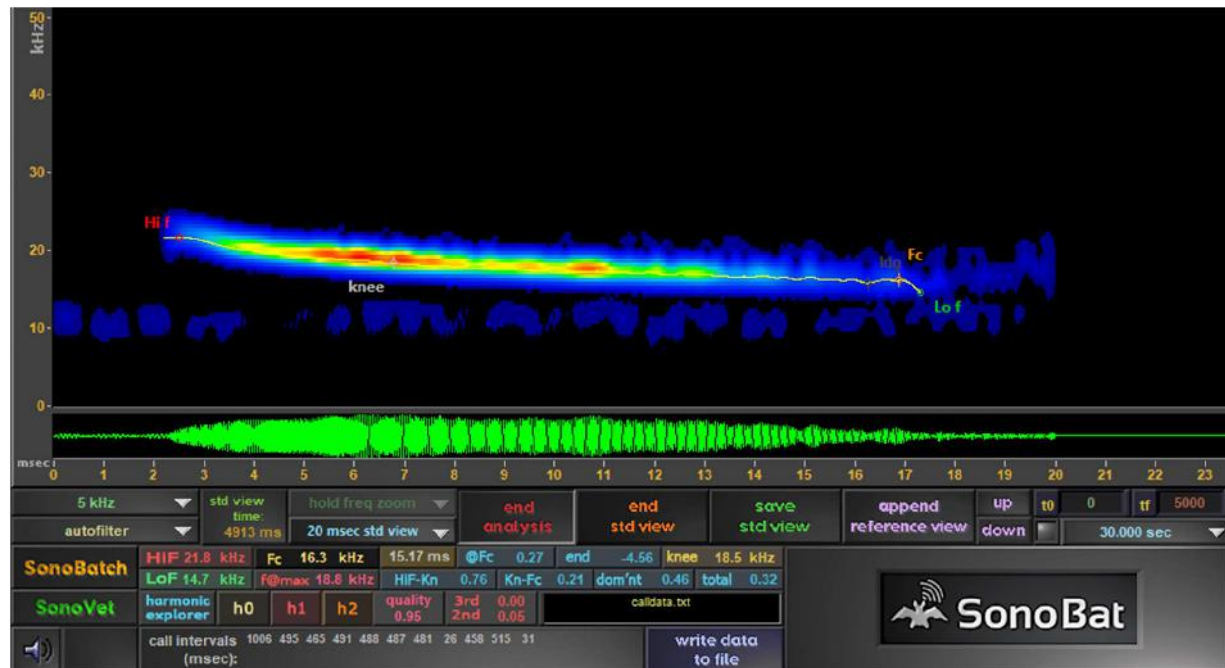


Figure 4: Time-expanded sonogram showing a FBB call recorded at the Babcock-Webb WMA in 2020. Note the characteristic frequency (fc, y-axis) of 16.3 kHz, the carrot-shaped oscillogram (green lines) and the flat slope.

Each of the calls identified as FBB from the Sonobat software's auto-classification were manually vetted as either noise (Figure 5), bird calls (Figure 6), or insect calls (Figure 7). The classifications between noise, bird, and insect calls were based on best judgement when listening to the live recordings.

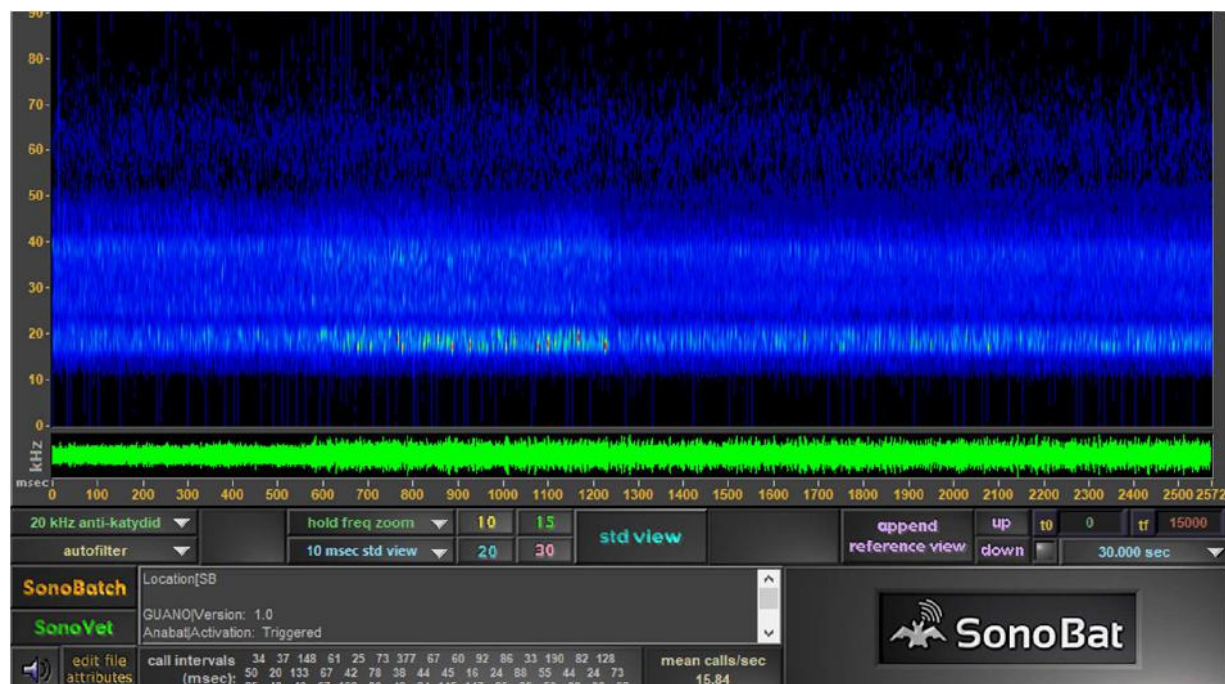


Figure 5: An example of a recording manually vetted and classified as noise. Note the absence of regularly spaced search phase calls. This recording was classified as FBB by the Sonobat auto-classification tool and recorded at Station 1.

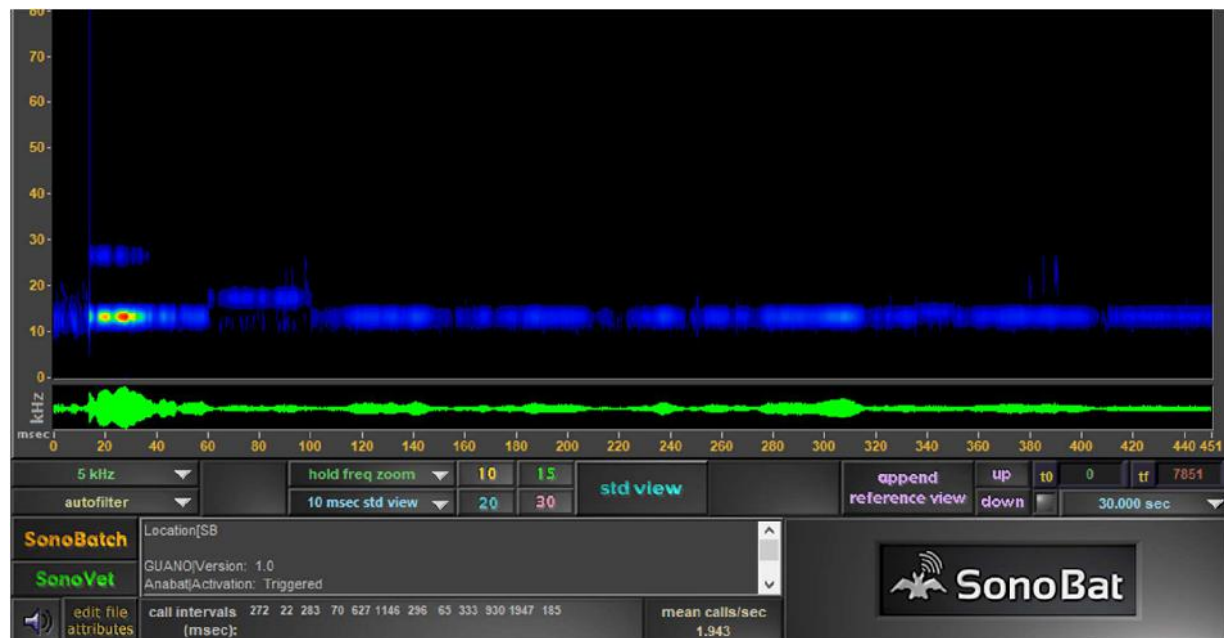


Figure 6: An example of a recording manually vetted and classified as a bird call. This recording was classified as FBB by the Sonobat auto-classification tool and recorded at Station 1. However, the call lacks regularly spaced search phase called, has a flat frequency, and clearly sounds like a bird chirping when manually listening in real-time.

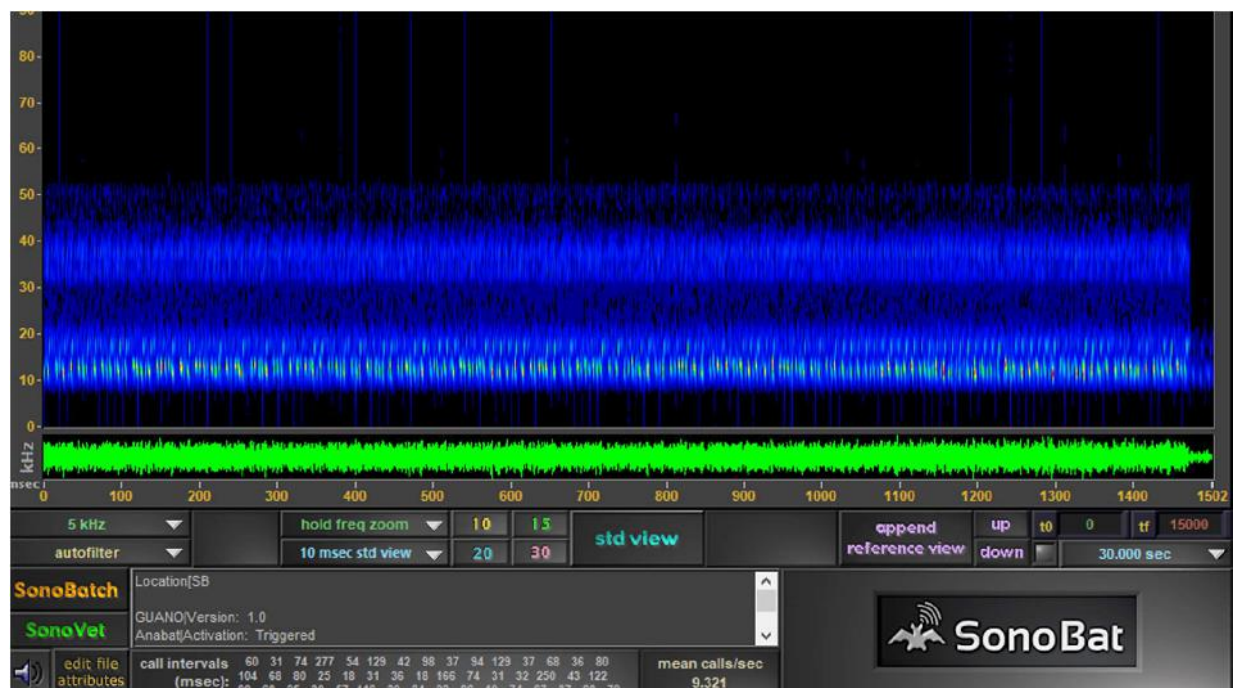


Figure 7: An example of a recording manually vetted and classified as an insect call. This recording was classified as FBB by the Sonobat auto-classification tool and recorded at Station 2. Note the absence of regularly spaced search phase calls. When listening to the call played in real-time, it becomes clear that this is a recording of an insect.

Five non-listed bat species were documented, the Brazilian free-tailed bat, the northern yellow bat (*Lasiurus intermedius*), the red bat (*Lasiurus borealis*), the evening bat (*Nycticeius humeralis*), the southeastern myotis (*Myotis austroriparius*), and the tri-colored bat (*Perimyotis subflavus*). A total of

566 bat calls were detected throughout the study period, with most calls identified as Brazilian free-tailed bats (Table 2).

Table 1: Summary of recordings identified via manual vetting during the study period displayed by bat species and recording device.

Recording Device	Florida bonneted bat (<i>Eumops floridanus</i>)	Brazilian free-tailed bat (<i>Tadarida brasiliensis</i>)	Northern yellow bat (<i>Lasiurus intermedius</i>)	Red Bat (<i>Lasiurus borealis</i>)	Evening Bat (<i>Nycticeius humeralis</i>)	Tri-Colored Bat (<i>Perimyotis subflavus</i>)	Southeastern Myotis (<i>Myotis austroriparius</i>)	Total Bat Calls Per Recording Device
Station #1	0	308	112	1	9	39	10	479
Station #2	0	54	10	0	6	15	2	87
Total:	0	362	122	1	15	54	12	566

5 CONCLUSIONS

The FDOT Highway 70 and 72 Project is a planned road expansion and roundabout installation for the intersection of Florida Highway 70 and 72 approximately 2 miles west of the city of Arcadia (Figure 1). The Project involves the expansion of roadways and installation of a road roundabout within an approximately 0.7-mile construction area, impacting areas of forested and non-forested wetlands and uplands.

The Site is within the USFWS consultation area for the endangered Florida bonneted bat and contains potential foraging and roosting habitat including forested uplands and forested wetlands. Neighboring properties contain a mixture of open pastureland and forested areas. Potential foraging and roosting habitats were surveyed for 8 detector nights during 8 calendar days resulting in the detection of six non-listed species: the Brazilian free-tailed bat, northern yellow bat, red bat, evening bat, southeastern myotis, and tri-colored bat. The Site does not appear to be utilized by the FBB. As specified in the Guidelines, all raw acoustic data will be provided to the USFWS under separate cover. Raw acoustic data will be provided as “all raw data” in digital format via secure FTP or external hard drive.

No effect to the species is anticipated as a result of construction and operation of the Project. However, WSP recommends that FDOT follow the USFWS-recommended Best Management Practices to minimize potential impacts to the FBB outlined in Appendix D of the Guidelines.

6 REFERENCES

- 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(6): 1586-1593.
- Bat Survey Solutions. 2020. Acoustic Survey Methods Course, Punta Gorda, FL. January 10-16, 2020. Lecture material provided by Janet Tyburec, and John Chenger, <https://batsurveysolutions.com/>.
- Bohn, K.M. and E.H. Gillam. 2018. In-flight Social Calls: a Primer for Biologists and Managers Studying Echolocation. *Canadian Journal of Zoology*. 96:787-800.
- Braun de Torrez, E.C., H.K. Ober, and R.A. McCleery. 2016. Use of Multi-tactic Approach to Locate an endangered Florida Bonneted Bat Roost. *Southeastern Naturalist*. 15: 235-242.
- Britzke, E.R., E.H. Gilliam, and K.L. Murray. 2013. Current State of Understanding of Ultrasonic Detectors for the study of Bat Ecology. *Acta Theriologica* 58:109-117.
- Marks, C.S. and G.E. Marks. 2006. *Bats of Florida*. University Press of Florida.
- 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
- Sonobat. 2017. Echolocation Call Characteristics of Florida Bats – Sonobat v.4x. J.M. Szewczak, Humboldt State University Bat Lab.
- Sonobat 2022. Sonobat Bat Call Analysis Software Version 4 developed by J.M. Szewczak, Humboldt State University Bat Lab.
- Terracon 2021. Acoustic and Roost Survey for the Florida Bonneted Bat (*Eumops floridanus*) on the Highlands North Solar Site in Highlands County, Florida. USFWS Consultation # 2020-TA-0992 submitted August 31, 2021
- Titely Scientific 2022. Anabat Chorus Ultrasonic Recording device, Columba, Missouri.
- U.S. Fish and Wildlife Service. 2019. *Florida Bonneted Bat Consultation Guidelines*. Vero Beach, Florida.
- Wildlife Acoustics Inc, 2019. SM4BAT FS, MINI BAT FS, Maynard, Massachusetts.

SIGNATURE PAGE

WSP USA Inc



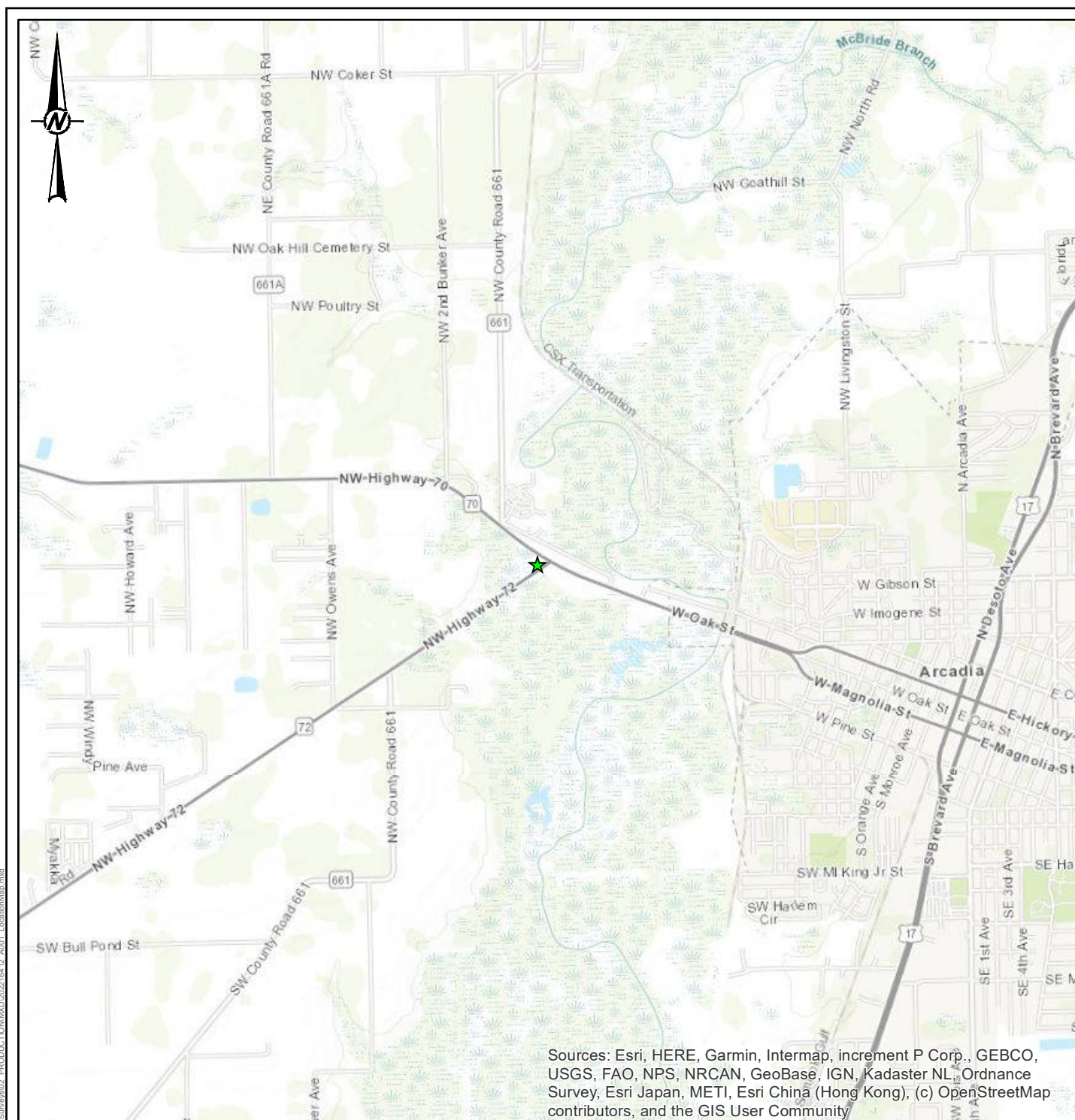
Joel Wixson
Environmental Scientist



Karl Bullock
Director, Environmental Permitting

JW/KB

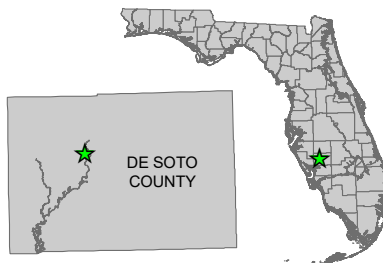
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Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

LEGEND

- ★ Project Location



CONSULTANT



YYYY-MM-DD 2023-03-03

DESIGNED JGW

PREPARED JGW

REVIEWED KAB

APPROVED KAB

REFERENCE(S)

PROJECT LOCATION: GOLDER ASSOCIATES INC 2022

COORDINATE SYSTEM: NAD 1983 STATEPLANE FLORIDA NORTH FIPS 0903 FEET

PROJECTION: LAMBERT CONFORMAL CONIC

DATUM: NORTH AMERICAN 1983

CLIENT

QUEST ECOLOGY

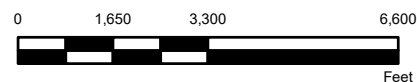
PROJECT

SR 70 AND SR72 ROUNDABOUT INSTALATION
FLORIDA BONNETED BAT ACOUSTIC SURVEYS

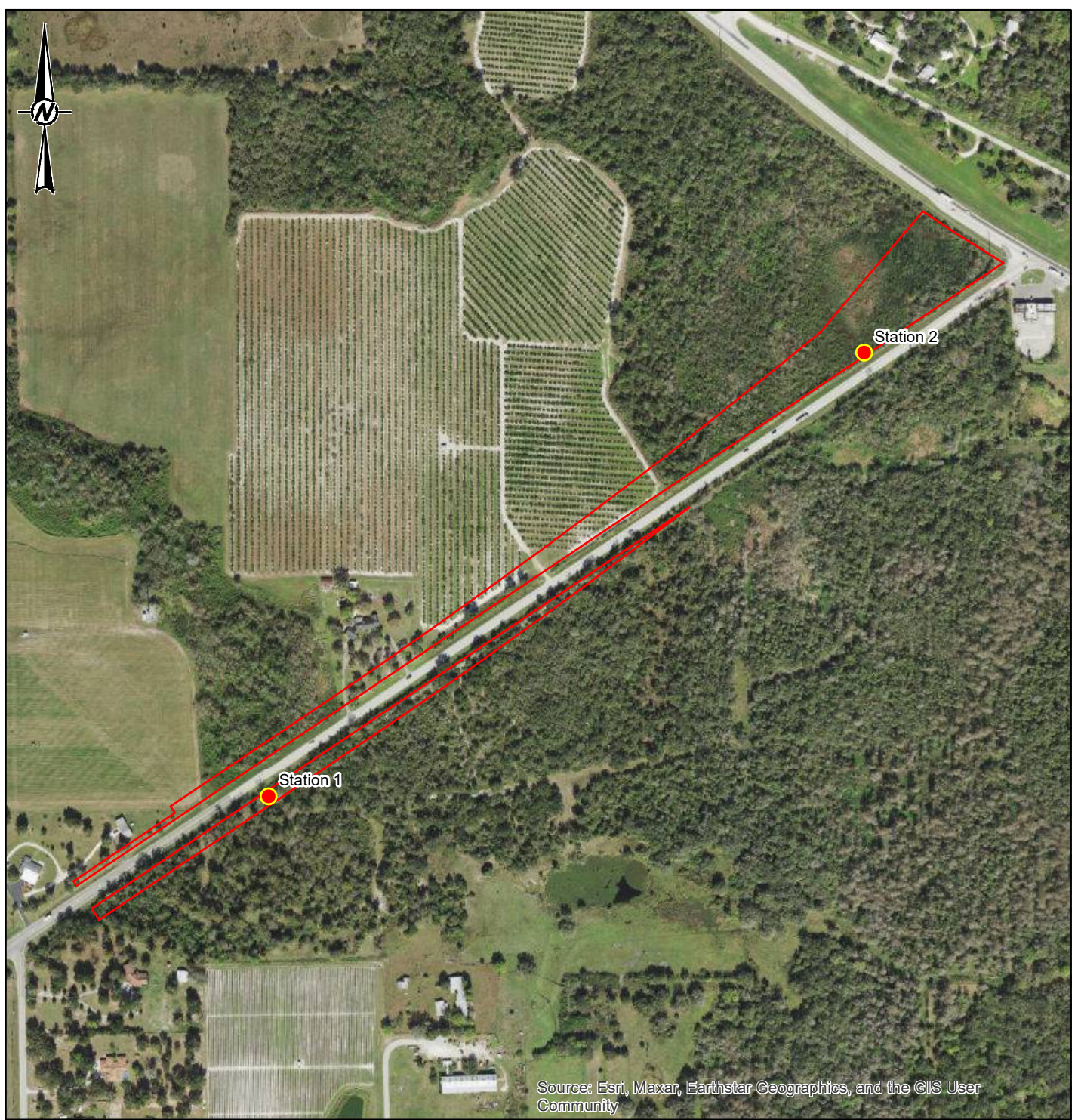
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LOCATION MAP

PROJECT NO.
202216412

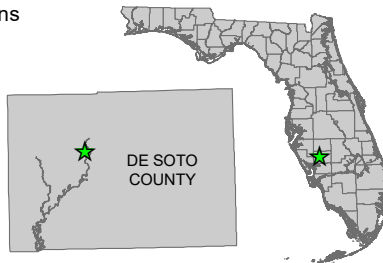
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LEGEND

- FBB Acoustic Survey Stations
- Project Location
- Project Boundary



REFERENCE(S)

PROJECT LOCATION: WSP 2022
PROJECT BOUNDARY: QUEST ECOLOGY 2023

COORDINATE SYSTEM: NAD 1983 STATEPLANE FLORIDA NORTH FIPS 0903 FEET
PROJECTION: LAMBERT CONFORMAL CONIC
DATUM: NORTH AMERICAN 1983

CLIENT

QUEST ECOLOGY

PROJECT

SR 70 AND SR72 ROUNDABOUT INSTALATION
FLORIDA BONNETED BAT ACOUSTIC SURVEYS

TITLE

FBB SURVEY STATIONS

CONSULTANT



YYYY-MM-DD 2023-03-03

DESIGNED JGW

PREPARED JGW

REVIEWED KAB

APPROVED KAB

PROJECT NO.
202216412

CONTROL
A003

REV.
0

FIGURE
2

1" IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A



wsp.com

APPENDIX A – STATION PHOTOGRAPHS

Florida Bonneted Bat (*Eumops floridanus*) Acoustic Survey

FDOT Florida Highway 70 and 72 Roundabout

Station ID:
Station 1

Device Type:
AnaBat Chorus

Device ID:
AB1



Station ID:
Station 2

Device Type:
AnaBat Chorus

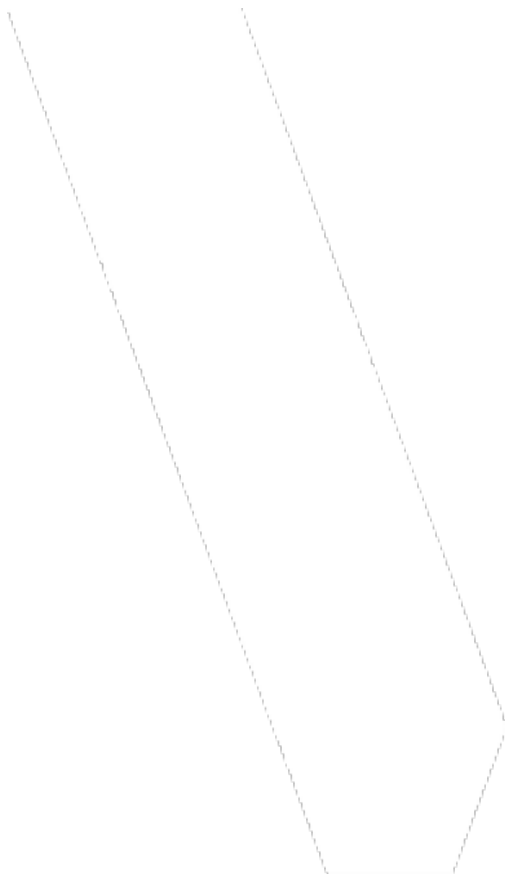
Device ID:
AB2



FDOT Florida Highway 70 and 72 Roundabout

Florida Bonneted Bat (*Eumops floridanus*) Acoustic Survey

APPENDIX B – Weather Reports



Date	Temperature (F)							Degree Days (base 65F)		Sun (LST)		Weather		Precipitation (in)			Pressure (inHg)		Wind	Maximum Wind Speed = MPH						
																				Direction = Degrees						
	Max	Min	Avg	Dep	ARH	ADP	AWB	Heat	Cool	Rise	Set	Weather Type		TLC	Snow Fall	Snow Depth	Avg Stn	Avg SL	Avg Speed	Peak Speed	Peak Dir	Sust. Speed	Sust. Dir			
1	2	3	4	5	6	7	8	9	10	11	12	13		14	15	16	17	18	19	20	21	22	23			
01	83	62	73	9.9				0	8	0714	1810	FG BR		0.00	0.0	0	30.17		3.3	17	280	12	260			
02	83	60	72	8.8				0	7	0713	1811	FG BR		0.00	0.0	0	30.14		5.3	19	250	15	240			
03	81	58	70	6.7				0	5	0713	1812	RA FG BR		0.05	0.0	0	30.09		9.6	27	030	21	030			
04	78	53	66	2.6				0	1	0712	1812			T	0.0	0	30.25		14.1	34	050	25	070			
05	82	58	70	6.5				0	5	0711	1813			0.00	0.0	0	30.14		6.4	26	100	21	100			
06	81	61	71	7.3				0	6	0711	1814			0.00	0.0	0	30.12		8.5	23	050	16	040			
07	81	55	68	4.2				0	3	0710	1814			0.00	0.0	0	30.20		9.5	25	090	21	100			
08	83	56	70	6.1				0	5	0710	1815			0.00	0.0	0	30.20		8.7	22	090	17	090			
09	87	58	73	9.0				0	8	0709	1816			0.10	0.0	0	30.14		8.2	26	160	18	140			
10	87	63	75	10.9				0	10	0708	1817	FG BR		0.00	0.0	0	30.10		8.7	24	220	18	240			
11	85	65	75	10.8				0	10	0708	1817			T	0.0	0	29.99		13.1	33	210	24	190			
12	73	63	68	3.7s				0s	3s	0707	1818	RA BR		0.01	0.0	0	29.95		17.7	42	290	31	270			
13	73	52	63	-1.5				2	0	0706	1819			0.00	0.0	0	30.03		8.5	21	290	16	290			
14	79	44*	62	-2.6				3	0	0705	1819			0.00	0.0	0	30.08		5.9	21	150	15	140			
15	84	52	68	3.3				0	3	0705	1820			0.00	0.0	0	30.12		7.3	25	180	18	160			
16	86	61	74	9.2				0	9	0704	1821			0.00	0.0	0	30.09		8.3	30	160	20	200			
17	86	62	74	9.0				0	9	0703	1821	BR		0.00	0.0	0	30.07		8.7	26	250	18	250			
18	78	60	69	3.9				0	4	0702	1822			0.00	0.0	0	30.20		11.5	26	060	18	060			
19	85	60	73	7.8				0	8	0701	1823			0.00	0.0	0	30.20		6.7	18	250	13	250			
20	82	60	71	5.6				0	6	0701	1823	FG MIFG BR		0.00	0.0	0	30.11		5.3	22	250	16	260			
21	81	61	71	5.5				0	6	0700	1824	FG BR		0.00	0.0	0	30.04		6.2	19	230	14	230			
22	88	58	73	7.4				0	8	0659	1825	FG BR HZ		0.00	0.0	0	30.09		8.0	25	190	20	180			
23	87	65	76	10.2				0	11	0658	1825	HZ		0.00	0.0	0	30.17		7.1	18	150	14	240			
24	90*	64	77	11.1				0	12	0657	1826	HZ		0.00	0.0	0	30.24		3.5	17	120	12	260			
25	87	62	75	9.0				0	10	0656	1827	HZ		0.00	0.0	0	30.21		5.4	20	280	15	280			
26	85	60	73	6.8				0	8	0655	1827	MIFG FG		0.00	0.0	0	30.11		6.1	22	240	16	250			
27	82	54	68	1.7				0	3	0654	1828	MIFG HZ FG		0.00	0.0	0	30.02		8.3	29	250	20	240			
28	83	58	71	4.6				0	6	0653	1828	FG BR HZ		0.00	0.0	0	29.99		6.9	26	290	18	230			
	82.9	58.6	70.8							Monthly Averages Totals				0.16			30.12	30.15	8.1							
	6.2	5.9	6.1	Departure from Normal (1981-2010)										-2.32s												
Degree Days											Number of days with...															
	Monthly				Season-to-date			Temperature				Precipitation			Snow		Weather									
	Total		Departure		Total		Departure		Max		Min															
Heating	6		-77		176				>=90°		<=32°		<=32°		<=0°		>=0.01"		>=0.1"		>=1"		T-Storms		Heavy Fog	
Cooling	168		93		279				1		0		0		0		3		1		0		9			
Date of 5-sec to 3-sec wind equipment change								Sea Level Pressure								Greatest...										
N/A												Date		Time		24-Hr...				Snow Depth						
								Maximum		30.33		04		1106		Precip		Snowfall								
								Minimum		29.94		12		1608		0.10										
																09-09										
Station Augmentation																										
Name:N/A Lat: N/A Lon: N/A Elevation: N/A Distance: N/A Elements: N/A Equipment: N/A																										

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Local Climatological Data
Hourly Observations
February 2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Current Location: Elev: 20 ft. Lat: 26.9185° N Lon: -81.9939° W
Station: PUNTA GORDA CHARLOTTE CO AIRPORT, FL US WBAN: 72203412812 (KPGD)
Generated on 02/13/2023

D a t e	Time (LST)	Sta- tion Type	Sky Conditions	Visi- bility	Weather Type (see documentation)	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Hum %	Wind Spee d (MPH)	Wind Dir (Deg)	Wind Gusts (MPH)	Station Press (inHg)	Press Tend	Net 3- Hr Change (inHg)	Sea Level Press (inHg)	Report Type	Precip Total (in)	Alti- meter Setting (inHg)
					AU AW MW	(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
08	0053	7	CLR:00	10.00		60	15.6	58	14.4	57	13.9	90	5	080		30.23	8	+0.01	30.26	FM-15	0.00	30.26
08	0153	7	CLR:00	10.00		59	15.0	57	13.9	56	13.3	90	5	090		30.22			30.24	FM-15	0.00	30.25
08	0253	7	CLR:00	10.00		57	13.9	56	13.3	56	13.3	96	6	050		30.21			30.23	FM-15	0.00	30.24
08	0353	7	CLR:00	10.00		57	13.9	56	13.3	55	12.8	93	7	030		30.20	6	+0.03	30.23	FM-15	0.00	30.23
08	0453	7	CLR:00	10.00		57	13.9	56	13.3	56	13.3	96	7	080		30.19			30.21	FM-15	0.00	30.22
08	0553	7	CLR:00	10.00		57	13.9	56	13.3	55	12.8	93	6	080		30.20			30.22	FM-15	0.00	30.23
08	0653	7	CLR:00	10.00		56	13.3	55	12.8	55	12.8	97	6	050		30.21	3	-0.01	30.24	FM-15	0.00	30.24
08	0753	7	CLR:00	10.00		59	15.0	58	14.4	57	13.9	93	6	050		30.23			30.26	FM-15	0.00	30.26
08	0853	7	CLR:00	10.00		66	18.9	62	16.7	60	15.6	81	7	080		30.24			30.27	FM-15	0.00	30.27
08	0953	7	CLR:00	10.00		73	22.8	66	18.9	61	16.1	66	10	110		30.26	1	-0.05	30.28	FM-15	0.00	30.29
08	1053	7	FEW:02 30	10.00		77	25.0	66	18.9	59	15.0	54	10	120		30.26			30.29	FM-15	0.00	30.29
08	1153	7	FEW:02 40	10.00		78	25.6	66	18.9	59	15.0	52	8	100	20	30.25			30.27	FM-15	0.00	30.28
08	1253	7	CLR:00	10.00		81	27.2	68	20.0	61	16.1	51	11	110	18	30.21	8	+0.05	30.23	FM-15	0.00	30.24
08	1353	7	CLR:00	10.00		82	27.8	70	21.1	63	17.2	53	13	090	20	30.17			30.20	FM-15	0.00	30.20
08	1453	7	CLR:00	10.00		82	27.8	70	21.1	64	17.8	55	11	100	21	30.16			30.18	FM-15	0.00	30.19
08	1653	6	CLR:00	10.00		80	26.7	67	19.4	59	15.0	49	15	100	22	30.14			30.17	FM-15	0.00	30.17
08	1753	6	CLR:00	10.00		76	24.4	66	18.9	60	15.6	58	13	090		30.15			30.18	FM-15	0.00	30.18
08	1853	6	CLR:00	10.00		72	22.2	65	18.3	60	15.6	66	9	080		30.16	3	-0.01	30.19	FM-15	0.00	30.19
08	1953	6	BKN:07 50	10.00		71	21.7	64	17.8	60	15.6	68	11	090		30.19			30.22	FM-15	0.00	30.22
08	2053	6	FEW:02 50	10.00		70	21.1	64	17.8	60	15.6	71	10	110		30.20			30.23	FM-15	0.00	30.23
08	2153	6	CLR:00	10.00		67	19.4	63	17.2	60	15.6	79	7	110		30.21	1	-0.05	30.23	FM-15	0.00	30.24
08	2253	6	CLR:00	10.00		65	18.3	62	16.7	60	15.6	84	6	110		30.20			30.22	FM-15	0.00	30.23
08	2353	6	SCT:04 41	10.00		63	17.2	61	16.1	59	15.0	87	6	080		30.19			30.21	FM-15	0.00	30.22

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Local Climatological Data
Hourly Observations
February 2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Current Location: Elev: 20 ft. Lat: 26.9185° N Lon: -81.9939° W
Station: PUNTA GORDA CHARLOTTE CO AIRPORT, FL US WBAN: 72203412812 (KPGD)
Generated on 02/15/2023

Date	Time (LST)	Station Type	Sky Conditions	Visibility	Weather Type (see documentation)	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Hum %	Wind Speed (MPH)	Wind Dir (Deg)	Wind Gusts (MPH)	Station Press (inHg)	Press Tend	Net 3-Hr Change (inHg)	Sea Level Press (inHg)	Report Type	Precip Total (in)	Alti-meter Setting (inHg)
					AU AW MW	(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
09	0053	7	FEW:02 34	10.00		62	16.7	60	15.6	59	15.0	90	7	090		30.17	8	+0.04	30.20	FM-15	0.00	30.20
09	0153	7	CLR:00	10.00		61	16.1	60	15.6	59	15.0	93	7	080		30.16			30.19	FM-15	0.00	30.19
09	0253	7	CLR:00	10.00		60	15.6	59	15.0	58	14.4	93	5	070		30.15			30.18	FM-15	0.00	30.18
09	0353	7	CLR:00	10.00		60	15.6	59	15.0	58	14.4	93	6	070		30.15	6	+0.02	30.17	FM-15	0.00	30.18
09	0453	7	CLR:00	10.00		59	15.0	58	14.4	58	14.4	96	6	090		30.15			30.17	FM-15	0.00	30.18
09	0553	7	CLR:00	10.00		59	15.0	58	14.4	58	14.4	96	5	100		30.16			30.19	FM-15	0.00	30.19
09	0653	6	FEW:02 100	10.00		60	15.6	59	15.0	58	14.4	93	5	080		30.18	3	-0.03	30.20	FM-15	0.00	30.21
09	0753	7	CLR:00	9.00		63	17.2	62	16.7	61	16.1	93	5	040		30.19			30.21	FM-15	0.00	30.22
09	0853	7	CLR:00	10.00		70	21.1	67	19.4	65	18.3	84	8	100		30.19			30.22	FM-15	0.00	30.22
09	0953	7	CLR:00	10.00		77	25.0	71	21.7	68	20.0	74	10	140		30.21	3	-0.03	30.24	FM-15	0.00	30.24
09	1053	7	SCT:04 30	10.00		81	27.2	72	22.2	67	19.4	62	17	140	23	30.20			30.22	FM-15	0.00	30.23
09	1153	7	FEW:02 32	10.00		83	28.3	72	22.2	67	19.4	59	10	160	23	30.17			30.19	FM-15	0.00	30.20
09	1253	6	FEW:02 40	10.00		86	30.0	73	22.8	67	19.4	53	14	160	21	30.14	8	+0.07	30.16	FM-15	0.00	30.17
09	1353	7	FEW:02 43 SCT:04 50	10.00		85	29.4	72	22.2	65	18.3	51	9	180		30.11			30.14	FM-15	0.00	30.14
09	1453	7	FEW:02 70	10.00		84	28.9	73	22.8	67	19.4	57	11	240		30.09			30.12	FM-15	0.00	30.12
09	1553	7	BKN:07 50 BKN:07 60	10.00		84	28.9	74	23.3	69	20.6	61	14	260		30.09	6	+0.05	30.12	FM-15	0.00	30.12
09	1653	7	FEW:02 47 BKN:07 65 OVC:08 95	10.00		81	27.2	73	22.8	69	20.6	67	11	240		30.10			30.12	FM-15	T	30.13
09	1753	7	FEW:02 48	10.00		78	25.6	71	21.7	68	20.0	71	8	250		30.11			30.13	FM-15	0.00	30.14
09	1853	7	SCT:04 50	10.00		77	25.0	71	21.7	68	20.0	74	8	210		30.11	2	-0.02	30.14	FM-15	0.00	30.14
09	1953	7	SCT:04 38 BKN:07 45	10.00		76	24.4	71	21.7	68	20.0	77	9	200		30.13			30.16	FM-15	T	30.16
09	2053	7	FEW:02 32 BKN:07 39 OVC:08 60	10.00		73	22.8	71	21.7	70	21.1	90	6	160		30.14			30.17	FM-15	0.10	30.17
09	2153	7	CLR:00	10.00		71	21.7	70	21.1	69	20.6	94	5	130		30.15	1	-0.04	30.18	FM-15	0.00	30.18
09	2253	7	CLR:00	10.00		69	20.6	68	20.0	68	20.0	96	5	110		30.15			30.18	FM-15	0.00	30.18
09	2353	7	CLR:00	10.00		69	20.6	68	20.0	67	19.4	93	5	120		30.14			30.17	FM-15	0.00	30.17

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Local Climatological Data
Hourly Observations
February 2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Current Location: Elev: 20 ft. Lat: 26.9185° N Lon: -81.9939° W
Station: PUNTA GORDA CHARLOTTE CO AIRPORT, FL US WBAN: 72203412812 (KPGD)
Generated on 02/15/2023

Date	Time (LST)	Station Type	Sky Conditions	Visi- bility	Weather Type (see documentation)	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Hum %	Wind Speed (MPH)	Wind Dir (Deg)	Wind Gusts (MPH)	Station Press (inHg)	Press Tend	Net 3-Hr Change (inHg)	Sea Level Press (inHg)	Report Type	Precip Total (in)	Alti- meter Setting (inHg)
					AU AW MW	(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
10	0053	7	CLR:00	10.00		68	20.0	67	19.4	67	19.4	96	5	130		30.14	8	+0.01	30.16	FM-15	0.00	30.17
10	0153	7	CLR:00	10.00		67	19.4	67	19.4	67	19.4	100	6	120		30.12			30.14	FM-15	0.00	30.15
10	0253	7	CLR:00	10.00		67	19.4	66	18.9	66	18.9	97	6	130		30.11			30.14	FM-15	0.00	30.14
10	0353	7	CLR:00	10.00		67	19.4	66	18.9	66	18.9	97	6	120		30.10	6	+0.04	30.13	FM-15	0.00	30.13
10	0453	7	CLR:00	7.00		66	18.9	65	18.3	65	18.3	96	0	000		30.12			30.14	FM-15	0.00	30.15
10	0505	7	FEW:02 17	1.50	BR:1	65	18.3	65	18.3	65	18.3	100	3	060		30.12				FM-16		30.15
10	0508	7	VV:09 17	0.75	BR:1	65	18.3	64	17.8	64	17.8	97	3	060		30.12				FM-16		30.15
10	0553	7	VV:09 14	0.50	FG:2 FG	63	17.2	63	17.2	63	17.2	100	5	080		30.13			30.15	FM-15	0.00	30.16
10	0607	7	VV:09 14	1.00	BR:1	63	17.2	63	17.2	63	17.2	100	3	090		30.13				FM-16		30.16
10	0630	7	VV:09 16	1.00	BR:1	63	17.2	63	17.2	63	17.2	100	0	000		30.14				FM-16		30.17
10	0648	7	VV:09 14	0.50	FG:2 FG	63	17.2	63	17.2	63	17.2	100	5	070		30.14				FM-16		30.17
10	0651	6	VV:09 13	0.25	FG:2 FG	63	17.2	63	17.2	63	17.2	100	5	070		30.15				FM-16		30.18
10	0653	7	VV:09 13	0.50	FG:2 FG	63	17.2	63	17.2	63	17.2	100	5	090		30.15	3	-0.04	30.17	FM-15	0.00	30.18
10	0714	7	VV:09 11	0.25	FG:2 FG	63	17.2	63	17.2	63	17.2	100	5	100		30.15				FM-16		30.18
10	0726	7	VV:09 12	0.50	FG:2 FG	63	17.2	63	17.2	63	17.2	100	5	100		30.15				FM-16		30.18
10	0734	7	VV:09 9	0.25	FG:2 FG	63	17.2	63	17.2	63	17.2	100	3	110		30.15				FM-16		30.18
10	0751	6	VV:09 9	0.50	FG:2 FG	66	18.9	66	18.9	66	18.9	100	3	120		30.15				FM-16		30.18
10	0753	7	VV:09 9	0.50	FG:2 FG	66	18.9	66	18.9	66	18.9	100	3	120		30.15		30.17	FM-15	0.00	30.18	
10	0759	7	VV:09 10	1.00	BR:1	66	18.9	66	18.9	66	18.9	100	5	120		30.15				FM-16		30.18
10	0805	7	BKN:07 10	3.00	BR:1	67	19.4	67	19.4	67	19.4	100	6	120		30.15				FM-16		30.18
10	0815	7	SCT:04 11	8.00		68	20.0	68	20.0	68	20.0	100	7	130		30.15				FM-16		30.18
10	0853	7	FEW:02 34	10.00		70	21.1	69	20.6	69	20.6	97	10	150		30.15		30.18	FM-15	0.00	30.18	
10	0953	7	SCT:04 38	10.00		75	23.9	71	21.7	69	20.6	82	11	160		30.15	2	-0.01	30.18	FM-15	0.00	30.18
10	1053	7	BKN:07 48	10.00		80	26.7	72	22.2	68	20.0	67	15	160		30.14			30.17	FM-15	0.00	30.17
10	1153	7	CLR:00	10.00		82	27.8	73	22.8	68	20.0	63	13	160		30.11			30.14	FM-15	0.00	30.14
10	1253	7	FEW:02 36 SCT:04 46 BKN:07 55	10.00		84	28.9	73	22.8	68	20.0	59	13	180	23	30.08	8	+0.07	30.11	FM-15	0.00	30.11
10	1353	7	BKN:07 39 BKN:07 50	10.00		84	28.9	72	22.2	66	18.9	55	14	200		30.06			30.08	FM-15	0.00	30.09
10	1453	7	CLR:00	10.00		86	30.0	71	21.7	63	17.2	46	14	230	21	30.03			30.06	FM-15	0.00	30.06
10	1553	7	SCT:04 36	10.00		84	28.9	72	22.2	66	18.9	55	13	230		30.04	5	+0.04	30.06	FM-15	0.00	30.07
10	1653	7	BKN:07 90	10.00		80	26.7	71	21.7	67	19.4	64	16	240		30.05			30.07	FM-15	0.00	30.08
10	1753	7	BKN:07 95	10.00		78	25.6	71	21.7	67	19.4	69	14	220		30.06			30.08	FM-15	0.00	30.09
10	1853	6	CLR:00	10.00		74	23.3	69	20.6	67	19.4	79	8	200		30.05	0	-0.01	30.08	FM-15	0.00	30.08
10	1953	7	CLR:00	10.00		74	23.3	68	20.0	65	18.3	74	9	210		30.07			30.09	FM-15	0.00	30.10
10	2053	7	CLR:00	10.00		73	22.8	69	20.6	66	18.9	79	9	200		30.09			30.11	FM-15	0.00	30.12
10	2153	7	CLR:00	10.00		71	21.7	68	20.0	66	18.9	84	7	200		30.08	0	-0.03	30.11	FM-15	0.00	30.11
10	2253	7	FEW:02 80	10.00		68	20.0	66	18.9	65	18.3	90	6	150		30.08			30.11	FM-15	0.00	30.11
10	2353	7	BKN:07 80	10.00		67	19.4	66	18.9	65	18.3	93	5	160		30.08			30.11	FM-15	0.00	30.11

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
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Local Climatological Data
Hourly Observations
February 2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Current Location: Elev: 20 ft. Lat: 26.9185° N Lon: -81.9939° W
Station: PUNTA GORDA CHARLOTTE CO AIRPORT, FL US WBAN: 72203412812 (KPGD)
Generated on 02/15/2023

Date	Time (LST)	Station Type	Sky Conditions	Visi-bility	Weather Type (see documentation)	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Hum %	Wind Speed (MPH)	Wind Dir (Deg)	Wind Gusts (MPH)	Station Press (inHg)	Press Tend	Net 3-Hr Change (inHg)	Sea Level Press (inHg)	Report Type	Precip Total (in)	Alti-meter Setting (inHg)
					AU AW MW	(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
11	0053	7	SCT:04 85	10.00		66	18.9	65	18.3	65	18.3	96	0	000		30.07	8	+0.01	30.10	FM-15	0.00	30.10
11	0153	7	CLR:00	10.00		65	18.3	64	17.8	64	17.8	97	3	140		30.06			30.09	FM-15	0.00	30.09
11	0253	6	CLR:00	10.00		67	19.4	66	18.9	66	18.9	97	7	150		30.04			30.06	FM-15	0.00	30.07
11	0353	7	SCT:04 47	10.00		68	20.0	67	19.4	67	19.4	96	7	150		30.02	8	+0.05	30.05	FM-15	0.00	30.05
11	0453	7	BKN:07 45 OVC:08 55	10.00		68	20.0	67	19.4	67	19.4	96	7	150		30.02			30.05	FM-15	0.00	30.05
11	0553	7	CLR:00	10.00		68	20.0	67	19.4	67	19.4	96	7	140		30.02			30.04	FM-15	0.00	30.05
11	0653	7	SCT:04 25	10.00		68	20.0	67	19.4	67	19.4	96	7	140		30.03	3	-0.01	30.06	FM-15	0.00	30.06
11	0753	6	FEW:02 60	9.00		70	21.1	69	20.6	69	20.6	97	7	140		30.04			30.07	FM-15	0.00	30.07
11	0820	7	SCT:04 60	10.00		71	21.7	70	21.1	70	21.1	96	9	140		30.05				FM-16		30.08
11	0853	7	CLR:00	10.00		74	23.3	72	22.2	71	21.7	91	13	150		30.05			30.07	FM-15	0.00	30.08
11	0953	7	CLR:00	10.00		79	26.1	74	23.3	71	21.7	77	16	170		30.05	0	-0.01	30.07	FM-15	0.00	30.08
11	1053	6	CLR:00	10.00		82	27.8	73	22.8	69	20.6	65	17	180		30.04			30.06	FM-15	0.00	30.07
11	1153	7	FEW:02 25	10.00		83	28.3	73	22.8	68	20.0	61	21	190	28	30.01			30.04	FM-15	0.00	30.04
11	1253	7	SCT:04 33	10.00		85	29.4	74	23.3	69	20.6	59	17	200	26	29.99	8	+0.06	30.01	FM-15	0.00	30.02
11	1353	7	SCT:04 31	10.00		83	28.3	73	22.8	68	20.0	61	22	200		29.96			29.98	FM-15	0.00	29.99
11	1453	6	FEW:02 30	10.00		81	27.2	73	22.8	69	20.6	67	20	190	31	29.95			29.97	FM-15	0.00	29.98
11	1551	6	BKN:07 28	10.00		82	27.8	73	22.8	68	20.0	62	23	210	32	29.93				FM-16		29.96
11	1553	7	BKN:07 28	10.00		82	27.8	73	22.8	68	20.0	63	21	200	32	29.93	6	+0.06	29.95	FM-15	0.00	29.96
11	1601	7	SCT:04 27	10.00		82	27.8	73	22.8	69	20.6	65	21	200	31	29.92				FM-16		29.95
11	1653	7	FEW:02 26	10.00		79	26.1	73	22.8	70	21.1	74	14	200	29	29.93			29.95	FM-15	0.00	29.96
11	1753	7	SCT:04 110	10.00		79	26.1	73	22.8	70	21.1	74	18	200	26	29.94			29.97	FM-15	0.00	29.97
11	1853	7	FEW:02 16	10.00		76	24.4	73	22.8	71	21.7	85	15	210	22	29.95	3	-0.02	29.97	FM-15	0.00	29.98
11	1909	7	BKN:07 16	10.00		76	24.4	73	22.8	72	22.2	88	14	210		29.95				FM-16		29.98
11	1930	6	BKN:07 14	10.00		76	24.4	73	22.8	72	22.2	88	16	210	24	29.95				FM-16		29.98
11	1953	6	BKN:07 13 OVC:08 20	10.00		76	24.4	73	22.8	72	22.2	88	15	220	22	29.96			29.98	FM-15	0.00	29.99
11	2035	7	SCT:04 12	10.00		75	23.9	73	22.8	72	22.2	90	15	210		29.96				FM-16		29.99
11	2053	7	FEW:02 12 SCT:04 18 BKN:07 55	10.00		75	23.9	72	22.2	71	21.7	88	21	240	29	29.96			29.99	FM-15	0.00	29.99
11	2153	7	SCT:04 65 BKN:07 120	10.00		73	22.8	69	20.6	67	19.4	81	11	230		29.96	0	-0.01	29.98	FM-15	T	29.99
11	2242	7	BKN:07 17 BKN:07 25 OVC:08 43	10.00		74	23.3	71	21.7	69	20.6	85	15	230	21	29.96				FM-16		29.99
11	2253	7	BKN:07 17 BKN:07 25 OVC:08 43	10.00		74	23.3	71	21.7	69	20.6	85	15	240	24	29.96			29.98	FM-15	0.00	29.99
11	2317	6	OVC:08 14	10.00		73	22.8	69	20.6	67	19.4	81	14	270		29.95				FM-16		29.98
11	2326	7	OVC:08 16	10.00		72	22.2	69	20.6	67	19.4	84	15	270	21	29.96				FM-16		29.99
11	2353	7	BKN:07 17 OVC:08 29	10.00		71	21.7	68	20.0	66	18.9	84	15	280		29.95			29.98	FM-15	0.00	29.98

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Local Climatological Data
Hourly Observations
February 2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Current Location: Elev: 20 ft. Lat: 26.9185° N Lon: -81.9939° W
Station: PUNTA GORDA CHARLOTTE CO AIRPORT, FL US WBAN: 72203412812 (KPGD)
Generated on 02/15/2023

Date	Time (LST)	Station Type	Sky Conditions	Visi- bility	Weather Type (see documentation)	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Hum %	Wind Speed (MPH)	Wind Dir (Deg)	Wind Gusts (MPH)	Station Press (inHg)	Press Tend	Net 3-Hr Change (inHg)	Sea Level Press (inHg)	Report Type	Precip Total (in)	Alti- meter Setting (inHg)
					AU AW MW	(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
12	0041	7	BKN:07 13 OVC:08 22	10.00		70	21.1	67	19.4	66	18.9	87	13	290		29.94				FM-16		29.97
12	0051	6	FEW:02 11 OVC:08 19	10.00		70	21.1	66	18.9	64	17.8	83	17	290	23	29.94				FM-16		29.97
12	0053	7	FEW:02 11 BKN:07 16 OVC:08 21	10.00		70	21.1	66	18.9	64	17.8	82	14	280	23	29.95	6	+0.01	29.97	FM-15	0.00	29.98
12	0153	7	FEW:02 24 OVC:08 32	10.00		70	21.1	66	18.9	63	17.2	79	10	260		29.94			29.96	FM-15	0.00	29.97
12	0207	7	FEW:02 13 BKN:07 23 OVC:08 32	10.00	-RA:02 RA RA	68	20.0	66	18.9	64	17.8	87	17	280	32	29.94				FM-16	T	29.97
12	0237	7	BKN:07 8 BKN:07 14 OVC:08 19	6.00	-RA:02 BR:1 RA RA	65	18.3	64	17.8	63	17.2	93	17	280	28	29.96				FM-16	T	29.99
12	0253	7	BKN:07 6 BKN:07 13 OVC:08 20	4.00	-RA:02 BR:1 RA RA	64	17.8	63	17.2	63	17.2	96	18	280	25	29.96			29.98	FM-15	0.01	29.99
12	0307	7	SCT:04 6 BKN:07 11 OVC:08 18	5.00	-RA:02 BR:1 RA RA	64	17.8	63	17.2	62	16.7	93	15	290	28	29.96				FM-16	T	29.99
12	0344	7	SCT:04 12 SCT:04 22 OVC:08 41	10.00		64	17.8	62	16.7	60	15.6	87	20	280	26	29.96				FM-16	T	29.99
12	0353	7	FEW:02 16 OVC:08 43	10.00		64	17.8	62	16.7	60	15.6	87	14	280	26	29.96	3	-0.01	29.99	FM-15	T	29.99
12	0453	7	BKN:07 42 OVC:08 50	10.00		65	18.3	61	16.1	58	14.4	78	9	260		29.95			29.98	FM-15	0.00	29.98
12	0553	7	OVC:08 44	10.00		67	19.4	60	15.6	54	12.2	63	16	270	25	29.95			29.97	FM-15	0.00	29.98
12	0653	7	OVC:08 47	10.00		66	18.9	60	15.6	56	13.3	70	10	250		29.96	5	+0.01	29.98	FM-15	0.00	29.99
12	0753	7	SCT:04 38 OVC:08 50	10.00		68	20.0	60	15.6	55	12.8	63	16	270	26	29.96			29.99	FM-15	0.00	29.99
12	0853	7	OVC:08 60	10.00		69	20.6	59	15.0	52	11.1	55	18	280	29	29.98			30.00	FM-15	0.00	30.01
12	0953	7	FEW:02 45	10.00		72	22.2	61	16.1	52	11.1	50	26	270	34	29.98	1	-0.02	30.01	FM-15	0.00	30.01
12	1053	7	BKN:07 37 OVC:08 55	10.00		71	21.7	61	16.1	54	12.2	55	28	290	39	30.00			30.02	FM-15	0.00	30.03
12	1153	7	FEW:02 46 SCT:04 55	10.00		73	22.8	60	15.6	50	10.0	44	24	270	40	29.97			30.00	FM-15	0.00	30.00
12	1253	7	SCT:04 38 SCT:04 49 BKN:07 55	10.00		72	22.2	62	16.7	54	12.2	53	23	280	39	29.96	8	+0.02	29.99	FM-15	0.00	29.99
12	1353	7	BKN:07 40 BKN:07 55	10.00		71	21.7	61	16.1	54	12.2	55	26	290	37	29.94			29.97	FM-15	0.00	29.97
12	1453	7	SCT:04 40 BKN:07 47	10.00		70	21.1	60	15.6	52	11.1	53	23	280	34	29.93			29.96	FM-15	0.00	29.96
12	1553	7	OVC:08 40	10.00		69	20.6	59	15.0	52	11.1	55	20	280	32	29.92	6	+0.04	29.95	FM-15	0.00	29.95
12	1653	7	BKN:07 38	10.00		68	20.0	59	15.0	53	11.7	59	20	300	31	29.93			29.96	FM-15	0.00	29.96
12	1753	7	BKN:07 38	10.00		66	18.9	59	15.0	54	12.2	65	23	290	32	29.94			29.96	FM-15	0.00	29.97

12	1853	7	BKN:07 38	10.00		65	18.3	59	15.0	54	12.2	68	16	290	26	29.94	1	-0.02	29.97	FM-15	0.00	29.97
12	1953	7	OVC:08 36	10.00		65	18.3	59	15.0	54	12.2	68	17	300	25	29.96			29.99	FM-15	0.00	29.99
12	2053	7	FEW:02 30 BKN:07 37	10.00		64	17.8	58	14.4	53	11.7	68	16	300	24	29.98			30.01	FM-15	0.00	30.01
12	2153	7	BKN:07 34	10.00		63	17.2	57	13.9	53	11.7	70	14	310		29.99	1	-0.05	30.02	FM-15	0.00	30.02
12	2253	7	SCT:04 29 BKN:07 35	10.00		62	16.7	58	14.4	54	12.2	75	13	320		30.01			30.03	FM-15	0.00	30.04
12	2353	7	FEW:02 29 BKN:07 35	10.00		60	15.6	56	13.3	52	11.1	75	14	330		30.03			30.06	FM-15	0.00	30.06

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

Local Climatological Data
Hourly Observations
February 2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Current Location: Elev: 20 ft. Lat: 26.9185° N Lon: -81.9939° W

Generated on 07/25/2023

Station: PUNTA GORDA CHARLOTTE CO AIRPORT, FL US WBAN: 72203412812 (KPGD)

D a t e	Time (LST)	Sta- tion Type	Sky Conditions	Visi- bility	Weather Type (see documentation)	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Hum %	Wind Spee d (MPH)	Wind Dir (Deg)	Wind Gusts (MPH)	Station Press (inHg)	Press Tend	Net 3- Hr Change (inHg)	Sea Level Press (inHg)	Report Type	Precip Total (in)	Alti- meter Setting (inHg)
					AU AW MW	(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
13	0053	7	CLR:00	10.00		58	14.4	54	12.2	51	10.6	78	9	340		30.02	0	-0.04	30.05	FM-15	0.00	30.05
13	0153	7	CLR:00	10.00		56	13.3	53	11.7	50	10.0	81	7	360		30.01			30.04	FM-15	0.00	30.04
13	0253	7	CLR:00	10.00		55	12.8	52	11.1	50	10.0	83	5	340		30.01			30.03	FM-15	0.00	30.04
13	0353	7	BKN:07 37	10.00		57	13.9	54	12.2	51	10.6	81	6	340		30.01	5	+0.01	30.04	FM-15	0.00	30.04
13	0453	7	OVC:08 37	10.00		59	15.0	55	12.8	52	11.1	78	7	340		30.02			30.05	FM-15	0.00	30.05
13	0553	7	CLR:00	10.00		57	13.9	54	12.2	51	10.6	81	9	360		30.04			30.06	FM-15	0.00	30.07
13	0653	7	CLR:00	10.00		54	12.2	52	11.1	50	10.0	87	7	020		30.05	3	-0.04	30.08	FM-15	0.00	30.08
13	0753	7	CLR:00	10.00		55	12.8	52	11.1	50	10.0	83	5	020		30.08			30.11	FM-15	0.00	30.11
13	0853	7	CLR:00	10.00		59	15.0	53	11.7	48	8.9	67	10	360		30.10			30.12	FM-15	0.00	30.13
13	0953	7	CLR:00	10.00		63	17.2	55	12.8	49	9.4	60	9	350		30.10	1	-0.05	30.13	FM-15	0.00	30.13
13	1053	7	CLR:00	10.00		65	18.3	56	13.3	49	9.4	56	10	350	20	30.10			30.13	FM-15	0.00	30.13
13	1153	7	CLR:00	10.00		67	19.4	57	13.9	49	9.4	53	10	330		30.09			30.11	FM-15	0.00	30.12
13	1253	7	CLR:00	10.00		68	20.0	57	13.9	48	8.9	49	7	320		30.05	8	+0.05	30.08	FM-15	0.00	30.08
13	1353	7	CLR:00	10.00		71	21.7	56	13.3	43	6.1	36	9	320		30.02			30.05	FM-15	0.00	30.05
13	1453	7	CLR:00	10.00		70	21.1	55	12.8	41	5.0	35	6	320		30.01			30.03	FM-15	0.00	30.04
13	1553	7	CLR:00	9.00		70	21.1	59	15.0	50	10.0	49	14	280		30.00	6	+0.05	30.03	FM-15	0.00	30.03
13	1653	7	CLR:00	8.00		69	20.6	58	14.4	49	9.4	49	15	290		30.01			30.03	FM-15	0.00	30.04
13	1753	7	CLR:00	8.00		66	18.9	57	13.9	49	9.4	54	11	290		30.02			30.04	FM-15	0.00	30.05
13	1853	7	CLR:00	10.00		62	16.7	55	12.8	48	8.9	60	11	300		30.03	3	-0.03	30.06	FM-15	0.00	30.06
13	1953	7	CLR:00	10.00		60	15.6	54	12.2	48	8.9	65	11	320		30.05			30.07	FM-15	0.00	30.08
13	2053	7	CLR:00	10.00		58	14.4	52	11.1	47	8.3	67	10	330		30.06			30.08	FM-15	0.00	30.09
13	2153	7	CLR:00	10.00		55	12.8	50	10.0	46	7.8	72	6	330		30.06	0	-0.02	30.08	FM-15	0.00	30.09
13	2253	7	CLR:00	10.00		54	12.2	50	10.0	47	8.3	77	3	320		30.06			30.09	FM-15	0.00	30.09
13	2353	7	CLR:00	10.00		53	11.7	50	10.0	47	8.3	80	6	340		30.07			30.09	FM-15	0.00	30.10

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
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Local Climatological Data
Hourly Observations
February 2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Current Location: Elev: 20 ft. Lat: 26.9185° N Lon: -81.9939° W
Station: PUNTA GORDA CHARLOTTE CO AIRPORT, FL US WBAN: 72203412812 (KPGD)

Generated on 07/25/2023

Date	Time (LST)	Station Type	Sky Conditions	Visibility	Weather Type (see documentation)	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Hum %	Wind Speed (MPH)	Wind Dir (Deg)	Wind Gusts (MPH)	Station Press (inHg)	Press Tend	Net 3-Hr Change (inHg)	Sea Level Press (inHg)	Report Type	Precip Total (in)	Altimeter Setting (inHg)
					AU AW MW	(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
14	0053	6	CLR:00	10.00		52	11.1	49	9.4	46	7.8	80	5	360		30.06	0	0.00	30.08	FM-15	0.00	30.09
14	0153	7	CLR:00	10.00		50	10.0	48	8.9	46	7.8	86	0	000		30.05			30.08	FM-15	0.00	30.08
14	0253	7	CLR:00	10.00		49	9.4	48	8.9	46	7.8	90	5	060		30.04			30.07	FM-15	0.00	30.07
14	0353	7	CLR:00	10.00		47	8.3	46	7.8	45	7.2	93	0	000		30.04	6	+0.02	30.06	FM-15	0.00	30.07
14	0453	7	CLR:00	10.00		46	7.8	45	7.2	44	6.7	93	3	060		30.04			30.06	FM-15	0.00	30.07
14	0553	7	CLR:00	10.00		47	8.3	46	7.8	45	7.2	93	3	110		30.06			30.09	FM-15	0.00	30.09
14	0653	7	CLR:00	10.00		44	6.7	44	6.7	43	6.1	96	5	080		30.08	3	-0.04	30.10	FM-15	0.00	30.11
14	0753	6	CLR:00	10.00		50	10.0	48	8.9	46	7.8	86	0	000		30.10			30.13	FM-15	0.00	30.13
14	0853	7	CLR:00	10.00		58	14.4	53	11.7	49	9.4	72	8	050		30.12			30.14	FM-15	0.00	30.15
14	0953	7	CLR:00	10.00		64	17.8	55	12.8	47	8.3	54	8	090		30.12			30.14	FM-15	0.00	30.15
14	1053	7	CLR:00	10.00		71	21.7	57	13.9	45	7.2	39	10	110		30.12			30.14	FM-15	0.00	30.15
14	1153	6	CLR:00	10.00		73	22.8	57	13.9	42	5.6	33	8	VRB		30.10			30.13	FM-15	0.00	30.13
14	1253	7	CLR:00	10.00		75	23.9	57	13.9	40	4.4	28	11	130	21	30.08	8	+0.04	30.10	FM-15	0.00	30.11
14	1353	7	CLR:00	10.00		78	25.6	59	15.0	42	5.6	28	10	130		30.05			30.08	FM-15	0.00	30.08
14	1453	7	CLR:00	10.00		78	25.6	59	15.0	44	6.7	30	10	VRB		30.05			30.07	FM-15	0.00	30.08
14	1553	7	CLR:00	10.00		78	25.6	60	15.6	46	7.8	32	10	260		30.04	6	+0.03	30.07	FM-15	0.00	30.07
14	1653	7	CLR:00	10.00		75	23.9	59	15.0	47	8.3	37	13	250		30.06			30.09	FM-15	0.00	30.09
14	1753	7	CLR:00	10.00		73	22.8	61	16.1	52	11.1	48	7	260		30.07			30.09	FM-15	0.00	30.10
14	1853	7	CLR:00	10.00		69	20.6	61	16.1	55	12.8	61	5	250		30.08	1	-0.04	30.10	FM-15	0.00	30.11
14	1953	7	CLR:00	10.00		61	16.1	58	14.4	56	13.3	84	0	000		30.10			30.12	FM-15	0.00	30.13
14	2053	7	CLR:00	10.00		61	16.1	58	14.4	56	13.3	84	6	110		30.11			30.13	FM-15	0.00	30.14
14	2153	7	CLR:00	10.00		58	14.4	56	13.3	54	12.2	87	5	110		30.11	1	-0.04	30.14	FM-15	0.00	30.14
14	2253	7	CLR:00	10.00		56	13.3	54	12.2	53	11.7	90	5	070		30.12			30.15	FM-15	0.00	30.15
14	2353	7	CLR:00	10.00		59	15.0	56	13.3	54	12.2	83	6	120		30.12			30.15	FM-15	0.00	30.15

U.S. Department of Commerce
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Local Climatological Data
Hourly Observations
February 2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Current Location: Elev: 20 ft. Lat: 26.9185° N Lon: -81.9939° W

Generated on 07/25/2023

Station: PUNTA GORDA CHARLOTTE CO AIRPORT, FL US WBAN: 72203412812 (KPGD)

D a t e	Time (LST)	Sta- tion Type	Sky Conditions	Visi- bility	Weather Type (see documentation)	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Hum %	Wind Spee d (MPH)	Wind Dir (Deg)	Wind Gusts (MPH)	Station Press (inHg)	Press Tend	Net 3- Hr Change (inHg)	Sea Level Press (inHg)	Report Type	Precip Total (in)	Alti- meter Setting (inHg)
					AU AW MW	(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
15	0053	7	CLR:00	10.00		60	15.6	57	13.9	55	12.8	84	6	140		30.12	0	0.00	30.14	FM-15	0.00	30.15
15	0153	7	CLR:00	10.00		59	15.0	57	13.9	55	12.8	87	3	130		30.11			30.13	FM-15	0.00	30.14
15	0253	7	CLR:00	10.00		58	14.4	56	13.3	55	12.8	90	5	120		30.10			30.12	FM-15	0.00	30.13
15	0353	7	CLR:00	10.00		54	12.2	53	11.7	53	11.7	97	5	090		30.10	5	+0.01	30.13	FM-15	0.00	30.13
15	0453	7	CLR:00	8.00		52	11.1	51	10.6	51	10.6	97	5	080		30.10			30.13	FM-15	0.00	30.13
15	0553	7	CLR:00	10.00		54	12.2	53	11.7	53	11.7	97	7	080		30.12			30.14	FM-15	0.00	30.15
15	0653	7	CLR:00	10.00		54	12.2	53	11.7	53	11.7	97	5	120		30.13	3	-0.03	30.16	FM-15	0.00	30.16
15	0753	7	CLR:00	10.00		59	15.0	57	13.9	56	13.3	90	6	100		30.16			30.18	FM-15	0.00	30.19
15	0853	7	CLR:00	10.00		67	19.4	63	17.2	60	15.6	79	8	130		30.17			30.20	FM-15	0.00	30.20
15	0953	7	CLR:00	10.00		74	23.3	65	18.3	60	15.6	62	14	150		30.18	1	-0.04	30.20	FM-15	0.00	30.21
15	1053	7	FEW:02 34	10.00		77	25.0	66	18.9	60	15.6	56	18	170	25	30.19			30.21	FM-15	0.00	30.22
15	1153	7	BKN:07 42	10.00		79	26.1	67	19.4	59	15.0	50	9	150	21	30.17			30.20	FM-15	0.00	30.20
15	1253	7	SCT:04 45	10.00		81	27.2	67	19.4	58	14.4	45	11	180	23	30.14	8	+0.04	30.17	FM-15	0.00	30.17
15	1353	7	SCT:04 49	10.00		83	28.3	67	19.4	58	14.4	43	10	190		30.11			30.14	FM-15	0.00	30.14
15	1453	7	FEW:02 50	10.00		81	27.2	68	20.0	61	16.1	51	11	240		30.10			30.12	FM-15	0.00	30.13
15	1553	7	CLR:00	10.00		80	26.7	68	20.0	61	16.1	52	11	260		30.09	6	+0.05	30.11	FM-15	0.00	30.12
15	1653	7	CLR:00	10.00		79	26.1	68	20.0	62	16.7	56	11	250		30.09			30.12	FM-15	0.00	30.12
15	1753	7	CLR:00	10.00		76	24.4	67	19.4	62	16.7	62	8	270		30.10			30.13	FM-15	0.00	30.13
15	1853	7	CLR:00	10.00		73	22.8	66	18.9	62	16.7	69	5	260		30.10	1	-0.01	30.13	FM-15	0.00	30.13
15	1953	7	CLR:00	10.00		69	20.6	65	18.3	62	16.7	78	0	000		30.12			30.14	FM-15	0.00	30.15
15	2053	6	CLR:00	10.00		67	19.4	64	17.8	62	16.7	84	0	000		30.13			30.16	FM-15	0.00	30.16
15	2153	7	CLR:00	10.00		66	17.8	62	16.7	61	16.1	90	7	090		30.14	3	-0.04	30.17	FM-15	0.00	30.17
15	2253	7	CLR:00	10.00		65	17.8	62	16.7	60	15.6	87	5	100		30.15			30.18	FM-15	0.00	30.18
15	2353	7	CLR:00	10.00		65	18.3	63	17.2	61	16.1	87	6	110		30.14			30.16	FM-15	0.00	30.17

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Local Climatological Data
Hourly Observations
February 2023

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Current Location: Elev: 20 ft. Lat: 26.9185° N Lon: -81.9939° W
Station: PUNTA GORDA CHARLOTTE CO AIRPORT, FL US WBAN: 72203412812 (KPGD)
Generated on 07/25/2023

D a t e	Time (LST)	Sta- tion Type	Sky Conditions	Visi- bility	Weather Type (see documentation)	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Hum %	Wind Spee d (MPH)	Wind Dir (Deg)	Wind Gusts (MPH)	Station Press (inHg)	Press Tend	Net 3- Hr Change (inHg)	Sea Level Press (inHg)	Report Type	Precip Total (in)	Alti- meter Setting (inHg)
					AU AW MW	(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
16	0053	7	CLR:00	10.00		64	17.8	62	16.7	61	16.1	90	6	120		30.12	8	+0.03	30.14	FM-15	0.00	30.15
16	0153	7	CLR:00	10.00		64	17.8	62	16.7	61	16.1	90	7	140		30.10			30.12	FM-15	0.00	30.13
16	0253	7	CLR:00	10.00		62	16.7	61	16.1	60	15.6	93	6	120		30.08			30.11	FM-15	0.00	30.11
16	0353	7	OVC:08 41	10.00		63	17.2	62	16.7	61	16.1	93	5	090		30.08	6	+0.04	30.10	FM-15	0.00	30.11
16	0453	7	FEW:02 34 FEW:02 42	10.00		62	16.7	61	16.1	60	15.6	93	5	070		30.08			30.11	FM-15	0.00	30.11
16	0553	7	OVC:08 42	10.00		64	17.8	62	16.7	61	16.1	90	7	080		30.10			30.12	FM-15	0.00	30.13
16	0653	7	BKN:07 43	10.00		63	17.2	61	16.1	60	15.6	90	6	070		30.12	3	-0.04	30.14	FM-15	0.00	30.15
16	0753	7	OVC:08 45	10.00		65	18.3	63	17.2	62	16.7	90	6	090		30.13			30.15	FM-15	0.00	30.16
16	0853	7	FEW:02 45	10.00		68	20.0	64	17.8	62	16.7	81	10	120		30.13			30.16	FM-15	0.00	30.16
16	0953	7	CLR:00	10.00		77	25.0	68	20.0	63	17.2	62	13	140		30.13	1	-0.01	30.16	FM-15	0.00	30.16
16	1053	7	FEW:02 36	10.00		80	26.7	69	20.6	63	17.2	56	17	160	23	30.12			30.15	FM-15	0.00	30.15
16	1153	7	SCT:04 43	10.00		81	27.2	68	20.0	60	15.6	49	18	200	25	30.11			30.14	FM-15	0.00	30.14
16	1253	7	BKN:07 47	10.00		83	28.3	69	20.6	61	16.1	48	15	160	22	30.09	8	+0.04	30.12	FM-15	0.00	30.12
16	1353	7	BKN:07 50	10.00		83	28.3	69	20.6	61	16.1	48	11	180		30.07			30.10	FM-15	0.00	30.10
16	1453	7	SCT:04 50	10.00		84	28.9	69	20.6	60	15.6	44	8	170		30.05			30.07	FM-15	0.00	30.08
16	1553	7	SCT:04 55	10.00		84	28.9	69	20.6	60	15.6	44	14	190		30.04	6	+0.06	30.06	FM-15	0.00	30.07
16	1653	7	CLR:00	10.00		83	28.3	67	19.4	58	14.4	43	14	210		30.04			30.06	FM-15	0.00	30.07
16	1753	7	CLR:00	10.00		80	26.7	68	20.0	61	16.1	52	9	240		30.05			30.08	FM-15	0.00	30.08
16	1853	7	CLR:00	10.00		76	24.4	68	20.0	64	17.8	67	5	240		30.06	3	-0.03	30.09	FM-15	0.00	30.09
16	1953	7	CLR:00	10.00		72	22.2	68	20.0	65	18.3	79	0	000		30.07			30.10	FM-15	0.00	30.10
16	2053	7	CLR:00	10.00		68	20.0	66	18.9	64	17.8	87	0	000		30.09			30.11	FM-15	0.00	30.12
16	2153	7	CLR:00	10.00		67	19.4	65	18.3	64	17.8	91	3	120		30.10	3	-0.03	30.12	FM-15	0.00	30.13
16	2253	7	FEW:02 35	10.00		66	18.9	64	17.8	63	17.2	90	7	130		30.09			30.12	FM-15	0.00	30.12
16	2353	7	CLR:00	10.00		70	21.1	67	19.4	65	18.3	84	9	150		30.08			30.10	FM-15	0.00	30.11

Attachment 2

Deployed Acoustic Detector Photographs



Photograph 1. Photograph looking south at Detector 1 with microphone deployment height of 7 meters – Wildlife Acoustics Song Meter SM4BAT FS Ultrasonic Recorder with SMM U2 Ultrasonic Mic.



Photograph 2. Photograph looking north at Detector 2 with microphone deployment height of 7 meters – Wildlife Acoustics Song Meter SM4BAT FS Ultrasonic Recorder with SMM U2 Ultrasonic Mic.



Photograph 3. Photograph looking southwest at Detector 3 with microphone deployment height of 10 meters – Wildlife Acoustics Song Meter SM4BAT FS Ultrasonic Recorder with SMM U2 Ultrasonic Mic.



Photograph 4. Photograph looking south at Detector 4 with microphone deployment height of 6 meters – Wildlife Acoustics Song Meter SM4BAT FS Ultrasonic Recorder with SMM U2 Ultrasonic Mic.

Attachment 3
Nightly Weather Data

Date	Time (EDT)	Temperature (°F)	Temperature (°C)	Precipitation (inches)	Wind (mph)	Wind Direction	Wind (kmph)	Weather	Within FBB Parameters
Sunset	20:21								Yes
6/9/2025	18:53	87	31	0.00	6	S	9.7	Fair	
6/9/2025	19:53	86	30	0.00	5	S	8.0	Fair	
6/9/2025	20:53	81	27	0.00	6	SE	9.7	Fair	
6/9/2025	21:53	79	26	0.00	6	SE	9.7	Fair	
6/9/2025	22:53	79	26	0.00	3	E	4.8	Fair	
6/9/2025	23:53	78	26	0.00	5	SE	8.0	Fair	
6/10/2025	0:53	78	26	0.00	8	SE	12.9	Fair	
6/10/2025	1:53	77	25	0.00	5	S	8.0	Fair	
6/10/2025	2:53	76	24	0.00	3	SE	4.8	Fair	
6/10/2025	3:53	76	24	0.00	5	SE	5.0	Fair	
6/10/2025	4:53	75	24	0.00	6	SE	6.0	Fair	
6/10/2025	5:53	74	23	0.00	6	SE	6.0	Fair	
6/10/2025	6:53	74	23	0.00	5	SE	5.0	Fair	
6/10/2025	7:53	79	26	0.00	Calm	-	Calm	Fair	
Sunrise	6:32								Yes, light rain (0.02 in) recorded at 18:53, survey event began at 18:51 (2 minutes prior) and rain was not sustained
Sunset	20:21								
6/10/2025	18:53	76	24	0.02	3	E	4.8	Light Rain	
6/10/2025	19:53	78	26	0.00	9	E	14.5	Fair	
6/10/2025	20:53	76	24	0.00	6	NE	9.7	Fair	
6/10/2025	21:53	75	24	0.00	Calm	-	Calm	Fair	
6/10/2025	22:53	75	24	0.00	3	S	4.8	Fair	
6/10/2025	23:53	74	23	0.00	6	NE	9.7	Fair	
6/10/2025	0:53	73	23	0.00	Calm	-	Calm	Fair	
6/11/2025	1:53	74	23	0.00	Calm	-	Calm	Fair	
6/11/2025	2:53	73	23	0.00	Calm	-	Calm	Fair	
6/11/2025	3:53	73	23	0.00	3	E	4.8	Fair	
6/11/2025	4:53	73	23	0.00	Calm	-	Calm	Fair	
6/11/2025	5:53	72	22	0.00	5	E	8.0	Fair	
6/11/2025	6:53	73	23	0.00	Calm	-	Calm	Fair	
6/11/2025	7:53	77	25	0.00	5	NE	8.0	Fair	
Sunrise	6:32								Yes, light rain (0.01 in) recorded at 18:53, survey event began at 18:52 (1 minute prior) and rain was not sustained
Sunset	20:22								
6/11/2025	18:53	74	23	0.01	8	N	12.9	Mostly Cloudy	
6/11/2025	19:53	76	24	0.00	3	NW	4.8	A Few Clouds	
6/11/2025	20:53	76	24	0.00	3	NE	4.8	Fair	
6/11/2025	21:53	74	23	0.00	5	NE	8.0	Fair	
6/11/2025	22:53	74	23	0.00	6	NE	9.7	Partly Cloudy	
6/11/2025	23:53	74	23	0.00	5	NE	8.0	Fair	
6/12/2025	0:53	74	23	0.00	3	E	4.8	A Few Clouds	
6/12/2025	1:53	74	23	0.00	Calm	-	Calm	Fair	
6/12/2025	2:53	74	23	0.00	5	E	8.0	Fair	
6/12/2025	3:53	74	23	0.00	6	E	9.7	Fair	
6/12/2025	4:53	74	23	0.00	6	E	9.7	Fair	
6/12/2025	5:53	73	23	0.00	5	E	8.0	Fair	
6/12/2025	6:53	73	23	0.00	5	E	8.0	Fair	
6/12/2025	7:53	77	25	0.00	5	SE	8.0	Fair	
Sunrise	6:32								Yes
Sunset	20:22								
6/12/2025	18:53	81	27	0.00	7	E	11.3	A Few Clouds	
6/12/2025	19:53	81	27	0.00	3	E	4.8	Fair	
6/12/2025	20:53	79	26	0.00	7	SE	11.3	A Few Clouds	
6/12/2025	21:53	78	26	0.00	6	SE	9.7	Fair	
6/12/2025	22:53	78	26	0.00	7	SE	11.3	Fair	
6/12/2025	23:53	78	26	0.00	5	E	8.0	Fair	
6/13/2025	0:53	76	24	0.00	5	E	8.0	Fair	
6/13/2025	1:53	76	24	0.00	5	E	8.0	Fair	
6/13/2025	2:53	75	24	0.00	5	E	8.0	Fair	
6/13/2025	3:53	75	24	0.00	5	E	8.0	Fair	
6/13/2025	4:53	74	23	0.00	3	E	4.8	Fair	
6/13/2025	5:53	74	23	0.00	Calm	-	Calm	Fair	
6/13/2025	6:53	74	23	0.00	5	E	8.0	Fair	
6/13/2025	7:53	77	25	0.00	6	E	9.7	Fair	
Sunrise	6:32								

Date	Time (EDT)	Temperature (°F)	Temperature (°C)	Precipitation (inches)	Wind (mph)	Wind Direction	Wind (kmph)	Weather	Within FBB Parameters
Sunset	20:22								No, light rain in first and third hour of survey
6/13/2025	18:53	81	27	0.05	9	SW	14.5	Partly cloudy	
6/13/2025	19:53	82	28	0.00	8	NE	12.9	Mostly Cloudy	
6/13/2025	20:53	79	26	0.02	Calm	-	Calm	Thunderstorm in vicinity, light rain	
6/13/2025	21:53	79	26	0.00	5	N	8.0	Mostly Cloudy	
6/13/2025	22:53	79	26	0.00	Calm	-	Calm	Fair	
6/13/2025	23:53	78	26	0.00	Calm	-	Calm	Fair	
6/14/2025	0:53	77	25	0.00	7	E	11.3	Mostly cloudy	
6/14/2025	1:53	77	25	0.00	Calm	-	Calm	A Few Clouds	
6/14/2025	2:53	76	24	0.00	3	E	4.8	Fair	
6/14/2025	3:53	75	24	0.00	3	E	4.8	Fair	
6/14/2025	4:53	76	24	0.00	6	E	9.7	Fair	
6/14/2025	5:53	75	24	0.00	Calm	-	Calm	Fair	
6/14/2025	6:53	75	24	0.00	5	E	8.0	Fair	
6/14/2025	7:53	78	26	0.00	5	E	8.0	Fair	
Sunrise	6:32								Yes, rain and wind (> 9 mph) only pick up at the end of the fifth hour and were not sustained
Sunset	20:23								
6/14/2025	19:53	84	29	0.00	7	SE	11.3	A Few Clouds	
6/14/2025	20:53	82	28	0.00	5	SE	8.0	Partly Cloudy	
6/14/2025	21:53	82	28	0.00	3	SW	4.8	Mostly Cloudy	
6/14/2025	22:53	81	27	0.00	3	SE	4.8	Partly Cloudy	
6/14/2025	23:53	79	26	0.00	5	E	8.0	A Few Clouds	
6/15/2025	0:53	78	26	0.09	13	E	20.9	Heavy Rain Fog/Mist	
6/15/2025	1:53	77	25	0.00	6	E	9.7	Thunderstorm in vicinity	
6/15/2025	2:53	78	26	0.00	3	NW	4.8	Mostly Cloudy	
6/15/2025	3:53	77	25	0.00	3	NE	4.8	Mostly Cloudy	
6/15/2025	4:53	77	25	0.00	3	N	4.8	Partly cloudy	
6/15/2025	5:53	76	24	0.00	3	N	4.8	Fair	
6/15/2025	6:53	75	24	0.00	5	NE	8.0	Fair	
6/15/2025	7:53	76	24	0.00	6	E	9.7	Fair	
Sunrise	6:32								Yes
Sunset	20:23								
6/15/2025	19:53	88	31	0.00	8	SW	12.9	Thunderstorm in vicinity	
6/15/2025	20:53	82	28	0.00	6	SE	9.7	Thunderstorm in vicinity	
6/15/2025	21:53	80	27	0.00	5	NW	8.0	Thunderstorm	
6/15/2025	22:53	80	27	0.00	6	E	9.7	Mostly Cloudy	
6/15/2025	23:53	78	26	0.00	3	NE	4.8	A Few Clouds	
6/16/2025	0:53	78	26	0.00	5	S	8.0	A Few Clouds	
6/16/2025	1:53	78	26	0.00	5	SE	8.0	A Few Clouds	
6/16/2025	2:53	77	25	0.00	6	SE	9.7	Fair	
6/16/2025	3:53	76	24	0.00	5	SE	8.0	Fair	
6/16/2025	4:53	76	24	0.00	6	SE	9.7	Fair	
6/16/2025	5:53	76	24	0.00	3	E	4.8	Fair	
6/16/2025	6:53	75	24	0.00	7	E	11.3	Fair	
6/16/2025	7:53	79	26	0.00	5	E	8.0	Fair	
Sunrise	6:32								No, while rain only falls for roughly 21 minutes in the first five hours, winds greater than 9 mph persist more than 30 minutes
Sunset	20:23								
6/16/2025	19:53	80	27	0.01	10	W	16.1	Thunderstorm	
6/16/2025	20:53	80	27	0.00	6	E	9.7	Light rain	
6/16/2025	21:53	79	26	0.01	7	SW	11.3	Light rain	
6/16/2025	22:53	79	26	0.00	7	SW	11.3	Overcast	
6/16/2025	23:53	78	26	0.00	Calm	-	Calm	Fair	
6/17/2025	0:53	78	26	0.00	3	E	4.8	Mostly Cloudy	
6/17/2025	1:53	77	25	0.00	Calm	-	Calm	Fair	
6/17/2025	2:53	75	24	0.00	5	E	8.0	Fair	
6/17/2025	3:53	75	24	0.00	8	E	12.9	Fair	
6/17/2025	4:53	75	24	0.00	5	E	8.0	Fair	
6/17/2025	5:53	74	23	0.00	5	E	8.0	Fair	
6/17/2025	6:53	74	23	0.00	3	N	4.8	Fair	
6/17/2025	7:53	77	25	0.00	5	E	8.0	Fair	
Sunrise	6:32								

Date	Time (EDT)	Temperature (°F)	Temperature (°C)	Precipitation (inches)	Wind (mph)	Wind Direction	Wind (kmph)	Weather	Within FBB Parameters
Sunset	20:24								No, rain persists for roughly 50 continuous minutes in the first 5 hours
6/17/2025	19:53	84	29	0.00	Calm	-	Calm	Overcast	
6/17/2025	20:53	82	28	0.00	7	E	11.3	Overcast	
6/17/2025	21:53	79	26	0.18	6	E	9.7	Thunderstorm in vicinity	
6/17/2025	22:53	80	27	0.00	5	SW	8.0	Overcast	
6/17/2025	23:53	80	27	0.00	9	S	14.5	Overcast	
6/18/2025	0:53	80	27	0.00	Calm	-	Calm	Mostly Cloudy	
6/18/2025	1:53	78	26	0.00	5	NE	8.0	A Few Clouds	
6/18/2025	2:53	78	26	0.00	7	N	11.3	Fair	
6/18/2025	3:53	78	26	0.00	5	E	8.0	Fair	
6/18/2025	4:53	77	25	0.00	5	NE	8.0	Fair	
6/18/2025	5:53	76	24	0.00	5	NE	8.0	Fair	
6/18/2025	6:53	76	24	0.00	5	E	8.0	Fair	
6/18/2025	7:53	78	26	0.00	5	E	8.0	Fair	
Sunrise	6:32								No, rain persists for more than 30 minutes and is intermittent within the first 5 hours of survey, and winds exceed 9 mph for more than 30 minutes within first 5 hours of survey
Sunset	20:24								
6/18/2025	19:53	81	27	0.00	6	Variable	9.7	Thunderstorm	
6/18/2025	20:53	75	24	0.85	12	ESE	19.3	Light Thunder Shower	
6/18/2025	21:53	75	24	0.85	12	SE	19.3	Thunderstorm; Light Rain	
6/18/2025	22:53	76	24	0.00	6	S	9.7	A Few Clouds	
6/18/2025	23:53	77	25	0.00	Calm	-	Calm	Mostly Cloudy	
6/19/2025	0:53	77	25	0.00	Calm	-	Calm	A Few Clouds	
6/19/2025	1:53	76	24	0.00	Calm	-	Calm	Fair	
6/19/2025	2:53	77	25	0.00	5	E	8.0	Mostly Cloudy	
6/19/2025	3:53	76	24	0.00	5	NE	8.0	A Few Clouds	
6/19/2025	4:53	76	24	0.00	6	NE	9.7	Partly Cloudy	
6/19/2025	5:53	76	24	0.00	5	E	8.0	Fair	
6/19/2025	6:53	76	24	0.00	Calm	-	Calm	Fair	
6/19/2025	7:53	78	26	0.00	5	NE	8.0	Fair	
Sunrise	6:33								No, rain persists for more than 30 minutes and is intermittent within the first 5 hours of survey
Sunset	20:24								
6/19/2025	19:50	76	24	0.11	6	S	9.7	Thunderstorm; Heavy Rain; Fog/Mist	
6/19/2025	20:53	76	24	0.03	3.0	S	4.8	Thunderstorm; Light Rain	
6/19/2025	21:53	76	24	0.01	3	S	4.8	Fair	
6/19/2025	22:53	77	25	0.00	8	E	12.9	Mostly Cloudy	
6/19/2025	23:53	77	25	0.00	3	S	4.8	Overcast	
6/20/2025	0:53	77	25	0.00	Calm	-	Calm	Overcast	
6/20/2025	1:53	77	25	0.00	Calm	-	Calm	Mostly Cloudy	
6/20/2025	2:53	77	25	0.00	Calm	-	Calm	Fair	
6/20/2025	3:53	77	25	0.00	Calm	-	Calm	Fair	
6/20/2025	4:53	75	24	0.00	5	SE	8.0	Fair	
6/20/2025	5:53	76	24	0.00	Calm	-	Calm	Fair	
6/20/2025	6:53	76	24	0.00	5	NE	8.0	Partly Cloudy	
6/20/2025	7:53	78	26	0.00	3	E	4.8	Fair	
Sunrise	6:33								No, winds exceed 9 mph within first 5 hours of survey
Sunset	20:24								
6/20/2025	19:53	80	27	0.00	5	N	8.0	Fair	
6/20/2025	20:53	78	26	0.00	6	E	9.7	Fair	
6/20/2025	21:53	77	25	0.00	3	ESE	4.8	Fair	
6/20/2025	22:53	77	25	0.00	7	NNE	11.3	Partly Cloudy	
6/20/2025	23:53	77	25	0.00	10	E	16.1	Fair	
6/21/2025	0:53	77	25	0.00	7	E	11.3	Fair	
6/21/2025	1:53	76	24	0.00	5	ESE	8.0	Fair	
6/21/2025	2:53	76	24	0.00	Calm	-	Calm	Fair	
6/21/2025	3:53	75	24	0.00	3.0	NE	Calm	Fair	
6/21/2025	4:53	75	24	0.00	5.0	E	Calm	Fair	
6/21/2025	5:53	74	23	0.00	3.0	E	Calm	Fair	
6/21/2025	6:53	75	24	0.00	5	ESE	8.0	Fair	
6/21/2025	7:53	77	25	0.00	6	ESE	9.7	Fair	
Sunrise	6:33								

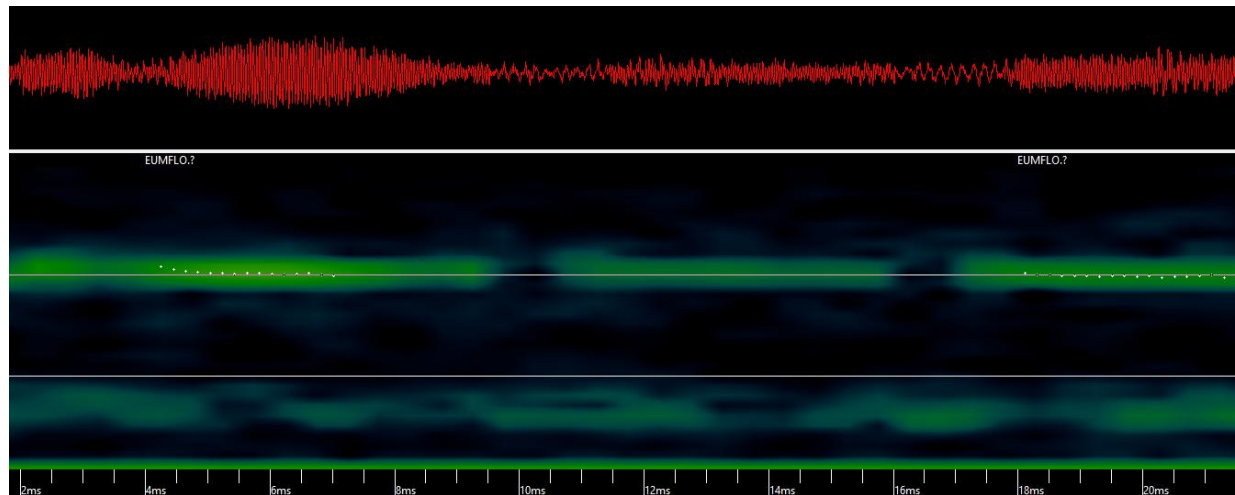
Date	Time (EDT)	Temperature (°F)	Temperature (°C)	Precipitation (inches)	Wind (mph)	Wind Direction	Wind (kmph)	Weather	Within FBB Parameters
Sunset	20:25								Yes
6/21/2025	19:53	83	28	0	5	NE	8.0	Mostly Cloudy	
6/21/2025	20:53	82	28	0	5	E	8.0	A Few Clouds	
6/21/2025	21:53	82	28	0	8	SE	12.9	Fair	
6/21/2025	22:53	81	27	0	6	SE	9.7	Fair	
6/21/2025	23:53	80	27	0	5	NE	8.0	Mostly Cloudy	
6/22/2025	0:53	78	26	0	7	E	11.3	A Few Clouds	
6/22/2025	1:53	76	24	0	5	E	8.0	Fair	
6/22/2025	2:53	75	24	0	Calm	-	Calm	Fair	
6/22/2025	3:53	75	24	0	3	E	4.8	Fair	
6/22/2025	4:53	74	23	0	3	NE	4.8	Fair	
6/22/2025	5:53	74	23	0	Calm	-	Calm	Fair	
6/22/2025	6:53	74	23	0	6	E	9.7	Fair	
6/22/2025	7:53	77	25	0	8	E	12.9	Fair	
Sunrise	6:33								No, light rain persists for approximately 3 hours, and winds exceed 9 mph for more than 30 minutes within first 5 hours of survey
Sunset	20:25								
6/22/2025	19:53	77	25	0	12.0	SE	19.3	Thunderstorm in Vicinity; Light Rain	
6/22/2025	20:53	74	23	0.01	12.0	E	19.3	Fair	
6/22/2025	21:53	73	23	0.02	7.0	E	11.3	Light Rain	
6/22/2025	22:53	73	23	0.04	6.0	E	9.7	Light Rain	
6/22/2025	23:53	74	23	0	6.0	SE	9.7	Fair	
6/23/2025	0:53	74	23	0	6.0	E	9.7	Fair	
6/23/2025	1:53	74	23	0	7.0	N	11.3	Fair	
6/23/2025	2:53	74	23	0	8.0	NE	12.9	Fair	
6/23/2025	3:53	73	23	0	5.0	NE	8.0	Fair	
6/23/2025	4:53	73	23	0	3.0	NE	4.8	Fair	
6/23/2025	5:53	73	23	0	7.0	NE	11.3	Fair	
6/23/2025	6:53	73	23	0	6.0	NE	9.7	Fair	
6/23/2025	7:53	76	24	0	6.0	E	9.7	Fair	
Sunrise	6:34								

Attachment 4

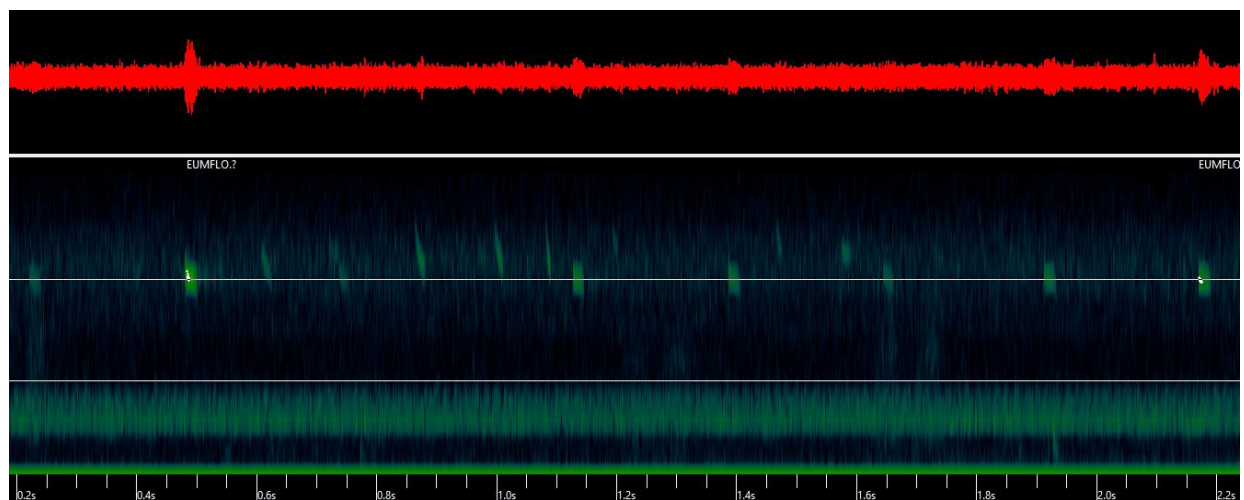
**Florida Bonneted Bat Recording Inventory Table and
Representative Spectrograms**

Florida Bonneted Bat AutoID Inventory						
Detector	AutoID	Manual ID	Recoring Date	Recording Time	Sunrise	Sunset
4	EUMFLO	Noise	6/9/2025	20:11:17	6:32:00	20:22:00
3	EUMFLO	NOTBAT	6/9/2025	21:59:39	6:32:00	20:21:00
4	EUMFLO	Noise	6/10/2025	1:58:01	6:32:00	20:21:00
4	EUMFLO	Noise	6/10/2025	6:28:55	6:32:00	20:21:00
4	EUMFLO	Noise	6/10/2025	6:42:59	6:32:00	20:21:00
2	EUMFLO	NOTBAT	6/10/2025	20:10:34	6:32:00	20:21:00
2	EUMFLO	NOTBAT	6/10/2025	22:54:34	6:32:00	20:21:00
3	EUMFLO	NOTBAT	6/11/2025	0:54:19	6:32:00	20:22:00
2	EUMFLO	Noise	6/11/2025	6:26:46	6:32:00	20:22:00
3	EUMFLO	NOTBAT	6/13/2025	0:15:34	6:32:00	20:22:00
4	EUMFLO	TADBRA	6/13/2025	1:16:03	6:32:00	20:22:00
4	EUMFLO	Noise	6/13/2025	1:28:41	6:32:00	20:22:00
4	EUMFLO	NOTBAT	6/13/2025	1:59:02	6:32:00	20:22:00
4	EUMFLO	TADBRA	6/13/2025	3:12:23	6:32:00	20:22:00
4	EUMFLO	Noise	6/13/2025	6:10:34	6:32:00	20:22:00
4	EUMFLO	Noise	6/21/2025	20:02:03	6:33:00	20:24:00
4	EUMFLO	Noise	6/21/2025	20:27:11	6:33:00	20:24:00
4	EUMFLO	Noise	6/21/2025	20:43:00	6:33:00	20:24:00
4	EUMFLO	Noise	6/21/2025	21:37:21	6:33:00	20:24:00
4	EUMFLO	Noise	6/21/2025	21:37:27	6:33:00	20:24:00

AutoID FBB Call. Detector 2 File ID: 443123-2-D2_20250610_225434.wav
06-10-2025 22:54:34 (EDT)
Example of NOTBAT from Detector 2

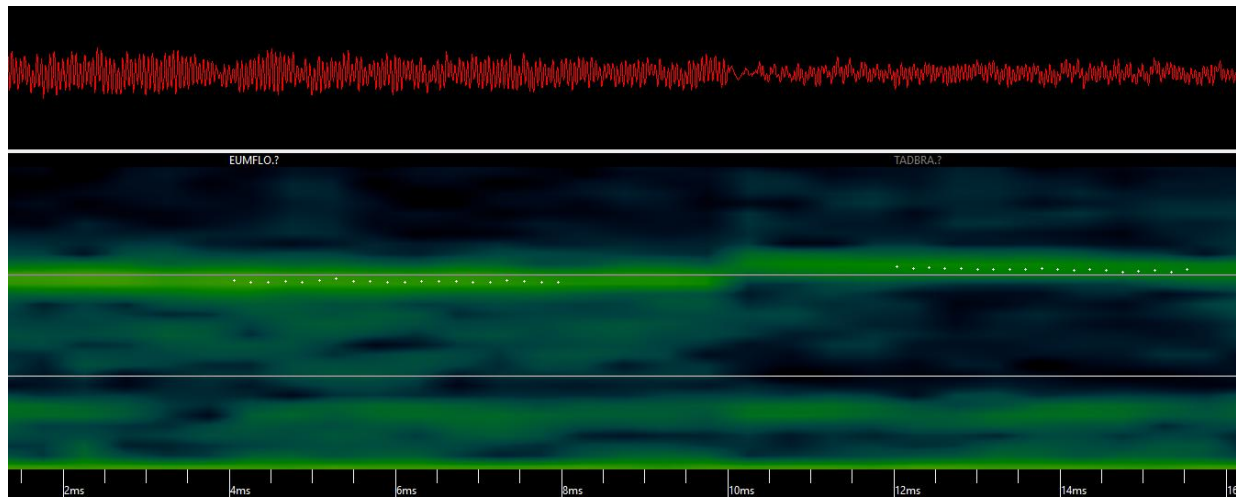


Compressed view

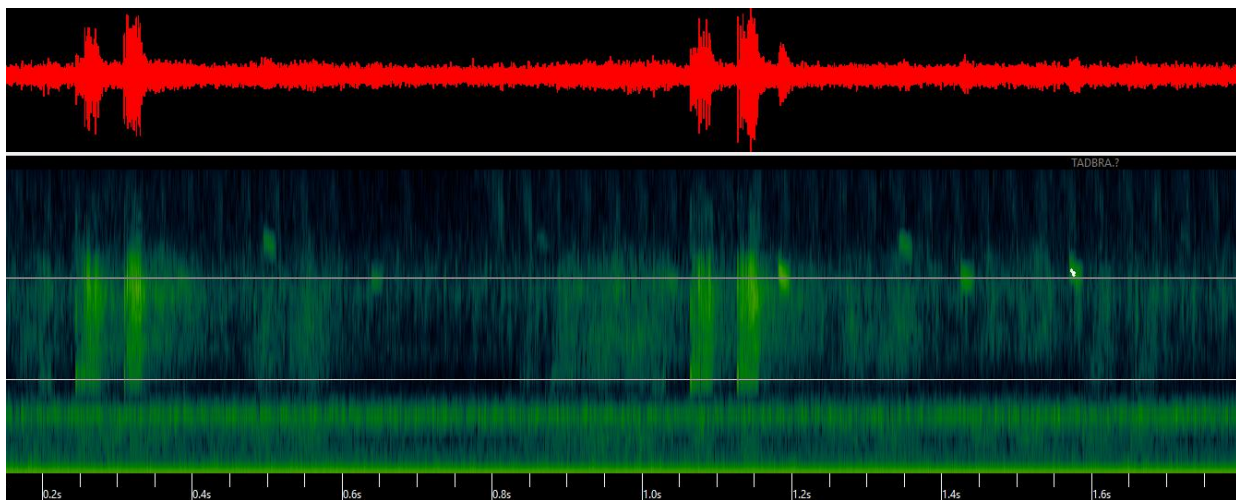


Normal time view

AutoID FBB Call. Detector 3 File ID: 443123-2-D3_20250609_215939.wav
06-09-2025 21:59:39 (EDT)
Example of NOTBAT from Detector 3

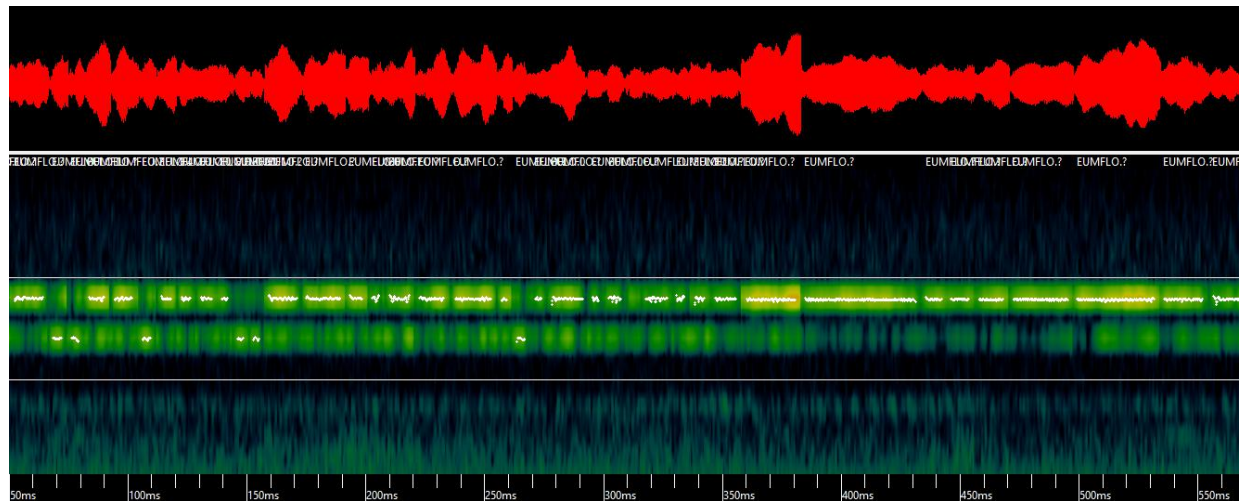


Compressed view

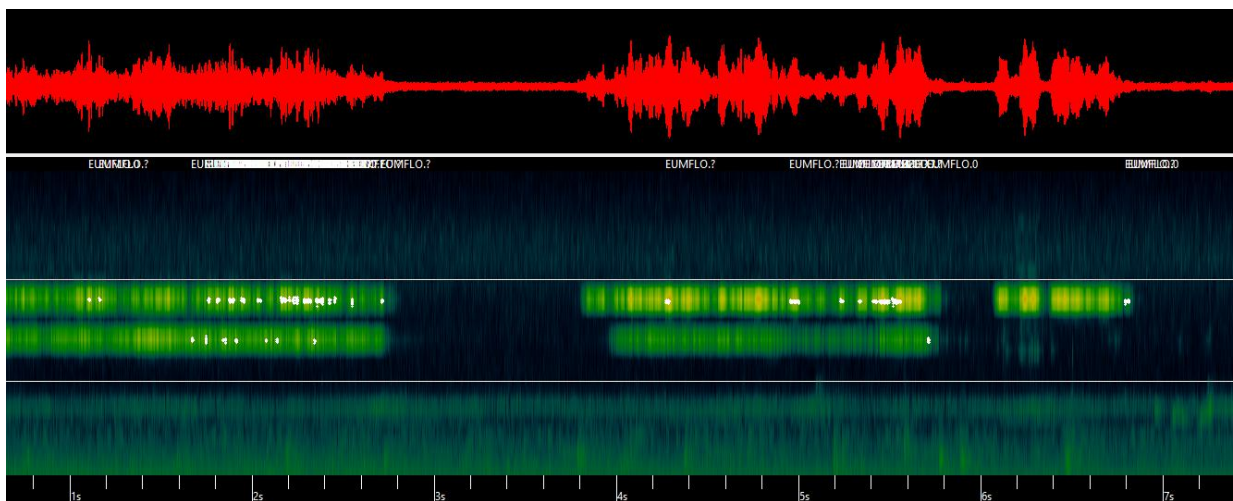


Normal time view

AutoID FBB Call. Detector 4 File ID: 443123-2-D4-20250610_064259.wav
06-10-2025 06:42:59 (EDT)
Example of Noise from Detector 4

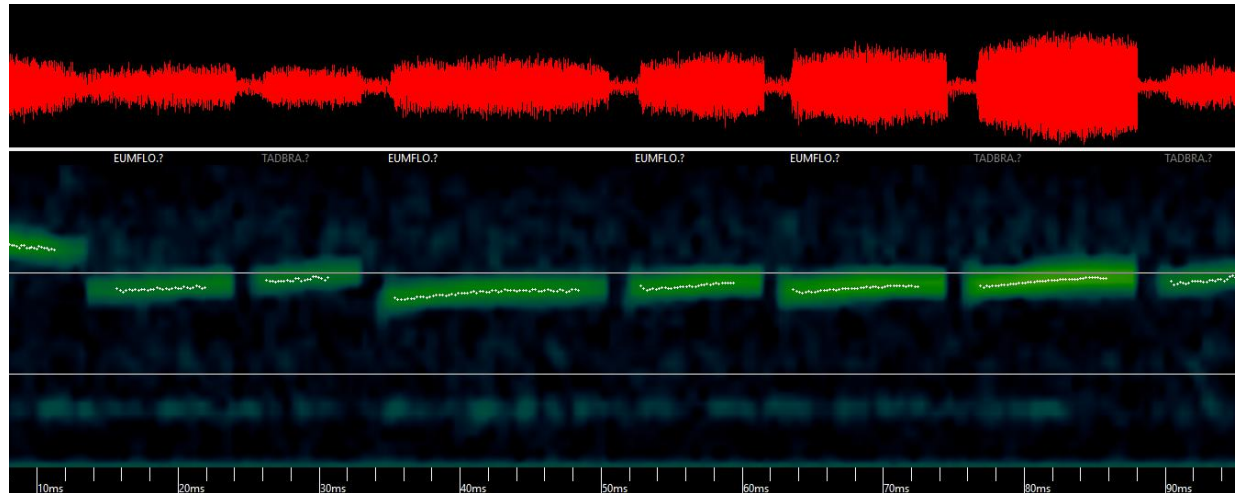


Compressed view

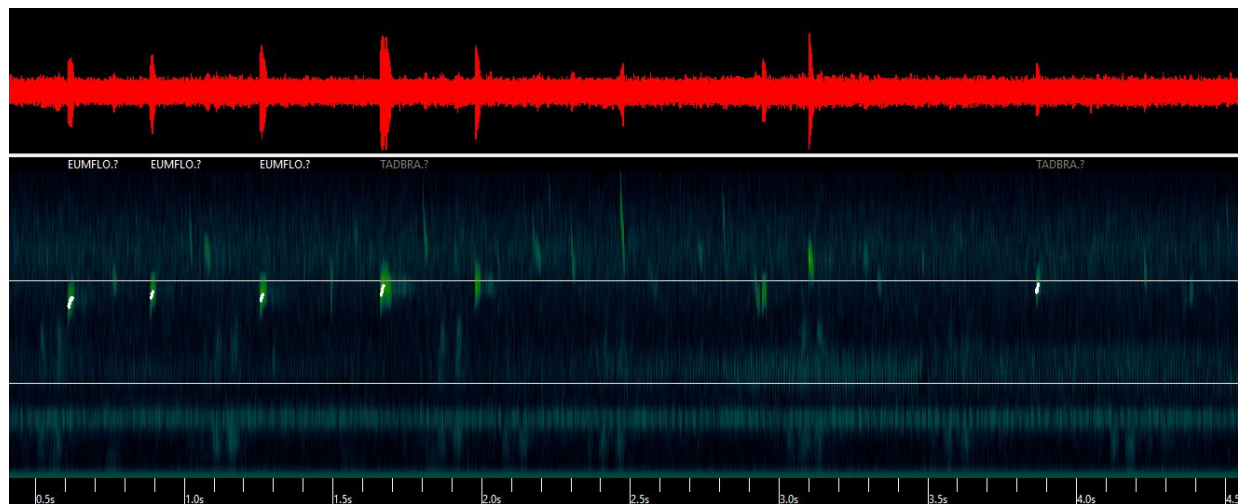


Normal time view

AutoID FBB Call. Detector 4 File ID: 443123-2-D4_20250613_011603.wav
06-13-2025 01:16:03 (EDT)
Example of TADBRA from Detector 4



Compressed view



Normal time view

Attachment 5

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* $\leq$ 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* $\leq$ 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* $\leq$ 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* $\leq$ 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.

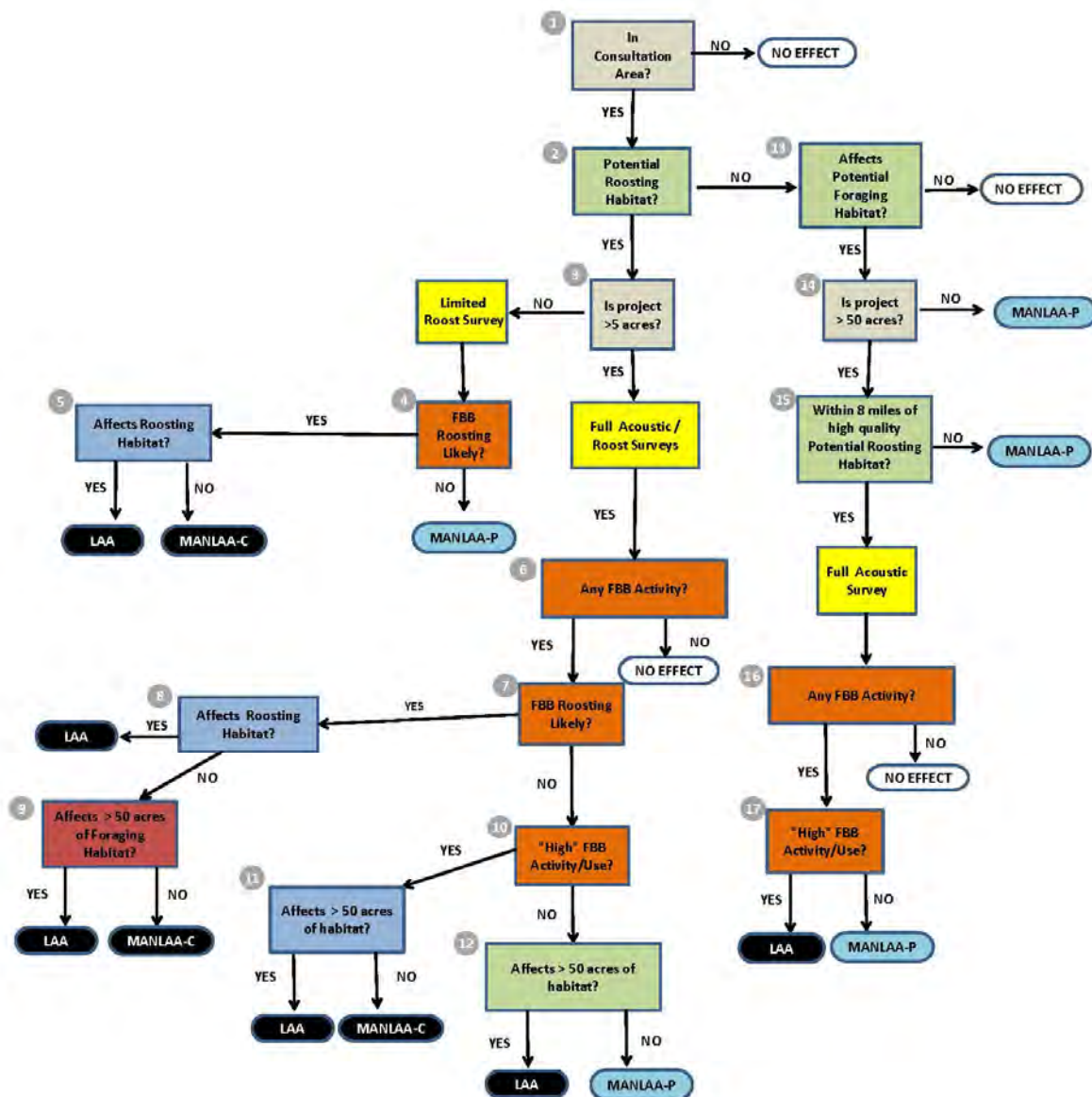


Figure 3. Florida bonneted bat Consultation Flowchart. “No effect” determinations do not need Service concurrence. “May affect, but not likely to adversely affect”, MANLAA-P, in blue have programmatic concurrence through the transmittal letter of these Guidelines, and therefore no further consultation 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.