

Natural Resources Evaluation Report

Florida Department of Transportation

District One

State Road (SR) 70 PD&E Study

Limits of Project: County Road (CR) 29 to Lonesome Island Road

Highlands County, Florida

Financial Management Number: 414506-5-22-01

ETDM Number: 14364

Date: October 2020

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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Highlands County, Florida

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Florida Department of Transportation District One

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October 2020

Table of Contents

<u>Section</u>	<u>Page</u>
Table of Contents	i
Executive Summary	ES-1
1.0 Project Overview	1-1
1.1 Project Description	1-1
1.2 Purpose and Need	1-1
1.3 Proposed Action	1-3
1.3.1 Alternatives	1-4
1.4 Pond Sites	1-5
1.5 Purpose of Report	1-8
1.6 Existing Conditions	1-8
1.6.1 Soils	1-9
1.6.2 Land Use	1-10
2.0 Protected Species	2-1
2.1 Introduction	2-1
2.2 Methodology	2-1
2.2.1 Agency Coordination	2-3
2.3 Results	2-3
2.3.1 Federal Species	2-8
2.3.2 State Species	2-17
2.3.3 Other Species of Concern	2-23
3.0 Wetland Evaluation	3-1
3.1 Introduction	3-1
3.2 Methodology	3-1
3.3 Wetland and Surface Water Locations	3-1
3.4 Wetland and Surface Water Impacts	3-2
3.4.1 Permanent Impacts	3-2
3.4.2 Secondary Impacts	3-3
3.5 Uniform Mitigation Assessment Method	3-6
3.6 Mitigation	3-8
4.0 Permitting and Review Agencies	4-1
5.0 Conclusions	5-1
5.1 Protected Species and Habitat	5-1
5.2 Wetland Evaluation	5-1
5.3 Implementation Measures	5-3
5.4 Commitments	5-4
6.0 References	6-1

LIST OF TABLES

<u>Table</u>	<u>Page</u>
Table ES-1 Federal Protected Species Effect Determinations	ES-2
Table ES-2 State Protected Species Effect Determinations	ES-3
Table ES-3 Proposed Wetland and Surface Water Impacts and Estimated UMAM ¹ Functional Loss ²	ES-4
Table 1-1 Soil Types and Coverage within the Project Study Area	1-9
Table 1-2 Existing Land Use within the Project Study Area	1-11
Table 1-3 Existing Land Use within the Proposed Pond Sites	1-12
Table 2-1 Protected Species Potential for Occurrence	2-4
Table 2-2 Eastern Indigo Snake Habitat within the Project Study Area	2-11
Table 3-1 Proposed Wetland and Surface Water Impacts within the Project Study Area	3-3
Table 3-2 Wetland and Surface Water Impacts within Proposed Ponds	3-5
Table 3-3 Estimated UMAM Functional Loss for Wetland and Surface Water Impacts	3-6
Table 3-4 Representative UMAM ¹ Scores for Direct Wetland and Surface Water Impacts	3-7
Table 5-1 Federal Protected Species Effect Determinations	5-2
Table 5-2 State Protected Species Effect Determinations	5-3

LIST OF FIGURES

<u>Figure</u>	<u>Page</u>
Figure 1-1 Project Location Map	1-2
Figure 1-2 Existing Typical Section	1-4
Figure 1-3 Interim Condition Typical Section	1-6
Figure 1-4 Ultimate Condition Typical Section	1-7
Figure 2-1 Wood Stork Colony Location Map	2-15
Figure 2-2 Bald Eagle Nest Location Map	2-24

LIST OF APPENDICES

Appendix A	Preferred Build Alternative Concept Plans
Appendix B	Soils Map
Appendix C	Land Use Map
Appendix D	Florida Natural Areas Inventory Custom Data Report
Appendix E	Agency Coordination
Appendix F	Protected Species Maps
Appendix G	Highlighted Species Effect Determination Keys
Appendix H	Audubon's Crested Caracara Technical Memorandum
Appendix I	Wood Stork Foraging Habitat Analysis
Appendix J	Everglade Snail Kite Technical Memorandum
Appendix K	Florida Bonneted Bat Technical Memoranda
Appendix L	Wetland and Surface Water Descriptions and Location Map
Appendix M	Wetland and Surface Water Representative Photographs
Appendix N	Wetland and Surface Water Impact Map
Appendix O	Uniform Mitigation Assessment Method Forms

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Executive Summary

The Florida Department of Transportation (FDOT), District One, is conducting a Project Development and Environment (PD&E) Study for State Road 70 (SR 70) in Highlands County to determine alternative roadway improvements along the corridor. The proposed action involves widening SR 70 from the existing two-lane undivided arterial roadway to a divided four-lane arterial roadway to improve existing roadway deficiencies, operational conditions, emergency evacuation/response times, vehicle safety conditions, and regional transportation connectivity in the project study area. The SR 70 study limits extend from County Road 29 (CR 29) to Lonesome Island Road in Lake Placid, Highlands County, Florida. The total project length is approximately 4.3 miles.

This *Natural Resources Evaluation* (NRE) is being prepared as a part of this PD&E Study. This report reviews the possible impacts to wetlands and federal and state protected species as a result of the Preferred Build Alternative. The identification of measures to avoid, minimize and mitigate for any potential impacts is also discussed. A summary of the analysis of potential project impacts for the improvements to SR 70 is presented below.

Protected Species

The project study area was evaluated for potential occurrences of federal and state protected plant and animal species in accordance with Section 7 of the *Endangered Species Act of 1973*, as amended, and Chapters 5B-40 and 68A-27 of the Florida Administrative Code (F.A.C.). The evaluation included coordination with the U.S. Fish and Wildlife Service (USFWS), the Florida Fish and Wildlife Conservation Commission (FWC), and the Florida Natural Areas Inventory (FNAI). The evaluation also included literature review, database searches, and field assessments of the project study area to identify the potential occurrence of protected species and/or presence of federal-designated critical habitat. Field evaluations of the project study area were conducted in October and December 2018 and May and August 2020, and species specific surveys from January 2019 to May 2019, and May and August 2020.

Based on the evaluation of collected data and field reviews, the federal and state protected species discussed in **Tables ES-1** and **ES-2** were observed or were determined to have the potential to occur within or adjacent to the project study area. An effect determination was then established for each of these species described below based on an analysis of the potential impacts the proposed project may have on each species. In addition to the federal and state listed species identified, other protected species including the bald eagle, Southern fox squirrel and Florida black bear have the potential to occur within the project study area. It was determined that the proposed project will not adversely impact these other protected species.

Table ES-1 Federal Protected Species Effect Determinations

Project Effect Determination	Federal Listed Species
"No effect"	Florida bonamia (<i>Bonamia grandiflora</i>) - T
	Pygmy fringe tree (<i>Chionanthus pygmaeus</i>) - E
	Perforate reindeer lichen (<i>Cladonia perforata</i>) - E
	Scrub pigeon wings (<i>Clitoria fragrans</i>) - T
	Short-leaved rosemary (<i>Conradina brevifolia</i>) - E
	Avon park harebells (<i>Crotalaria avonensis</i>) - E
	Garrett's scrub balm (<i>Dicerandra christmanii</i>) - E
	Scrub mint (<i>Dicerandra frutescens</i>) - E
	Scrub buckwheat (<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>) - T
	Snakeroot (<i>Eryngium cuneifolium</i>) - E
	Highlands scrub hypericum (<i>Hypericum cumulicola</i>) - E
	Scrub blazingstar (<i>Liatris ohlingerae</i>) - E
	Britton's beargrass (<i>Nolina brittoniana</i>) - E
	Paper nailwort (<i>Paronychia chartacea</i>) - T
	Lewton's polygala (<i>Polygala lewtonii</i>) - E
	Sandlace (<i>Polygonella myriophylla</i>) - E
	Florida jointweed (<i>Polygonum basiramia</i>) - E
	Scrub plum (<i>Prunus geniculata</i>) - E
	Scrub ziziphus (<i>Pseudoziziphus celata</i>) - E
	Carter's mustard (<i>Warea carteri</i>) - E
"May affect, but is not likely to adversely affect"	Florida grasshopper sparrow (<i>Ammodramus savannarum floridanus</i>) - E
	Blue-tailed mole skink (<i>Plestiodon egregius lividus</i>) - T
	Sand skink (<i>Plestiodon reynoldsi</i>) - T
	American alligator (<i>Alligator mississippiensis</i>) - SAT
	Florida scrub-jay (<i>Aphelocoma coerulescens</i>) - T
	Audubon's crested caracara (<i>Caracara cheriway</i>) - T
"May affect, and is likely to adversely affect"	Wood stork (<i>Mycteria americana</i>) - T
	Florida panther (<i>Puma concolor cougar</i>) - E
	Everglade snail kite (<i>Rostrhamus sociabilis</i>) - E
"May affect, and is likely to adversely affect"	Eastern indigo snake (<i>Drymarchon couperi</i>) - T
	Florida bonneted bat (<i>Eumops floridanus</i>) - E

E = Endangered, T = Threatened, SAT = Threatened Due to Similarity of Appearance

Table ES-2 State Protected Species Effect Determinations

Project Effect Determination	State Listed Species
"No adverse effect anticipated"	Curtiss' milkweed (<i>Asclepias curtissii</i>) - E
	Ashe's savory (<i>Calamintha ashei</i>) - T
	Piedmont jointgrass (<i>Coelorachis tuberculosa</i>) - T
	Hartwrightia (<i>Hartwrightia floridana</i>) - T
	Edison's ascyrum (<i>Hypericum edisonianum</i>) - E
	Narrowleaf naiad (<i>Najas filifolia</i>) - T
	Cutthroat grass (<i>Coleataenia abscissa</i>) - E
	Yellow fringeless orchid (<i>Platanthera integra</i>) - E
	Northern needleleaf (<i>Tillandsia balbisiana</i>) - T
	Spreading airplant (<i>Tillandsia fasciculata</i>) - E
	Giant airplant (<i>Tillandsia utriculata</i>) - E
	Redmargin zephyrlily (<i>Zephyranthes simpsonii</i>) - T
	Gopher tortoise (<i>Gopherus polyphemus</i>) - T
	Short-tailed snake (<i>Lampropeltis extenuata</i>) - T
	Florida pine snake (<i>Pituophis melanoleucus mugitus</i>) - T
	Florida sandhill crane (<i>Antigone canadensis pratensis</i>) - T
	Florida burrowing owl (<i>Athene cunicularia floridana</i>) - T
	Little blue heron (<i>Egretta caerulea</i>) - T
	Tricolored heron (<i>Egretta tricolor</i>) - T
Southeastern American kestrel (<i>Falco sparverius paulus</i>) - T	
Roseate spoonbill (<i>Platalea ajaja</i>) - T	

E = Endangered, T = Threatened

Wetlands

For the purposes of this document, wetlands are defined as per Chapter 62-340 F.A.C., Section 373.019 (27) Florida Statutes (F.S.), and *Corps of Engineers Wetland Delineation Manual* (USACE 1987) with *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region* (USACE 2010).

The No-Build Alternative would result in no impacts to wetlands or surface waters. Although unavoidable wetland impacts will occur as a result of the Preferred Build Alternative, these wetlands are located adjacent to, and/or within, the existing road right-of-way (ROW) and were previously disturbed by agricultural and residential development, roadway construction, maintenance activities and the invasion of nuisance and exotic species. Wetlands to be impacted by the proposed improvements include mixed hardwood wetlands, wetland scrub, and freshwater marshes. Surface water impacts consists of roadside ditches and canals, and one (1) reservoir. Anticipated wetland and surface water impacts and functional loss is presented in **Table ES-3**. Impacts associated with the Preferred Build Alternative total 70.37 acres and include 47.93 acres of surface waters and 22.44 acres of wetlands (direct and secondary impacts). Construction of the Preferred Build Alternative results in an estimated loss of 35.59 functional units. A description of land use, dominant vegetation, soil type and other descriptors regarding these communities is provided in subsequent sections of this report. The Uniform Mitigation Assessment Method (UMAM) analysis was performed on representative wetland impact areas.

Table ES-3 Proposed Wetland and Surface Water Impacts and Estimated UMAM¹ Functional Loss²

Alternative	Impact type	Total Impact Acres	Total Functional Loss
Preferred Build Alternative	Surface Waters	47.93	22.50
	Wetlands	22.44	13.09
Total		70.37	35.59

¹UMAM scores have not been approved by permitting agencies and are subject to change during the permitting process.

²Functional loss includes totals for two pond site options per basin. Upon selection of preferred pond sites, impacts will be recalculated and may decrease impact acreage and functional loss.

Wetland impacts, which will result from the construction of this project, will be mitigated pursuant to Section 373.4137, F.S., to satisfy all mitigation requirements of Part IV of Chapter 373, F.S., and 33 U.S.C. § 1344. Based on the type and location of project impacts the FDOT has determined that there is no practicable alternative to the proposed construction in wetlands. In accordance with Presidential Executive Order (EO) 11990, the FDOT has undertaken all actions to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency’s responsibilities. Nonetheless, the FDOT has determined that there is no practicable alternative to construction impacts occurring in wetlands. The proposed project will have no significant short-term or long-term adverse impacts to wetlands because any unavoidable impacts to wetlands will be mitigated to achieve no net loss of wetland function.

Essential Fish Habitat

The proposed project will have no involvement with Essential Fish Habitat as none exists within the project study area.

1.0 Project Overview

1.1 Project Description

The Florida Department of Transportation (FDOT), District One, is conducting a Project Development and Environment (PD&E) study to evaluate widening State Road 70 (SR 70) from County Road 29 (CR 29) to Lonesome Island Road in Lake Placid, Highlands County. The project is approximately 4.3 miles in length. The project study area is shown in **Figure 1-1**. The PD&E study is evaluating widening the existing two-lane undivided roadway to a four-lane divided roadway.

The study is evaluating the need for capacity improvements within the project limits and provides engineering and environmental analysis and documentation along with public involvement. The results of the study will aid FDOT and the FDOT Office of Environmental Management (OEM) for selection of the no build (no action) alternative or the preferred alternative for approval of the Type 2 Categorical Exclusion to grant Location Design Concept Acceptance.

The project was evaluated through FDOT's Efficient Transportation Decision Making (ETDM) process as project #14364. An ETDM *Programming Screen Summary Report* containing comments from the Environmental Technical Advisory Team (ETAT) was published on June 7, 2019. The ETAT evaluated the project's effects on various natural, physical and social resources.

Upon completion, the study will meet all requirements of the National Environmental Policy Act of 1969 (NEPA) as administered by the Federal Highway Administration (FHWA) and the requirements of other federal and state laws so as to qualify the proposed project for federal-aid funding.

1.2 Purpose and Need

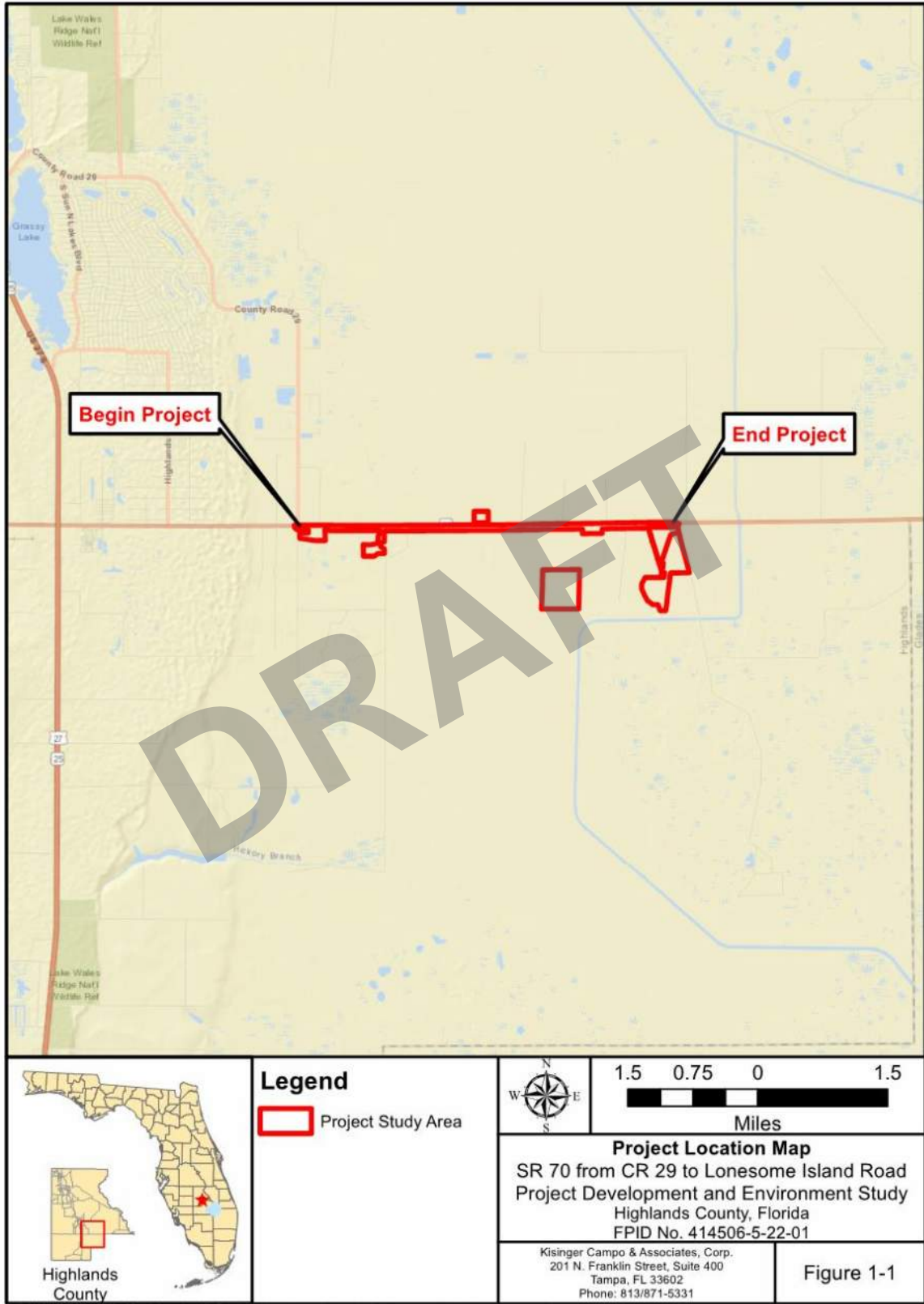
The purpose of this project is to improve roadway deficiencies along SR 70 from CR 29 to Lonesome Island Road. Additionally, the project will enhance operational capacity of the corridor, thereby improving vehicle safety and emergency evacuation/response times as well as access for standard roadway maintenance.

The need for the project is based on existing roadway deficiencies, operational conditions, vehicle safety conditions, and to support economic development, discussed below.

Roadway Deficiencies

Existing sections of the project segment contain pavement distresses (such as severe cracking, rutting, and potholes) as well as failing roadway slopes. The project is additionally located within the 100-year floodplain and prone to flooding. Furthermore, SR 70 is part of Florida's Strategic Intermodal System (SIS). Facilities on the SIS are subject to special standards and criteria for number of lanes, design speed, access, level of service and other requirements. The existing SR 70 cross-section and geometrics do not meet SIS facility criteria. The potential future widening of the project segment will be built to meet the SIS facility standards and criteria.

Figure 1-1 Project Location Map



Operational Conditions

SR 70 is part of the emergency evacuation route network designated by the Florida Division of Emergency Management (FDEM), as well as the network established by Highlands County. This roadway is critical in facilitating east-west traffic movement and evacuating residents of southern Highlands County. The project segment of SR 70 was deemed critical through the FDEM's Statewide Regional Evacuation Study Program due to vehicle queues lasting among the longest in the Central Florida region under various evacuation scenarios for different storm events.

Clearance time is also critical in emergency response situations. The narrow shoulders along the project corridor, in conjunction with the substandard setback of the guardrails from the roadway and adjacent canals, provide limited space for an emergency service vehicle to pass in response to a situation during periods of congestion. Likewise, inadequate space is provided to accommodate a disabled vehicle to prevent it from obstructing traffic flow.

Accessing the roadway to perform standard maintenance is additionally challenging due to the narrow width of the project corridor. During a maintenance event, a portion of one of the roadway's travel lanes must be closed to accommodate the maintenance vehicle, leading to vehicle queues and increased delays and clearance times.

Safety

The crash rates reported for the project corridor for years 2011 (0.61), 2014 (1.02), & 2015 (1.69) were above the statewide average crash rates reported for similar facilities (a rural undivided facility with 2 – 3 lanes) for the same three years (0.56, 0.73, and 0.78).

Economic

The proposed reconstruction and widening of SR 70 from CR 29 to Lonesome Island Road will enhance the corridor's ability to function as a SIS highway and accomplish SIS objectives for interregional transportation linked to economic development.

1.3 Proposed Action

The proposed action will increase the capacity of the existing two-lane undivided roadway by widening it to a four-lane divided roadway to accomplish the purpose and need described in the previous section.

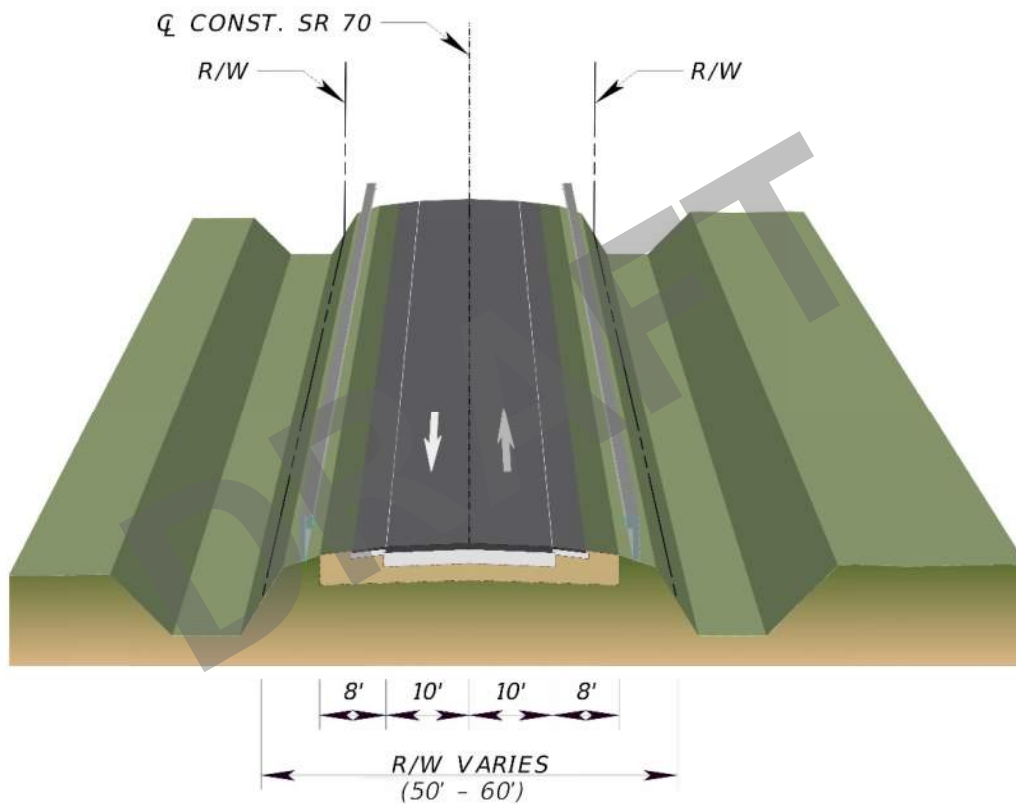
The designation of SR 70 as a SIS facility throughout the project limits presents a key constraint to the design speeds for the project. The FDOT Design Manual, Table 201.5.1, provides design speed controls for SIS facilities. For arterial facilities in rural areas a minimum design speed of 65 miles per hour (mph) is required. Based on these constraints, the following alternatives were developed.

1.3.1 Alternatives

1.3.1.1 No-Build Alternative

The No-Build Alternative remains a viable option throughout the study process. It assumes that both normal and evacuation traffic volumes continue to increase in the future without capacity or operational improvements. The existing typical section with two 10-foot travel lanes and 8-foot shoulders will remain (**Figure 1-2**). Only standard maintenance activities would be conducted along the project. The No-Build Alternative minimizes right-of-way (ROW) and construction costs along with environmental impacts. However, it does not accomplish the purpose and need for this project.

Figure 1-2 Existing Typical Section



1.3.1.2 Preferred Build Alternative

Based on the ETDM programming screen, several significant natural resources, including conservation easements within the Wetlands Reserve Program (currently the Agricultural Conservation Easement Program), were identified directly north of the existing ROW. To avoid impacting these resources, one (1) build alternative, the southern alignment alternative, was moved forward for further detailed analysis as the Preferred Build Alternative. The Preferred Build Alternative includes an interim condition and an ultimate condition. Due to significant roadway deficiencies, the existing travel lanes will be taken out of service.

The interim condition includes the construction of two (2) new undivided travel lanes to the south of SR 70 and a shared use path. The southern canal along SR 70 will also be rerouted in the interim condition. Once complete, traffic will be shifted to these new lanes and SR 70 will continue to operate as a two-lane undivided facility. **Figure 1-3** provides the proposed interim typical section.

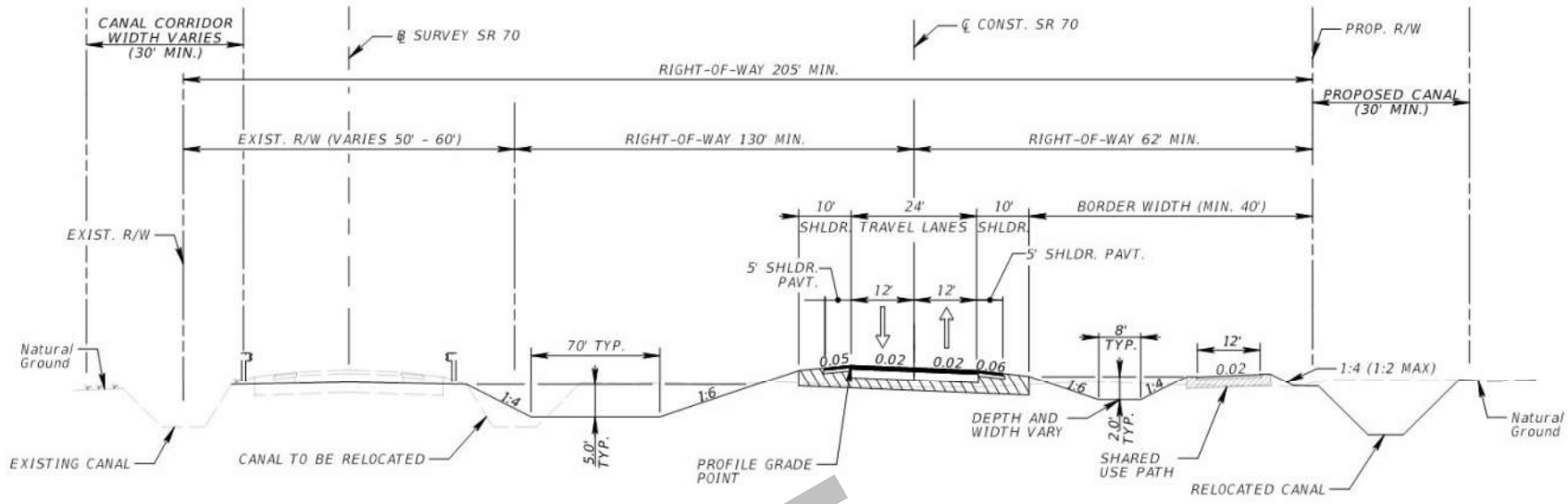
The ultimate condition includes the construction of two (2) new undivided travel lanes north of the travel lanes constructed for the interim condition. Once complete, westbound traffic will be shifted to the northern lanes and southbound traffic will be directed to utilize the southern lanes. SR 70 will operate as a four-lane divided facility under the ultimate condition. The Preferred Build Alternative's ultimate typical section includes 12-foot travel lanes, 10-foot (5-foot paved) outside shoulders, 8-foot median shoulders and a 12-foot shared use path (**Figure 1-4**). **Appendix A** provides the concept plans for the Preferred Build Alternative.

1.4 Pond Sites

There are eight (8) potential pond sites associated with the Preferred Build Alternative described above. Of those eight (8) sites, there are four (4) proposed floodplain compensation (FPC) ponds, three (3) proposed stormwater management facilities (SMF) and one (1) proposed regional pond. The pond site footprints were included in the project study area for analysis and field reviews to evaluate protected species and wetland involvement. Field reviews of the pond sites were conducted in May and August 2020.

Additional drainage engineering analysis is being conducted to identify one (1) FPC and one (1) SMF per basin for the Preferred Build Alternative. Therefore, a total of two (2) FPC ponds and a total of three (3) SMF ponds, or linear treatment ponds, will be constructed for the Preferred Build Alternative. The linear treatment ponds will be constructed parallel to SR 70 within the proposed ROW. The regional pond will be incorporated and constructed in the Preferred Build Alternative regardless of the additional drainage analysis results and selected FPC and SMF locations.

Figure 1-3 Interim Condition Typical Section

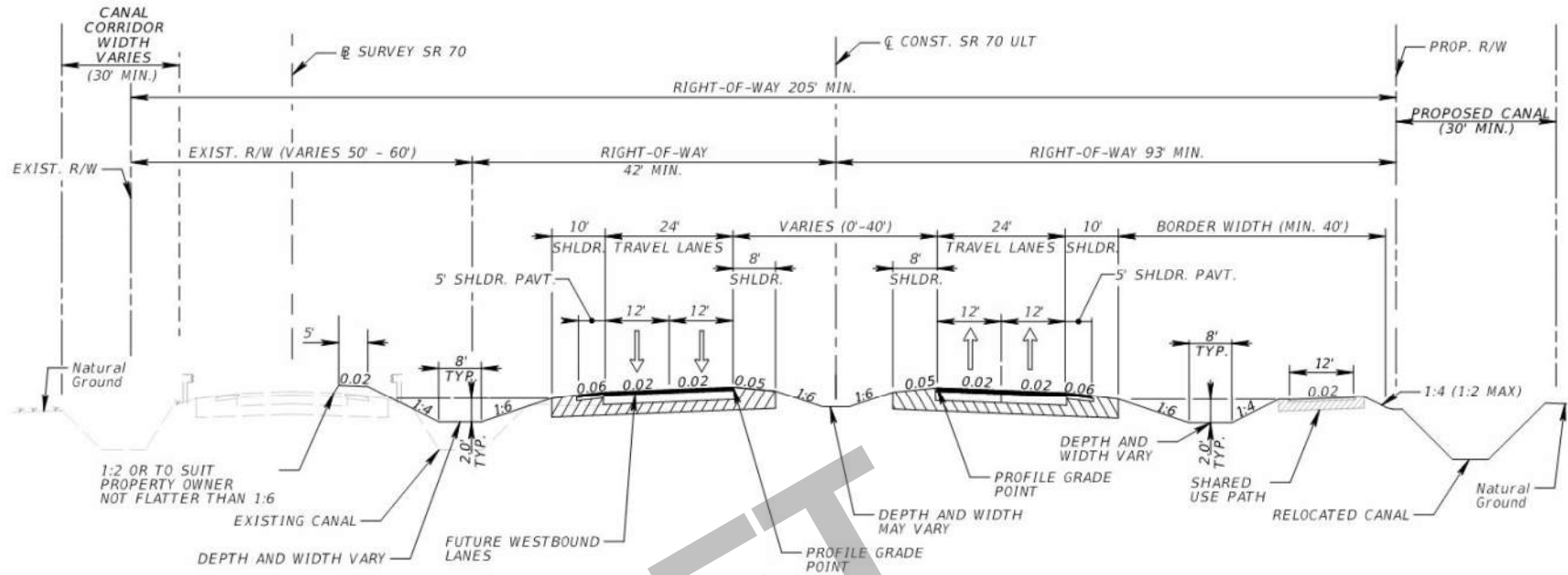


2-LANE (INTERIM CONDITION)
 TYPICAL SECTION SR 70
 Q CONST. SR 70

NOT TO SCALE

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Figure 1-4 Ultimate Condition Typical Section



4-LANE (ULTIMATE CONDITION)
 TYPICAL SECTION SR 70
 CL CONST. SR 70 ULT

NOT TO SCALE

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1.5 Purpose of Report

The purpose of this report is to document wetlands and protected species within the proposed project's corridor. The project corridor is referred to as the project study area and is defined as the existing ROW plus a 300-foot buffer to the south, and the project study area includes the proposed pond sites.

Pursuant to Presidential Executive Order 11990 entitled "Protection of Wetland," the U.S. Department of Transportation (USDOT) has developed a policy, Preservation of the Nation's Wetlands (USDOT Order 5660.1A), dated August 24, 1978, which requires all federal-funded highway projects to protect wetlands to the fullest extent possible. In accordance with this policy, as well as Part 2, Chapter 9 – Wetlands and Other Surface Waters of the FDOT PD&E Manual (FDOT 2020), the Preferred Build Alternative was assessed to determine the potential wetland impacts associated with construction.

Additionally, this report documents existing wildlife resources and includes an assessment of existing habitat types found within the project study area. The potential for occurrence and anticipated project effect on federal and state protected plant and animal species are evaluated in accordance with Part 2, Chapter 16 – Protected Species and Habitat of the FDOT PD&E Manual (FDOT 2020). Potential impacts to natural resources and critical habitat that may support these species are also addressed in this report.

1.6 Existing Conditions

The project study area is defined as the existing SR 70 ROW and a 300-foot buffer to the south to capture the mainline corridor portion of the proposed project. Additionally, all the proposed pond site alternatives are included for a total project study area of approximately 491.85 acres. The new canal is included in the mainline corridor of the project study area. The proposed ponds comprise approximately 316.23 acres of the project study area. In order to assess the approximate locations and boundaries of existing wetland and upland communities within the project study area, a desktop analysis was conducted, and the following site-specific data were collected and reviewed:

- Aerial photographs, (scale 1"=200') ESRI 2019;
- U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS), Soil Survey of Highlands County, Florida, 1989;
- USDA, NRCS, Web Soil Survey, 2019;
- Florida Association of Environmental Soil Scientists, Hydric Soils of Florida Handbook, 4th ed., (Hurt et. al. 2007);
- U. S. Geological Survey (USGS), Topographic Quadrangle Maps, 7.5-minues series, Childs Quadrangle and Venus NW Quadrangle;
- Florida Department of Transportation (FDOT), Florida Land Use, Cover and Forms Classification System (FLUCFCS), 3rd ed., January 1999;
- South Florida Water Management District (SFWMD), Florida Land Use, Cover and Forms Classification System GIS Database (SFWMD 2019);

- U.S. Fish and Wildlife Service (USFWS), National Wetlands Inventory (NWI), Wetlands Online Mapper (May 2020); and
- USFWS, Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979).

In addition to the desktop analysis, environmental scientists familiar with Florida’s natural communities conducted field reviews and species specific surveys of the project study area in October and December 2018, January through May 2019, and May and August 2020. Field reviews consisted of pedestrian transects throughout all habitat types found within the project study area. The purpose of the reviews was to verify or refine preliminary habitat boundaries and classification codes established during the desktop analysis. Attention was given to identifying plant species and composition for each community. Exotic plant infestation and other disturbances such as soil subsidence, clearing, canals, power lines, etc., were noted. Attention was also given to identifying wildlife and signs of wildlife usage in each wetland and adjacent upland habitats within the project study area.

1.6.1 Soils

Based on the Soil Survey of Highlands County, Florida (NRCS 1989), the project study area is comprised of seven (7) soil types. **Appendix B** provides an aerial map depicting the boundaries of each soil type within the project study area. According to the NRCS Web Soil Survey, five (5) of the soil types reported within the project study area are classified as hydric and two (2) are classified as non-hydric with hydric inclusions. **Table 1-1** lists the soil types reported within the project study area, their corresponding NRCS reference numbers, their hydric classification and their approximate acreage. Mapped hydric soils comprise 331.99 acres (67.50%) and non-hydric soils comprise 159.86 acres (32.50%) of the project study area. Six of the soils mapped within the project study area are classified as farmland of unique importance (**Table 1-1**). Farmland of unique importance is defined as lands where high-value food and fiber crops are produced and are protected by the Farmland Protection Policy Act of 1981.

Table 1-1 Soil Types and Coverage within the Project Study Area

Soils Type	Hydric Y/N	Area within the Project Study Area (acres)	Percent of Project Study Area
8: Immokalee sand, 0-2% slopes*	N**	155.24	31.56%
10: Myakka fine sand, 0 to 2% slopes*	N**	4.62	0.94%
12: Basinger fine sand, 0-2% slopes*	Y	14.51	2.95%
13: Felda fine sand, 0-2% slopes*	Y	55.50	11.28%
18: Kaliga muck, frequently ponded, 0-1% slopes*	Y	194.95	39.64%
26: Tequesta muck, frequently ponded, 0-1% slopes*	Y	65.31	13.28%
35: Sanibel Muck	Y	1.72	0.35%
Total Hydric Soils		331.99	67.50%
Total Non-Hydric Soils		159.86	32.50%
Total		491.85	100.00%

* Classified as farmland of unique importance

** May have hydric soil inclusions

1.6.2 Land Use

A total of eight (8) upland, three (3) wetland, and two (2) surface water habitat types were found within the project study area. Aerial maps depicting existing land uses and habitats within the project study area are provided in **Appendix C**. Each habitat type within the project study area was classified using FLUCFCS (FDOT 1999) and the USFWS Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979), if applicable. **Table 1-2** provides land use and habitat classifications, total acreage, and percent coverage for each habitat type identified in the project study area (including pond sites). **Table 1-3** provides the existing land use and habitat classifications, total acreage, and percent coverage for the proposed pond sites.

Upland communities comprise 422.50 acres (85.90%) of the project study area and include low density residential, improved pastures, unimproved pastures, citrus groves, sod farms, temperate hardwood forests, live oak forests, and roads and highways (**Table 1-2**). The natural areas abutting the existing road are composed of habitat fringes that have been impacted, to varying degrees, by construction of the existing roadway and drainage canals. Upland communities in proposed pond sites are dominated by agricultural land uses including improved pastures, unimproved pastures, citrus groves and sod farms (**Table 1-3**).

Wetland and surface water communities comprise 69.35 acres (14.10%) of the project study area and include streams and waterways, reservoirs, freshwater marshes, wetland scrub, and mixed wetland hardwoods (**Table 1-2**). Wetland communities within the project study area have been partially drained/ditched from the construction of SR 70 and the drainage canals and ditches. Wetlands are present in three (3) of the eight (8) proposed pond sites: FPC 1A, Regional Pond and SMF 2B (**Table 1-3**). Wetlands comprise approximately 3.76% of FPC 1A, 3.90% of the Regional Pond and 87.58% of SMF 2B. FPC 1B, FPC 2A, FPC 2B, SMF 1B, and SMF 3B have no wetland involvement.

Table 1-2 Existing Land Use within the Project Study Area

Habitat Type	FLUCFCS ¹ Code	FLUCFCS Description	USFWS Classification ²	Acreage within the Project Study Area	Percent of Project Study Area
Developed	110	Residential, low density	N/A	2.35	0.48%
	814	Road and highways	N/A	28.11	5.71%
Undeveloped	211	Improved pastures	N/A	72.19	14.68%
	212	Unimproved pastures	N/A	87.57	17.80%
	221	Citrus groves	N/A	71.75	14.59%
	242	Sod farms	N/A	150.21	30.54%
	425	Temperate hardwood	N/A	3.43	0.70%
	427	Live oak	N/A	6.89	1.40%
Total Uplands				422.50	85.90%
Surface Water	510	Streams and waterways	R2UBHx, R2AB3Fx, R2AB4Hx, PEM1Cx	47.54	9.67%
	530	Reservoirs	PUBHx	0.39	0.08%
Wetland	617	Mixed wetland hardwoods	PFO1Cd	3.62	0.74%
	631	Wetland scrub	PSS1Cd	4.84	0.98%
	641	Freshwater marshes	PEM1Ad	12.96	2.63%
Total Wetlands and Surface Waters				69.35	14.10%
Total				491.85	100.00%

¹ FDOT 1999

² Cowardin et al. 1979

PEM1Ad: Palustrine, Emergent, Persistent, Temporarily Flooded, Partially Drained/Ditched

PEM1Cx: Palustrine, Emergent, Persistent, Seasonally Flooded, Excavated

PFO1Cd: Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded, Partially Drained/Ditched

PSS1Cd: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded, Partially Drained/Ditched

PUBHx: Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated

R2AB3Fx: Riverine, Lower Perennial, Aquatic Bed, Rooted Vascular, Semipermanently Flooded, Excavated

R2AB4Hx: Riverine, Lower Perennial, Aquatic Bed, Floating Vascular, Permanently Flooded, Excavated

R2UBHx: Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded, Excavated

Table 1-3 Existing Land Use within the Proposed Pond Sites

ID	FLUCFCS ¹ within Pond Site	FLUCFCS Description	USFWS Classification ²	Individual FLUCFCS acreage	Total Pond Size (acres)	Percent of Pond Site
FPC 1A	211	Improved pastures	N/A	19.05	20.20	94.31%
	510	Streams and waterways	PEM1Cx	0.39		1.93%
	617	Mixed wetland hardwoods	PFO1Cd	0.16		0.79%
	641	Freshwater marshes	PEM1Ad	0.60		2.97%
FPC 1B	211	Improved pastures	N/A	17.74	19.45	91.21%
	425	Temperate hardwood	N/A	1.28		6.58%
	510	Streams and waterways	PEM1Cx	0.43		2.21%
FPC 2A	221	Citrus groves	N/A	60.09	63.62	94.45%
	510	Streams and waterways	R2UBHx	3.53		5.55%
FPC 2B	212	Unimproved pastures	N/A	59.63	62.37	95.61%
	510	Streams and waterways	PEM1Cx	2.74		4.39%
Regional Pond	242	Sod farms	N/A	113.81	123.99	91.79%
	510	Streams and waterways	R2UBHx	5.34		4.31%
	631	Wetland scrub	PSS1Cd	4.84		3.90%
SMF 1B	211	Improved pastures	N/A	5.03	5.05	99.60%
	425	Temperate hardwood	N/A	0.02		0.40%
SMF 2B	221	Citrus groves	N/A	1.35	13.84	9.75%
	510	Streams and waterways	R2AB4Hx	0.37		2.67%
	641	Freshwater marshes	PEM1Ad	12.12		87.58%
SMF 3B	212	Unimproved pastures	N/A	7.36	7.71	95.46%
	510	Streams and waterways	R2AB4Hx, PEM1Cx	0.35		4.54%
Total Pond Acreage					316.23	100.00%

Notes: Acreage of proposed pond sites also included in Table 1-2

¹ FDOT 1999

² Cowardin et al. 1979

PEM1Ad: Palustrine, Emergent, Persistent, Temporarily Flooded, Partially Drained/Ditched

PEM1Cx: Palustrine, Emergent, Persistent, Seasonally Flooded, Excavated

PFO1Cd: Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded, Partially Drained/Ditched

PSS1Cd: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded, Partially Drained/Ditched

R2AB4Hx: Riverine, Lower Perennial, Aquatic Bed, Floating Vascular, Permanently Flooded, Excavated

R2UBHx: Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded, Excavated

2.0 *Protected Species*

2.1 *Introduction*

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

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

The following sections describe the methodology used to assess the potential for occurrence of protected species and to identify the effects that construction of the Preferred Build Alternative may have on protected species in accordance with Part 2, Chapter 16 – Protected Species and Habitat of the FDOT PD&E Manual (FDOT 2020). Other species protected and/or managed under regulations outside of the ESA or Chapter 68A-27, F.A.C. are also discussed in the following sections.

2.2 *Methodology*

In order to determine federal and state protected plant and animal species that have the potential to occur within and adjacent to the project study area, available site-specific data was collected and evaluated. Literature reviewed and databases searched as part of this evaluation included:

- Audubon Center for Birds of Prey, EagleWatch Map, (Audubon 2020);
- True color aerial imagery of the assessment area, (1" = 200'), (ESRI 2019);
- Florida Department of Transportation (FDOT), Florida Land Use, Cover and Forms Classification System (FLUCFCS), 3rd ed., (FDOT 1999);
- FWC, Fish and Wildlife Research Institute. Wading Bird Colonies Florida database (<http://geodata.myfwc.com/datasets/wading-bird-rookeries-1999>); (FWC 1999);
- FWC, Florida Black Bear Management Plan, (FWC 2012);
- Florida Fish and Wildlife Conservation Commission (FWC), Imperiled Species Management Plan, (FWC 2016);

- FWC, Eagle Nest Locator Website (<https://www.arcgis.com/apps/webappviewer/index.html?id=253604118279431984e8bc3ebf1cc8e9>), (FWC 2019);
- Florida Natural Areas Inventory (FNAI) Biodiversity Matrix Map Server (<http://www.fnai.org/biointro.cfm>), (FNAI 2019a);
- FNAI, Element Occurrence Data Report, (FNAI 2019b);
- Florida Department of Agriculture and Consumer Services (FDACS), Notes on Florida's Endangered and Threatened Plants: Botany Contribution No. 38, 5th edition, (2010), (<https://www.fdacs.gov/ezs3download/download/25089/516005/Media/Files/Plant-Industry-Files/fl-endangered-plants.pdf>), (FDACS 2010).
- South Florida Water Management District (SFWMD), FLUCFCS, (SFWMD 2019a);
- SFWMD, South Florida Wading Bird Colonies data (<https://geo-sfwmd.hub.arcgis.com/datasets/south-florida-wading-bird-colonies>), (SFWMD 2019b);
- USFWS, Wood Stork database (<https://www.fws.gov/northflorida/woodstorks/woodstorks.htm>), (USFWS 2018).
- USFWS, Endangered and Threatened Wildlife and Plants Database, (<https://ecos.fws.gov/ecp0/reports/species-listed-by-state-report?state=FL&status=list>); (USFWS 2019a).
- USFWS, Information for Planning and Consultation (IPaC) Mapper (<https://ecos.fws.gov/ipac/location/index>), (USFWS 2019c);
- USFWS, Critical Habitat Portal website (<https://ecos.fws.gov/ecp/report/table/critical-habitat.html>), (USFWS 2019d);
- USFWS, National Wetlands Inventory (NWI), Wetlands online Mapper, (<https://www.fws.gov/wetlands/data/mapper.html>), (USFWS 2020);

Environmental scientists familiar with Florida natural communities conducted on-site field reviews of the project study area and adjacent habitats in October and December 2018, January through May 2019, and May and August 2020. Species specific surveys for the Everglade snail kite were conducted from December 2018 through May 2019. Surveys for the Audubon's crested caracara were conducted from January 2019 to April 2019, and acoustic and roost surveys for the Florida bonneted bat were conducted in May and August 2020. The project study area is defined as the existing ROW plus a 300-foot buffer to the south, and the proposed pond sites, as described in **Section 1.0**.

The purpose of the reviews was to verify and/or refine preliminary habitat boundaries and classification codes established through in-office literature reviews and aerial photographic interpretation. During field investigations, each upland and wetland community within the project study area was visually inspected. Attention was given to identifying dominant plant species composition for each community. Additional attention was given to identifying wildlife and signs of wildlife usage in each wetland and upland community within the project study area. The Florida Natural Areas Inventory (FNAI) was contacted for documented occurrences of listed species within one (1) mile of the project study area (**Appendix D**).

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

2.2.1 Agency Coordination

During the ETDM (#14364) screening for the proposed project, FWC stated that the primary wildlife issues associated with the proposed project include increased habitat fragmentation, potential impacts to listed species, and potential to increase wildlife roadkill. The USFWS commented that the proposed project may adversely affect the eastern indigo snake due to documented observations within the project study area. Additionally, they recommended Audubon's crested caracara surveys be conducted.

Coordination with the USFWS was initiated during this study in order to identify the appropriate methods and extent of surveys required to quantify potential impacts the proposed project may have on the Audubon's crested caracara, the Everglade snail kite, and the Florida bonneted bat. Survey plans were commented on and agreed to by USFWS on February 7, 2019. Additionally, coordination with the USFWS was conducted following the Florida bonneted bat acoustic survey on July 7, 2020. Agency coordination is provided in **Appendix E**.

2.3 Results

Based on the information collected, field reviews, and species specific survey results, a list of protected species with the potential to occur within the project study area was generated. **Table 2-1** presents a list of protected species with the potential to occur within the project study area, their federal or state protection status, preferred habitat, and a ranking of potential for occurrence. While several federal plant species were identified as having the potential to occur within the project study area (**Table 2-1**), these species are generally associated with fire-maintained natural scrub, sandhill or flatwoods habitat that are absent from the project study area. Additionally, the majority of these plants are found on central Florida ridges and the project study area lies outside of the nearest ridge, the Lake Wales Ridge. As a result, these species were eliminated from an individual analysis and instead are discussed collectively. **Appendix F** presents the locations of all listed species documented within one (1) mile of the project study area as well as the locations of all protected species observed during field reviews (**Appendices F-1 and F-2**).

The potential for occurrence for each species was designated as **None**, **Low**, **Moderate**, or **High** based on the type of habitat present within the project study area, its relative condition, and if the species has been previously documented or was observed in the project study area. A **None** rating indicates that there is not suitable habitat within the project study area. A **Low** rating indicates that potential habitat for that species was found within the project study area, but the habitat is suboptimal and there have been no historical observations within the project study area. A **Moderate** rating indicates that suitable habitat exists and it is reasonable to assume the species is present. A **High** rating indicates that suitable habitat exists and the species was observed within the project study area during field reviews or during species specific surveys.

Table 2-1 Protected Species Potential for Occurrence

Species	Designated Status			Habitat Preference	Potential for Occurrence
	Federal	State	FDACS		
Flora					
<i>Federal Species</i>					
Florida Bonamia <i>Bonamia grandiflora</i>	T	-	E	Open or disturbed areas in white sand scrub on central Florida ridges that include scrub oaks, sand pine, and lichens	Low
Pygmy Fringe Tree <i>Chionanthus pygmaeus</i>	E	-	E	Scrub, sandhill and xeric hammocks, primarily on the Lake Wales Ridge	None
Perforate Reindeer Lichen <i>Cladonia perforata</i>	E	-	E	High, well-drained sands of rosemary scrub	None
Scrub Pigeon Wing <i>Clitoria fragrans</i>	T	-	E	Turkey oak barrens with wiregrass, bluejack and turkey oak, and also on scrub and scrubby high pine	None
Short-leaved Rosemary <i>Conradina brevifolia</i>	E	-	E	White sands of sand pine-oak scrub of the Lake Wales Ridge and the scattered overstory of sand pine and scrub oak	None
Avon Park Harebells <i>Crotalaria avonensis</i>	E	-	E	Bare patches of sand in scrub communities on the Lake Wales Ridge	None
Garrett's Scrub Balm <i>Dicerandra christmanii</i>	E	-	E	Open areas of sand pine and oak scrub, particularly on yellow sands, on the Lake Wales Ridge	None
Scrub Mint <i>Diceradra frutescens</i>	E	-	E	Open areas of sand pine-oak scrub and sandhills, on the Lake Wales Ridge	None
Scrub Buckwheat <i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	T	-	E	Sandhill, oak-hickory scrub, high pinelands and turkey oak barrens with wiregrass, blue jack and turkey oak	None
Snakeroot <i>Eryngium cuneifolium</i>	E	-	E	Sunny sites of bare white sands in scrub, usually with rosemary	Low
Highlands Scrub Hypericum <i>Hypericum cumulicola</i>	E	-	E	Upland areas with well-drained, sterile, white sands; including scrub, rosemary balds and scrubby flatwoods	None
Scrub Blazing Star <i>Liatris ohlingeriae</i>	E	-	E	Rosemary balds, oak scrub, scrubby flatwoods and disturbed scrub	None
Britton's Beargrass <i>Nolina brittoniana</i>	E	-	E	Scrub, sandhill, scrubby flatwoods and xeric hammock	None
Paper Nailwort <i>Paronychia chartacea</i>	T	-	E	White sand clearing of scrub	Low
Lewton's Polygala <i>Polygala lewtonii</i>	E	-	E	Oak scrub, sandhill and transition zones between high pine and turkey oak barrens	Low
Sandlace <i>Polygonella myriophylla</i>	E	-	E	Open, sandy areas within scrub habitat	None

Species	Designated Status			Habitat Preference	Potential for Occurrence
	Federal	State	FDACS		
Florida Jointweed <i>Polygonum basiramia</i>	E	-	E	Sand pine scrub at higher elevations of the Lake Wales, Winter Haven and Bombing Range Ridges	None
Scrub Plum <i>Prunus geniculata</i>	E	-	E	Sandhill and oak scrub habitat	None
Scrub Ziziphus <i>Pseudoziziphus celata</i>	E	-	E	Oak-hickory scrub, scrubby flatwoods or sandhills on yellow sand	Low
Carter's Warea <i>Warea carteri</i>	E	-	E	Sandhill, scrubby flatwoods and inland scrub habitat	None
State Species					
Curtiss' Milkweed <i>Asclepias curtissii</i>	-	-	E	Well drained areas in white sand scrub, sand pine scrub, and scrubby flatwoods	Low
Ashe's Savory <i>Calamintha ashei</i>	-	-	T	Openings of pine scrub habitat in Florida, abandoned fields, roadsides and fire lanes	Low
Piedmont Jointgrass <i>Coelorachis tuberculosa</i>	-	-	T	Pond and marsh margins	Low
Hartwrightia <i>Hartwrightia floridana</i>	-	-	T	Seepage slopes, edges of baygalls and springheads, wet prairies and flatwoods with wet, peaty soils	Low
Edison's Ascyrum <i>Hypericum edisonianum</i>	-	-	E	Depressions in scrub, cutthroat seeps, flatwoods ponds, lake margins and wet prairies	Low
Narrowleaf Naiad <i>Najas filifolia</i>	-	-	T	Freshwater lakes, rivers and streams	Low
Cutthroat Grass <i>Coleataenia abscissa</i>	-	-	E	Mesic flatwoods, dry prairies and seepage slopes	High (Observed 2018)
Yellow Fringeless Orchid <i>Platanthera integra</i>	-	-	E	Wet pine flatwoods, wet prairies, seepage slopes and depressions within pinelands, marshes and swamps	Low
Northern Needleleaf <i>Tillandsia balbisiana</i>	-	-	T	Scrub, dry and mesic hammocks and pinelands	Moderate (Observed 2018)*
Spreading Airplant <i>Tillandsia fasciculata</i>	-	-	E	Scrub, dry and mesic hammocks and pinelands	Moderate (Observed 2018)*
Giant Airplant <i>Tillandsia utriculata</i>	-	-	E	Scrub, dry and mesic hammocks and pinelands	Moderate (Observed 2018)*
Redmargin Zephyrlily <i>Zephyranthes simpsonii</i>	-	-	T	Wet pine flatwoods, meadows, pastures and roadsides	Low

Species	Designated Status			Habitat Preference	Potential for Occurrence
	Federal	State	FDACS		
Reptiles					
<i>Federal Species</i>					
American Alligator <i>Alligator mississippiensis</i>	SAT	-	-	Freshwater and brackish marshes, ponds, lakes, rivers, swamps, bayous, canals, and large spring runs	High (Observed 2019)
Eastern Indigo Snake <i>Drymarchon couperi</i>	T	-	-	Mesic flatwoods, upland pine forests, swamps, wet prairies, xeric pinelands and scrub habitats, agricultural lands	Moderate
Blue-tailed Mole Skink <i>Plestiodon egregius lividus</i>	T	-	-	Central Florida in habitat with loose sandy areas, such as rosemary scrub, sand pine scrub, oak scrub, scrubby flatwoods and turkey oak barrens	Low
Sand Skink <i>Plestiodon reynoldsi</i>	T	-	-	Central Florida in habitat with loose sandy areas, such as rosemary scrub, sand pine scrub, oak scrub, scrubby flatwoods and turkey oak barrens	Low
<i>State Species</i>					
Gopher Tortoise <i>Gopherus polyphemus</i>	C	T	-	Dry upland habitats including sandhills, scrub, xeric oak hammock and dry pine flatwoods; also commonly uses disturbed habitats such as pastures, old fields and road shoulders	High (Observed 2018)
Short-tailed Snake <i>Lampropeltis extenuata</i>	-	T	-	Dry upland habitats with open canopies and dry sandy soils including sandhill, rosemary-sand pine scrub and adjacent xeric oak hammocks	Moderate
Florida Pine Snake <i>Pituophis melanoleucus mugitus</i>	-	T	-	Dry sandy soils with open canopies. Sandhill, sand pine scrub and scrubby flatwoods	Moderate
Birds					
<i>Federal Species</i>					
Florida Grasshopper Sparrow <i>Ammodramus savannarum floridanus</i>	E	-	-	Large areas of frequently burned dry prairie habitat with patchy open areas sufficient for foraging	Low
Florida Scrub-jay <i>Aphelocoma coerulescens</i>	T	-	-	Early successional stages of fire-dominated xeric oak communities located on well-drained, sandy soils; preferred habitat consists of scrub oaks between 3 and 10 feet tall, with open sand and scattered clumps of herbaceous vegetation.	High (Observed 2018)*

Species	Designated Status			Habitat Preference	Potential for Occurrence
	Federal	State	FDACS		
Audubon's Crested Caracara <i>Caracara cheriway</i>	T	-	-	Open country such as dry prairie and pasture lands with scattered cabbage palm, cabbage palm/live oak hammocks, and shallow ponds and sloughs. Cabbage palms or live oaks with low-growing surrounding vegetation are required for nesting.	High (Observed 2020)
Bald Eagle <i>Haliaeetus leucocephalus</i>	NL ¹	NL ²	-	Large open water bodies, saltwater marshes, dry prairies, mixed pine, hardwood forests, wet prairies, marshes, pine flatwoods and sandhills	High (Observed 2019)
Wood Stork <i>Mycteria americana</i>	T	-	-	Fresh and saltwater habitats such as fresh and saltwater marshes, tidal flats, wet prairies, cypress swamps and agricultural environments	High (Observed 2019)
Everglade Snail Kite <i>Rostrhamus sociabilis</i>	E	-	-	Large open freshwater marshes and lakes with shallow water and a low density of emergent vegetation	High (Observed 2019)
State Species					
Florida Sandhill Crane <i>Antigone canadensis pratensis</i>	-	T	-	Wet and dry prairies, marshes and marshy lake edges	High (Observed 2020)
Florida Burrowing Owl <i>Athene cunicularia floridana</i>	-	T	-	Areas of short, herbaceous groundcover; including prairies, sandhills and farmland	Low
Little Blue Heron <i>Egretta caerulea</i>	-	T	-	Freshwater marshes, coastal beaches, mangrove swamps, cypress swamps, hardwood swamps, wet prairies and bay swamps	High (Observed 2020)
Tricolored Heron <i>Egretta tricolor</i>	-	T	-	Freshwater marshes, coastal beaches, mangrove swamps, cypress swamps, hardwood swamps, wet prairies and bay swamps	High (Observed 2019)
Southeastern American Kestrel <i>Falco sparverius paulus</i>	-	T	-	Pine scrub, dry prairies, mixed pine hardwood forests and pine flatwoods	Moderate
Roseate Spoonbill <i>Platalea ajaja</i>	-	T	-	Freshwater marshes, coastal beaches, mangrove swamps, cypress swamps, hardwood swamps, wet prairies and bay swamps	High (Observed 2019)

Species	Designated Status			Habitat Preference	Potential for Occurrence
	Federal	State	FDACS		
Mammals					
<i>Federal Species</i>					
Florida Bonneted Bat <i>Eumops floridanus</i>	E	-	-	Precise habitat requirements unknown; roosts in forested communities or artificial structures and forages in open areas	High (Observed 2020 via acoustics)
Florida Panther <i>Puma concolor cougar</i>	E	-	-	A variety of habitats including upland forests, prairies, wetlands, stands of saw palmetto and swamps	Low
<i>State Species</i>					
Southern Fox Squirrel <i>Sciurus niger niger</i>	-	NL ³	-	Sandhills (high pine), pine flatwoods, and pastures and other open, ruderal habitats with scattered pines and oaks	Low
Florida Black Bear <i>Ursus americanus floridanus</i>	-	NL ⁴	-	Mixed hardwood pine, cabbage palm hammock, upland oak scrub and forested wetlands, such as cypress and riverine	Low

Notes:

Low = potential habitat for that species was found within the project study area, but the available habitat is suboptimal and there have been no historical observations within the project study area

Moderate = suitable habitat exists and it is reasonable to assume the species is present

High = suitable habitat exists and the species was observed within the project study area during field reviews or during species specific surveys

E = endangered, T = threatened, C = Candidate for Listing, SAT = federal threatened due to similarity of appearance, NL = not listed

*Observed outside of the project study area during field reviews for the adjacent project, FDOT FPID 414506-1-22-01

¹ While not listed under the ESA, the Bald Eagle is federally protected under the Bald and Golden Eagle Protection Act.

² While not listed under Chapter 68A-27 FAC, the Bald Eagle is state protected under the FWC Bald Eagle Management Plan (2008).

³ The Southern Fox Squirrel, their nests, and young are afforded protection under 68A-29.002(1)(c) F.A.C.

⁴ The Florida black bear is no longer state-listed; however, this species is managed in Florida by the FWC's Florida Black Bear Conservation rule (68A-4.009, F.A.C.).

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

The No-Build Alternative would have “**no effect**” on federal and state listed species.

2.3.1 Federal Species

Pursuant to Chapter 68A-27.0012, F.A.C. (Effective November 11, 2017), species that are federally listed under the ESA are also considered state listed species.

2.3.1.1 Plants

Several federally listed plant species were identified as occurring in Highlands County that have the potential to occur within the project study area. These are species primarily found on white and/or yellow sands of Central Florida Ridges, such as the Lake Wales Ridge. These species include Florida bonamia (*Bonamia grandiflora*), pygmy fringe tree (*Chionanthus pygmaeus*), perforate reindeer lichen (*Cladonia perforata*), scrub pigeon wing (*Clitoria fragrans*), short-leaved rosemary (*Conradina brevifolia*), Avon Park harebells (*Crotalaria avonensis*), Garrett's scrub balm (*Dicerandra christmanii*), scrub mint (*Dicerandra frutescens*), scrub buckwheat (*Eriogonum longifolium* var. *gnaphalifolium*), snakeroot (*Eryngium cuneifolium*), Highlands scrub hypericum (*Hypericum cumulicola*), scrub blazingstar (*Liatris ohlingerae*), Britton's beargrass (*Nolina brittoniana*), paper nailwort (*Paronychia chartacea*), Lewton's polygala (*Polygala lewtonii*), Sandlace (*Polygonella myriophylla*), Florida jointweed (*Polygonum basiramia*), scrub plum (*Prunus geniculata*), scrub ziziphus (*Pseudoziziphus celata*), and Carter's mustard (*Warea carteri*).

The project study area occurs within the USFWS Consultation Area for Lake Wales Ridge plants. Though nearby, the project study area falls outside of the Lake Wales Ridge and xeric white and yellow sandy soils are limited to patches within heavily altered and maintained citrus groves found in the project study area. These species are most commonly associated with fire-maintained ecosystems including scrub, sandhill or flatwoods habitats, which are absent from the project study area.

The paper nailwort was identified within one (1) mile of the project study area (**Appendix F-1**) during listed plant surveys for the SR 70 from Jefferson to CR 29 PD&E study (FDOT FPID 454506-1-22-01). However, this species was not observed during field reviews and there is no available suitable habitat within the project study area. The Florida bonamia, snakeroot, Lewton's polygala and scrub ziziphus are known to occasionally occur within disturbed open sandy patches along roadsides or in pasturelands, which are present within the project study area. Due to the lack of fire-maintained ecosystems and minimal open sandy patches, these species were given a low potential for occurrence.

Based on the lack of available suitable habitat, the location of the project at lower elevations outside of the Lake Wales Ridge, and the lack of observations within the project study area, it has been determined that the proposed project will have “**no effect**” on the above listed species.

2.3.1.2 Reptiles

American Alligator (*Alligator mississippiensis*)

The Final Rule for the American alligator was published in the Federal Register on June 4, 1987 (FR 52, No. 107, June 4, 1987). The Final Rule is a formal recognition by the Service that the American alligator is biologically secure throughout its range. The Final Rule removes federal agency responsibility under Section 7 of the ESA.

The American alligator is a large, rounded-snout crocodylian listed as *threatened* by the USFWS due to its similarity of appearance to the American crocodile (*Crocodylus acutus*). The project

study area contains available suitable habitat for this species within the canals and ditches. Additionally, this species was observed during field reviews (**Appendix F-1**). This species is highly mobile and there is available suitable habitat outside of the project study area. In addition, any wetland impacts will be mitigated to ensure no net loss of wetland functions, including wildlife habitat. Based on this information, it has been determined that the proposed project “**may affect, but is not likely to adversely affect**” the American alligator.

Eastern Indigo Snake (*Drymarchon couperi*)

The eastern indigo snake is a large, glossy black snake that is listed as *threatened* by the USFWS. This species can be found in a variety of habitat types, including pine flatwoods, scrubby flatwoods, high pine, dry prairie, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields, coastal dunes, as well as human-altered habitats. It may also utilize gopher tortoise burrows for shelter to escape hot or cold ambient temperatures within its range. Gopher tortoise burrows were observed within the project study area. Suitable habitat for the eastern indigo snake exists within agricultural and natural habitats within the project study area.

Due to the large amount of undeveloped open areas, all land uses presented in **Section 1.6.2** are considered suitable eastern indigo snake habitat with the exception of roads and highways (FLUCFCS 814), reservoirs (FLUCFCS 530) and streams and waterways (FLUCFCS 510). Seasonally and temporarily flooded wetland systems were included with the assumption that the eastern indigo snake could utilize these areas when dry. While multiple floodplain compensation (FPC) ponds per basin are proposed, only one (1) FPC pond per basin will be constructed. Additionally, in lieu of stormwater management facilities (SMFs), linear treatment may be utilized. To estimate potential impacts to suitable eastern indigo snake habitat the largest FPC pond per basin, all SMF pond sites, and the regional pond, were included for a worst-case scenario. As a result, there are approximately 337.16 acres of potential eastern indigo snake habitat that will be impacted from construction of the roadway improvements and pond sites (**Table 2-2**).

According to FNAI data, there are two (2) historical observations (1974 and 1976) of the eastern indigo snake (**Appendix F-1**), one (1) within the project study area. However, the species was not observed during field reviews. The path followed through the *Programmatic Eastern Indigo Snake Effect Key* (USFWS 2017) was A>B>C>may affect (**Appendix G**). Potential direct impacts associated with the proposed project include loss of habitat, habitat fragmentation, mortality from construction equipment, den abandonment, and loss of foraging and mating opportunities. Potential indirect impacts include increased traffic and noise that may alter behavior or increase avoidance of an area, and a higher frequency of potential roadkill.

To minimize potential adverse impacts to the eastern indigo snake, the FDOT will commit to use the most current *Standard Protection Measures for the Eastern Indigo Snake* during the proposed roadway improvements. Additionally, the FDOT will survey the project study area prior to construction to determine the presence and location of gopher tortoise burrows within the project area. If gopher tortoises or burrows are found within 25 feet of the limits of construction, the FDOT will coordinate with the FWC to secure all permits needed to relocate the tortoises and associated commensal species. To further mitigate for potential impacts to the eastern indigo snake, the FDOT is willing to deduct available eastern indigo snake credits from the Platt Branch Mitigation Bank (PBMB) in Highlands County. Final mitigation credit requirements will be determined in

consultation with the USFWS. Based on this information it has been determined that the proposed project “**may affect, and is likely to adversely affect**” the eastern indigo snake and formal consultation with the USFWS will be initiated.

Table 2-2 Eastern Indigo Snake Habitat within the Project Study Area

Project Component	FLUCFCS¹ Classification	FLUCFCS Description	Acreage of Eastern Indigo Snake Habitat
Mainline Corridor	110	Residential, low density	2.35
	211	Improved pastures	30.37
	212	Unimproved pastures	20.58
	221	Citrus groves	10.31
	242	Sod farms	36.40
	425	Temperate hardwood	2.13
	427	Live oak	6.89
	617	Mixed wetland hardwoods	3.46
	641	Freshwater marshes	0.24
Eastern Indigo Snake Habitat Subtotal Mainline			112.73
FPC 1A	211	Improved pastures	19.05
	617	Mixed wetland hardwoods	0.16
	641	Freshwater marshes	0.60
Eastern Indigo Snake Habitat Subtotal FPC 1A			19.81
FPC 2A	221	Citrus groves	60.09
Eastern Indigo Snake Habitat Subtotal FPC 2A			60.09
Regional Pond	242	Sod farms	113.81
	631	Wetland scrub	4.84
Eastern Indigo Snake Habitat Subtotal Regional Pond			118.65
SMF 1B	211	Improved pastures	5.03
	425	Temperate hardwood	0.02
Eastern Indigo Snake Habitat Subtotal SMF 1B			5.05
SMF 2B	221	Citrus groves	1.35
	641	Freshwater marshes	12.12
Eastern Indigo Snake Habitat Subtotal SMF 2B			13.47
SMF 3B	212	Unimproved pastures	7.36
Eastern Indigo Snake Habitat Subtotal SMF 3B			7.36
Total			337.16

¹FDOT 1999

Blue-tailed Mole Skink (*Plestiodon egregius lividus*) and Sand Skink (*Plestiodon reynoldsi*)

The blue-tailed mole skink and sand skink are small lizards that are listed as *threatened* by the USFWS. The project study area is within the USFWS Consultation Area for the blue-tailed mole skink and the sand skink west of J C Durrance Road (**Appendix F-1**); however, the project study area does not contain suitable skink soils at a suitable elevation. Therefore, species specific surveys were not required for the proposed project. Blue-tailed mole skinks are expected to occur with sand skinks where the two (2) species overlap in distribution. These species are found in central Florida in habitat with loose sandy soils, such as rosemary scrub, sand pine scrub, oak scrub, scrubby flatwoods, and turkey oak barrens. They are also known to utilize disturbed habitats with suitable soils, such as pine plantations, citrus groves, open fields, and pastures.

Skinks were documented during species specific surveys for the adjacent SR 70 from Jefferson to CR 29 PD&E study (FDOT FPID 454506-1-22-01). These observations were within mapped suitable skink soils. While suitable soils are within one (1) mile, they are absent from the project study area and surveys for the proposed project were not needed. Additionally, FNAI data has not documented these species within one (1) mile of the project study area and these species were not observed during field reviews of the project study area. Based on this information, it has been determined that the proposed project will have “**no effect**” on the blue-tailed mole skink and sand skink. As necessary, the FDOT will reinitiate consultation with the USFWS during the project’s design phase to revisit this effect determination relative to updates to project design and the implementation of specific actions and measures.

2.3.1.3 Birds

Florida Grasshopper Sparrow (*Ammodramus savannarum floridanus*)

The Florida grasshopper sparrow is a small, short-tailed, flat-headed sparrow that is listed as *endangered* by the USFWS. This species requires large areas of frequently burned dry prairie habitat with patchy open areas sufficient for foraging. However, it may persist in pasture lands that have not been intensively managed. While the project study area lies within the USFWS Florida Grasshopper Sparrow Consultation Area (**Appendix F-2**), there is minimal habitat for this species within the project study area and it was not observed during field reviews. Additionally, FNAI data has not documented the Florida grasshopper sparrow within one (1) mile of the project study area. Based on the lack of documented occurrences, it has been determined that the project will have “**no effect**” on the Florida grasshopper sparrow. As necessary, the FDOT will reinitiate consultation with the USFWS during the project’s design phase to revisit this effect determination relative to updates to project design and the implementation of specific actions and measures.

Florida Scrub-jay (*Aphelocoma coerulescens*)

The Florida scrub-jay is similar to the common blue jay in size and shape, with a pale blue crestless head, nape, wings and tail. It is listed as *threatened* by the USFWS. Optimal scrub-jay habitat consists of low growing, scattered scrub species with patches of bare sandy soil such as those found in sand pine scrub and scrubby flatwoods habitats that are occasionally burned. In areas where these types of habitats are unavailable, Florida scrub-jays may be found in less optimal habitats such as pine flatwoods with scattered oaks. There is no suitable habitat in the project study

area for this species; however, it is located within the USFWS Florida Scrub-jay Consultation Area (**Appendix F-2**). According to FNAI data, this species has been documented within one (1) mile of the project study area. Additionally, the Florida scrub-jay was observed at the west end of the project study area during species specific surveys by FDOT environmental scientists during the SR 70 from Jefferson to CR 29 PD&E study (FDOT FPID 454506-1-22-01) (**Appendix F-2**). Only one (1) scrub-jay was observed within the project study area during this survey and it is thought that this scrub-jay belongs to an occupied territory to the west of the project study area. Based on this information, it has been determined that the proposed project “**may affect, but is not likely to adversely affect**” the Florida scrub-jay.

Audubon’s Crested Caracara (*Caracara cheriway*)

The Audubon’s crested caracara is a large, boldly patterned raptor with a crest that is listed as *threatened* by the USFWS. This species often inhabits open country, such as dry prairie and pasture lands with scattered cabbage palms and cabbage palm/live oak hammocks. It also requires cabbage palms or live oaks with low-growing surrounding vegetation for nesting. The project is located within the USFWS Audubon’s Crested Caracara Consultation Area (**Appendix F-2**). According to FNAI data, there have been several documented occurrences of this species within one (1) mile of the project study area. As a result, a species specific survey for the Audubon’s crested caracara was conducted of the project study area in 2019. Several Audubon’s crested caracaras were observed and one (1) nest was identified near the project study area during this survey. **Appendix H** provides the methodology and results of the Audubon’s crested caracara survey.

A total of 97.98 acres of occupied Audubon’s crested caracara nesting habitat (secondary zone habitat) will be impacted by the proposed action (**Appendix H**). No impacts to primary zone habitat are proposed. Impacts include the conversion of wetlands and pastures to transportation land use within the secondary zone habitat.

Due to the Audubon’s crested caracara’s ability to reuse previous nest sites or nests in close proximity to a previous nest site and the vast availability of suitable nesting/foraging habitat surrounding the project study area, the FDOT commits to resurvey the project area during the design phase to identify any active nest location(s) to ensure accurate impact estimates. Additionally, FDOT will implement applicable conservation measures to further mitigate for potential impacts. Based on the commitment, it has been determined that the proposed project “**may affect, but is not likely to adversely affect**” the Audubon’s crested caracara.

Wood Stork (*Mycteria americana*)

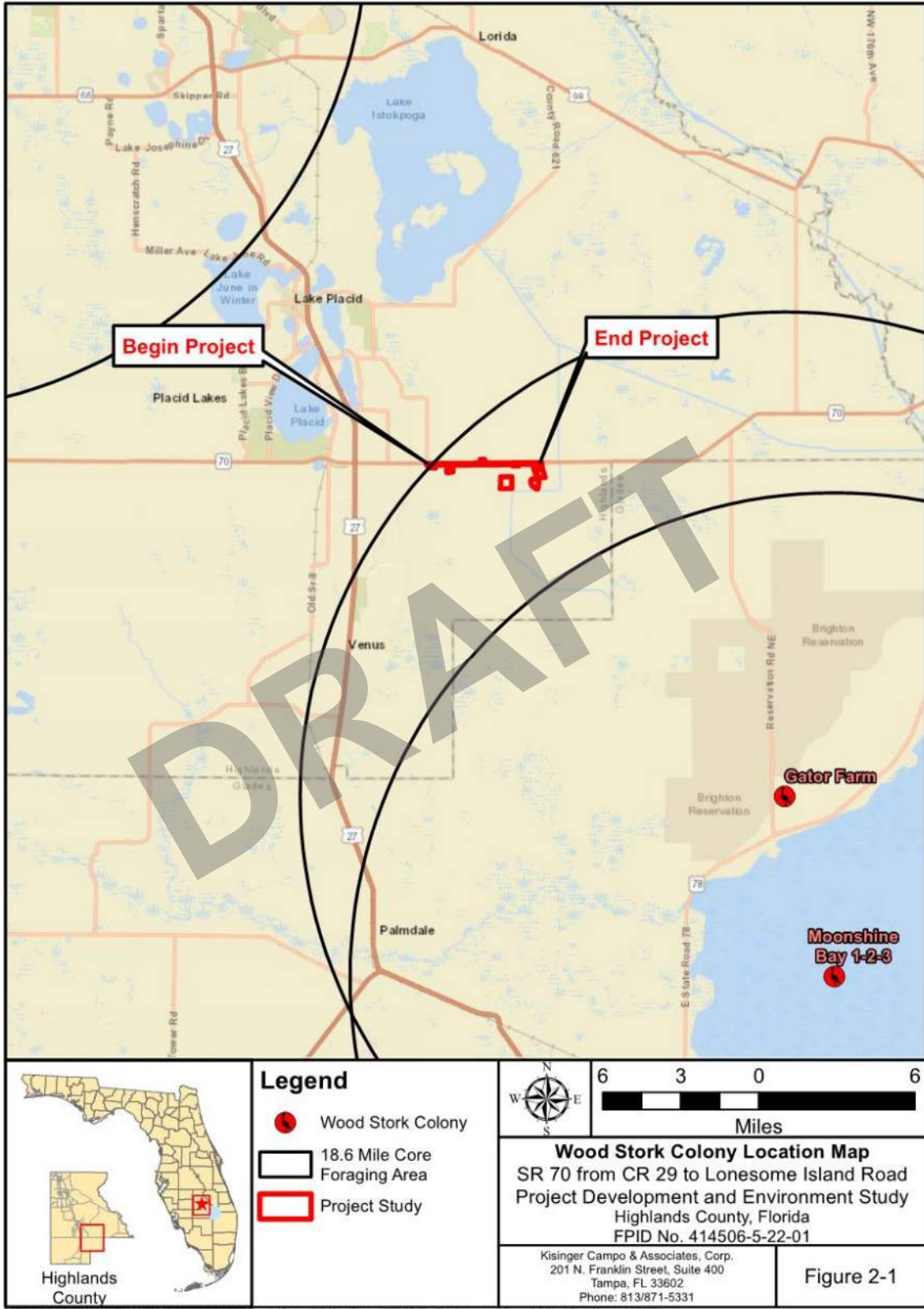
The wood stork is a large, white, wading bird that is listed as *threatened* by the USFWS. The wood stork is opportunistic and utilizes various habitat types including freshwater marshes, swamps, lagoons, ponds, tidal creeks, flooded pastures and ditches. Water that is relatively calm, uncluttered by dense aquatic vegetation and with a permanent or seasonal water depth between two (2) and 15 inches is considered suitable foraging habitat for this species. Suitable foraging habitat for the wood stork is present within the project study area and individuals were observed during species specific surveys (**Appendix F-2**). According to the USFWS wood stork colony website, the project study area is located within the 18.6-mile core foraging area (CFA) of one (1) wood stork nesting colony, Gator Farm (**Figure 2-1**). The primary concern for this species is loss of suitable foraging habitat within the CFA of a wood stork colony.

A wood stork foraging analysis was conducted to determine the amount of biomass lost from wetlands and surface water impacts resulting from the Preferred Build Alternative (**Appendix I**). Based on the results of the wood stork foraging analysis the Preferred Build Alternative will result in the direct loss of 32.95 acres of suitable wood stork foraging areas. A total of 17.61 acres of short hydroperiod wetlands will be impacted and 15.34 acres of long hydroperiod wetlands will be impacted. Analysis results concluded that the Preferred Build Alternative will result in the net loss of 36.66 kg total (fish and crayfish) biomass.

The path followed through the *Effects Determination Key for the Wood Stork* (Revised May 2010, USFWS, South Florida Ecological Service Office), was A>B>C>E>NLAA (USFWS 2010) (**Appendix G**). As part of this project, impacts to wetlands will be mitigated within the CFA of one (1) or more of the affected rookeries or at a regional mitigation bank that has been approved by the USFWS, to satisfy all mitigation requirements of 33 U.S.C. §1344, or pursuant to Section 373.4137, F.S. Therefore, it has been determined that the proposed project “**may affect, but is not likely to adversely affect**” the wood stork.

DRAFT

Figure 2-1 Wood Stork Colony Location Map



Everglade Snail Kite (*Rostrhamus sociabilis*)

The Everglade snail kite is a medium size raptor that is listed as *endangered* by the USFWS. The Everglade snail kite inhabits lowland freshwater marshes, primarily forages on apples snails (*Pomacea paludosa*), and is restricted to the watersheds of the Everglades, lakes Okeechobee and Kissimmee, and the upper St. Johns River. The project is located within the USFWS Everglade Snail Kite Consultation Area (**Appendix F-2**). Suitable habitat is present for this species directly adjacent to the project study area. As a result, a species specific Everglade snail kite survey was conducted. Several Everglade snail kites were documented; however no nests were identified in or adjacent to the project study area. **Appendix J** provides the results of the Everglade snail kite survey. As part of this project, impacts to wetlands considered suitable Everglade snail kite habitat will be mitigated at a regional mitigation bank that has been approved by the USFWS, to satisfy all mitigation requirements of 33 U.S.C. §1344, or pursuant to Section 373.4137, F.S. If regional mitigation banks are not available, FDOT will provide Permittee-responsible mitigation. Therefore, it has been determined that the proposed project “**may affect, but is not likely to adversely affect**” the Everglade snail kite.

2.3.1.4 Mammals

Florida Bonneted Bat (*Eumops floridanus*)

The Florida bonneted bat (FBB) is a large, free-tailed bat with joined ears that varies in color from dark gray to brownish gray or cinnamon brown. It is listed as *endangered* by the USFWS. Precise roosting and foraging habitat requirements are unknown; however, the species forages in open areas and is closely associated with forested communities due to their roosting habits. They are thought to nest in tree cavities or building crevices. The project location is within the USFWS FBB Consultation Area, but outside of designated Focal Areas. The project study area contains small patches of potential roosting habitat and large contiguous areas of suitable foraging habitat. According to FNAI data, the FBB has the potential to occur in Highlands County; however, no occurrences have been documented within one (1) mile of the project study area. In accordance with USFWS protocols, roost and acoustic surveys were conducted for the proposed project. An acoustic survey was conducted in May 2020. The acoustic survey concluded that sufficient evidence does not exist to conclude a high likelihood of a roost based on the overall low number (20) of potential FBB calls (**Appendix K**). Additionally, a roost survey where tree cavities and man-made structures were visually inspected was conducted in August 2020. Several cavities were located and inspected; however, no signs of the Florida bonneted bat were observed in these cavities. The results of Florida bonneted bat surveys conducted in May and August 2020 are provided in **Appendix K**.

To determine the project’s effect on the FBB, the USFWS 2019 *Florida Bonneted Bat Consultation Key* (Key) (USFWS 2019b) was used. Based on the detected presence of the FBB and the large amount of potential suitable foraging habitat, the path followed through the Key was 1a>2a>3b>6a>7b>10b>12a>“*may affect and is likely to adversely affect*” (**Appendix K**). Therefore, through the use of this key, it has been determined that the proposed project “**may affect, and is likely to adversely affect**” the FBB and formal consultation with the USFWS will be initiated.

Florida Panther (*Puma concolor cougar*)

The Florida panther is a large, tan subspecies of the cougar that has black tips on the ears and tail and is listed as *endangered* by the USFWS. This species prefers a variety of habitats, including upland forests, prairies, wetlands, stands of saw palmetto and swamps. The project study area does not fall within Consultation Area or the “Primary”, “Secondary”, or “Dispersal” zones for this species; however, the USFWS Species Profile for the Florida panther shows that the panther is known to occur, or is believed to occur, in Highlands County. Suitable habitat exists within undeveloped communities, and FWC has recorded one (1) panther telemetry point within one (1) mile of the project study area (**Appendix F-1**). However, this species was not observed during field reviews. Because the project is not located in the “Primary,” “Secondary,” or “Dispersal” zones, it has been determined that the proposed project “**may affect, but is not likely to adversely affect**” the Florida panther. As necessary, the FDOT will reinitiate consultation with the USFWS during the project’s design phase to revisit this effect determination relative to updates to project design and the implementation of specific actions and measures.

2.3.1.5 Critical Habitat

The project study area was evaluated for the occurrence of Critical Habitat as defined by the Endangered Species Act of 1973 as amended, 50 CFR Part 424. The USFWS is the authority, as a federal agency, to protect critical habitat from destruction or adverse modification of the biological or physical constituent elements essential to the conservation of listed species. Critical Habitat is defined as the specific areas within the geographical area occupied by a species on which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection. No designated or proposed Critical Habitat for any federal listed species occurs within the project study area. Based on this information, it has been determined that the proposed project will have “**no effect**” on any Critical Habitat.

2.3.2 State Species

2.3.2.1 Flora

Curtiss’ Milkweed (*Asclepias curtissii*)

Curtiss’ milkweed is a slender shrub that has small white flowers that is listed as *endangered* by the FDACS. This species is a member of the dogbane (*Apocynaceae*) family and is found mostly in openings of scrub and sandhill habitat in central peninsular Florida, but can be found in disturbed sandy soils along roadsides. The project study area contains available disturbed habitat for Curtiss’ milkweed along portions of the roadway and within citrus groves. According to FNAI data, Curtiss’ milkweed has the potential to occur within Highlands County. Additionally, this species was identified within one (1) mile of the project study area (**Appendix F-1**) during listed plant surveys for the SR 70 from Jefferson to CR 29 PD&E study (FDOT FPID 454506-1-22-01). However, this species was not observed during field reviews of the project study area. Based on the lack of documented occurrences within the project study area, it has been determined that the proposed project will have “**no adverse effect anticipated**” on Curtiss’ milkweed.

Ashe's Savory (*Calamintha ashei*)

Ashe's savory is a bushy shrub that has small white to lavender flowers that is listed as ***threatened*** by the **FDACS**. This species is a member of the mint (*Lamiaceae*) family and is found mostly in openings of pine scrub habitat in Florida, but can also be found in disturbed areas such as abandoned fields, roadsides and fire lanes. The project study area contains available suitable habitat for Ashe's savory along the roadway. According to FNAI data, Ashe's savory has the potential to occur within Highlands County; however, it has not been documented within one (1) mile of the project study area. Additionally, this species was not observed during field reviews of the project study area. Based on the lack of documented occurrences within the project study area, it has been determined that the proposed project will have “**no adverse effect anticipated**” on Ashe's savory.

Piedmont Jointgrass (*Coelorachis tuberculosa*)

The piedmont joint grass is a short-lived, erect, woody, perennial shrub that is listed as ***threatened*** by the **FDACS**. This species is a member of the grass (*Poaceae*) family and occurs in basin marshes. Suitable habitat for this species is present within the project study area within freshwater marshes. According to FNAI data, Piedmont jointgrass has the potential to occur within the project study area; however, it has not been documented within one (1) mile of the project study area. Additionally, this species was not observed during the field reviews. Based on the lack of documented occurrences within the project study area, it has been determined that the proposed project will have “**no adverse effect anticipated**” on the Piedmont jointgrass.

Hartwrightia (*Hartwrightia floridana*)

Hartwrightia is a perennial herb on a single, erect stem with flat-topped clusters of pink to whitish flowers at the ends of stiff branches that is listed as ***threatened*** by the **FDACS**. This species is a member of the aster (*Asteraceae*) family and occurs on seepage slopes, edges of baygalls and springheads, wet prairies, and flatwoods with wet, peaty soils. Suitable habitat for this species is available within freshwater marshes and mixed hardwood wetlands in the project study area. According to FNAI data, this species has the potential to occur within Highlands County; however, it has not been documented within one (1) mile of the project study area. Additionally, this species was not observed during field reviews of the project study area. Based on the lack of documented occurrences within the project study area, it has been determined that the proposed project will have “**no adverse effect anticipated**” on hartwrightia.

Edison's Ascyrum (*Hypericum edisonianum*)

Edison's ascyrum is a shrub that forms extensive thickets and is listed as ***endangered*** by the **FDACS**. This species is a member of the mangosteen (*Clusiaceae*) family and occurs on depressions in scrub, cutthroat seeps, flatwoods, ponds, lake margins and wet prairies. Suitable habitat for Edison's ascyrum is available within reservoirs in the project study area. According to FNAI data, this species has the potential to occur in Highlands County; however, it has not been documented within one (1) mile of the project study area. Additionally, this species was not observed during field reviews of the project study area. Based on the lack of documented occurrences within the project study area, it has been determined that the proposed project will have “**no adverse effect anticipated**” on Edison's ascyrum.

Narrowleaf Naiad (*Najas filifolia*)

The narrowleaf naiad is a submerged aquatic annual that is listed as ***threatened*** by the FDACS. This species is a member of the naiad (*Hydrocharitaceae*) family and occurs in freshwater lakes, rivers and streams. The project study area contains available suitable habitat for the narrowleaf naiad within streams and waterways and reservoirs. According to FNAI data, this species has the potential to occur within Highlands County; however, this species has not been documented within one (1) mile of the project study area. Additionally, this species was not observed during field reviews of the project study area. Based on the lack of documented occurrences within the project study area, it has been determined that the proposed project will have “**no adverse effect anticipated**” on the narrowleaf naiad.

Cutthroat Grass (*Coleataenia abscissa*)

Cutthroat grass is a rhizomatous perennial that is listed as ***endangered*** by the FDACS. This species is a member of the grass (*Poaceae*) family and occurs in mesic flatwoods, dry prairies and seepage slopes. The project study area contains available suitable habitat for cutthroat grass within wet prairies. According to FNAI data, cutthroat grass has the potential to occur within Highlands County, and this species had not been previously documented within one (1) mile of the project study area. However, this species was observed during field reviews of the project study area, within mixed wetland hardwoods habitat (**Appendix F-1**). Due to the presence of this species within the project study area, coordination with the FDACS will be initiated during the project design and permitting phase. With the implementation of these measures, it has been determined that the proposed project will have “**no adverse effect anticipated**” on cutthroat grass.

Yellow Fringeless Orchid (*Platanthera integra*)

The yellow fringeless orchid is a medium sized terrestrial orchid with orange-yellow flowers that is listed as ***endangered*** by the FDACS. This species is a member of the orchid (*Orchidaceae*) family and occurs in wet pine flatwoods, wet prairies, seepage slopes and depressions within pinelands, marshes and swamps. The project study area contains available suitable habitat for the yellow fringeless orchid in freshwater marshes. According to FNAI data, this species has the potential to occur within Highlands County; however, it has not been documented within one (1) mile of the project study area. Additionally, this species was not observed during field reviews of the project study area. Based on the lack of documented occurrences within the project study area, it has been determined that the proposed project will have “**no adverse effect anticipated**” on the yellow fringeless orchid.

Epiphytes (*Tillandsia* spp.)

Northern Needleleaf (*Tillandsia balbisiana*), Spreading Airplant (*Tillandsia fasciculata*), and Giant Airplant (*Tillandsia utriculata*)

The northern needleleaf is listed as ***threatened*** and the spreading airplant and giant airplant are listed as ***endangered*** by the FDACS. These species are epiphytes and can grow singly or in clusters, have a leathery appearance and red to green floral bracts. These species are members of the bromeliad (*Bromeliaceae*) family and occur on scrub, dry and mesic hammocks, pinelands, and along roadsides. The project study area contains available suitable habitat for these species along the roadside. According to FNAI, these species have the potential to occur within Highlands

County, and they had not been previously documented within one (1) mile of the project study area. However, the northern needleleaf, spreading airplant and giant airplant were documented within one (1) mile of the project study area (**Appendix F-1**) during 2018 listed plant surveys for the SR 70 from Jefferson to CR 29 PD&E Study (FDOT FPID 414506-1-22-01). These species were not observed during 2019 field reviews of the project study area. Based on the lack of documented occurrences within the project study area, it has been determined that the proposed project will have “**no adverse effect anticipated**” on the northern needleleaf, giant airplant and spreading airplant.

Redmargin Zephyrlily (*Zephyranthes simpsonii*)

The redmargin zephyrlily is a perennial herb with white or pink flowers having purple stripes that is listed as *threatened* by the FDACS. This species is a member of the amaryllis (*Amaryllidaceae*) family and occurs in wet pine flatwoods, meadows, pastures and roadsides. Suitable habitat for the redmargin zephyrlily is available in pastures and along roadsides throughout the project study area. According to FNAI data, this species has the potential to occur within Highlands County; however, it has not been documented within one (1) mile of the project study area. Additionally, this species was not observed during field reviews of the project study area. Based on the lack of documented occurrences within the project study area, it has been determined that the proposed project will have “**no adverse effect anticipated**” on the redmargin zephyrlily.

2.3.2.2 Reptiles

Gopher Tortoise (*Gopherus polyphemus*)

The gopher tortoise is a large, terrestrial tortoise that is listed as *threatened* by the FWC and as a *candidate* for listing by the USFWS. This species requires well drained and loose sandy soils for burrowing and low-growing herbs and grasses for food. These conditions are best found in the sandhill (longleaf pine-xeric oak) community, although tortoises are known to use many other habitats including sand pine scrub, xeric oak hammocks, dry prairies, pine flatwoods and ruderal sites such as roadsides. The project study area contains available suitable habitat for the gopher tortoise in undeveloped areas. According to FNAI data, this species has the potential to occur within Highlands County, and it had not been previously documented within one (1) mile of the project study area. However, this species was documented within the project study area during field reviews (**Appendix F-1**).

Based on current FWC regulations, any gopher tortoise located within 25 feet of the project construction area must be relocated to an FWC-approved recipient site or temporarily relocated onsite. The FDOT will survey the project study area prior to construction to determine the presence of this species within the project study area. If gopher tortoises or burrows are found within 25 feet of the limits of construction, the FDOT will coordinate with the FWC to secure all permits needed to relocate the tortoises and associated commensal species. With the implementation of these measures, it has been determined that the proposed project will have “**no adverse effect anticipated**” on the gopher tortoise.

Short-tailed Snake (*Lampropeltis extenuata*)

The short-tailed snake is a small, fossorial snake listed as ***threatened*** by FWC. This species requires sandy soils, particularly in longleaf pine, oak sandhills and scrub habitats. The project study area may contain suboptimal habitat for the short-tailed snake within sandy soils in citrus groves or pastures. According to FNAI data, this species has the potential to occur within Highlands County; however, it has not been documented within one (1) mile of the project study area. Additionally, this species was not observed during field reviews of the project study area. Based on the lack of documented occurrences within the project study area, it has been determined that the proposed project will have “**no adverse effect anticipated**” on the short-tailed snake.

Florida Pine Snake (*Pituophis melanoleucus mugitus*)

The pine snake is a large, stocky, tan or rusty colored snake with an indistinct pattern of blotches. This snake is listed as ***threatened*** by the FWC. This species requires habitats with open canopies and dry sandy soils such as sandhills, sand pine scrub and scrubby flatwoods, in which it burrows and often coexists with pocket gophers and gopher tortoises. Suboptimal habitat for the pine snake may be available in live oaks or along roadsides within the project study area. According to FNAI, this species has the potential to occur in Highlands County; however, it has not been documented within one (1) mile of the project study area. Additionally, this species was not observed during field reviews. The FDOT will survey the Preferred Build Alternative for gopher tortoise burrows prior to construction and will coordinate with the FWC to secure the necessary permits to relocate gopher tortoises and associated commensal species, including the Florida pine snake, prior to construction. With the implementation of these measures, it has been determined that the proposed project will have “**no adverse effect anticipated**” on the pine snake.

2.3.2.3 Birds

Florida Sandhill Crane (*Antigone canadensis pratensis*)

The Florida sandhill crane is a tall, long-necked, long-legged crane that is listed as ***threatened*** by the FWC. This species requires wet and dry prairies, marshes and marshy lake edges. Nests are generally a mound of herbaceous plant material in shallow water or on the ground in marshy areas. The project study area contains available suitable foraging and nesting habitat within freshwater marshes. According to FNAI, this species has the potential to occur in Highlands County, and there had been no previously documented occurrences within one (1) mile of the project study area. However, this species was observed in May and August 2020, outside of the migratory season, during field reviews of the project study area (**Appendix F-2**). No nests were observed during field reviews. The FDOT will survey areas of suitable nesting habitat prior to construction if construction activities take place during the nesting season (January through July), and will coordinate with the FWC if nesting pairs are identified within 400 feet of the project’s construction limits. With the implementation of these measures, it has been determined that the proposed project will have “**no adverse effect anticipated**” on the Florida sandhill crane.

Florida Burrowing Owl (*Athene cunicularia floridana*)

The Florida burrowing owl is a small, ground-dwelling owl that is listed as ***threatened*** by the FWC. This species requires areas of short, herbaceous groundcover such as prairies, sandhills and farmland. Suitable habitat is available for the Florida burrowing owl in prairie and farmland habitats throughout the project study area. According to FNAI data, this species has the potential to occur within Highlands County; however, it has not been documented within one (1) mile of the project study area. Additionally, this species was not observed during field reviews of the project study area. Based on the lack of documented occurrences within the project study area, it has been determined that the project will have “**no adverse effect anticipated**” on the Florida burrowing owl.

Wading Birds

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

The little blue heron, tricolored heron and roseate spoonbill are listed as ***threatened*** by the FWC. While each species is distinct, wading birds are discussed collectively since they occupy similar habitats and have similar feeding patterns. These wading birds nest and forage among both fresh and saltwater habitats such as freshwater marshes, coastal beaches, mangrove swamps, cypress swamps, hardwood swamps, wet prairies and bay swamps. The populations of these species have been primarily impacted by the destruction of wetlands for development and by the drainage of wetlands for flood control and agriculture. Suitable habitat for these wading birds is available throughout the project study area in much of the wetlands and surface waters. According to FNAI data and the FWC Wading Bird Rookery Database, there are no active wading bird rookeries documented within one (1) mile of the project study area. However, all three (3) species were observed during field reviews of the project study area (**Appendix F-2**).

The primary concern for impacts to these species is the loss of foraging habitat (wetlands). As part of implementing the proposed project, all wetland impacts will be mitigated to prevent a net loss of wetland functions and values. Since the mitigation of impacts will be undertaken by the FDOT, it has been determined that the proposed project will have “**no adverse effect anticipated**” on the little blue heron, tricolored heron and roseate spoonbill.

Southeastern American Kestrel (*Falco sparverius paulus*)

The southeastern American kestrel is the smallest falcon species found in the southeastern United States and is listed as ***threatened*** by the FWC. This species utilizes pine scrub habitat, dry prairies, mixed pine hardwood forests and pine flatwoods. Nests are typically built in tall dead trees or utility poles with an unobstructed view of surroundings. The project study area contains available suitable nesting habitat within undeveloped communities. According to FNAI data, there have been no documented occurrences within one (1) mile of the project study area. Additionally, this species was not observed during field reviews. Due to the southeastern American kestrel’s ability to reuse previous nest sites or nests in close proximity to a previous nest site and vast availability of suitable nesting/foraging habitat surrounding the project study area, incidental take is not anticipated. Based on the large amount of suitable habitat outside of the project study area, it has

been determined that the proposed project will have “no adverse effect anticipated” on the southeastern American kestrel.

2.3.3 Other Species of Concern

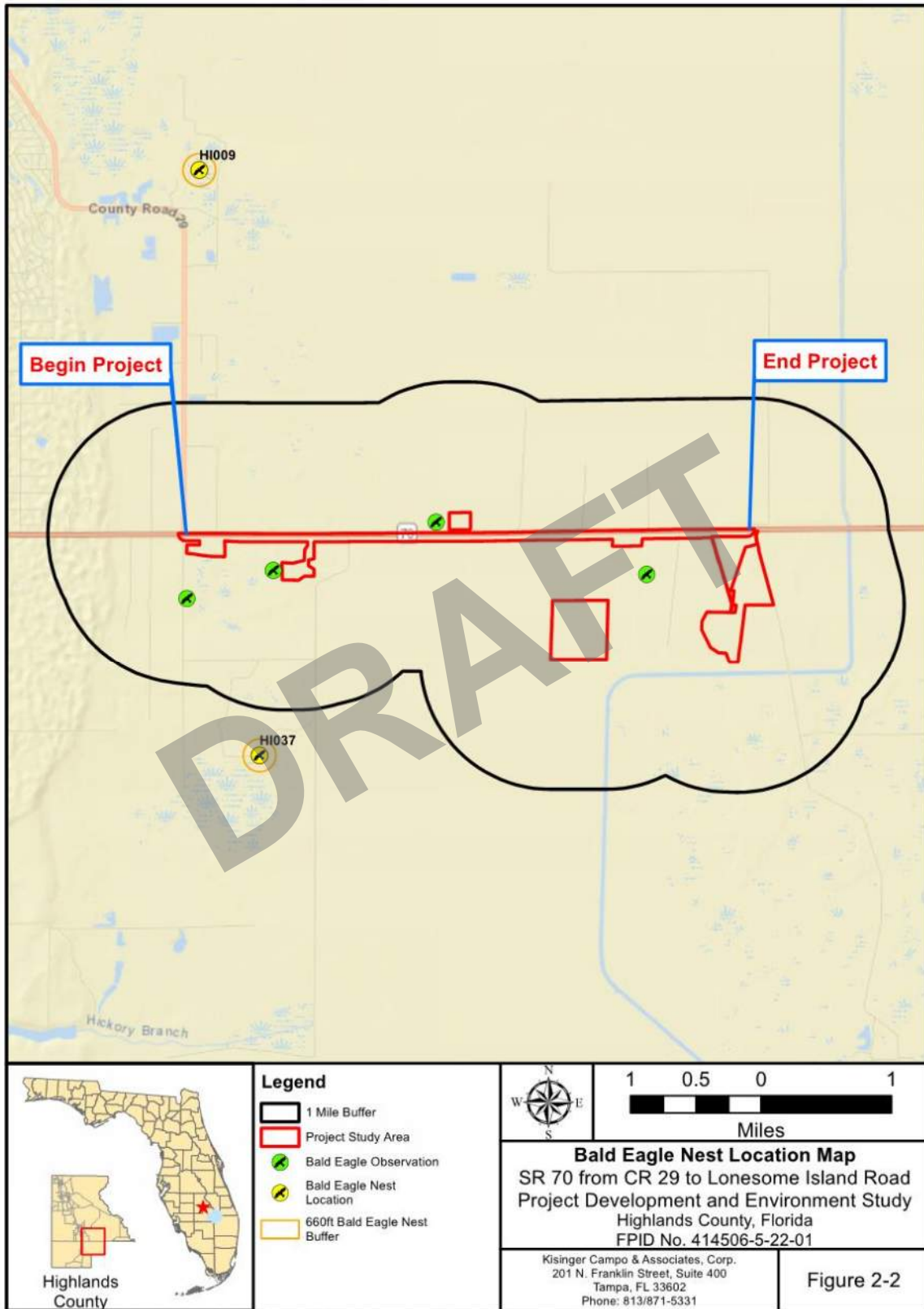
2.3.3.1 Birds

Bald Eagle (*Haliaeetus leucocephalus*)

The bald eagle is a large raptor with a distinctive white head and yellow bill. This species has been de-listed by the USFWS. However, it remains federally protected under the Bald and Golden Eagle Protection Act (BGEPA) in accordance with the 16 U.S.C. 668 and the Migratory Bird Treaty Act of 1918. In addition, the bald eagle is protected by the State of Florida under the Bald Eagle Management Plan and the FWC has implemented a Bald Eagle Species Action Plan (FWC 2017). The bald eagle tends to utilize riparian habitats associated with coastal areas, lake shorelines and riverbanks. Bald eagles were observed during field reviews of the project study area (**Figure 2-2**). Nests are generally located near water bodies that provide a dependable food source. Nests within Florida are closely monitored by the Audubon Center for Birds of Prey. According to their database, the closest bald eagle nest to the project is HI037 located approximately 1.1 miles south of SR 70 near the western terminus of the project (**Figure 2-2**). This nest was last surveyed and determined to be active in 2013 by FWC. Additionally, nest HI009 is located approximately 2.7 miles north of SR 70 near the western terminus of the project (**Figure 2-2**). This nest was last surveyed and determined to be active in 2013 by FWC.

The project is located outside the primary (330 feet) and secondary (660 feet) buffer zones of these bald eagle nests. During project design and permitting, the FDOT will review the project study area for active bald eagle nests. If an active nest is identified within 660 feet of the proposed project, the FDOT will coordinate with the USFWS to secure all necessary approvals prior to start of construction.

Figure 2-2 Bald Eagle Nest Location Map



2.3.3.2 Mammals

Southern Fox Squirrel (*Sciurus niger niger*)

The southern fox squirrel, their nests, and young are afforded protection under 68A-29.002(1)(c) F.A.C. This species inhabits pine forests dominated by longleaf or slash pine and oak hammocks with open space for foraging. There is available suitable habitat for the southern fox squirrel present within the forested areas of the project study area. According to FNAI data, the southern fox squirrel has the potential to occur within Highlands County; however, there have been no documented occurrences within one (1) mile of the project study area. Additionally, this species was not observed during field reviews. The FDOT will conduct preconstruction surveys of appropriate southern fox squirrel habitat and construction activities will not occur within a 125-foot buffer zone of any identified active nest(s). A Listed Species Incidental Take Permit will be obtained from the FWC to remove any nest trees upon verifying that no young occupy the nests.

Florida Black Bear (*Ursus americanus floridanus*)

The Florida black bear is a large mammal with glossy black hair and a brown muzzle. This species has been de-listed by the FWC; however, it is managed under the FWC's Florida Black Bear Management Plan (FWC 2012). The Florida black bear can be found statewide in a number of habitats including mixed hardwood pine communities, cabbage palm hammocks and forested wetland systems. This species tends to den alone in tree cavities, riverbanks, logs or caves. They will also den on the ground in palmetto thickets, gallberry, fetterbush and sweet pepperbush. The project study area is located within the FWC-designated Frequent Range of the South Central Bear Management Unit. The project study area contains available suitable habitat for the Florida black bear within the forested wetland systems. According to FWC nuisance reports, Florida black bears have been documented within one (1) mile of the project study area (**Appendix F-1**), however no black bears or signs of black bears were observed during field reviews.

3.0 *Wetland Evaluation*

3.1 *Introduction*

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

During the ETDM (#14364) screening, significant wetland resources were identified within the preliminary project study area. Several private lands adjacent to SR 70 are protected by conservation easements through the Wetlands Reserve Program (now known as the Agricultural Conservation Easement Program). Additionally, resource and regulatory agencies noted that the increase in impervious or semi-impervious surfaces will contribute to surface drainage and non-point sources that will impact surface and groundwater quality, and that all impacts will require compensatory mitigation.

3.2 *Methodology*

For the purposes of this document, wetlands were defined and delineated in accordance the State of Florida Wetlands Delineation Manual, Chapter 62-340, F.A.C., *Corp of Engineers Wetland Delineation Manual* (Technical Report Y-87-1) (USACE 1987) , and the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region* (ERDC/EL TR-10-20) (USACE 2010). Surface waters are defined as open water bodies or man-made, upland-cut water courses with a defined channel and bank structure.

Environmental scientists familiar with Florida natural communities conducted on-site field reviews of the project study area and adjacent habitats in October and December 2018, January through May 2019, and May and August 2020. Wetland and surface water boundaries were delineated, vegetation composition and structure were documented, and overall quality of the habitat assessed to determine the Preferred Build Alternative's impact on each system. On-site field reviews and an informal wetland determination, No. 28-100736-P, was completed with the South Florida Water Management District (SFWMD) for wetlands and surface waters delineated within the mainline corridor (**Appendix E**).

3.3 *Wetland and Surface Water Locations*

Based on collected field data and in-house reviews, a total of seven (7) wetlands and 22 surface waters were identified within the project study area. Wetlands and surface waters were classified using the FLUCFCS (FDOT 1999) and consist of reservoirs, streams and waterways, freshwater marshes, wetland scrub, and mixed wetland hardwoods. Surface waters consisted entirely of man-made excavated systems.

Wetlands and surface waters were further classified in accordance with the USFWS Wetlands and Deepwater Habitats Classification System (Cowardin et al. 1979). The majority of wetlands and surface waters exhibited homogeneity by habitat type, and continue outside of the project study area. As a result, representative classifications for areas within the project study area were used.

Detailed descriptions of wetland and surface water habitat types identified, and aerial maps of their locations, are provided in **Appendix L**. Representative photographs of each habitat type are provided in **Appendix M**.

3.4 Wetland and Surface Water Impacts

The No-Build Alternative would result in no impacts to wetlands and surface waters.

Due to the inclusion of all proposed pond site alternatives, the impact acreages presented below are an overestimation. Additionally, the impact acreages presented below are preliminary, high-level estimates, and are subject to change during the design phase of the proposed project.

The proposed project was designed to avoid and minimize construction in wetlands and surface waters to the greatest extent possible. Prior to finalizing the roadway design, environmental scientists familiar with natural communities of Florida conducted a desktop analysis and on-site field reviews to determine the extent of wetland resources within and adjacent to the proposed project. Several conservation easements within the Wetlands Reserve Program (currently the Agricultural Conservation Easement Program) are located adjacent, to the north, of the existing SR 70 facility. These easements were avoided by utilizing a southern alignment, due to the difficulty of getting this land released. Additionally, wetland and surface water impacts will be minimized by designing stormwater runoff treatment facilities, which consists of either on-site linear treatment or off-site stormwater management ponds, and floodplain compensation sites, located principally in uplands.

Based on the type and location of project impacts the FDOT has determined that there is no practicable alternative to the proposed construction in wetlands. In accordance with EO 11990, the FDOT has undertaken all actions to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities. Nonetheless, the FDOT has determined that there is no practicable alternative to construction impacts occurring in wetlands. The proposed project will have no significant short-term or long-term adverse impacts to wetlands because any unavoidable impacts to wetlands will be mitigated to achieve no net loss of wetland function. The locations of the wetland and surface water impacts associated with the Preferred Build Alternative are shown in **Appendix N**.

3.4.1 Permanent Impacts

Potential permanent (direct) impacts to wetlands and surface waters were assessed for the Preferred Build Alternative, including all proposed pond sites. **Table 3-1** provides a summary of the proposed wetland and surface water impacts (including proposed pond sites) resulting from the construction of the Preferred Build Alternative. Permanent wetland and surface water impacts resulting from the Preferred Build Alternative total 69.35 acres and include 21.42 acres of wetlands and 47.93 acres of surface waters. Of the 69.35 acres of impacts, approximately 30.86 acres (17.71 acres of wetlands and 13.15 acres of surface waters) are associated with the proposed pond sites. **Appendix N** provides a map of the proposed wetland and surface water impacts. Impacts from proposed ponds are presented separately in **Table 3-2**. Impacts associated with FPC 1B, FPC 2A, FPC 2B, and SMF 3B are limited to man-made canals and ditches. SMF 1B does not impact wetlands or man-made surface waters. Total impacts by habitat type are also presented in **Table 3-3**.

3.4.2 Secondary Impacts

When a portion of a wetland is directly impacted by new construction, the SFWMD requires an analysis of secondary (indirect) impacts to the remaining portion of the wetland to assess reduced functions. Specifically, if a 25-foot upland buffer between wetland impacts and additional wetland areas is not feasible, SFWMD guidance requires a secondary impact assessment of remaining wetland areas beyond the permanent impact. Secondary impacts were assessed for each wetland habitat type with remaining wetland areas beyond the permanent impacts. The Preferred Build Alternative will result in approximately 1.02 acres of secondary wetland impacts (**Table 3-1**). Of the 1.02 acres of proposed secondary impacts, 0.54 acres are associated with proposed ponds (**Table 3-2**). **Appendix N** provides a map of the proposed wetland and surface water impacts. Impacts by habitat type are also presented in **Table 3-3**.

Table 3-1 Proposed Wetland and Surface Water Impacts within the Project Study Area

ID	FLUCFCS Code ¹	Description	USFWS Classification ²	Size ³ (acres)	Permanent Impacts (acres)	Secondary Impacts (acres)
WL 1	617	Mixed wetland hardwoods	PFO1Cd	0.90	0.90	--
WL 2	617	Mixed wetland hardwoods	PFO1Cd	1.49	1.49	0.18
WL 3	617	Mixed wetland hardwoods	PFO1Cd	1.23	1.23	0.30
Subtotal FLUCFCS 617				3.62	3.62	0.48
WL 4	641	Freshwater marshes	PEM1Ad	0.25	0.25	--
WL 5	641	Freshwater marshes	PEM1Ad	0.59	0.59	0.39
WL 7	641	Freshwater marshes	PEM1Ad	12.12	12.12	0.15
Subtotal FLUCFCS 641				12.96	12.96	0.54
WL 8	631	Wetland scrub	PSS1Cd	4.84	4.84	--
Subtotal FLUCFCS 631				4.84	4.84	0.00
Total Wetlands				21.42	21.42	1.02
SW 1	510	Streams and waterways	R2UBHx / R2AB4Hx	21.81	21.81	--
SW 1A	510	Streams and waterways	R2UBHx / R2AB4Hx	6.97	6.97	--
SW 1B	510	Streams and waterways	PEM1Cx	0.77	0.77	--
SW 1C	510	Streams and waterways	R2AB4Hx	1.37	1.37	--
SW 1D	510	Streams and waterways	PEM1Cx	0.19	0.19	--
SW 1F	510	Streams and waterways	PEM1Cx	0.60	0.60	--
SW 1G	510	Streams and waterways	PEM1Cx	<0.01	<0.01	--
SW 1H	510	Streams and waterways	PEM1Cx	0.13	0.13	--
SW 1Ha	510	Streams and waterways	PEM1Cx	0.08	0.08	--
SW 1Hb	510	Streams and waterways	PEM1Cx	0.22	0.22	--
SW 2	510	Streams and waterways	R2AB3Fx	1.47	1.47	--
SW 3	510	Streams and waterways	R2AB3Fx	1.04	1.04	--
SW 3A	510	Streams and waterways	R2AB4Hx	0.56	0.56	--
SW 3B	510	Streams and waterways	R2UBHx	3.40	3.40	--
SW 3C	510	Streams and waterways	PEM1Cx	0.68	0.68	--

ID	FLUCFCS Code ¹	Description	USFWS Classification ²	Size ³ (acres)	Permanent Impacts (acres)	Secondary Impacts (acres)
SW 3D	510	Streams and waterways	PEM1Cx	0.79	0.79	--
SW 3E	510	Streams and waterways	PEM1Cx	0.46	0.46	--
SW 3F	510	Streams and waterways	PEM1Cx	0.51	0.51	--
SW 4	510	Streams and waterways	R2AB4Hx	1.15	1.15	--
SW 5	510	Streams and waterways	R2UBHx	2.97	2.97	--
SW 5A	510	Streams and waterways	R2UBHx	2.37	2.37	--
Subtotal FLUCFCS 510				47.54	47.54	--
SW 1E	530	Reservoirs	PUBHx	0.39	0.39	--
Subtotal FLUCFCS 530				0.39	0.39	--
Total Surface Waters				47.93	47.93	--
Total				69.35	69.35	1.02
Total Impacts (Permanent and Secondary)					70.37	

¹FDOT 1999

²Cowardin et al. 1979

³Size within the project study area, including proposed pond sites

PEM1Ad: Palustrine, Emergent, Persistent, Temporarily Flooded, Partially Drained/Ditched

PEM1Cx: Palustrine, Emergent, Persistent, Seasonally Flooded, Excavated

PFO1Cd: Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded, Partially Drained/Ditched

PSS1Cd: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded, Partially Drained/Ditched

PUBHx: Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated

R2AB3Fx: Riverine, Lower Perennial, Aquatic Bed, Rooted Vascular, Semipermanently Flooded, Excavated

R2AB4Hx: Riverine, Lower Perennial, Aquatic Bed, Floating Vascular, Permanently Flooded, Excavated

R2UBHx: Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded, Excavated

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Table 3-2 Wetland and Surface Water Impacts within Proposed Ponds

Pond ID	Wetland ID	FLUCFCS ¹ within Pond Site	FLUCFCS Description	USFWS Classification ²	Permanent Impacts (acres)	Secondary Impacts (acres)
FPC 1A	SW 1F	510	Streams and waterways	PEM1Cx	0.39	--
	WL 1	617	Mixed wetland hardwoods	PFO1Cd	0.16	0.00
	WL 5	641	Freshwater marshes	PEM1Ad	0.59	0.39
Subtotal FPC 1A					1.14	0.39
FPC 1B	SW 1H, SW 1Ha, SW 1Hb	510	Streams and waterways	PEM1Cx	0.43	--
Subtotal FPC 1B					0.43	--
FPC 2A	SW 3A, SW 3B	510	Streams and waterways	R2UBHx	3.53	--
Subtotal FPC 2A					3.53	--
FPC 2B	SW 3A, SW 3C, SW 3D, SW 3E, SW 3F	510	Streams and waterways	PEM1Cx	2.74	--
Subtotal FPC 2B					2.74	--
Regional Pond	SW 5, SW 5A	510	Streams and waterways	R2UBHx	5.34	--
	WL 8	631	Wetland scrub	PSS1Cd	4.84	0.00
Subtotal Regional Pond					10.18	0.00
SMF 2B	SW 4	510	Streams and waterways	R2AB4Hx	0.37	--
	WL 7	641	Freshwater marshes	PEM1Ad	12.12	0.15
Subtotal SMF 2B					12.49	0.15
SMF 3B	SW 1C, SW 1D	510	Streams and waterways	R2AB4Hx, PEM1Cx	0.35	--
Subtotal SMF 3B					0.35	--
Total Wetland					17.71	0.54
Total Surface Water					13.15	--
Total					30.86	0.54

¹FDOT 1999

²Cowardin et al. 1979

PEM1Ad: Palustrine, Emergent, Persistent, Temporarily Flooded, Partially Drained/Ditched

PEM1Cx: Palustrine, Emergent, Persistent, Seasonally Flooded, Excavated

PFO1Cd: Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded, Partially Drained/Ditched

PSS1Cd: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded, Partially Drained/Ditched

R2AB4Hx: Riverine, Lower Perennial, Aquatic Bed, Floating Vascular, Permanently Flooded, Excavated

R2UBHx: Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded, Excavated

3.5 Uniform Mitigation Assessment Method

To determine the Preferred Build Alternative’s impact on wetland functions, wetland impacts were assessed using the Uniform Mitigation Assessment Method (UMAM). UMAM scores were developed and functional loss was calculated for wetland and surface water habitat types (by FLUCFCS category) affected by the proposed project. The completed UMAM data sheets for each habitat type are provided in **Appendix O**. Functional loss was calculated by habitat type for the Preferred Build Alternative (**Table 3-3**). Construction of the Preferred Build Alternative results in a loss of 35.59 functional units. The UMAM scores and functional loss presented in **Table 3-4** are subject to agency review and may change during the state and federal permitting process.

Table 3-3 Estimated UMAM Functional Loss for Wetland and Surface Water Impacts

FLUCFCS Code ¹	Description	USFWS Classification ²	Impact Type	UMAM Delta	Acres of Impact	Functional Loss
Wetlands						
617	Mixed wetland hardwoods	PFO1Cd	Permanent	-0.63	3.62	2.28
617	Mixed wetland hardwoods	PFO1Cd	Secondary	-0.06	0.48	0.03
631	Wetland scrub	PSS1Cd	Permanent	-0.53	4.84	2.57
641	Freshwater marshes	PEM1Ad	Permanent	-0.63	12.96	8.17
641	Freshwater marshes	PEM1Ad	Secondary	-0.06	0.54	0.04
Total Wetland					22.44	13.09
Surface Waters						
510	Streams and waterways	R2UBHx, R2AB4Hx, R2AB3Fx, PEM1Cx	Permanent	-0.47	47.54	22.35
530	Reservoirs	PUBHx	Permanent	-0.37	0.39	0.15
Total Surface Water					47.93	22.50
Total					70.37	35.59

¹ FDOT 1999

² Cowardin et al 1979

PEM1Ad: Palustrine, Emergent, Persistent, Temporarily Flooded, Partially Drained/Ditched

PEM1Cx: Palustrine, Emergent, Persistent, Seasonally Flooded, Excavated

PFO1Cd: Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded, Partially Drained/Ditched

PSS1Cd: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded, Partially Drained/Ditched

PUBHx: Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated

R2AB3Fx: Riverine, Lower Perennial, Aquatic Bed, Rooted Vascular, Semipermanently Flooded, Excavated

R2AB4Hx: Riverine, Lower Perennial, Aquatic Bed, Floating Vascular, Permanently Flooded, Excavated

R2UBHx: Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded, Excavated

Table 3-4 Representative UMAM¹ Scores for Direct Wetland and Surface Water Impacts

FLUCFCS Code ²	FLUCFCS Description	USFWS Classification ³	Representative Wetlands and Surface Waters	Location and Landscape		Water Environment		Community Structure		Score (Sum/30)		Delta
				Current	With	Current	With	Current	With	Current	With	
510	Streams and waterways	R2UBHx, R2AB4Hx, R2AB3Fx, PEM1Cx	SW 1, SW 1A, SW 1B, SW 1C, SW 1D, SW 1F, SW 1G, SW 1H, SW 1Ha, SW 1Hb, SW 2, SW 3, SW 3A, SW 3B, SW 3C, SW 3D, SW 3E, SW 3F, SW 4, SW 5, SW 5A	5	0	5	0	4	0	0.47	0	-0.47
530	Reservoirs	PUBHx	SW 1E	5	0	3	0	3	0	0.37	0	-0.37
617	Mixed wetland hardwoods	PFO1Cd	WL 1, WL 2, WL 3	6	0	6	0	7	0	0.63	0	-0.63
631	Wetland scrub	PSS1Cd	WL 8	6	0	5	0	5	0	0.53	0	-0.53
641	Freshwater marshes	PEM1Ad	WL 4, WL 5, WL 7	6	0	6	0	7	0	0.63	0	-0.63

¹UMAM scores have not been approved by permitting agencies and are subject to change during the permitting process

²FDOT 1999

³Cowardin, et al. 1979

PEM1Ad: Palustrine, Emergent, Persistent, Temporarily Flooded, Partially Drained/Ditched

PEM1Cx: Palustrine, Emergent, Persistent, Seasonally Flooded, Excavated

PFO1Cd: Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded, Partially Drained/Ditched

PSS1Cd: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded, Partially Drained/Ditched

PUBHx: Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated

R2AB3Fx: Riverine, Lower Perennial, Aquatic Bed, Rooted Vascular, Semipermanently Flooded, Excavated

R2AB4Hx: Riverine, Lower Perennial, Aquatic Bed, Floating Vascular, Permanently Flooded, Excavated

R2UBHx: Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded, Excavated

3.6 Mitigation

Wetland impacts, which will result from the construction of this project, will be mitigated pursuant to Section 373.4137, F.S., to satisfy all mitigation requirements of Part IV of Chapter 373, F.S., and 33 U.S.C. §1344. In accordance with EO 11990 and Part 2, Chapter 9 - Wetlands and Other Surface Waters of the FDOT PD&E Manual (FDOT 2020), the Florida Department of Transportation (FDOT) has undertaken all actions to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities. Nonetheless, the FDOT has determined that there is no practicable alternative to construction occurring in wetlands. Unavoidable wetland impacts are necessary to meet transportation safety standards for side slopes and additional lanes. However, wetland impacts have been minimized by incorporating a stormwater management system, which will be constructed to meet state water quality criteria, thereby minimizing water quality impacts from stormwater discharges from roadway and bridge surfaces.

Any unavoidable impacts to wetlands will be mitigated to achieve no net loss of wetland function. The proposed project is not located within a mitigation service area for an approved mitigation bank. If at the time of permitting, the use of an in-lieu fee program is not available, a conceptual mitigation plan will be created to offset the unavoidable impacts to wetlands that would result from construction of the proposed project. The proposed project is within the SFWMD's South Kissimmee drainage basin. The conceptual mitigation plan may include restoring, enhancing, or creating wetland/surface water habitats of similar type and quality (on-site or off-site) within the same drainage basin as the proposed project. Compensatory mitigation will be completed within the same drainage basin as proposed impacts. As such, cumulative impacts are not anticipated.

Unavoidable surface water impacts will be offset through the construction of stormwater management ponds, floodplain compensation ponds and roadside swales and ditches. Surface water impacts and functional loss will be offset on-site through the construction of a stormwater management system and in-situ canal replacement. There will be no net loss in surface water functions within the project study area. Although functional losses have been calculated for surface waters, impacts to surface waters do not require mitigation.

All preliminary UMAM scores, UMAM calculations, wetland lines and determinations discussed are subject to review, revision and approval by regulatory agencies during the permitting process. The exact amount and type of mitigation used to offset wetland impacts from the proposed SR 70 roadway improvements will be coordinated with the USACE and SFWMD during the permitting phase(s) of this project.

4.0 *Permitting and Review Agencies*

Both the USACE and SFWMD regulate impacts to wetlands within the project study area. Other agencies, including the USFWS, National Marine Fisheries Service (NMFS), USEPA, and the FWC, review and comment on wetland permit applications. The FWC also issues permits for gopher tortoise relocation activities. In addition, the FDEP regulates stormwater discharges from construction sites and issues proprietary authorization for work on Sovereign Submerged Lands. The complexity of the permitting process will depend greatly on the degree of the impact to jurisdictional areas. It is anticipated that the following permits will be required for this project:

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

Federal Permits

Section 404 Dredge and Fill Permit

It is anticipated that a standard permit will be required from the USACE. A standard permit will require compliance with the 404(b)(1) guidelines, including verification that all impacts have first been avoided to the greatest extent possible, that unavoidable impacts have been minimized to the greatest extent possible, and lastly that unavoidable impacts have been mitigated in the form of wetlands creation, restoration, and/or enhancement. The 404(b)(1) guidelines state that only the least environmentally damaging practicable alternative can be authorized for construction. In addition, coordination with the USFWS will be necessary for potential effects to federal listed protected species.

State Permits

Environmental Resource Permit

The SFWMD requires an ERP when construction of any project results in the creation of a new or modification of an existing surface water management system or results in impacts to wetlands or waters of the state. As with the USACE permits, the complexity associated with the ERP permitting process will depend on the size of the project and/or the extent of wetland impacts. The SFWMD will require an individual ERP for this project.

National Pollutant Discharge Elimination System

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

NPDES permit is the development of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP identifies potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges from the site and discusses good engineering practices (i.e., best management practices) that will be used to reduce the pollutants. The FDEP will issue a NPDES permit to the contractor prior to construction commencement.

Gopher Tortoise Relocation Permit (as necessary)

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

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

In accordance with the requirements of Rules 68A-25.002 and 68A-27.004 (F.A.C.), a permit for gopher tortoise capture/release activities must be secured from FWC before initiating any relocation work. A Conservation Permit is available for development projects that require the relocation of gopher tortoises when more than 10 burrows occur in the development site. The 10 or Fewer Burrows Permit is available for projects that contain 10 or fewer gopher tortoise burrows on the development site. Both of these permits allow for relocation either to an on-site preserve or off-site to a FWC-certified Recipient Site. The FWC will require a 100 percent gopher tortoise survey to be conducted within 90 days of construction commencement.

Listed Species Incidental Take Permit (as necessary)

Based on field reviews, suitable foraging and nesting habitat exists within the project study area for the Florida burrowing owl, Florida sandhill crane, little blue heron, tricolored heron, southeastern American kestrel, roseate spoonbill and southern fox squirrel. The project study area also contains available suitable habitat for the short-tailed snake and Florida pine snake. In accordance with 68A-27.001(4), 68A-27.003(a), 68A-25.002(10), 68A-27.003(2)(a), 68A-27.001(4), 68A-1.004, and 68A-27.005 F.A.C., a permit for removal of these species must be secured from the FWC before initiating incidental take. A Listed Species Incidental Take Permit is available for development projects that require the removal of these species.

5.0 *Conclusions*

5.1 *Protected Species and Habitat*

The project study area was evaluated for the presence of federal and state protected species and their suitable habitat in accordance with Section 7 of the ESA and Part 2, Chapter 16 of the PD&E Manual. **Tables 5-1** and **5-2** summarize the effect determinations that have been made for each federal and state listed species based upon their potential for occurrence, and the implementation measures and/or commitments to offset any potential impacts to each species.

5.2 *Wetland Evaluation*

In accordance with EO 11990, the FDOT has undertaken all actions to minimize the destruction, loss or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities. Nonetheless, the FDOT has determined that there is no practicable alternative to construction impacts occurring in wetlands. Any unavoidable impacts to wetlands will be mitigated to achieve no net loss of wetland function. The proposed project will have no significant short-term or long-term adverse impacts to wetlands.

The proposed project will permanently impact approximately 21.42 acres of wetland and 47.93 acres of surface waters. Potential secondary impacts associated with construction of the proposed project totals approximately 1.02 acres of wetlands. Anticipated functional loss associated with proposed impacts is approximately 13.09 functional loss units for wetlands and 22.50 functional loss units for surface waters. These values are preliminary and subject to change during the design phase and project permitting. Surface water impacts and functional loss will be offset on-site through the construction of a stormwater management system and in-situ canal replacement. There will be no net loss of surface water functions within the project study area. Wetland impacts, which will result from the construction of this project, will be mitigated pursuant to Section 373.4137, F.S. to satisfy all mitigation requirements of Part IV Chapter 373, F.S. and 33 U.S.C. 1344. Compensatory mitigation for this project will be completed through the use of a conceptual mitigation plan, or other mitigation options that satisfy state and federal requirements. Mitigation will occur within the same drainage basin as proposed impacts. As such, cumulative impacts are not anticipated.

Table 5-1 Federal Protected Species Effect Determinations

Project Effect Determination	Federal Listed Species
"No effect"	Florida bonamia (<i>Bonamia grandiflora</i>) - T
	Pygmy fringe tree (<i>Chionanthus pygmaeus</i>) - E
	Perforate reindeer lichen (<i>Cladonia perforata</i>) - E
	Scrub pigeon wings (<i>Clitoria fragrans</i>) - T
	Short-leaved rosemary (<i>Conradina brevifolia</i>) - E
	Avon park harebells (<i>Crotalaria avonensis</i>) - E
	Garrett's scrub balm (<i>Dicerandra christmanii</i>) - E
	Scrub mint (<i>Dicerandra frutescens</i>) - E
	Scrub buckwheat (<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>) - T
	Snakeroot (<i>Eryngium cuneifolium</i>) - E
	Highlands scrub hypericum (<i>Hypericum cumulicola</i>) - E
	Scrub blazingstar (<i>Liatris ohlingerae</i>) - E
	Britton's beargrass (<i>Nolina brittoniana</i>) - E
	Paper nailwort (<i>Paronychia chartacea</i>) - T
	Lewton's polygala (<i>Polygala lewtonii</i>) - E
	Sandlace (<i>Polygonella myriophylla</i>) - E
	Florida jointweed (<i>Polygonum basiramia</i>) - E
	Scrub plum (<i>Prunus geniculata</i>) - E
	Scrub ziziphus (<i>Pseudoziziphus celata</i>) - E
	Carter's mustard (<i>Warea carteri</i>) - E
"May affect, but is not likely to adversely affect"	Florida grasshopper sparrow (<i>Ammodramus savannarum floridanus</i>) - E
	Blue-tailed mole skink (<i>Plestiodon egregius lividus</i>) - T
	Sand skink (<i>Plestiodon reynoldsi</i>) - T
	American alligator (<i>Alligator mississippiensis</i>) - SAT
	Florida scrub-jay (<i>Aphelocoma coerulescens</i>) - T
	Audubon's crested caracara (<i>Caracara cheriway</i>) - T
"May affect, and is likely to adversely affect"	Wood stork (<i>Mycteria americana</i>) - T
	Florida panther (<i>Puma concolor cougar</i>) - E
	Everglade snail kite (<i>Rostrhamus sociabilis</i>) - E
	Eastern indigo snake (<i>Drymarchon couperi</i>) - T
	Florida bonneted bat (<i>Eumops floridanus</i>) - E

E = Endangered, T = Threatened, SAT = Threatened Due to Similarity of Appearance

Table 5-2 State Protected Species Effect Determinations

Project Effect Determination	State Listed Species
"No adverse effect anticipated"	Curtiss' milkweed (<i>Asclepias curtissii</i>) - E
	Ashe's savory (<i>Calamintha ashei</i>) - T
	Piedmont jointgrass (<i>Coelorachis tuberculosa</i>) - T
	Hartwrightia (<i>Hartwrightia floridana</i>) - T
	Edison's ascyrum (<i>Hypericum edisonianum</i>) - E
	Narrowleaf naiad (<i>Najas filifolia</i>) - T
	Cutthroat grass (<i>Coleataenia abscissa</i>) - E
	Yellow fringeless orchid (<i>Platanthera integra</i>) - E
	Northern needleleaf (<i>Tillandsia balbisiana</i>) - T
	Spreading airplant (<i>Tillandsia fasciculata</i>) - E
	Giant airplant (<i>Tillandsia utriculata</i>) - E
	Redmargin zephyrlily (<i>Zephyranthes simpsonii</i>) - T
	Gopher tortoise (<i>Gopherus polyphemus</i>) - T
	Short-tailed snake (<i>Lampropeltis extenuata</i>) - T
	Florida pine snake (<i>Pituophis melanoleucus mugitus</i>) - T
	Florida sandhill crane (<i>Antigone canadensis pratensis</i>) - T
	Florida burrowing owl (<i>Athene cunicularia floridana</i>) - T
	Little blue heron (<i>Egretta caerulea</i>) - T
Tricolored heron (<i>Egretta tricolor</i>) - T	
Southeastern American kestrel (<i>Falco sparverius paulus</i>) - T	
Roseate spoonbill (<i>Platalea ajaja</i>) - T	

E = Endangered, T = Threatened

5.3 Implementation Measures

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

- If Florida sandhill crane nests are observed during future surveys prior to construction, then a 400-foot buffer will be used if construction occurs during the nesting season (January through July). The FDOT will coordinate with the FWC during the project construction phase, if necessary.
- During the design and permitting phase of this project, gopher tortoise surveys will be conducted and if any burrows are found within 25 feet of construction limits there will be coordination with FWC to secure any necessary permits before construction.
- Water quality Best Management Practices (BMPs) will be identified during the design and permitting phase and later implemented during construction by the selected contractor.
- If a bald eagle nest is observed within 660 feet of the project study area, the FDOT will coordinate with the USFWS to secure necessary approvals prior to constructing the project.

- Impacts to suitable foraging habitat for the federally protected wood stork will be mitigated through the purchase of credits from a USFWS-approved mitigation bank pursuant to Section 373.4137, F.S., 33 U.S.C. §1344, or as otherwise agreed to by the FDOT and the appropriate regulatory agencies.
- In an effort to mitigate impacts to protected plant species within the project study area, FDOT will coordinate with FDACS prior to construction for possible relocation of protected plants.
- If southern fox squirrel nests are observed prior to construction, then a 125-foot buffer will be maintained for any active nest(s) identified. A Listed Species Incidental Take Permit will be obtained from the FWC to secure all permits needed if the take of a nest tree is necessary.

5.4 *Commitments*

To minimize project impacts on protected species to the greatest extent practicable, the following project commitments will be adhered to:

- The USFWS *Standard Protection Measures for the Eastern Indigo Snake* will be implemented during construction of the project.
- The FDOT will perform Audubon's crested caracara surveys of the project area during design and permitting phase of the project.

6.0 References

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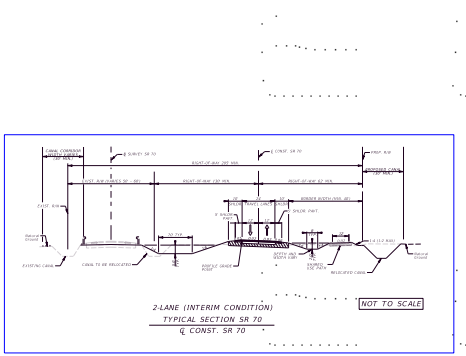
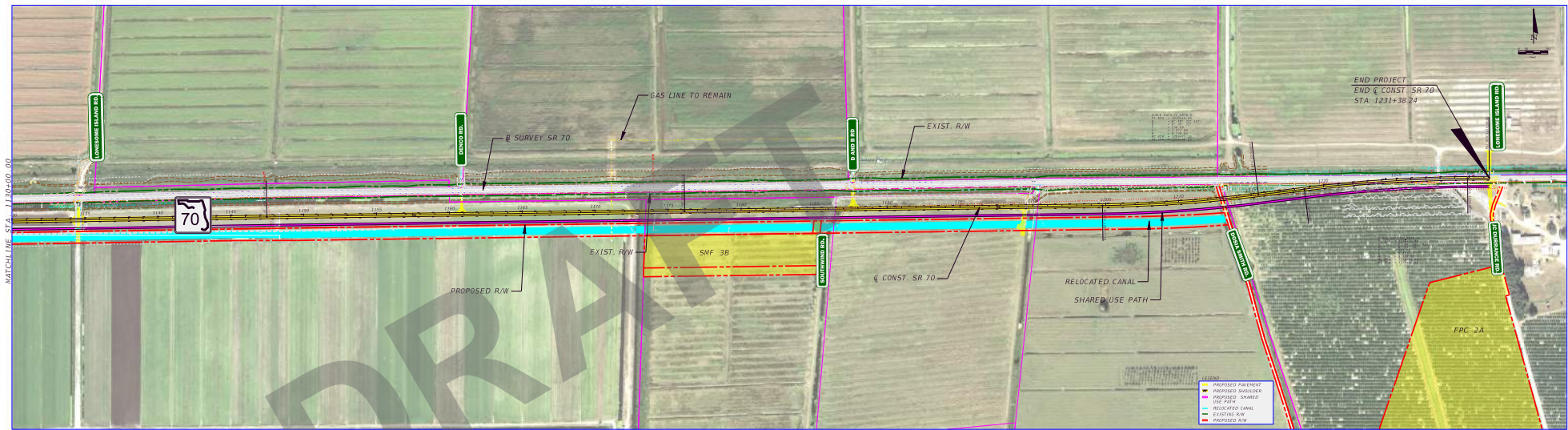
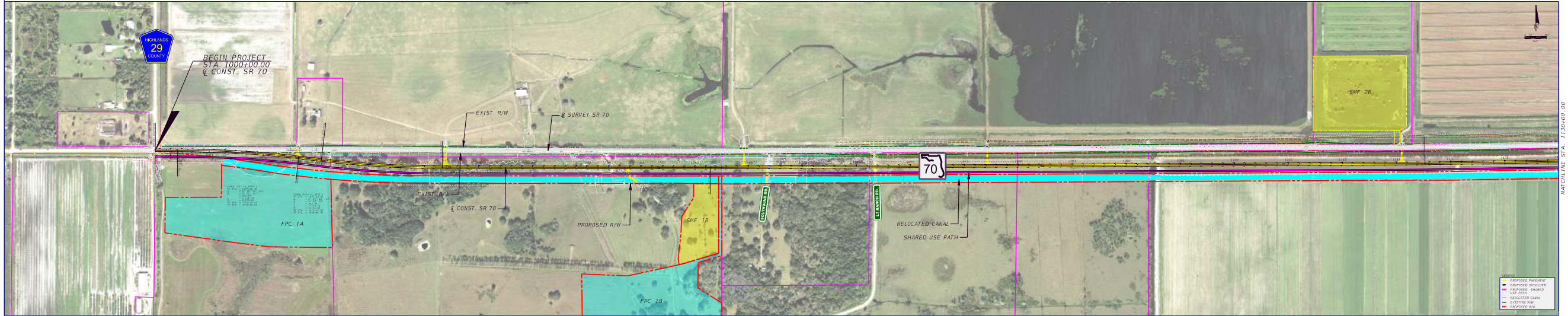
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APPENDIX A

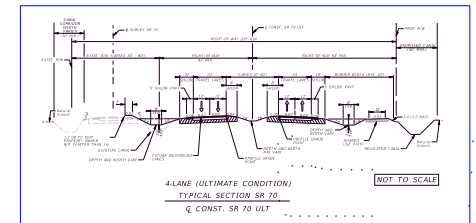
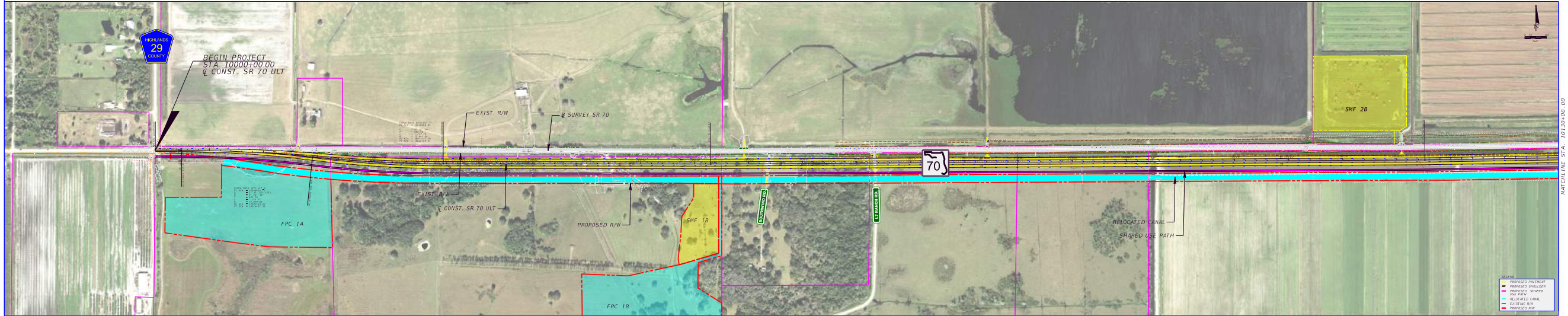
Preferred Build Alternative Concept Plans

INTERIM DESIGN



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ULTIMATE DESIGN



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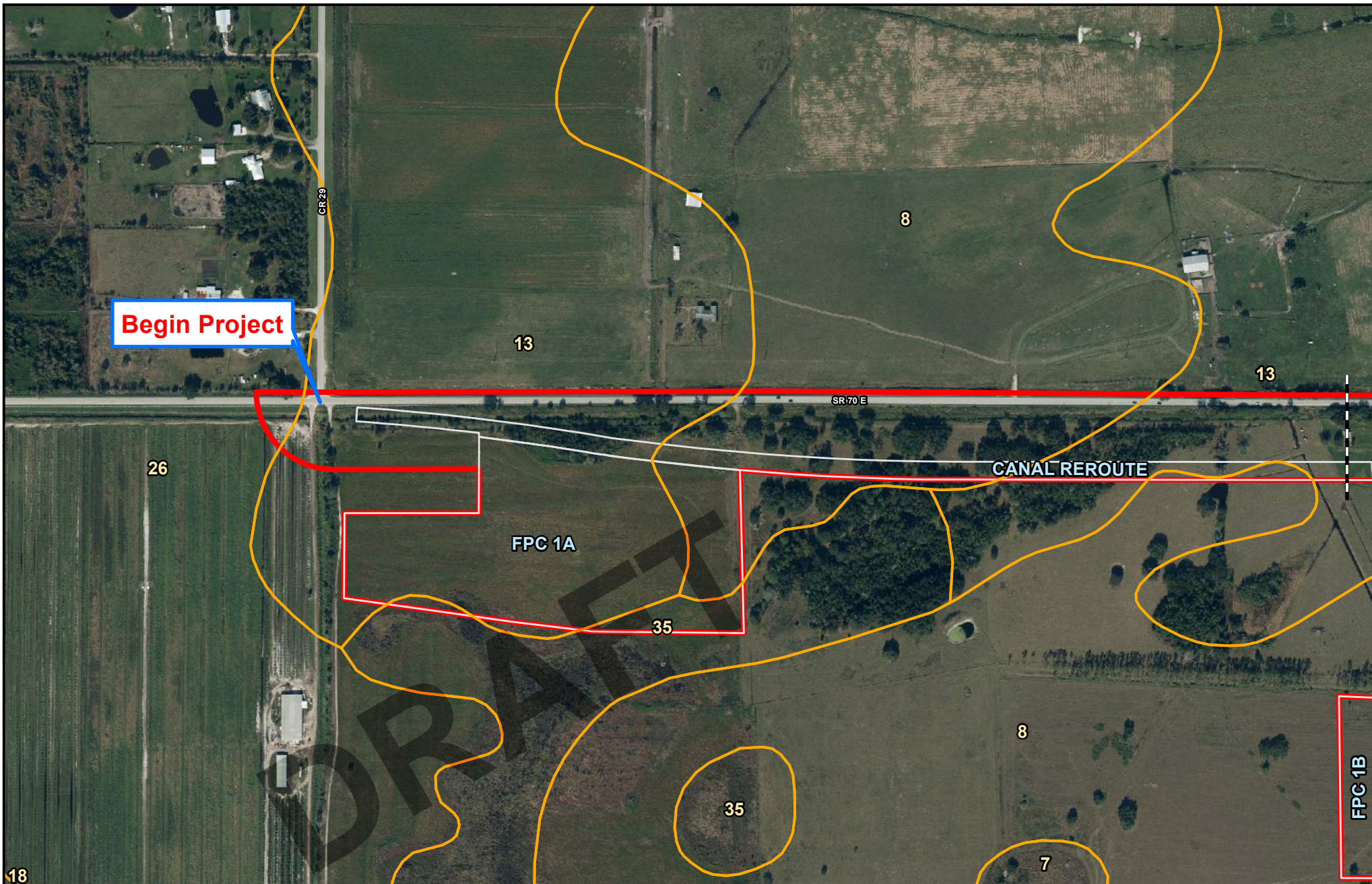
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APPENDIX B

Soils Map

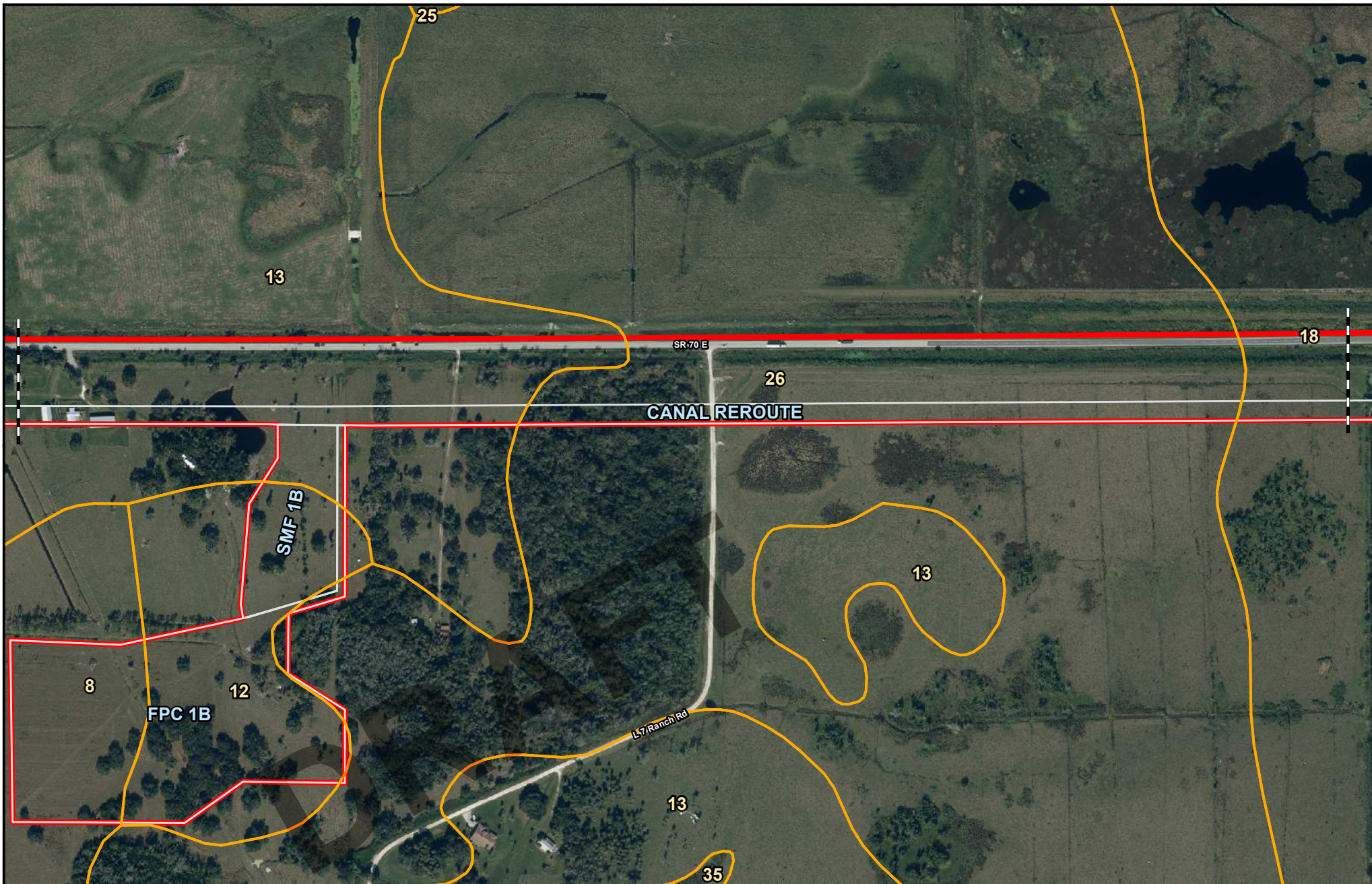


Project Study Area	13: FELDA FINE SAND, 0 TO 2 PERCENT SLOPES
Proposed Pond	18: KALIGA MUCK, FREQUENTLY PONDED, 0 TO 1 PERCENT SLOPES
7: PLACID FINE SAND, FREQUENTLY PONDED, 0 TO 1 PERCENT SLOPES	26: TEQUESTA MUCK, FREQUENTLY PONDED, 0 TO 1 PERCENT SLOPES
8: IMMOKALEE SAND, 0 TO 2 PERCENT SLOPES	35: SANIBEL MUCK

NRCS Soils Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
 Highlands County, FL

Appendix B Page 1 of 7

Feet	
Kisinger Campo & Associates, Corp. 201 N. Franklin Street, Suite 400 Tampa, FL 33602 Phone: 813/871-5331	



Project Study Area	18: KALIGA MUCK, FREQUENTLY PONDED, 0 TO 1 PERCENT SLOPES
Proposed Pond	25: CHOBEE FINE SANDY LOAM, FREQUENTLY PONDED, 0 TO 1 PERCENT SLOPES
8: IMMOKALEE SAND, 0 TO 2 PERCENT SLOPES	26: TEQUESTA MUCK, FREQUENTLY PONDED, 0 TO 1 PERCENT SLOPES
12: BASINGER FINE SAND, 0 TO 2 PERCENT SLOPES	35: SANIBEL MUCK
13: FELDA FINE SAND, 0 TO 2 PERCENT SLOPES	

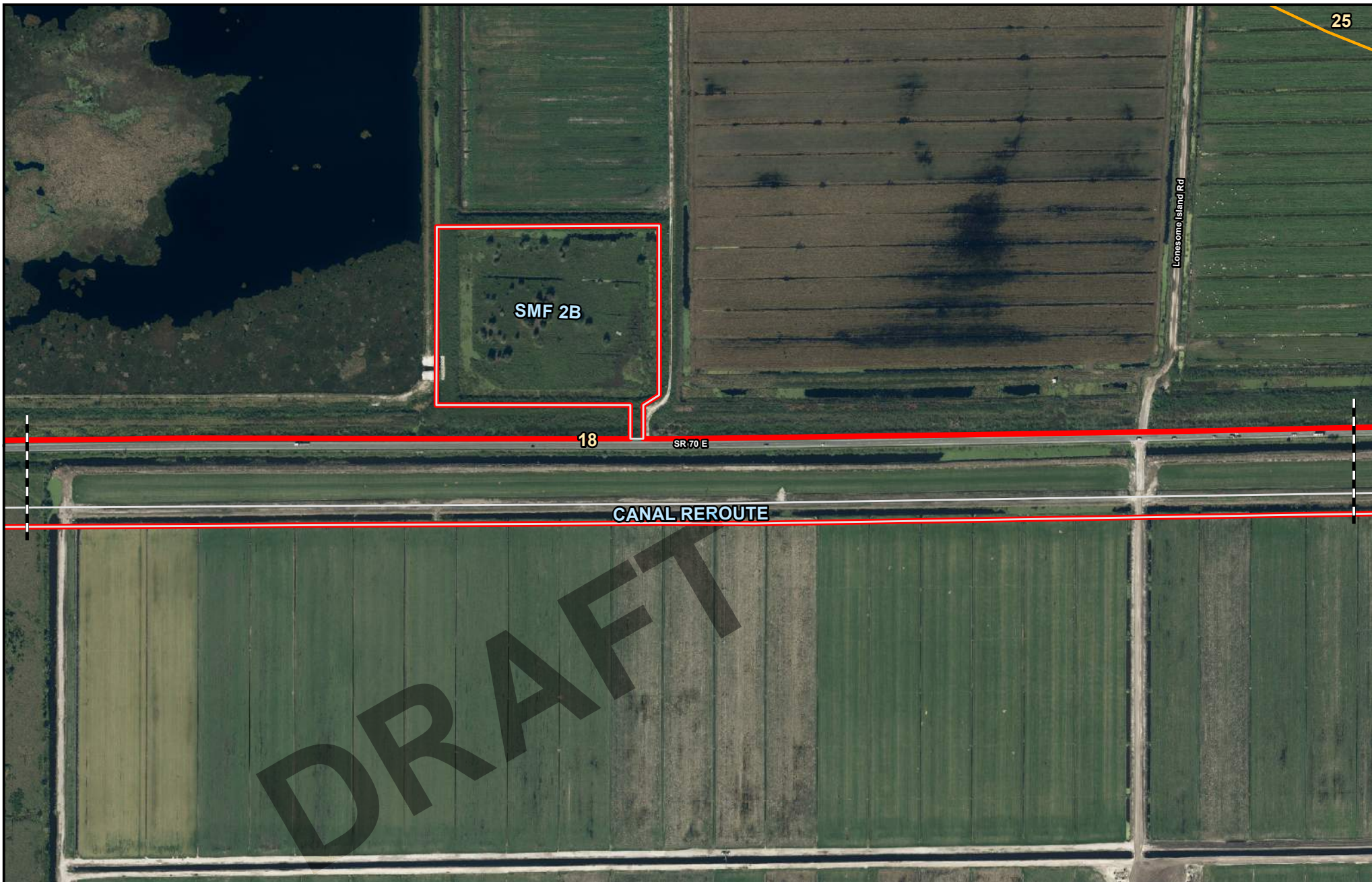
NRCS Soils Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
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Appendix B Page 2 of 7

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Feet

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SMF 2B


18


SR 70 E

CANAL REROUTE

Lonesome Island Rd

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 Project Study Area

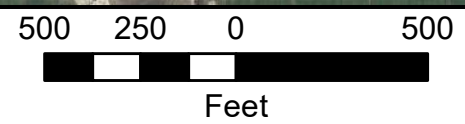
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0 TO 1 PERCENT SLOPES

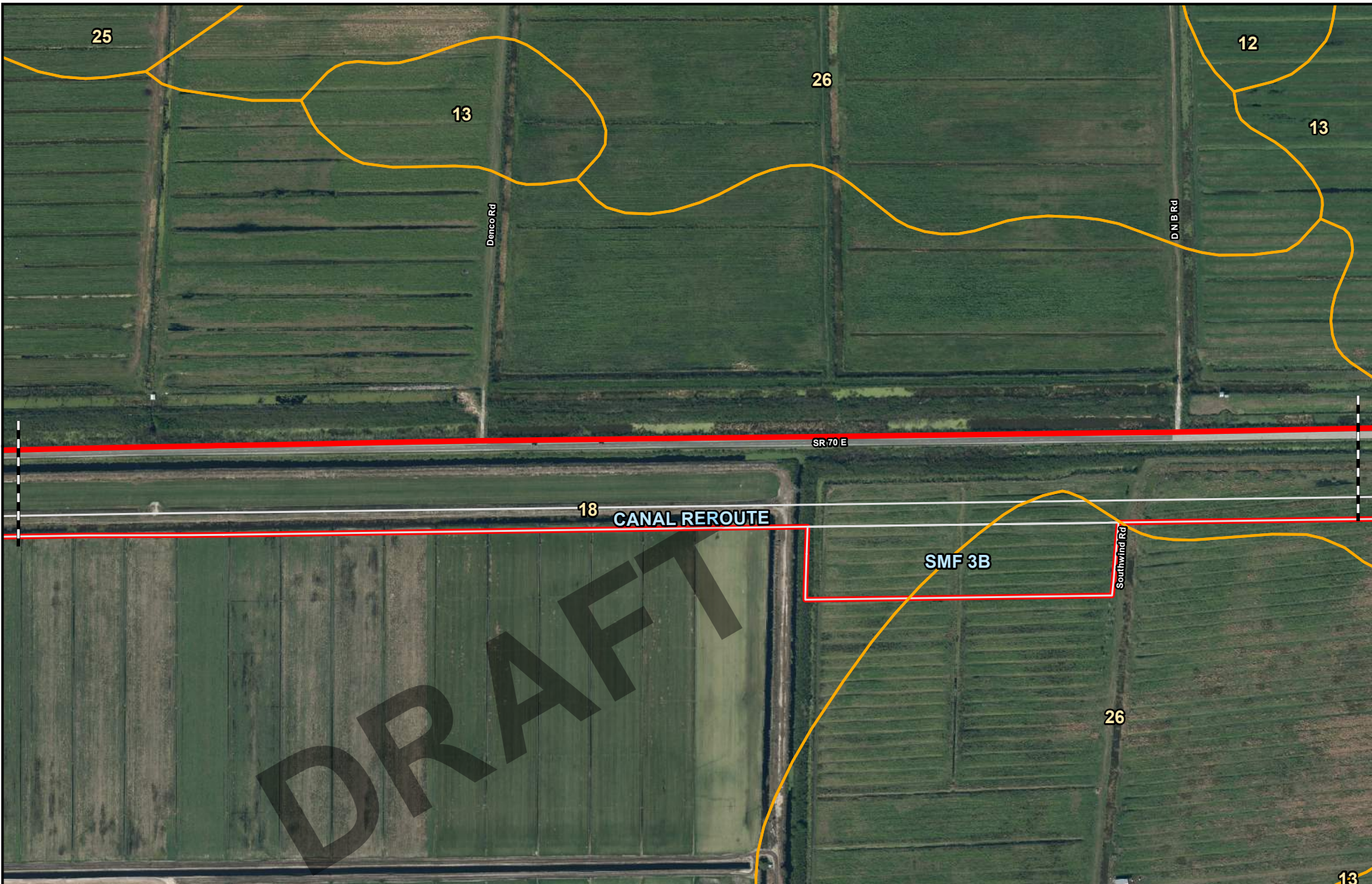
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FREQUENTLY PONDED, 0 TO 1 PERCENT
SLOPES

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SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01
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Appendix B Page 3 of 7



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 Project Study Area	18: KALIGA MUCK, FREQUENTLY PONDED, 0 TO 1 PERCENT SLOPES
 Proposed Pond	25: CHOBEE FINE SANDY LOAM, FREQUENTLY PONDED, 0 TO 1 PERCENT SLOPES
12: BASINGER FINE SAND, 0 TO 2 PERCENT SLOPES	26: TEQUESTA MUCK, FREQUENTLY PONDED, 0 TO 1 PERCENT SLOPES
13: FELDA FINE SAND, 0 TO 2 PERCENT SLOPES	

NRCS Soils Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
 Highlands County, FL

Appendix B Page 4 of 7

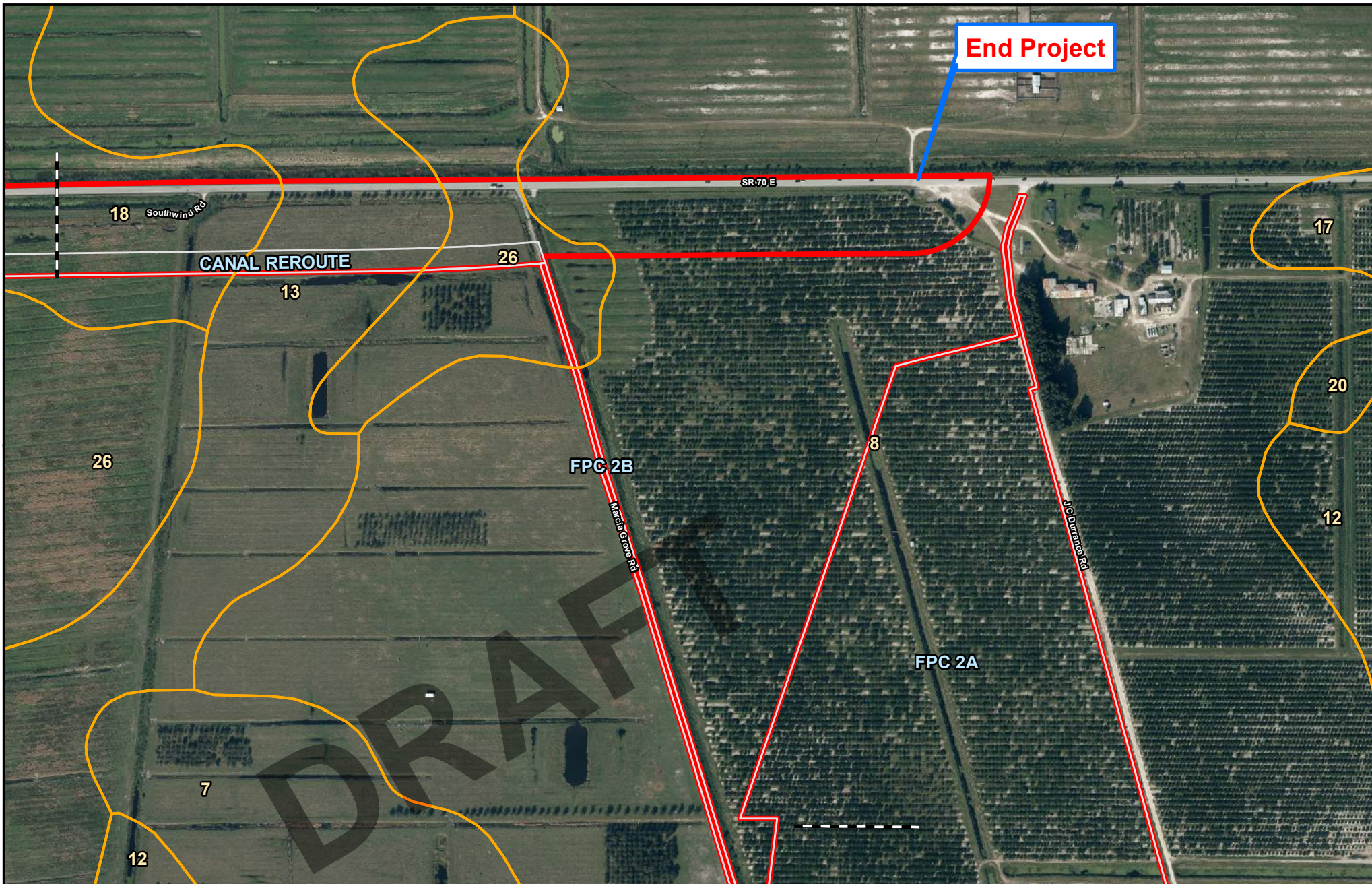


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Feet

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End Project

Project Study Area

Proposed Pond

7: PLACID FINE SAND, FREQUENTLY PONDED, 0 TO 1 PERCENT SLOPES

8: IMMOKALEE SAND, 0 TO 2 PERCENT SLOPES

12: BASINGER FINE SAND, 0 TO 2 PERCENT SLOPES

13: FELDA FINE SAND, 0 TO 2 PERCENT SLOPES

17: MALABAR FINE SAND, 0 TO 2 PERCENT SLOPES

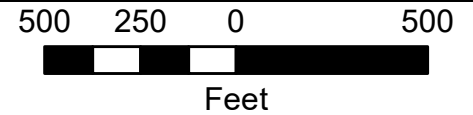
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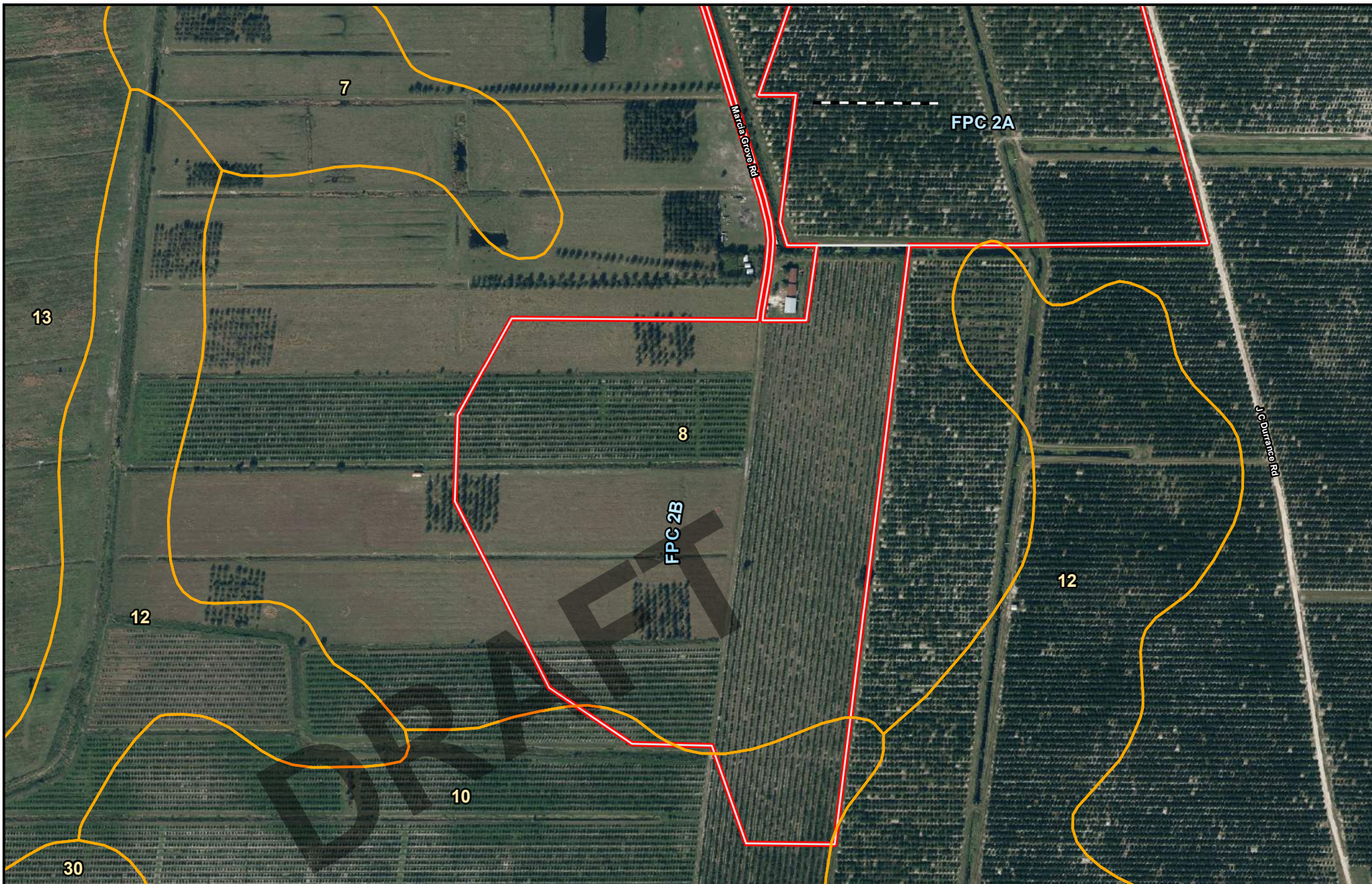
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26: TEQUESTA MUCK, FREQUENTLY PONDED, 0 TO 1 PERCENT SLOPES

NRCS Soils Map

SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
 Highlands County, FL





 Project Study Area

 Proposed Pond

7: PLACID FINE SAND, FREQUENTLY PONDED, 0 TO 1 PERCENT SLOPES

8: IMMOKALEE SAND, 0 TO 2 PERCENT SLOPES

10: MYAKKA FINE SAND, 0 TO 2 PERCENT SLOPES

12: BASINGER FINE SAND, 0 TO 2 PERCENT SLOPES

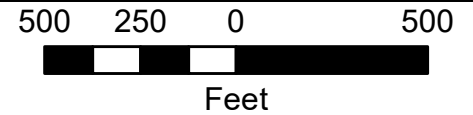
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30: OLDSMAR FINE SAND, 0 TO 2 PERCENT SLOPES

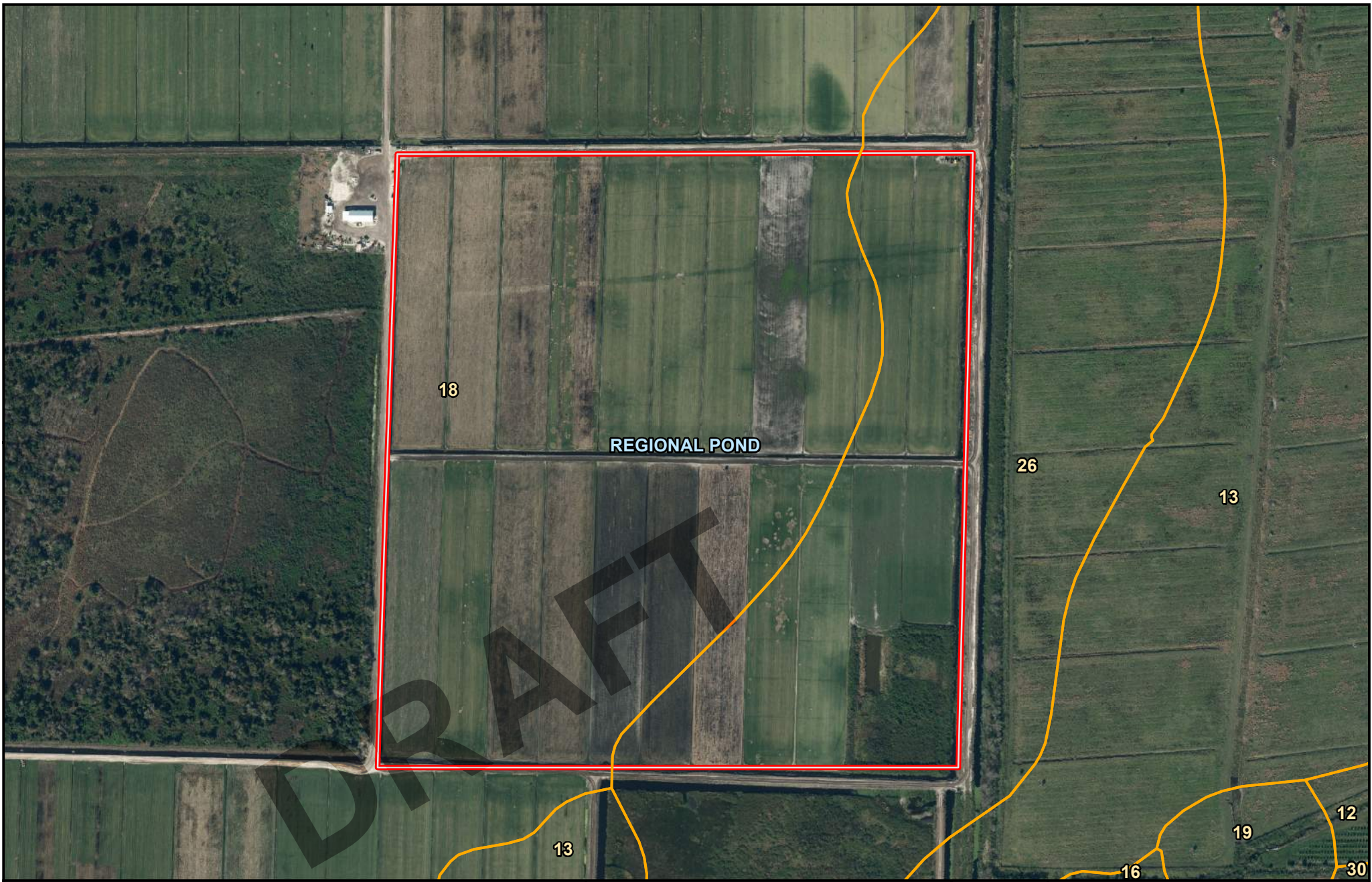
NRCS Soils Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
 Highlands County, FL


Appendix B


Page 6 of 7



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 Project Study Area

 Proposed Pond

12: BASINGER FINE SAND, 0 TO 2 PERCENT SLOPES

13: FELDA FINE SAND, 0 TO 2 PERCENT SLOPES

16: VALKARIA FINE SAND, 0 TO 2 PERCENT SLOPES

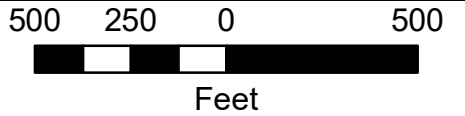
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19: HICORIA MUCKY SAND, DEPRESSIONAL

26: TEQUESTA MUCK, FREQUENTLY PONDED, 0 TO 1 PERCENT SLOPES

30: OLDSMAR FINE SAND, 0 TO 2 PERCENT SLOPES

NRCS Soils Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
 Highlands County, FL

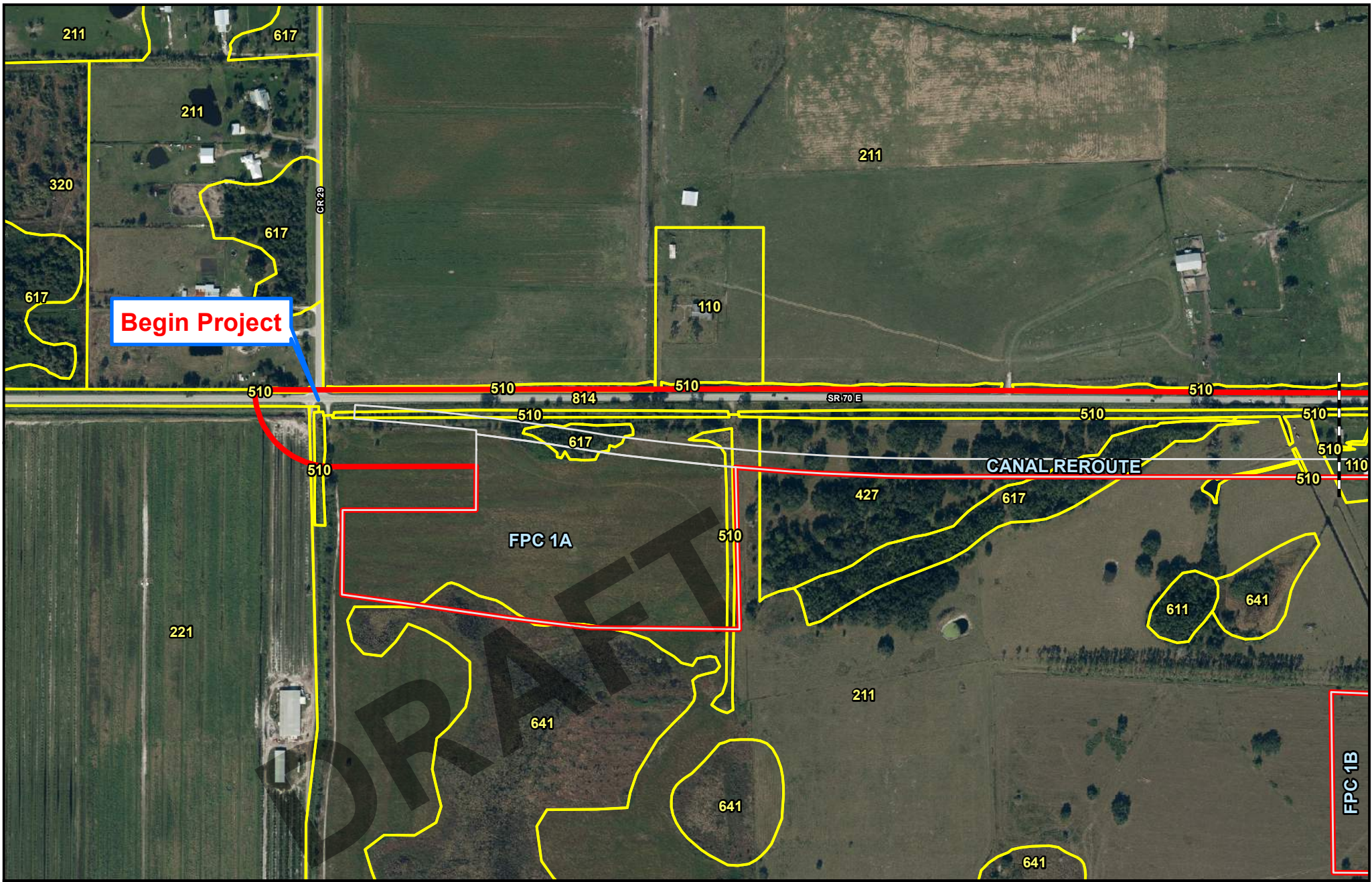


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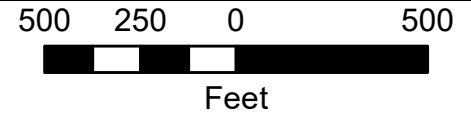
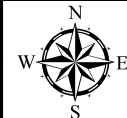
APPENDIX C
Land Use Map



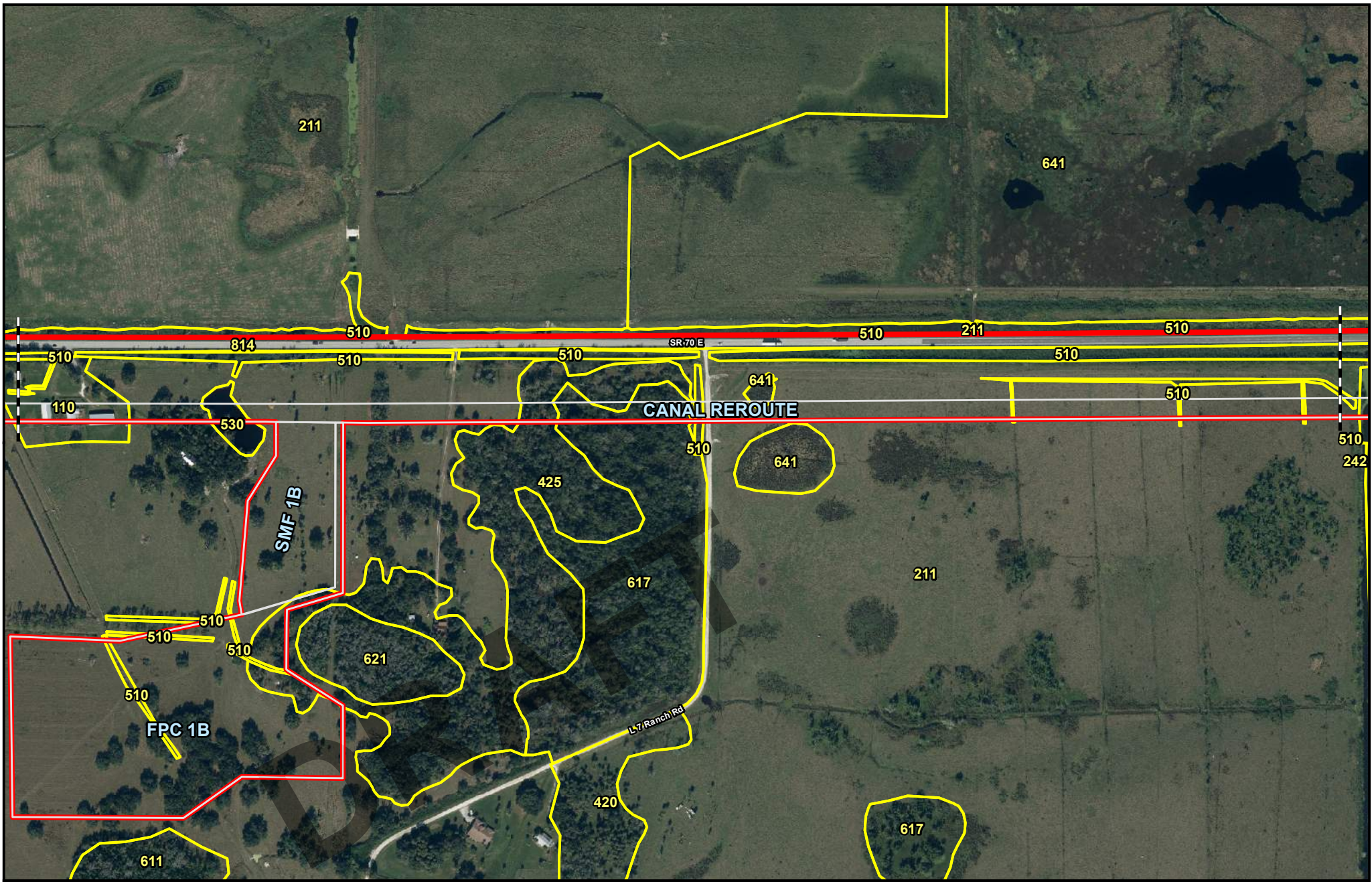
- Project Study Area
- Proposed Pond
- 110: Residential, Low Density
- 211: Improved Pastures
- 221: Citrus Groves
- 320: Upland Shrub and Brushland

- 427: Live Oak
- 510: Streams and Waterways
- 611: Bay Swamps
- 617: Mixed Wetland Hardwoods
- 641: Freshwater Marshes / Graminoid Prairie - Marsh
- 814: Roads and Highways

Land Use Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
 Highlands County, FL



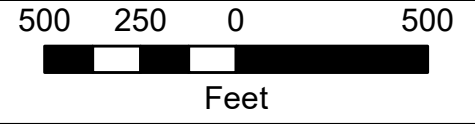
Kisinger Campo & Associates, Corp.
 201 N. Franklin Street, Suite 400
 Tampa, FL 33602
 Phone: 813/871-5331



- Project Study Area
- Proposed Pond
- 110: Residential, Low Density
- 211: Improved Pastures
- 242: Sod Farms
- 420: Upland Hardwood Forests

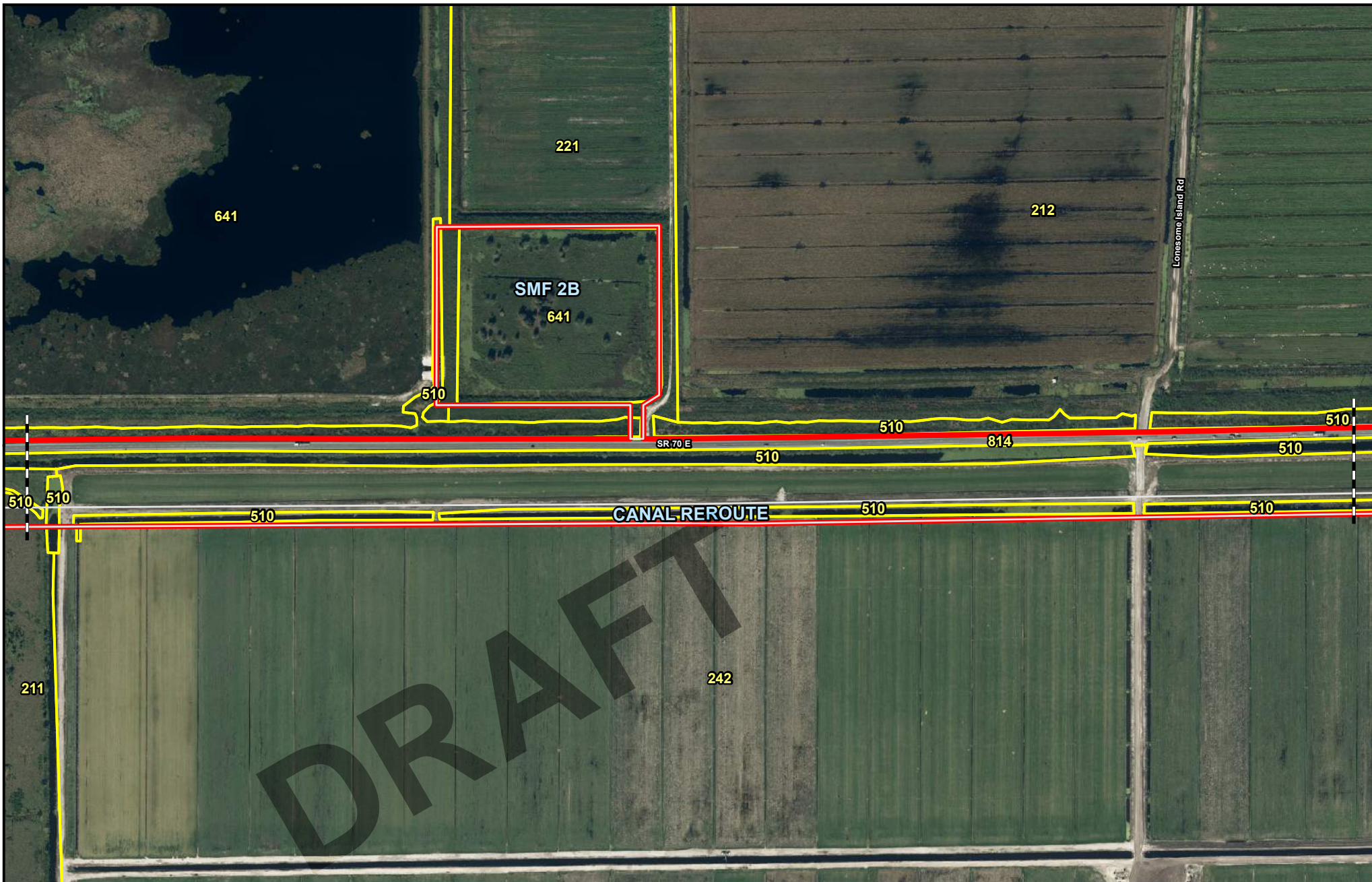
- 425: Temperate Hardwood
- 510: Streams and Waterways
- 530: Reservoirs
- 611: Bay Swamps
- 617: Mixed Wetland Hardwoods
- 621: Cypress - Mixed Hardwoods
- 641: Freshwater Marshes / Graminoid Prairie - Marsh
- 814: Roads and Highways

Land Use Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
 Highlands County, FL



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 Project Study Area

 Proposed Pond

211: Improved Pastures

212: Unimproved Pastures

221: Citrus Groves

242: Sod Farms

510: Streams and Waterways

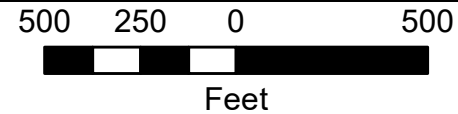
641: Freshwater Marshes / Graminoid Prairie - Marsh

814: Roads and Highways

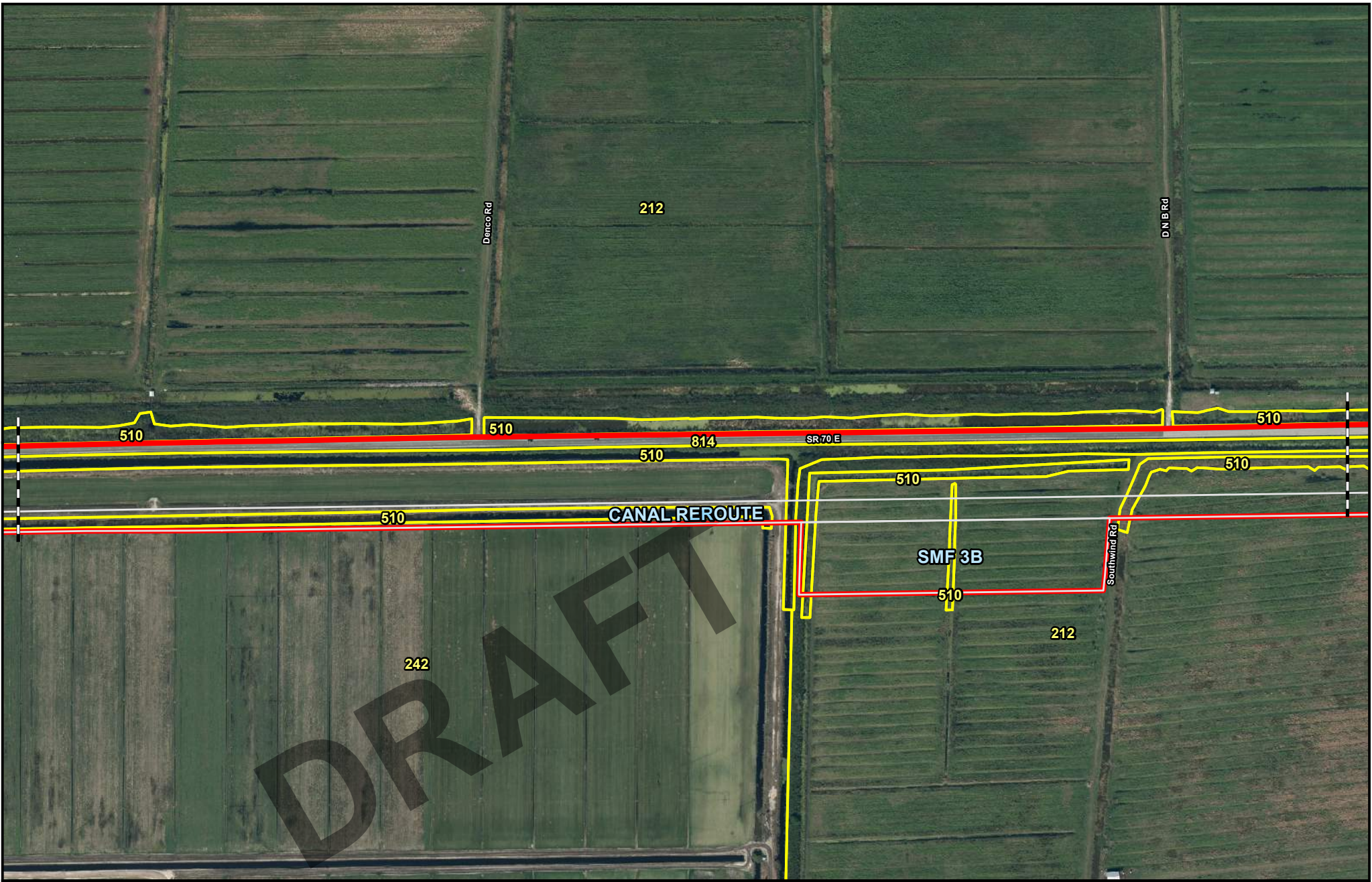
Land Use Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
 Highlands County, FL

Appendix C

Page 3 of 7

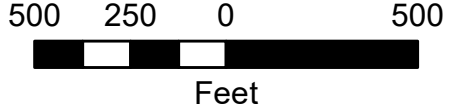


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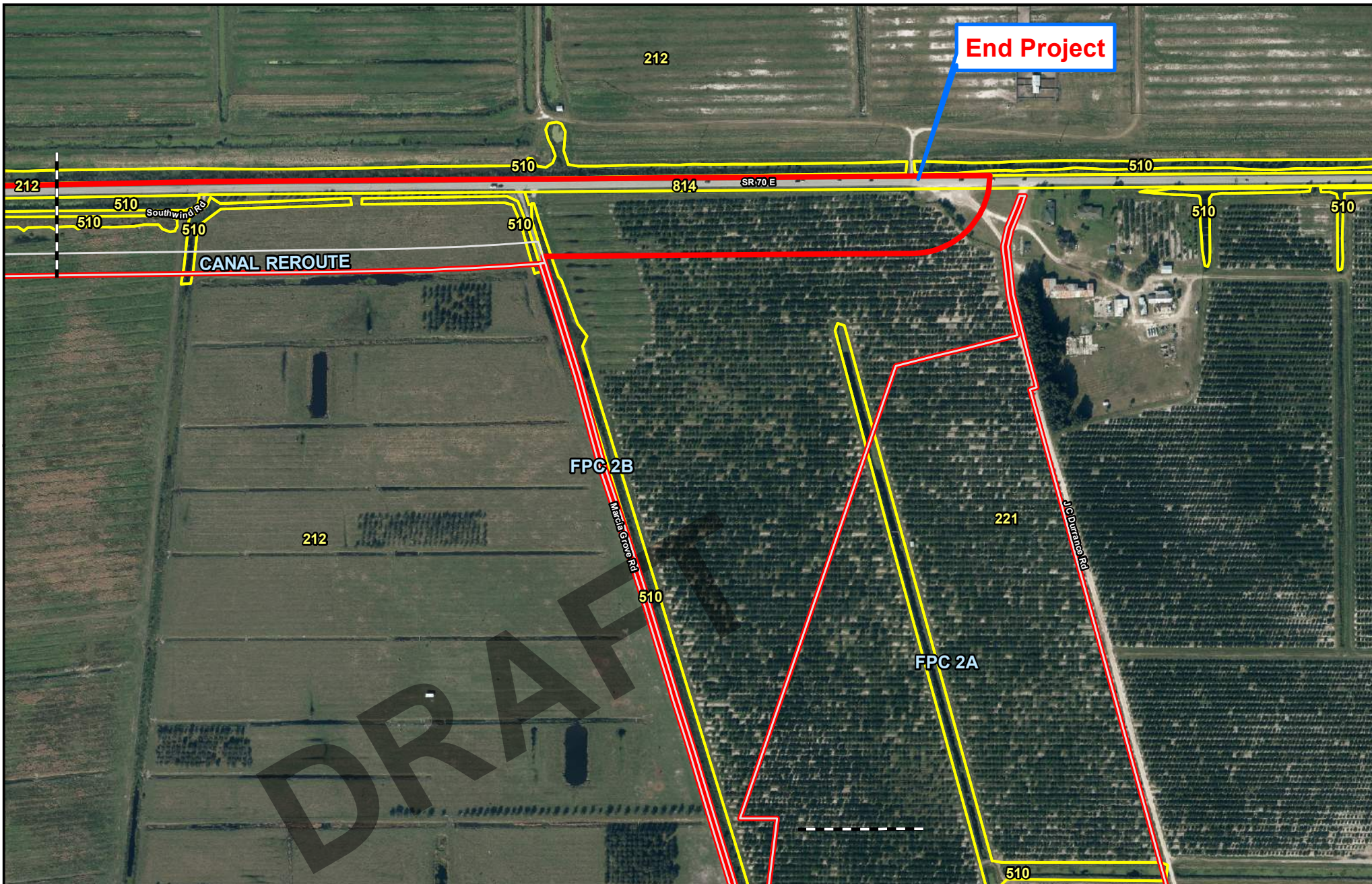
- Project Study Area
- Proposed Pond
- 212: Unimproved Pastures
- 242: Sod Farms
- 510: Streams and Waterways
- 814: Roads and Highways

Land Use Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
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Path: M:\41450652201 SR70 - CR29 to Lonesome\NonSubmittal Design\GIS\Maps\Figures\NRE\SR 70_Lonesome_Appendix B Land Use Map.mxd 8/25/2020



End Project

CANAL REROUTE

FPC 2B

FPC 2A

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Project Study Area

Proposed Pond

212: Unimproved Pastures

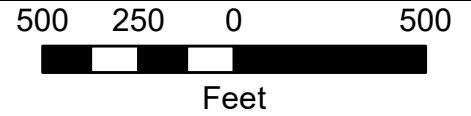
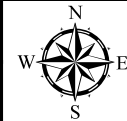
221: Citrus Groves

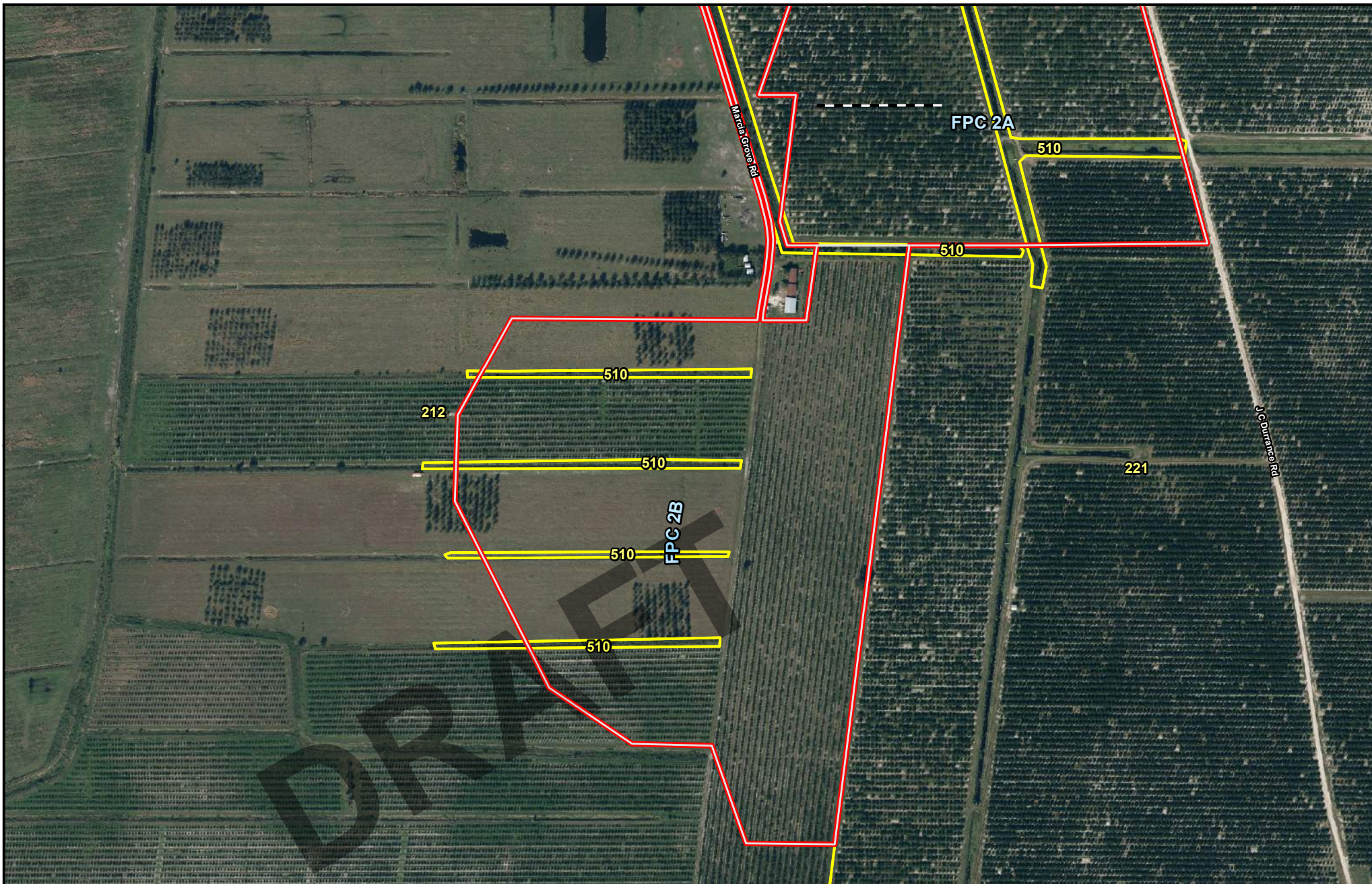
510: Streams and Waterways

814: Roads and Highways

Land Use Map

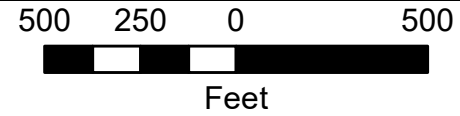
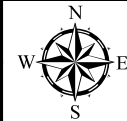
SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
 Highlands County, FL



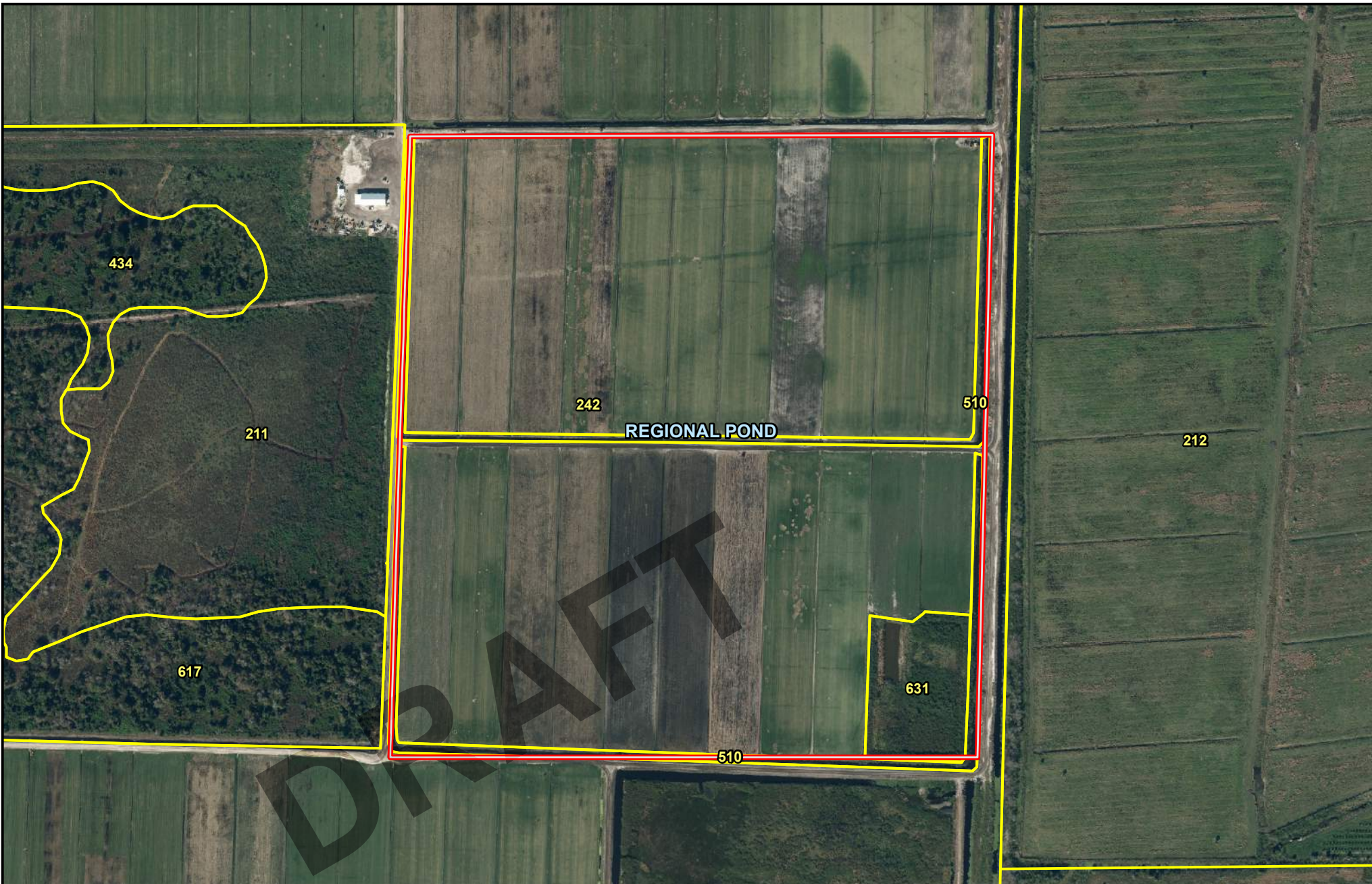



- Project Study Area
- Proposed Pond
- 212: Unimproved Pastures
- 221: Citrus Groves
- 510: Streams and Waterways

Land Use Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
 Highlands County, FL



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 Project Study Area

 Proposed Pond

211: Improved Pastures

212: Unimproved Pastures

242: Sod Farms

434: Upland Mixed Coniferous / Hardwood

510: Streams and Waterways

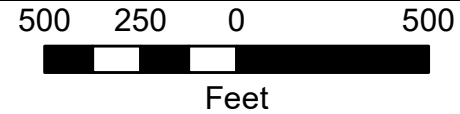
617: Mixed Wetland Hardwoods

631: Wetland Scrub

Land Use Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
 Highlands County, FL

Appendix C

Page 7 of 7



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APPENDIX D

Florida Natural Areas Inventory Custom Data Report



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August 15, 2019

Christen Cerrito
Kisinger, Campo, & Associates
201 N Franklin St., Suite 400
Tampa, FL 33602

Dear Ms. Cerrito,

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

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

Project: SR 70 from CR 29 to Lonesome Island Road
Date Received: 08/15/19
Location: Highlands County

Element Occurrences

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

Federally Listed Species

Our data indicate federally listed species are present on or very near this site, specifically *Caracara cheriway* and *Drymarchon couperi* (see enclosed map and tables for details). This statement should not be interpreted as a legal determination of presence or absence of federally listed species on a property.

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

Likely and Potential Rare Species

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



Florida Resources
and Environmental
Analysis Center

Institute of Science
and Public Affairs

The Florida State University

Tracking Florida's Biodiversity

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

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

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

CLIP

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

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

Florida Scrub-jay Survey – U.S. Fish and Wildlife Service

This survey was conducted by staff and associates of the Archbold Biological Station from 1992 to 1996. An attempt was made to record all scrub-jay (*Aphelocoma coerulescens*) groups, although most federal lands were not officially surveyed. Each map point represents one or more groups.

This data layer indicates that there are potential scrub-jay populations on or very near your site. For additional information:

Fitzpatrick, J.W., B. Pranty, and B. Stith, 1994, Florida scrub jay statewide map, 1992-1993. U. S. Fish and Wildlife Service Report, Cooperative Agreement no. 14-16-004-91-950.

Managed Areas

Portions of the site appear to be located adjacent to the Wetlands Reserve Program Easement #180, managed by the US Dept. of Agriculture, Natural Resources Conservation Service.

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

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

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

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

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

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

Sincerely,

Kerri Brinegar

Kerri Brinegar
GIS / Data Services

Encl

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Element Occurrences

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

Conservation Lands

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

Land Acquisition Projects

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

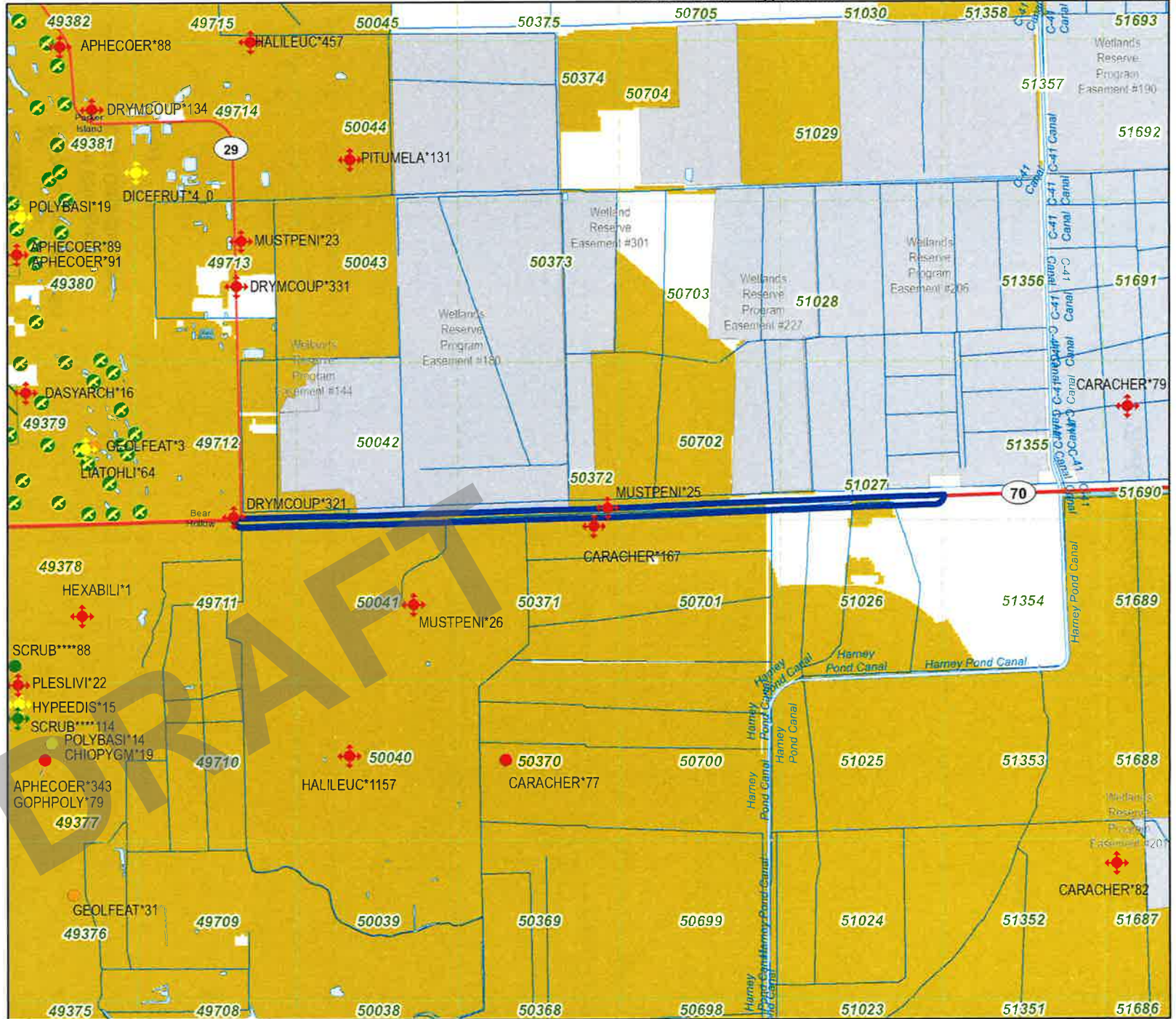
NOTE

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

SR 70 from CR 29 to Lonesome Island Road

Site boundaries are approximate.

Highlands County





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CLIP v4.0 Resource Priorities

Biodiversity Resource Category

- Priority 1 - highest
- Priority 2
- Priority 3
- Priority 4
- Priority 5

Landscape Resource Category

- Priority 1 - highest
- Priority 2
- Priority 3
- Priority 4
- Priority 5

Surface Water Resource Category

- Priority 1 - highest
- Priority 2
- Priority 3
- Priority 4
- Priority 5

Aggregated CLIP Priorities

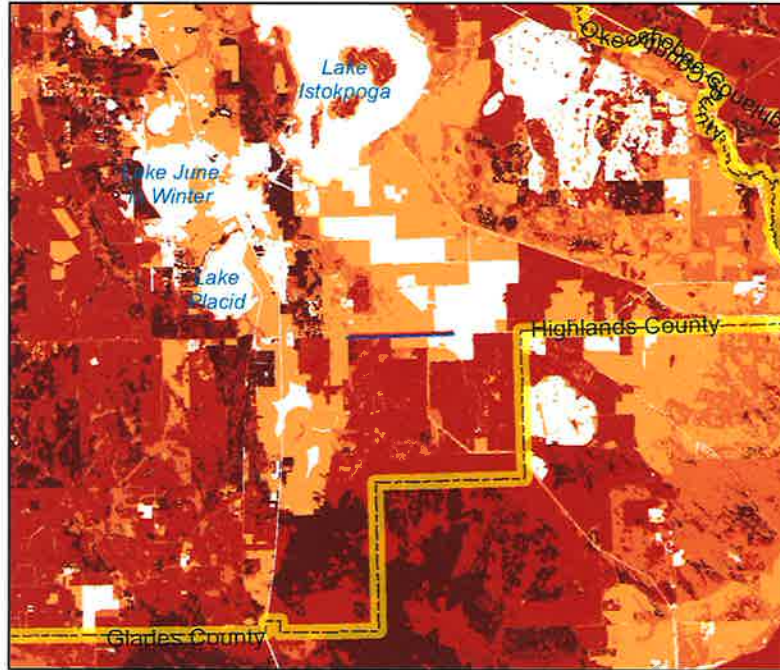
- Priority 1 - highest
- Priority 2
- Priority 3
- Priority 4
- Priority 5

Site Boundary

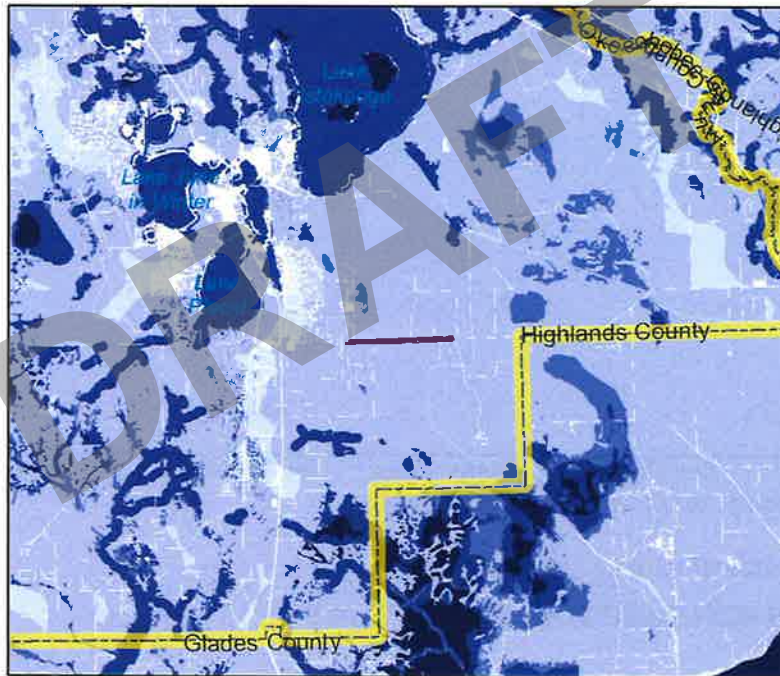
Map should not be interpreted without accompanying documents.

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

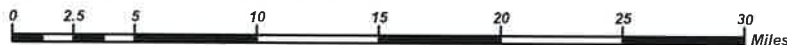
SR 70 from CR 29 to Lonesome Island Road



CLIP Biodiversity Resource Priorities



CLIP Surface Water Resource Priorities



Site boundaries are approximate.

Highlands County



CLIP Landscape Resource Priorities



CLIP Aggregated Resource Priorities



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FNAI ELEMENT OCCURRENCE REPORT on or near
SR 70 from CR 29 to Lonesome Island Road

Map Label	Scientific Name	Common Name	Global State Federal State Observation				Date	Description	EO Comments
			Rank	Rank	Status	Listing			
APHECOER*89	<i>Aphelocoma coerulescens</i>	Florida Scrub-Jay	G2?	S2	T	FT	1992 -- 1993	1998-03-12: This yellow sand oak scrub has rolling topography with numerous undulating ridges interspersed with shallow depression marshes. Section 34 lacks pines. The 10-15 ft tall shrubs tend to grow in clumps with frequent gaps in between. <i>Quercus geminata</i> , <i>Q. myrtifolia</i> , <i>Q. chapmanii</i> , <i>Carya floridana</i> , and <i>Lyonia ferruginea</i> dominate this stratum. The short shrubs <i>Serenoa repens</i> and <i>Sabal etonia</i> (3-4 ft) are abundant, with <i>Dicerandra frutescens</i> rare to occasional. The groundcover has abundant <i>Selaginella arenicola</i> and lichens. Bare sand is exposed in many of the gaps. The scrub to the N in the W2 Section 27 and S3 of Section 28 has denser tall shrubs 6-15 ft tall with <i>Dicerandra</i> below. Section 28 has a mature <i>Pinus elliotii</i> canopy that was logged in the past month, leaving only widely scattered trees. The area is gridded with paved and dirt roads with scattered houses near Highlands Blvd. (F98SCH19FLUS). 1981-07-31: Oak scrub, dense sand pines in western portion; substantial portions developed (U81COX01FLUS). 1983-09-22: Section 27 NW4- Very disturbed site; portions of scrub have been cleared in past 5 years. Paved and dirt roads in grid with a few houses (F83SCH48FLUS).	1998-11-04: Not observed in brief survey. West part of scrub in Section 28 has dense shrubs 6 to 15 ft tall (F98SCH19FLUS). 1998-03-12: Not observed during brief survey. Shrub stratum getting too tall in many areas because of lack of fire (F98SCH19FLUS). 1992-1993: 36 jays in 9 groups observed during statewide mapping project (U97PRA01FLUS - HIGH#14 - Sun 'N Lakes South Florida Forever site); this conflicts with jay data set/point file from project (indicates more jays and groups) (U94FIT02FLUS). 1981-07-31: 23 adults, 5 juvenile scrub jays observed (U81COX01FLUS).
APHECOER*91	<i>Aphelocoma coerulescens</i>	Florida Scrub-Jay	G2?	S2	T	FT	1981-07-31	MOSTLY OAK SCRUB, SOME CLEARED	1981-07-31: 10 ADULT, 1 JUVENILE SCRUB JAY.

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SR 70 from CR 29 to Lonesome Island Road



Map Label	Scientific Name	Common Name	Global State Federal State Observation				Date	Description	EO Comments
			Rank	Rank	Status	Listing			
CARACHER*167	<i>Caracara cheriway</i>	Crested Caracara	G5	S2	T	FT	1989-03-31	Bottomland Forest; improved pasture	Probable nest site. 1989: 03/31 - R. Titus observed 1 adult in same place as 2 juveniles on 03/28. (U97GFC02). 03/28 - R. Titus observed adult flying with food nearby 2 juveniles on poles. Very smudged brown throats. 03/20 - R. Titus, GFC, observed 1 adult in third or faded adult plumage. Raccoon sleeping nearby old raptor nest. Caracara 5 meters from nest. Nest in red bay? First record of nest in that species of tree. 03/04 - R. Titus, GFC, observed 1 young in first immature plumage on 2 occasions; 02/27 - R. Titus, GFC, observed 1 young in first immature plumage on 2 occasions.
CARACHER*79	<i>Caracara cheriway</i>	Crested Caracara	G5	S2	T	FT	1978	No general description given	ACTIVE TERRITORY/BREEDING PAIR W/ KNOWN NESTING. CENTROID MARKS ESTIMATED CENTER OF TERRITORY (MEAN DIAMETER 5 MI.).
DASYARCH*16	<i>Dasymutilla archboldi</i>	Lake Wales Ridge Velvet Ant	G2G3	S2S3	N	N	2010-08-04	Sand pine and rosemary scrub. See individual source features for general descriptions.	Large population represented by 96 specimens spanning > 3 decades collected at multiple sites. See source features for detailed information.
DICEFRUT*4_0	<i>Dicerandra frutescens</i>	scrub mint	G1	S1	E	E	1980-11-26	OPEN, STEEP SANDY BANK AT ROADSIDE, SAND PINE-OAK SCRUB BEHIND RIDGE JUST S OF LAKE PLACID BY US-27.	1980-11-26: FRUITING.
DRYMCROUP*321	<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	T	FT	1974-08-23	No general description given	MUSEUM SPECIMEN: L. LAYNE, 23 AUG 1974 (ABS 844); SPECIMEN AMNH-65646, COLLECTOR AND DATE N/A.
DRYMCROUP*331	<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	T	FT	1976-01-11	No general description given	MUSEUM SPECIMEN: M. YUSKO, 11 JAN 1976 (ABS 6 AND 494).
GEOLFAT*3	Geological feature		GNR	SNR	N	N	1966	SAMPLE OF A REGIONAL ZONE OF RELICT COASTAL SAND DUNES REACHING DISCONTIN. FOR 110 MI ALONG BASE OFE SIDE OF TRAIL RIDGE-LAKE WALES RIDGE FROM OCALA NATIONAL FOREST CA TO SOUTH END LAKE WALES RIDGE.	DUNES AT THIS SITE ARE SOME OF THE BEST PRESERVED IN THE WHOLE ZONE. THEY SHOW A GENERAL TENDENCY FOR ELONGATION IN A NORTHWEST-SOUTHEAST DIRECTION APPARENTLY BEING INCIPIENT TRANSVERSE DUNE RIDGES. ON THE EASTERN EDGE TWO RELICT ATLANTIC S HORELINE SCARPS.



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FNAI ELEMENT OCCURRENCE REPORT on or near SR 70 from CR 29 to Lonesome Island Road

Map Label	Scientific Name	Common Name	Global State Federal State Observation				Date	Description	EO Comments
			Rank	Rank	Status	Listing			
HEXABILI*1	<i>Hexagenia bilineata</i>	A Mayfly	G5	S2	N	N	1994-08-22	1994-08-22: No description given (U09DEP01FLUS).	1994-08-22: Staff from the Florida Department of Environmental Protection collected this species (U09DEP01FLUS).
HYPEEDIS*15	<i>Hypericum edisonianum</i>	Edison's ascyrum	G2	S2	N	E	1987-01-19	EPHEMERAL POND	PLANTS TO CA 1.5 M TALL, TALLER ONES WITH STEM UNBRANCHED BELOW & BUSHY BRANCHED AT THE SUMMIT. IN FLOWER 1980-11-26. FOUND IN 1989 BY CHRISTMAN.
LIATOHLI*64	<i>Liatris ohlingerae</i>	Florida blazing star	G2	S2	E	E	1983	DENSE OAK/HICKORY SCRUB ON VERY HILLY TERRAIN. DEPRESSIONS COVERED ONLY BY ANDROPOGON AND SELAGINELLA WITH 20% BARE SAND. UNDERSTORY OF QUERCUS SPP., YOUNG CARYA, LYONIA FERRUGMEG, SABEL, SERENOA AND PERSEA. RARE P. CLUSA.	2011 aerial photography: This is a large area of orange groves, residential development, with some extant habitat mostly in the northern Source Feature (F12FNA02FLUS). Present in 1983
MUSTPENI*23	<i>Mustela frenata peninsulae</i>	Florida Long-tailed Weasel	G5T3?	S3	N	N	1975-01-21	improved pasture; Baygall	1975-01-21: J.N. Layne, observation. Teats enlarged. Archbold Biol. Stn. No. 8952. J.N. Layne field note entry no. 3864.
MUSTPENI*25	<i>Mustela frenata peninsulae</i>	Florida Long-tailed Weasel	G5T3?	S3	N	N	1979-01-13	grove	1979-01-13: C.E. Winegarner, observation. Archbold Biol. Stn. No. 10539.
MUSTPENI*26	<i>Mustela frenata peninsulae</i>	Florida Long-tailed Weasel	G5T3?	S3	N	N	1980-02	No general description given	1980-02: R. Scarborough, individual observation. Brought in by house cat. Archbold Biol. Station. No. 11005 (U97GFC02FLUS).
PITUMELA*131	<i>Pituophis melanoleucus</i>	Pine Snake	G4	S3	N	ST	ZZ	No general description given	SPEC. (AMNH-110990), COLLECTOR N/A, DATE N/A.
PLESLIVI*22	<i>Plestiodon egregius lividus</i>	Blue-tailed Mole Skink	G5T2	S2	T	FT	1987-01-18	DENSE OAK/HICKORY SCRUB ON VERY HILLY TERRAIN. DEPRESSIONS COVERED ONLY BY ANDROPOGON AND SELAGINELLA WITH 20% BARE SAND. UNDERSTORY OF QUERCUS SPP., YOUNG CARYA, LYONIA FERRUGMEG, SABEL, SERENOA AND PERSEA. RARE P. CLUSA.	No EO data given



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FNAI ELEMENT OCCURRENCE REPORT on or near
SR 70 from CR 29 to Lonesome Island Road

Map Label	Scientific Name	Common Name	Global State Federal State Observation				Date	Description	EO Comments
			Rank	Rank	Status	Listing			
POLYBASI*19	<i>Polygonella basiramia</i>	Florida jointweed	G3	S3	E	E	2012-10-24	<p>1998-05-08: Rosemary scrub on rolling hills. The sparse canopy consists of widely scattered <i>Pinus clausa</i> (up to 12 in dbh and 40 ft tall). Occasional <i>Lyonia ferruginea</i> and <i>L. fruticosa</i> stick out above the abundant <i>Ceratiola ericoides</i> (6 ft tall) which dominates the landscape. Numerous isolated clumps of abundant <i>Quercus inopina</i> occur throughout. The palms <i>Serenoa repens</i> and <i>Sabal etonia</i> are frequently intermixed. Gaps (less than 5% cover) of bare white sand have abundant lichens and common <i>Licania michauxii</i>. The more common listed species are <i>Calamintha ashei</i>, <i>Paronychia chartacea</i>, and <i>Polygonella myriophylla</i> (PNDSCH03FLUS).</p> <p>1998-03-11: South end: Partially cleared, extremely open sand pine scrub on steep rolling hills. The absence of <i>Serenoa repens</i> is particularly conspicuous. The white sand is exposed over more than 25% of the area. The sparse canopy consists of a few widely scattered <i>Pinus clausa</i> (up to 15 in. dbh and 50 ft tall). Occasional clumps of tall shrubs with <i>Quercus geminata</i>, <i>Q. chapmanii</i>, and <i>Persea humilis</i> dot the landscape. Short shrubs are generally clustered around these clumps; <i>Quercus inopina</i>, <i>Sabal etonia</i>, and <i>Bumelia tenax</i> are frequent. The huge gaps of bare white sand have numerous species with <i>Licania michauxii</i>, <i>Opuntia humifusa</i>, <i>Palafoxia feayi</i>, and <i>Polygonella robusta</i> common. The exotic grasses <i>Digitaria decumbens</i> and <i>Rhynchelytrum repens</i> are</p>	<p>This is a moderately large, fairly stable EO where plants have been seen repeatedly. A recent quick survey in 2012 counted at least 1000 plants in reproductive condition. According to 2011 aerial photography, habitat is still extant throughout this EO (F12FNA02FLUS). Species not observed in large southern polygon in 1998, but it is unclear whether the entire polygon was surveyed.</p>

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FNAI ELEMENT OCCURRENCE REPORT on or near
SR 70 from CR 29 to Lonesome Island Road

Global State Federal State Observation

Map Label	Scientific Name	Common Name	Rank	Rank	Status	Listing	Date	Description	EO Comments
SCRUB****114	Scrub		G2	S2	N	N	1999	abundant. Observed listed species are Calamintha ashei, Eryngium cuneifolium, Hypericum cumulicola, Ilex opaca var. arenicola, Nolina brittoniana, Paronychia chartacea, Persea humilis, Polygonella basiramia, P. myriophylla, Prunus geniculata, Aphelocoma coerulescens, Gopherus polyphemus, and Sceloporus woodi (PNDSCH03FLUS). MOSTLY OAK SCRUB, SOME CLEARED	1999: Update to last obs date was based on interpretation of aerial photography (previous value was 1981-07-31) (U05FNA02FLUS). OCCURRENCE AT SITE, SOME CLEARED.

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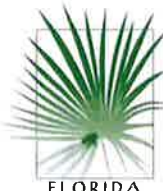
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Florida Natural Areas Inventory Biodiversity Matrix Report



Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
Matrix Unit ID: 49711					
Documented					
<i>Polygonella basiramia</i>	Florida jointweed	G3	S3	E	E
Likely					
<i>Aphelecoma coerulescens</i>	Florida Scrub-Jay	G2?	S2	T	FT
<i>Caracara cheriway</i>	Crested Caracara	G5	S2	T	FT
<i>Dasymutilla archboldi</i>	Lake Wales Ridge Velvet Ant	G2G3	S2S3	N	N
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	T	FT
<i>Plestiodon egregius lividus</i>	Blue-tailed Mole Skink	G5T2	S2	T	FT
Scrub		G2	S2	N	N
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T4	S4	N	N
Potential					
<i>Ammodramus savannarum floridanus</i>	Florida Grasshopper Sparrow	G5T1	S1	E	FE
<i>Andropogon arctatus</i>	pinewoods bluestem	G3	S3	N	T
<i>Antigone canadensis pratensis</i>	Florida Sandhill Crane	G5T2	S2	N	ST
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	ST
<i>Bonamia grandiflora</i>	Florida bonamia	G3	S3	T	E
<i>Calamintha ashei</i>	Ashe's savory	G3	S3	N	T
<i>Calopogon multiflorus</i>	many-flowered grass-pink	G2G3	S2S3	N	T
<i>Carex chapmannii</i>	Chapman's sedge	G3	S3	N	T
<i>Centrosema arenicola</i>	sand butterfly pea	G2Q	S2	N	E
<i>Chionanthus pygmaeus</i>	pygmy fringe tree	G2G3	S2S3	E	E
<i>Clitoria fragrans</i>	scrub pigeon-wing	G3	S3	T	E
<i>Coelorachis tuberculosa</i>	Piedmont jointgrass	G3	S3	N	T
<i>Coleataenia abscissa</i>	cutthroatgrass	G3	S3	N	E
<i>Conradina brevifolia</i>	short-leaved rosemary	G2Q	S2	E	E
<i>Dryobates borealis</i>	Red-cockaded Woodpecker	G3	S2	E	FE
<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	scrub buckwheat	G4T3	S3	T	E
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	C	ST
<i>Gymnopogon chapmanianus</i>	Chapman's skeletongrass	G3	S3	N	N
<i>Hartwrightia floridana</i>	hartwrightia	G2	S2	N	T
<i>Heterodon simus</i>	Southern Hognose Snake	G2	S2S3	N	N
<i>Hypericum edisonianum</i>	Edison's ascyrum	G2	S2	N	E
<i>Lampropeltis extenuata</i>	Short-tailed Snake	G3	S3	N	ST
<i>Lechea cernua</i>	nodding pinweed	G3	S3	N	T
<i>Liatris ohlingerae</i>	Florida blazing star	G2	S2	E	E
<i>Lithobates capito</i>	Gopher Frog	G3	S3	N	N
<i>Matelea floridana</i>	Florida spiny-pod	G2	S2	N	E
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3?	S3	N	N
<i>Nemastylis floridana</i>	celestial lily	G2	S2	N	E
<i>Neofiber alleni</i>	Round-tailed Muskrat	G3	S3	N	N
<i>Nolina atopocarpa</i>	Florida beargrass	G3	S3	N	T
<i>Nolina brittoniana</i>	Britton's beargrass	G3	S3	E	E
<i>Paronychia chartacea</i> var. <i>chartacea</i>	paper-like nailwort	G3T3	S3	T	E
<i>Peucaea aestivalis</i>	Bachman's Sparrow	G3	S3	N	N
<i>Pituophis melanoleucus</i>	Pine Snake	G4	S3	N	ST
<i>Platanthera integra</i>	yellow fringeless orchid	G3G4	S3	N	E

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Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
<i>Podomys floridanus</i>	Florida Mouse	G3	S3	N	N
<i>Polygala lewtonii</i>	Lewton's polygala	G2	S2S3	E	E
<i>Polygonella myriophylla</i>	Small's jointweed	G3	S3	E	E
<i>Prunus geniculata</i>	scrub plum	G3	S3	E	E
<i>Pteroglossaspis ecristata</i>	giant orchid	G2G3	S2	N	T
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	E	FE
<i>Rostrhamus sociabilis</i>	Snail Kite	G4G5	S2	E	FE
<i>Salix floridana</i>	Florida willow	G2	S2	N	E
<i>Sceloporus woodi</i>	Florida Scrub Lizard	G2G3	S2S3	N	N
<i>Sciurus niger niger</i>	Southeastern Fox Squirrel	G5T5	S3	N	N
<i>Warea carteri</i>	Carter's warea	G3	S3	E	E

Matrix Unit ID: 49712

Documented

<i>Polygonella basiramia</i>	Florida jointweed	G3	S3	E	E
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Likely

<i>Aphelocoma coerulescens</i>	Florida Scrub-Jay	G2?	S2	T	FT
<i>Caracara cheriway</i>	Crested Caracara	G5	S2	T	FT
<i>Dasymutilla archboldi</i>	Lake Wales Ridge Velvet Ant	G2G3	S2S3	N	N
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	T	FT
Scrub		G2	S2	N	N
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T4	S4	N	N

Potential

<i>Ammodramus savannarum floridanus</i>	Florida Grasshopper Sparrow	G5T1	S1	E	FE
<i>Andropogon arctatus</i>	pinewoods bluestem	G3	S3	N	T
<i>Antigone canadensis pratensis</i>	Florida Sandhill Crane	G5T2	S2	N	ST
<i>Athene cucularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	ST
<i>Bonamia grandiflora</i>	Florida bonamia	G3	S3	T	E
<i>Calamintha ashei</i>	Ashe's savory	G3	S3	N	T
<i>Calopogon multiflorus</i>	many-flowered grass-pink	G2G3	S2S3	N	T
<i>Carex chapmannii</i>	Chapman's sedge	G3	S3	N	T
<i>Centrosema arenicola</i>	sand butterfly pea	G2Q	S2	N	E
<i>Chionanthus pygmaeus</i>	pygmy fringe tree	G2G3	S2S3	E	E
<i>Cladonia perforata</i>	perforate reindeer lichen	G1	S1	E	E
<i>Clitoria fragrans</i>	scrub pigeon-wing	G3	S3	T	E
<i>Coelorachis tuberculosa</i>	Piedmont jointgrass	G3	S3	N	T
<i>Coleataenia abscissa</i>	cutthroatgrass	G3	S3	N	E
<i>Conradina brevifolia</i>	short-leaved rosemary	G2Q	S2	E	E
<i>Crotalaria avonensis</i>	Avon Park rabbit-bells	G1	S1	E	E
<i>Dicerandra christmanii</i>	Garrett's scrub balm	G1	S1	E	E
<i>Dicerandra frutescens</i>	scrub mint	G1	S1	E	E
<i>Dryobates borealis</i>	Red-cockaded Woodpecker	G3	S2	E	FE
<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	scrub buckwheat	G4T3	S3	T	E
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	C	ST
<i>Gymnopogon chapmanianus</i>	Chapman's skeletongrass	G3	S3	N	N
<i>Hartwrightia floridana</i>	hartwrightia	G2	S2	N	T
<i>Heterodon simus</i>	Southern Hognose Snake	G2	S2S3	N	N

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Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
<i>Hypericum cumulicola</i>	Highlands Scrub hypericum	G2	S2	E	E
<i>Hypericum edisonianum</i>	Edison's ascyrum	G2	S2	N	E
<i>Lampropeltis extenuata</i>	Short-tailed Snake	G3	S3	N	ST
<i>Lechea cernua</i>	nodding pinweed	G3	S3	N	T
<i>Lechea divaricata</i>	pine pinweed	G2	S2	N	E
<i>Liatris ohlingerae</i>	Florida blazing star	G2	S2	E	E
<i>Lithobates capito</i>	Gopher Frog	G3	S3	N	N
<i>Matelea floridana</i>	Florida spiny-pod	G2	S2	N	E
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3?	S3	N	N
<i>Nemastylis floridana</i>	celestial lily	G2	S2	N	E
<i>Neofiber alleni</i>	Round-tailed Muskrat	G3	S3	N	N
<i>Nolina atopocarpa</i>	Florida beargrass	G3	S3	N	T
<i>Nolina brittoniana</i>	Britton's beargrass	G3	S3	E	E
<i>Paronychia chartacea</i> var. <i>chartacea</i>	paper-like nailwort	G3T3	S3	T	E
<i>Peucaea aestivalis</i>	Bachman's Sparrow	G3	S3	N	N
<i>Pituophis melanoleucus</i>	Pine Snake	G4	S3	N	ST
<i>Platanthera integra</i>	yellow fringeless orchid	G3G4	S3	N	E
<i>Plestiodon egregius lividus</i>	Blue-tailed Mole Skink	G5T2	S2	T	FT
<i>Plestiodon reynoldsi</i>	Sand Skink	G2	S2	T	FT
<i>Podomys floridanus</i>	Florida Mouse	G3	S3	N	N
<i>Polygala lewtonii</i>	Lewton's polygala	G2	S2S3	E	E
<i>Polygonella myriophylla</i>	Small's jointweed	G3	S3	E	E
<i>Prunus geniculata</i>	scrub plum	G3	S3	E	E
<i>Pteroglossaspis ecristata</i>	giant orchid	G2G3	S2	N	T
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	E	FE
<i>Rostrhamus sociabilis</i>	Snail Kite	G4G5	S2	E	FE
<i>Salix floridana</i>	Florida willow	G2	S2	N	E
<i>Sceloporus woodi</i>	Florida Scrub Lizard	G2G3	S2S3	N	N
<i>Schizachyrium niveum</i>	scrub bluestem	G1G2	S1S2	N	E
<i>Sciurus niger niger</i>	Southeastern Fox Squirrel	G5T5	S3	N	N
<i>Warea carteri</i>	Carter's warea	G3	S3	E	E

Matrix Unit ID: 50041

Likely

<i>Caracara cheriway</i>	Crested Caracara	G5	S2	T	FT
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	T	FT
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T4	S4	N	N

Potential

<i>Ammodramus savannarum floridanus</i>	Florida Grasshopper Sparrow	G5T1	S1	E	FE
<i>Andropogon arctatus</i>	pinewoods bluestem	G3	S3	N	T
<i>Antigone canadensis pratensis</i>	Florida Sandhill Crane	G5T2	S2	N	ST
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	ST
<i>Bonamia grandiflora</i>	Florida bonamia	G3	S3	T	E
<i>Calamintha ashei</i>	Ashe's savory	G3	S3	N	T
<i>Calopogon multiflorus</i>	many-flowered grass-pink	G2G3	S2S3	N	T
<i>Carex chapmannii</i>	Chapman's sedge	G3	S3	N	T
<i>Centrosema arenicola</i>	sand butterfly pea	G2Q	S2	N	E
<i>Chionanthus pygmaeus</i>	pygmy fringe tree	G2G3	S2S3	E	E

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Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
<i>Coelorachis tuberculosa</i>	Piedmont jointgrass	G3	S3	N	T
<i>Coleataenia abscissa</i>	cutthroatgrass	G3	S3	N	E
<i>Conradina brevifolia</i>	short-leaved rosemary	G2Q	S2	E	E
<i>Dryobates borealis</i>	Red-cockaded Woodpecker	G3	S2	E	FE
<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	scrub buckwheat	G4T3	S3	T	E
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	C	ST
<i>Gymnopogon chapmanianus</i>	Chapman's skeletongrass	G3	S3	N	N
<i>Heterodon simus</i>	Southern Hognose Snake	G2	S2S3	N	N
<i>Hypericum edisonianum</i>	Edison's ascyrum	G2	S2	N	E
<i>Lampropeltis extenuata</i>	Short-tailed Snake	G3	S3	N	ST
<i>Lechea cernua</i>	nodding pinweed	G3	S3	N	T
<i>Liatris ohlingerae</i>	Florida blazing star	G2	S2	E	E
<i>Lithobates capito</i>	Gopher Frog	G3	S3	N	N
<i>Matelea floridana</i>	Florida spiny-pod	G2	S2	N	E
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3?	S3	N	N
<i>Nemastylis floridana</i>	celestial lily	G2	S2	N	E
<i>Neofiber alleni</i>	Round-tailed Muskrat	G3	S3	N	N
<i>Nolina atopocarpa</i>	Florida beargrass	G3	S3	N	T
<i>Nolina brittoniana</i>	Britton's beargrass	G3	S3	E	E
<i>Paronychia chartacea</i> var. <i>chartacea</i>	paper-like nailwort	G3T3	S3	T	E
<i>Peucaea aestivalis</i>	Bachman's Sparrow	G3	S3	N	N
<i>Pituophis melanoleucus</i>	Pine Snake	G4	S3	N	ST
<i>Platanthera integra</i>	yellow fringeless orchid	G3G4	S3	N	E
<i>Podomys floridanus</i>	Florida Mouse	G3	S3	N	N
<i>Polygala lewtonii</i>	Lewton's polygala	G2	S2S3	E	E
<i>Polygonella basiramia</i>	Florida jointweed	G3	S3	E	E
<i>Prunus geniculata</i>	scrub plum	G3	S3	E	E
<i>Pteroglossaspis ecristata</i>	giant orchid	G2G3	S2	N	T
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	E	FE
<i>Rostrhamus sociabilis</i>	Snail Kite	G4G5	S2	E	FE
<i>Sceloporus woodi</i>	Florida Scrub Lizard	G2G3	S2S3	N	N
<i>Sciurus niger niger</i>	Southeastern Fox Squirrel	G5T5	S3	N	N
<i>Warea carteri</i>	Carter's warea	G3	S3	E	E

Matrix Unit ID: 50042

Likely

<i>Caracara cheriway</i>	Crested Caracara	G5	S2	T	FT
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	T	FT
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T4	S4	N	N

Potential

<i>Ammodramus savannarum floridanus</i>	Florida Grasshopper Sparrow	G5T1	S1	E	FE
<i>Andropogon arctatus</i>	pinewoods bluestem	G3	S3	N	T
<i>Antigone canadensis pratensis</i>	Florida Sandhill Crane	G5T2	S2	N	ST
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	ST
<i>Bonamia grandiflora</i>	Florida bonamia	G3	S3	T	E
<i>Calamintha ashei</i>	Ashe's savory	G3	S3	N	T
<i>Calopogon multiflorus</i>	many-flowered grass-pink	G2G3	S2S3	N	T
<i>Carex chapmannii</i>	Chapman's sedge	G3	S3	N	T

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Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
<i>Centrosema arenicola</i>	sand butterfly pea	G2Q	S2	N	E
<i>Chionanthus pygmaeus</i>	pygmy fringe tree	G2G3	S2S3	E	E
<i>Coelorachis tuberculosa</i>	Piedmont jointgrass	G3	S3	N	T
<i>Coleataenia abscissa</i>	cutthroatgrass	G3	S3	N	E
<i>Conradina brevifolia</i>	short-leaved rosemary	G2Q	S2	E	E
<i>Dryobates borealis</i>	Red-cockaded Woodpecker	G3	S2	E	FE
<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	scrub buckwheat	G4T3	S3	T	E
<i>Gopher polyphemus</i>	Gopher Tortoise	G3	S3	C	ST
<i>Gymnopogon chapmanianus</i>	Chapman's skeletongrass	G3	S3	N	N
<i>Heterodon simus</i>	Southern Hognose Snake	G2	S2S3	N	N
<i>Hypericum edisonianum</i>	Edison's ascyrum	G2	S2	N	E
<i>Lechea cernua</i>	nodding pinweed	G3	S3	N	T
<i>Liatris ohlingerae</i>	Florida blazing star	G2	S2	E	E
<i>Lithobates capito</i>	Gopher Frog	G3	S3	N	N
<i>Matelea floridana</i>	Florida spiny-pod	G2	S2	N	E
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3?	S3	N	N
<i>Nemastylis floridana</i>	celestial lily	G2	S2	N	E
<i>Neofiber alleni</i>	Round-tailed Muskrat	G3	S3	N	N
<i>Nolina atopocarpa</i>	Florida beargrass	G3	S3	N	T
<i>Nolina brittoniana</i>	Britton's beargrass	G3	S3	E	E
<i>Paronychia chartacea</i> var. <i>chartacea</i>	paper-like nailwort	G3T3	S3	T	E
<i>Peucaea aestivalis</i>	Bachman's Sparrow	G3	S3	N	N
<i>Pituophis melanoleucus</i>	Pine Snake	G4	S3	N	ST
<i>Platanthera integra</i>	yellow fringeless orchid	G3G4	S3	N	E
<i>Podomys floridanus</i>	Florida Mouse	G3	S3	N	N
<i>Polygala lewtonii</i>	Lewton's polygala	G2	S2S3	E	E
<i>Polygonella basiramia</i>	Florida jointweed	G3	S3	E	E
<i>Prunus geniculata</i>	scrub plum	G3	S3	E	E
<i>Pteroglossaspis ecristata</i>	giant orchid	G2G3	S2	N	T
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	E	FE
<i>Rostrhamus sociabilis</i>	Snail Kite	G4G5	S2	E	FE
<i>Sceloporus woodi</i>	Florida Scrub Lizard	G2G3	S2S3	N	N
<i>Sciurus niger niger</i>	Southeastern Fox Squirrel	G5T5	S3	N	N
<i>Warea carteri</i>	Carter's warea	G3	S3	E	E

Matrix Unit ID: 50371

Likely

<i>Caracara cheriway</i>	Crested Caracara	G5	S2	T	FT
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	T	FT
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T4	S4	N	N

Potential

<i>Ammodramus savannarum floridanus</i>	Florida Grasshopper Sparrow	G5T1	S1	E	FE
<i>Antigone canadensis pratensis</i>	Florida Sandhill Crane	G5T2	S2	N	ST
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	ST
<i>Bonamia grandiflora</i>	Florida bonamia	G3	S3	T	E
<i>Calamintha ashei</i>	Ashe's savory	G3	S3	N	T
<i>Calopogon multiflorus</i>	many-flowered grass-pink	G2G3	S2S3	N	T
<i>Carex chapmannii</i>	Chapman's sedge	G3	S3	N	T

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Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
<i>Centrosema arenicola</i>	sand butterfly pea	G2Q	S2	N	E
<i>Chionanthus pygmaeus</i>	pygmy fringe tree	G2G3	S2S3	E	E
<i>Coelorachis tuberculosa</i>	Piedmont jointgrass	G3	S3	N	T
<i>Coleataenia abscissa</i>	cutthroatgrass	G3	S3	N	E
<i>Conradina brevifolia</i>	short-leaved rosemary	G2Q	S2	E	E
<i>Dryobates borealis</i>	Red-cockaded Woodpecker	G3	S2	E	FE
<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	scrub buckwheat	G4T3	S3	T	E
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	C	ST
<i>Gymnopogon chapmanianus</i>	Chapman's skeletongrass	G3	S3	N	N
<i>Heterodon simus</i>	Southern Hognose Snake	G2	S2S3	N	N
<i>Hypericum edisonianum</i>	Edison's ascyrum	G2	S2	N	E
<i>Lampropeltis extenuata</i>	Short-tailed Snake	G3	S3	N	ST
<i>Lechea cernua</i>	nodding pinweed	G3	S3	N	T
<i>Liatris ohlingerae</i>	Florida blazing star	G2	S2	E	E
<i>Lithobates capito</i>	Gopher Frog	G3	S3	N	N
<i>Matelea floridana</i>	Florida spiny-pod	G2	S2	N	E
<i>Mustela frenata peninsulae</i>	Florida Long-tailed Weasel	G5T3?	S3	N	N
<i>Nemastylis floridana</i>	celestial lily	G2	S2	N	E
<i>Neofiber alleni</i>	Round-tailed Muskrat	G3	S3	N	N
<i>Nolina atopocarpa</i>	Florida beargrass	G3	S3	N	T
<i>Nolina brittoniana</i>	Britton's beargrass	G3	S3	E	E
<i>Paronychia chartacea</i> var. <i>chartacea</i>	paper-like nailwort	G3T3	S3	T	E
<i>Peucaea aestivalis</i>	Bachman's Sparrow	G3	S3	N	N
<i>Pituophis melanoleucus</i>	Pine Snake	G4	S3	N	ST
<i>Platanthera integra</i>	yellow fringeless orchid	G3G4	S3	N	E
<i>Podomys floridanus</i>	Florida Mouse	G3	S3	N	N
<i>Polygala lewtonii</i>	Lewton's polygala	G2	S2S3	E	E
<i>Polygonella basiramia</i>	Florida jointweed	G3	S3	E	E
<i>Prunus geniculata</i>	scrub plum	G3	S3	E	E
<i>Pteroglossaspis ecristata</i>	giant orchid	G2G3	S2	N	T
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	E	FE
<i>Rostrhamus sociabilis</i>	Snail Kite	G4G5	S2	E	FE
<i>Sceloporus woodi</i>	Florida Scrub Lizard	G2G3	S2S3	N	N
<i>Sciurus niger niger</i>	Southeastern Fox Squirrel	G5T5	S3	N	N
<i>Warea carteri</i>	Carter's warea	G3	S3	E	E

Matrix Unit ID: 50372

Likely

<i>Caracara cheriway</i>	Crested Caracara	G5	S2	T	FT
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T4	S4	N	N

Potential

<i>Ammodramus savannarum floridanus</i>	Florida Grasshopper Sparrow	G5T1	S1	E	FE
<i>Antigone canadensis pratensis</i>	Florida Sandhill Crane	G5T2	S2	N	ST
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	ST
<i>Bonamia grandiflora</i>	Florida bonamia	G3	S3	T	E
<i>Calamintha ashei</i>	Ashe's savory	G3	S3	N	T
<i>Calopogon multiflorus</i>	many-flowered grass-pink	G2G3	S2S3	N	T
<i>Carex chapmannii</i>	Chapman's sedge	G3	S3	N	T

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<i>Centrosema arenicola</i>	sand butterfly pea	G2Q	S2	N	E
<i>Chionanthus pygmaeus</i>	pygmy fringe tree	G2G3	S2S3	E	E
<i>Coelorachis tuberculosa</i>	Piedmont jointgrass	G3	S3	N	T
<i>Coleataenia abscissa</i>	cutthroatgrass	G3	S3	N	E
<i>Conradina brevifolia</i>	short-leaved rosemary	G2Q	S2	E	E
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	T	FT
<i>Dryobates borealis</i>	Red-cockaded Woodpecker	G3	S2	E	FE
<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	scrub buckwheat	G4T3	S3	T	E
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	C	ST
<i>Gymnopogon chapmanianus</i>	Chapman's skeletongrass	G3	S3	N	N
<i>Heterodon simus</i>	Southern Hognose Snake	G2	S2S3	N	N
<i>Hypericum edisonianum</i>	Edison's ascyrum	G2	S2	N	E
<i>Lechea cernua</i>	nodding pinweed	G3	S3	N	T
<i>Liatris ohlingerae</i>	Florida blazing star	G2	S2	E	E
<i>Lithobates capito</i>	Gopher Frog	G3	S3	N	N
<i>Matelea floridana</i>	Florida spiny-pod	G2	S2	N	E
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3?	S3	N	N
<i>Nemastylis floridana</i>	celestial lily	G2	S2	N	E
<i>Neofiber alleni</i>	Round-tailed Muskrat	G3	S3	N	N
<i>Nolina atopocarpa</i>	Florida beargrass	G3	S3	N	T
<i>Nolina brittoniana</i>	Britton's beargrass	G3	S3	E	E
<i>Paronychia chartacea</i> var. <i>chartacea</i>	paper-like nailwort	G3T3	S3	T	E
<i>Peucaea aestivalis</i>	Bachman's Sparrow	G3	S3	N	N
<i>Pituophis melanoleucus</i>	Pine Snake	G4	S3	N	ST
<i>Podomys floridanus</i>	Florida Mouse	G3	S3	N	N
<i>Polygala lewtonii</i>	Lewton's polygala	G2	S2S3	E	E
<i>Polygonella basiramia</i>	Florida jointweed	G3	S3	E	E
<i>Prunus geniculata</i>	scrub plum	G3	S3	E	E
<i>Pteroglossaspis ecristata</i>	giant orchid	G2G3	S2	N	T
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	E	FE
<i>Sceloporus woodi</i>	Florida Scrub Lizard	G2G3	S2S3	N	N
<i>Sciurus niger niger</i>	Southeastern Fox Squirrel	G5T5	S3	N	N
<i>Warea carteri</i>	Carter's warea	G3	S3	E	E

Matrix Unit ID: 50702

Likely

<i>Caracara cheriway</i>	Crested Caracara	G5	S2	T	FT
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T4	S4	N	N

Potential

<i>Ammodramus savannarum floridanus</i>	Florida Grasshopper Sparrow	G5T1	S1	E	FE
<i>Antigone canadensis pratensis</i>	Florida Sandhill Crane	G5T2	S2	N	ST
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	ST
<i>Bonamia grandiflora</i>	Florida bonamia	G3	S3	T	E
<i>Calamintha ashei</i>	Ashe's savory	G3	S3	N	T
<i>Calopogon multiflorus</i>	many-flowered grass-pink	G2G3	S2S3	N	T
<i>Carex chapmannii</i>	Chapman's sedge	G3	S3	N	T
<i>Centrosema arenicola</i>	sand butterfly pea	G2Q	S2	N	E
<i>Chionanthus pygmaeus</i>	pygmy fringe tree	G2G3	S2S3	E	E

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Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
<i>Coelorachis tuberculosa</i>	Piedmont jointgrass	G3	S3	N	T
<i>Coleataenia abscissa</i>	cutthroatgrass	G3	S3	N	E
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	T	FT
<i>Dryobates borealis</i>	Red-cockaded Woodpecker	G3	S2	E	FE
<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	scrub buckwheat	G4T3	S3	T	E
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	C	ST
<i>Gymnopogon chapmanianus</i>	Chapman's skeletongrass	G3	S3	N	N
<i>Heterodon simus</i>	Southern Hognose Snake	G2	S2S3	N	N
<i>Lechea cernua</i>	nodding pinweed	G3	S3	N	T
<i>Liatris ohlingerae</i>	Florida blazing star	G2	S2	E	E
<i>Lithobates capito</i>	Gopher Frog	G3	S3	N	N
<i>Matelea floridana</i>	Florida spiny-pod	G2	S2	N	E
<i>Mustela frenata peninsulae</i>	Florida Long-tailed Weasel	G5T3?	S3	N	N
<i>Nemastylis floridana</i>	celestial lily	G2	S2	N	E
<i>Neofiber alleni</i>	Round-tailed Muskrat	G3	S3	N	N
<i>Nolina atopocarpa</i>	Florida beargrass	G3	S3	N	T
<i>Nolina brittoniana</i>	Britton's beargrass	G3	S3	E	E
<i>Paronychia chartacea</i> var. <i>chartacea</i>	paper-like nailwort	G3T3	S3	T	E
<i>Peucaea aestivalis</i>	Bachman's Sparrow	G3	S3	N	N
<i>Pituophis melanoleucus</i>	Pine Snake	G4	S3	N	ST
<i>Platanthera integra</i>	yellow fringeless orchid	G3G4	S3	N	E
<i>Podomys floridanus</i>	Florida Mouse	G3	S3	N	N
<i>Polygala lewtonii</i>	Lewton's polygala	G2	S2S3	E	E
<i>Polygonella basiramia</i>	Florida jointweed	G3	S3	E	E
<i>Prunus geniculata</i>	scrub plum	G3	S3	E	E
<i>Pteroglossaspis ecristata</i>	giant orchid	G2G3	S2	N	T
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	E	FE
<i>Sceloporus woodi</i>	Florida Scrub Lizard	G2G3	S2S3	N	N
<i>Sciurus niger niger</i>	Southeastern Fox Squirrel	G5T5	S3	N	N
<i>Warea carteri</i>	Carter's warea	G3	S3	E	E

Matrix Unit ID: 51027

Likely

<i>Caracara cheriway</i>	Crested Caracara	G5	S2	T	FT
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Potential

<i>Ammodramus savannarum floridanus</i>	Florida Grasshopper Sparrow	G5T1	S1	E	FE
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	ST
<i>Bonamia grandiflora</i>	Florida bonamia	G3	S3	T	E
<i>Calamintha ashei</i>	Ashe's savory	G3	S3	N	T
<i>Calopogon multiflorus</i>	many-flowered grass-pink	G2G3	S2S3	N	T
<i>Centrosema arenicola</i>	sand butterfly pea	G2Q	S2	N	E
<i>Chionanthus pygmaeus</i>	pygmy fringe tree	G2G3	S2S3	E	E
<i>Coelorachis tuberculosa</i>	Piedmont jointgrass	G3	S3	N	T
<i>Coleataenia abscissa</i>	cutthroatgrass	G3	S3	N	E
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	T	FT
<i>Dryobates borealis</i>	Red-cockaded Woodpecker	G3	S2	E	FE
<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	scrub buckwheat	G4T3	S3	T	E
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	C	ST

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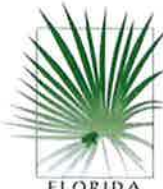
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Scientific Name	Common Name	Global Rank	State Rank	Federal Status	State Listing
<i>Gymnopogon chapmanianus</i>	Chapman's skeletongrass	G3	S3	N	N
<i>Lechea cernua</i>	nodding pinweed	G3	S3	N	T
<i>Liatris ohlingerae</i>	Florida blazing star	G2	S2	E	E
<i>Lithobates capito</i>	Gopher Frog	G3	S3	N	N
<i>Matelea floridana</i>	Florida spiny-pod	G2	S2	N	E
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3?	S3	N	N
<i>Nemastylis floridana</i>	celestial lily	G2	S2	N	E
<i>Neofiber alleni</i>	Round-tailed Muskrat	G3	S3	N	N
<i>Nolina atopocarpa</i>	Florida beargrass	G3	S3	N	T
<i>Nolina brittoniana</i>	Britton's beargrass	G3	S3	E	E
<i>Paronychia chartacea</i> var. <i>chartacea</i>	paper-like nailwort	G3T3	S3	T	E
<i>Peucaea aestivalis</i>	Bachman's Sparrow	G3	S3	N	N
<i>Platanthera integra</i>	yellow fringeless orchid	G3G4	S3	N	E
<i>Podomys floridanus</i>	Florida Mouse	G3	S3	N	N
<i>Polygala lewtonii</i>	Lewton's polygala	G2	S2S3	E	E
<i>Polygonella basiramia</i>	Florida jointweed	G3	S3	E	E
<i>Prunus geniculata</i>	scrub plum	G3	S3	E	E
<i>Pteroglossaspis ecristata</i>	giant orchid	G2G3	S2	N	T
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	E	FE
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T4	S4	N	N
<i>Warea carteri</i>	Carter's warea	G3	S3	E	E
Matrix Unit ID: 51355					
Likely					
<i>Caracara cheriway</i>	Crested Caracara	G5	S2	T	FT
<i>Ursus americanus floridanus</i>	Florida Black Bear	G5T4	S4	N	N
Potential					
<i>Antigone canadensis pratensis</i>	Florida Sandhill Crane	G5T2	S2	N	ST
<i>Athene cunicularia floridana</i>	Florida Burrowing Owl	G4T3	S3	N	ST
<i>Bonamia grandiflora</i>	Florida bonamia	G3	S3	T	E
<i>Calamintha ashei</i>	Ashe's savory	G3	S3	N	T
<i>Calopogon multiflorus</i>	many-flowered grass-pink	G2G3	S2S3	N	T
<i>Centrosema arenicola</i>	sand butterfly pea	G2Q	S2	N	E
<i>Chionanthus pygmaeus</i>	pygmy fringe tree	G2G3	S2S3	E	E
<i>Coelorachis tuberculosa</i>	Piedmont jointgrass	G3	S3	N	T
<i>Coleataenia abscissa</i>	cutthroatgrass	G3	S3	N	E
<i>Conradina brevifolia</i>	short-leaved rosemary	G2Q	S2	E	E
<i>Drymarchon couperi</i>	Eastern Indigo Snake	G3	S3	T	FT
<i>Dryobates borealis</i>	Red-cockaded Woodpecker	G3	S2	E	FE
<i>Eriogonum longifolium</i> var. <i>gnaphalifolium</i>	scrub buckwheat	G4T3	S3	T	E
<i>Gopherus polyphemus</i>	Gopher Tortoise	G3	S3	C	ST
<i>Gymnopogon chapmanianus</i>	Chapman's skeletongrass	G3	S3	N	N
<i>Lechea cernua</i>	nodding pinweed	G3	S3	N	T
<i>Liatris ohlingerae</i>	Florida blazing star	G2	S2	E	E
<i>Linum carteri</i> var. <i>smallii</i>	Small's flax	G2T2	S2	N	E
<i>Lithobates capito</i>	Gopher Frog	G3	S3	N	N
<i>Matelea floridana</i>	Florida spiny-pod	G2	S2	N	E
<i>Mustela frenata peninsulæ</i>	Florida Long-tailed Weasel	G5T3?	S3	N	N

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<i>Nemastylis floridana</i>	celestial lily	G2	S2	N	E
<i>Neofiber alleni</i>	Round-tailed Muskrat	G3	S3	N	N
<i>Nolina atopocarpa</i>	Florida beargrass	G3	S3	N	T
<i>Nolina brittoniana</i>	Britton's beargrass	G3	S3	E	E
<i>Paronychia chartacea var. chartacea</i>	paper-like nailwort	G3T3	S3	T	E
<i>Peucaea aestivalis</i>	Bachman's Sparrow	G3	S3	N	N
<i>Platanthera integra</i>	yellow fringeless orchid	G3G4	S3	N	E
<i>Podomys floridanus</i>	Florida Mouse	G3	S3	N	N
<i>Polygonella basiramia</i>	Florida jointweed	G3	S3	E	E
<i>Pteroglossaspis ecristata</i>	giant orchid	G2G3	S2	N	T
<i>Puma concolor coryi</i>	Florida Panther	G5T1	S1	E	FE
<i>Salix floridana</i>	Florida willow	G2	S2	N	E
<i>Sciurus niger niger</i>	Southeastern Fox Squirrel	G5T5	S3	N	N
<i>Warea carteri</i>	Carter's warea	G3	S3	E	E

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

Elements and Element Occurrences

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

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

Element Ranking and Legal Status

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

FNAI GLOBAL ELEMENT RANK

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

FNAI STATE ELEMENT RANK

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

FEDERAL LEGAL STATUS

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

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

C = Candidate species for which federal listing agencies have sufficient information on biological vulnerability and threats to support proposing to list the species as Endangered or Threatened.

E = Endangered: species in danger of extinction throughout all or a significant portion of its range.

E, T = Species currently listed endangered in a portion of its range but only listed as threatened in other areas

E, PDL = Species currently listed endangered but has been proposed for delisting.

E, PT = Species currently listed endangered but has been proposed for listing as threatened.

E, XN = Species currently listed endangered but tracked population is a non-essential experimental population.

T = Threatened: species likely to become Endangered within the foreseeable future throughout all or a significant portion of its range.

PE = Species proposed for listing as endangered

PS = Partial status: some but not all of the species' infraspecific taxa have federal

PT = Species proposed for listing as threatened

SAT = Treated as threatened due to similarity of appearance to a species which is federally listed such that enforcement personnel have difficulty in attempting to differentiate between the listed and unlisted species.

SC = Not currently listed, but considered a "species of concern" to USFWS.

STATE LEGAL STATUS

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

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

C = Candidate for listing at the Federal level by the U. S. Fish and Wildlife Service

FE = Listed as Endangered Species at the Federal level by the U. S. Fish and Wildlife Service

FT = Listed as Threatened Species at the Federal level by the U. S. Fish and Wildlife Service

FXN = Federal listed as an experimental population in Florida

FT(S/A) = Federal Threatened due to similarity of appearance

ST = State population listed as Threatened by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.

SSC = Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species. (SSC* for *Pandion haliaetus* (Osprey) indicates that this status applies in Monroe county only.)

N = Not currently listed, nor currently being considered for listing.

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

E = Endangered: species of plants native to Florida that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue; includes all species determined to be endangered or threatened pursuant to the U.S. Endangered Species Act.

T = Threatened: species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in number as to cause them to be Endangered.

N = Not currently listed, nor currently being considered for listing.

Element Occurrence Ranking

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

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

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

FNAI also uses the following EO ranks:

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

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

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

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

DRAFT

APPENDIX E

Agency Coordination

U.S. Fish and Wildlife Service Coordination

DRAFT

Project Name

SR 70 from CR 29 to Lonesome Island Rd. PD&E Study

Project Number

FPID 414506-5

Date/Time

July 7, 2020 at 9am

Location

Call via Microsoft Teams

Purpose of Meeting

Florida Bonneted Bat Formal Consultation

Participants

Gwen Pipkin – FDOT
Vivianne Cross – FDOT
John Wrublik – USFWS
Martin Horwitz – KCA

1. Introductions.
2. A brief history of the project and coordination with USFWS was presented which included a summary of the 2019 listed species surveys conducted by KCA.
 - a. We went over project location and project status. There is no current funding for Design or Construction.
 - b. The Everglade snail kite survey resulted documentation of snail kites foraging in wetlands north of project but there was no nests or roosting observed.
 - c. A caracara nest was found and the project is located in the Primary Zone. Formal consultation will be required for caracara.
3. Next, we discussed the results of the Florida Bonneted Bat (FBB) acoustic survey and the process required to complete consultation.
 - a. The acoustic survey was conducted by Johnson Engineering.
 - b. A total of 20 potential FBB calls were identified during the acoustic survey. No FBB calls were within 90 minutes of sunset or sunrise.
 - c. Due to project size and need to convert >50 acres of uplands/wetlands, the FBB Consultation Key results in a determination of Likely to Adversely Affect (LAA).
 - i. John stated, the existing 2-lanes of roadway not suitable FBB foraging habitat. Therefore, the area of existing roadway is not to be included in total calculation of upland land conversion since the that area of road will be replaced.

- ii. The conversion of agricultural land to pond sites is included in conversion of uplands/wetlands so it must be accounted for.
 - iii. USFWS will review the FBB acoustic report and NRE for this project to determine if formal consultation is required or not for FBB.
- d. If Formal Consultation is required:
- i. The NRE will need to include a proposal for mitigation in form of payment to FBB fund similar to the caracara fund contributions for mitigation, e.g. \$100,000 for impacts to caracara nest. The project's total required contribution has not been determined yet for the FBB.
- e. Next Steps:
- i. KCA will finalize NRE and submit to FDOT for review/approval.
 - ii. NRE will be sent by OEM to initiate Formal Consultation.
 - 1. USFWS will determine if FBB LAA determination can be reduced to May Affect Not Likely to Adversely Affect or keep as LAA and require Biological Opinion for FBB.
 - 2. A Biological Opinion will be required for caracara.
- f. Additional Note:
- i. During the meeting, John mentioned if an Eastern Indigo Snake was documented in the project area that formal consultation will also be required for it. Following the meeting Martin verified that an Eastern Indigo Snake was documented in the project area. Formal consultation will be required for it and FDOT will propose mitigation in the form of credits from FDOT's Platt Branch Conservation Bank.

From: Catie Neal
Sent: Monday, August 10, 2020 4:59 PM
To: Megan Rasmussen
Cc: Christen Cerrito
Subject: FW: FW: [EXTERNAL] 414506-5-22-01 SR 70 from CR 29 to Lonesome Island Road - Federal Species Surveys Memorandum



Catie Neal
Senior Environmental Scientist/Project Manager
Email: CNeal@kcaeng.com
Work: 813.871.5331
Cell: 678.485.9340
201 N. Franklin St. Suite 400, Tampa, FL 33602

From: Wrublik, John <john.wrublik@fws.gov>
Sent: Thursday, February 7, 2019 3:15 PM
To: Mark Easley <Mark.Easley@kisingercampo.com>
Subject: Re: FW: [EXTERNAL] 414506-5-22-01 SR 70 from CR 29 to Lonesome Island Road - Federal Species Surveys Memorandum

No, but you can advise FDOT that we will be asking for a donation to the Wildlife Foundation of Florida indigo snake fund. Although, we can work that out during the permitting phase.

John

John M. Wrublik
U.S. Fish and Wildlife Service
1339 20th Street
Vero Beach, Florida 32960
Office: (772) 469-4282
Fax: (772) 562-4288
email: John.Wrublik@fws.gov

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On Thu, Feb 7, 2019 at 2:16 PM Mark Easley <Mark.Easley@kisingercampo.com> wrote:

John,

Is there anything you will need from me (or that I can do) to aid you with the indigo snake formal BO?

Please let me know and I'll try and build it into the plan now.

Thanks,

ME



Mark Easley
Senior Project Manager - Environmental Services

Email: Mark.Easley@kisingercampo.com
Work: 813.871.5331 ext 4111
201 N. Franklin St., Suite 400, Tampa, FL 33602

From: Wrublik, John <john_wrublik@fws.gov>

Sent: Thursday, February 7, 2019 9:06 AM

To: Mark Easley <Mark.Easley@kisingercampo.com>

Subject: Re: FW: [EXTERNAL] 414506-5-22-01 SR 70 from CR 29 to Lonesome Island Road - Federal Species Surveys Memorandum

Mark,

I looked over the document. Two things.

First, the Service is now asking for acoustic surveys along with roosting surveys for

the Florida bonneted bat. Please see attached survey protocol. Second, fyi,

When recently reviewing this project in order to submit comments through the FDOT ETDM website, I noticed that the Service has records of indigo snakes occurring in the project site. As such, we will go formal on the indigo snake and I'll need to write a biological opinion for the project. Other than that, I didn't have any other comments on the document.

John

John M. Wrublik

U.S. Fish and Wildlife Service

1339 20th Street

Vero Beach, Florida 32960

Office: (772) 469-4282

Fax: (772) 562-4288

email: John_Wrublik@fws.gov

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On Wed, Feb 6, 2019 at 7:57 AM Mark Easley <Mark.Easley@kisingercampo.com> wrote:

I can only imagine the of the pile.

Welcome back.



Mark Easley

Senior Project Manager - Environmental Services

Email: Mark.Easley@kisingercampo.com

Work: 813.871.5331 ext 4111

201 N. Franklin St., Suite 400, Tampa, FL 33602

From: Wrublik, John <john_wrublik@fws.gov>

Sent: Wednesday, February 6, 2019 7:52 AM

To: Mark Easley <Mark.Easley@kisingercampo.com>

Subject: Re: FW: [EXTERNAL] 414506-5-22-01 SR 70 from CR 29 to Lonesome Island Road - Federal Species Surveys Memorandum

It's in my pile, I should get to it soon

John M. Wrublik

U.S. Fish and Wildlife Service

1339 20th Street

Vero Beach, Florida 32960

Office: (772) 469-4282

Fax: (772) 562-4288

email: John_Wrublik@fws.gov

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On Wed, Feb 6, 2019 at 7:43 AM Mark Easley <Mark.Easley@kisingercampo.com> wrote:

John,

I know you must be swamped but have you had time to take a look at the attached memorandum (see link below).

Please give me a call if you have any questions or would like to discuss.

Thanks,

ME



Mark Easley

Senior Project Manager - Environmental Services

Email: Mark.Easley@kisingercampo.com

Work: 813.871.5331 ext 4111

201 N. Franklin St., Suite 400, Tampa, FL 33602

From: Mark Easley <Mark.Easley@kisingercampo.com>

Sent: Monday, January 28, 2019 7:15 AM

To: Wrublik, John <john_wrublik@fws.gov>

Subject: RE: [EXTERNAL] 414506-5-22-01 SR 70 from CR 29 to Lonesome Island Road - Federal Species Surveys Memorandum

John,

There should be a new link at the bottom of the e-mail.

Because of the time issue, we started the caracara surveys the 2nd of January.

Please give me a call if you have any questions or would like to discuss.

Thanks,

ME

Files attached to this message

Filename	Size	Checksum (SHA256)
18-12-18 414506-5 SR 70 cr 29 to lonesome island - USFWS species survey memorandum+attachm ents.pdf	73. 6 M B	1e493cf7f929889c3dd72ce7484e58ec06839e51e5e4ed60 797a08717695e55f

Please click on the following link to download the attachments:

<https://fta.kcaeng.com/message/9F7YUEn6zCFSkqbreVENj7>

This email or download link can be forwarded to anyone.

The attachments are available until: **Wednesday, 27 February.**

Message ID: 9F7YUEn6zCFSkqbreVENj7



Mark Easley
Senior Project Manager - Environmental Services

Email: Mark.Easley@kisingercampo.com
Work: 813.871.5331 ext 4111
201 N. Franklin St., Suite 400, Tampa, FL 33602

From: Wrublik, John <john_wrublik@fws.gov>
Sent: Monday, January 28, 2019 7:12 AM
To: Mark Easley <Mark.Easley@kisingercampo.com>
Cc: Cross, Vivianne <Vivianne.Cross@dot.state.fl.us>; Bateman, Patrick <Patrick.Bateman@dot.state.fl.us>
Subject: Re: [EXTERNAL] 414506-5-22-01 SR 70 from CR 29 to Lonesome Island Road - Federal Species Surveys Memorandum

Mark,

Due to the government shutdown, I did not see this email until today. It appears that the attachments are no longer

available. Please resend them, and I will let you know if I have any questions or comments.

Thank you

John

John M. Wrublik

U.S. Fish and Wildlife Service

1339 20th Street

Vero Beach, Florida 32960

Office: (772) 469-4282

Fax: (772) 562-4288

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.

On Tue, Dec 18, 2018 at 12:52 PM Mark Easley <Mark.Easley@kisingercampo.com> wrote:

John,

KCA has been contracted by the FDOT to undertake a PD&E study for a segment of SR 70 extending from CR 29 to Lonesome Island Road, in Highlands County. This project begins at the eastern end of the SR 70 from Jefferson Avenue to CR 29 project and extends 4.3 miles to the east. As this project has not been evaluated through the ETDM Programming Screen, we collect available local, county and regional data to assess the potential for impacts to federal listed species. The key species that may be affected by the project include the crested caracara, Everglades snail kite, and Florida bonneted bat. We have developed a survey plan to be used to assess and quantify impacts to these species and wanted you to review and provide any input you may have on the plan before we start the implementation process. While we also identified the wood stork and Eastern indigo snake as species of concern, impacts to these species will be quantified based on wetland impacts (wood stork) and habitat impacts (indigo snake) and species surveys are not anticipated.

We would ask that you review the attached plan ([see link at bottom of e-mail](#)) and provide us with any comments you may have.

Please give Vivianne Cross a call at 863.519.2805 (vivianne.cross@dot.state.fl.us) or me a call at 813.871.5331 (mark.easley@kisingercampo.com) if you would like to discuss the attached information.

Thanks for your help with this.

ME



Mark Easley
Senior Project Manager - Environmental Services

Email: Mark.Easley@kisingercampo.com
Work: 813.871.5331 ext 4111
201 N. Franklin St., Suite 400, Tampa, FL 33602

CONFIDENTIALITY NOTE: This communication may be privileged and confidential. It should not be disseminated to others. If received in error, please immediately reply that you have received this communication in error and then delete it. Thank you.

DRAFT

December 18, 2018

To: John Wrublik, USFWS

From: Mark Easley, KCA

CC: Patrick Bateman, FDOT
Vivianne Cross, FDOT

RE: SR 70 FROM CR 29 TO LONESOME ISLAND ROAD
Financial Project No.: 414506-5-22-01
PROTECTED SPECIES SURVEY PLAN

Kisinger, Campo & Associates (KCA) on the behalf of the Florida Department of Transportation (FDOT) is conducting a Project Development and Environmental (PD&E) study to evaluate options for widening State Road 70 (SR 70) in Highlands County. The study covers approximately 4.3 miles, beginning at CR 29 and ending at Lonesome Island Road. The project limits are shown in **Figure 1-Project Location Map**. The PD&E study will evaluate widening the existing two-lane undivided roadway to a four-lane divided roadway.

The project has not been evaluated through the ETDM process at this time. As a result, available project, county, and regional information was used to develop a list of potential federal listed species which may be present within and/or adjacent to the project corridor. Databases utilized in this assessment included:

- U.S. Fish and Wildlife Service (USFWS), *Endangered and Threatened Wildlife and Plants, 50 CFR 17.11 and 17.12, June 2007*;
- USFWS, *Information for Planning and Consultation website* (<https://ecos.fws.gov/ipac/>);
- Florida Fish and Wildlife Conservation Commission (FWC), *Eagle Nest Locator website* (<https://public.myfwc.com/FWRI/EagleNests/nestlocator.aspx>);
- FWC, *Wading Bird Rookeries website* (http://ocean.floridamarine.org/TRGIS/Description_Layers_Terrestrial.htm);
- Florida Natural Areas Inventory (FNAI), *Biodiversity Matrix Map Server* (<http://www.fnai.org/biointro.cfm>);
- FNAI, *Field Guide to the Rare Plants and Animals of Florida website* (www.fnai.org/fieldguide/search_001.cfm);
- USFWS, 2017 Wood Stork Nesting Colonies Maps (<http://www.fws.gov/northflorida/woodstorks/wood-storks.htm>); and
- USFWS, *Critical Habitat Portal website* (<http://criticalhabitat.fws.gov/crithab/>).

Using this information, supported by field reviews of the project corridor and assessments of existing land uses, a list of federal listed species with the potential to occur within and adjacent to the project corridor was developed. Based on this list, species which we feel have a potential to be impacted by the proposed roadway widening include:

- Wood stork
- Everglade's snail kite
- Audubon's crested caracara
- Eastern indigo snake
- Florida bonneted bat

No wood stork rookeries were identified within the area of the project corridor. However, the project does fall within the core foraging area (CFA) of one rookery (Brighton Indian Reservation – active 2017). As a result, to address potential impacts to wood stork foraging habitat, it is the Florida Department of Transportation's (FDOT) intent to quantify foraging biomass loss resulting from the project and off-setting this loss through mitigation of wetland impacts. In addition, to minimize and avoid impacts to the Eastern indigo snake, USFWS approved "*Standard Protection Measures for the Eastern Indigo Snake*", will be utilized during all construction activities.

To identify and quantify potential impacts to the Everglade's snail kite, Audubon's crested caracara, and Florida bonneted bat, the FDOT proposes to utilize species specific surveys. As the land uses vary throughout the project corridor (see **Attachment A- Land Use Map**), specific areas to be studied and assessed for each of these species varies. As such, discussions of the methodology to be used for each is provided separately below.

Everglade's Snail kite (*Rostrhamus sociabilis plumbeus*)

Like much of the region, the majority of the project corridor has been converted to agricultural land uses, which has resulted in the removal of native vegetation and the lowering of the ground water table. In an attempt to reverse this trend, the Wetlands Reserve Program was developed. This program is managed through the Food Security Act of 1985 and the Federal Farm Bill, and is implemented by the Natural Resources Conservation Service (NRCS). Through this program, the NRCS acquires easements over, and develops wetland enhancement and restoration plans for private properties. One such parcel is a large tract of land located north of SR 70, in the western segment of the project corridor (see **Attachment B – Wetlands Reserve Easement #180**). This parcel has been diked and its hydrology has been enhanced, resulting in a permanent open water area which has the potential to be utilized by the snail kite for roosting and nesting. To determine the presence or absence of snail kites, KCA proposes to survey this area in accordance with the USFWS snail kite survey protocols (see **Attachment C- Everglades Snail Kite Survey Protocol**). Within this parcel, open water areas with floating or emergent vegetation will be surveyed for the presence of roosting or nesting snail kites (see **Attachment D- Everglades Snail Kite Survey Area Map**).

Audubon's crested caracara (*Polyborus plancus audubonii*)

As stated within the USFWS – *Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season)* (see **Attachment E**), the crested caracara is typically found within dry or wet prairies with scattered cabbage palm, lightly wooded areas, and improved pasture. Much of the SR 70 project corridor contains land uses and land cover types that would be considered potential caracara habitat. The majority of the corridor is comprised of improved and unimproved pasture containing scattered

cabbage palms with isolated wetlands, active row crops and fallow agricultural fields. To determine the presence or absence of nesting caracara, these areas will be surveyed in accordance with the above referenced protocol. This includes the establishment of survey stations (see **Attachment F- Created Caracara Survey Stations Map**) which will allow review of all appropriate habitat within 1500 meters of the proposed roadway corridor.

Florida Bonneted Bat (*Eumops floridanus*)

The Florida bonneted bat 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 residential dwellings. They are known to roost in both natural and artificial structures.

The project study area is located within the Florida bonneted bat consultation area. While potential roosting areas for this species is limited due to the conversion of the majority of the project area to agriculture activities, there are small stands of hardwood forest within the corridor's western segment and scattered potential roosting sites throughout the project area (see **Attachment G- Florida Bonneted Bat Survey Area Map**). In order to determine the presence or absence of roosting bonneted bats, all forested areas within the project area will be surveyed in accordance with the Service's most recent survey guidance as stated within the USFWS Draft Protocol for Bonneted Bat Roost Surveys (see **Attachment H**). In accordance with these protocols, pedestrian transects will be established within all potential roosting areas and each snag and tree will be inspected for the presence of cavities that can be utilized for roosting. Each cavity will then be visually inspected for the presence of bonneted bats.

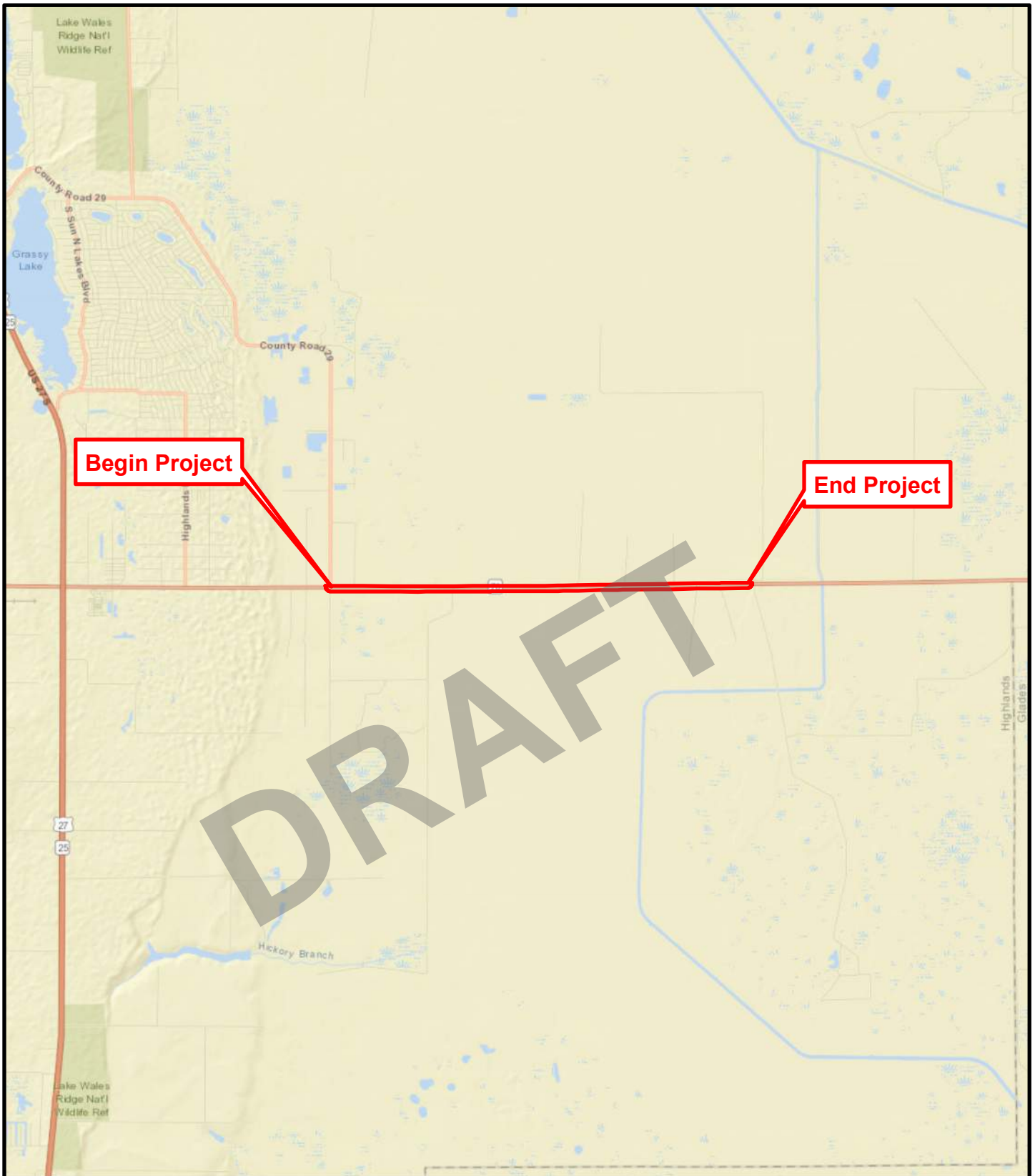
FDOT and KCA kindly request that you review the attached information, and if you agree with the planned survey methodologies discussed above, provide us with your concurrence. If you feel that surveys for additional species should be conducted along the project corridor, we would ask that you identify these species so that survey methodologies and timeframes can be developed.

If you have questions or comments on the survey methodologies submitted within this memorandum, or if you would like to discuss this project, please do not hesitate to contact me at 813.871.5331 or mark.easley@kisingercampo.com.

DRAFT

Figure 1

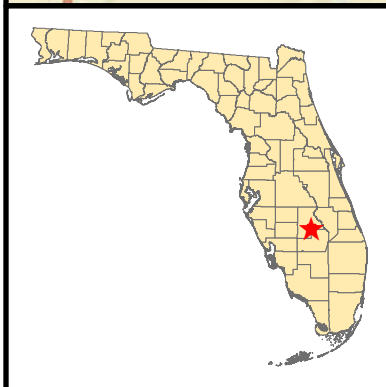
Project Location Map



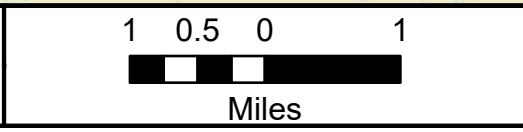
Begin Project

End Project

DRAFT



Legend
 Project Study Area



Project Location Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
Highlands County, Florida
FPID No. 414506-5-22-01

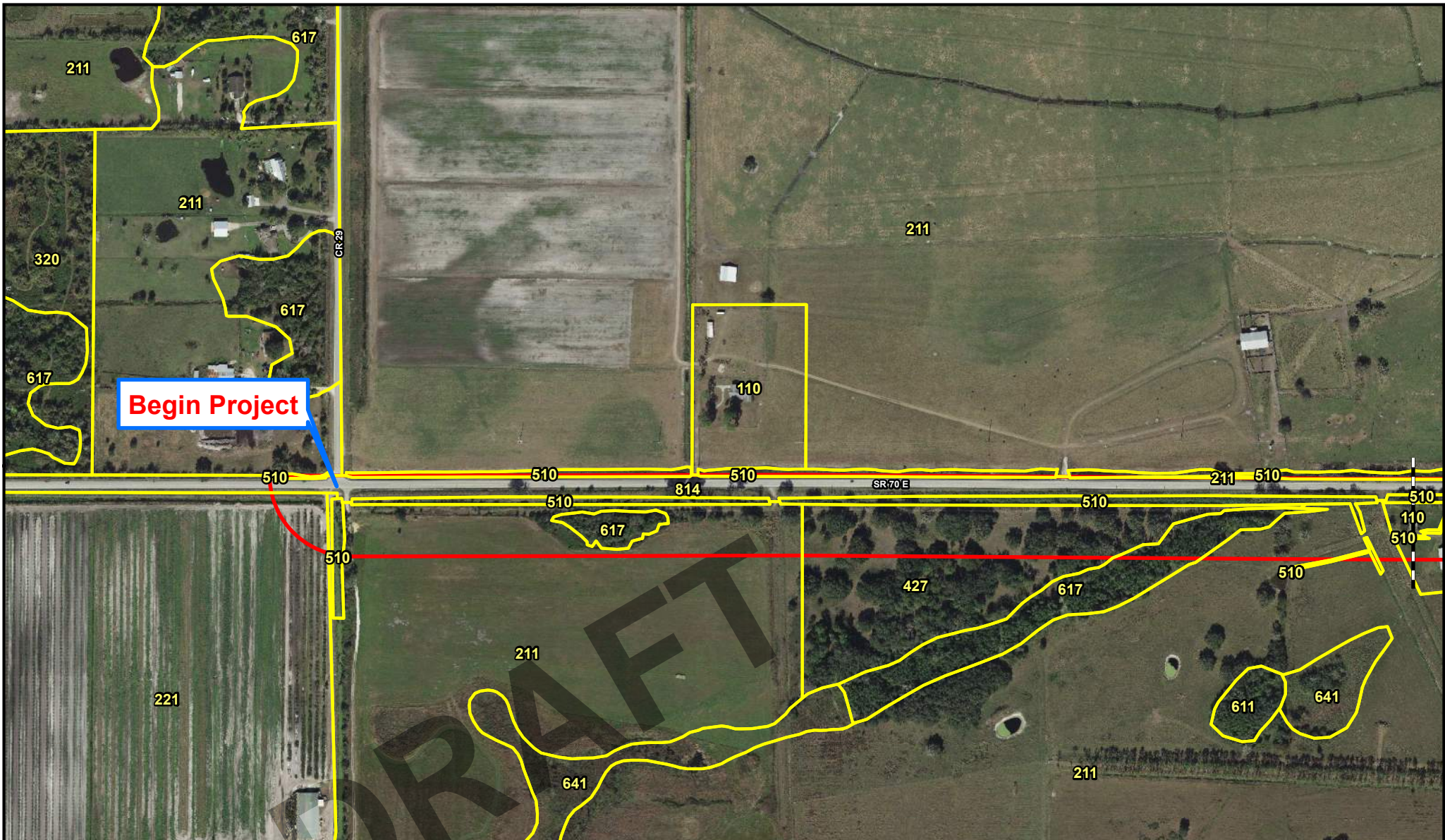
Kisinger Campo & Associates, Corp.
 201 N. Franklin Street, Suite 400
 Tampa, FL 33602
 Phone: 813/871-5331
 Fax: 813/871-5135

Figure 1

DRAFT

Attachment A

Land Use Map




 Project Study Area	310: Herbaceous (Dry Prairie)	611: Bay Swamps
110: Residential, Low Density	320: Upland Shrub and Brushland	617: Mixed Shrubs
113: Mixed Units, Fixed and Mobile Home Units	411: Pine Flatwoods	617: Mixed Wetland Hardwoods
211: Improved Pastures	420: Upland Hardwood Forests	621: Cypress
212: Unimproved Pastures	422: Brazilian Pepper	630: Cypress - Mixed Hardwoods
215: Sugar Cane	425: Temperate Hardwood	630: Wetland Forested Mixed
221: Citrus Groves	427: Live Oak	641: Freshwater Marshes / Graminoid Prairie - Marsh
232: Poultry Feeding Operations	434: Upland Mixed Coniferous / Hardwood	814: Roads and Highways
242: Sod Farms	441: Coniferous Plantations	836: Other Treatment Ponds
250: Specialty Farms	510: Streams and Waterways	
	530: Reservoirs	

Land Use Map


SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

Highlands County, FL

500 250 0 500



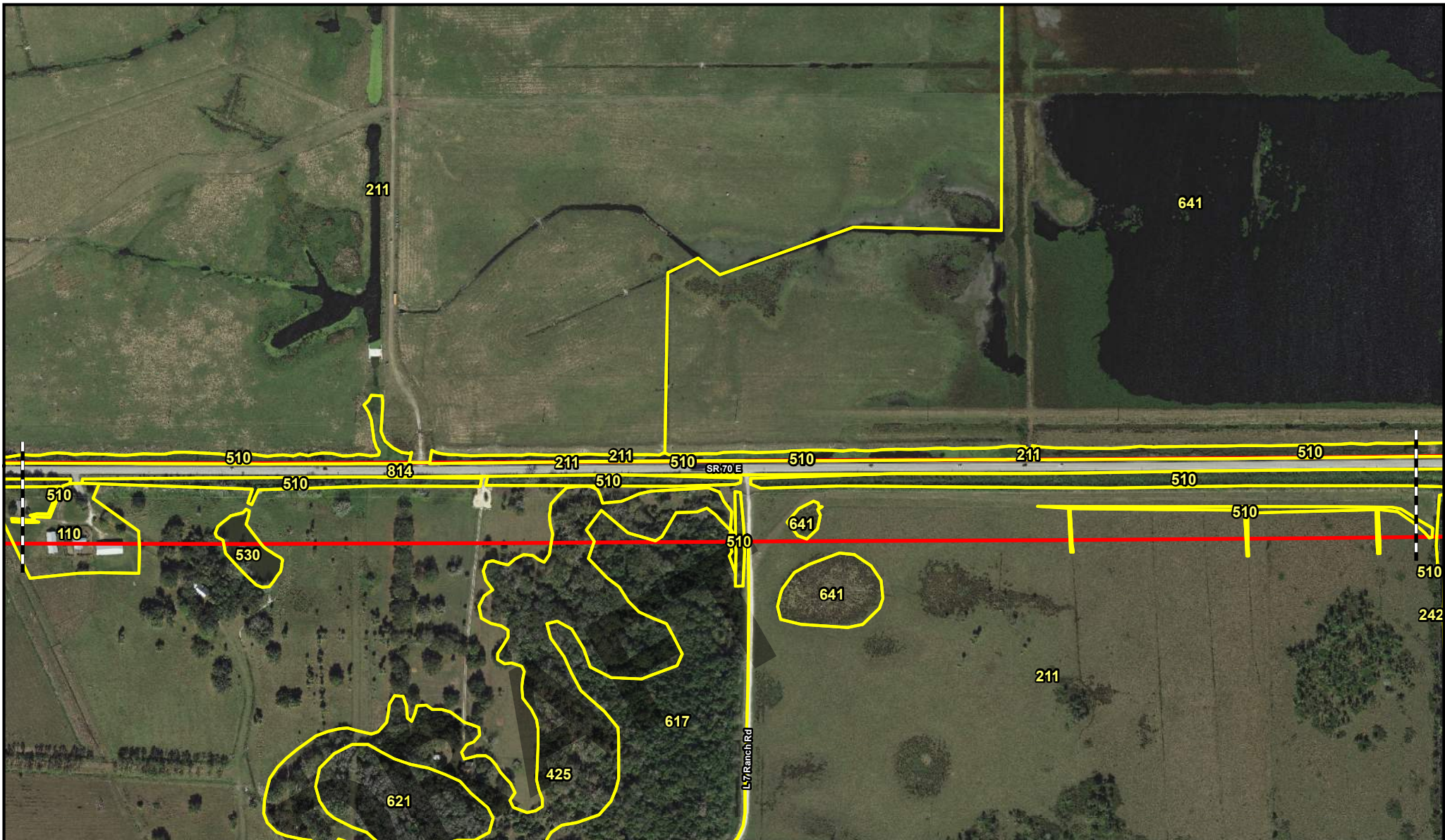
Feet



Attachment A

Page 1 of 5

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Fax: 813/871-5135



Project Study Area

- 110: Residential, Low Density
- 113: Mixed Units, Fixed and Mobile Home Units
- 211: Improved Pastures
- 212: Unimproved Pastures
- 215: Sugar Cane
- 221: Citrus Groves
- 232: Poultry Feeding Operations
- 242: Sod Farms
- 250: Specialty Farms

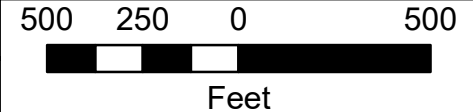
- 310: Herbaceous (Dry Prairie)
- 320: Upland Shrub and Brushland
- 411: Pine Flatwoods
- 420: Upland Hardwood Forests
- 422: Brazilian Pepper
- 425: Temperate Hardwood
- 427: Live Oak
- 434: Upland Mixed Coniferous / Hardwood
- 441: Coniferous Plantations
- 510: Streams and Waterways
- 530: Reservoirs

- 611: Bay Swamps
- 617: Mixed Shrubs
- 617: Mixed Wetland Hardwoods
- 621: Cypress
- 621: Cypress - Mixed Hardwoods
- 630: Wetland Forested Mixed
- 641: Freshwater Marshes / Graminoid Prairie - Marsh
- 814: Roads and Highways
- 836: Other Treatment Ponds

Land Use Map

SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

Highlands County, FL



Attachment A

Page 2 of 5

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 Project Study Area	310: Herbaceous (Dry Prairie)	611: Bay Swamps
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242: Sod Farms	441: Coniferous Plantations	836: Other Treatment Ponds
250: Specialty Farms	510: Streams and Waterways	
	530: Reservoirs	

Land Use Map


SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

Highlands County, FL

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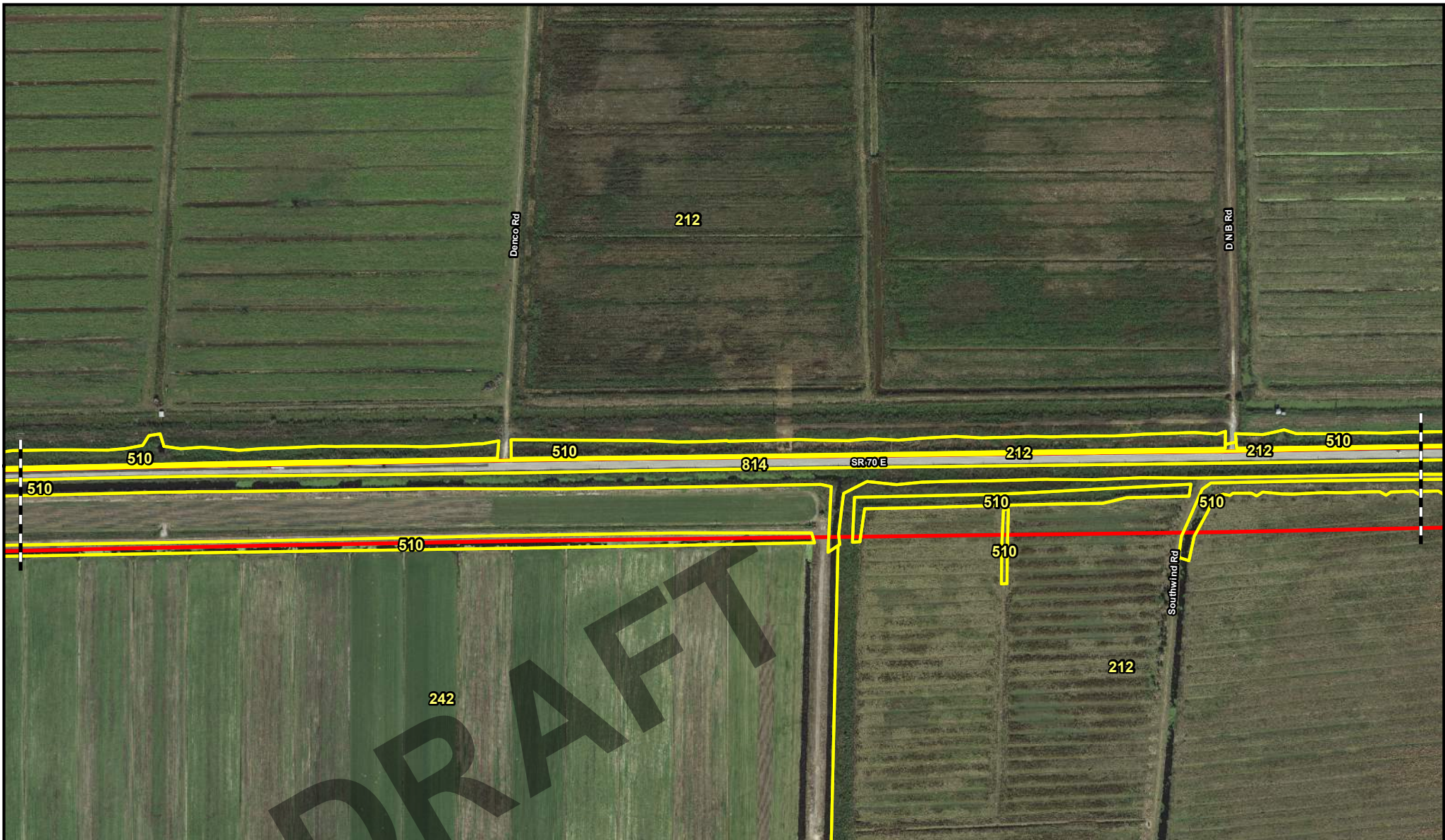
Feet



Attachment A

Page 3 of 5

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 Project Study Area	310: Herbaceous (Dry Prairie)	611: Bay Swamps
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250: Specialty Farms	510: Streams and Waterways	
	530: Reservoirs	

Land Use Map


SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

Highlands County, FL

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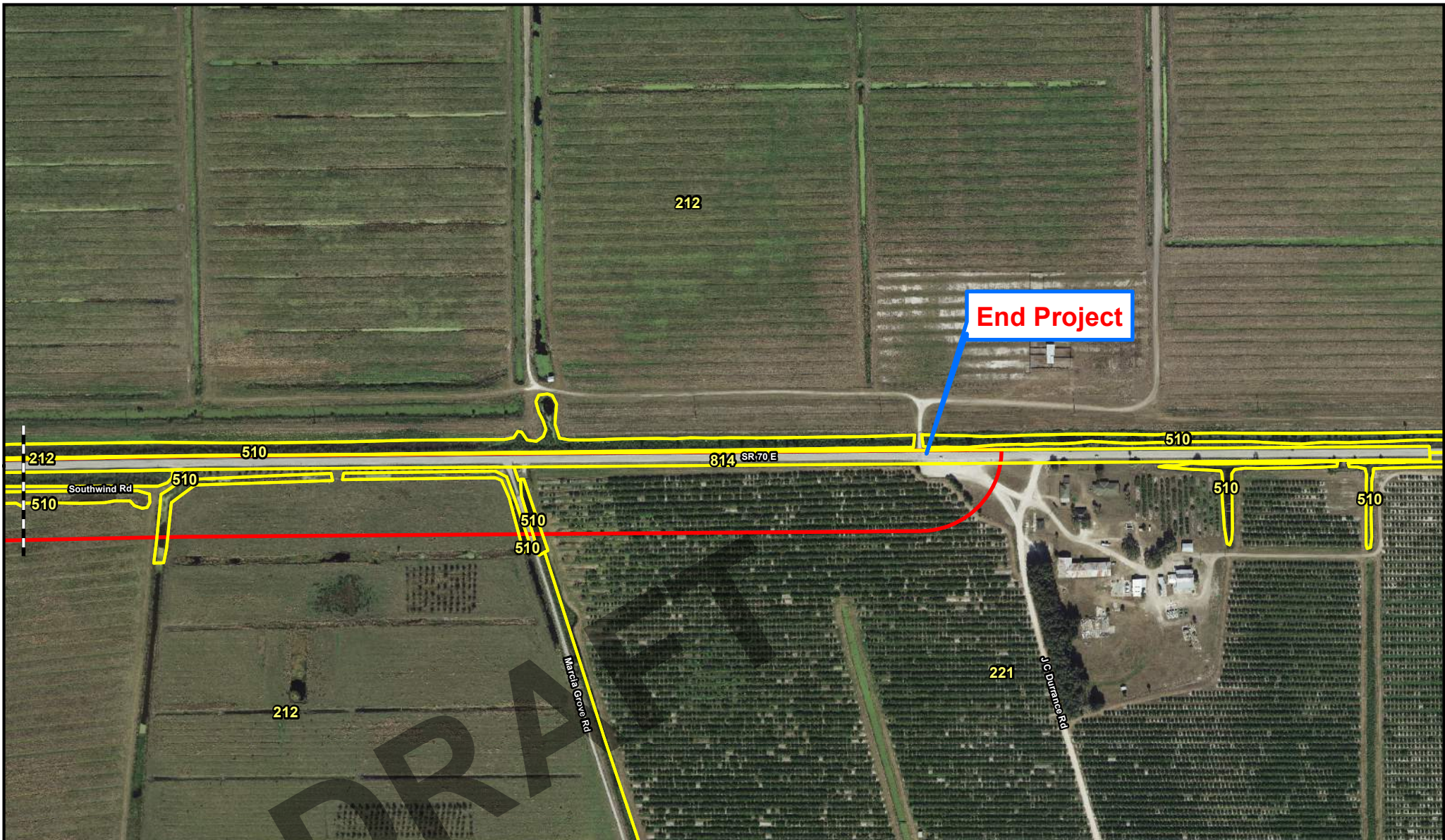
Feet



Attachment A

Page 4 of 5


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Fax: 813/871-5135




 Project Study Area	310: Herbaceous (Dry Prairie)	611: Bay Swamps
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	530: Reservoirs	

Land Use Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
 Highlands County, FL

500 250 0 500



Feet



Attachment A

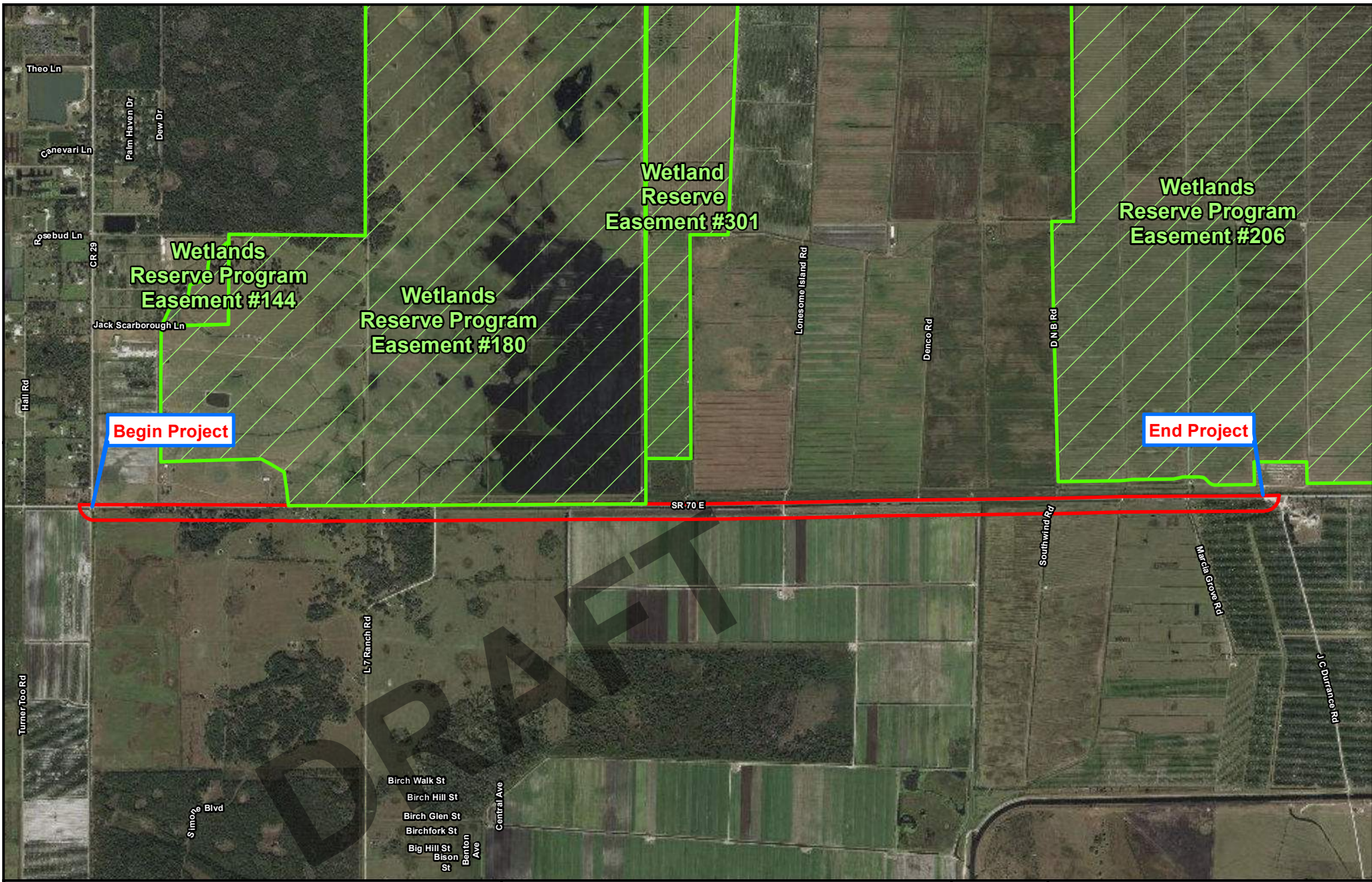
Page 5 of 5



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Attachment B



Wetlands Reserve Easement #180



	Project Study Area
	Wetland Reserve Program Easement

Wetland Reserve Easement #180
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01

Attachment B	Page 1 of 1
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	2,400 1,200 0 2,400  Feet
Kisinger Campo & Associates, Corp. 201 N. Franklin Street, Suite 400 Tampa, FL 33602 Phone: 813/871-5331 Fax: 813/871-5135	

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Attachment C

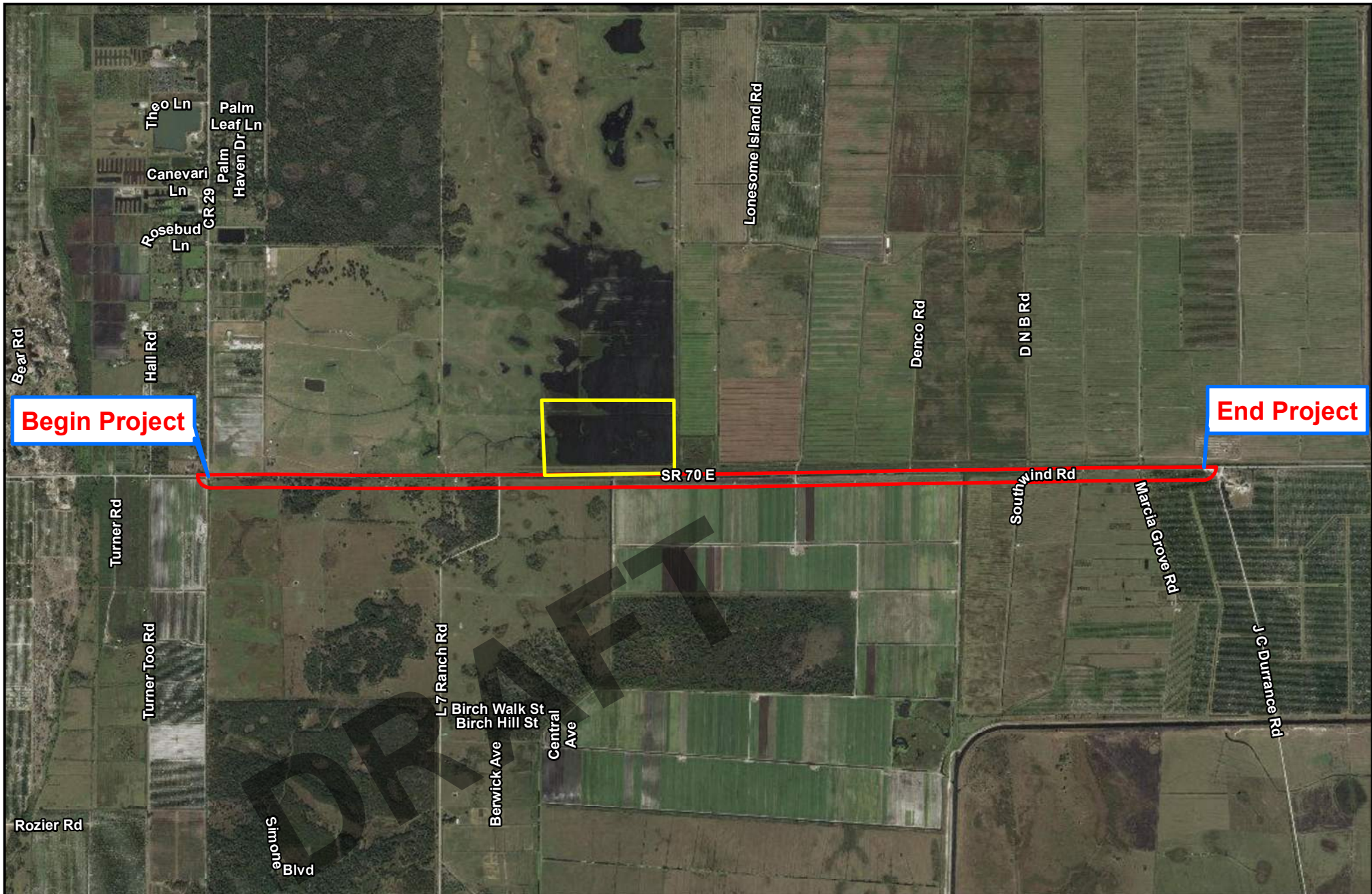
Everglades Snail Kite Survey Protocol

**Refer to the May 18, 2004 USFWS South Florida Ecological Services Office
Draft Snail Kite Survey Protocol.**

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Attachment D

Everglades Snail Kite Survey Area Map



Begin Project

End Project

SR 70 E

Southwind Rd

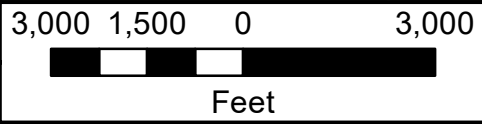
Maricla Grove Rd

J C Durance Rd

Legend

- Project Study Area
- Snail Kite Survey Area

Everglades Snail Kite Survey Area Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01



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Attachment E

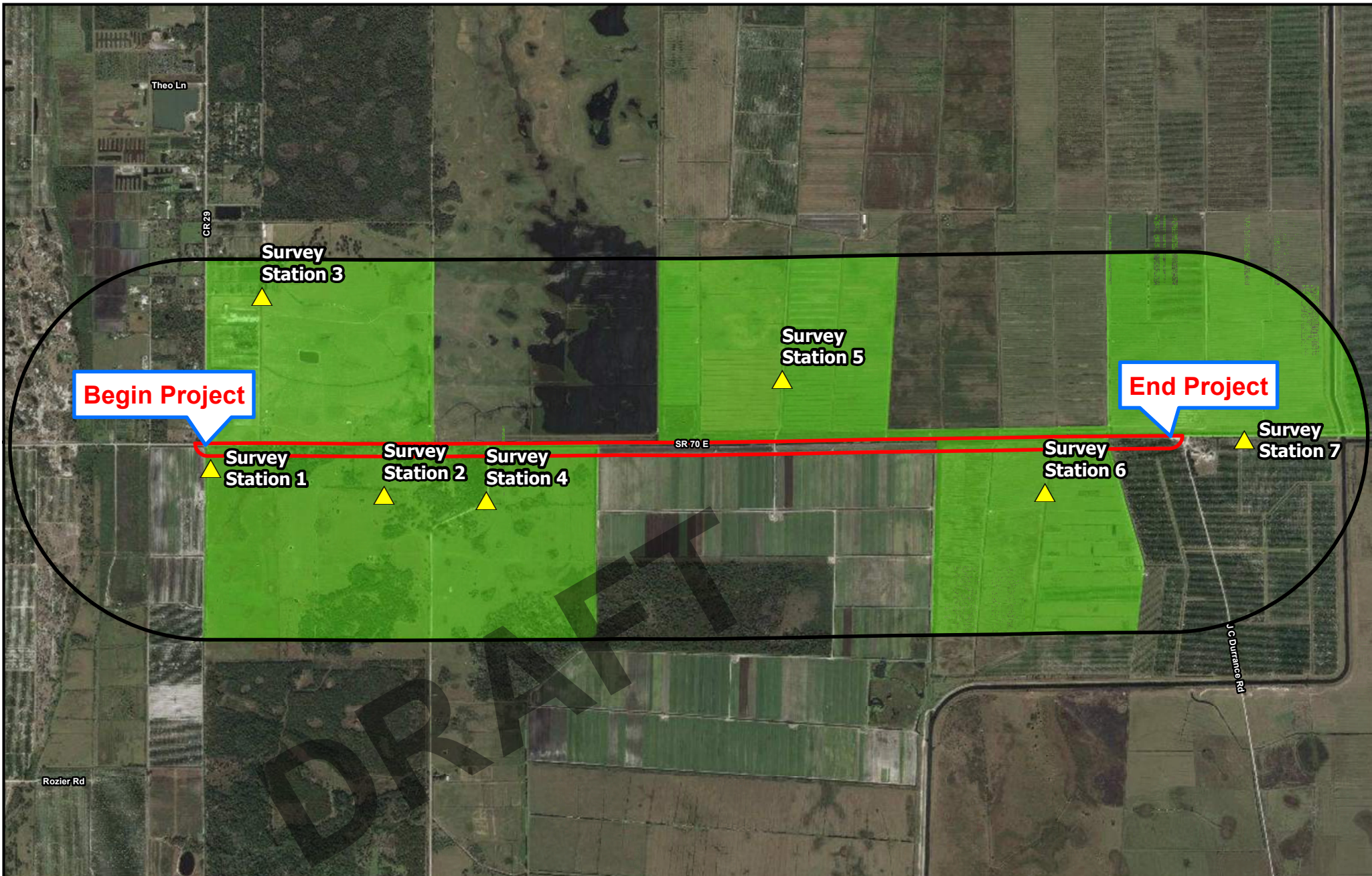
Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season)

**Refer to the South Florida Ecological Services Office USFWS Crested Caracara
Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season).**

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Attachment F

Crested Caracara Survey Stations Map

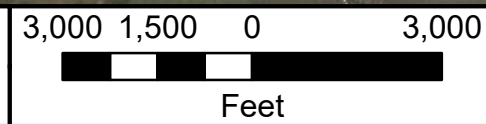


Legend

- Project Study Area
- 1500 Meter Buffer
- ▲ Caracara Survey Station
- Crested Caracara Habitat

Crested Caracara Survey Station Map

SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01



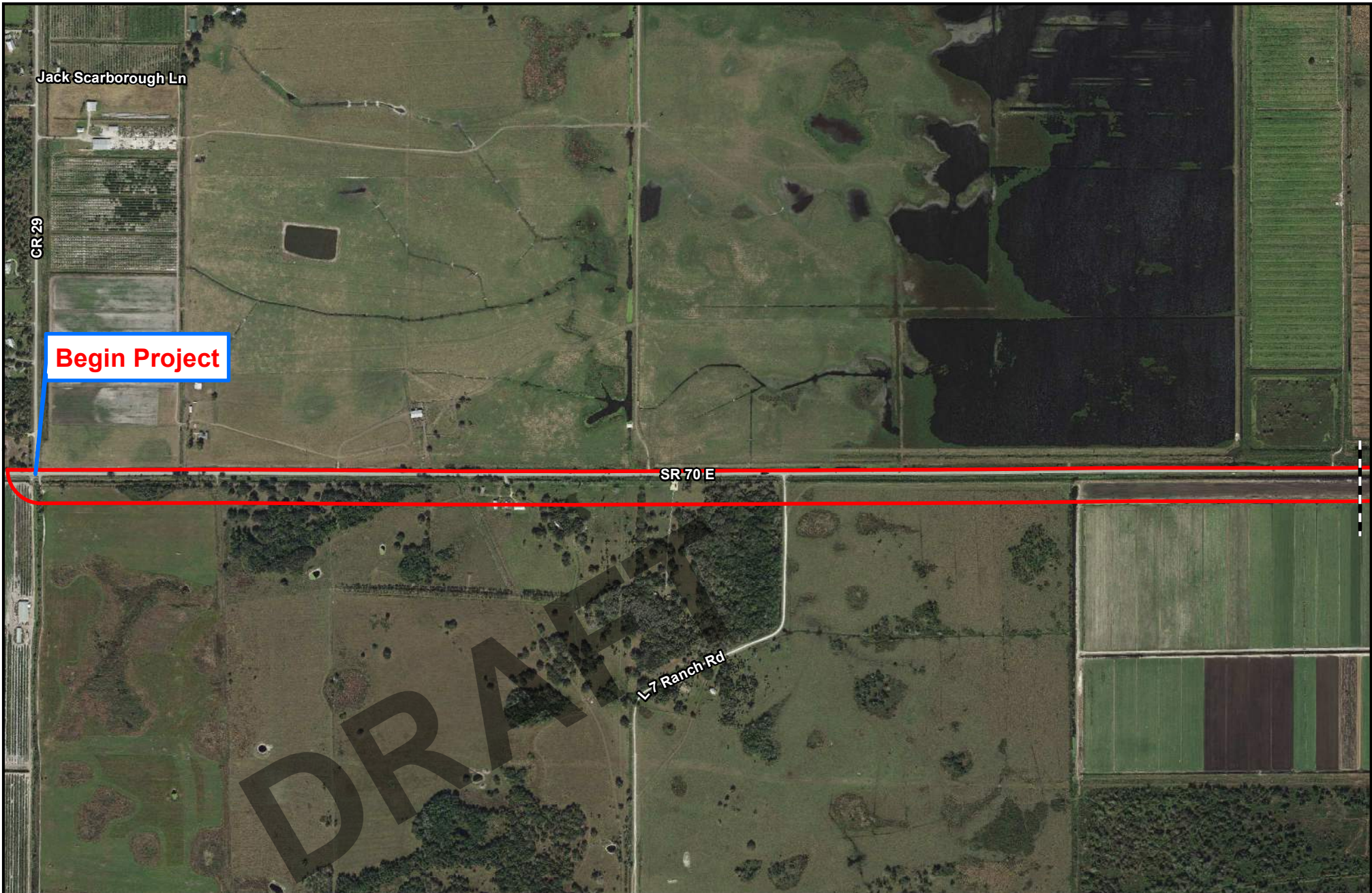
Attachment F Overview

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Attachment G

Florida Bonneted Bat Survey Area Map



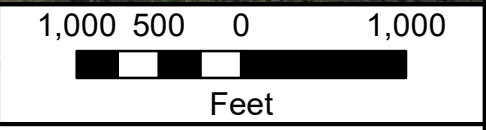
Legend

 Florida Bonneted Bat Survey Area

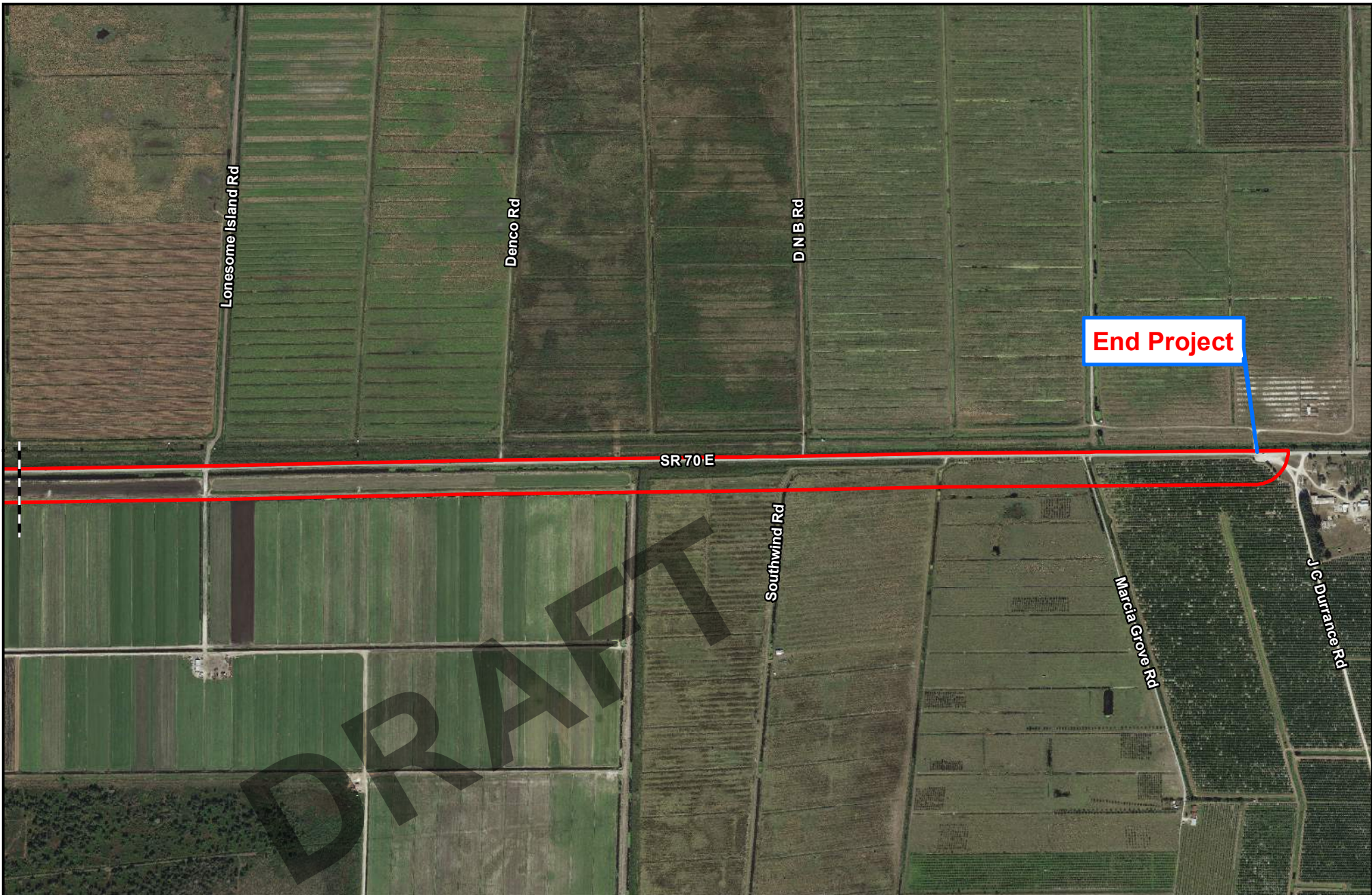
Florida Bonneted Bat Survey Area Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01

Attachment G


Page 1 of 2



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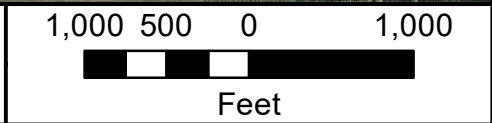
Legend

 Florida Bonneted Bat Survey Area

Florida Bonneted Bat Survey Area Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01

Attachment G

Page 2 of 2



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Attachment H

USFWS Draft Protocol for Bonneted Bat Roost Surveys

Refer to the February 3, 2015 USFWS South Florida Ecological Services Office Draft Survey Protocol for Florida Bonneted Bat Roost Surveys.

**South Florida Water Management
District Coordination**

DRAFT



SOUTH FLORIDA WATER MANAGEMENT DISTRICT

November 26, 2018

** Delivered via email*

Nicole Monies *
FDOT District 1
801 N Broadway Ave
Bartow, FL 33830

**Subject: SR 70 From CR 29 To Lonesome Island Road
Application No. 181105-945
Informal Wetland Determination No. 28-100736-P
Highlands County**

Dear Ms. Monies:

The District reviewed your request for an informal determination of the jurisdictional wetland and other surface water boundaries within the subject property, which is located as shown on the attached Exhibit 1. A site inspection was conducted on November 15, 2018 and November 20, 2018.

Based on the information provided and the results of the site inspection, jurisdictional wetlands and other surface waters as defined in Chapter 62-340, Florida Administrative Code, exist on the property. Exhibit 2, attached, identifies the boundaries of the property inspected and the approximate landward limits of the wetlands and other surface waters.

This correspondence is an informal jurisdictional wetland determination pursuant to Section 373.421(6), Florida Statutes, and Section 7.3 of Environmental Resource Permit Applicant's Handbook Volume I. It does not bind the District, its agents or employees, nor does it convey any legal rights, expressed or implied. Persons obtaining this informal jurisdictional determination are not entitled to rely upon it for purposes of compliance with provision of law or District rules.

Sincerely,



Ricardo A. Valera, P.E.
Bureau Chief, Environmental Resource Bureau

c: Bruce Williams, Kisinger Campo & Associates *

Exhibits

The following exhibits to this permit are incorporated by reference. The exhibits can be viewed by clicking on the links below or by visiting the District's ePermitting website (<http://my.sfwmd.gov/ePermitting>) and searching under this application number 181105-945.

[Exhibit No. 1.0 Location Map](#)

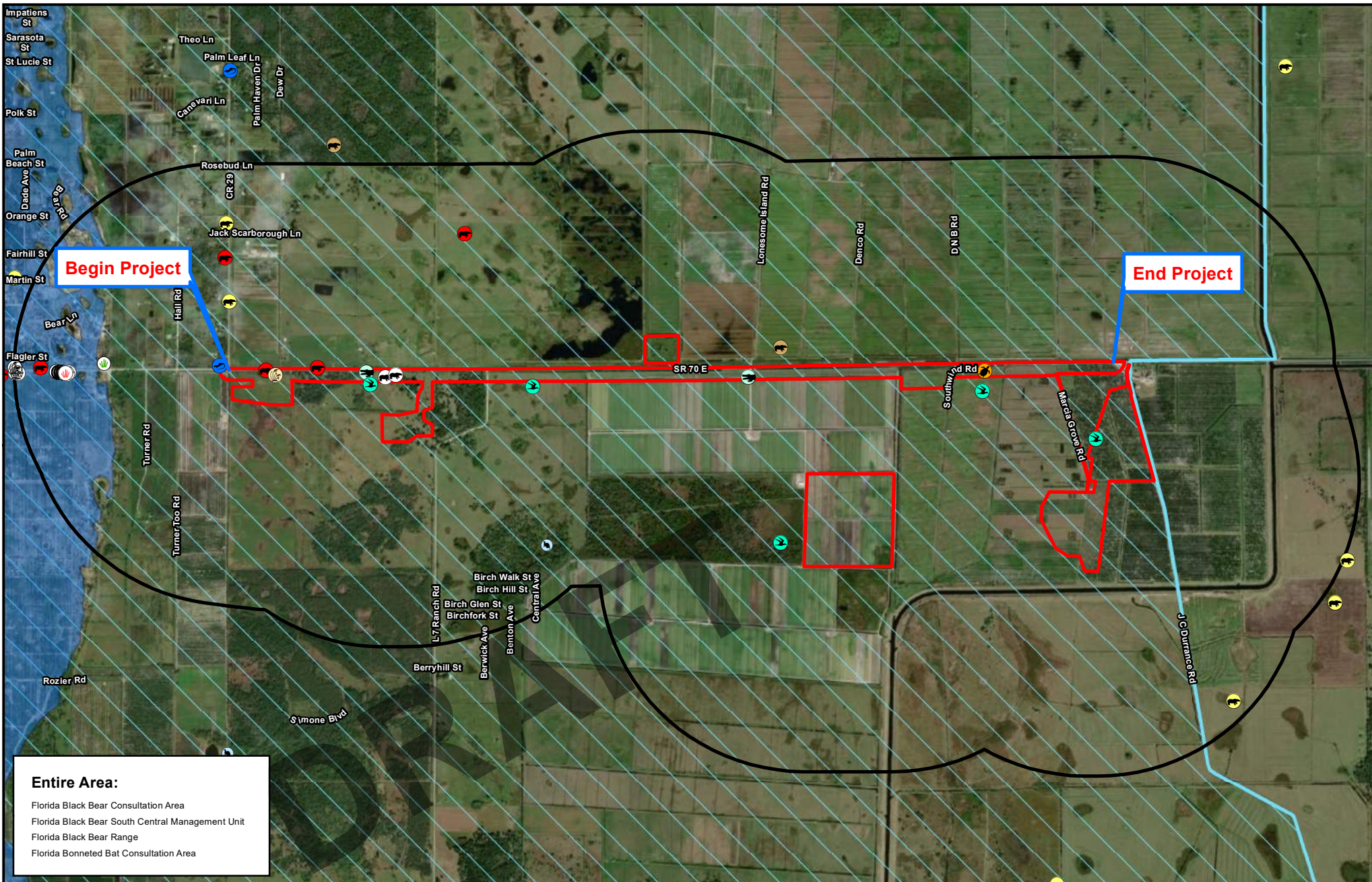
[Exhibit No. 3.0 IWD Verification](#)

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APPENDIX F

Protected Species Maps



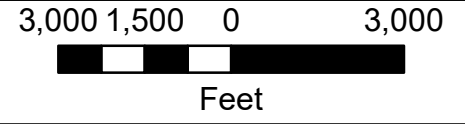
Begin Project

End Project

Entire Area:
 Florida Black Bear Consultation Area
 Florida Black Bear South Central Management Unit
 Florida Black Bear Range
 Florida Bonneted Bat Consultation Area

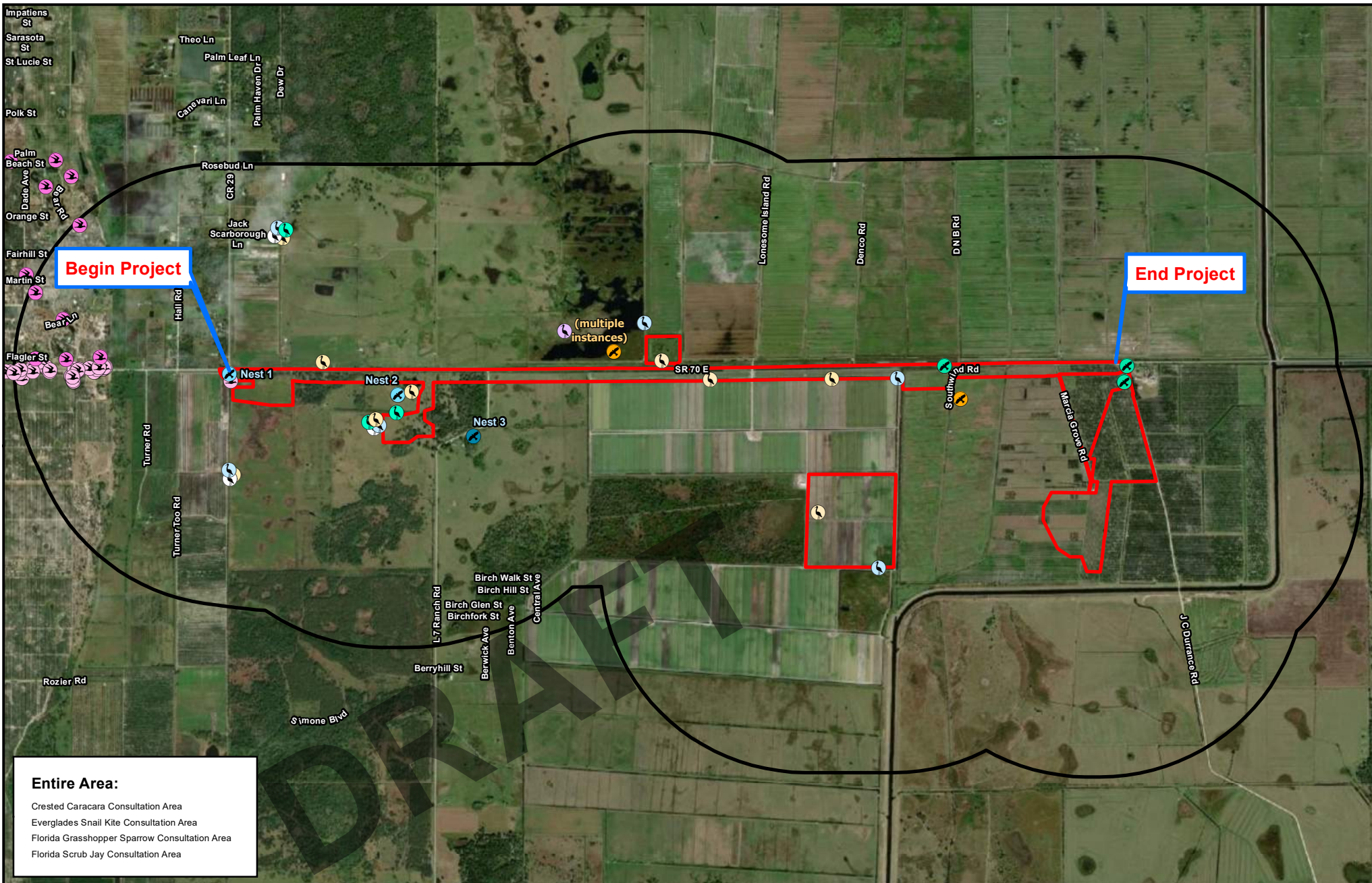
- | | | |
|--|---|-------------------------------------|
| Project Study Area | American Alligator | Florida Black Bear Capture Location |
| 1 Mile Buffer | Black Bear | Florida Panther Telemetry |
| KCA Field Observations | Cutthroat grass (<i>Coleataenia abscessa</i>) | FNAI Data |
| Airplants (<i>Tillandsia</i> spp.) | Gopher Tortoise Burrow | Eastern Indigo Snake |
| Curtiss' Milkweed (<i>Asclepias curtissii</i>) | FWC Data | Potential Sand Skink Habitat |
| Paper Nailwort (<i>Paronychia chartacea</i>) | Black Bear Roadkill | Sand Skink Consultation Area |
| Florida Bonneted Bat (acoustics) | Black Bear Related Calls | |

Protected Non-Avian Species Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
 Highlands County, FL



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 Tampa, FL 33602
 Phone: 813/871-5331

Path: \\hofs\idot\41450652201 SR70 - CR29 to Lonesome\NonSubmittal Design\GIS\Maps\Figures\NRE\SR_70_Lonesome_Appendix F Protected Species Map_NonAvian.mxd 8/25/2020



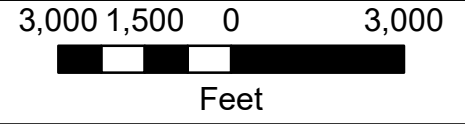
Begin Project

End Project

Entire Area:
 Crested Caracara Consultation Area
 Everglades Snail Kite Consultation Area
 Florida Grasshopper Sparrow Consultation Area
 Florida Scrub Jay Consultation Area

- | | | |
|-------------------------------|--------------------|-------------------|
| Project Study Area | 2018 Caracara Nest | Wood Stork |
| 1 Mile Buffer | 2019 Caracara Nest | Roseate Spoonbill |
| KCA Field Observations | Little Blue Heron | Florida Scrub jay |
| Everglade Snail Kite | Sandhill Crane | FWC Data |
| Crested Caracara | Tricolored Heron | Florida Scrub jay |

Protected Avian Species Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
 Highlands County, FL



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Path: \\hofs\idot\41450652201 SR70 - CR29 to Lonesome\NonSubmittal Design\GIS\Maps\Figures\NRE\SR 70_Lonesome_Appendix F Protected Species Map_Avian.mxd 8/25/2020

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APPENDIX G

Highlighted Species Effect Determination Keys

Eastern Indigo Snake Effect Determination Key

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A. Project is not located in open water or salt marsh.....go to B
 Project is located solely in open water or salt marsh.....**no effect**

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

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

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

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

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

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

E. Any permit will be conditioned such that all gopher tortoise burrows, active or inactive, will be excavated prior to site manipulation in the vicinity of the burrow¹. If an eastern indigo snake is encountered, the snake must be allowed to vacate the area prior to additional site manipulation in the vicinity. Any permit will also be conditioned such that holes, cavities, and snake refugia other than gopher tortoise burrows will be inspected each morning before planned site manipulation of a particular area, and, if occupied by an eastern indigo snake, no work will commence until the snake has vacated the vicinity of proposed work.....NLAA²

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

End Key

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

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

Wood Stork
Effect Determination Key

DRAFT



United States Department of the Interior



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

May 18, 2010

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

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

Dear Mr. Kinard:

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

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

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

Wood stork

Habitat

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



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

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

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

Conservation Measures

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

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

In an effort to reduce correspondence in effect determinations and responses, the Service is providing the Wood Stork Effect Determination Key below. If the use of this key results in a Corps determination of "no effect" for a particular project, the Service supports this determination. If the use of this Key results in a determination of NLAA, the Service concurs with this determination¹. This Key is subject to revisitation as the Corps and Service deem necessary.

The Key is as follows:

- A. Project within 0.76 km (0.47 mile)² of an active colony site³ "may affect"⁴
- Project impacts Suitable Foraging Habitat (SFH)⁵ at a location greater than 0.76 km (0.47 mile) from a colony site..... "go to B"

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

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

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

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

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

Project does not affect SFH.....“no effect”.

B. Project impact to SFH is less than 0.20 hectare (one-half acre)⁶.....NLAA¹”

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

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

Project impacts to SFH within the CFA of a colony sitego to E

D. Project impacts to SFH have been avoided and minimized to the extent practicable; compensation (Service approved mitigation bank or as provided in accordance with Mitigation Rule 33 CFR Part 332) for unavoidable impacts is proposed in accordance with the CWA section 404(b)(1) guidelines; and habitat compensation replaces the foraging value matching the hydroperiod⁷ of the wetlands affected and provides foraging value similar to, or higher than, that of impacted wetlands. See Enclosure 3 for a detailed discussion of the hydroperiod foraging values, an example, and further guidance⁸..... NLAA¹”

Project not as above..... “may affect⁴”

E. Project provides SFH compensation in accordance with the CWA section 404(b)(1) guidelines and is not contrary to the HMG; habitat compensation is within the appropriate CFA or within the service area of a Service-approved mitigation bank; and habitat compensation replaces foraging value, consisting of wetland enhancement or restoration matching the hydroperiod⁷ of the wetlands affected, and provides foraging value similar

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

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

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

to, or higher than, that of impacted wetlands. See Enclosure 3 for a detailed discussion of the hydroperiod foraging values, an example, and further guidance⁸..... "NLAA¹"

Project does not satisfy these elements "may affect⁴"

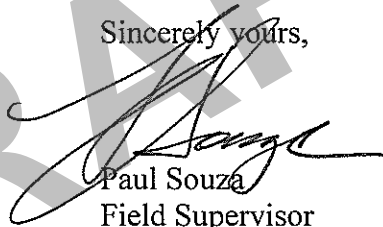
This Key does not apply to Comprehensive Everglades Restoration Plan projects, as they will require project-specific consultations with the Service.

Monitoring and Reporting Effects

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

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

Sincerely yours,



Paul Souza
Field Supervisor
South Florida Ecological Services Office

Enclosures

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

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APPENDIX H

Audubon's Crested Caracara Technical Memorandum

SR 70 PD&E Study
Audubon's Crested Caracara
Technical Memorandum

Florida Department of Transportation
District One

Project Development and Environment Study
SR 70 from CR 29 to Lonesome Island Road
Roadway Improvement Project
Highlands County, Florida

Financial Project ID: 414506-5-22-01
ETDM No.: 14364

October 2020

Table of Contents

<i>Section</i>	<i>Page</i>
1.0 Introduction.....	1
2.0 Methodology.....	1
3.0 Results.....	3
4.0 Effect Determination.....	8
5.0 Mitigation.....	9
6.0 References.....	10

List of Figures

<i>Figure</i>	<i>Page</i>
Figure 1-1 Project Location Map.....	2

List of Tables

<i>Table</i>	<i>Page</i>
Table 2-1 Audubon’s Crested Caracara Observer Information	3
Table 3-1 2019 Audubon’s Crested Caracara Survey Dates and Results.....	4
Table 3-2 Incidental Species Observations.....	6
Table 4-1 Anticipated Impacts to Audubon’s Crested Caracara Nesting Habitat	8

List of Attachments

Attachment A	Audubon’s Crested Caracara Survey Station Map
Attachment B	Audubon’s Crested Caracara Survey Station Representative Photographs
Attachment C	2019 Audubon’s Crested Caracara Survey Datasheets
Attachment D	Audubon’s Crested Caracara Nest Location Map

1.0 Introduction

The State Road (SR) 70 from County Road (CR) 29 to Lonesome Island Road Project Development and Environment (PD&E) Study (FDOT FPID No. 414506-5-22-01) proposes roadway and safety improvements within this section of SR 70 in Highlands County, Florida (**Figure 1-1 Project Location Map**). The project falls within the U.S. Fish and Wildlife Service (USFWS) Consultation Area for Audubon's crested caracara (*Caracara cheriway*). According to Florida Natural Areas Inventory (FNAI) data, Audubon's crested caracara have been documented within one (1) mile of the project study area.

In an effort to gather information needed to determine the potential effect the project may have on Audubon's crested caracara, a survey of suitable habitat within the project study area and its 1,500-meter buffer was conducted by qualified biologists from January through April 2019 in accordance with USFWS Audubon's Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season) (USFWS 2016). For the purposes of this memorandum, the preferred alternative's project study area (existing and proposed right-of-way of the mainline corridor), as well as a 1,500-meter buffer around the project study area, was used for the Audubon's crested caracara survey area.

2.0 Methodology

Prior to conducting initial field reviews, the survey methods outlined below were reviewed and approved by USFWS on February 7, 2019. Seven monitoring stations were selected along the SR 70 corridor based on visibility and presence of suitable nesting habitat for the species. Suitable habitat consists of open lands, including dry prairie, agricultural fields, and pasturelands with scattered cabbage palms, and cabbage palm/live oak hammocks. Stations were also selected based on the presence of suitable nesting trees such as cabbage palms and clumps of live oak trees located adjacent to contiguous pasturelands within the survey area. Additionally, stations were selected based on their vantage point, where large expanses of suitable habitat would be clearly visible from a stationary location using spotting scopes and binoculars. Based on this information, Stations 1 through 7 were positioned within the survey area limits (**Attachment A**). Representative photographs of each survey station are provided in **Attachment B**. Pond sites depicted on exhibits as part of this memorandum were identified after the 2019 nest monitoring season. These areas will be surveyed for Audubon's crested caracara during the project's design and permitting phase and consultation will be re-initiated, as necessary.

During the months of January through April 2019, observations were made at each station for one (1) day every two (2) weeks. Audubon's crested caracara surveys began during the week of January 1, 2019 and ended during the week of April 22, 2019. On each day of monitoring, stations were observed starting at least 15 minutes prior to sunrise each morning and continuing for a minimum of three (3) hours. All surveys were conducted by qualified biologists (**Table 2-1**) and in accordance with USFWS Audubon's crested caracara survey protocol (USFWS 2016). Observations were also made in transit to and from survey stations.

Species activities were monitored at each station from a vehicle, or from the ground in areas where vehicular access was not possible. Cabbage palm and oak trees located within the survey area were monitored during each field visit for nesting, roosting, and foraging activity. During each visit, Audubon's crested caracara presence/absence and behaviors were observed and noted at each station in addition to other avian species observed. Data was collected on Caracara Survey Forms and annotated on true color aerial imagery (**Attachment C**).

Figure 1-1 Project Location Map

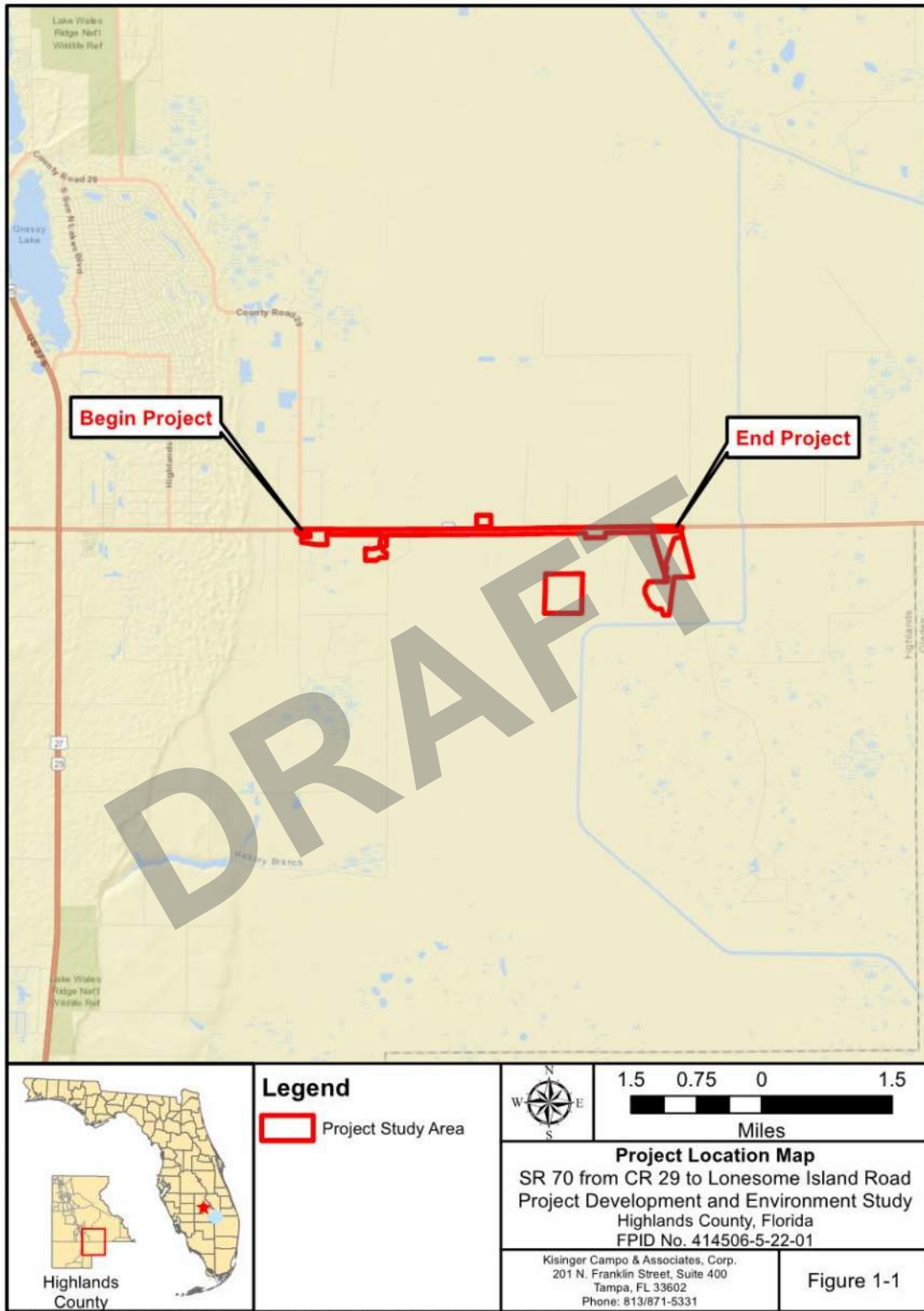


Table 2-1 Audubon’s Crested Caracara Observer Information

Name	Hours of Experience¹	Number of Caracara Nests Found²	Observer Position
Catie Neal	>150	1	Primary
Robert Whitman	>150	0	Primary
Cynthia Grizzle (Lochner)	>300	0	Primary
Christen Cerrito	0	0	Secondary
Bruce Williams	0	0	Secondary

¹ Approximate hours of experience surveying Audubon’s crested caracara as of January 1, 2019

² For the January 2019 survey effort

3.0 Results

There was one (1) confirmed active Audubon’s crested caracara nest, Nest 3, observed within the survey area during the 2019 monitoring season (**Attachment D**). During the 2018 monitoring season for the adjacent project, SR 70 from Jefferson to CR 29 (FDOT FPID 454506-1-22-01), there were two (2) confirmed nests within the survey area for the proposed project. These nests were within the survey area for the 2019 monitoring season and were identified as Nest 1 and Nest 2 (**Attachment D**). Due to the lack of nesting activity or individual Audubon’s crested caracara observations at Survey Stations 1 and 2, it has been determined that Nest 1 and Nest 2 were inactive for the 2019 monitoring season. Nesting individuals of Nest 1 were observed to be young and inexperienced during the 2018 monitoring season. Therefore, it is likely that this pair left the area entirely. The inactivity of Nest 2 and its close proximity to Nest 3 indicates Nest 3 is an alternate nest to Nest 2. It is suspected that the nesting pair at Nest 3 moved to this location from Nest 2 for the 2019 monitoring season.

Audubon’s crested caracaras were observed during every survey event. Individuals were observed flying within the survey area at Survey Station 1 on seven (7) days: January 14, January 29, February 13, February 27, March 27, April 9, and April 23. For Survey Station 2, individuals were observed flying within the survey area on six (6) days: January 9, February 8, February 20, March 6, March 21, and April 3. At Survey Station 3, individuals were observed flying within the survey area on four (4) days: January 15, February 26, March 13, and April 10. At Survey Station 4, individuals were observed on every day except April 25. Survey Station 5 had five (5) days where Audubon’s crested caracaras were observed: January 3, January 29, February 27, March 14, and April 12. For Survey Stations 6 and 7, individuals were observed during every survey event. The 2019 Audubon’s crested caracara survey observations for each station are summarized in **Table 3-1**.

Survey Station 4 had one (1) confirmed nest with one (1) juvenile having successfully fledged. Adults were observed flying with nest material during the third monitoring event on February 1. Individuals were observed flying within the vicinity of Station 4 during all monitoring events with the exception of Event 9. The juvenile was first observed on the seventh monitoring event on March 25. It was last seen and determined to have fledged on the eighth monitoring event on April 11.

Table 3-1 lists the specific field review dates and the results of each monitoring event and **Table 3-2** lists additional avian species observed during the January 2019 to April 2019 Audubon’s crested caracara surveys.

Table 3-1 2019 Audubon's Crested Caracara Survey Dates and Results

Survey Event	Survey Station	Survey Date	Audubon's Crested Caracara Observed (Yes/No)
1	1	January 2, 2019	No
	3	January 2, 2019	No
	4	January 3, 2019	Yes
	5	January 3, 2019	Yes
	6	January 4, 2019	Yes
	7	January 4, 2019	Yes
	2	January 9, 2019	Yes
2	1	January 14, 2019	Yes
	3	January 15, 2019	Yes
	4	January 16, 2019	Yes
	5	January 16, 2019	No
	7	January 17, 2019	Yes
	6	January 18, 2019	Yes
	2	January 23, 2019	No
3	1	January 29, 2019	Yes
	5	January 29, 2019	Yes
	3	January 30, 2019	No
	7	January 30, 2019	Yes
	6	January 31, 2019	Yes
	4	February 1, 2019	Yes
	2	February 8, 2019	Yes
4	6	February 12, 2019	Yes
	1	February 13, 2019	Yes
	3	February 14, 2019	No
	4	February 14, 2019	Yes
	7	February 14, 2019	Yes
	5	February 15, 2019	No
	2	February 20, 2019	Yes
5	3	February 26, 2019	Yes
	4	February 26, 2019	Yes
	7	February 26, 2019	Yes
	1	February 27, 2019	Yes
	5	February 27, 2019	Yes
	6	February 28, 2019	Yes
	2	March 6, 2019	Yes
6	6	March 12, 2019	Yes
	3	March 13, 2019	Yes
	4	March 13, 2019	Yes
	7	March 13, 2019	Yes
	1	March 14, 2019	No
	5	March 14, 2019	Yes
	2	March 21, 2019	Yes

Survey Event	Survey Station	Survey Date	Audubon's Crested Caracara Observed (Yes/No)
7	4	March 25, 2019	Yes
	7	March 25, 2019	Yes
	5	March 26, 2019	No
	6	March 26, 2019	Yes
	1	March 27, 2019	Yes
	3	March 28, 2019	No
	2	April 3, 2019	Yes
8	1	April 9, 2019	Yes
	3	April 10, 2019	Yes
	4	April 11, 2019	Yes
	6	April 11, 2019	Yes
	7	April 11, 2019	Yes
	5	April 12, 2019	Yes
	2	April 17, 2019	No
9	1	April 23, 2019	Yes
	3	April 24, 2019	No
	4	April 25, 2019	No
	6	April 25, 2019	Yes
	7	April 25, 2019	Yes
	5	April 26, 2019	No
	2	April 30, 2019	No

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Table 3-2 Incidental Species Observations

Scientific Name	Common Name	Station Observed (Protected Species)
Birds		
<i>Accipiter cooperii</i>	Coopers Hawk	
<i>Agelaius phoeniceus</i>	Red-winged Blackbird	
<i>Aix sponsa</i>	Wood Duck	
<i>Anas fulvigula</i>	Mottled Duck	
<i>Anas platyrhynchos</i>	Mallard Duck	
<i>Anhinga anhinga</i>	Anhinga	
<i>Antigone canadensis</i>	Sandhill Crane**	
<i>Aramus guarana</i>	Limpkin	
<i>Ardea alba</i>	Great Egret	
<i>Ardea herodias</i>	Great Blue Heron	
<i>Baeolophus bicolor</i>	Tufted Titmouse	
<i>Bubo virginianus</i>	Great Horned Owl	
<i>Bubulcus ibis</i>	Cattle Egret	
<i>Buteo jamaicensis</i>	Red-tailed Hawk	
<i>Buteo lineatus</i>	Red-shouldered Hawk	
<i>Buteo platypterus</i>	Broad-winged Hawk	
<i>Butorides virescens</i>	Green Heron	
<i>Cardinalis cardinalis</i>	Cardinal	
<i>Cathartes aura</i>	Turkey Vulture	
<i>Chaetura pelagica</i>	Chimney Swift	
<i>Charadrius vociferus</i>	Killdeer	
<i>Chordeiles acutipennis</i>	Lesser Nighthawk	
<i>Chordeiles minor</i>	Common Nighthawk	
<i>Circus hudsonius</i>	Northern Harrier	
<i>Colinus virginianus</i>	Northern Bobwhite	
<i>Coragyps atratus</i>	Black Vulture	
<i>Corvus brachyrhynchos</i>	American Crow	
<i>Corvus ossifragus</i>	Fish Crow	
<i>Cyanocitta cristata</i>	Blue Jay	
<i>Dendrocygna autumnalis</i>	Whistling Duck	
<i>Drycopus pileatus</i>	Pileated Woodpecker	
<i>Dryobates pubescens</i>	Downy Woodpecker	
<i>Egretta caerulea</i>	Little Blue Heron	Station 1*, Station 3, Station 5
<i>Egretta thula</i>	Snowy Egret	
<i>Egretta tricolor</i>	Tricolored Heron	Station 2, Station 7
<i>Elanoides forficatus</i>	Swallow-tailed Kite	
<i>Eudocimus albus</i>	White Ibis	
<i>Falco sparverius</i>	American Kestrel**	
<i>Gallinula chloropus</i>	Common Moorhen	

Scientific Name	Common Name	Station Observed (Protected Species)
Birds		
<i>Gallinula galeata</i>	Common Gallinule	
<i>Geothlypis trichas</i>	Common Yellowthroat	
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Station 2, Station 5, Station 6*, Station 7*
<i>Lanius ludovicianus</i>	Loggerhead Shrike	
<i>Megaceryle alcyon</i>	Belted Kingfisher	
<i>Melanerpes carolinus</i>	Red-bellied Woodpecker	
<i>Meleagris gallopavo</i>	American Turkey	
<i>Melospiza melodia</i>	Song Sparrow	
<i>Mimus polyglottos</i>	Mockingbird	
<i>Molothrus bonariensis</i>	Shiny Cowbird	
<i>Mycteria americana</i>	Wood Stork	Station 1*, Station 2*, Station 3*, Station 4, Station 5*, Station 6*, Station 7*
<i>Myiarchus crinitus</i>	Great Crested Flycatcher	
<i>Nycticorax nycticorax</i>	Black-crowned Night Heron	
<i>Pandion haliaetus</i>	Osprey	
<i>Pelecanus erythrorhynchos</i>	White Pelican	
<i>Phalacrocorax auritus</i>	Double-crested Cormorant	
<i>Pipilo erythrophthalmus</i>	Eastern Towhee	
<i>Platalea ajaja</i>	Roseate Spoonbill	Station 5
<i>Poliophtila caerulea</i>	Blue-gray Gnatcatcher	
<i>Quiscalus major</i>	Boat-tailed Grackle	
<i>Quiscalus quiscula</i>	Common Grackle	
<i>Rostrhamus sociabilis</i>	Everglade Snail Kite	Station 6
<i>Sayornis phoebe</i>	Eastern Phoebe	
<i>Setophaga coronata</i>	Yellow-rumped Warbler	
<i>Sitta carolinensis</i>	White-breasted Nuthatch	
<i>Stetophaga palmarum</i>	Palm Warbler	
<i>Streptopelia decaocto</i>	Collared Dove	
<i>Strix varia</i>	Barred Owl	
<i>Sturnella magna</i>	Eastern Meadowlark	
<i>Sturnus vulgaris</i>	Starling	
<i>Tachycineta bicolor</i>	Tree Swallow	
<i>Thryothorus ludovicianus</i>	Carolina Wren	
<i>Tyto alba</i>	Barn Owl	
<i>Toxostoma rufum</i>	Brown Thrasher	
<i>Vireo gilvus</i>	Warbling Vireo	
<i>Zenaida macroura</i>	Mourning Dove	
Mammals		
<i>Lontra canadensis</i>	River Otter	
<i>Sciurus carolinensis</i>	Eastern Gray Squirrel	
<i>Sylvilagus palustris</i>	Marsh Rabbit	

Notes: Species in **bold** are federally and/or state protected

*Species observed at station during multiple survey events

**Observation occurred within the migratory season for species, unable to identify to protected subspecies

4.0 Effect Determination

As a result of the 2019 Audubon’s crested caracara surveys, there was one (1) confirmed active Audubon’s crested caracara nest, Nest 3, observed within the survey area. During the 2018 monitoring season for the adjacent project, SR 70 from Jefferson to CR 29 (FDOT FPID 454506-1-22-01), there were two (2) confirmed nests, Nests 1 and 2, within the survey area for the proposed project. However, there was no nesting activity or behavior observed at these locations during the 2019 survey effort and they were determined to be inactive. In accordance with USFWS guidelines (USFWS 2004), a 300-meter primary zone and a 1,500-meter secondary zone was placed around each nest. The location of all confirmed Audubon’s crested caracara nests and their primary and secondary zones are shown in **Attachment D**.

Impacts to occupied Audubon’s crested caracara nesting habitat will be unavoidable due to construction of the proposed project. A total of 97.98 acres of occupied Audubon’s crested caracara nesting habitat (secondary zone habitat) will be impacted by the proposed action (**Table 4-1**). No impacts to primary zone habitat are proposed. Impacts include the conversion of wetlands and pastures to transportation land use within the secondary zone habitat. **Table 4-1** contains impact acreages to primary and secondary zones of the identified Audubon’s crested caracara nest.

To offset impacts to Audubon’s crested caracara nesting habitat within the project study area, FDOT District 1 will commit to minimization and mitigation measures for the Audubon’s crested caracara following USFWS mitigation requirements (USFWS 2004). Based on this information, it has been determined that the proposed project “**may affect, but is not likely to adversely affect**” Audubon’s crested caracara. The FDOT will conduct supplemental surveys to confirm involvement during the project’s design and permitting phase to revisit this effect determination relative to updates to project design and the implementation of specific actions and measures. Selected pond sites included on exhibits in this memorandum were not identified prior to the 2019 nesting season surveys. These areas will be surveyed for Audubon’s crested caracara during the project’s design and permitting phase and it is not anticipated that the selected pond sites will elevate the effect determination and involvement with this species.

Table 4-1 Anticipated Impacts to Audubon’s Crested Caracara Nesting Habitat

ID	2019 Status	Primary Zone Impacts (acres)	Secondary Zone Impacts (acres)	Total
Nest 3	Active	0.00	97.98	97.98
Total Impacts		0.00	97.98	97.98

5.0 Mitigation

Incidental take of the Audubon's crested caracara is not expected from the proposed project. A total of 97.98 acres of suitable foraging and nesting habitat for the Audubon's crested caracara is expected to be impacted by project activities. Due to no proposed impacts to the primary zone, the project is not likely to result in jeopardy to Audubon's crested caracara. In accordance with USFWS guidelines (USFWS 2004), FDOT will minimize direct and indirect effects of the proposed action to Audubon's crested caracara by implementing a combination of mitigation and minimization strategies. These strategies include one (1) or more of the following:

- Monitor confirmed nest sites when construction activities occur within 300 meters of a nest site. The purpose of this monitoring is to determine if construction activities are disturbing nesting Audubon's crested caracaras. A monitoring report will be provided to the USFWS documenting the results of any required monitoring.
- Establish a 300-meter radius around confirmed nests within the project corridor so that this area will be avoided during construction activities. Construction will not take place during the nesting season.
- Educate on-site personnel on the presence of Audubon's crested caracara.
- Minimize disturbance and injury to caracaras during construction activities by posting speed limits and removing roadkill.

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6.0 References

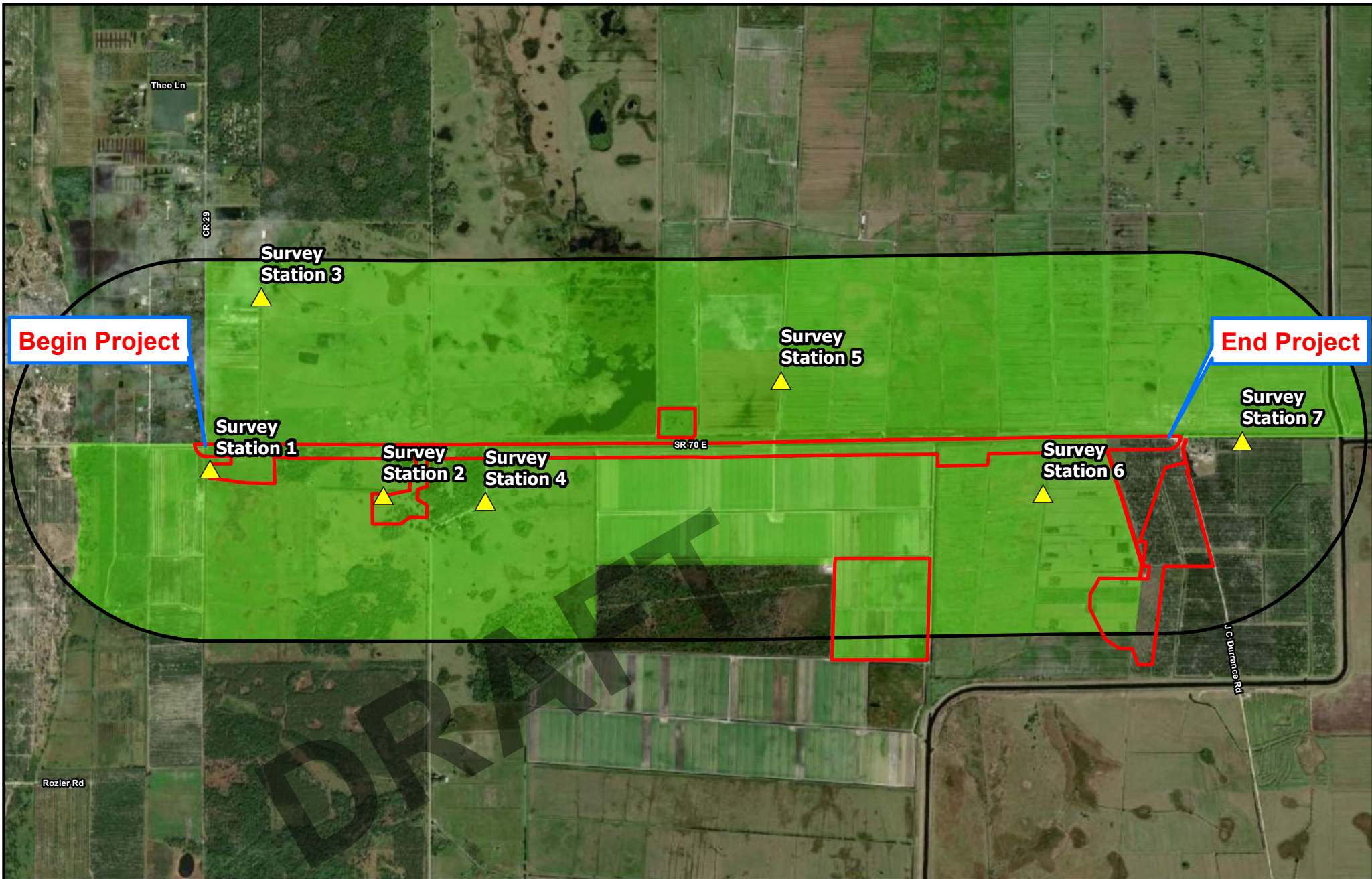
- Florida Natural Areas Inventory. 2019. Element Occurrence Data Report. Florida Natural Areas Inventory. (<https://www.fnai.org/trackinglist.cfm>).
- United States Fish and Wildlife Service (USFWS). 2004. Species Conservation Guidelines South Florida Audubon's Crested Caracara. South Florida Ecological Services, April 2004.
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Attachment A

Audubon's Crested Caracara Survey Station Map

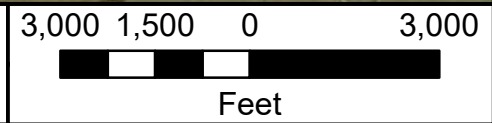
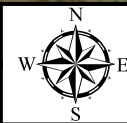


Legend

- Caracara Survey Station
- Project Study
- 1500 Meter Buffer
- Crested Caracara Habitat

Audubon's Crested Caracara Survey Station Map

SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01



Attachment A

Overview

Kisinger Campo & Associates, Corp.
 201 N. Franklin Street, Suite 400
 Tampa, FL 33602
 Phone: 813/871-5331
www.kisingercampo.com

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Attachment B

Audubon's Crested Caracara Survey Station Representative
Photographs



Survey Station 1, facing north



Survey Station 2, facing north



Survey Station 3, facing south



Survey Station 4, aerial view, facing southeast



Survey Station 4, facing north, Audubon's crested caracara on ground under active nest - Nest 3 (see Attachment D)



Survey Station 5, facing west



Survey Station 6, facing south



Survey Station 7, facing east

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Attachment C

2019 Audubon's Crested Caracara Survey Datasheets

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

2
2
5 1/2

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 1
(27°12'31.60"N, 81°12'29.73"W) Event 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2 Jan 19	0655	1131	Catie Neal + Christen Cerreto (training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0655	58° F	calm	100%	cumulus	foggy
Finish: 1131	80° F	7 mph/E	20%	cumulus	no fog

stayed longer to adjust from fog

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture + citrus, cabbage palm, bahiagrass, scattered oaks, slash pine

black vulture
great egret, pileated woodpecker, American crow, mourning dove, turkey vulture, American kestrel

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No observations

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 2
(27°12'18.30"N, 81°16'14.76"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
9 Jan	0652	10:02	Catie Neal + Christen Lemto (training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0652	58°	3 mph / NW	50%	stratus	none
Finish: 1002	67°	8 mph / NW	30%	stratus	none

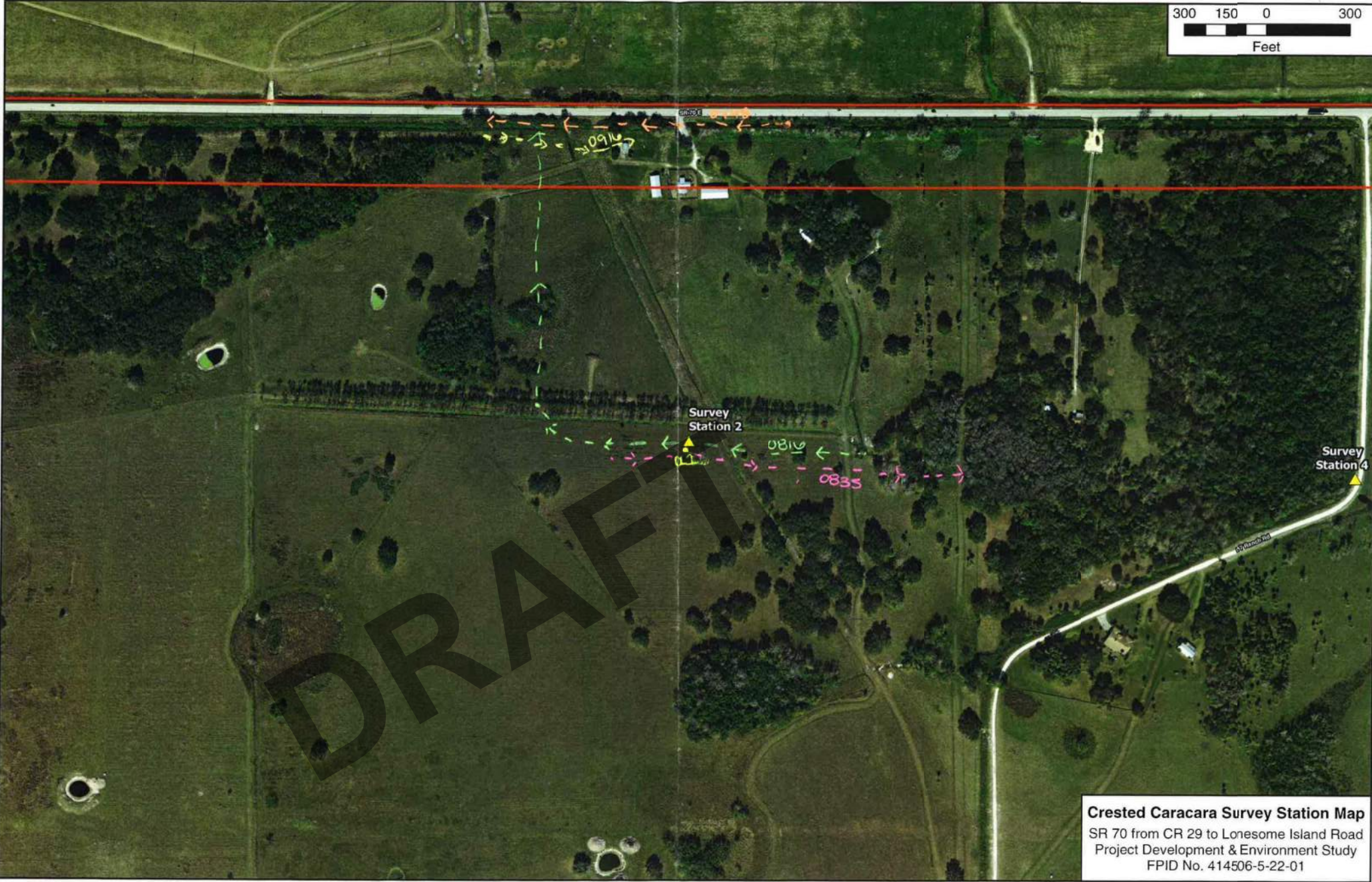
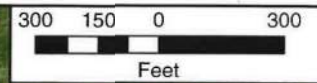
Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
pasture w some slash pine + ditches throughout: bahiagrass, scattered cabbage palm, smutgrass
nighthawk, pileated woodpecker, great egret, turkey vulture, eastern phoebe, sandhill crane, American turkey, crow, bald eagle, wood stork, red-shouldered hawk,

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	0748	Adult flew from east to west along the SR 70 corridor.
OL1	2A 2SA	0816	4 adults flew in from the west to sit in pine trees west of OL1 for 6 min then flew north towards SR 70
OL1	2A	0835	2 flew from west to east into the trees
OL1	1A	0916	1 flew from the west to the east behind the green barn along SR 70



Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

BMW
3

Caracara Survey Form (updated 12/9/2016)

Project Name: SR70

Location/Observation Block/Lat-Long: STA 3; 27.218019x -81.279683

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
JAN 2 '19	7:00	11:30	BOB WILSON EXP 2016-2017
FOG @ 7:15A; FOG @ 8AM 400 FT VIS; 9AM FOG LIFTING VIS = 1200 FT 10AM FOG LIFTED 3000 FT VIS			Weather BLSKY 100% 10:20 AM

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:15	63°F	0 -	100%	STRATUS FOG	FOG 100%
Finish: 11:30	76°F	ESE @ 10 mph	20%	CUMMUS	FOG LIFTED @ 10 AM

#11 AM 85% CLEAR 15% CUMMUS

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

1m PROVED/UNIMPROVED PASTURES; RANCHER MOVING CATTLE SOUTH

GBH, TURKEY VULTURE, PILEATED WOODPECKER
 CATTLE EGRET / MEADOW LARK / AM. CROW, GREAT EGRET, BUK VULTURE
 EASTERN PHOENIX, MOURN. DOVE, SANDHILL CRANES, PALM WARBLER

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
STA 3	∅	∅	NO CARACARAS OBS.

1 of 2



300 150 0 300
Feet

Survey Station 3

Jack Scarborough Ln

2 JAN 2019 NO CARACARA OBS
STA [3] SW

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 4
(27°12'17.07"N, 81°15'48.00"W) Event 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3 Jan 18	0652	1054	Catie Neal + Christen Cerrito (training)

Actual Survey Date 3 January 2019

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0652	63°F	2 mph / SE	100%	cumulus	foggy
Finish: 1054	77°F	7 mph / S	75%	cumulus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture - scattered oak + pine, Juncus effusus, bahiagrass, scattered cabbage palm, small wetland - bay, slash pine, pickerel, Sagittaria, water hyacinth
 mockingbird, lesser nighthawk, grackle
 great blue heron, American osprey, downy woodpecker, black vulture, turkey vulture, red-shouldered hawk, snowy egret, sandhill crane, great egret, little egret, belted kingfisher, white-brasted nuthatch

stayed longer to accommodate fox

Observations

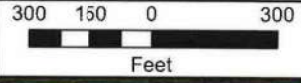
(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	0929	Adult flew in from the north (road) and landed on a pine snag immediately adjacent to a patch of 3 cabbage palms. Perched on the snag for 10 min.
OL1	A	0939	Flew from perch in pine snag to the north then turned to fly along the road.
OL1	A	0944	Flew in from the road (SR 70) to a snag near patch of palms, perched itself for 15 min.
OL1	A	0959	Flew from snag to a cabbage palm in large cluster by house, back to snag

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

			Flew from snag back towards road (SR76).
OL1	A	1003	

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Survey Station 2

Survey Station 4

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

03Jan18 - Event 1

page 1 station 4

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

BW
5

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: 52,21901 & -81,241935

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3 JAN 19	452	11:00 AM	BOB WHITMAN EXPERIENCED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 452	65°F	0	100%	STRATUS	100% FOG
Finish: 11 AM	77°F	SE @ 7 mph	90%	STRAT. CUMMUS	

8 AM 800 FT VIS; 8:15 A FOG LIFTING - VIS APPROX 1000 FT TO SR 70
9:30 LIGHT DRIZZLE

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
PASTURE / DITCHED HISTORIC WETLAND / PRAIRIE
TURKEY VULTURE, GBA, BALD EAGLE, LITTLE BLUE HERON
RIVER OYSTER BOAT, TRICED OYSTER, WHITE IBIS, WOOD STORK
REDWINGED BLACK BIRD, PALM MARLBER, ANHINGA, CATTLE EGRET
MARSH TANK NORTHERN HARRIER, GREAT EGRET, AM. CROW

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
STA 5	ADULT A ADULT B	8:28 A 8:53 8:44	A PERCHED ON FENCE POST PREENING B FLY WEST INTO PASTURE + SET (1000 FT) B FLEW UP ON FENCES, BACK DOWN
STA 5.1	ADULT A ADULT B	8:58 8:59	A - FLY SOUTH TO FUEL TANK B FLEW EAST OUT OF SITE (BEHIND TREES)
STA 5.1	A ADULT AND B ADULT	9:00 9:01	A LANDED ON FUEL TANK B FLEW IN FROM NE TO FUEL TANK
STA 5.1	A ADULT B ADULT	9:05 9:08	ADULTS A & B PERCHED ON N. END FUEL TANK A & B PREENING - SELVES + EACH OTHER TRUCK DROVE BY - NO SUBSTANTIAL REACTION

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

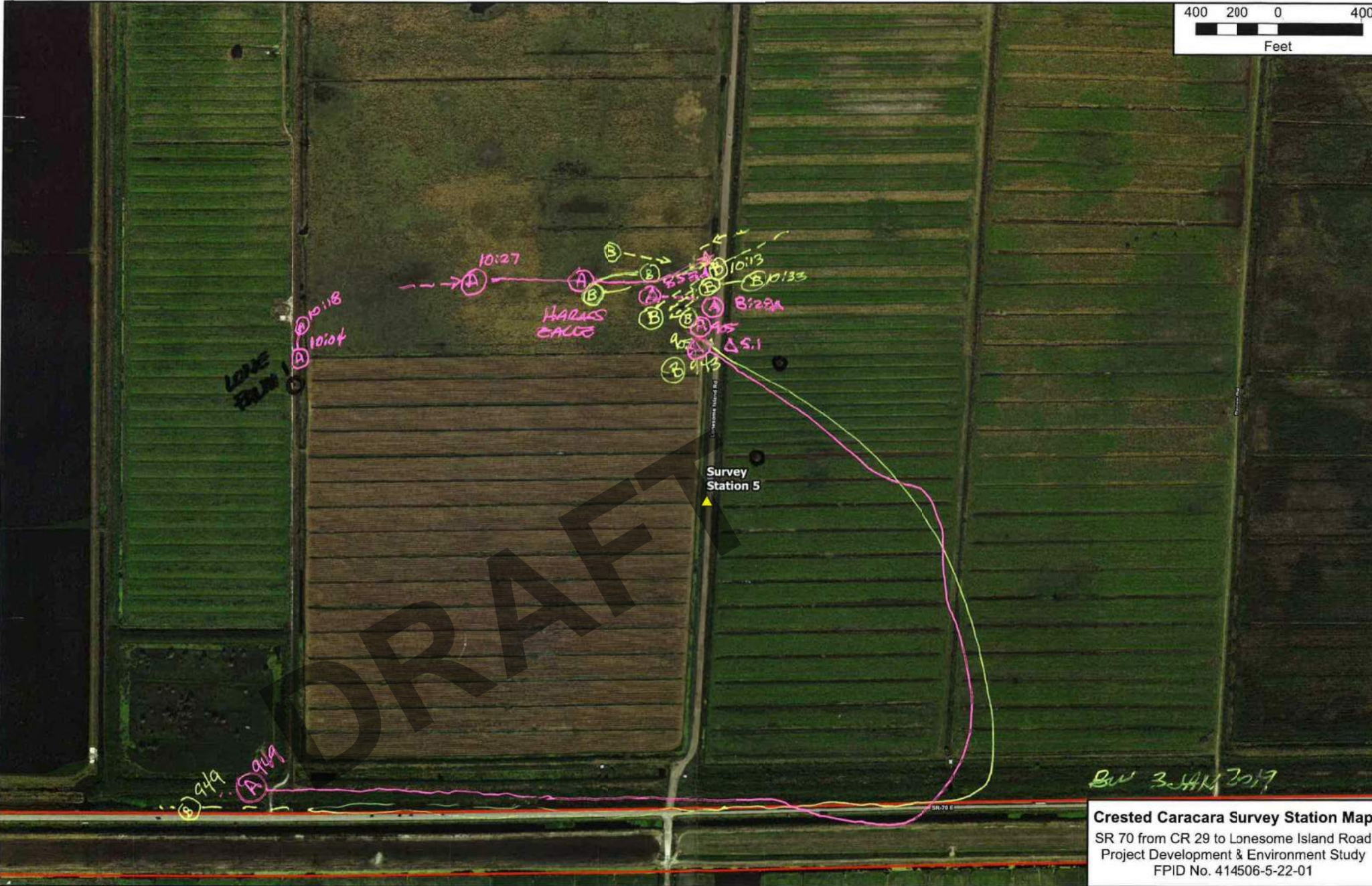
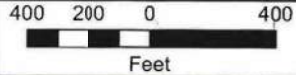
BN STA 5

30 JAN 19

5.1	(A) ADULT (B) ADULT	9:15 A	POWER & FUEL PROBLEMS / PERCHED ON NURD OF FUEL TANK - FUEL TANK: FRESH FECS MAY INVOLVE HABITUAL
5.1	(A) ADULT (B) ADULT	9:40 A	TRUCKS PASS BY - NO REACTION P/ TRUCK & SEMI-TRUCK
5.1	(A) ADULT (B) ADULT	9:43 A 9:49 A	FLOW FROM FUEL TANK (A+B) TO SE. (A) HARASSED A N. HARRIER ENROUTE - BOTH A & B FLOW WEST ALONG (ABOUT) SE TO UNTIL OUT OF VIEW
5.1	(A) ADULT	10:04	PERCHED ON FECS POST WEST OF STA 5.1 APPROX. 200 FT NORTH OF LONG PALM
5.1	(B) ADULT	10:13	PERCHED IN TREE NEAR ORIGINAL (A) SITING
5.1	(A) ADULT	10:18	FLOW 50' +/- NORTH & PERCHED ON FECS
5.1	(B) ADULT	10:22	FLOW SW FROM TREE TOP TO GROUND
5.1	(A) ADULT (B) ADULT	10:27 10:27	FLEW IN FROM WEST HARASSED BAUD EAGLE; JOINED BY (B) ADULTS (A) & (B) HARASS BAUD EAGLE TO EAST... BOTH PERCH IN TREE (SEE 10:13)
5.1	(A) ADULT (B) ADULT	10:31 10:33	(A) FLEW WEST TO GROUND (OUT OF SIGHT) (B) FLEW EAST (OUT OF SIGHT)
		10:45	(A) FLEW TO TREE TOP
		10:48	(A) FLEW BACK DOWN TO GROUND

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2 of 2
BN STA 5
30 JAN 19



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REV 3 JAN 2019

Crested Caracara Survey Station Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road

Location/Observation Block/Lat-Long: Survey Station 6
(27°12'19.20"N, 81°13'21.84"W) Event 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4 Jan 19	0657	1001	Katie Neal + Christen Cerrito (training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0657	69°F	4 mph / S	100%	cumulus	overcast, no fog on ground
Finish: 1001	74°F	9 mph / S	50%	cumulus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

pasture: scattered oak + cabbage palm, bahiagrass, smutgrass, dog fennel, rose natal, patches of citrus
 common moorhen, killdeer, sandhill crane, meadowlark, night hawk, red-winged black bird, ceryle, great egret, snowy egret, little blue heron, night heron, American crow, turkey vulture, northern harrier, great egret, great blue, snowy egret, little blue heron, night heron, American crow, turkey vulture, northern harrier.

Observations

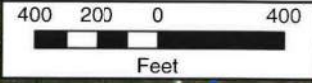
(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	0752	Adult flew in from the east to canyon in the pasture. Spent 6 minutes eating then flew to the fence to perch for 10 min then flew to the north side of SR 70 where more canyon is suspected (several vultures there as well).
OL2	A	0812	Adult flew in from the east along the road (SR 70) and continued flying west along SR 70 until it was out of sight.
OL1	2 As	0829	2 adults flew in from the east along SR 70 to the pasture.
OL1	2 AS	0846	Flew around in some pasture + tended to walk around.

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Additional Guidance (2016-2017 Breeding Season)**

OL1	2A	0852	Both adults flew from the pasture and flew north across the road (SR 70) until out of sight.
OL1	3A	0855	3 Adults flew in from the east to land in the pasture. They flew around the pasture to land in the pasture & patch of oaks
OL1	7A	0908	1 Adult is flying around the pasture, circling a group of 2 cabbage palms (possible nest?)

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Survey Station 6

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lcnesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

1/4/2019 - Event 1

Page 1 - Station 6

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

BW 7
4 JAN 19

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70

Location/Observation Block/Lat-Long: 7

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4 JAN 19	6:55 A	10:00 AM	BOB WILKINSON EXPERIENCED

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:55 A	70°F	4 SE @ 5 mph	100%	STRATUS	100% light @ Ground
Finish: 10:00 A	77°F	4 SE @ 7 mph	60%	CUMMULUS	∅

7 AM VIS APPROX 2000' @ SURFACE W/ LOW HAZE AND FOG

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
ORANGE GROVE SOUTH OF SR 70; PASTURIZED WETLAND/PRAIRIE
NORTH OF SR 70; CABBAGE PALM LINE SE 70
GETTYSBURG
(PI-COLORED HERON, PALM WAXWING, EASTERN WILSON WALK, RED TAILD HAWK,
BLACK VULTURE, TURKEY VULTURE, RED WING TO BLACK POWD,
~~NORTHERN HARRIER~~; AM. CROW, MOURNING DOVE, ANAHEKA,

Observations

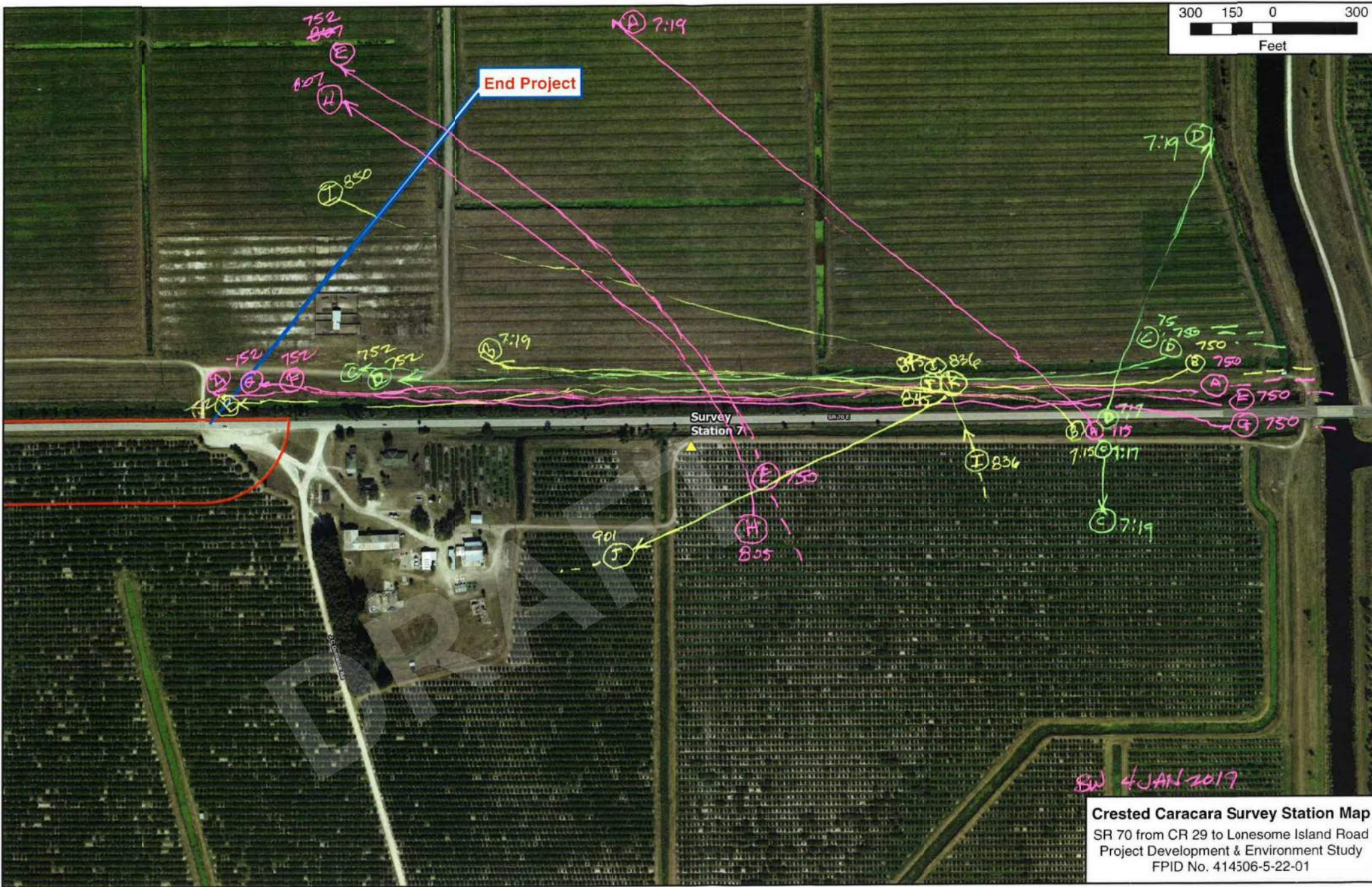
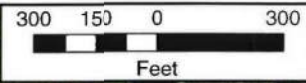
(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
STA 7	(A) ADULT (B) ADULT	7:15	(A) FLY FROM ROAD (LOW) TO ORANGE GROVE DIRT (B) ROAD (FEEDING) ON GROUND (B) JOINS (A) @ DIRT ROAD (FEEDING ON GROUND)
7	(A) ADULT (B) ADULT	7:14	(A) FLYS NW OUT OF VIEW (B) FLYS ALONG SR 70 (100m N) TO WEST
7	(C) JUV (D) IM IM	7:17	(C) FLYS IN FROM EAST (LOW) TO GROUNDS WEST (A) + (B) AGE, FEEDING (D) FLYS IN FROM SE (LOW) THRU ORANGE GROVE GROUNDS JOINS (A) + (B) FEEDING
7	(C) IM (D) IM	7:19	(C) FLYS S THRU ORANGE GROVE (D) FLYS NE TOWARD CANAL

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

7	(7) ADULT 3 IM	750	SEEN CARACARA FLY IN FROM EAST SIX LOW NORTH OF SR 70 ALONG DITCH (BSPM NORTH OF SR 70 SEE BELOW); IMMATURES FLYING (E)
7	(A) ADULT (B) ADULT (E) IM	750 7:52	(E) IN FROM SE HIGH OVER ORANGES (BSPM) 2 ADULTS (A) (B) AERIAL MANEUVERS HARASSING BEHAVIOR FLY WEST W OF SR 70 (E) CONTINUES FLYING NW OUT OF SIGHT
7	(F) ADULT (G) ADULT	750 7:52	(F) (G) FLY IN FROM EAST LOW OVER CANAL N OF SR 70 CONTINUES WEST OUT OF SIGHT AERIAL MANEUVERS - HARASSING BEHAVIOR
7	(C) IM (D) IM	750 7:52	TWO IMMATURE CARACARA FOLLOWING CROSS BEARING (F) (G) ALONG CANAL NORTH OF SR 70
7	(H) IM	805 8:07	ONE IMMATURE CARACARA FLYS IN FROM SE HIGH OVER ORANGES GROVE CONTINUES TO NW
7	(I) IM	836 843	ONE IMMATURE CARACARA FLYS IN FROM SE GROVE (?) (OUT OF SITE) IN DITCH N. OF SR 70 TURKEY VULTURE APPROACHES LOCATION - IS HARASSED BY (3) IMMATURE CARACARA
7	(L) IM (J) IM (K) IM	845 850	TWO CARACARA FIGHT OVER (DEAD?) FISH (J) (K) (I) FLYS OFF TO WNW
	(J)? IM	859 901	FLYS SW W/ FOOD (FISH) LOW THRU ORANGES GROVE TOWARD "FARM" (J) OUT OF SITE IN ORANGES GROVE
/			

NOTE: ADULTS (F) (G) ARE SUB-ADULTS (OVERSIBERADNES)
: IMMATURES (IM) ARE JUVENILES BUT NOT APPARENT FLIGHTLESS OR YOUNG OF THIS YEAR
(F) (G) COULD BE GROUDED W/ (IM)



SW 4 JAN 2019

Crested Caracara Survey Station Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 1
(27°12'31.60"N, 81°12'29.73"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
14 Jan 19	6:51 AM	9:51 AM	Cynthia Grizzle - Exp.

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0651	56°F	NNW 6mph	5%	clear	None
Finish: 0951	63°F	NNW 5mph	10%	mostly clear	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Busy intersection of SR70 and US27.
Open improved pasture with some scattered pines, oaks, +
Cabbage palm. Most trees are along ditches.

Observations

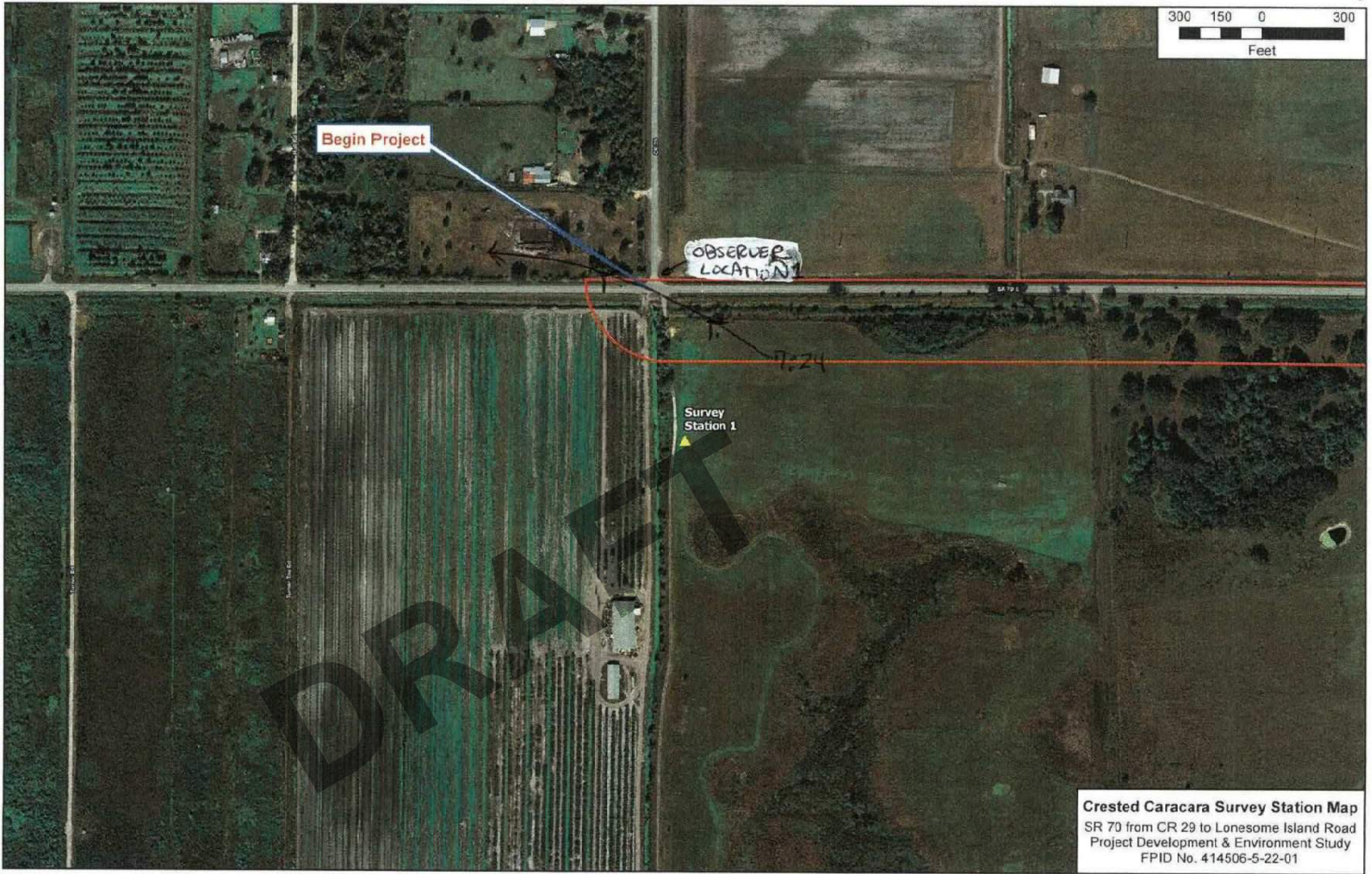
(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
Observer location 1	A	7:24 AM	Flyover SE to NW. Not observed perching in area.

Wood stork
American crow
Sandhill crane
kill deer

Mourning dove
Meadowlark
Mocking bird
boat tailed grackles

red shouldered hawk
cattle egrets
Northern harrier



14 January 2019

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 2
(27°12'18.30"N, 81°16'14.76"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
23 Jan 19	6:59 AM	9:59 AM	Cynthia Grizzle - Experienced

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0659	57°F	ESE 4mph	80%	cumulus/stratus	No fog, 1 m.m. of light rain
Finish: 0959	64°F	SE 6mph	20%	cirrus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Open pasture with scattered palms and pine row.
739 - Gunshots (3) spooked most birds. Again at 742. Phoebe - Anhinga
Meadowlark - pileated wp. Blue jay - cattle egret - downy wp - fish crow
Turkey - Am. Crow - red b. wp - red shouldered hawk - Many sandhill cranes.
Crows bringing nesting material to pine row.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No observations

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road

Location/Observation Block/Lat-Long: Survey Station 3

(27°13'4.30"N, 81°16'14.76"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
15 Jan 19	6:52	9:52	Cynthia Grizzle - Experienced

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:52	51°F	N 5mph	70%	Stratus	None
Finish: 9:52	57°F	N 6mph	70%	Stratus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Open pasture, actively grazed. Cactus grove + canal, old field near residence and out buildings.
Sandhill cranes - mourning doves - meadowlarks - woodstorks - Am. crows

Black vultures - mockingbirds - red bellied wood pecker.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
Station 3	A	7:59 AM	Lone adult flying east-west-east in a circle before traveling out of viewing range.



300 150 0 300
Feet

Survey Station 3

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

15 January 2019

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 4
(27°12'17.07"N, 81°15'48.00"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
Jan 19	0659	1012	Catie Neal & Bruce Williams (training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0659	42°	3 mph / N	25%	cumulus	none
Finish: 1012	54°	1 mph / N	70%	stratus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

red-shouldered hawk, snowy egret, great egret, sandhill crane, American crow, wood stork, black vulture, turkey vulture,

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
DL1	A	0702	1 adult sat on a snag for 20 min the flew into the patch of cabbage palm
	2A	0725	2 adults flew out of a cabbage palm to a pile of dead wood then back into the cluster of palms. The other 1 flew stayed on the snag.
	1A	0736	1 adult flew from the pile of snags north towards SR 70.
	1A	0852	1 adult left the suspected nest tree and flew to the SW.

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Additional Guidance (2016-2017 Breeding Season)**

OL1	A	0900	Flew in to snag from NW w food in feet. Then flew to potential nest tree.
OL1	A	0933	Flew in to potential nest tree from the S
OL1	A	0937	left potential nest tree, flew to the S over the field then turned & flew N towards 51270.

DRAFT



Survey Station 2

Survey Station 4

Lonesome Island Rd

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

16 January 2019

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 05
(27°12'19.20"N, 81°13'21.84"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
16 Jan 2019	5:05 pm	6:15 pm	Catie Neal

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 5:05 pm	62°	7 mph / N	80%	stratus	none
Finish: 6:15 pm	56°	3 mph / NW	60%	stratus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

northern honer, wood stork, anhinga, snowy egret, great egret, turkey vulture

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No observations



Survey Station 5

DRAFT

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lcnesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 6
(27°12'19.20"N, 81°13'21.84"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
18 Jan 19	6:55 AM	9:55 AM	Cynthia Grizzle - Experienced Cheryl Reed - Training

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0655	47°F	SE 1 mph	5%	Cirrus	some fog
Finish: 0955	50°F	SE 2 mph	5%	Cirrus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

open pasture, few trees. Actively grazed. Deep and shallow canals; only deep canals inundated.
Some fog along ground at start but gone by ~730AM

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
Location 1	A	7:22	perched then flew off to west
Location 2 Survey Station 6	A	7:33	Flew in from SW, across the pasture, then across the street
Location 2 Survey Station 6	A	7:49	Flew in from N, landed @ canal to forage, then perched on post.
Location 2 Survey Station 6	A	7:58	Same bird left post, flew north up the canal, then landed on the ground

USFWS Crested Caracara Draft Survey Protocol –
 Additional Guidance (2016-2017 Breeding Season)

Location <u>2</u> Survey Station 6	A	8:06	Same individual flew from ground across pasture, circled the oaks, and continued to fly south until not visible.

DRAFT

Meadowlarks
 Sandhill cranes
 Killdeer
 Kestrel
 Red tailed hawk
 Juv. Bald eagles
 Eri American egret
 Am. cranes
 Common grackles

Red winged blackbird
 Adult Bald eagle
 Carolina wren
 Loggerhead Shrike
 Swifts
 Palm warbler

Woodstork
 great blue heron
 Common Moorhen
 black vulture
 turkey vulture



18 January 2019

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 7
(27°12'31.60"N, 81°12'29.73"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
17 Jan 2019	0658	1006	Catie Neal + Bruce Williams (training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0658	45°	2 mph/N	15%	cumulus	none
Finish: 1006	60°	3 mph/NE	5%	cumulus	none

Observation Point Information

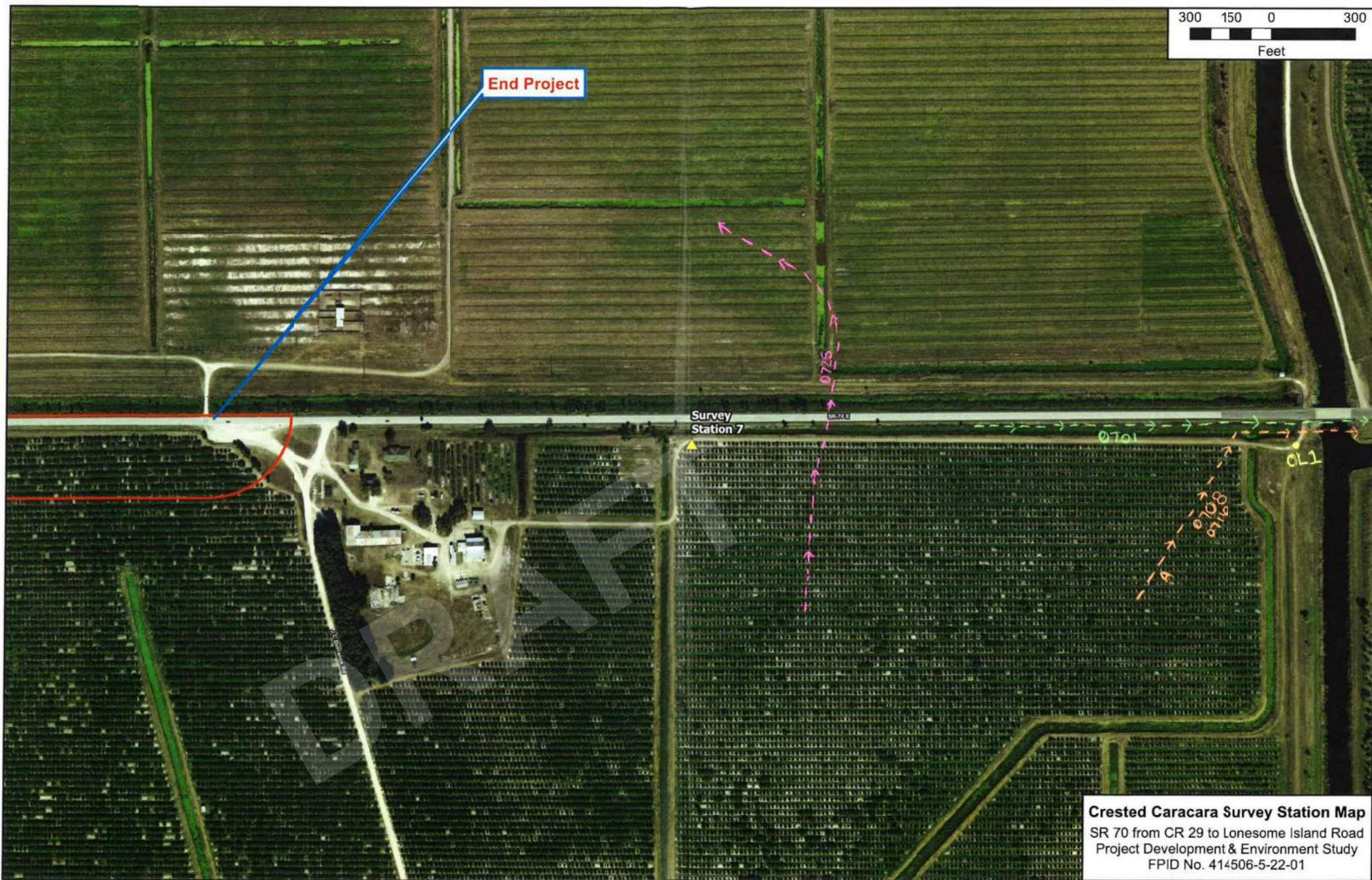
General Site and Habitat Conditions; Other Activities in the Area

kingfisher, starling, red-winged blackbird, bald eagle, green night heron, black vulture
 great egret, anhinga, American crow, snowy egret, white American, mourning dove, northern harrier

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
021 020	A	0701	Adult flew from E to W along SR70 to potential canyon in road.
	A	0708	Adult flew across citrus, turned along road and flew W. (path A) to potential canyon in road
	2 SA A	0716	2 Adult flew across the citrus + turned along road to fly W (path A) to potential canyon in road.
	A	0725	Adult flew across citrus, across SR70 into pasture, turned NE + flew out of site



End Project

Survey Station 7

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 1
(27°12'31.60"N, 81°12'29.73"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
01-29-19	0650	0950	Grizzle - Experienced

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0650	41°	0	0%	None	None
Finish: 0950	53°	SE 2mph	0%	None	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Kelly farms gates are busy – may spook birds from palms where a nest was previously observed.
 Field at SW quadrant of intersection recently plowed.

Observations

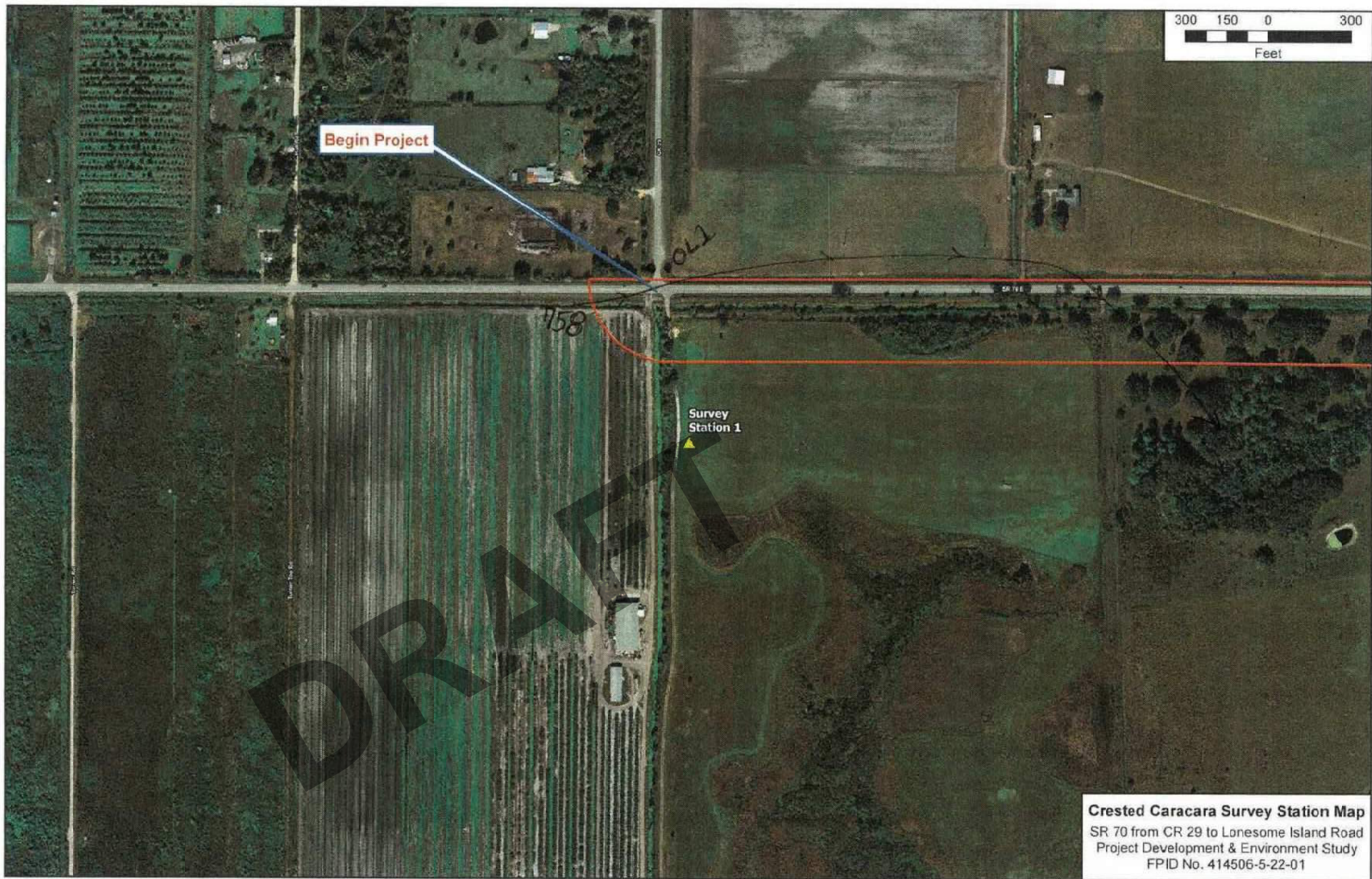
(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	758 AM	Fly over from west to east.

Wood Stork
 Mourning dove
 American crow
 Black vulture
 Blue Jay

Sandhill cranes
 Piliated w. 8
 Loggerhead shrike
 cattle egret
 meadowlark

common yellowthroat
 American egrets
 Boat tailed grackle
 Red shouldered hawk



Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road

Location/Observation Block/Lat-Long: Survey Station 2

(27°12'18.30"N, 81°16'14.76"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
8 Feb 19	06:42 AM	10:34 AM	Cynthia Grizzle - Experienced

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0642	54°F	SW 1mph	10%	Cirrus	Fog 0642-1034
Finish: 1034	71°F	NNE 2mph	5%	Cirrus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Open improved pasture - actively grazed.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	744 AM	one adult flying swiftly from west to east, holding something in its beak.
OL1	A	811 AM	one adult flying swiftly from west to east, holding prey in its beak.

Barred owl
mourning dove
turkey
A. crows
Red Shouldered hawk

8 Sandhill cranes
wood storks
red bellied wp
piloted wp



USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 3
(27°13'4.30"N, 81°16'14.76"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
01-30-19	0649	0949	Cynthia Grizzle - Experienced

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0649	54°F	NNE 5mph	100%	Stratus	None
Finish: 0949	56°F	NNE 5-10 mph	100%	Stratus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
open actively grazed pasture - orange grove - old field Residence + barn and storage area

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No observations

Great horned owl
Red shouldered hawk
Black crowned night heron
Killdeer
Cattle egrets

8
Mourning dove
Meadowlark
Sandhill cranes
Red bellied woodpecker
American crow
Great blue heron

yellow rumped warbler
Black vultures
Wood stork
Bluegray gnatcatcher
Northern passer

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

BW [4] RBW
1 FEB 19

Project Name: SR 70 LOWERS IS 4.1

Location/Observation Block/Lat-Long: 27°12'17.07"N x 81°15'48.00"W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1 FEB 19	6:50A	10:00AM	BOB WILTMAN (EXPERIENCED) BRUCE WILLIAMS (TRAINING)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:50A	59°F	E @ 3 mph	70%	STRATOCUMMUS	Ø
Finish: 10:00A	69°F	E @ 7 mph	60%	CUMMUS	Ø

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

PASTURES / PALM HAMMERS PAUCID OAK TREES

AMER. CROW; RED SHOULDER HAWK, CAROLINA WREN
MCKENBIRD, GREAT EGRET, RED BELLED WOODPECKER
TURKEY VULTURES; SANDHILL CRANES, GRAY SQUIRREL, PILEATED WOODPECKER

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
STA 4.1	(A) ADULT	6:50A	(A) ADULT PERCHED ON FALLEN OAK
	(B) ADULT	7:13A	(B) ADULT JOINS (A) ON STUMP - FALLEN OAK
	(A) ADULT	7:17A	(A) FLYS TOWARD ROAD SR 70 TO NE
STA 4.1	(A) ADULT	7:18A	(A) FLYS TO CARIBBEAN PALM SUSPECT NEST
	(A) ADULT	7:23A	(A) FLYS FROM PALM (NEST) TO STUMP (OAK SNAG)
	(A) ADULT	7:127A	(A) FLYS TO NE ACROSS SR 70
ST 4.1	(A) ADULT	7:186A	(A) FLYS FROM SR 70 TO NEST TREES
	(B) ADULT	7:38A	(B) FLYS FROM SR 70 W/ FOOD STUFF TO STUMP OF FALLEN OAK SNAG
	(A) ADULT	7:39A	(A) FLYS FROM NEST TREES TO STUMP W/ NESTS (B)
STA 4.1	(B) ADULT	7:42A	(B) GOES GROUND W/ FOOD - TEARING @ FOOD
	(B) ADULT		(B) FLYS TO NEST TREES W/ SMALL PIECES OF FOOD
	(A) ADULT	7:43A	(A) FLYS FROM STUMP W/ FOOD TO PATCH ON GROUND

* NEST TREES IN CLUSTER OF CARIBBEAN PALMS W/ BARELY ROOTED GROWN REMONING AT TOP TO SE... BIRDS APPROACH FROM SE LANDING @ SE + WESTERN SIDE OF PALM CRANK

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

STA 4.1	(A) 748 ADULT	748	(A) FLY TO NE TO SR TO
	(A) ADULT	753	(A) FLYS FROM SR TO DIRECTLY TO NEST W/ LINEAR OBJECT (TWIG OR BARK)
		754	(A) FLYS FROM NEST TO OAK SNAG-STUMP WITHOUT LINEAR OBJ. WHICH WAS LEFT IN NEST
STA 4.1	(A) ADULT	759	(A) FLYS FROM STUMP TO BAYS TREES
STA 4.1	(A) ADULT	802	(A) FLYS FROM BAY TREES TO INTERCEPT (C)
	(C) ADULT	803	(C) ADULT FLYS IN FROM ESB (C) HARRASSED BY (A) TO NEST OUT OF SITE
STA 4.1	(B) ADULT	848	(B) FLYS FROM NEST TO GROUND (EAS) WITH PIECE OF FOOD
	(A) ADULT	849	(A) FLYS IN LOW FROM NEST TO NEST (B) (B) ON GROUND WITH FOOD (EATING)
* COURTSHIP BEHAVIOR	(A) MALE	850	(A) FLYS ON TOP EFF (B) FROM POSITION (SIMULATES) MATING BEHAVIOR
	(B) FEMALE	852	(A) - WENT TO NEST
STA 4.1	(A) ADULT	854	(A) FLYS OUT OF NEST TREES TO NEST (B) ON E END OF FALSN OAK SNAG (PRESNNG/ALLOPRESNNG)
STA 4.1	(A) ADULT	900	PAIR BONING ALLOPRESNNG; MALE (A)
	(B) ADULT	904	PRESNNG FEMALE (B); FEMALE (B) PRESNNG MALE (A); FEMALE (B) THROWS HEAD BACK
STA 4.1	(A) ADULT	907	(A) (B) FLY TO TOP OF TREE BOTH
	(B) ADULT	909	(B) FLYS FROM SNAG TO NEST TREES
		914	(A) STILL IN TREE, PRESNNG
STA 4.1	(A) ADULT	917	(A) FLYS FROM TOP OF TREE TO NORTH
		952	(A) FLYS IN FROM NORTH CARRY A SMALL (MAMMAL) FOOD ITEM A = VOCALIZING
	(B) ADULT	952	(B) FLYS FROM NEST TREES TO NEST

STA 4.1 (A) ADULT (A) ON EAST END OF SNAG, THEN (A) + (B)
(B) ADULT 956 (B) FLYS NNE TOWARD SR TO
(A) FLYS W/ FOOD ITEM LOW TOWARD JUNEBO
DITCH (STACKED FOOD); FLYS TO LOW BRANCH
IN TREE 2 of 2
(B) RETURNS WITH FOOD ITEM
9 FLYS TO NEST
END 10104.
10104A
BOW [4] RBW
1 FEB 19



BOB WHITMAN 1 FEB 19
BENGE WILLIAMS

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

5
29 JAN 19

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70 Lowland

Location/Observation Block/Lat-Long: STA 5: 27.211901° x -81.24195

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
29 JAN 19	06:45A	10:50A	BOB WATMAN (EXP) BRUCE WILLIAMS (FRESH)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 06:45A	44° =	LIGHT VAR NE	0%	NA (STRAWS)	very light fog
Finish: 10:50A	57°	NEER Trpls	10%	ELIMINUS	∅

Colony unharmed

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
 PASTORIZED PRAIRIE/PLANT AND AGRICULTURE SOIL WITH TRASH QUADON
 CATTLE BUSH EASTERN MEADOW LARK GBH, COASTAL ORACKS
 2 BLUE GRACKLES (ADULT) 1 SUB ADULT, DOUBLE CRESTED COCKATOO
 REDWING-BLACK BIRD AMER CROW ANHINGA, WHISTLING DUCK WADZU
 MOTTLED NODDY WOOD STICK WRESTLER CURT WREST SANDHILL ORANG RABBIT
 TURKEY VINEY PALM WARDER WHOS (BL)

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head
throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

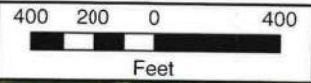
Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
STA 5	(A) ADULT (B) ADULT	6:45 7:04	(A) & (B) PERCH ON FENCE POSTS NORTH OF SUSPECTED NEST PALM 7:04 FLY OFF TO NORTH BOTH (A) & (B)
STA 5	(A) ADULT (B) ADULT	7:06 7:12	7:06 - BOTH BACK UP ON FENCE FURTHER NORTH (A) & (B) ON FENCE FURTHER NORTH OF PALM BOTH FLY WEST DROP DOWN IN DITCH
STA 5	(A) ADULT (B) ADULT	7:35 8:10 8:10	(A) FLY TO PERCH ON FENCE ALONG DITCH FAR NORTH OF TREE, PERCHING (A) FLIES NORTH TO TREE PERCHING (B) FLIES IN FRONT TO TREE TOP
STA 5	(B) ADULT (A) ADULT	8:14 8:16 8:21	(B) FLIES OFF TO NORTH THEN EAST (A) FLIES DOWN INTO DITCH THEN UP TO POST (6:45 AM) THEN DROPS DOWN TO GROUND (8:21)

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

STA 5	(A) ADULT (A)	831 834	FLYS BACK UP TO POST; IMMATURES HANG FLYS NEAR TREE (PALM) (A) HARASS IMMATURES EAGLE (A) RETURNS TO POST FROM M/L
STA 5	(A) ADULT	850	(A) ADULT ON POST - EAGLE (MATURE) FLYS BY PALM AND OVER CARACARA (A) NO REACTION
STA 5	(B) ADULT (A) ADULT	856 901	(B) FLYS IN FROM NORTH LOW - POPS UP ON POST (G45 A POSITIONS) (A) HOPS TO THE GROUND
STA 5	(B) ADULT	932 938	(B) HOPS TO GROUND 934 BACK UP ON POST (B) HOPS TO GROUND OUT OF SITE
STA 5	(C) ADULT (D) ADULT	956 959 10:04	(C) ADULT CARACARA FLY IN FROM W/N/W (C) FOLLOWS FENCE LINE NORTH & LOW (D) FENCE LINE JUST NORTH OF ABELIA
STA 5	(A) ADULT (B) ADULT	10:14 10:14	(A) ADULT ON FENCE (BIO POSITION) FLEW IN FROM N (B) CHASES EAGLE LOW SOUTH OF PALM LANS LOW SOUTH OF PALM (20M) INT OF SITE
STA 5	(A) ADULT (B) ADULT (A) ADULT	10:17 10:20 10:20	DROPS OFF POST LOW OUT OF SITE BOTH (A) + (B) BACK @ G45 POSITIONS ON POST
STA 5	(C) ADULT (SUB) (ADULT) (A) (B)	10:32 10:35	WITH BOTH (A) + (B) IN SITE ANOTHER (SUB?) ADULT FLYS UP FROM DITCH + BACK DOWN TO DITCH QUICKLY BOTH FLY/HOP OFF POST TO GROUND / DITCH OUT OF SITE
STA 5	(A) ADULT (B) ADULT	10:46 10:49	(A) BACK UP ON POST - 1 (B) FLYS SOUTH OUT OF SITE (A) FLYS TO GROUND

END 10:50A

2 of 2
BN [5] BRUCE W
29 JAN 19
Page 2 of 3



Crested Caracara Survey Station Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 6
(27°12'19.20"N, 81°13'21.84"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1-31-19	0658	1001	Grizzle - Experienced

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0658	52°F	NNE 7mph	100%	Stratus	None
Finish: 1001	56°F	NNE 8mph	100%	Stratus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
open pasture w/ agricultural ditching - clusters of oaks and palms far from observer location center. Many crows and vultures comingling with caracaras - no interactions.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	0719	Flew in from south, landed on ground near ditch North of SR 70
OL2	A	726	Flew in from west to join the other.
OL2	Im	727	Flew in from east to join the others on the ground
OL2	Im	731	Flew in to join the others on the ground.

American crow
Red winged blackbird
Gr. American egret
Anhinga
meadowlark

8 grackle



31 January 2019

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

BW [7] BROWN WILLIAMS
30 Jan 19

Caracara Survey Form (updated 12/9/2016)

Project Name: SR to Longmead Is.

Location/Observation Block/Lat-Long: 7 27.208833N - 81.205789W

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
30 JAN 19	10:52 A	10:02 A	BROWN WILLIAMS (EXPERIENCED) BROWN WILLIAMS TRAVER

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 10:52 A	56°F	LITE VAR NE	100%	STRATO CUMULUS	☐
Finish: 10:02 A	57°F	NNE @ 5 mph	100%	STRATO CUMULUS	☐

CEILING @ APPROX 1000'

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

ORANGE GROVE(S) PARTRIDGE FURROW/WOLLAUN W ADJACENT SR TO
RECENT EARTHWORK/ROAD ACROSS N. SIDE SR TO (HORSES)
TALL GRASS HERON POND, BUCKLEBERRY, BLACK VULTURE STARLING-
GIRL, MOURNING DOVE, BLUEGRASS, ORNAMENTAL IMM, BIRD FEEDER
EASTERN GRACKLE, YELLOW RUMP WARBLER GREAT CARDINAL
N. HARRIER, WOOD STORK, AMER CROW, TURKEY VULTURE, AMER. EGRET
RED SHOULDERED HAWK, CATS, EGGS, COLLARED DOVE, BOTTLED KINGFISH

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head
throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
STA 7	(A) ADULT	708	(A) FLIES IN FROM SE OVER GROVE
	(B) ADULT	710	(B) FLIES IN FROM ENE (N OF SR TO) LAND IN ORANGE TREE
	(C) ADULT	711	(C) ORANGE TREE
STA 7	(B) ADULT	716	(B) FLIES WEST ALONG RD FROM ORANGE TREE
	(C) ADULT	721	(C) RTNS FLIES EAST ALONG SR TO DROPS OUT OF SITE N OF SR TO OUT OF SITE
	(D) ADULT	723	(D)
STA 7	(E) ADULT	727	(E) ADULT FLIES IN FROM SOUTH OVER ORANGE GROVE HEADS NNW
	(F) ADULT	731	(F) ADULT FLIES IN FROM WNW LOW OVER SR TO HEADS TOWARD SR TO @ CANAL
	(G) ADULT	731	(G) FLIES UP FLIES LOW ALONG CANAL/ROAD
STA 7	(G) ADULT	752	(G) FLIES IN FROM EAST LOW OVER SR TO (JUST SOUTH) FLIES WEST ALONG SR TO; TURN NORTH LOW OUT OF SITE
	(H) ADULT	759	(H) FLIES IN LOW FROM CANAL AREA LANDS ON FENCE POST N OF STA 7

1 of 2 [7]

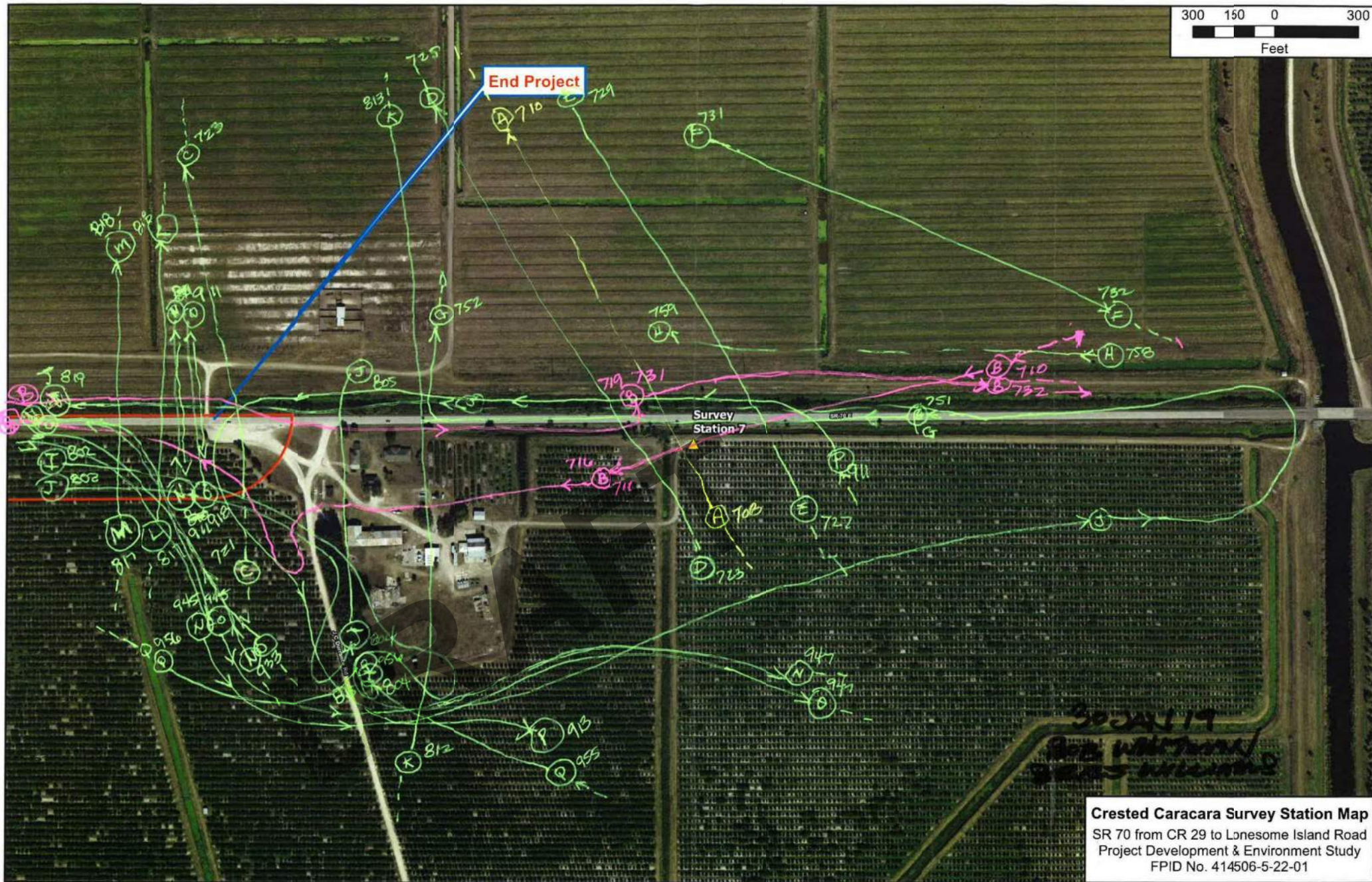
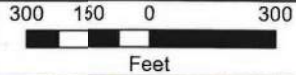
**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

STA 7	(I) ADULT (J) ADULT (K) ADULT	802 (I) 802 (J) 804 (K)	(I) (J) 2 ADULTS FLY IN FROM WEST, SOUTH OF SE 70 TO AUSTRALIAN PINE GROUB HARASSED BY CROWS BUT PERCH IN TREES (K) FLYS NORTH ACROSS SR TO DROPS DOWN OUT OF SITE
STA 7	(L) ADULT (M) ADULT (N) ADULT	812 (L) 815 (M) 817 (N)	(L) FLYS IN FROM SOUTH OVER ORANGE GROUBS CONTINUES N OUT OF SITE (M) LEAVES TREE FLYS LONG-LOOP E, N, WEST ALONG SR TO OUT OF SITE (N) FLYS FROM SOUTH → NORTH
STA 7	(O) ADULT (P) ADULT (Q) ADULT	817 (O) 910 (P) 910 (Q)	(O) FLYS FROM S → NORTH ACROSS SR TO OUT OF SITE (P) 2 ADULTS FLY IN FROM SOUTH ACROSS SR TO FIGHTING (OVER FOOD) (Q) FLYS IN FROM SOUTH OVER ORANGE GROUBS ALONG SR TO, THEN SOUTH + EAST LOOP OVER GROUBS RETURN FLYING SOUTH... STILL "FIGHTING" FLY SOUTH OUT OF SITE
STA 7	(R) ADULT (S) ADULT	911 (R) 917 (S) 917 (S)	(R) FLYS IN FROM SOUTH STILL FIGHTING (AERIAL INTERACTION) FLY NORTH TO SR 70 SOUTH ACROSS IN (S) FLY IN FROM SOUTH STILL FIGHTING (AERIAL INTERACTION) FLY NORTH TO SR 70 SOUTH ACROSS IN
STA 7	(T) ADULT (U) ADULT (V) ADULT	933 (T) 933 (U) 933 (V)	(T) FLY IN FROM SOUTH STILL FIGHTING (AERIAL INTERACTION) FLY NORTH TO SR 70 SOUTH ACROSS IN (U) FLY IN FROM SOUTH STILL FIGHTING (AERIAL INTERACTION) FLY NORTH TO SR 70 SOUTH ACROSS IN (V) FLY IN FROM SOUTH STILL FIGHTING (AERIAL INTERACTION) FLY NORTH TO SR 70 SOUTH ACROSS IN
STA 7	(W) ADULT (X) ADULT (Y) ADULT	945 (W) 945 (X) 955 (Y)	(W) FLY IN FROM WEST STILL AERIAL INTERACTION (X) BOTH FLY SOUTH + EAST OVER GROUBS (Y) SIMULTANEOUSLY FLYS IN FROM SE TO DEAD TREE PERCH (IC 802) HARASSED BY 2 CROWS FLYS OFF TO WEST
END	(Z) 10/02		NO NEST OBSERVED

30 JAN 19

BW [7] RBW

2 of 2



Crested Caracara Survey Station Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
13 Feb 19	0651	0957	Grizzle/Cumby / Exp/Training

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0651	60°F	N @ 10 mph	100%	cumulus	yes. see below.
Finish: 0957	60°F	N @ 7 mph	100%	cumulus	NO

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Overcast. Intermittent, light rain until 8:30 AM. open pasture - actively grazed. Busy intersection + gates. old orange grove + canal w/ oaks + palms.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	853	Individual flew from west to east, likely landed on ground out of view.
OL2	A	943	perched in oak, then flew past.
OL2	A	955	Flew along roadway, then perched in oaks north of roadway near Survey station 2 + 4.

American crow
Blue jay
Cr. Am. egret
mourning doves

rattle egrets
Wood stork 8
Meadowlark
towhee
little blue heron

red bellied wp.
killdeer



13 February 2019

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 2
(27°12'18.30"N, 81°16'14.76"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
20 Feb 19	0652 AM	1010 AM	Grizzle-Exp. Cumby/Reed-Training

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0652 ^{AM}	70°F	SE 10-15 mph	30%	Cumulus	light fog
Finish: 1010 AM	77°F	SE 10 mph	90%	Stratus + Cumulus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Improved pasture - actively grazed + pine row + ditches. 2-3 vehicles or ATVs through study area during survey. Many hawks + crows observed.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	956	Individual flew west to east toward Station 4, until no longer visible.

Red shouldered hawk
Sandhill cranes
Pileated w/p
Turkey
Am. Crow

8 mocking bird
downy w.p.
barred owl
belted kingfisher
Blue jay

e. meadowlark
kestrel
Wood stork
turkey vulture
black vulture



USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 3
(27°13'4.30"N, 81°16'14.76"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
14 Feb 19	0653	10:00	Grizzle/Cumby Exp/Training

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0653	46°F	NNW 5 mph	5%	circus	None
Finish: 10:00	62°F	N 9 mph	0%	none	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Open pasture + old field. Many hawk and other raptor observations + crows and vultures. No palms in immediate vicinity.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No observations

Mourning dove
Northern harrier
red shouldered hawk
sand hill cranes
black vulture

Turkey vulture.
Wood stork. 8
Gr. Am. egret.
meadow larks

USFWS Crested Caracara Draft Survey Protocol –
 Additional Guidance (2016-2017 Breeding Season)
Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 4
(27°12'17.07"N, 81°15'48.00"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
14Feb	5:16 pm	6:45 pm	Catie Neal + Christen Cemto (training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 5:16pm	74°	7 mph / NE	35%	cumulus	none
Finish: 6:45pm	69°	5 mph / NE	45%	cumulus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Improved pasture

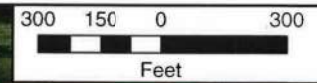
sandhill crane, pileated woodpecker, red-bellied woodpecker, turkey vulture, swifts

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1 OL1	1A	5:56pm	Adult flew in from SR70 across the pasture to the nest tree.

14 Feb 2019
Map Page 1



Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 5
(27°12'45.62"N, 81°14'30.62"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
15 Feb 19	0647	10:01	Catie Neal + Christen Cernito (training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0647	54°	1 mph / W	20%	cumulus	none
Finish: 1001	67°	1 mph / E	10%	cumulus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Unimproved pasture
 grackle, American crow, red-winged blackbird,
 juncos, swift, turkey vulture, snowy egret, cattle egret, carolina wren, tree swallow, warbling vireo,
 northern harrier, anhinga, sandhill crane, great blue heron, wood stork, great white egret, roseate spoonbill.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head
 throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No observations

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 6

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
12 Feb 2019	0654	1035 AM	Greerle + Cumby / Exp + Training

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0654	69°F	7mph SSE	10%	circus	Yes until 8AM
Finish: 1035	74°F	10mph S	50%	cumulus	NO

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

open pasture + planted oak + orange grove.
light rain/mist until 8AM.
very little human activity at site.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	843	Individual flew from south to north, turn west down roadway
OL2	Im	850	Perched on electric pole
OL3	A	10:27	Individual flew in from east, perched on pole, then flew south

Mourning dove
boat tailed grackle
Gullinulee
Red winged black birds

8 yellow rumped warbler
killdeer



Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 7
(27°12'31.60"N, 81°12'29.73"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
Feb 14 2016	0657	10:02	Catie Neal + Christen Cerito (training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0657	47°	5 mph / NW	20%	stratus	none
Finish: 1002	62°	8 mph / NW	10%	stratus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

improved pasture; bahiagrass, smutgrass w potential row crops; scattered cabbage palms along canal + road

whitinga, American crow, cattle egret, snowy egret, swift, turkey vulture, great white egret, killdeer, wood stork, eastern phoebe

Observations

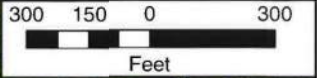
(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	0705	AS	Subadult flew in from east along SR70 and landed on fence. Sat for 23 min then flew east to a palm tree.
OL1	A	0709	Adult flew in from S turned along SR70 and flew to the east then across the pasture.
OL1	A	0715	Adult flew in from S turned + flew east over ditch
OL1	A	0718	Adult flew in from the S turned + flew west adjacent to SR70 corridor.

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

OL1	2A	0725	2 birds flew in from south to join original caracara on fence posts. left at 0728 (all 3 birds) to palm nearby
OL7	2A	0730	2 adults flew out of tree, south through the citrus
OL1	1A	0741	Adult flew from the S from citrus to then turned west to fly adjacent to SR70.
OL1	1A	0752	Adult flew in from south across citrus and landed on fence post. Then flew into pasture + met w 2 others + flew N across the pasture
OL1	2A	0738	2 Adults flew from the south across the citrus, across the road + continued across across the pasture with

DRAFT



End Project

Survey Station 7

0718

0711

0705

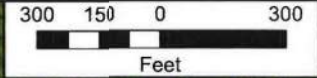
0715

0707

possible
nest

14 Feb 2019 Map Pg. 1

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lcnesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01



End Project

Survey Station 7

Potential

0138
0752
012

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14 Feb 2019 Map Page 2

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 1
(27°12'31.60"N, 81°12'29.73"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
27 Feb 2019	0643	0943	Raina Cumby - Cynthia Grizzle Training Experienced

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0643	63°F	1 mph NW	5%	Cirrus	none
Finish: 0943	72°F	4 mph E	10%	cumulus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
No change in habitat.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	816	Individual flew from north to southeast, past SR 70, carrying nesting material

A. crow
Vulture
morning dove

8 red shouldered hawk



27 February 2019

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 2
(27°12'18.30"N, 81°16'14.76"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
03062019	0635	0935	Cynthia Grizzle - experienced Raina Cumby - training Cheryl Reed - training

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0635	45°F	8 mph N	5%	cumulus	none
Finish: 0935	53°F	11 mph N	0%	cumulus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
swallowtail kites (2) bald eagle broadwing hawks (2) white pelican osprey sandhill cranes

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	2A	7:10	south to north flight path nest



06 March 2019

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 3
(27°13'4.30"N, 81°16'14.76"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
26 Feb 2019	0651	1051 AM	Cynthia Grizzle - Exp / Raina Cumby - Training

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0651	62°F	3mph E	10%	Cirrus	NONE
Finish: 1051	75°F	10mph E	40%	cumulus	NONE

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Improved pasture + old field
Landowner indicated 3 were observed feeding on a dead cow at the back of the property within the last week.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL2	A	805	Individual flew from south to north up CR29, then flew over to orange grove + landed. Several turkey vultures flushed from orange trees.
OL1	A	815	Individual flew to orange grove to the south

Sand hill cranes
N. Harrier
meadowlark
Wood stork

8
mourning dove
N. bobwhite
A. owl
kestrel



26 February 2019

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 4
(27°12'17.07"N, 81°15'48.00"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/26/14	4:45pm	6:08 pm	Catie Neal, Christen Cerrito (training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 4:45pm	72°	ENE 9mph	95	cumulus	None
Finish: 6:08pm	68°	ENE 6mph	100	cumulus	light rain

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

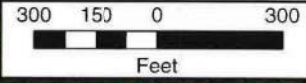
South: open pasture w/ bahiagrass, lantana, and scattered live oak and cabbage palm. North: Ditch w/ water lettuce, sagittaria, pickerel weed.

Cattle egret, great egret

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	5:28	Flew out of tree and into a snag north. sat in snag and then went back to nest.
OL1	A	5:36	Flew out of nest and into snag nearby



Survey Station 2

Survey Station 4

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0528
0536

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lcnesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 5
(27°12'45.62"N, 81°14'30.62"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/27/19	6:33AM	9:33AM	Ratie Neal / Christen Gerrits (Training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:33AM	63°	NW 1mph	20	stratus	Light fog
Finish: 9:33AM	71°	SNE 4mph	10	Cumulus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Lonesome island road separating pastures w/ two ditches on either side. Pasture dominated by bahiagrass and scattered cabbage palm. Pitches have tagweed, buffalo grass, peruvian primrose, cattail

Meadowlark, American crow

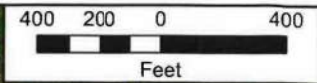
Northern Harrier, wood stork, eastern phoebe, red winged black bird

snowy egret, mockingbird, mottled duck, grackle, swifts, great egret

Bald eagle, warbling vireo
Observations Mourning Dove, turkey vulture

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OLI	A	7:04	flew north from road, made a loop, and went back north
OLI	A	8:17	flew over from north and headed south



Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 6
(27°12'19.20"N, 81°13'21.84"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
02282019	0643	0943	Raina Cumby, Cheryl Reed – Training Cynthia Grizzle – Exp.

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0643	64°F	2 mph NW	100%	cumulus	none
Finish: 0943	69°F	3 mph NW	70%	cumulus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

No change in habitat.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	6:44	Individual flew east to west along SR70
OL1/ OL2	A	6:44 6:52 6:54 6:57	Individual flew east to west, perched on wire post, flew south, landed on ground, flew north, perched on different wire post, flew north
OL3	A	7:20	Individual flew north, perched on wire post next to SR70, flew west
OL3	A	7:30	Individual flew west to east along SR70

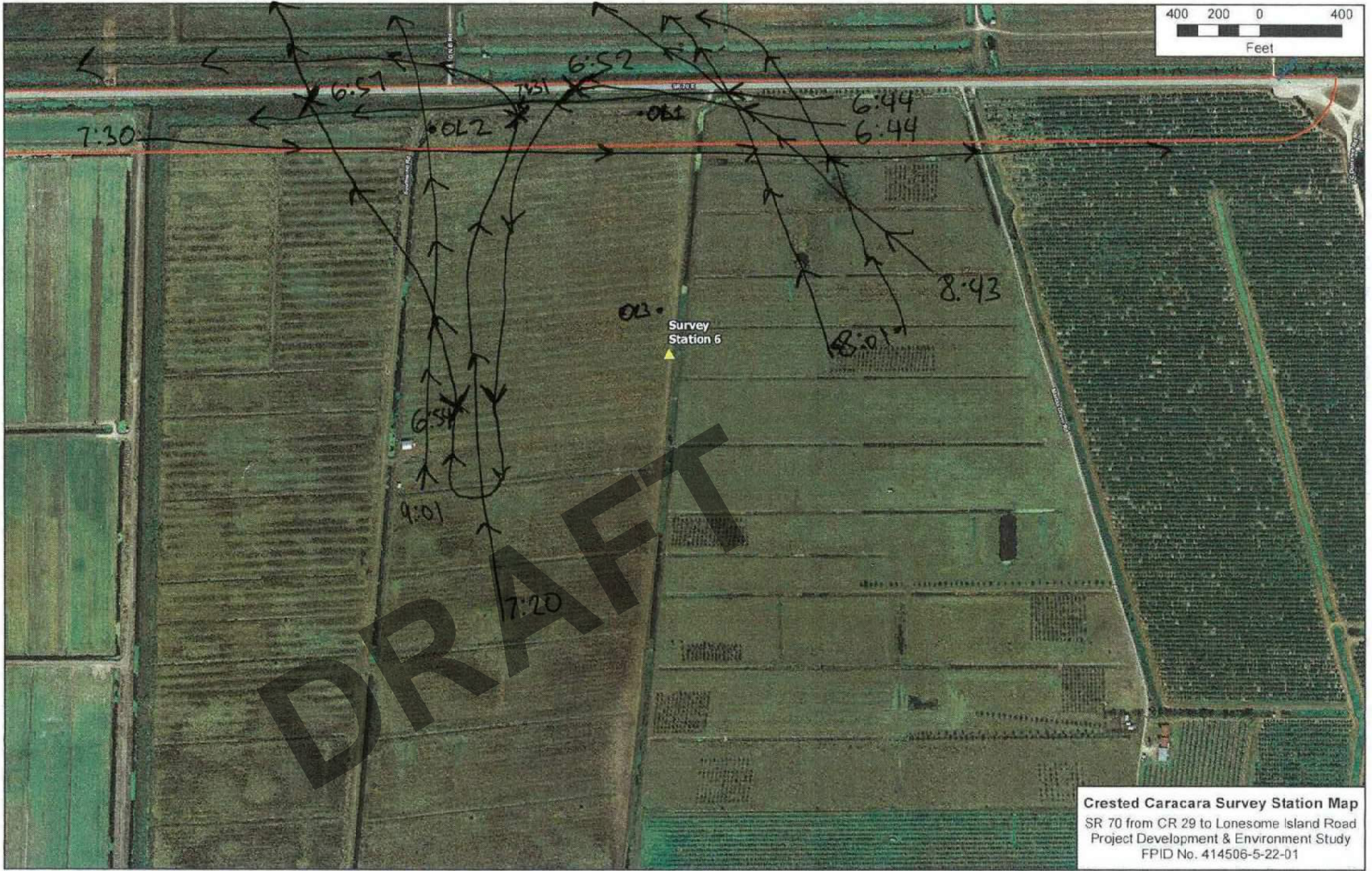
Wood stork
A. crow
northern harrier

8 mourning dove
Vulture
Bald eagle

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

OL3	A	8:01	Two individuals flying from south to northwest across SR 70
OL3	A	8:43	Individual flew northwest over SR 70
OL3	A	9:01	Individual flew north over SR 70

DRAFT



Crested Caracara Survey Station Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01

28 February 2019

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 7
(27°12'31.60"N, 81°12'29.73"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/26/19	6:35AM	9:35AM	Catie Neal/Christen Cerrito (Training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:35AM	62°	ENE 3mph	30	stratus	None
Finish: 9:35AM	75°	E 10 MPH	60	stratus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

North: Ditch w/ Carolina willow, peruvian primrose willow, scattered cabbage palm. south: citrus grove
 Swifths,
 Great egret, Northern Harrier, grackle, sandhill crane, cattle egret
 American Crow, Turkey vulture, cardinal, Black vulture
 Belted kingfisher, Eastern Pheobe, redwinged black bird.

Observations

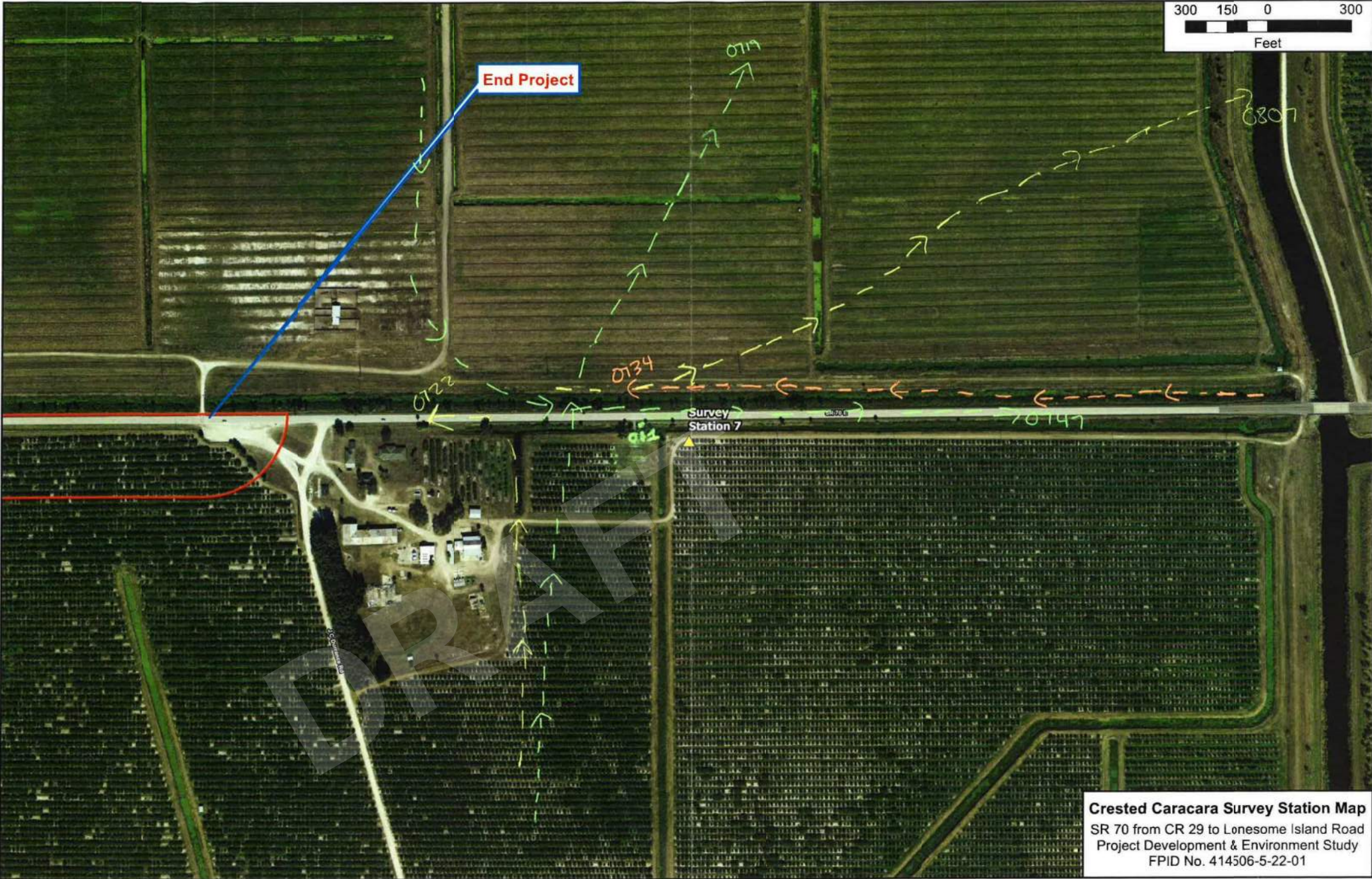
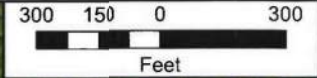
(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OLI	A	7:19	flew from south over SR 70 to North
OLI	A	7:22	flew from citrus to south to SR 70 flying west out of sight
OLI	2A	7:34	flew along SR 70 from East to west out of sight
OLI	2A	7:47	flew from north then turned east and flew along SR 70 out of sight

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Additional Guidance (2016-2017 Breeding Season)

041	A	8:07	flew from west and to the northeast out of sight

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End Project

Survey Station 7

0122

0134

0119

0307

0147

DRAFT

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
 Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
 Location / Observation Block / Lat-Long: Survey Station 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/14/19	06:45	09:45	Grizzle-Exp, Cumby-Training

Weather					
Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 06:45	62°F	3 mph ENE	5%	Cirrus	slight fog
Finish: 09:45	72°F	8 mph E	0%	—	none

Observation Point Information
General Site and Habitat Conditions; Other Activities in the Area
 Site unchanged. Very little activity by any wildlife.

Observations
 (flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No observations

Crow
 Mourning Dove
 Vulture

Property Manager

Marilyn Wilson

USFWS Crested Caracara Draft Survey Protocol – Additional Guidance (2016-2017 Breeding Season)

863-441-3616 Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 2 (27°12'18.30"N, 81°16'14.76"W)

Table with 4 columns: Date, Start Time, Stop Time, Observer Name(s) and Experience Level(s). Handwritten entries: 3-21-19, 653, 953, Grizzle-Exp, Cumberly-Training

Weather

Table with 6 columns: Time, Air Temp, Wind Speed and Direction, % Cloud Cover, Cloud Type, Rain/Fog. Handwritten entries for Start and Finish times and conditions.

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Site unchanged. Some human activity near house. Met property manager who showed us where the nest was previously. He also mentioned he saw a Caracara that was struck by a vehicle in the past week or two.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

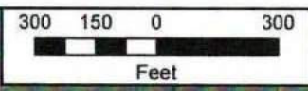
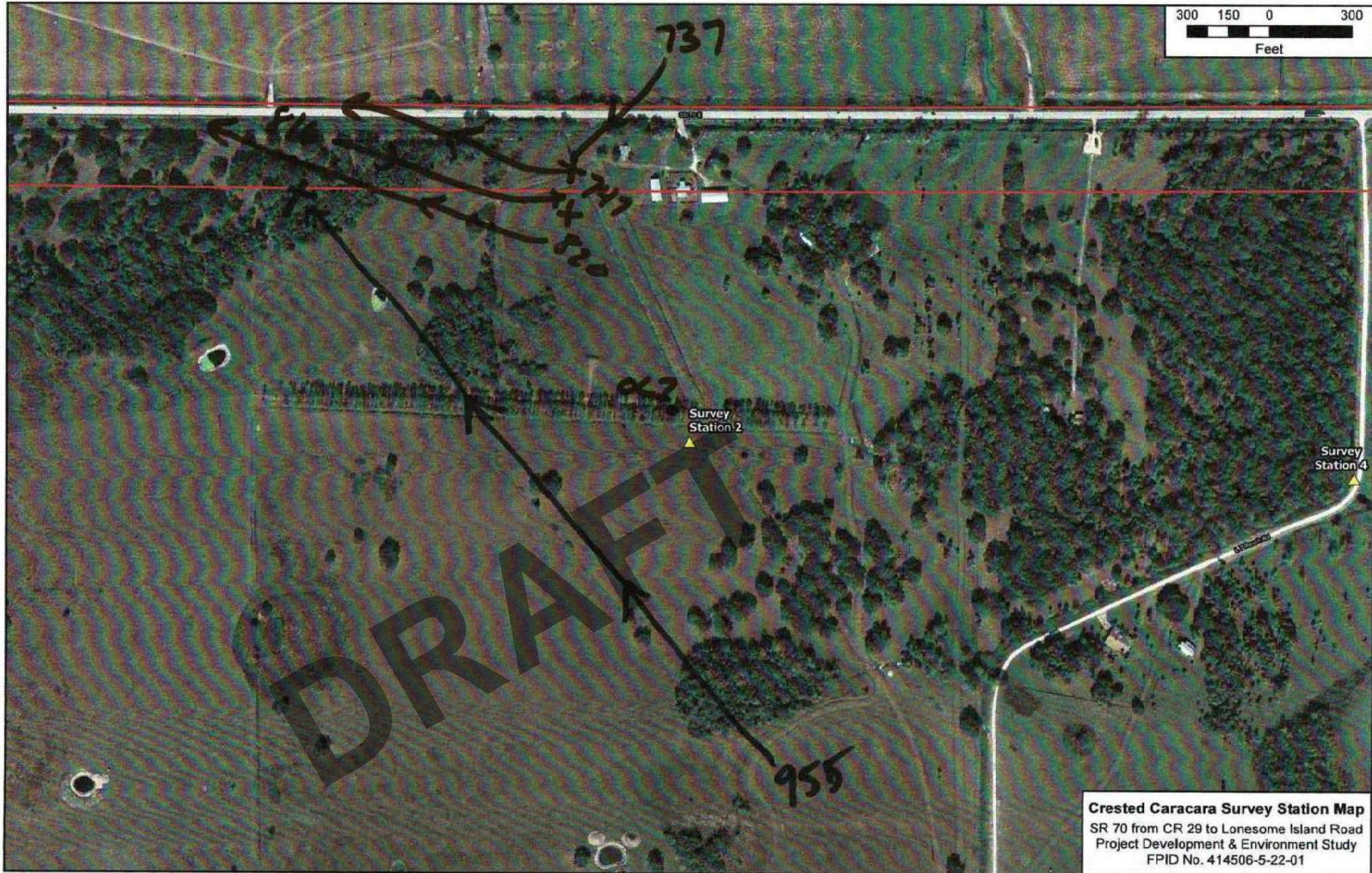
Table with 4 columns: Observer Location, Age A/Im, Time, Description of behavior, flight path, etc. Handwritten entries for four observations.

- List of other bird species observed: mallard ducks, sandhill cranes, tufted tit, blue jay, pileated w, m. doves, turkey, A. crow, R.S. Hawk, Wood Stork, black vulture, turkey vulture, Downy w.

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Additional Guidance (2016-2017 Breeding Season)

021	A	955	Individual flew in from south & landed in oak tree.

DRAFT



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Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 3
(27°13'4.30"N, 81°16'14.76"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/13/19	6:43	09:43	Cynthia Grizzle (Exp), Raina Cumby (Training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0643	61°F	4 mph ENE	5%	Cirrus	None
Finish: 0943	68°F	7 mph ENE	30%	cirrus/cumulus	None

Observation Point Information

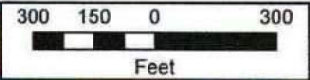
General Site and Habitat Conditions; Other Activities in the Area
red shouldered hawk Site unchanged. Some human activity along dirt roads- ATV & vehicle traffic.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	9:32	E to SW along SR 70 From Somewhere in open pasture

STK
sand hill cranes



Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

3-13-19
PSG Page 2 of 2

USFWS Crested Caracara Draft Survey Protocol –
 Additional Guidance (2016-2017 Breeding Season)
Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 4
(27°12'17.07"N, 81°15'48.00"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
13 Mar	1:50 pm	3:10 pm	Catie Neal + Hannah (training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 1:50 pm	82°	E 11 mph	75%	cumulus	none
Finish: 3:10 pm	82°	E 12 mph	75%	cumulus	none

Observation Point Information

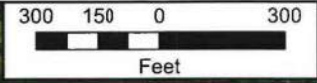
General Site and Habitat Conditions; Other Activities in the Area

red-shouldered hawk, turkey vulture

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	1:53	Adult flew from road to nest tree.
OL1	2A	1:08	Turkey vulture was flying very low over tree line. Both birds came out of the nest tree to chase off the vulture. Then returned to the nest.
OL1	1A	2:22	Turkey vulture is remaining in area. 1 caracara flew out to chase it off.



Survey Station 2

Survey Station 4

SR 70

222
2108

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)
Caracara Survey Form (updated 12/9/2016)**

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 5
(27°12'45.62"N, 81°14'30.62"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
14 Mar 19	0710	10:10	Catie Neal + Hannah (training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0710	61°	ENE 3 mph	20%	stratus	little on ground - <i>visual grass</i>
Finish: 1010	71°	E 6 mph	5%	cumulus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

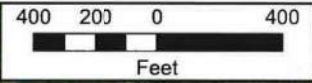
The pasture owner was cutting grass today. Many birds in pasture foraging on insects + other small prey.

sandhill crane, wood stork, red-winged black bird, bald eagle, swift, grackle, eastern phoebe, whistling ducks, snowy egret, white egret, cattle egret, turkey vulture, black vulture, northern harrier.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL7	A	0739	Adult flew from the N, above the pasture for a bit then went to roadside. Took flight again to fly above the pasture until 0743 then flew off to the SW
	A	0845	Adult flew from the north to land in the pasture. Hopped around in pasture with other 4 until 0852 - 1 flew to S
	4 2A	0847	4 Adults flew from the S to land + forage in the pasture. Hopped around in pasture with other one until 0854 2 flew to SW, 2 flew to NE
	4 2A	0830	2 Adults flew from S to N across pasture. 2 other Adults flew from S to land in pasture + forage until 0902.



Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

14 March 2019

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 6
(27°12'19.20"N, 81°13'21.84"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3-12-19	7:03 AM	10:03 AM	Cynthia Grizzle (Exp), Raina Cumby (training) Cheryl Reed (Training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0703	65°F	2 mph ENE	5%	Cirrus	Some fog
Finish: 1003	72°F	5 mph E	35%	Cumulus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Fog cleared shortly after monitoring began. Visibility was good throughout event.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	0740	ONE individual flew in from east to west along SR70
OL2	A	0833	Different individual flew in from the south, crossed over SR70 & landed on ground out of view.
OL3	A	0903 0917	Possible same individual, flew from N of SR70 to S of SR70 near fence line landed on ground - Flew off at 09:17
OL3	A	0913 0927	Another individual flew in at 0913 - walked around with the other individual near fence - Flew off at 09:27

Common gallinule
redwinged blackbirds
Northern harrier

8

Black vultures

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

OL2	A	0927	Same individual that landed at 913 took off from fence, flew N of SR70 and landed on ground.
OL2	A	0955	Individual sitting on telephone pole then flew out of view

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3-12-19
PSG



Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 7
(27°12'31.60"N, 81°12'29.73"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
0229 13 Mar	0720	1021	Catie Neal + Flannah (training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0720	61°	NE 4 mph	40%	cius	none
Finish: 1021	72°	E 10 mph	20%	cius	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
<p>citrus to the south, farming facilities to immediate east, pasture (improved) in surrounding area w cattle, scattered cabbage palms mostly along road.</p> <p>green heron, swifts, black vulture, mourning dove, turkey vulture, snowy egret, woodstork, white egret, northern harrier, blue jay, grackle, red-winged blackbird</p>

Observations

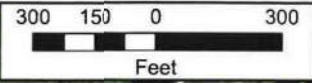
(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A 0229	0724	Adult flew from east to west along SR 70
OL1	A	0738	Adult flew from the west along SR 70 to the east then turned north to cross the pasture.
OL1	2A	0742	2 Adults flew from the west to turn north across the pasture
OL1	1A	0750	Adult flew N to S from across the field, it sat on the telephone pole for a few min then flew off to the south.

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

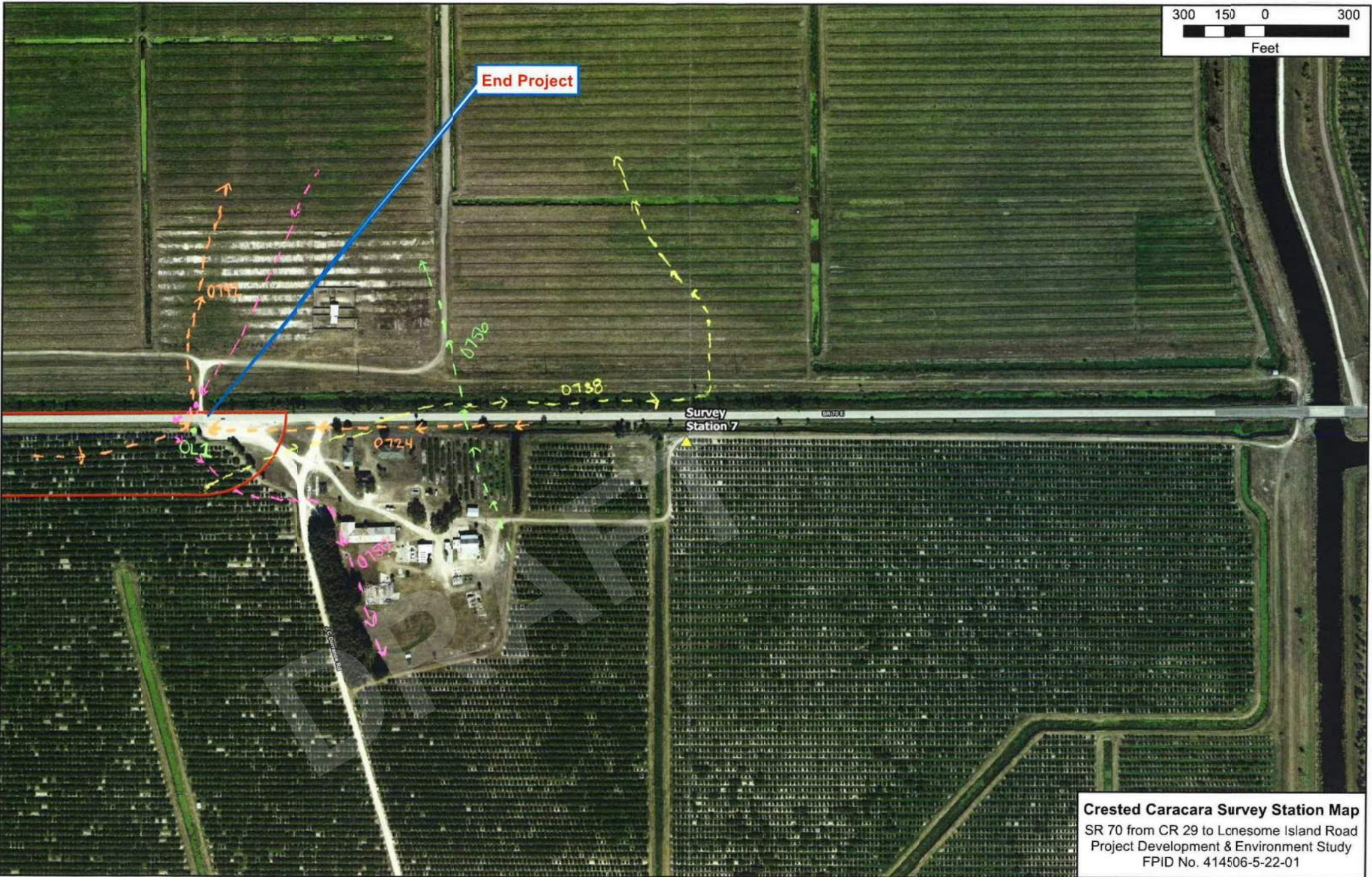
011	2A	0750	2 Adults flew from S to N across the pasture.

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End Project

Survey Station 7



Crested Caracara Survey Station Map
SR 70 from CR 29 to Lcnesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
 Additional Guidance (2016-2017 Breeding Season)
Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 1
(27°12'31.60"N, 81°12'29.73"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/27/19	0639	0939	Cynthia Grizzle (Exp) + Raina Lumby (Training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0639	60°F	4 mph NW	5%	cirrus	none
Finish: 0939	64°F	7 mph NW	70%	cumulus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
~5 vehicles in and out of Kelley Farms entrance

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	7:48	Individual flew east to west along SR 70

Vulture
 Crow
 Woodstork



3-27-19
PSG

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 2
(27°12'18.30"N, 81°16'14.76"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
9-3-19	0647 AM	0947 AM	Cynthia Gnozzle (Exp) + Raine Lumby (Training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0647	59°F	8 mph E	30%	cirrus	None
Finish: 0947	65°F	10 mph ENE	30%	stratus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

No change - wind picked up in the last hour of monitoring.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OLI	A	831 AM	Adult flew in from SR 70, over the pasture and continued to fly out of sight to the southeast.
OLI	A	844 AM	Two adults flew over from southeast one landed in oak tree, the other circled around and then they both flew off to the west, down SR 70

- American crow
- Sand hill crane
- meadowlark
- many birds
- Pileated wood pecker
- red shouldered hawk
- meadowlark ⁸
- Cattle egrets
- turkeys
- Cattle egrets.



4-3-19
PSG

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 3
(27°13'4.30"N, 81°16'14.76"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/28/19	0633	0933	Cynthia Grizzle - expert Raina Cumby - training

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0633	57°F	5 mph N	0%	Cumulus	None
Finish: 0933	67°F	10 mph N	5%	Cumulus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
No change.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No observations

Meadowlark
red winged black bird
great egret
Sandhill cranes

8 Red bellied wp.
N. bobwhite
Common gallinule
black water
N. Harrier

greenback heron
mourning dove
mexican birds
blue jays

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 4
(27°12'17.07"N, 81°15'48.00"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/25/19	6:03PM	7:03PM	Catie Neal/Christen Cerrito (Training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:03 PM	84°	WNW 4mph	20%	Cumulus	None
Finish:					

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Pasture w/ bahiagrass, lantana, scattered cabbage palm, live oak, slash pine. Anhinga

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OLI	A	6:05PM	observed perched in tree, at 6:30 parent flew to tree w/ fledgling, and both flew to ground and parent was observed feeding fledgling. @ 6:36 parent flew off towards road. Never went into nest.
OLI	Fledgling	6:13PM	observed perched in fallen tree, low to ground. Then hopped around on ground. Parent flew down to feed him @ 6:30.



Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 5
(27°12'45.62"N, 81°14'30.62"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/26/19	7:16 AM	10:16 am	catie Neal/christen Cerrito (training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:16 AM	58°	SSE 2mph	80%	stratus	None
Finish: 10:16 AM	68°	NNW 6mph	90%	stratus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Pasture with bahiagrass and scattered cabbage palm. Ditch borders pasture w/ ragweed, musk thistle, virginia pepperweed, yellow foxtail

Coopers hawk, northern harrier, redwinged black bird, swifts, great egret, grackle, killdeer, warbling vireo, Bald eagle, woodstork, night heron, meadowlark

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No observations



USFWS Crested Caracara Draft Survey Protocol –
 Additional Guidance (2016-2017 Breeding Season)
Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 6
(27°12'19.20"N, 81°13'21.84"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/26/19	0643	0943	Cynthia Grizzle (Exp) + Raina Cumby (Training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0643	60°F	1 mph SE	5%	Cirrus	fog
Finish: 0943	68°F	5 mph NW	100%	stratus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Fog cleared by 0705.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

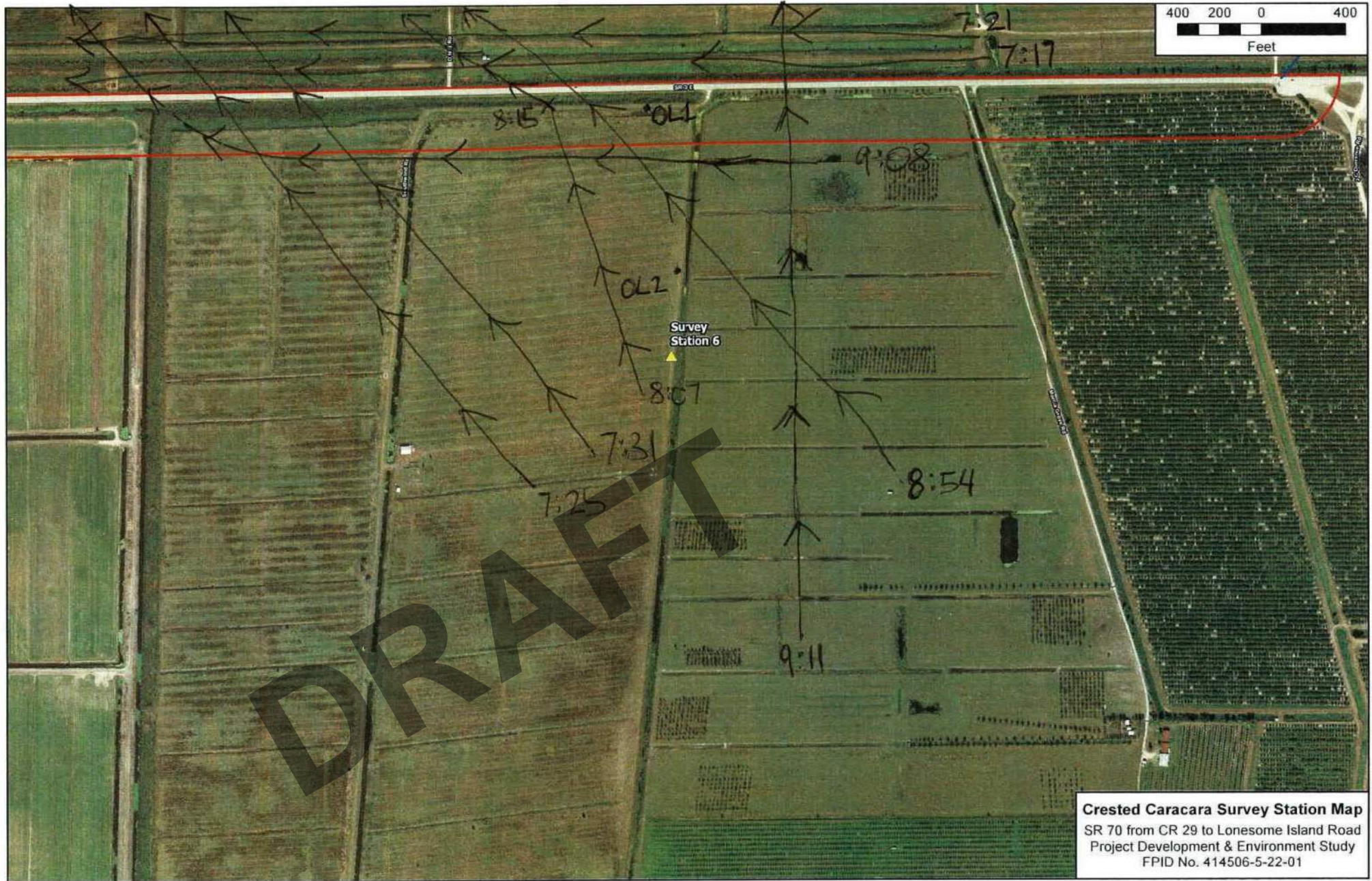
Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OLI	A	7:17	Individual flew east to west along SR 70
OLI	A	7:21	Individual flew east to west along SR 70
OLI	A	7:25	Individual flew SE to NW across SR 70
OLI	A	7:31	Individual flew SE to NW across SR 70

vulture
 crow
 juvenile bald eagle

8 sandhill cranes

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

OL1	A	8:07	Individual flew from SE and landed in ditch. At 8:15, took off again heading NW.
OL2	A	8:54	Individual flew SE to NW across SR 70
OL2	A	9:08	Individual flew E to W along SR 70, then headed NW across SR 70.
OL2	A	9:11	Individual flew S to N, crossing SR 70



3-26-19
P 54

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 7
(27°12'31.60"N, 81°12'29.73"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/25/19	7:06 AM	10:06	Catie Neal / Christen Cerrito (training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:06 AM	57°	0 mph	30%	Stratus	light fog / visibility unaffected
Finish: 10:06 AM	73°	SE 1 mph	0	—	NONE

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Pasture to North w/ Bahiagrass and scattered cabbage palm. Pitch borders pasture along SE 70 dominated by Ludwigia peruviana, elderberry, cabbage palm

Great Egret, grackle, Mourning Dove, Swift, Red winged Blackbird, American Crow, red shouldered hawk, snowy egret, Black vulture, Mockingbird, Blue jays

Observations

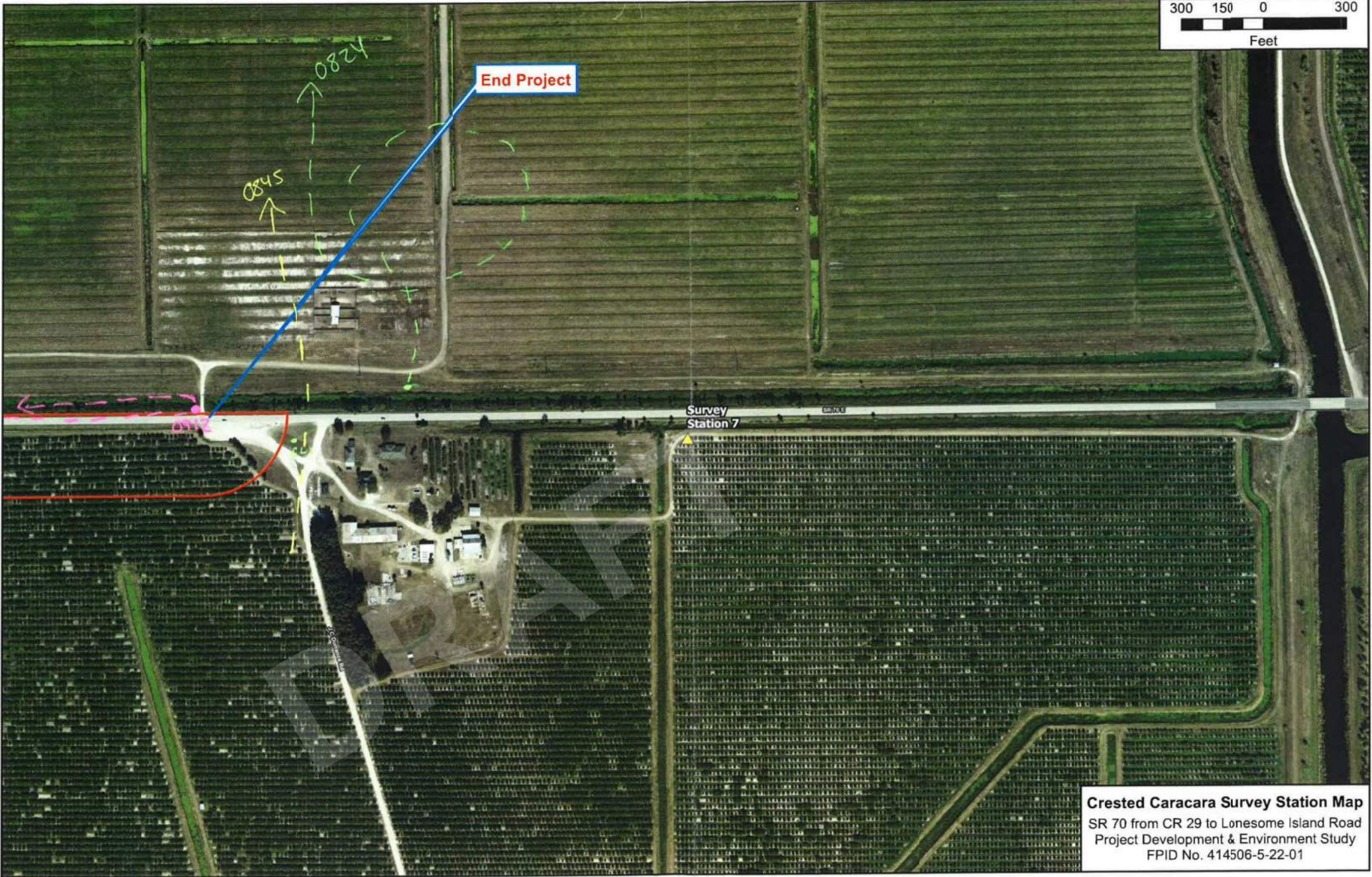
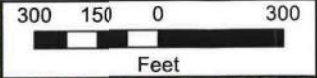
(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	7:15	flew down road (E) and then into pasture
OL1	A	7:45	flying over pasture
OL1	A	8:08	flew from pasture into citrus grove
OL1	3A	8:13	3 flew from pasture towards SE 70 and then 2 went East and 1 went west and then flew over citrus.

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

061 061	0824	A	2 sitting on fence post, 1 flew off to the N and flew around in a circle and then flew off to the N again
061	8:45	A	flew from S to N over pasture
061	9:11	A	flew from west along KCA to the east and then perched on a pole, then flew off to west 40 min later

DRAFT



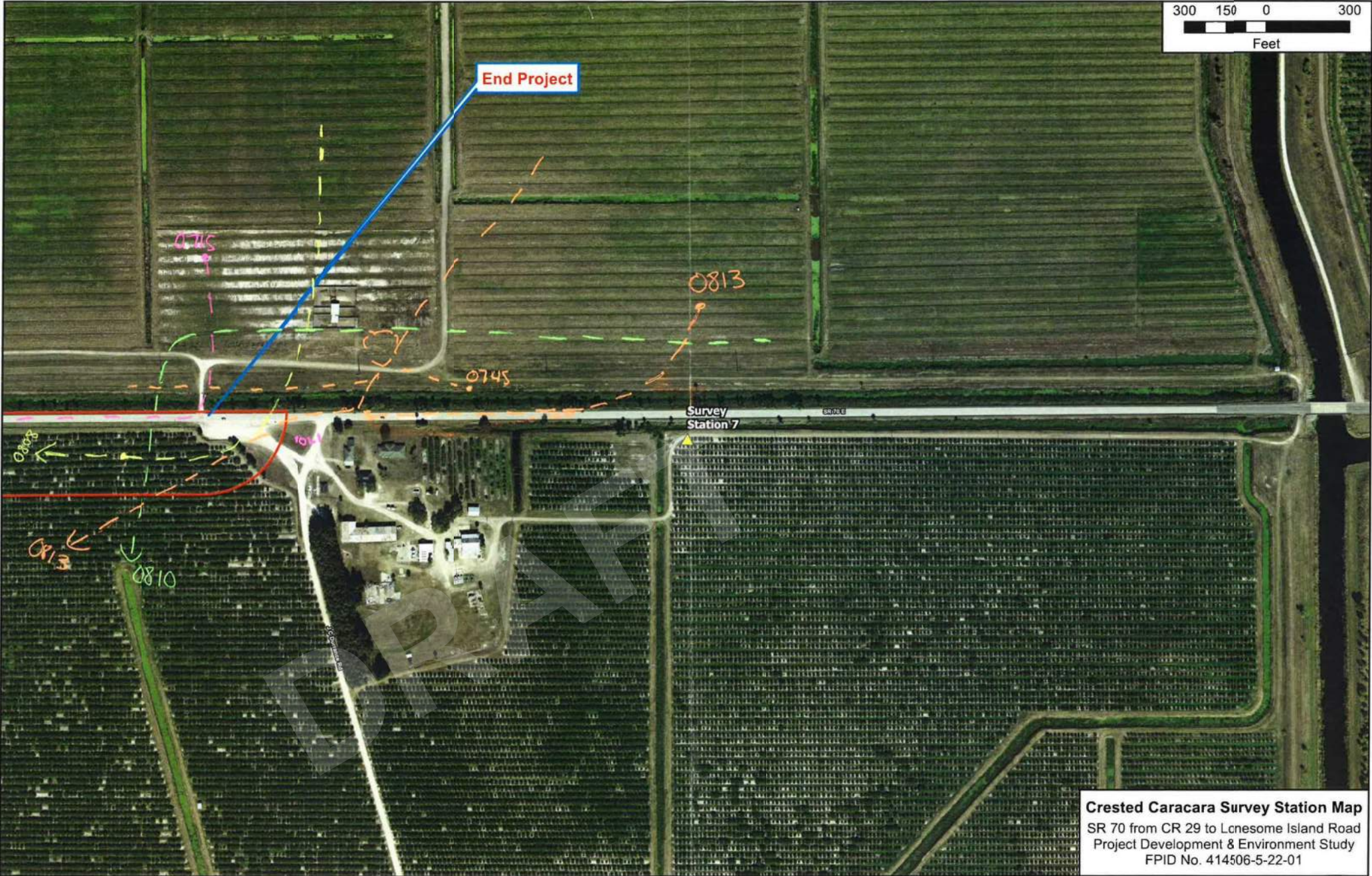
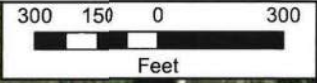
End Project

Survey Station 7

0845

0824

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01



Crested Caracara Survey Station Map
SR 70 from CR 29 to Lcnesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

25 March 2019

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 1
(27°12'31.60"N, 81°12'29.73"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4-9-19	0649	0949	Cynthia Grizzle (Exp) Raina Cumby (Training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0649	71°F	S 5 mph	95%	stratus	none
Finish: 0949	74°F	S 9 mph	100%	stratus	light

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Busy intersection - many vehicles entering & exiting Kelly Farms.
 Logging in process.
 Light sprinkle @ 8:30, visibility still good. Intermittent light drizzle until 9 AM.

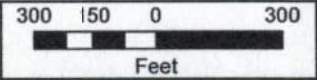
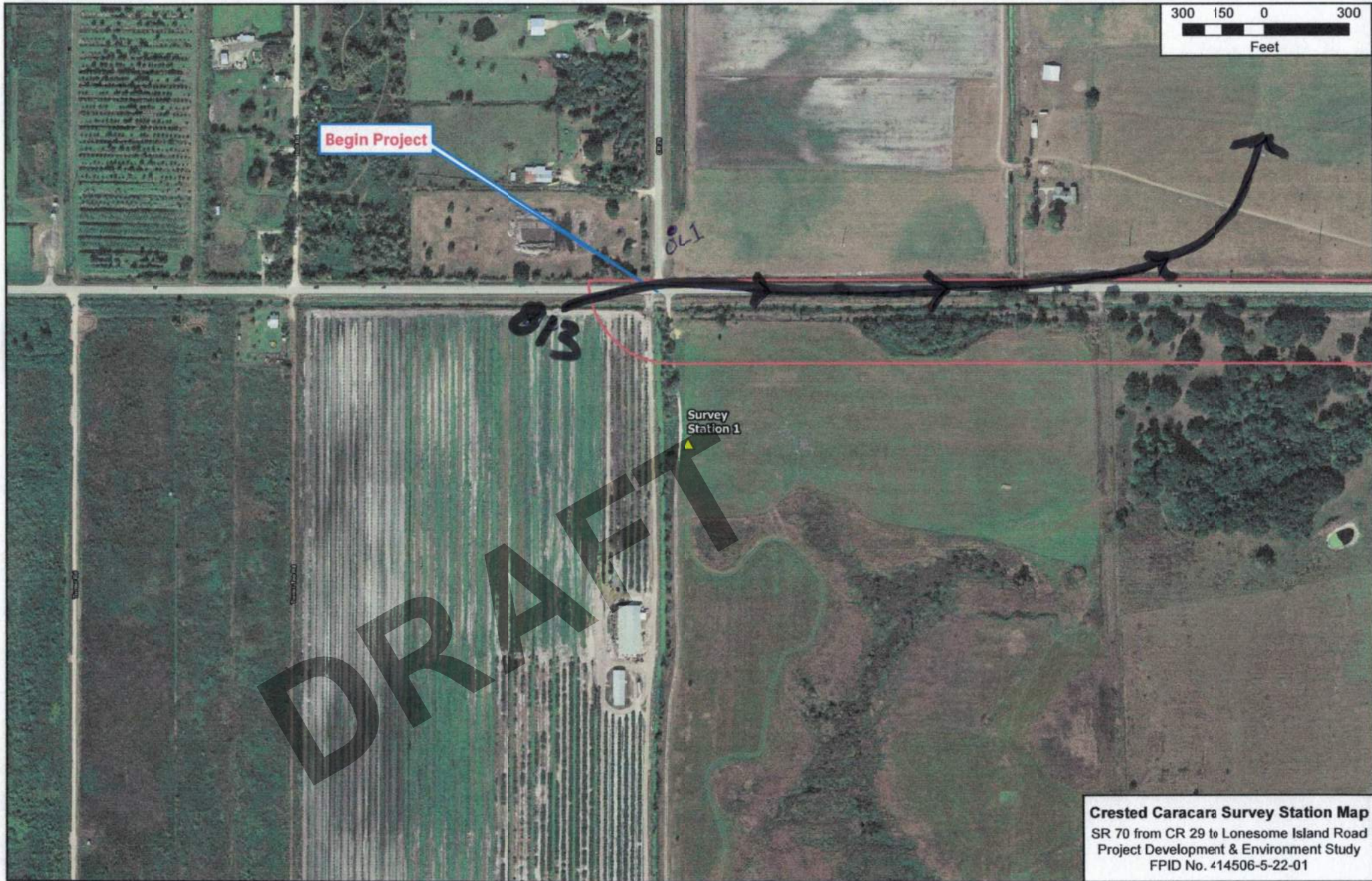
Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
062	A	813	one individual flew over SR70 from west to east.

cattle egret
 red shouldered hawk
 mourning dove
 sandhill cranes
 little blue heron

8 meadowlarks
 american crow
 red bellied wp
 red winged black bird
 pileated wp



Begin Project

Survey Station 1

DRAFT

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

4-9-19
PSG

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 2
(27°12'18.30"N, 81°16'14.76"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
04-17-19	0637 AM	0937 AM	Cynthia Grizzle (Exp) + Raina Cumby (Train)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0637	58°F	0 W	5%	stratus	some fog
Finish: 0937	73°F	4 mph E	10%	cirrus/cumulus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Some fog at start of event, but visibility good.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No observations

Mockingbird
A. crow
meadowlark
red shouldered hawk
wood ducks

piled up
turkey

8

Bald eagle
cattle egrets
tricolored heron
brown thrasher
Blue Jay

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 3
(27°13'4.30"N, 81°16'14.76"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/10/19	0639	0939	Raina Cumby (Training) + Cynthia Gizzler (Exp)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0639	67°F	3 mph S	30%	Cirrus	none
Finish: 0939	72°F	7 mph SW	20%	Cirrus	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
No changes in conditions.

Observations

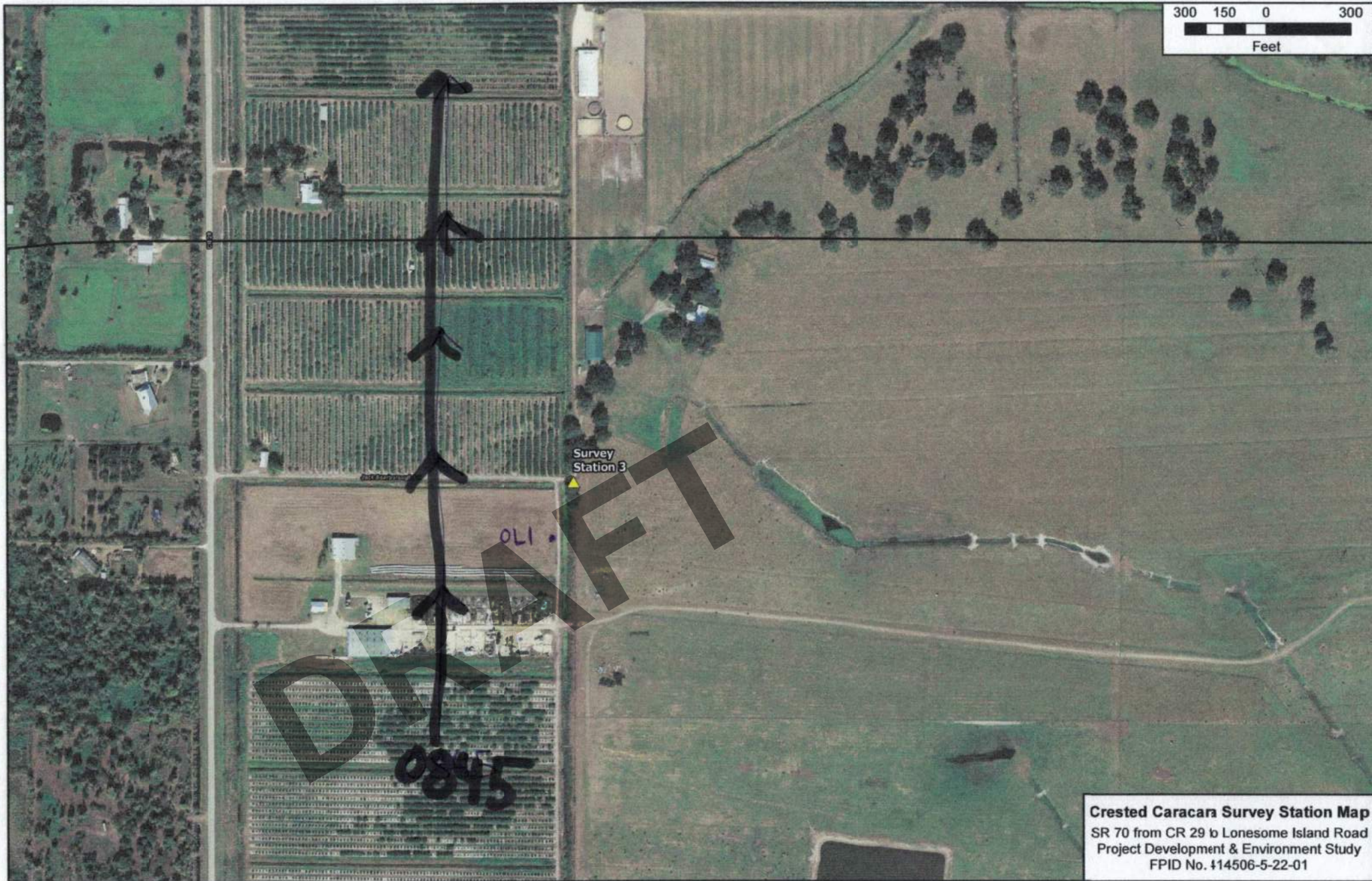
(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OLI	A	0845	Individual flew north past orange groves

sand hill cranes
red shouldered hawk
red winged black bird

8

little blue heron
american crow
great egret



4-10-19
PSG

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 4
(27°12'17.07"N, 81°15'48.00"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/11/17	1:15 pm	2:15 pm	Cate Neal/Christen Cerreto

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 1:15pm	85°	ESE 5mph	60%	Cumulus	None
Finish: 2:15					

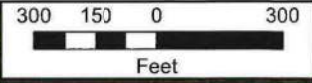
Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Pasture w/ bahiagrass, lantana, scattered cabbage palm, live oak, slash pine. Turkey vulture

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	Im	1:26	Fledgling observed perched in tree sat in tree for whole survey period



Survey Station 2

Survey Station 4

US Ranch Rd

012C

012D

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 5
(27°12'45.62"N, 81°14'30.62"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/12/19	6:45 AM	9:45 AM	Christen Carito (training) & Catie Neal

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:45 AM	64°	0 mph	10%	stratus	None
Finish: 9:45 AM	77°	SE 5 mph	20%	Stratocumulus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
unimproved pasture. Bahiagrass, scattered cabbage palm
Northern Harrier, Red winged Black bird, sandhill crane, cattle egret, warbling vireo, song sparrow, turkey vulture, cowbird

Observations

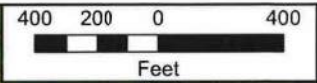
(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OLI	A	7:54	flew over pasture from south to northwest
OLI	A	8:02	flew from SR 70 over pasture and out of site. observed w/ food in mouth
OL	A	8:06	flew from N and towards SR 70 south along path A. suspect same bird seen @ 7:54
OL	A	8:09	flew from SR 70 to North w/ food in mouth. suspect same birds seen earlier going back for roadkill (path A)

**USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)**

0L1	A	8:22	flew from road to north w/ food in its mouth.
0L1	A	8:31	flew from N and towards road then turned to East
0L1	A	8:41	flew back from N along path A.
0L1	A	9:18	flew from road to North

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Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 6
(27°12'19.20"N, 81°13'21.84"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/11/19	0649	0949	Cynthia Grizzle (Exp) + Raina Cumby (Training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0649	63°F	0 mph	0%	—	Fog
Finish: 0949	77°F	5 mph E	0%	—	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Fog from 0649 to 0745 but within the site, the visibility still good.

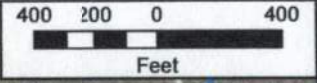
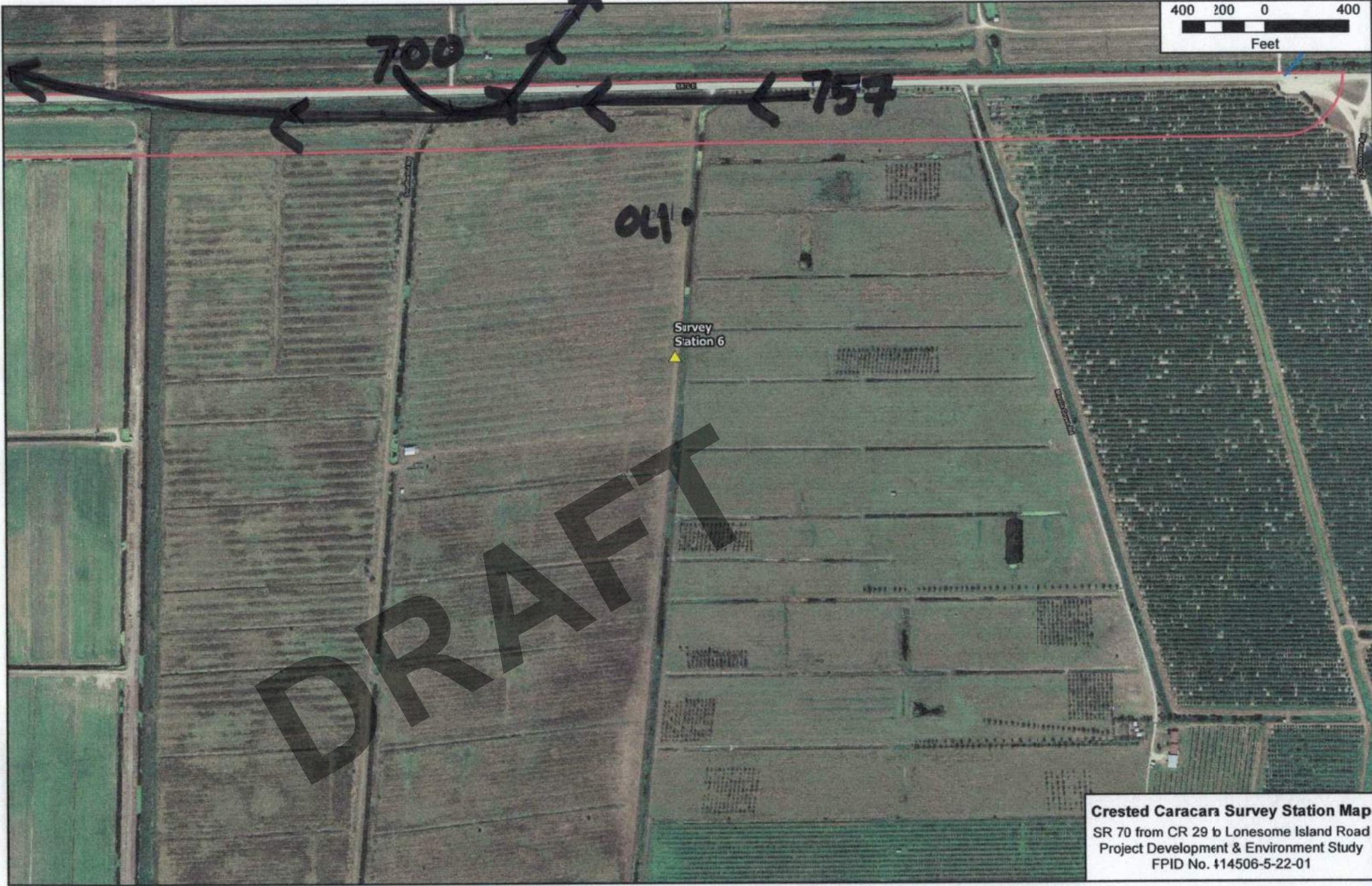
Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	700 AM	Individual flew in from north side of road and perched on electric pole; then flew north out of sight.
OL1	JUV	757	Individual flew from east to west, along road, didn't stop

mocking bird
boat-tailed grackles
red-winged blackbird
Sandhill cranes
cattle egrets

anhinga
8 common grackle
white ibis



Survey Station 6

DRAFT

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 114506-5-22-01

4-11-19
PSC

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 7
(27°12'31.60"N, 81°12'29.73"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/11/19	6:41 AM	9:41 AM	Cate Neal / Christen Cerrito (trainee)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:41 AM	62°	0 mph	0	None	Light fog
Finish: 9:41 AM	75°	ENE 4 mph	0	None	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

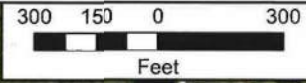
Ditch along N side of SR 70 w/ cabbage palm, elderberry, Ludwigia Peruviana, and Carolina Willow. Pasture borders ditch w/ bahiagrass. Citrus grove on S side of SR 70.

Grackle, Cattle egret, white ibis, American crow, Mourning Dove, Red winged blackbird, Northern Harrier, Barn owl, Turkey Vulture

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	7:48	flying over pasture and went out of sight
OL1	A	7:55	flew from East to West along SR 70



End Project



Survey Station 7



Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 1
(27°12'31.60"N, 81°12'29.73"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/23/19	0653	0953	Cynthia Grizzle - Exp Raina Cumby - Training

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0653	56°F	1 mph SSW	0%	—	fog
Finish: 0953	72°F	3 mph NE	0%	—	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Fog cleared by 0730

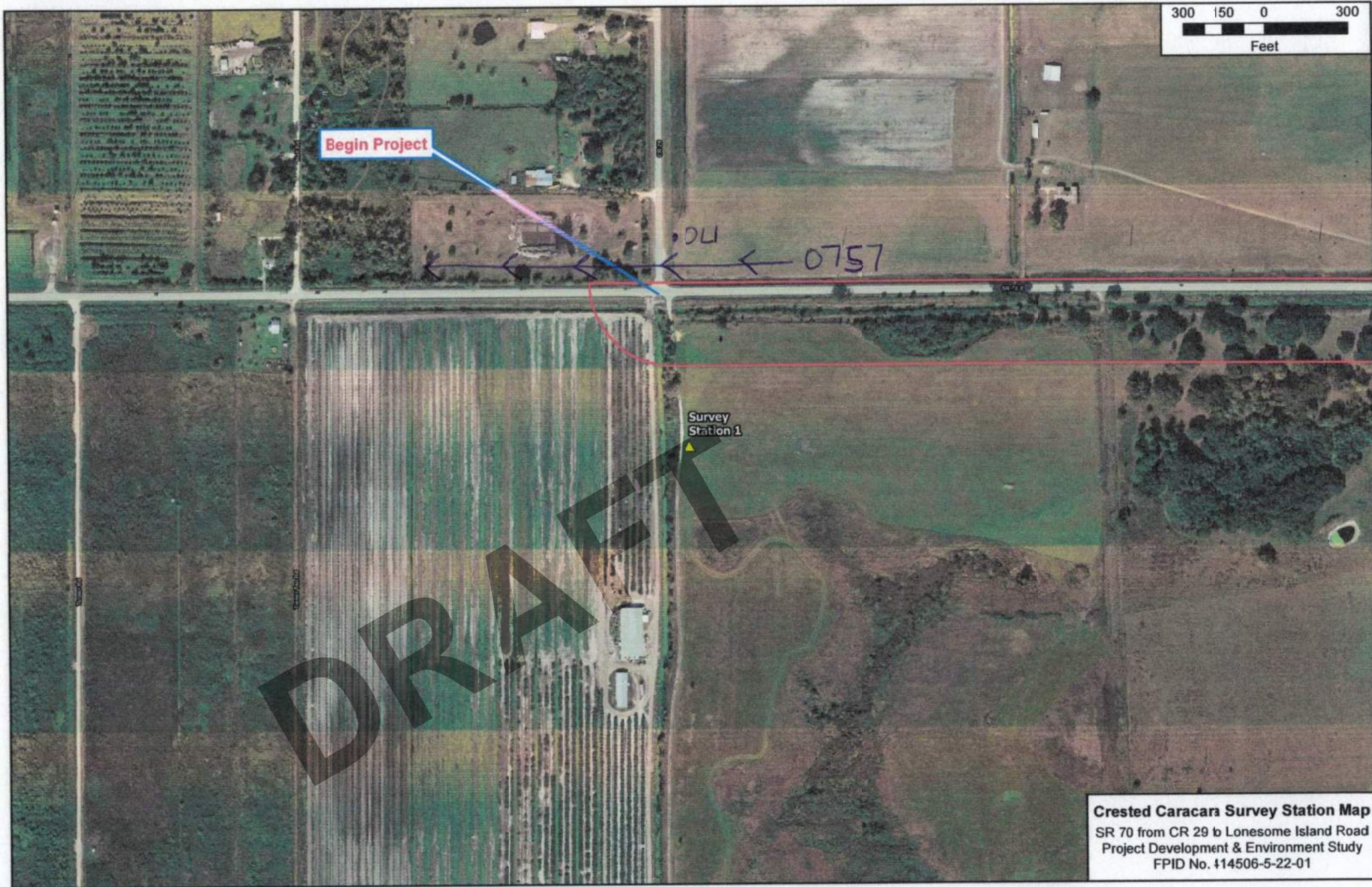
Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OLI	A	0757	Individual flying west along the north side of SR 70

swallow-tailed kite
red-shouldered hawk
American crow

8 red-winged black bird
grackle



PSG
4123119

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 2
(27°12'18.30"N, 81°16'14.76"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/30/19	0639	0939	Cynthia Grizzle - Experienced Raina Lumby - Training

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0639	69°F	4 mph NE	5%	cumulus	—
Finish: 0939	78°F	9 mph E	30%	cumulus	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

No changes in site.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No observations

crow
anhinga
red-shouldered hawk

8 red-bellied woodpecker
red-winged blackbird
mockingbird

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 3
(27°13'4.30"N, 81°16'14.76"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/24/19	0639	0939	Cynthia Grizzle - Experienced Raina Cumby - Training

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0639	56°F	1 mph WNW	0%	—	—
Finish: 0939	74°F	3 mph E	0%	—	—

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No observations

vulture
A. crow
grackle

sand hill cranes
red-shouldered hawk

USFWS Crested Caracara Draft Survey Protocol –
 Additional Guidance (2016-2017 Breeding Season)
Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 4
(27°12'17.07"N, 81°15'48.00"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/25/19	11:00 AM	11:41	Christen Cercito (training) / Katie Neal

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 11:00 AM	79°	S 9 mph	40	Cumulus	None
Finish: 11:41	80°	S 9 mph	50	cumulus	none

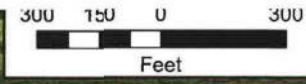
Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Improved pasture: bah. a grass, lantana, scattered live oak & cabbage palm Great Crested flycatcher, blue jay, turkey vulture

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No observations



Survey Station 2

Survey Station 4

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 5
(27°12'45.62"N, 81°14'30.62"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/26/19	6:35AM	9:35AM	Catie Neal/Christen Carrizo (training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:35AM	66°	SSE 5mph	20	Stratus	NONE
Finish: 9:35AM	74°	S 9mph	10	stratus	NONE

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

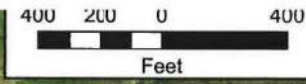
Unimproved pasture

Redwinged blackbird, whistling duck, sandhill crane, grackle, white ibis, great egret, Turkey vulture

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
			No observations



Survey Station 5

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

USFWS Crested Caracara Draft Survey Protocol –
 Additional Guidance (2016-2017 Breeding Season)
Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 6
(27°12'19.20"N, 81°13'21.84"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
04-25-19	0650	0950	Cynthia Grizzle + Zaina Cumby (Training) (Exp)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0650	60°F	1mph N	80%	cirrus	None
Finish: 0950	75°F	9mph SSE	80%	cirrus/cumulus	None

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

No change in site activity or habitat.
 Coyote came across pasture at about 830AM.

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OL1	A	7:12	Two adults flew in from east, down SR70 and then north of SR70.
OL1	A	7:34	Adult flew in from west, across pasture, then south

Red winged black birds
 grackles (common)
 Green backed Newn
 Black vulture

8
 morning doves
 carolina wren
 turkey vulture
 white ibis
 Meadowlark



PSG
4/25/19

USFWS Crested Caracara Draft Survey Protocol –
Additional Guidance (2016-2017 Breeding Season)

Caracara Survey Form (updated 12/9/2016)

Project Name: SR 70, from CR 29 to Lonesome Island Road
Location/Observation Block/Lat-Long: Survey Station 7
(27°12'31.60"N, 81°12'29.73"W)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/25/19	6:42 AM	9:42 AM	Catie Neal/Christen Cerrito (training)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:42 AM	60°	0 mph	80	stratus	NONE
Finish: 9:42 AM	70°	SSE 3mph	30	stratus	NONE

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area

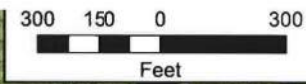
improved pasture: bahiagrass, smutgrass, scattered cabbage palms along road and canal.

Cattle egret, grackle, black vulture, American crow, Redwinged Blackbird, Swift, wood storks, cardinal, Northern Harrier, red tailed hawk, Mockingbird

Observations

(flight data, perching, preening, courtship, feeding, nest building, incubation, head throwback, diving, reaction to passing planes/traffic/pedestrians, other bird species, etc)

Observer Location	Age A/Im	Time	Description of behavior, flight path, etc
OLI	A	8:09	Spotted flying over pasture to the east, flew across SR 70 and flew southeast out of site



End Project

Survey Station 7

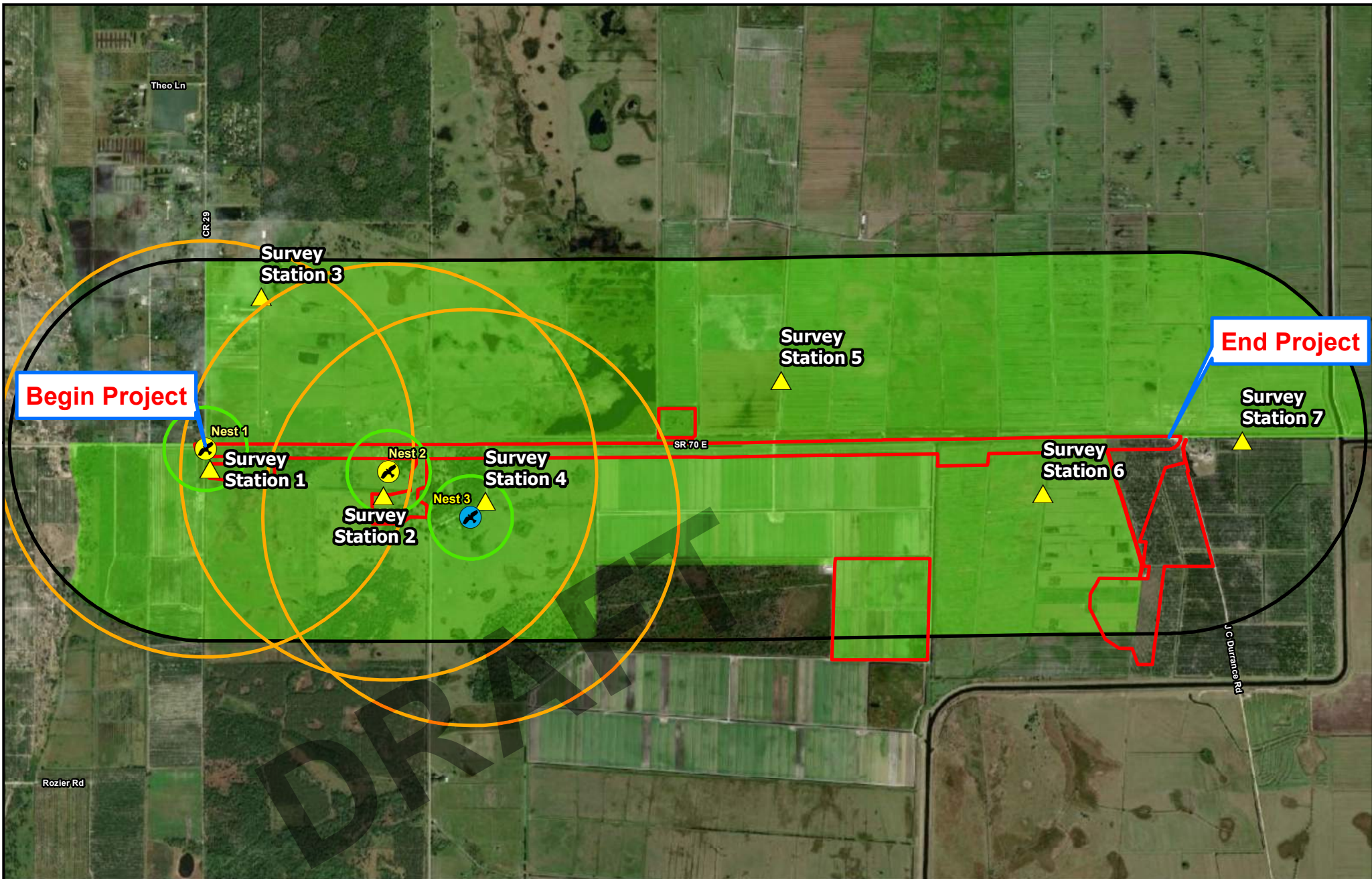
0807

Crested Caracara Survey Station Map
SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01

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Attachment D

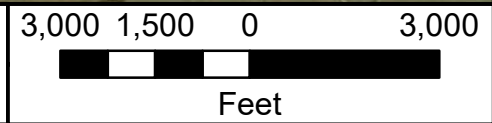
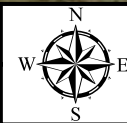
Audubon's Crested Caracara Nest Location Map



Legend

-  2019 Caracara Nest
-  2018 Caracara Nest - Inactive
-  300 Meter Nest Buffer
-  1500 Meter Nest Buffer
-  Caracara Survey Station
-  Project Study Area
-  1500 Meter Buffer
-  Crested Caracara Habitat

Audubon's Crested Caracara Nest Location Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01



Attachment D Overview

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APPENDIX I

Wood Stork Foraging Habitat Analysis

SR 70 PD&E Study
Wood Stork Foraging Habitat
Assessment Technical Memorandum

Florida Department of Transportation
District One

Project Development and Environment Study
SR 70 from County Road 29 to Lonesome Island Road
Roadway Improvement Project
Highlands County, Florida

Financial Project ID: 414506-5-22-01
ETDM No.: 14364

October 2020

WOOD STORK FORAGING HABITAT ASSESSMENT

1.0 INTRODUCTION

The Florida Department of Transportation (FDOT), District One, is conducting a Project Development and Environment (PD&E) study to evaluate the proposed widening State Road 70 (SR 70) from County Road 29 (CR 29) to Lonesome Island Road in Highlands County, a distance of 4.3 miles. The purpose of this PD&E study is to evaluate engineering and environmental data and document information that will aid Highlands County, FDOT District One, and the FDOT Office of Environmental Management (OEM) in determining the type, preliminary design and location of the proposed improvements. The study was conducted in order to meet the requirements of the FDOT, the National Environmental Policy Act (NEPA) and other related federal and state laws, rules and regulations.

2.0 WOOD STORK NESTING AND SUITABLE FORAGING HABITAT

The wood stork is primarily associated with freshwater and estuarine habitats that are used for nesting, roosting, and foraging. Wood storks typically nest colonially in medium to tall trees that occur in stands located in swamps or on islands surrounded by relatively broad expanses of open water. Successful breeding sites are those that have limited human disturbance and low exposure to land-based predators. Nesting sites protected from land-based predators are characterized as areas surrounded by large expanses of open water or where the nest trees are inundated at the onset of nesting and remain inundated throughout most of the breeding cycle.

In addition to limited human disturbance and low land-based predation, successful nesting depends on the availability of suitable foraging habitat. Because of their specialized feeding behavior, wood storks forage most effectively in shallow-water areas with highly concentrated prey. Typical foraging sites for the wood stork include freshwater marshes, depressions in cypress heads, swamps, sloughs, managed impoundments, stock ponds, shallow-seasonally flooded roadside or agricultural ditches, and narrow tidal creeks or shallow tidal pools. Suitable foraging habitat is described as wetland or open water areas that are relatively calm, uncluttered by dense thickets of aquatic vegetation and have a water depth between 5 and 15 inches. Preferred foraging habitat includes wetlands exhibiting a mosaic of submerged and/or emergent aquatic vegetation, and shallow, open-water areas subject to hydraulic regimes that exhibit short and long hydroperiods. The vegetative component provides nursery habitat for small fish, frogs, and other aquatic prey, and the shallow open-water areas provide sites for concentration of the prey during daily or seasonal low water periods. In Highlands County, suitable wetland and open water habitats within 18.6 miles of a wood stork nesting colony are considered Core Foraging Areas (CFA) by the U.S. Fish and Wildlife Service (USFWS).

The loss of wetland habitats, or wetland function, has been the primary cause of the wood stork population decline in the United States. The alteration of wetlands and the manipulation of wetland hydroperiods to suit human needs have also reduced the amount of available habitat to wood storks and affected prey base availability. The altered hydrology of these systems has also enhanced the

invasion of these systems by exotic plant species. These exotic plants can produce a dense understory and closed canopy, limiting suitability of these wetland systems to foraging by wood storks, although a sufficient prey base may be present in the wetlands.

Four variables are indicative of the necessities and functions of optimal or suitable foraging habitat required by the wood stork:

1. **Vegetation Density:** the density of vegetation within habitats suitable for wood stork foraging;
2. **Wetland Hydroperiods:** the hydroperiod of the wetland, which includes two (2) subcomponents; (1) the fish density per hydroperiod; and (2) the fish biomass per hydroperiod;
3. **Prey Size Suitability:** the suitability of prey size for the wood stork, which provides an adjustment to the fish biomass per hydroperiod and is referenced hereafter as the “wood stork suitability prey base”; and
4. **Competition with other wading bird species:** the likelihood that the wood stork is the wading bird species that actually consumes the concentrated prey.

3.0 SUITABLE FORAGING HABITATS WITHIN THE PROJECT STUDY AREA

Wood stork foraging habitat within the project study area was analyzed using the USFWS Wood Stork Foraging Habitat Assessment Methodology (July 2012). The proposed project study area contains wood stork foraging habitat and is located within the 18.6-mile CFA of one (1) active wood stork nesting colony, the Gator Farm colony (#53). There are 32.95 acres of wetlands and surface waters that could be utilized by the wood stork for foraging within the project study area. These wetlands and surface waters were grouped by similar habitat types utilizing the Florida Department of Transportation’s Florida Land Use, Cover and Forms Classification System (FDOT 1999). The 32.95 acres of suitable wood stork foraging habitat consist of 11.14 acres of streams and waterways (FLUCFCS 510), 0.39 acres of reservoirs (FLUCFCS 530), 3.62 acres of mixed hardwood wetland (FLUCFCS 617), 4.84 acres of wetland scrub (FLUCFCS 631) and 12.96 acres of freshwater marshes (FLUCFCS 641). All were evaluated relative to exotic species density and hydroperiod. Streams and waterways that had a water depth that exceeded 15 inches and steep banks (canals) were not considered suitable wood stork foraging habitat.

Exotic Vegetation Density

Wood stork habitat quality can be adversely affected by the level of exotic species infestation within wetlands and surface waters. The availability of the prey base for wood storks and other foraging wading birds is reduced by the restriction of access caused from dense and thick exotic vegetation. **Table 1** provides the foraging suitability percentages used in the Wood Stork Biomass Analysis.

Table 1 Exotic Vegetation Cover Percentage Foraging Suitability

PERCENTAGE OF EXOTIC VEGETATION	FORAGING SUITABILITY VALUE (PERCENT)
Between 0 and 25 Percent Exotics	100
Between 26 and 50 Percent Exotics	64
Between 51 and 75 Percent Exotics	37
Between 76 and 100 Percent Exotics	3

Within the project study area, exotic plant species coverage within wetlands ranged from low to dense (approximately 90%). The wetland habitats within the project study area vary in the percentage of exotic vegetation. A Foraging Suitability Value of 100, 64, and 3 were assigned to the potential foraging habitat available to wood storks within the project study area.

Hydroperiod

Hydroperiod of the wetlands potentially affected by a project is an important consideration in determining effects on wood stork foraging habitat due to the dependability of potential biomass of forage (fish and crayfish) on hydroperiod. Wetlands and surface waters within the project study area were grouped according to hydroperiod class, and included Classes 1, 3, 4, 5, and 7. No wetlands and surface waters were identified in Classes 2 and 6.

4.0 IMPACTS

The proposed action increases the capacity of the existing two-lane undivided roadway by widening it to a four-lane divided roadway. The purpose of this project is to improve operational conditions for emergency evacuations along the SR 70 corridor from CR 29 to Lonesome Island Road. All construction will be conducted in a single, disruptive event, with the associated permanent disturbance resulting in a loss of habitat currently available to the wood stork. This section analyzes the impacts of the proposed project on the wood stork and wood stork habitat.

For assessment purposes, the wood stork biomass analysis addresses the loss of wetland habitat within the proposed right-of-way limits of the mainline corridor and the proposed ponds to assess the maximum amount of wood stork foraging habitat impacts associated with the proposed project. For the assessment of the proposed project, 21.42 acres of wetlands and 11.53 acres of surface waters were analyzed.

The analysis determined that the project will result in the net loss of 36.66 kg total biomass (fish and crayfish). Of the 36.66 kg, 11.26 kg of total biomass are from short hydroperiod wetlands and 25.40 kg of total biomass are from long hydroperiod wetlands. **Table 2** presents the analysis of the impacts to wood stork foraging habitat resulting from the project.

Table 2 Analysis Summary - Project Impacts to Wood Stork Foraging Habitats

Wood Stork Foraging Analysis Summary - Total Biomass (including Crayfish and Fish)									
Impact Area									
Hydroperiods	Acres	% exotics	F.S.V.	m²	m² suitable	crayfish & fish g/m²	available biomass	32.5% consum.	Biomass (kg)
Class 1 (0-60 days)	12.96	26-50	0.64	52,447.47	33,566.38	0.31	10,405.58	3,381.81	3.38
Class 3 (120-180 days)	4.35	0-25	1	17,603.90	17,603.90	1.32	23,237.14	7,552.07	7.55
Class 3 (120-180 days)	0.30	26-50	0.64	1,214.06	777.00	1.32	1,025.64	333.33	0.33
Class 4 (180-240 days)	5.61	26-50	0.64	22,702.96	14,529.89	2.34	33,999.95	11,049.98	11.05
Class 5 (240-300 days)	5.53	76-100	0.03	22,379.21	671.38	2.93	1,967.14	639.32	0.64
Class 7 (330-365 days)	2.83	0-25	1	11,452.65	11,452.65	3.63	41,573.12	13,511.26	13.51
Class 7 (330-365 days)	1.37	76-90	0.03	5,544.22	166.33	3.63	603.78	196.22	0.20
Total Short Hydroperiod (Classes 1, 2, & 3)	17.61			71,265.43	51,947.28		34,668.36	11,267.21	11.26
Total Long Hydroperiod (Classes 4, 5, 6, & 7)	15.34			62,079.04	26,820.25		78,143.99	25,396.78	25.40
Total	32.95			133,344.47	78,767.53		112,812.35	36,663.99	36.66

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5.0 MITIGATION

Mitigation for the proposed project will provide adequate compensatory credits for encroachment into USACE-regulated wetlands and surface waters. All impacts to wetlands will be mitigated within the CFA of the affected rookeries or at a regional mitigation bank that has been approved by the USFWS, in accordance with 33 U.S.C. §1344, or pursuant to Section 373.4137, F.S. These mitigation measures will include compensation for the loss of wood stork foraging habitat resulting from construction of the project. Compensation for the loss of wetlands, as well as wood stork habitat and foraging, will be provided at a state and federal approved mitigation bank. Mitigation for the loss of foraging habitat will be of the same hydroperiod. However, the proposed project is not located within the service area of any currently permitted mitigation banks. Therefore, a conceptual mitigation plan will be developed during design and permitting to compensate for wood stork foraging habitat impacts.

6.0 SUMMARY

Construction of the proposed project will result in the direct loss of 32.95 acres of suitable wood stork foraging areas. Wood stork foraging biomass productivity is calculated based on the hydroperiods class of affected wetlands. A total of 17.61 acres of short hydroperiod wetlands will be impacted and 15.34 acres of long hydroperiod wetlands will be impacted that are considered suitable wood stork foraging habitat (see **Table 2**). This analysis concluded that the preferred alternative would result in the net loss of 36.66 kg total biomass (fish and crayfish). Impact acreages and biomass calculations are preliminary. As such, these values are subject to change during the design and permitting phase of the project.

Loss of potential wood stork foraging habitat attributable to the project will be offset by providing the equivalent credits at a USFWS-approved mitigation bank, if available, pursuant to Section 373.4137, F.S, or through development of a Permittee-operated mitigation area.

7.0 REFERENCES

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APPENDIX J

Everglade Snail Kite Technical Memorandum

SR 70 PD&E Study Everglade Snail Kite Technical Memorandum

**Florida Department of Transportation
District One**

**Project Development and Environment Study
SR 70 from County Road 29 to Lonesome Island Road
Roadway Improvement Project
Highlands County, Florida**

Financial Project ID: 414506-5-22-01
ETDM No.: 14364

October 2020

Table of Contents

<i>Section</i>	<i>Page</i>
1.0 Introduction.....	1
2.0 Study Area Characteristics and Habitat Suitability	3
3.0 Methodology	3
4.0 Results.....	4
4.1 Summary	8
5.0 Effect Determination.....	8
6.0 References.....	9

List of Figures

<i>Figure</i>	<i>Page</i>
Figure 1-1 Project Location Map.....	2

List of Tables

<i>Table</i>	<i>Page</i>
Table 4-1 Everglade Snail Kite Survey Results.....	6
Table 4-2 Incidental Species Observations.....	7

List of Attachments

Attachment A	Wetlands Reserve Easements Map
Attachment B	Everglade Snail Kite Survey Area Map
Attachment C	Everglade Snail Kite Survey Station Map
Attachment D	Representative Photographs of Habitat Assessment Areas
Attachment E	Everglade Snail Kite Survey Datasheets

1.0 Introduction

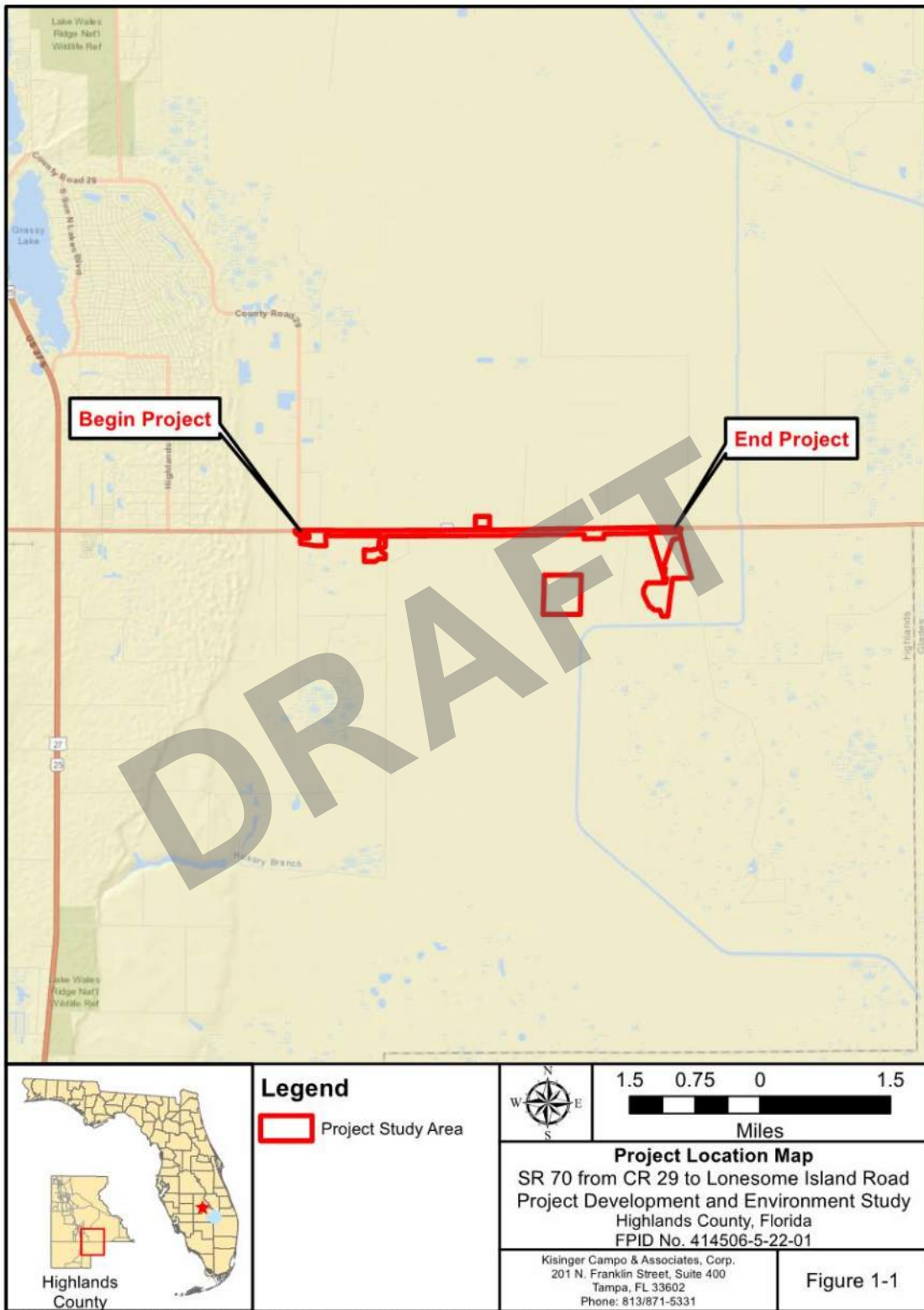
The SR 70 from County Road 29 (CR 29) to Lonesome Island Road Project Development and Environment (PD&E) Study proposes roadway and safety improvements within this section of SR 70 in Highlands County (**Figure 1-1 Project Location Map**). The project falls within the U.S. Fish and Wildlife Service (USFWS) consultation area for the Everglade Snail Kite (*Rostrhamus sociabilis*). This project proposes widening SR 70 from a two-lane undivided road to a four-lane divided road by maintaining the existing northern right-of-way (ROW) boundary and widening to the south.

According to Florida Natural Areas Inventory (FNAI) data, there have been no previously documented sightings of the Everglade snail kite within one (1) mile of the project study area; however, suitable habitat is present immediately adjacent to the project study area. Although much of the area has been drained for agricultural purposes, the Wetlands Reserve Program implemented by the Natural Resources Conservation Service (NRCS), has acquired easements in order to restore wetlands on private properties immediately adjacent to the project study area. Specifically, Wetlands Reserve Easement (No. 180) has been restored resulting in a permanent open water area, which has the potential to be utilized by the Everglade snail kite for roosting and nesting activities (**Attachment A**).

In an effort to determine the potential effects of the proposed project on the Everglade snail kite, qualified biologists conducted Everglade snail kite surveys in December 2018 and from January through May 2019 in accordance with the USFWS South Florida Ecological Services Office Snail Kite Monitoring Protocol (USFWS 2004).

For the purposes of this report, the project study area is defined as the existing and proposed ROW of the preferred alternative mainline corridor.

Figure 1-1 Project Location Map



2.0 Study Area Characteristics and Habitat Suitability

In accordance with the USFWS South Florida Ecological Services Office Snail Kite Monitoring Protocol (USFWS 2004), if suitable habitat is present or snail kites are reported, surveys should be undertaken to document their occurrence. To maximize the chances of finding snail kites, surveys should be conducted in areas of potential habitat during the snail kite breeding season, from January through May. Potential snail kite habitat includes areas with appropriate foraging habitat, areas where nesting or perching habitat is present, areas with an appropriate water depth under nesting substrate, nesting substrates greater than 150 meters (490 feet) from upland habitat and the proximity of the nearest wading bird colony.

Coordination with USFWS was conducted to determine the appropriate survey methodology and extent. Suitable snail kite foraging habitat consists of freshwater marshes and the littoral zones around lakes where apple snails are present. Snail kite nesting habitat include small trees (usually < 10 m in height), including willow (*Salix caroliniana*), bald cypress (*Taxodium distichum*), pond cypress (*T. ascendens*), punk tree (*Melaleuca quinquenervia*), sweetbay (*Magnolia virginiana*), swamp bay (*Persea palustris*), pond apple (*Annona glabra*), and dahoon holly (*Ilex cassine*). Shrubs used for nesting include wax myrtle (*Morella cerifera*), cocoplum (*Chrysobalanus icaco*), buttonbush (*Cephalanthus occidentalis*), sesbania (*Sesbania* spp.), elderberry (*Sambucus nigra* subsp. *canadensis*), and Brazilian pepper (*Schinus terebinthifolia*). Nesting also can occur in herbaceous vegetation, such as sawgrass (*Cladium jamaicense*), cattail (*Typha* spp.), bulrush (*Schoenoplectus tabernaemontani*), and reed (*Phragmites australis*) (Sykes et al. 1995). Nests are more frequently found in herbaceous vegetation around Lake Kissimmee during periods of low water when dry conditions beneath the willow stands prevent snail kites from nesting in woody vegetation.

To determine the extent of suitable Everglade snail kite foraging and nesting habitat within the project study area, habitats were classified using the Florida Land Use, Cover and Forms Classification System (FLUCFCS) (FDOT 1999). Based on field reviews of the project corridor and information provided by the USFWS, suitable nesting habitat was identified in Wetlands Reserve Easement No. 180 and classified as a freshwater marsh (FLUCFCS 641). The survey area consists of floating and emergent aquatic vegetation dominated by water hyacinth (*Eichhornia crassipes*), cattail, Peruvian primrose willow (*Ludwigia peruviana*), dog fennel (*Eupatorium capillifolium*), smart weed (*Persicaria hydropiperoides*), and maidencane (*Panicum hemitomon*).

3.0 Methodology

According to USFWS (2006) Everglade Snail Kite Draft Management Guidelines, a 500-meter (1,640-foot) limited activity buffer zone surrounding a nest should be protected from habitat disturbances. The area surveyed included a 515-meter (1,690-foot) buffer extending from the SR 70 roadway north into the southeast corner of Wetlands Reserve Easement No. 180. This 515-meter (1,690-foot) buffer encompasses the radius of the limited activity buffer zone (**Attachment B**). A total of three (3) survey stations were established within the survey area. Stations were selected based on their vantage point, where all suitable habitat would be clearly visible from a stationary location using spotting scopes and binoculars (**Attachment C**).

Surveys events consisted of monitoring snail kite presence and behavior at each survey station. Surveys were conducted for approximately one (1) hour at each of the three (3) stations. A total of six (6) survey events were undertaken from December 2018 to May 2019.

The six (6) survey events were conducted on the following dates:

- Survey Event 1: December 14, 2018
- Survey Event 2: January 16 and 17, 2019
- Survey Event 3: February 14, 26, and 27, 2019
- Survey Event 4: March 13 and 25, 2019
- Survey Event 5: April 11 and 25, 2019
- Survey Event 6: May 31, 2019

During the survey events, the survey team consisted of two (2) observers. Surveys were conducted from inside vehicles to avoid any potential disturbance to Everglade snail kites foraging or nesting within the assessment area. The order of site monitoring varied during each event. Site-specific information was collected and included vegetation types, nesting/perching habitat, site distance from upland, observed snail kite activity, and other fauna present. Representative photographs of the habitat assessment areas are provided in **Attachment D**.

While conducting the Everglade snail kite surveys, the NRCS was implementing habitat improvement projects within their wetland restoration project area (Wetlands Reserve Easement No. 180). Due to the construction associated with these improvements, Station 2 was not accessible during Survey Event 4. Several attempts throughout the month of March were made to reach Station 2, however construction was ongoing throughout the entire month. Additional efforts were made at Stations 1 and 3 to monitor the habitat surrounding Station 2 with spotting scopes and binoculars. Within the survey area, visibility was greater than 515 meters (1,690 feet) and therefore all habitat within the survey area was visible from each station.

Survey Station distance from the roadway are as follows:

- Survey Station 1 – 51 meters (167 feet)
- Survey Station 2 – 507 meters (1,663 feet)
- Survey Station 3 – 153 meters (502 feet)

4.0 Results

Everglade snail kites were observed from each of the survey stations throughout the course of the six (6) survey events (**Table 4-1**). Everglade snail kites were observed in four (4) of the six (6) survey events, with as many as six (6) observations from one (1) survey station. Multiple observations during a single survey event may be of the same individual. The highest number of observations per survey event occurred in December during Event 1 with a total of six (6) observations, and the least occurred in March and May during Events 4 and 6 with no observations. Vegetation present was not mature enough yet to provide adequate nesting habitat; however, apple snails were abundant in the marsh. Therefore, the survey area appears to only provide foraging

habitat for the Everglade snail kite. **Table 4-2** provides a list of incidental species observed during all survey events. Field datasheets are provided in **Attachment E**.

Station 1

Station 1 was located centrally along the southern edge of the survey area. Emergent and floating wetland vegetation consisted of water hyacinth, cattail, Peruvian primrose willow, and maidencane. Wetland restoration activities near Station 1 within Wetlands Reserve Easement No. 180 were recently initiated, and insufficient time has elapsed to allow vegetation to mature and become suitable perching and nesting substrates for the Everglade snail kite. Two adult snail kite observations were made at Station 1 on January 16th, 2019. Both individuals were foraging, and one (1) was identified as a male. No nesting activity or behavior was observed from Station 1.

Station 2

Station 2 was located along the eastern edge of the wetland, near the northern end of the survey area. Floating aquatic vegetation consisted of water hyacinth, and fence posts were available nearby for perching. A total of seven (7) snail kite observations were made at Station 2. Four observations were made on December 14th, 2018, one (1) on January 7th, 2019, and two (2) on February 14th, 2019. On all occasions individuals were observed foraging and perched on fence posts. No nesting activity or behavior was observed from Station 2.

Station 3

Station 3 was located along the western edge of the survey area. Emergent and floating aquatic vegetation consisted of water hyacinth, Peruvian primrose willow, dog fennel and smart weed. There was no perching substrate present. A total of five (5) snail kite observations were made from Station 3. Two observations were made on December 14th, 2018 and three (3) on April 11th, 2019. The three (3) observations made on April 11th were suspected of being the same individual. Activity observed included hovering over the marsh looking for prey and foraging in the marsh. No nesting activity or behavior was observed from Station 3.

Table 4-1 Everglade Snail Kite Survey Results

Event	Date	Station	Survey Start Time	Survey End Time	Number of Snail Kite Observations	Age
1	12/14/2018	1	9:40 AM	10:37 AM	0	--
	12/14/2018	2	10:50 AM	11:50 AM	4	Adult
	12/14/2018	3	12:00 PM	1:00 PM	2	Adult
2	1/16/2019	1	11:10 AM	12:18 PM	2	Adult
	1/17/2019	2	11:53 AM	1:00 PM	1	Adult
	1/17/2019	3	10:45 AM	11:45 AM	0	--
3	2/14/2019	2	12:30 PM	1:30 PM	2	Adult
	2/26/2019	3	12:00 PM	12:45 PM	0	--
	2/27/2019	1	9:34 AM	10:34 AM	0	--
4	3/13/2019	3	11:04 AM	12:02 PM	0	--
	3/25/2019	1	10:38 AM	11:38 AM	0	--
	3/25/2019**	2	N/A	N/A	N/A	--
5	4/11/2019	3	10:45 AM	11:45 AM	3	Adult
	4/25/2019	1	9:52 AM	10:52 AM	0	--
	4/25/2019	2	1:35 PM	2:35 PM	0	--
6	5/31/2019	1	10:56 AM	11:46 AM	0	--
	5/31/2019	2	9:58 AM	10:47 AM	0	--
	5/31/2019	3	9:07 AM	9:57 AM	0	--

*Survey was not conducted at station due to access issues

Table 4-2 Incidental Species Observations

Scientific Name	Common Name	Station Observed (Protected Species)
<i>Agelaius phoeniceus</i>	Red-winged Blackbird	
<i>Anhinga anhinga</i>	Anhinga	
<i>Antigone canadensis</i>	Sandhill Crane**	
<i>Aramus guarana</i>	Limpkin	
<i>Ardea alba</i>	Great Egret	
<i>Ardea herodias</i>	Great Blue Heron	
<i>Bubulcus ibis</i>	Cattle Egret	
<i>Caracara cheriway</i>	Audubon's Crested Caracara	Station 1
<i>Cathartes aura</i>	Turkey Vulture	
<i>Chaetura pelagica</i>	Chimney Swift	
<i>Circus hudsonius</i>	Northern Harrier	
<i>Coragyps atratus</i>	Black Vulture	
<i>Dendrocygna autumnalis</i>	Black-bellied Whistling Duck	
<i>Egretta caerulea</i>	Little Blue Heron	Station 1*, Station 2*, Station 3
<i>Egretta thula</i>	Snowy Egret	
<i>Egretta tricolor</i>	Tricolored Heron	Station 1
<i>Eudocimus albus</i>	White Ibis	
<i>Gallinula chloropus</i>	Common Moorhen	
<i>Gavia immer</i>	Common Loon	
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Station 1, Station 2, Station 3
<i>Mycteria americana</i>	Wood Stork	Station 1*, Station 2*, Station 3*
<i>Nycticorax nycticorax</i>	Black-crowned Night Heron	
<i>Pandion haliaetus</i>	Osprey	
<i>Pelecanus erythrorhynchos</i>	White Pelican	
<i>Phalacrocorax auritus</i>	Double-crested Cormorant	
<i>Platalea ajaja</i>	Roseate Spoonbill	Station 2*, Station 3
<i>Plegadis falcinellus</i>	Glossy Ibis	
<i>Quiscalus major</i>	Boat-tailed Grackle	
<i>Sturnella magna</i>	Eastern Meadowlark	
<i>Vireo gilvus</i>	Warbling Vireo	

Notes: Species in **bold** are federally and/or state protected

*Species observed at station during multiple survey events

**Observation occurred within the migratory season for species, unable to identify to protected subspecies

4.1 Summary

Everglade snail kite observations were made over the course of the survey events from December 2018 to May 2019. Behavior observed included foraging and perching on fence posts. No behavior was observed that indicated Everglade snail kites were roosting or nesting in or near the survey area. There is no suitable nesting substrate within the survey area. Wetland restoration activities within Wetlands Reserve Easement No. 180 were recently initiated and insufficient time has elapsed to allow vegetation to mature and become suitable nesting substrate. Over time, this area may begin to provide suitable nesting habitat for the Everglade snail kite. Based on the results of this survey, it has been concluded that there are no nests or roosts within 515 meters (1,690 feet) of the proposed project, and this system only provides foraging habitat for the species.

5.0 Effect Determination

As a result of these surveys, presence of Everglade snail kites within the project area was confirmed. No roosting or nesting activity was observed during any of the survey events and it was determined that there are no nests or roosts within 515 meters of the project study area. As a result, breeding behavior and nest success will not be adversely affected as a result of this project and no nesting habitat will be impacted by the proposed project.

Prior to construction, FDOT will re-survey the area to determine if any nests are present within the project study area or within 515 meters of the project study area, including final pond sites. An education plan will be provided to construction workers to instruct them on how to identify Everglade snail kites and what to do if one is observed. If a nest is found within 130 meters of project activities, all construction will cease and the USFWS will be contacted. Based on the implementation of these measures it has been determined that the project “**may affect, but is not likely to adversely affect**” the Everglade snail kite. The FDOT will conduct Everglade snail kite surveys during the project’s design and permitting phase. As necessary, consultation will be reinitiated to revisit this effect determination relative to updates to project design and the implementation of specific actions and measures.

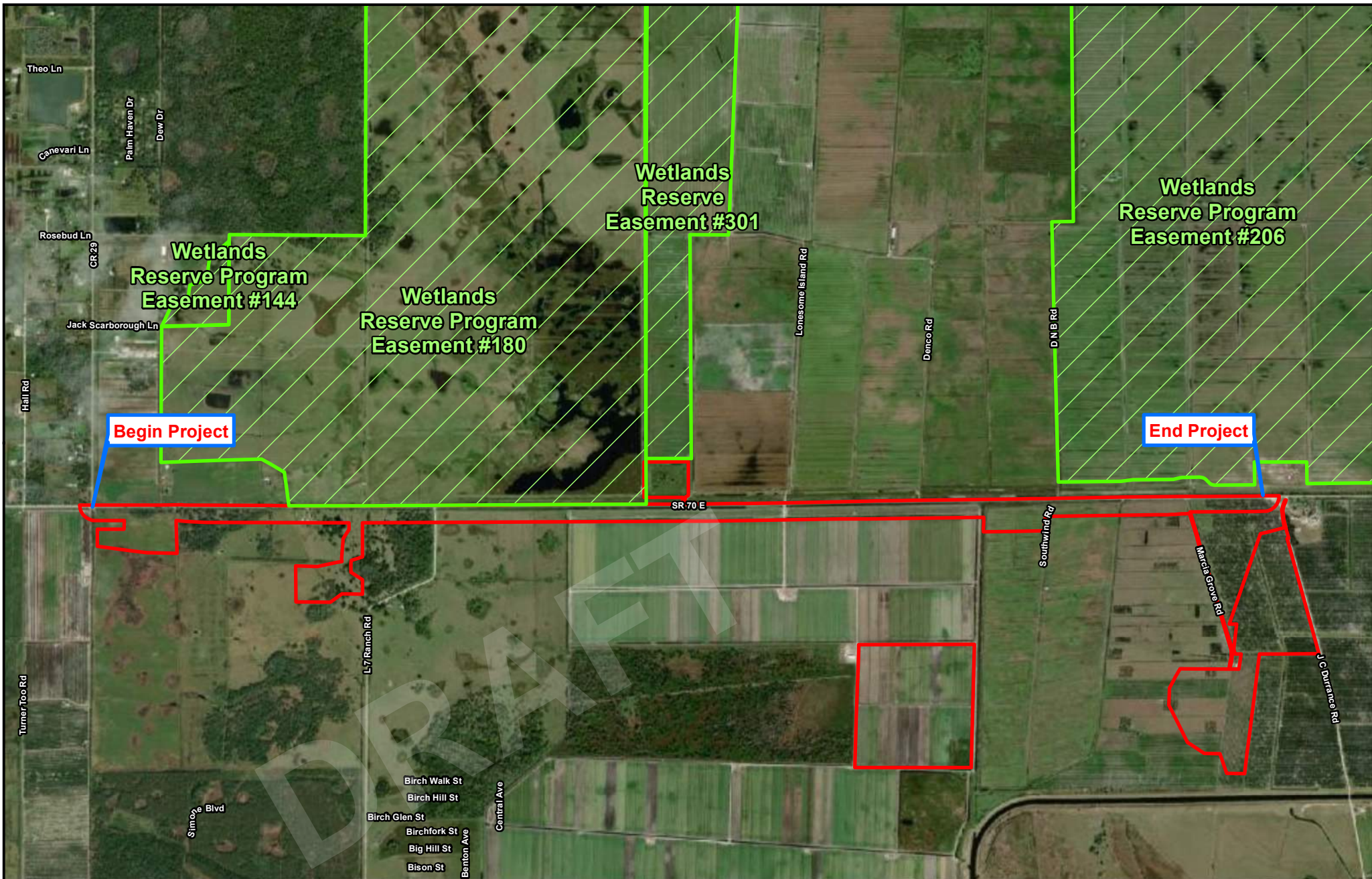
6.0 References

- Florida Department of Transportation (FDOT). 1999. Florida Land Use, Cover, Forms, and Classification System: Handbook. (3rd Edition) FDOT Surveying and Mapping Office, Geographic Mapping Section, Tallahassee, Florida.
- South Florida Water Management District (SFWMD). 2018. South Florida Wading Bird Colonies. Geographic Information Systems Open Data Site. (<https://geo-sfwmd.opendata.arcgis.com/datasets/south-florida-wading-bird-colonies?geometry=-81.799%2C27.163%2C-80.492%2C27.377>)
- Sykes, P. W., Jr., J. A. Rodgers, Jr., and R. E. Bennetts. 1995. Snail kite (*Rostrhamus sociabilis*) in A. Poole and F. Gill, eds. The birds of North America, Number 171, The Academy of Natural Sciences, Philadelphia, and the American Ornithologists Union; Washington, D.C.
- United States Fish and Wildlife Service (USFWS). 2004. USFWS Snail Kite Draft Survey Protocol –South Florida Ecological Services, May 2004.
- United States Fish and Wildlife Service (USFWS). 2006. Draft Everglade Snail Kite Management Guidelines. South Florida Ecological Services Office. February 2006.

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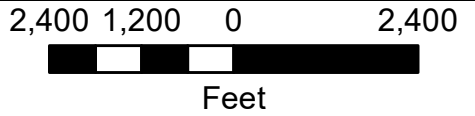
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Attachment A
Wetlands Reserve Easements Map



- Project Study Area
- Wetlands Reserve Program Easement

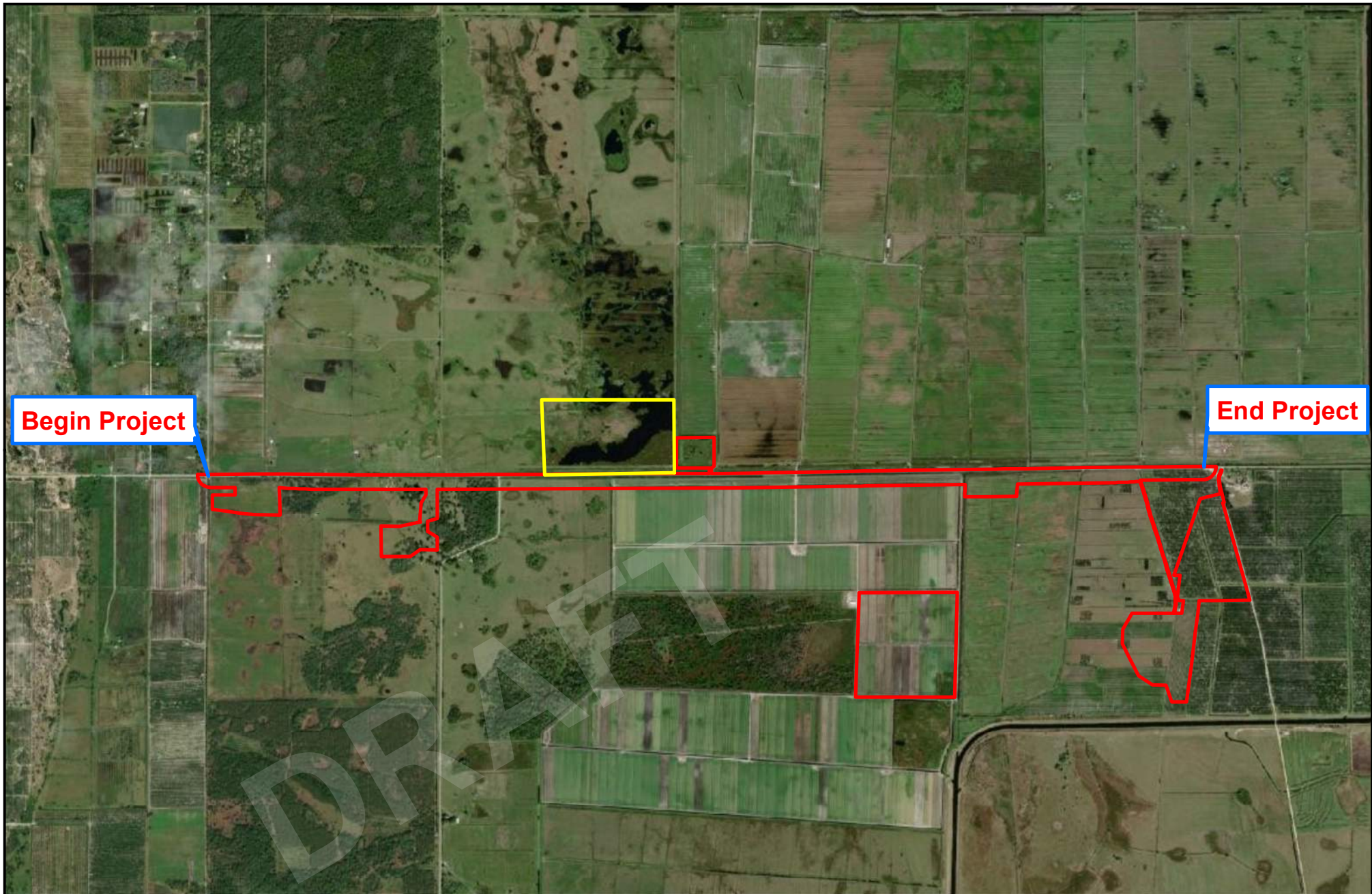
Wetlands Reserve Easements Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01



Path: M:\41450652201 SR70 - CR29 to Lonesome\NonSubmittal Design\GIS\Maps\Figures\SR_70_Lonesome_Cons Lands Map.mxd 8/25/2020

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Attachment B
Everglade Snail Kite Survey Area Map



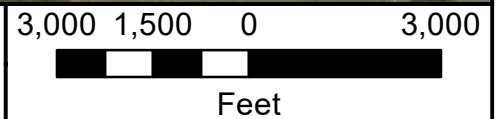
Legend

- Project Study Area
- Snail Kite Survey Area

Everglade Snail Kite Survey Area Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01

Attachment B

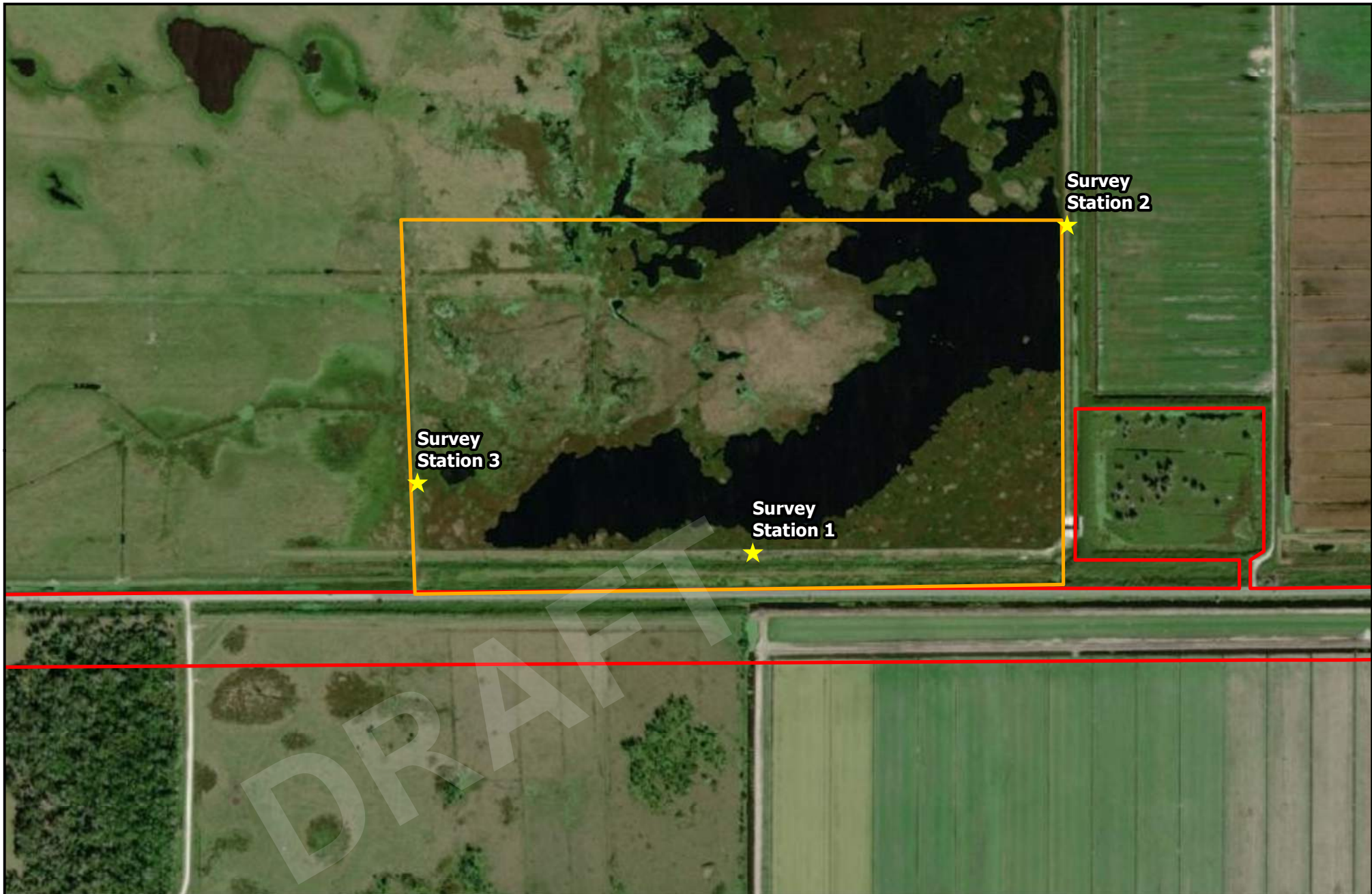
Page 1 of 1






Kisinger Campo & Associates, Corp.
 201 N. Franklin Street, Suite 400
 Tampa, FL 33602
 Phone: 813/871-5331
 Fax: 813/871-5135

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Attachment C
Everglade Snail Kite Survey Station Map


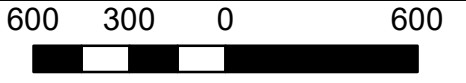


Legend	
	Snail Kite Survey Station
	Project Study Area
	Snail Kite Survey Area

Everglade Snail Kite Survey Station Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01

Attachment C

Page 1 of 1

	 Feet
Kisinger Campo & Associates, Corp. 201 N. Franklin Street, Suite 400 Tampa, FL 33602 Phone: 813/871-5331 Fax: 813/871-5135	

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Attachment D
Representative Photographs of Habitat Assessment
Areas



Survey Station 1, facing northeast



Survey Station 1, facing northwest



Survey Station 2, facing northwest



Survey Station 2, facing southwest



Survey Station 3, facing northeast



Survey Station 3, facing southeast

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Attachment E
Everglade Snail Kite Survey Datasheets

Snail Kite Survey
Field Data Form

Date: 12/14/18 Start Time: 10:50 Stop Time: 11:45 Monitor: Catie Neal
(Bruce Williams + Christen
Cattis - Training)

Site Name and Location:
Include latitude and longitude, section, township, range and county.

Site Name: Station 2 Location: SR 70, CR 29 & Lonesome Island Rd

Latitude: 27.213116 Longitude: -81.25088

Section: 32 Township: 37S Range: 31E

Suitable Habitat Conditions

Emergent vegetation types	<u>Water hyacinth</u>
Nesting Perching substrate	<u>Perching on fence posts.</u>
Water depth	<u>N/A - on edge of wetland.</u>
Distance from uplands	

Observed Activity - Snailkite

Flight direction, behavior, nest observation, etc)

#	Age A/Im.	Time	Description
<u>1</u>	<u>A/Im</u>	<u>10:53</u>	<u>Flying over vegetation and canal over east adjacent to wetland. Drove down into canal. SE of Station 2</u>
<u>2</u>	<u>A/F</u>	<u>10:56</u>	<u>Fly over vegetation in wetland just west of Station 2. Flew north out of view</u>
<u>3</u>	<u>A/F</u>	<u>11:20</u>	<u>Flew into vegetation north-west of Station 2. Flew into sedge grass.</u>
<u>4</u>	<u>A/Im</u>	<u>11:50</u>	<u>Flew over vegetation Northeast corner of station 2 perched on wooden pole</u>

M=Male
F=Female

Station 2 12/14/18

Incidental Observations

Species	Activity
Anhinga	
Northern Harrier	
Great blue heron	
Great white egret	
Snowy egret	
Wood stork	
Cinnamon	
Boat tail grackle	
Red winged blackbird	
Roseate spoonbill	

DRAFT

**Snail Kite Survey
Field Data Form**

Date: 12/14/18 Start Time: 12:00 Stop Time: 13:00 Monitor: Gtie Neal

Site Name and Location:

Include latitude and longitude, section, township, range and county.

Site Name: Station 3 Location: S1270, CR 29 & Lonesome Island Rd

Latitude: 27.209864 Longitude: -81.26004

Section: 31 Township: 37S Range: 3E

Suitable Habitat Conditions

Emergent vegetation types	<u>Water Hyacinth, primrose, dog fence, smart weed.</u>
Nesting Perching substrate	<u>N/A.</u>
Water depth	<u>N/A</u>
Distance from uplands	<u>Station 3 at edge of wetland.</u>

Observed Activity - Snail kite

Flight direction, behavior, nest observation, etc)

#	Age A/Im.	Time	Description
<u>1</u>	<u>A/F</u>	<u>12:10</u>	<u>Hovering over vegetation at center of wetland NE of station 3. Flow off to the north.</u>
<u>2</u>	<u>A/M</u>	<u>12:40</u>	<u>Hovering near vegetation over wetland and NE of station 3. Flow off to NE.</u>

**Snail Kite Survey
Field Data Form**

Date: 10 Jan 19 Start Time: 1110 Stop Time: 1218 Monitor: Catie Neal
 Site Name and Location: 61° Sunny / 5 mph NW / 80% Bruce Williams (training)
 Include latitude and longitude, section, township, range and county. cloud cover

Site Name: Station 1 Location: SR 70, CR 29 to Lonesome Island Rd.

Latitude: 27.208984 Longitude: -81.255295

Section: 31 Township: 37S Range: 31E

Suitable Habitat Conditions

Emergent vegetation types	
Nesting Perching substrate	
Water depth	
Distance from uplands	

Observed Activity - Snailkite

Flight direction, behavior, nest observation, etc)

#	Age A/Im.	Time	Description
1	A	1141	Flying around north end of the marsh (foraging?) flew down to ground - immediately N of st. 1 (observed outside the buffer)
2	A/M	1216	Plying west through center of marsh, landed to forage

**Snail Kite Survey
Field Data Form**

Date: 1/17/19 Start Time: 11:53 Stop Time: 13:00 pm Monitor: Catie Neal
Bruce Williams (training)

Site Name and Location:
 Include latitude and longitude, section, township, range and county.

Site Name: Survey Station 2 Location: SR 70, CR 29 to Lonesome Island Rd.

Latitude: 27.213116 Longitude: -81.25088

Section: 32 Township: 37S Range: 31E

Suitable Habitat Conditions

Emergent vegetation types	
Nesting Perching substrate	
Water depth	
Distance from uplands	

Observed Activity - Snail kite
 Flight direction, behavior, nest observation, etc)

#	Age A/Im.	Time	Description
1	A	12:51	Female snail kite on fence post. Flew in from the west. Flew off to the west.

Great egret
Warbling vireo
Snowy egret
Cattle egret
Great blue heron
Little blue heron
Limkin
Anhinga
Red winged black bird
Crested caracara
Northern harrier
Black vulture
Bald eagle
Wood stork
Turkey vulture
White pelican
American crow

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**Snail Kite Survey
Field Data Form**

Date: 02/14/19 Start Time: 12:30 Stop Time: 1:30 Monitor: Catie Neal

Site Name and Location:

Include latitude and longitude, section, township, range and county.

Training: Christen Cerrito

Site Name: Survey Station 2 Location: SR 70, CR 29 to Lonesome Island Rd.

Latitude: 27.213116 Longitude: -81.25088

Section: 32 Township: 37S Range: 31E

Suitable Habitat Conditions

Emergent vegetation types	<u>Water hyacinth</u>
Nesting Perching substrate	<u>NONE</u>
Water depth	<u>Unknown</u>
Distance from uplands	<u>0 mi</u>

Observed Activity - Snail kite

Flight direction, behavior, nest observation, etc)

#	Age A/Im.	Time	Description
<u>1</u>	<u>A</u>	<u>12:57</u>	<u>Hovering / flying over marsh, diving down intermittently</u>
<u>1</u>	<u>A</u>	<u>1:19</u>	<u>Hovering over marsh</u>



Turkey Vulture

Anhinga

Great Egret

Wood Stork

Swifts

Great Blue Heron

American Crow

Black Vulture

Little Blue Heron

Loon

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Northern harrier
Limpkin
Little blue heron
Red winged Black Bird
Great Egret
Crested Caracara
Cattle egret
Anhinga
Snowy egret
Roseatte Spoonbill
Turkey vulture
Black vulture
Great Blue Heron
Wood stork
grackle

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Great Egret

Red winged black bird

Anhinga

Northern Harrier

turkey vulture

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white egret
anhinga
turkey vulture
black vulture
little blue heron
glossy ibis
red-winged blackbird
meadow lark
limpkin

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Warbling vireo
Redwinged black bird

Great egret

Limpkin

Black vulture

Anhinga

American crow

Eastern meadowlark

little blue heron

Turkey vulture

White ibis

Tricolored heron

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Warbling vireo
Red winged black bird
Great egret
Limkin
Black vulture
Little blue heron
Anhinga
Crow
White ibis
Eastern Meadowlark
Cattle egret

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Snail Kite Survey
Field Data Form

Date: 4/11/19 Start Time: 10:45 Stop Time: 11:45 Monitor: Catie Neal

Christen Cerrito

Site Name and Location:

Include latitude and longitude, section, township, range and county.

Site Name: Survey Station 3 Location: SR 70, CR 29 to Lonesome Island Rd.

Latitude: 27.209864 Longitude: -81.26004

Section: 31 Township: 37S Range: 31E

Suitable Habitat Conditions

Emergent vegetation types	<u>Water hyacinth, cattail</u>
Nesting Perching substrate	<u>none</u>
Water depth	<u>unknown</u>
Distance from uplands	<u>0 m</u>

Observed Activity - Snail kite

Flight direction, behavior, nest observation, etc)

#	Age A/Im.	Time	Description
<u>1</u>	<u>A</u>	<u>10:46</u>	<u>hovering over marsh, foraging</u>
<u>1</u>	<u>A</u>	<u>11:21</u>	<u>hovering over marsh, foraging</u>
<u>1</u>	<u>A</u>	<u>11:34</u>	<u>hovering over marsh, foraging</u>

} suspect same bird

- Wood stork
- Great Egret
- Red winged blackbird
- Cimprkin
- Whistling Duck
- Turkey vulture
- Black vulture
- Northern harrier
- Anhinga
- American Crow
- Grackle
- Little Blue heron

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Northern harrier
Great Blue heron
Cattle egret
White ibis
Limpkin
Osprey
Anhinga

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Great Egret

Great Blue heron

Red winged Blackbird

Limpkin

Common moorhen

Rosette spoonbill

cattle egret

White ibis

boat tailed grackle

Anhinga

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Red winged Black Bird

Great egret

Great blue heron

Limpkin

Little blue heron

Cattle egret

White ibis

Eastern Meadowlark

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APPENDIX K

Florida Bonneted Bat Technical Memoranda

**Florida Bonneted Bat
Acoustic Survey
Technical Memorandum**

DRAFT

FLORIDA BONNETED BAT ACOUSTIC SURVEY

**STATE ROAD 70 PD&E
FROM COUNTY ROAD 29 TO LONESOME ISLAND ROAD**

(FPID 414506-5-22-01)

May 2020

DRAFT

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

Prepared for:

**Florida Department of Transportation
District One
801 N. Broadway Ave
Bartow, FL 33830-3809**

DRAFT

Prepared by:

**Johnson Engineering, Inc.
2122 Johnson Street
Fort Myers, FL 33901
(239) 334-0046**

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION / PROJECT BACKGROUND	
1.1 Project Information	1
1.2 Florida Bonneted Bat	2
2.0 METHODOLOGY	
2.1 Acoustic Survey	4
2.2 Acoustic Data Analysis	7
3.0 RESULTS AND DISCUSSION	
3.1 Summary of Results	8
3.2 Analysis	9
3.3 Effect Determination/Conclusions	10
4.0 REFERENCES	12

LIST OF FIGURES AND TABLES

Figure 1	Location Map	3
Figure 2	Acoustic Survey Sites	5
Table 1-1	Project Townships, Ranges and Sections	1
Table 2-1	Ultrasonic Microphone Calibration	6
Table 2-2	Acoustic Recorder Deployment Schedule	7
Table 3-1	Acoustic Survey Summary	8
Table 3-2	FBB Call Summary	9
Table 3-3	Species Recorded and Relative Call Abundance	9

LIST OF APPENDICES

APPENDIX A	Photo Documentation
APPENDIX B	Representative Bat Calls
APPENDIX C	Weather Data
APPENDIX D	FBB Effect Determination Key

1.0 INTRODUCTION / PROJECT BACKGROUND

1.1 Project Information

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) study to evaluate options for widening State Road 70 (SR 70) in Highlands County. The study covers 4.3 miles of SR 70 beginning at County Road 29 (CR 29) and ending at Lonesome Island Road with central coordinates of 27.29410° N latitude and 81.245911° W. The project is bordered by a mix of citrus grove, sod farms and open pasture. The project study area is shown in **Figure 1** and a list of the project Sections, Townships and Ranges is provided in **Table 1-1**.

Table 1-1. Project Townships, Ranges and Sections

Township	Range	Section(s)
37 S	30 E	36
37 S	31 E	31-34
38 S	30 E	1
38 S	31 E	3-6

The objective of this PD&E study is to evaluate widening the existing two-lane undivided roadway to a four-lane divided roadway. This study documents the need for capacity improvements within the SR 70 corridor to determine the least environmentally damaging practicable alternative necessary to address the existing roadway deficiencies. For the purposes of this study, the project study area was determined to be the proposed right-of-way (ROW) for the preferred alternative.

The study evaluates the need for capacity improvements and provides engineering and environmental documentation and analysis to establish the optimal type and location of improvements to SR 70. Other components of the PD&E study include a preliminary engineering report, concept plans, environmental studies, a public involvement program, and other information for use in the development of this project.

The project was evaluated through FDOT's Efficient Transportation Decision Making (ETDM) process as project #14364. An ETDM *Programming Screen Summary Report* containing comments from the Environmental Technical Advisory Team (ETAT) was published on June 7, 2019. The ETAT evaluated the project's effects on various natural, physical and social resources.

Upon completion, this study will meet all requirements of the National Environmental Policy Act of 1969 (NEPA) as administered by the Federal Highway Administration (FHWA) and the requirements of other federal and state laws so as to qualify the proposed project for federal-aid funding.

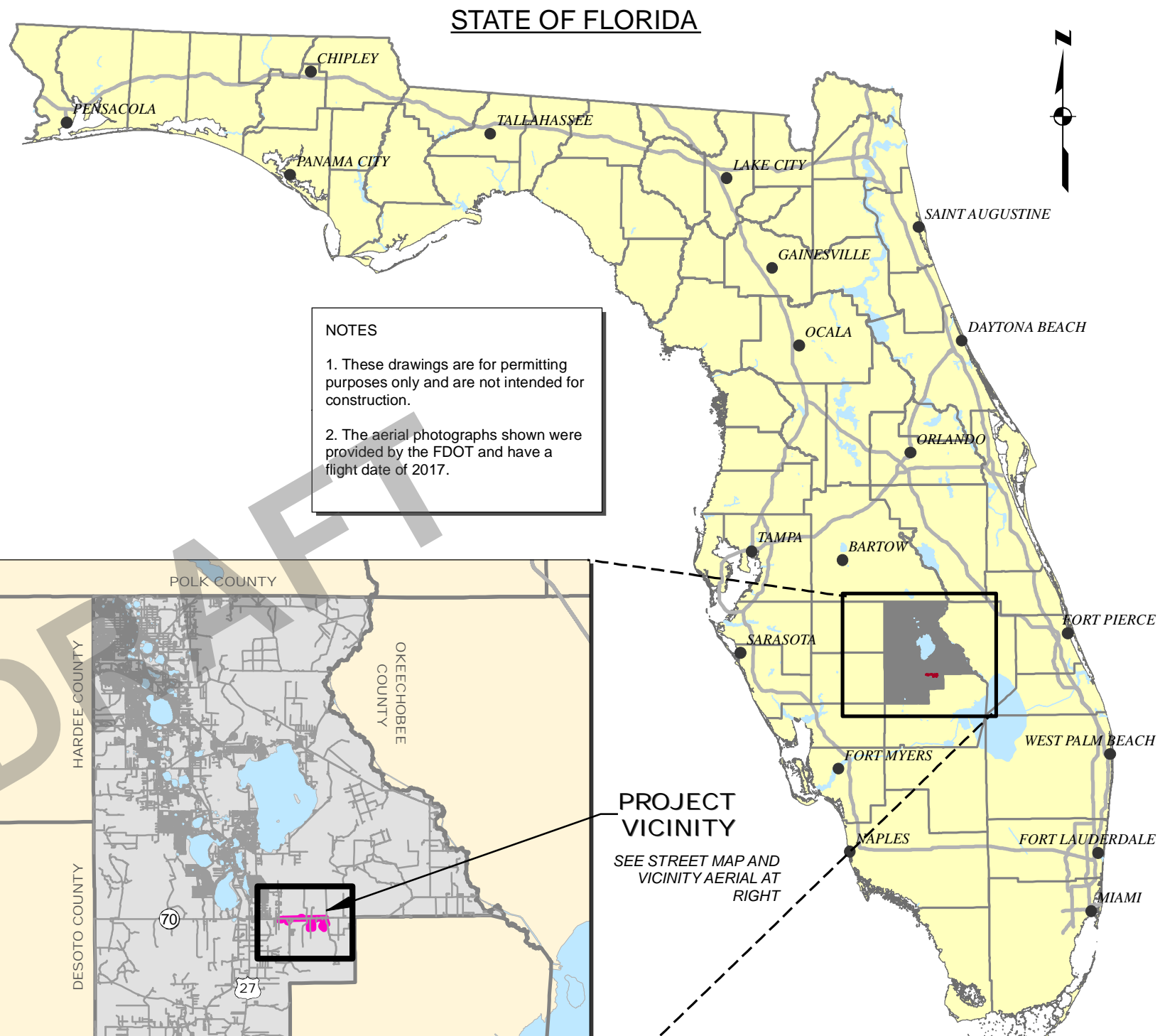
1.2 Florida Bonneted Bat

Effective November 2, 2013, the U.S. Fish and Wildlife Service (FWS) listed the Florida bonneted bat (FBB) as endangered under the Endangered Species Act (ESA) (FWS, 2013). Increased acoustic and roost surveys, radio telemetry, GPS technology and tracking have led to discoveries of new natural roosts. While most natural roosts discovered are on public lands, several occur in urban areas on private lands (Halupa, pers. com.).

The FBB was previously known as the Florida mastiff bat, Wagner's mastiff bat, and mastiff bat (*Eumops glaucinus floridanus*). However, recent genetic research confirmed that *E. floridanus* is a distinct species (FWS, 2013). The FBB is a member of the Molossidae (free-tailed bats) family within the Order Chiroptera. The FBB is the largest bat in Florida and is distinguished from the Brazilian free-tailed bat (*Tadarida brasiliensis*) by its larger size and the ears being joined at the midline of the head (FWS, 2013).

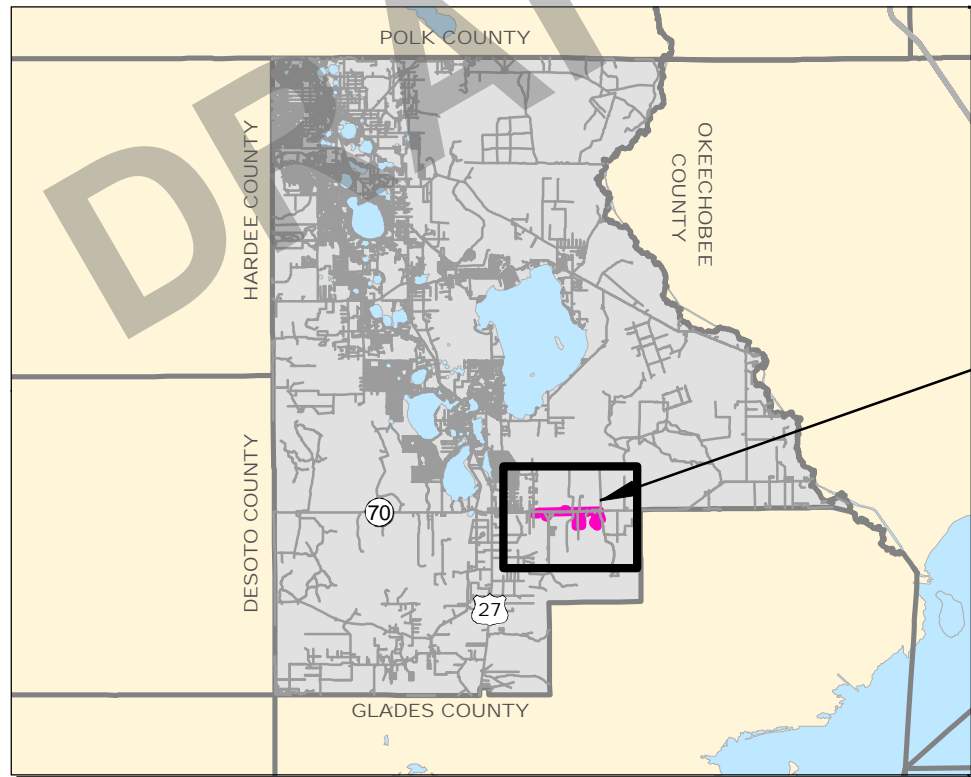
The FWS established a consultation area for the FBB around known and suspected roosting areas. The project is located within the FWS consultation area for the FBB. As such, the FWS requested an acoustic survey for FBB be conducted for the project, in accordance with the 2019 Florida Bonneted Bat Consultation Guidelines (FBB Guidelines).

C:\2019\201922200-001\Environmental\arcgis\LocMap2020.mxd Date: 5/26/2020 Time: 9:51:55 AM User: bkm



NOTES

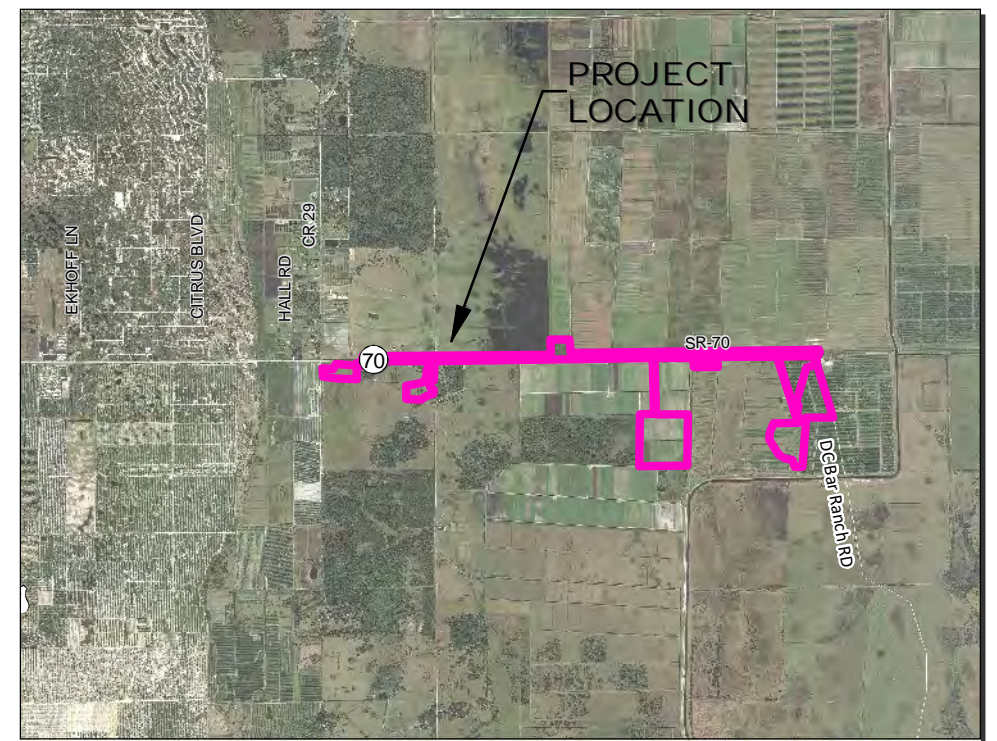
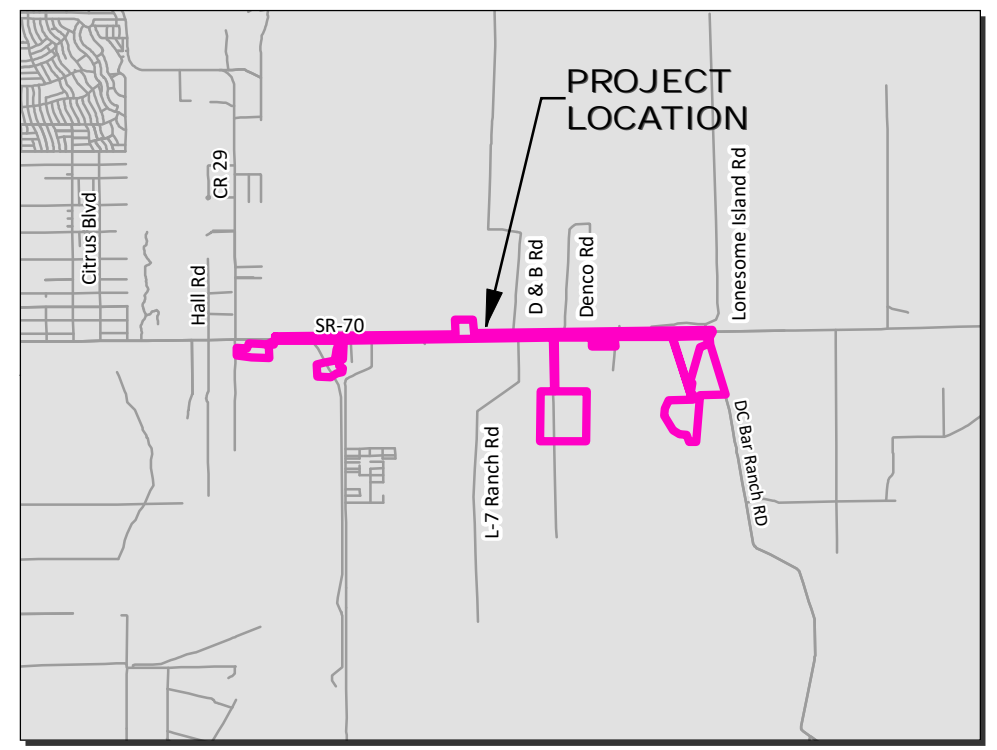
1. These drawings are for permitting purposes only and are not intended for construction.
2. The aerial photographs shown were provided by the FDOT and have a flight date of 2017.



HIGHLANDS COUNTY
N.T.S

PROJECT VICINITY
SEE STREET MAP AND VICINITY AERIAL AT RIGHT

Section 36, Township 37 S, Range 30 E
 Section 31-34, Township 37 S, Range 31 E
 Sections 1, Township 38 S, Range 30 E
 Sections 3-6, Township 38 S, Range 31 E
 Latitude: 27.29410 N; Longitude: 81.245911 W



Florida Dept. of Transportation District 1	SR 70 from CR 29 to Lonesome Is. Rd. FBB Acoustic Survey Highlands County, Florida	JOHNSON ENGINEERING, INC. 2122 JOHNSON STREET P.O. BOX 1550 FORT MYERS, FLORIDA 33902-1550 PHONE (239) 334-0046 FAX (239) 334-3661 E.B. #642 & L.B. #642	Location Map
DATE May 2020	PROJECT NO. 20192200-001	FILE NO.	SCALE NTS
		SHEET Figure 1	

Knowledge of the long-term habitat requirements of the FBB is limited. Foraging areas for bats are diverse and include fields, ball parks, golf courses, lakes, canals, streams, and wetlands. Analysis of fecal samples indicates that beetles (Coleoptera), flies (Diptera), and true bugs (Hemiptera) appear to be important prey items (FWS, 2013). Echolocation is used to detect prey 10 to 16 feet away (Belwood, 1992). Foraging flights can last hours and may occur at long distances from established roosts (FWS, 2013). The FBB produces loud calls easily recognizable by humans as they fly (Belwood, 1992). Free-tailed (Molossid) bats are known to be high, fast fliers when foraging and acoustic surveys for FBBs should take this into consideration when positioning microphones for recording.

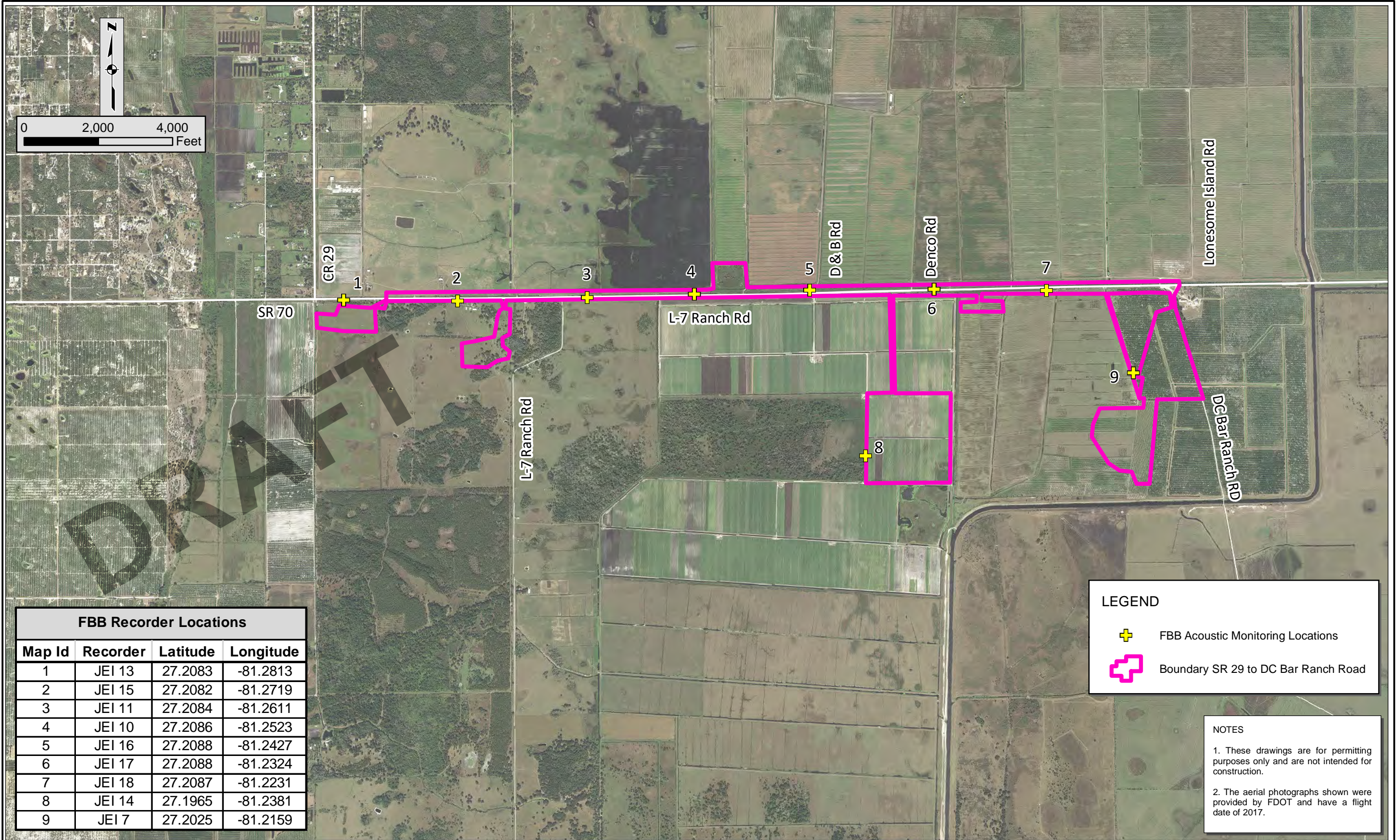
2.0 METHODOLOGY

2.1 Acoustic Survey

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

The Guidelines currently require a minimum of five (5) acoustic detector nights per kilometer (0.6 miles) for linear projects. A total of nine acoustic monitoring locations were determined to be needed for the project corridor based on the Guidelines and evaluation of habitat along the corridor. **Figure 2** provides an aerial photograph of the project corridor and depicts the deployment location for each acoustic recorder. The survey was designed to utilize nine Song Meter SM4 BAT FS Wildlife Acoustics full spectrum bioacoustic recorders equipped with ultrasonic microphones. All microphones were mounted on metal conduit to elevate the microphone above the shrub level and attached to a tree or post.

O:\2019\20192200-001\Environmental\arcgis\2020 Deployment\Path\mxd\2020192200-001\Environmental\arcgis\2020 Acoustic Deployment.mxd



FBB Recorder Locations			
Map Id	Recorder	Latitude	Longitude
1	JEI 13	27.2083	-81.2813
2	JEI 15	27.2082	-81.2719
3	JEI 11	27.2084	-81.2611
4	JEI 10	27.2086	-81.2523
5	JEI 16	27.2088	-81.2427
6	JEI 17	27.2088	-81.2324
7	JEI 18	27.2087	-81.2231
8	JEI 14	27.1965	-81.2381
9	JEI 7	27.2025	-81.2159

LEGEND

- FBB Acoustic Monitoring Locations
- Boundary SR 29 to DC Bar Ranch Road

NOTES

- These drawings are for permitting purposes only and are not intended for construction.
- The aerial photographs shown were provided by FDOT and have a flight date of 2017.

Photo documentation of representative detector deployments at the project site is provided in **Appendix A**. As shown in **Table 2-1**, each microphone was calibrated prior to deployment in accordance with manufacturer guidelines to ensure proper microphone sensitivity. Note: A reading higher (less negative) than -38 dB is required for the microphone to pass the manufacturer’s sensitivity guidelines.

Table 2-1. Ultrasonic Microphone Calibration

Date	Recorder	Microphone	Reading	Required Reading	Pass/Fail
4/23/2020	7	MU208859	-25.02	-38	Pass
4/23/2020	10	MU103261	-26.76	-38	Pass
4/23/2020	11	MU207242	-22.77	-38	Pass
4/23/2020	13	MU207629	-22.96	-38	Pass
4/23/2020	14	MU207299	-23.28	-38	Pass
4/23/2020	15	MU106581	-31.41	-38	Pass
4/23/2020	16	MU207592	-22.18	-38	Pass
4/23/2020	17	MU106540	-30.10	-38	Pass
4/23/2020	18	MU106508	-33.00	-38	Pass

Passive sampling was conducted from approximately 40 minutes before sunset to approximately 40 minutes after sunrise at each survey site for nine consecutive nights, based on weather conditions. Each site was surveyed for a minimum of five nights during acceptable weather conditions: temperatures above 65°F during the first 5 hours of survey; no precipitation, including rain and/or fog, exceeding 30 minutes or continuing intermittently during the first 5 hours of survey; and sustained winds \leq 9 miles/hour (4 meters/second; 3 on Beaufort scale). **Table 2-2** provides the deployment schedule for the acoustic survey.

Following data collection, all call sequences were processed using Kaleidoscope Pro™ software and subsequently analyzed with AnaBat™ and Kaleidoscope Pro™ software. All calls were verified manually through visual comparison with a known library of bat calls. Calls were recorded using the full spectrum WAV file format in accordance with recommendations by the equipment manufacturer. 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.

Table 2-2. Acoustic Recorder Deployment Schedule

Site	Detector	Deployed	Retrieved	Detector Nights
1	JEI-13	11-May-20	20-May-20	9
2	JEI-15	11-May-20	20-May-20	9
3	JEI-11	11-May-20	20-May-20	9
4	JEI-10	11-May-20	20-May-20	9
5	JEI-16	11-May-20	20-May-20	9
6	JEI-17	11-May-20	20-May-20	9
7	JEI-18	11-May-20	20-May-20	9
8	JEI-14	11-May-20	20-May-20	9
9	JEI-7	11-May-20	20-May-20	9
TOTAL				81

2.2 Acoustic Data Analysis

Full spectrum WAV format data files were recorded on 32 gigabyte (GB) or 64 GB SanDisk (SD) memory cards, downloaded and original WAV files retained on an external hard drive. Data files were then processed to WAV and Zero Crossing (ZC) format using Kaleidoscope Pro™ software provided by Wildlife Acoustics. The program settings resulted in recordings of 0.1 to 15 seconds in length and all recordings were reviewed for detection and subsequent identification of bat species recorded. Summary tables were created to list the number of total calls recorded, total number of FBB calls, percentage of FBB calls, survey begin and end dates and number of monitoring days per station.

3.0 RESULTS AND DISCUSSION

3.1 Summary of Results

A total of 147,997 recordings were collected from the nine deployment sites. The Kaleidoscope Pro™ software classified 125,756 of those recordings as noise. All noise files were visually evaluated to ensure no FBB calls were mislabeled. The remaining 22,241 call sequences represent seven different bat species commonly found in southwest Florida. Twenty of the recorded calls (0.09%) were identified as potential FBB. **Table 3-1** provides a summary of the acoustic survey results. **Table 3-2** provides the date, time, location and minutes past sunset of all recorded FBB calls.

Table 3-1. Acoustic Survey Summary

Site	Recorder	Latitude	Longitude	Total Recordings	Noise	Total Calls	FBB Calls	Percent FBB
1	13	27.2083	-81.2813	24,396	20,434	3,962	1	0.03%
2	15	27.2082	-81.2719	23,028	17,833	5,195	1	0.02%
3	11	27.2084	-81.2611	20,173	17,198	2,975	7	0.24%
4	10	27.2086	-81.2523	21,370	18,310	3,060	0	0.00%
5	16	27.2088	-81.2427	17,883	16,032	1,851	0	0.00%
6	17	27.1965	-81.2381	3,613	3,571	42	0	0.00%
7	18	27.2088	-81.2324	19,784	1,6277	3,507	4	0.11%
8	14	27.2087	-81.2231	11,675	10,501	1,174	5	0.43%
9	7	27.2025	-81.2159	6,075	5,600	475	2	0.42%
TOTALS				147,997	125,756	22,241	20	0.09%

Based on call Auto ID results from Kaleidoscope Pro software, non-FBB bat species identified during data analysis are summarized in **Table 3-3**. The recorded FBB calls and representative bat call sequences from each of the species recorded are provided in **Appendix B**. Nightly weather conditions observed during the survey period are provided in **Appendix C**.

Table 3-2: FBB Call Summary

Site	Recorder	Call ID	Date	Time (EDT)	Sunset	Mins After Sunset
1	JEI-13	JEI-13_20200517_022139.wav	5/17/2020	2:21:39	20:18	363
2	JEI-15	JEI-15_20200514_024337.wav	5/14/2020	2:43:37	20:15	388
3	JEI-11	JEI11_20200512_004035.wav	5/12/2020	00:40:35	20:13	267
3	JEI-11	JEI11_20200515_232256.wav	5/15/2020	23:22:56	20:16	186
3	JEI-11	JEI11_20200517_231523.wav	5/17/2020	23:15:23	20:18	177
3	JEI-11	JEI11_20200517_231540.wav	5/17/2020	23:15:40	20:18	177
3	JEI-11	JEI11_20200518_003612.wav	5/18/2020	00:36:12	20:20	256
3	JEI-11	JEI11_20200518_003629.wav	5/18/2020	00:36:29	20:20	256
3	JEI-11	JEI11_20200518_013654.wav	5/18/2020	1:36:54	20:20	316
7	JEI-18	JEI-18_20200514_023742.wav	5/14/2020	2:37:42	20:15	382
7	JEI-18	JEI-18_20200518_021000.wav	5/18/2020	2:10:00	20:20	350
7	JEI-18	JEI-18_20200518_231245.wav	5/18/2020	23:12:45	20:20	172
7	JEI-18	JEI-18_20200518_231302.wav	5/18/2020	23:13:02	20:20	173
8	JEI-14	JEI-14_20200512_223338.wav	5/12/2020	22:33:38	20:13	140
8	JEI-14	JEI-14_20200512_223357.wav	5/12/2020	22:33:57	20:13	140
8	JEI-14	JEI-14_20200512_223414.wav	5/12/2020	22:34:14	20:13	141
8	JEI-14	JEI-14_20200512_225219.wav	5/12/2020	22:52:19	20:13	159
8	JEI-14	JEI-14_20200514_224047.wav	5/14/2020	22:40:47	20:15	145
9	JEI-07	JEI-7_20200518_231511.wav	5/18/2020	23:15:11	20:20	175
9	JEI-07	JEI-7_20200518_231528.wav	5/18/2020	23:15:28	20:20	175

Table 3-3. Species Recorded and Relative Call Abundance

Common name	Scientific name	Relative call abundance*
Florida bonneted bat	<i>Eumops floridanus</i>	Present (20 calls)
Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>	Abundant
Northern yellow bat	<i>Lasiurus intermedius</i>	Abundant
Big brown bat	<i>Eptesicus fuscus</i>	Common
Tricolored bat	<i>Perimyotis subflavus</i>	Common
Evening bat	<i>Nycticeius humeralis</i>	Rare
Seminole bat	<i>Lasiurus seminolus</i>	Rare

3.2 Analysis

FWS defines “High FBB Activity” to include any of the following: (a) multiple FBB feeding buzzes are detected; (b) FBB social calls are recorded; (c) large numbers of FBB calls (9 or more) are recorded throughout one night. The acoustic survey revealed a total of 20 potential FBB calls. Review of the recorded FBB calls revealed no social calls or feeding buzzes

recorded during the survey. Additionally, only four FBB calls were recorded at one station (Site 8) on one night (May 12, 2020), which does not meet the definition of High FBB Activity.

Of greatest interest to FWS 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. Based on communication with FWS South Florida Ecological Services Office staff, timing of acoustic survey calls is one parameter to identify potential roosting in an area (Halupa, pers. com.). Calls recorded within 90 minutes after sunset or 90 minutes before sunrise may suggest possible FBB roosting in an area, according to draft FWS guidelines. However, some experts disagree with this assertion based on the high speeds at which FBBs are known to fly. Thus, an FBB may have a roost site several miles away even if recorded close to sunset or sunrise (Marks, pers. comm.). None of the FBB calls were recorded within 90 minutes of sunset/sunrise.

3.3 Effect Determination/Conclusions

The Guidelines define Potential Roosting Habitat as forest and other areas with tall, mature trees or other areas with suitable structures (*e.g.*, utility poles, artificial structures). The preferred alternative was reviewed for tree cavities and man-made structures during a roost survey in August 2020. Several cavities were located and inspected; however, no signs of FBB were observed in these cavities. Additionally, although the project includes areas of trees that are greater than 10 meters in height, dense canopy and understory vegetation surrounding them limit the ability for bats to fall from a roost to take flight.

The Guidelines define Foraging Habitat as being comprised of relatively open areas to find and catch prey, and sources of drinking water. This includes open fresh water, permanent or seasonal freshwater wetlands, within and above wetland and upland forests, wetland and upland shrub, and agricultural lands. In urban and residential areas drinking water, prey base, and suitable foraging can be found at golf courses, parking lots, and parks in addition to relatively small patches of natural habitat. The project includes areas that would be considered Foraging Habitat as defined.

The FWS developed a 2019 FBB “Florida Bonneted Bat Consultation Key” (Key) to assist regulatory agencies in making effect determinations for projects located in the FBB consultation area. As stated above, the acoustic survey resulted in 20 recorded FBB calls.

With this information, the Key leads to couplet 12a with a determination of Likely to Adversely Affect (LAA) requiring consultation with FWS. **Appendix D** provides the Key with the path taken to arrive at couplet 12a highlighted. Certain Best Management Practices (BMPs) could potentially reduce the potential adverse effects to FBB. Appropriate BMPs will be developed during consultation with FWS.

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4.0 **REFERENCES**

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

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

U.S. Fish and Wildlife Service. 2019. Florida Bonneted Bat Consultation Guidelines - October 2019

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APPENDIX A
Photo Documentation

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Site 1, JEI 13 facing west



Site 2, JEI 15 facing west.



Site 1, JEI 13 deployed on telephone pole.



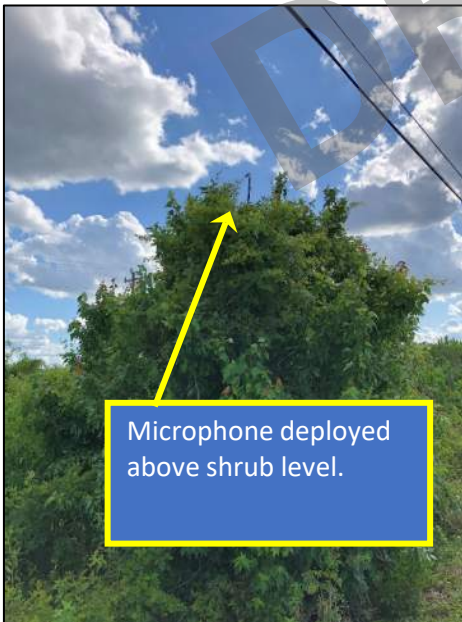
Site 2, JEI 15 deployed on fence post.



Site 3, JEI 11 facing west



Site 4, JEI 10 facing east.



Site 3, JEI 11 deployed on maple tree.



Site 4, JEI 10 deployed on cabbage palm.



Site 5, JEI 16 facing south.



Site 6, JEI 17 facing east.



Site 5, JEI 16 deployed on willow.



Site 6, JEI 17 deployed on fence post.



Site 7, JEI 18 facing north.



Site 8, JEI 14 facing east



Site 7, JEI 18 deployed on sign post.

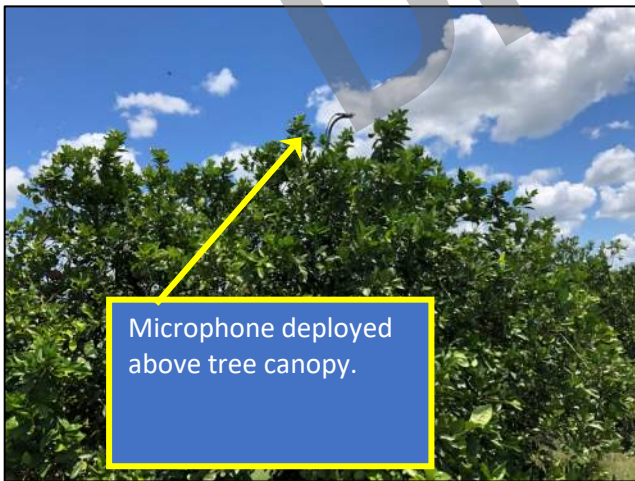


Site 8, JEI 14 deployed on maple tree.



Site 9, JEI 7 facing west

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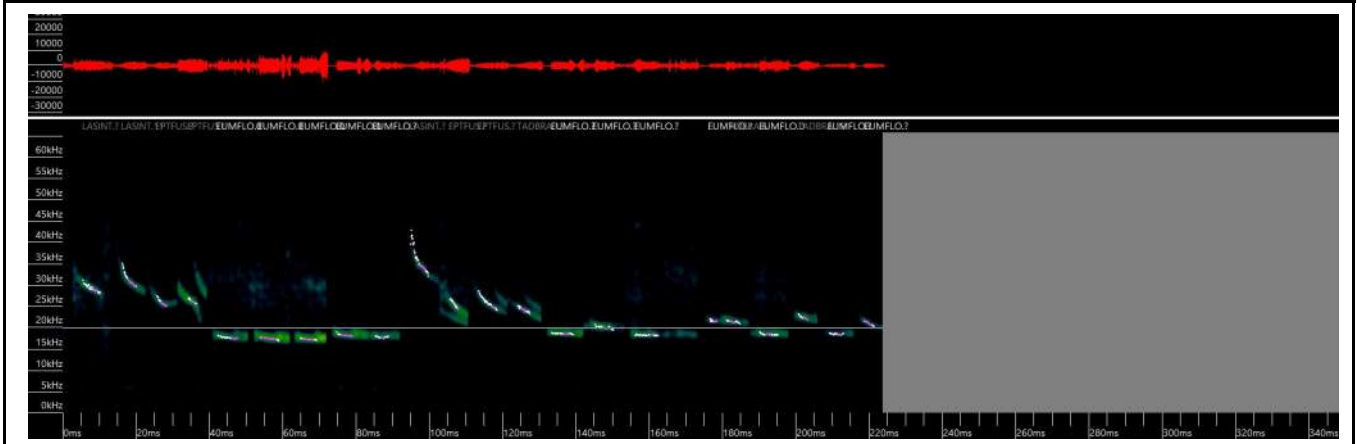
Site 9, JEI 7 deployed on orange tree.



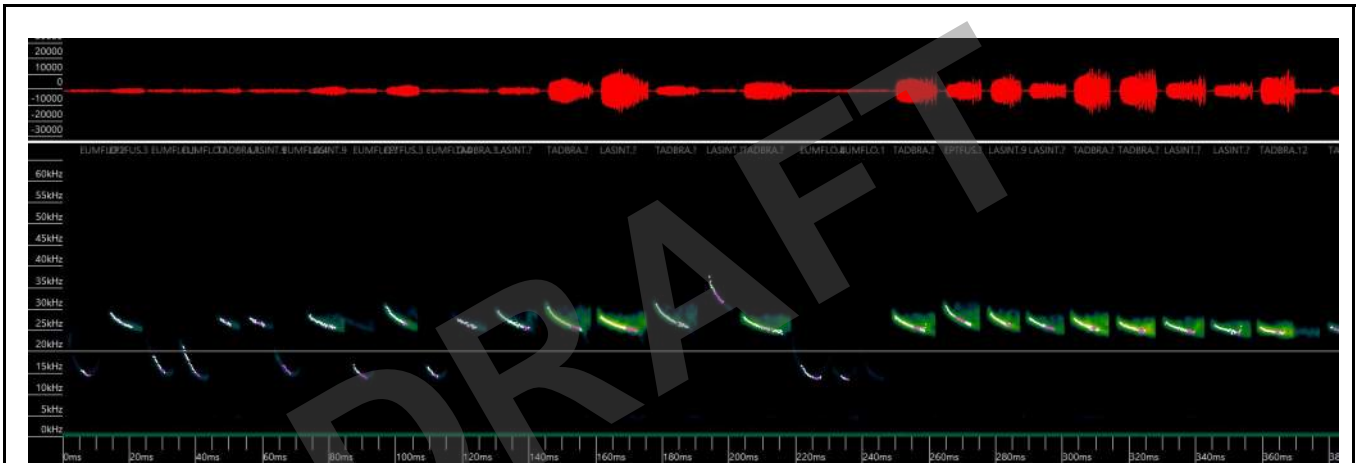
Typical SM4 deployment.

APPENDIX B
Representative Bat Calls

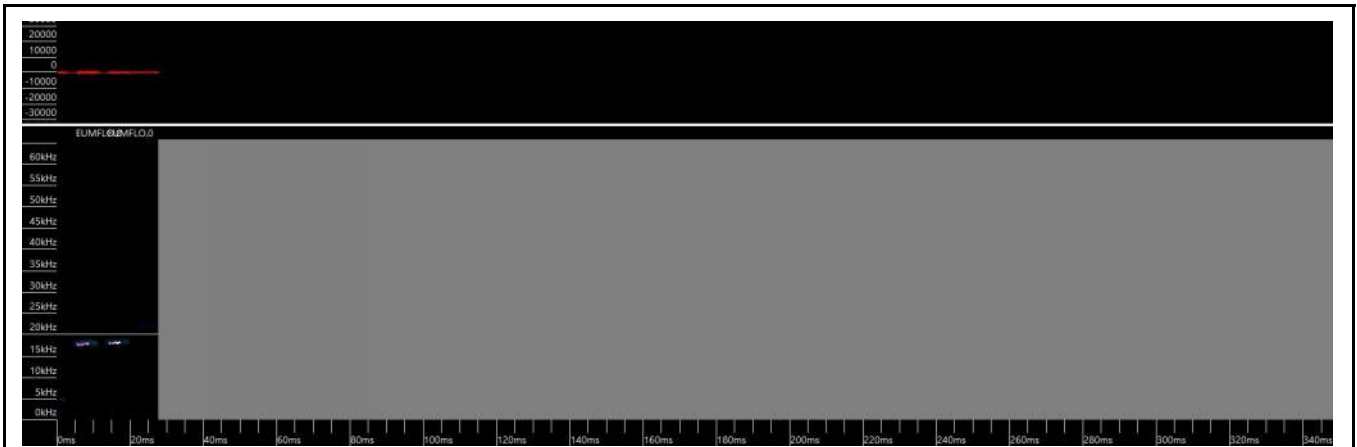
DRAFT



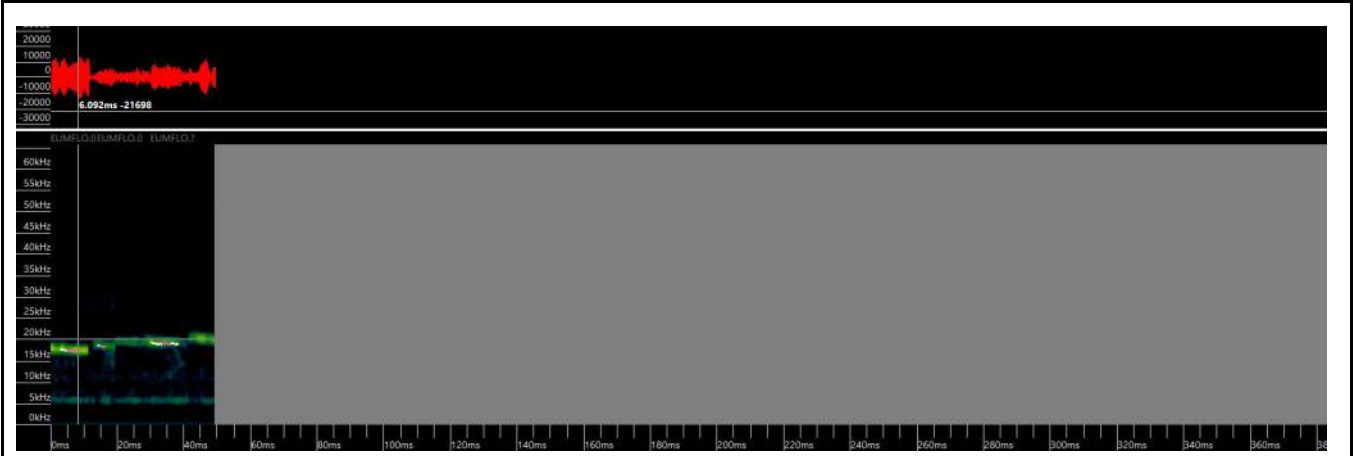
Potential Florida bonneted bat (*Eumops floridanus*). Site 1. JEI-13. May 17, 2020. 02:21:39 (EDT).



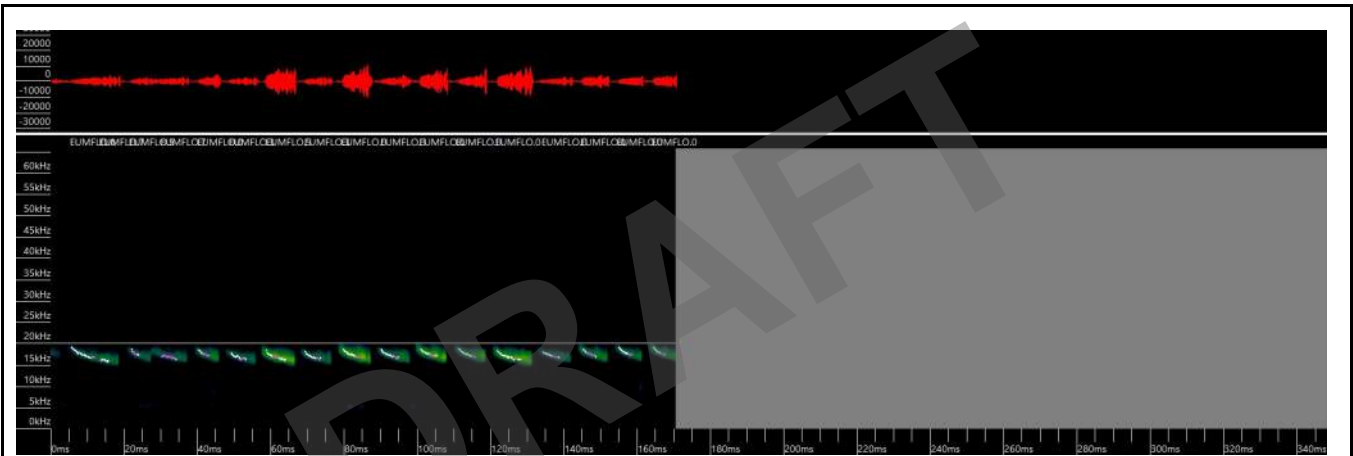
Potential Florida bonneted bat (*Eumops floridanus*). Site 2. JEI-15. May 14, 2020. 02:43:37 (EDT).



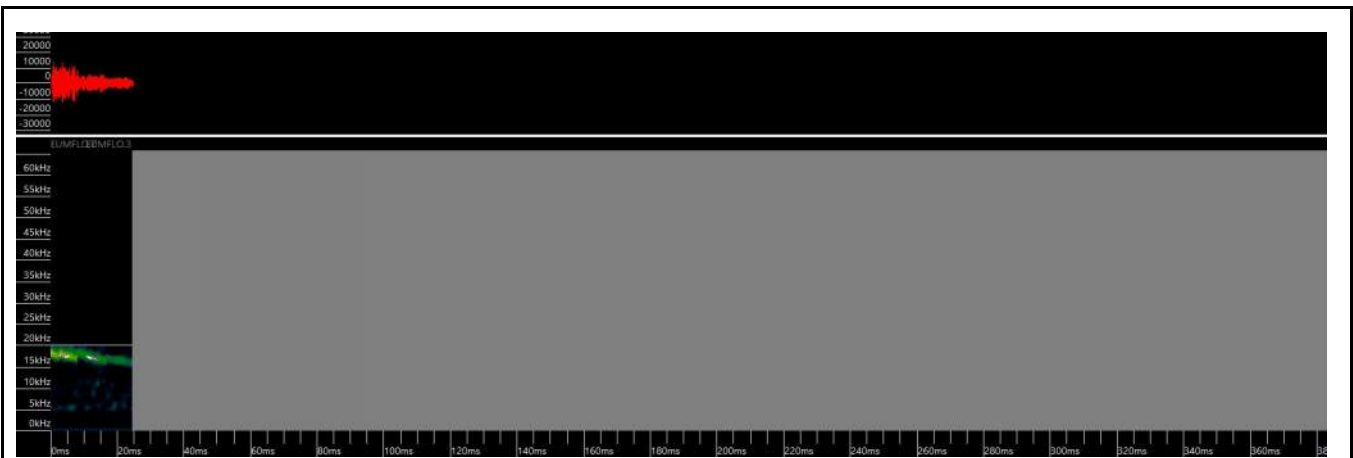
Florida bonneted bat (*Eumops floridanus*). Site 3. JEI-11. May 12, 2020. 00:40:35 (EDT).



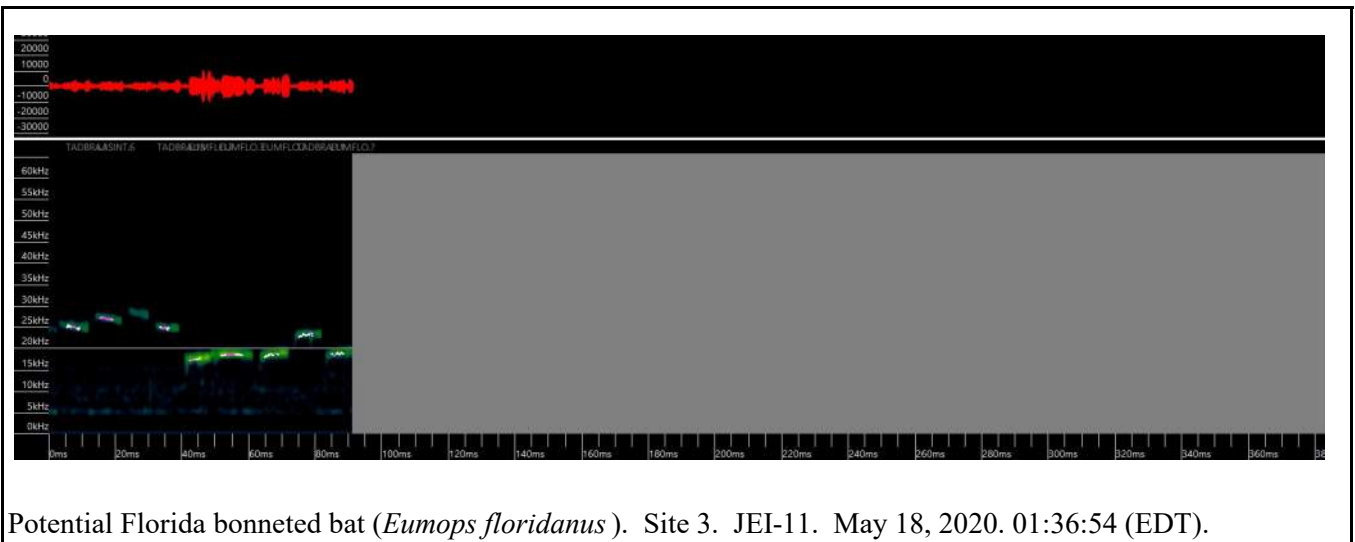
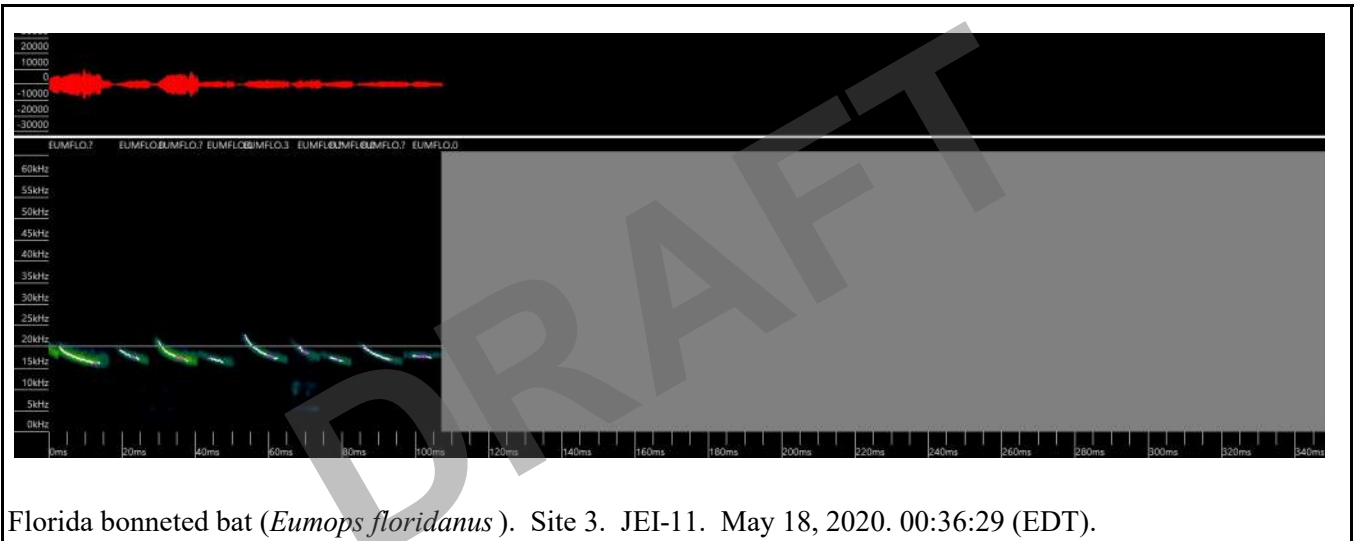
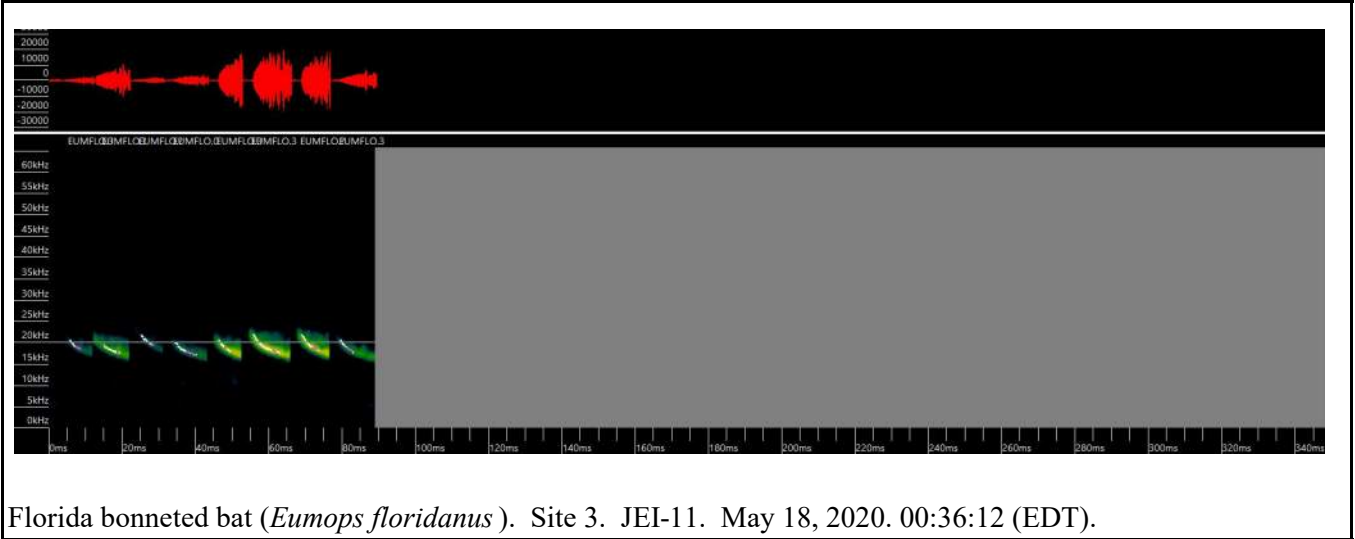
Potential Florida bonneted bat (*Eumops floridanus*). Site 3. JEI-11. May 15, 2020. 23:22:56 (EDT).

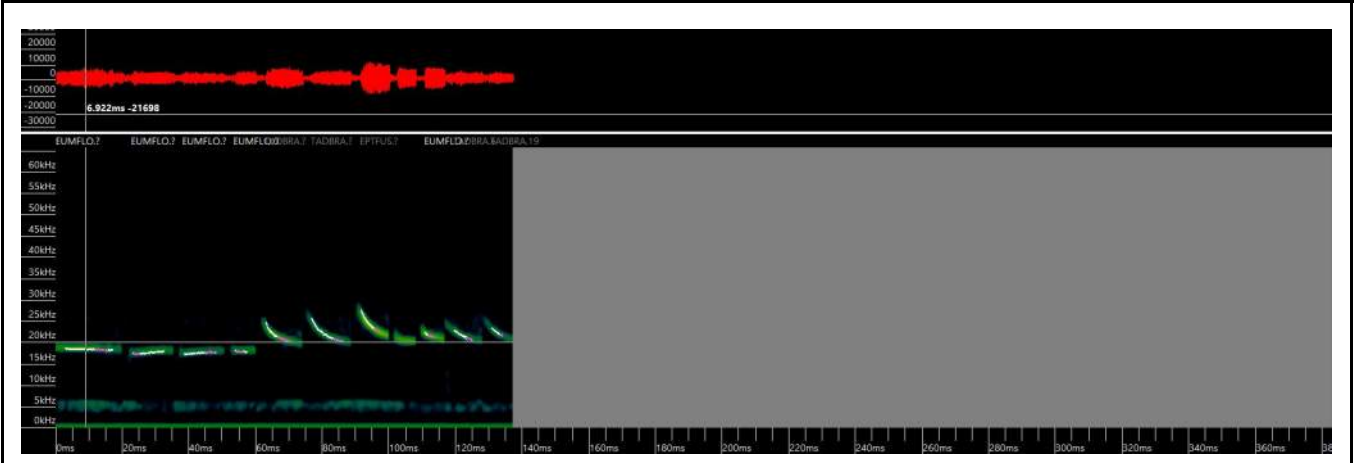


Florida bonneted bat (*Eumops floridanus*). Site 3. JEI-11. May 17, 2020. 23:15:23 (EDT).



Potential Florida bonneted bat (*Eumops floridanus*). Site 3. JEI-11. May 17, 2020. 23:15:40 (EDT).

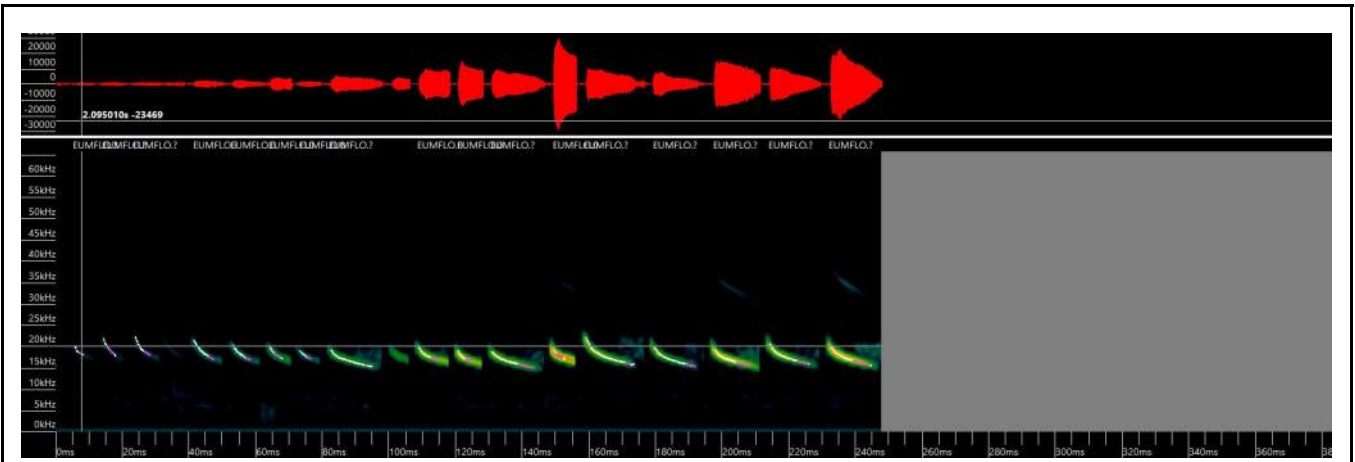




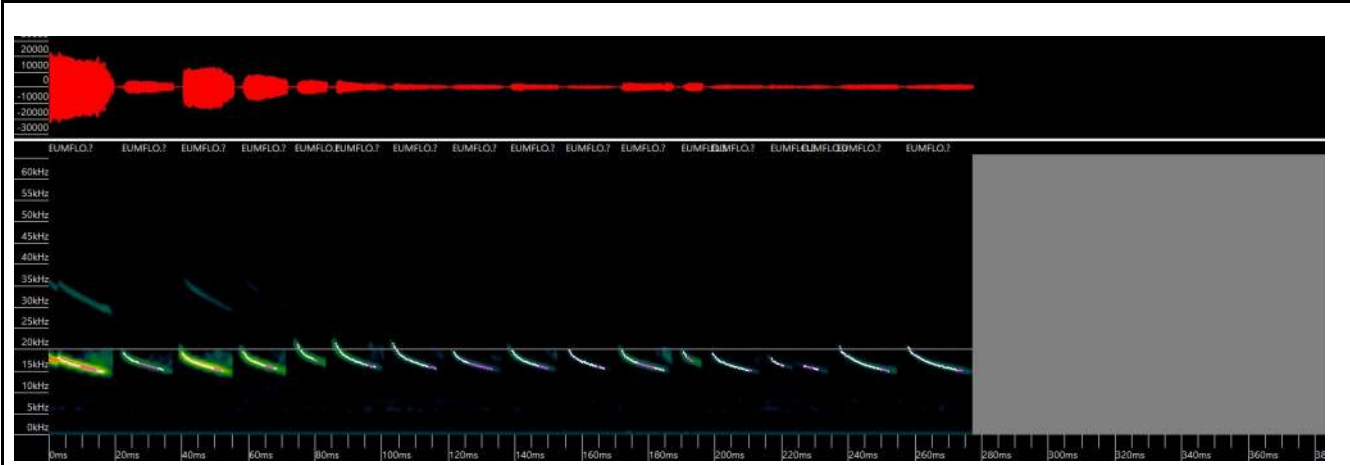
Florida bonneted bat (*Eumops floridanus*). Site 7. JEI-18. May 14, 2020. 02:37:42 (EDT).



Potential Florida bonneted bat (*Eumops floridanus*). Site 7. JEI-18. May 18, 2020. 02:10:00 (EDT).



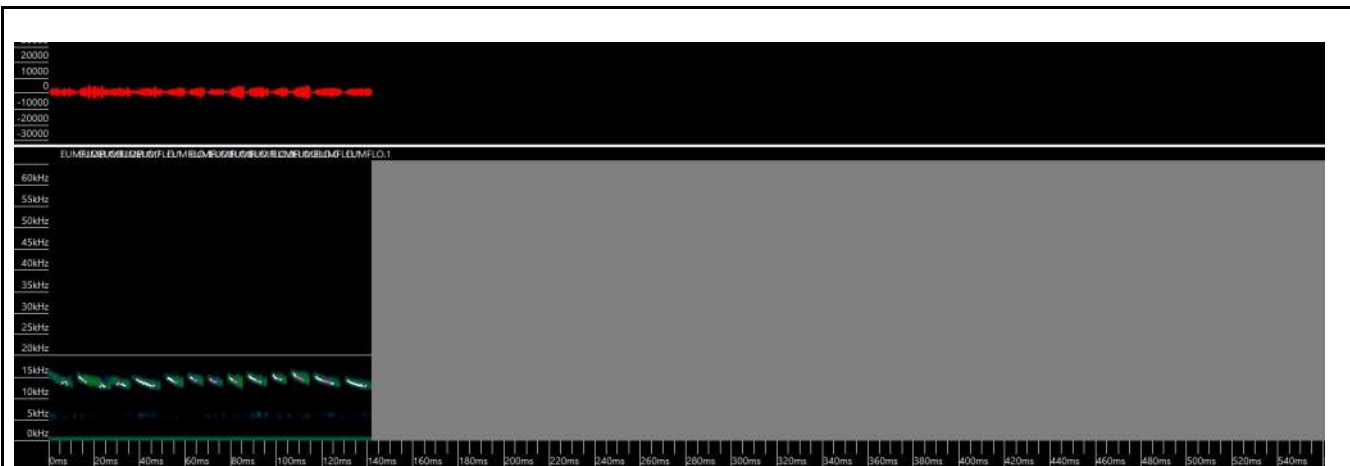
Florida bonneted bat (*Eumops floridanus*). Site 7. JEI-18. May 18, 2020. 23:12:45 (EDT).



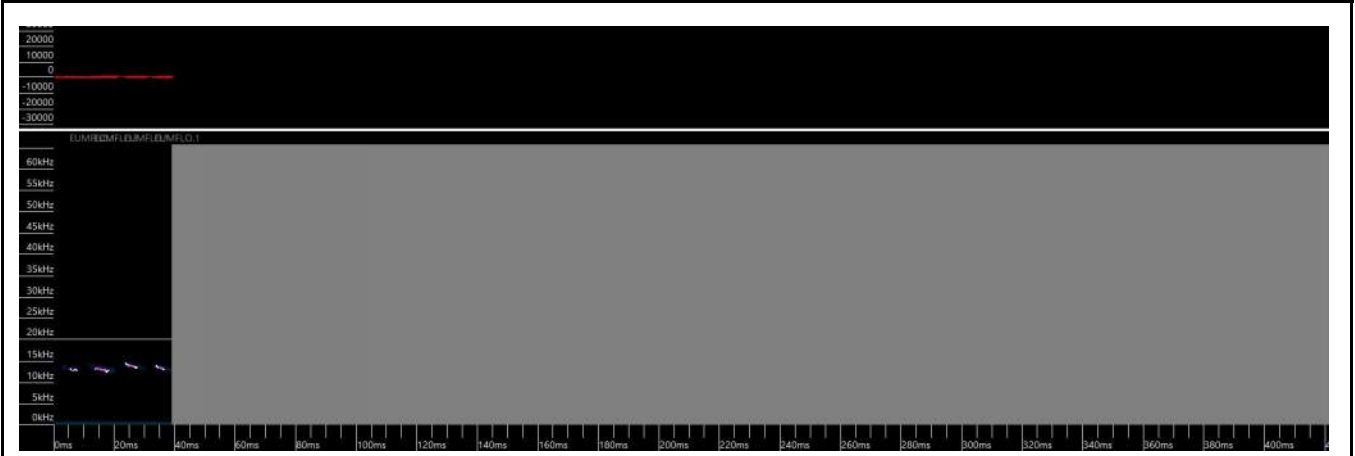
Florida bonneted bat (*Eumops floridanus*). Site 7. JEI-18. May 18, 2020. 23:13:02 (EDT).



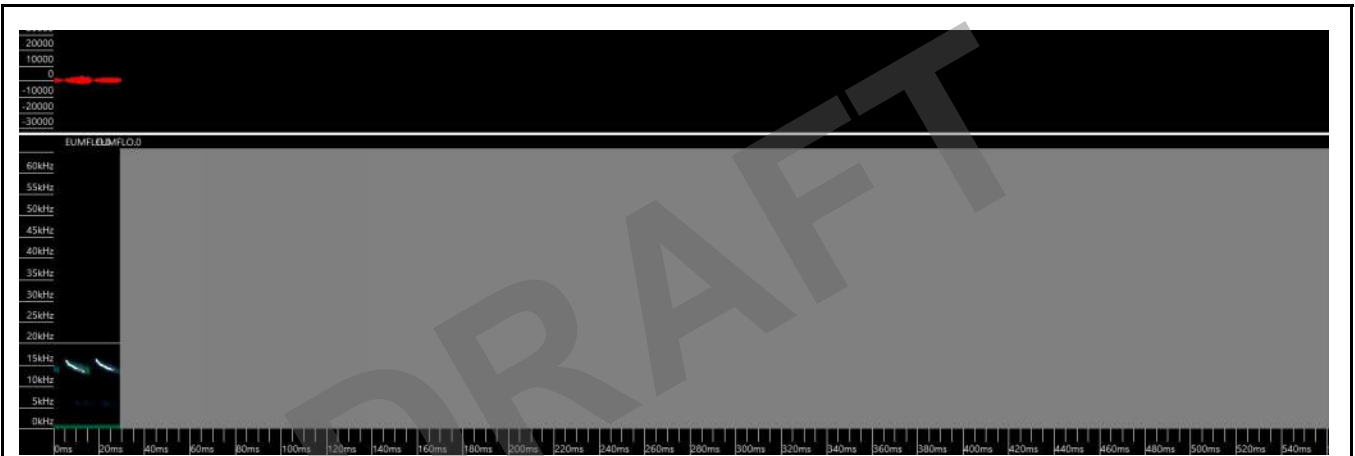
Florida bonneted bat (*Eumops floridanus*). Site 8. JEI-14. May 12, 2020. 22:33:38 (EDT).



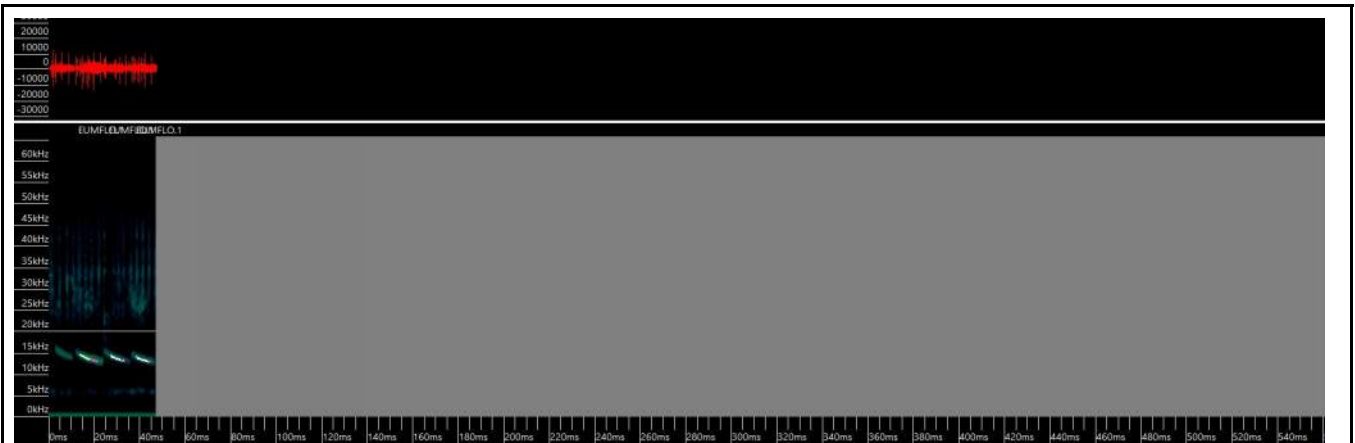
Florida bonneted bat (*Eumops floridanus*). Site 8. JEI-14. May 12, 2020. 22:33:57 (EDT).



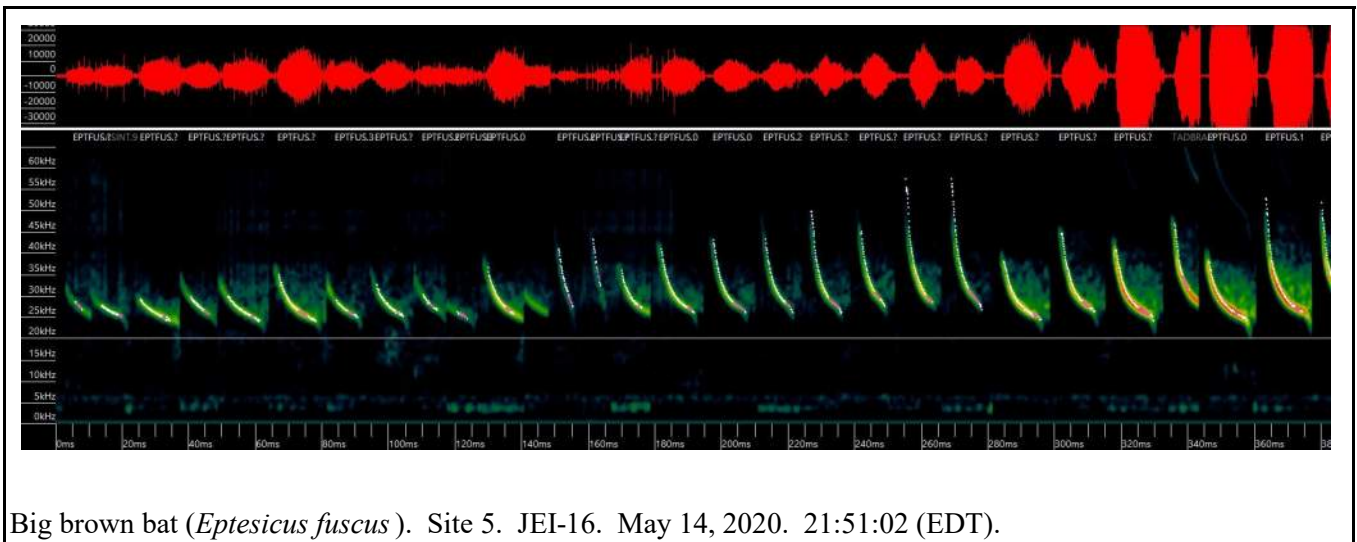
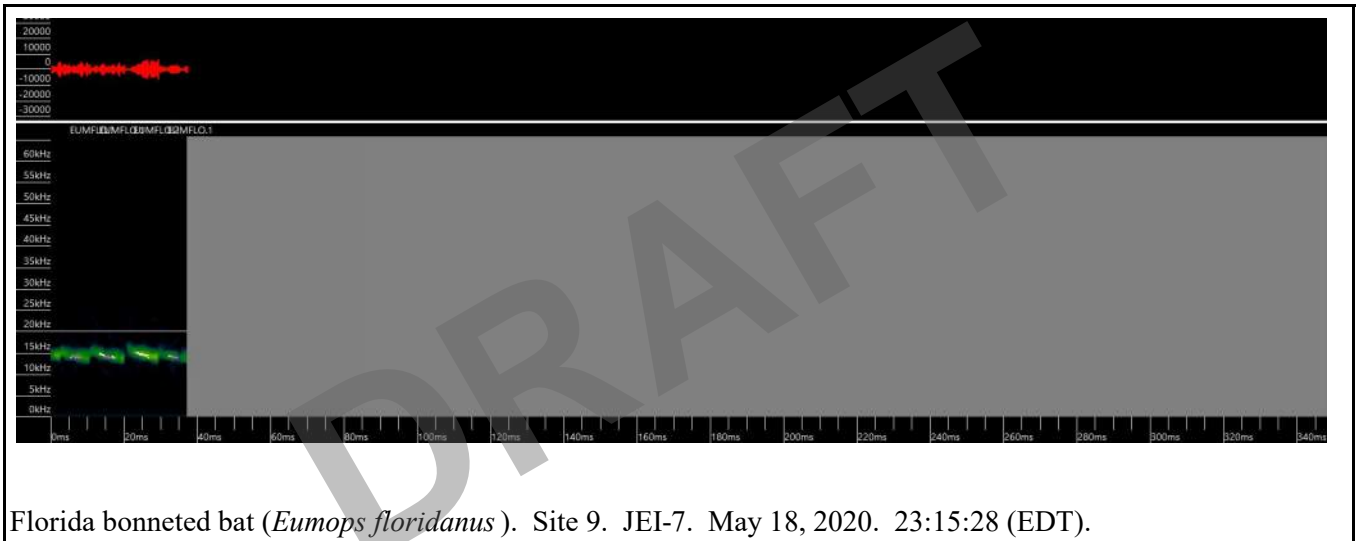
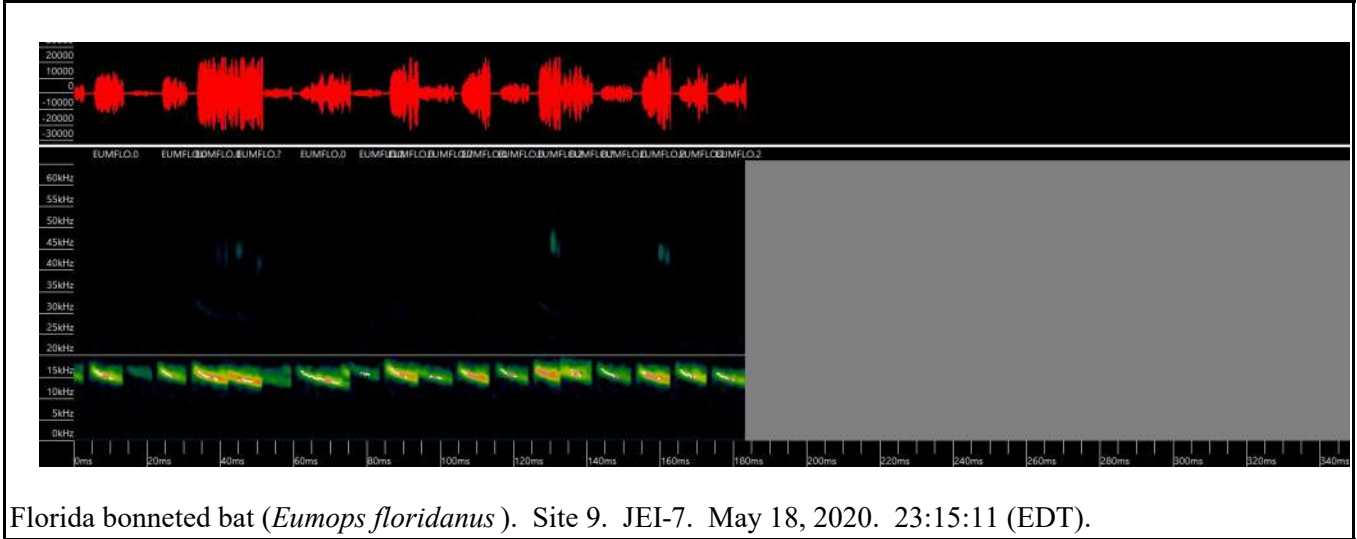
Florida bonneted bat (*Eumops floridanus*). Site 8. JEI-14. May 12, 2020. 22:34:14 (EDT).

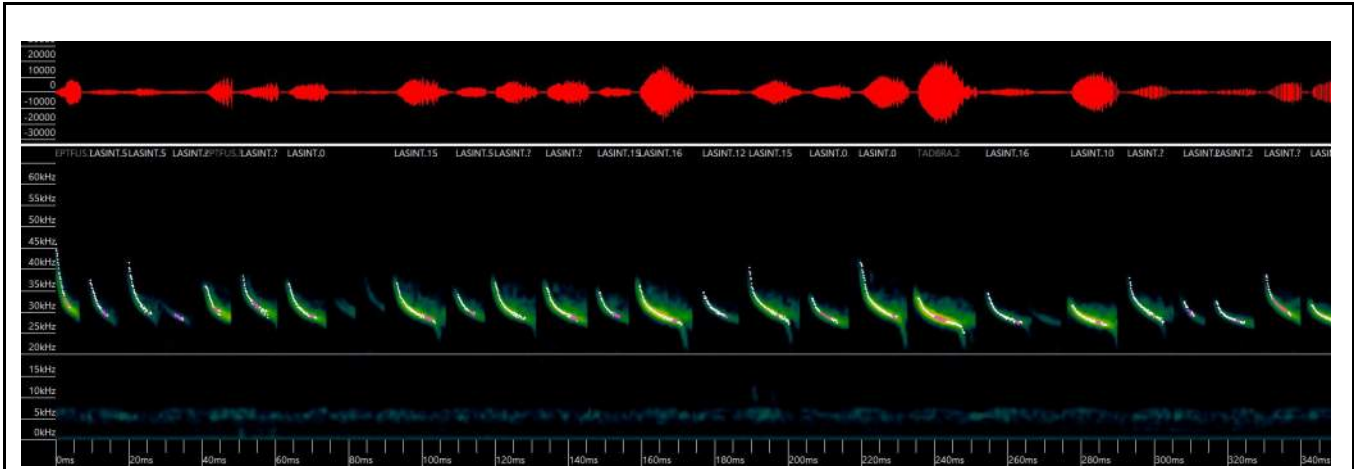


Florida bonneted bat (*Eumops floridanus*). Site 8. JEI-14. May 12, 2020. 22:52:19 (EDT).

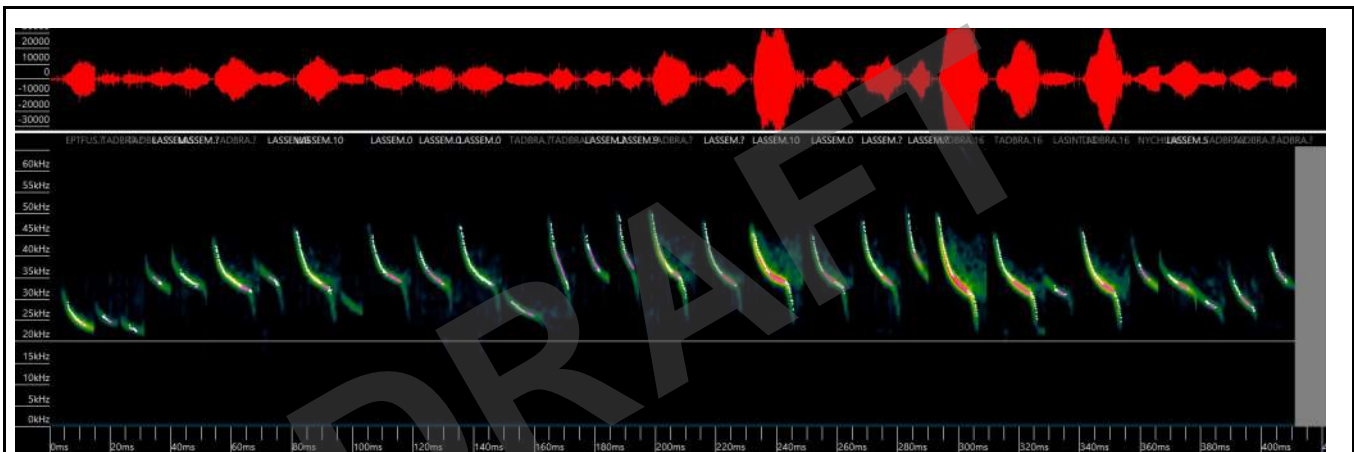


Florida bonneted bat (*Eumops floridanus*). Site 8. JEI-14. May 14, 2020. 22:40:47 (EDT).

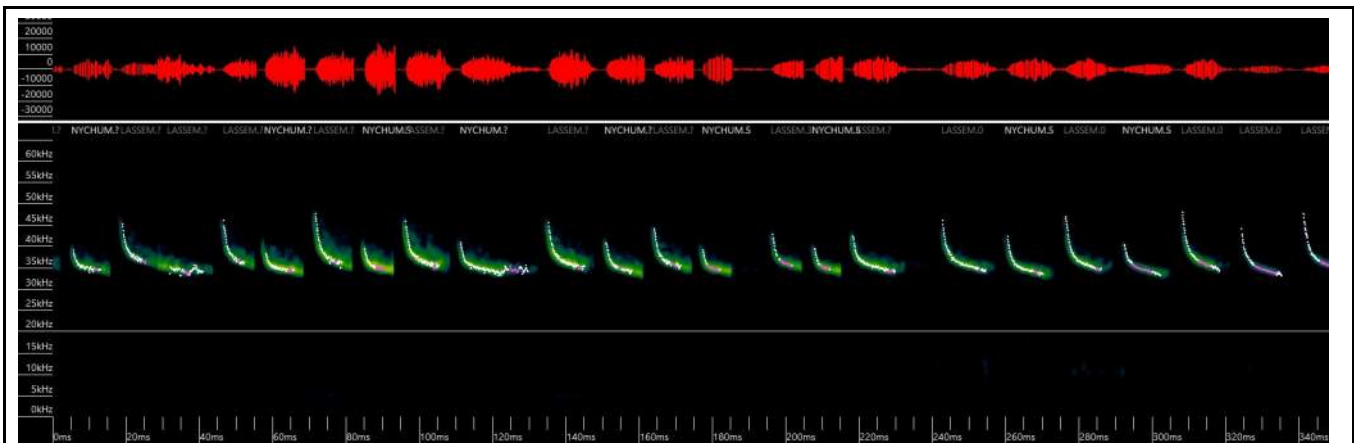




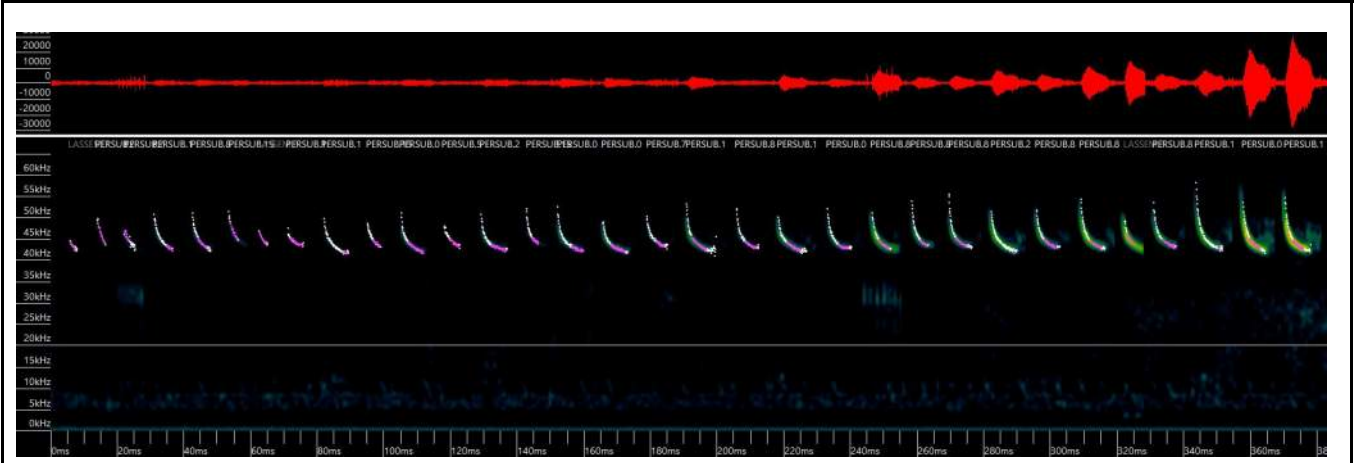
Northern yellow bat (*Lasiurus intermedius*). Site 4. JEI-10. May 13, 2020. 03:29:09 (EDT).



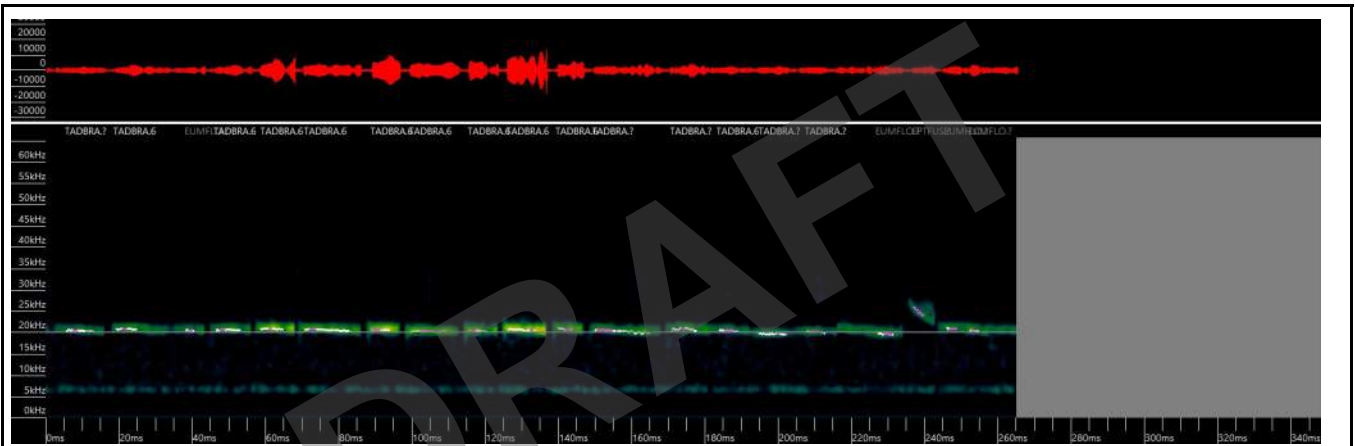
Seminole bat (*Lasiurus seminolus*). Site 8. JEI-14. May 15, 2020. 04:00:59 (EDT).



Evening bat (*Nycticeius humeralis*). Site 3. JEI-11. May 14, 2020. 23:40:22 (EDT).



Tricolored bat (*Perimyotis subflavus*). Site 5. JEI-16. May 17, 2020. 23:53:46 (EDT).



Brazilian free-tailed bat (*Tadarida brasiliensis*). Site 9. JEI-7. May 16, 2020. 21:49:05 (EDT).

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APPENDIX C
Weather Data

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Date	Time	Temp	Weather	Wind	W/In Weather Parameters
5/11/2020	7:35 PM	82 °F	Passing clouds.	12 mph	Yes
5/11/2020	7:55 PM	79 °F	Sunny.	10 mph	
5/11/2020	8:15 PM	77 °F	Clear.	9 mph	
5/11/2020	8:35 PM	77 °F	Clear.	7 mph	
5/11/2020	8:55 PM	75 °F	Clear.	9 mph	
5/11/2020	9:15 PM	73 °F	Clear.	5 mph	
5/11/2020	9:35 PM	72 °F	Clear.	6 mph	
5/11/2020	9:55 PM	70 °F	Clear.	5 mph	
5/11/2020	10:15 PM	70 °F	Clear.	6 mph	
5/11/2020	10:35 PM	70 °F	Clear.	3 mph	
5/11/2020	10:55 PM	68 °F	Clear.	No wind	
5/11/2020	11:15 PM	66 °F	Clear.	No wind	
5/11/2020	11:35 PM	66 °F	Clear.	No wind	
5/11/2020	11:55 PM	63 °F	Clear.	No wind	
5/12/2020	12:15 AM	66 °F	Clear.	No wind	
5/12/2020	12:35 AM	64 °F	Clear.	No wind	
5/12/2020	12:55 AM	63 °F	Clear.	No wind	
5/12/2020	1:15 AM	63 °F	Clear.	No wind	
5/12/2020	1:35 AM	66 °F	Clear.	No wind	
5/12/2020	1:55 AM	63 °F	Clear.	No wind	
5/12/2020	2:15 AM	63 °F	Clear.	No wind	
5/12/2020	2:35 AM	61 °F	Clear.	No wind	
5/12/2020	2:55 AM	61 °F	Clear.	No wind	
5/12/2020	3:15 AM	59 °F	Clear.	No wind	
5/12/2020	3:35 AM	61 °F	Clear.	No wind	
5/12/2020	4:35 AM	59 °F	Clear.	No wind	
5/12/2020	4:55 AM	63 °F	Clear.	No wind	
5/12/2020	5:15 AM	61 °F	Clear.	No wind	
5/12/2020	5:35 AM	61 °F	Clear.	No wind	
5/12/2020	5:55 AM	59 °F	Clear.	No wind	
5/12/2020	6:35 AM	63 °F	Clear.	No wind	
5/12/2020	6:55 AM	63 °F	Sunny.	No wind	
5/12/2020	7:15 AM	63 °F	Sunny.	No wind	
5/12/2020	7:30 AM	63 °F	Sunny.	No wind	
5/12/2020	7:35 PM	79 °F	Sunny.	10 mph	
5/12/2020	7:55 PM	79 °F	Sunny.	12 mph	
5/12/2020	8:35 PM	75 °F	Clear.	13 mph	
5/12/2020	8:55 PM	75 °F	Clear.	10 mph	
5/12/2020	9:15 PM	73 °F	Clear.	10 mph	
5/12/2020	9:35 PM	73 °F	Clear.	9 mph	
5/12/2020	9:55 PM	72 °F	Clear.	7 mph	
5/12/2020	10:15 PM	72 °F	Clear.	7 mph	
5/12/2020	10:35 PM	72 °F	Clear.	8 mph	

Date	Time	Temp	Weather	Wind	W/In Weather Parameters	
5/12/2020	10:55 PM	70 °F	Passing clouds.	6 mph	No - Wind	
5/12/2020	11:35 PM	70 °F	Passing clouds.	7 mph		
5/13/2020	12:15 AM	68 °F	Passing clouds.	7 mph		
5/13/2020	12:35 AM	68 °F	Clear.	6 mph		
5/13/2020	12:55 AM	66 °F	Clear.	6 mph		
5/13/2020	1:10 AM	66 °F	Clear.	7 mph		
5/13/2020	1:35 AM	66 °F	Clear.	6 mph		
5/13/2020	1:55 AM	66 °F	Clear.	6 mph		
5/13/2020	2:15 AM	64 °F	Clear.	6 mph		
5/13/2020	2:35 AM	66 °F	Clear.	6 mph		
5/13/2020	2:55 AM	66 °F	Clear.	5 mph		
5/13/2020	3:15 AM	66 °F	Clear.	5 mph		
5/13/2020	3:35 AM	66 °F	Clear.	6 mph		
5/13/2020	3:55 AM	64 °F	Clear.	5 mph		
5/13/2020	4:15 AM	64 °F	Clear.	3 mph		
5/13/2020	4:35 AM	64 °F	Clear.	5 mph		
5/13/2020	4:55 AM	64 °F	Clear.	5 mph		
5/13/2020	5:15 AM	64 °F	Clear.	6 mph		
5/13/2020	5:35 AM	64 °F	Clear.	6 mph		
5/13/2020	5:55 AM	64 °F	Clear.	7 mph		
5/13/2020	6:15 AM	64 °F	Passing clouds.	7 mph		
5/13/2020	6:35 AM	64 °F	Passing clouds.	6 mph		
5/13/2020	6:55 AM	66 °F	Passing clouds.	6 mph		
5/13/2020	7:15 AM	66 °F	Sunny.	8 mph		
5/13/2020	7:25 AM	66 °F	Sunny.	8 mph		
5/13/2020	7:35 PM	77 °F	Sunny.	16 mph		No - Wind
5/13/2020	7:55 PM	77 °F	Passing clouds.	14 mph		
5/13/2020	8:35 PM	75 °F	Partly cloudy.	16 mph		
5/13/2020	8:55 PM	75 °F	Passing clouds.	14 mph		
5/13/2020	9:15 PM	73 °F	Passing clouds.	8 mph		
5/13/2020	9:35 PM	73 °F	Passing clouds.	12 mph		
5/13/2020	9:55 PM	72 °F	Passing clouds.	15 mph		
5/13/2020	10:15 PM	72 °F	Clear.	13 mph		
5/13/2020	10:35 PM	72 °F	Clear.	10 mph		
5/13/2020	10:55 PM	72 °F	Clear.	8 mph		
5/13/2020	11:15 PM	72 °F	Clear.	10 mph		
5/13/2020	11:35 PM	70 °F	Clear.	9 mph		
5/13/2020	11:55 PM	70 °F	Clear.	9 mph		
5/14/2020	12:15 AM	70 °F	Clear.	9 mph		
5/14/2020	12:35 AM	70 °F	Clear.	10 mph		
5/14/2020	12:55 AM	70 °F	Clear.	8 mph		
5/14/2020	1:35 AM	68 °F	Clear.	9 mph		
5/14/2020	1:55 AM	68 °F	Clear.	8 mph		

Date	Time	Temp	Weather	Wind	W/In Weather Parameters
5/14/2020	2:15 AM	68 °F	Clear.	9 mph	
5/14/2020	2:35 AM	68 °F	Clear.	9 mph	
5/14/2020	2:55 AM	70 °F	Clear.	10 mph	
5/14/2020	3:35 AM	68 °F	Passing clouds.	9 mph	
5/14/2020	3:55 AM	68 °F	Clear.	10 mph	
5/14/2020	4:15 AM	68 °F	Clear.	9 mph	
5/14/2020	4:35 AM	68 °F	Passing clouds.	8 mph	
5/14/2020	4:55 AM	68 °F	Passing clouds.	8 mph	
5/14/2020	5:15 AM	68 °F	Passing clouds.	9 mph	
5/14/2020	5:35 AM	68 °F	Passing clouds.	8 mph	
5/14/2020	5:55 AM	68 °F	Passing clouds.	8 mph	
5/14/2020	6:15 AM	68 °F	Passing clouds.	9 mph	
5/14/2020	6:35 AM	68 °F	Clear.	10 mph	
5/14/2020	6:55 AM	68 °F	Sunny.	9 mph	
5/14/2020	7:15 AM	68 °F	Sunny.	10 mph	
5/14/2020	7:30 AM	70 °F	Sunny.	12 mph	
5/14/2020	7:35 PM	79 °F	Sunny.	14 mph	
5/14/2020	7:55 PM	77 °F	Sunny.	12 mph	
5/14/2020	8:15 PM	75 °F	Clear.	12 mph	
5/14/2020	8:35 PM	75 °F	Passing clouds.	12 mph	
5/14/2020	8:55 PM	75 °F	Passing clouds.	10 mph	
5/14/2020	9:15 PM	75 °F	Clear.	10 mph	
5/14/2020	9:35 PM	73 °F	Clear.	13 mph	
5/14/2020	9:55 PM	73 °F	Clear.	10 mph	
5/14/2020	10:15 PM	73 °F	Clear.	10 mph	
5/14/2020	10:35 PM	72 °F	Clear.	9 mph	
5/14/2020	10:55 PM	72 °F	Clear.	9 mph	
5/14/2020	11:15 PM	72 °F	Passing clouds.	9 mph	
5/14/2020	11:35 PM	72 °F	Clear.	9 mph	
5/14/2020	11:55 PM	72 °F	Passing clouds.	7 mph	
5/15/2020	12:15 AM	70 °F	Passing clouds.	8 mph	
5/15/2020	12:35 AM	70 °F	Clear.	9 mph	
5/15/2020	12:55 AM	70 °F	Clear.	9 mph	
5/15/2020	1:15 AM	70 °F	Passing clouds.	10 mph	
5/15/2020	1:35 AM	70 °F	Passing clouds.	10 mph	
5/15/2020	1:55 AM	70 °F	Passing clouds.	10 mph	
5/15/2020	2:35 AM	70 °F	Passing clouds.	9 mph	
5/15/2020	2:55 AM	70 °F	Clear.	9 mph	
5/15/2020	3:35 AM	70 °F	Clear.	7 mph	
5/15/2020	4:15 AM	70 °F	Clear.	9 mph	
5/15/2020	4:35 AM	70 °F	Clear.	8 mph	
5/15/2020	4:55 AM	70 °F	Clear.	7 mph	
5/15/2020	5:15 AM	70 °F	Clear.	8 mph	

No - Wind

Date	Time	Temp	Weather	Wind	W/In Weather Parameters
5/15/2020	5:55 AM	70 °F	Clear.	9 mph	
5/15/2020	6:15 AM	70 °F	Clear.	8 mph	
5/15/2020	6:35 AM	70 °F	Clear.	10 mph	
5/15/2020	6:55 AM	70 °F	Sunny.	9 mph	
5/15/2020	7:15 AM	70 °F	Sunny.	10 mph	
5/15/2020	7:30 AM	72 °F	Sunny.	9 mph	
5/15/2020	7:35 PM	79 °F	Partly sunny.	14 mph	No - Wind
5/15/2020	7:55 PM	79 °F	Scattered clouds.	14 mph	
5/15/2020	8:35 PM	77 °F	Partly cloudy.	15 mph	
5/15/2020	8:55 PM	75 °F	Partly cloudy.	15 mph	
5/15/2020	9:15 PM	75 °F	Passing clouds.	12 mph	
5/15/2020	9:35 PM	75 °F	Partly cloudy.	16 mph	
5/15/2020	9:55 PM	75 °F	Overcast.	10 mph	
5/15/2020	10:15 PM	75 °F	Overcast.	10 mph	
5/15/2020	10:35 PM	73 °F	Passing clouds.	10 mph	
5/15/2020	10:55 PM	73 °F	Passing clouds.	10 mph	
5/15/2020	11:15 PM	73 °F	Overcast.	9 mph	
5/15/2020	11:35 PM	73 °F	Partly cloudy.	8 mph	
5/15/2020	11:55 PM	73 °F	Passing clouds.	8 mph	
5/16/2020	12:15 AM	73 °F	Passing clouds.	8 mph	
5/16/2020	12:35 AM	73 °F	Passing clouds.	9 mph	
5/16/2020	12:55 AM	73 °F	Partly cloudy.	12 mph	
5/16/2020	1:15 AM	73 °F	Partly cloudy.	8 mph	
5/16/2020	1:35 AM	73 °F	Passing clouds.	9 mph	
5/16/2020	1:55 AM	73 °F	Partly cloudy.	9 mph	
5/16/2020	2:15 AM	73 °F	Partly cloudy.	10 mph	
5/16/2020	2:35 AM	73 °F	Passing clouds.	9 mph	
5/16/2020	2:55 AM	73 °F	Passing clouds.	12 mph	
5/16/2020	3:15 AM	73 °F	Clear.	10 mph	
5/16/2020	3:35 AM	73 °F	Clear.	7 mph	
5/16/2020	3:55 AM	73 °F	Passing clouds.	7 mph	
5/16/2020	4:15 AM	73 °F	Passing clouds.	6 mph	
5/16/2020	4:35 AM	73 °F	Mostly cloudy.	7 mph	
5/16/2020	4:55 AM	73 °F	Overcast.	8 mph	
5/16/2020	5:15 AM	73 °F	Mostly cloudy.	9 mph	
5/16/2020	5:35 AM	73 °F	Overcast.	8 mph	
5/16/2020	5:55 AM	73 °F	Overcast.	10 mph	
5/16/2020	6:15 AM	73 °F	Overcast.	8 mph	
5/16/2020	6:35 AM	73 °F	Overcast.	10 mph	
5/16/2020	6:55 AM	73 °F	Overcast.	13 mph	
5/16/2020	7:15 AM	75 °F	Partly sunny.	13 mph	
5/16/2020	7:30 AM	75 °F	Partly sunny.	13 mph	
5/16/2020	7:35 PM	81 °F	Sunny.	12 mph	

Date	Time	Temp	Weather	Wind	W/In Weather Parameters
5/16/2020	7:55 PM	81 °F	Sunny.	8 mph	Yes
5/16/2020	8:15 PM	79 °F	Clear.	9 mph	
5/16/2020	8:35 PM	79 °F	Clear.	8 mph	
5/16/2020	8:55 PM	77 °F	Clear.	10 mph	
5/16/2020	9:15 PM	77 °F	Clear.	10 mph	
5/16/2020	9:35 PM	77 °F	Clear.	7 mph	
5/16/2020	9:55 PM	77 °F	Clear.	N/A	
5/16/2020	10:15 PM	77 °F	Clear.	9 mph	
5/16/2020	10:35 PM	75 °F	Clear.	9 mph	
5/16/2020	10:55 PM	75 °F	Clear.	7 mph	
5/16/2020	11:15 PM	75 °F	Clear.	5 mph	
5/16/2020	11:35 PM	75 °F	Clear.	5 mph	
5/16/2020	11:55 PM	75 °F	Passing clouds.	3 mph	
5/17/2020	12:15 AM	75 °F	Passing clouds.	3 mph	
5/17/2020	12:35 AM	75 °F	Passing clouds.	3 mph	
5/17/2020	12:55 AM	73 °F	Clear.	5 mph	
5/17/2020	1:15 AM	73 °F	Clear.	5 mph	
5/17/2020	1:35 AM	73 °F	Clear.	No wind	
5/17/2020	1:55 AM	73 °F	Clear.	3 mph	
5/17/2020	2:15 AM	72 °F	Clear.	No wind	
5/17/2020	2:35 AM	72 °F	Clear.	6 mph	
5/17/2020	2:55 AM	72 °F	Clear.	5 mph	
5/17/2020	3:15 AM	72 °F	Clear.	5 mph	
5/17/2020	3:35 AM	72 °F	Clear.	No wind	
5/17/2020	3:55 AM	72 °F	Clear.	No wind	
5/17/2020	4:15 AM	72 °F	Clear.	No wind	
5/17/2020	4:35 AM	70 °F	Clear.	No wind	
5/17/2020	5:15 AM	72 °F	Clear.	3 mph	
5/17/2020	5:35 AM	72 °F	Clear.	No wind	
5/17/2020	5:55 AM	70 °F	Clear.	No wind	
5/17/2020	6:15 AM	70 °F	Passing clouds.	5 mph	
5/17/2020	6:35 AM	70 °F	Fog.	6 mph	
5/17/2020	6:55 AM	70 °F	Low clouds.	No wind	
5/17/2020	7:15 AM	72 °F	Low clouds.	5 mph	
5/17/2020	7:30 AM	72 °F	Scattered clouds.	No wind	
5/17/2020	7:35 PM	84 °F	Sunny.	12 mph	
5/17/2020	7:55 PM	84 °F	Sunny.	12 mph	
5/17/2020	8:15 PM	82 °F	Clear.	10 mph	
5/17/2020	8:35 PM	81 °F	Clear.	9 mph	
5/17/2020	8:55 PM	81 °F	Passing clouds.	6 mph	
5/17/2020	9:15 PM	79 °F	Clear.	5 mph	
5/17/2020	9:35 PM	77 °F	Clear.	5 mph	
5/17/2020	9:55 PM	77 °F	Clear.	3 mph	

Date	Time	Temp	Weather	Wind	W/In Weather Parameters
5/17/2020	10:15 PM	77 °F	Clear.	3 mph	Yes
5/17/2020	10:35 PM	75 °F	Clear.	5 mph	
5/17/2020	10:55 PM	75 °F	Passing clouds.	5 mph	
5/17/2020	11:15 PM	75 °F	Overcast.	No wind	
5/17/2020	11:35 PM	75 °F	Overcast.	No wind	
5/17/2020	11:55 PM	77 °F	Passing clouds.	No wind	
5/18/2020	12:15 AM	75 °F	Clear.	3 mph	
5/18/2020	12:35 AM	75 °F	Clear.	5 mph	
5/18/2020	12:55 AM	75 °F	Clear.	7 mph	
5/18/2020	1:15 AM	75 °F	Clear.	6 mph	
5/18/2020	1:35 AM	75 °F	Clear.	5 mph	
5/18/2020	1:55 AM	73 °F	Clear.	3 mph	
5/18/2020	2:15 AM	73 °F	Clear.	3 mph	
5/18/2020	2:35 AM	73 °F	Passing clouds.	3 mph	
5/18/2020	2:55 AM	73 °F	Passing clouds.	No wind	
5/18/2020	3:15 AM	73 °F	Overcast.	No wind	
5/18/2020	3:35 AM	75 °F	Mostly cloudy.	5 mph	
5/18/2020	4:15 AM	75 °F	Overcast.	No wind	
5/18/2020	4:35 AM	75 °F	Overcast.	No wind	
5/18/2020	4:55 AM	73 °F	Mostly cloudy.	No wind	
5/18/2020	5:15 AM	73 °F	Mostly cloudy.	No wind	
5/18/2020	5:35 AM	73 °F	Mostly cloudy.	No wind	
5/18/2020	5:55 AM	73 °F	Passing clouds.	No wind	
5/18/2020	6:15 AM	73 °F	Passing clouds.	No wind	
5/18/2020	6:35 AM	72 °F	Light rain. Passing clouds.	No wind	
5/18/2020	6:55 AM	72 °F	Light rain. Sunny.	No wind	
5/18/2020	7:15 AM	72 °F	Light rain. Sunny.	No wind	
5/18/2020	7:30 AM	72 °F	Scattered clouds.	5 mph	
5/18/2020	7:35 PM	75 °F	Sunny.	9 mph	
5/18/2020	7:55 PM	75 °F	Sunny.	10 mph	
5/18/2020	8:15 PM	73 °F	Clear.	10 mph	
5/18/2020	8:35 PM	73 °F	Clear.	10 mph	
5/18/2020	8:55 PM	73 °F	Passing clouds.	7 mph	
5/18/2020	9:15 PM	73 °F	Passing clouds.	6 mph	
5/18/2020	9:35 PM	72 °F	Clear.	8 mph	
5/18/2020	9:55 PM	72 °F	Clear.	8 mph	
5/18/2020	10:35 PM	72 °F	Clear.	6 mph	
5/18/2020	10:55 PM	70 °F	Clear.	7 mph	
5/18/2020	11:15 PM	70 °F	Clear.	7 mph	
5/18/2020	11:35 PM	70 °F	Clear.	9 mph	
5/18/2020	11:55 PM	70 °F	Clear.	6 mph	
5/19/2020	12:15 AM	70 °F	Passing clouds.	5 mph	
5/19/2020	12:35 AM	70 °F	Passing clouds.	6 mph	

Date	Time	Temp	Weather	Wind	W/In Weather Parameters
5/19/2020	12:55 AM	68 °F	Clear.	No wind	Yes
5/19/2020	1:15 AM	68 °F	Passing clouds.	5 mph	
5/19/2020	1:35 AM	68 °F	Passing clouds.	5 mph	
5/19/2020	1:55 AM	68 °F	Passing clouds.	3 mph	
5/19/2020	2:35 AM	68 °F	Passing clouds.	6 mph	
5/19/2020	2:55 AM	70 °F	Overcast.	6 mph	
5/19/2020	3:15 AM	68 °F	Passing clouds.	6 mph	
5/19/2020	3:35 AM	68 °F	Partly cloudy.	6 mph	
5/19/2020	4:15 AM	68 °F	Clear.	3 mph	
5/19/2020	4:35 AM	68 °F	Clear.	5 mph	
5/19/2020	4:55 AM	68 °F	Clear.	5 mph	
5/19/2020	5:15 AM	68 °F	Clear.	6 mph	
5/19/2020	5:35 AM	68 °F	Passing clouds.	7 mph	
5/19/2020	5:55 AM	68 °F	Passing clouds.	7 mph	
5/19/2020	6:15 AM	68 °F	Passing clouds.	8 mph	
5/19/2020	6:35 AM	68 °F	Passing clouds.	6 mph	
5/19/2020	6:55 AM	68 °F	Scattered clouds.	7 mph	
5/19/2020	7:15 AM	70 °F	Mostly cloudy.	8 mph	
5/19/2020	7:30 AM	70 °F	Partly sunny.	8 mph	
5/19/2020	7:35 PM	82 °F	Sunny.	9 mph	
5/19/2020	7:55 PM	81 °F	Sunny.	9 mph	
5/19/2020	8:15 PM	79 °F	Clear.	7 mph	
5/19/2020	8:35 PM	77 °F	Clear.	6 mph	
5/19/2020	8:55 PM	77 °F	Clear.	6 mph	
5/19/2020	9:15 PM	75 °F	Clear.	5 mph	
5/19/2020	9:35 PM	73 °F	Clear.	3 mph	
5/19/2020	9:55 PM	73 °F	Clear.	3 mph	
5/19/2020	10:15 PM	72 °F	Clear.	5 mph	
5/19/2020	10:35 PM	72 °F	Clear.	5 mph	
5/19/2020	10:55 PM	72 °F	Clear.	5 mph	
5/19/2020	11:15 PM	70 °F	Clear.	6 mph	
5/19/2020	11:35 PM	72 °F	Clear.	6 mph	
5/19/2020	11:55 PM	70 °F	Clear.	6 mph	
5/20/2020	12:15 AM	70 °F	Clear.	6 mph	
5/20/2020	12:35 AM	70 °F	Clear.	5 mph	
5/20/2020	12:55 AM	68 °F	Clear.	6 mph	
5/20/2020	1:15 AM	70 °F	Clear.	6 mph	
5/20/2020	1:35 AM	70 °F	Clear.	6 mph	
5/20/2020	1:55 AM	68 °F	Clear.	3 mph	
5/20/2020	2:15 AM	68 °F	Clear.	6 mph	
5/20/2020	2:35 AM	68 °F	Clear.	6 mph	
5/20/2020	2:55 AM	68 °F	Clear.	6 mph	
5/20/2020	3:15 AM	66 °F	Clear.	6 mph	

Date	Time	Temp	Weather	Wind	W/In Weather Parameters
5/20/2020	3:35 AM	66 °F	Clear.	6 mph	
5/20/2020	3:55 AM	66 °F	Clear.	3 mph	
5/20/2020	4:15 AM	66 °F	Clear.	5 mph	
5/20/2020	4:35 AM	66 °F	Clear.	5 mph	
5/20/2020	5:15 AM	64 °F	Clear.	5 mph	
5/20/2020	5:35 AM	64 °F	Clear.	3 mph	
5/20/2020	5:55 AM	66 °F	Clear.	No wind	
5/20/2020	6:15 AM	64 °F	Clear.	3 mph	
5/20/2020	6:35 AM	64 °F	Sunny.	No wind	
5/20/2020	6:55 AM	66 °F	Sunny.	No wind	

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APPENDIX D
FBB Effect Determination Key

DRAFT

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.

DRAFT

**Florida Bonneted Bat
Roost Survey
Technical Memorandum**

DRAFT

SR 70 PD&E Study

Florida Bonneted Bat

Roost Survey

Technical Memorandum

Florida Department of Transportation
District One

Project Development and Environment Study
SR 70 from County Road 29 to Lonesome Island Road
Roadway Improvement Project
Highlands County, Florida

Financial Project ID: 414506-5-22-01
ETDM No.: 14364

October 2020

Table of Contents

<i>Section</i>	<i>Page</i>
1.0 Introduction.....	1
2.0 Methodology	1
3.0 Results.....	2
4.0 Conclusion	2
5.0 References.....	4

List of Tables

<i>Table</i>	<i>Page</i>
Table 1. Land Uses within the SR 70 Project Area	3
Table 2. Potential Roosting Trees Observed.....	3

List of Attachments

Attachment A	Project Location Map
Attachment B	Photographic Documentation
Attachment C	Florida Bonneted Bat Roost Survey Map

1.0 Introduction

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study to evaluate the widening of State Road 70 (SR 70) from County Road 29 (CR 29) to Lonesome Island Road in Highlands County, Florida. A Project Location Map is provided in **Attachment A**.

This roadway capacity improvement project proposes widening SR 70 from CR 29 to Lonesome Island Road in Highlands County from a two-lane undivided roadway to a four-lane divided roadway. SR 70 is a principal arterial roadway and primary east-west highway for the Lake Placid and southern Highlands County area as it provides regional access to employment centers, agricultural lands, and residential areas across the state. SR 70 is part of the designated Strategic Intermodal System (SIS) highway network. The project is approximately 4.3 miles in length. Additional right-of-way (ROW) will likely be necessary to accommodate the proposed widening. This additional ROW will be acquired south of SR 70 due to the Natural Resources Conservation Service (NRCS) conservation easement north of the project area.

The SR 70 study limits fall within the United States Fish and Wildlife Service (USFWS) Consultation Area for the Florida bonneted bat (*Eumops floridanus*). The Florida bonneted bat is federally listed under the Endangered Species Act. Both the bat and its roosting habitat are protected under federal law. If proposed activity will affect known roosts, consultation is required as this could result in the take of individuals through the destruction of the roost.

To determine the potential effect the SR 70 project may have on the Florida bonneted bat, KCA environmental scientists conducted a Florida bonneted bat survey on August 6, 2020. The effort of this survey focused on the identification of potential habitat and roosts within the project limits and determined the presence/absence of the Florida bonneted bat.

2.0 Methodology

A Florida bonneted bat survey was conducted for all areas of the existing and proposed ROW and preferred pond sites within the SR 70 project limits.

According to the *Consultation Key for the Florida Bonneted Bat* (USFWS 2019), the species is thought to forage in relatively open areas with nearby sources of drinking water. The Florida bonneted bat is closely associated with forested communities due to their roosting habitats. They are thought to roost in tall, mature trees of forested areas. General roosting habitat contains one or more of the following structures: tree snags, and trees with cavities, hollows, deformities, crevices, or loose bark. Florida bonneted bats have also been found roosting in rock crevices and artificial structures that mimic natural roosting conditions such as bat houses, utility poles, and buildings (USFWS 2019). The Florida bonneted bat can reach a body length of 6.5 inches and a wingspan upwards of 20 inches, making this the largest species of bat occurring in Florida (FWC 2018).

Taking into account the USFWS defined size of potential roosting structures, only potentially viable roosting trees and snags that could support cavities equal to or larger than 1-inch wide were visually inspected (USFWS 2019). Given the environment throughout the SR 70 project area, the only viable roosting options provided for Florida bonneted bats were tree cavities of live oaks, cabbage palm boots, and pavilion structures. For all areas surveyed, the type and location of potentially viable roosting trees was recorded. If a potentially viable roosting tree was observed, then further investigation was performed. This investigation consisted of a visual examination of the cavity or crevice. A camera (GoPro Hero 7) attached to an extendable pole was utilized to take photographs of out-of-reach tree cavities and crevices. Any evidence indicating the presence of Florida bonneted bats in and around the tree cavity or crevice was noted. Observations that would support the utilization of a tree by a bonneted bat include guano surrounding the cavity or crevice, a clear path to the cavity or crevice with no obstructions, and presence of roosting bats. **Attachment B** provides photographic documentation of the equipment used, potential foraging habitat, and identified potential roosting structures.

3.0 Results

A variety of upland and wetland land uses are present within the survey limits. Each habitat type within the project study area was classified using the Florida Land Use, Cover and Forms Classification System (FLUCFCS) (FDOT 1999). **Table 1** provides the land uses within the project area. In general, the project area consists primarily of agricultural lands being utilized as sod farms, citrus groves, or pasture land. The remaining land uses are made up of roads and highways, residential, upland hardwood forests, and forested and herbaceous wetlands. The majority of potential roosting trees were observed within the proposed ROW. However, additional potential roosting trees were observed within pond sites that were too tall for visual inspection. No potential roosting trees were observed within sod farms or citrus groves within the project area. **Attachment C** provides the survey limits and locations of potential roosting trees visually inspected.

In total, 26 potential roosting trees were inspected within the SR 70 project area. **Table 2** provides a breakdown of the number of trees by species. The most prevalent potential roosting tree observed was cabbage palm (*Sabal palmetto*). In total, 25 cabbage palms of appropriate size were observed. Of those 25 cabbage palms, all of them were noted to have boots (loose bark) that could provide potential roosting habitat. The second most prevalent potential roosting tree was live oak (*Quercus virginiana*). In total, one (1) live oak of appropriate size with a cavity that could provide potential roosting habitat was observed. Of all trees and structures visually inspected, no evidence of bat presence was observed.

4.0 Conclusion

Based on the results of this survey, no evidence suggesting the colonization of the Florida bonneted bat within the SR 70 project area was observed.

Table 1. Land Uses within the SR 70 Project Area

Habitat Type	FLUCFCS ¹ Classification	FLUCFCS Description	USFWS Classification ²	Acreage within the Project Study Area	Percent of Project Study Area
Developed	110	Residential, low density	N/A	2.35	0.48%
	814	Road and highways	N/A	28.11	5.71%
Undeveloped	211	Improved pastures	N/A	72.19	14.68%
	212	Unimproved pastures	N/A	87.57	17.80%
	221	Citrus groves	N/A	71.75	14.59%
	242	Sod farms	N/A	150.21	30.54%
	425	Temperate hardwood	N/A	3.43	0.70%
	427	Live oak	N/A	6.89	1.40%
Total Uplands				422.50	85.90%
Surface Water	510	Streams and waterways	R2UBHx, R2AB4Hx, R2AB3Fx, PEM1Cx	47.54	9.67%
	530	Reservoirs	PUBHx	0.39	0.08%
Wetland	617	Mixed wetland hardwoods	PFO1Cd	3.62	0.74%
	631	Wetland scrub	PSS1Cd	4.84	0.98%
	641	Freshwater marshes	PEM1Ad	12.96	2.63%
Total Wetlands and Surface Waters				69.35	14.10%
Total				491.85	100.00%

¹ FDOT 1999

² Cowardin et al. 1979

PEM1Ad: Palustrine, Emergent, Persistent, Temporarily Flooded, Partially Drained/Ditched

PEM1Cx: Palustrine, Emergent, Persistent, Seasonally Flooded, Excavated

PFO1Cd: Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded, Partially Drained/Ditched

PSS1Cd: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded, Partially Drained/Ditched

PUBHx: Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated

R2AB3Fx: Riverine, Lower Perennial, Aquatic Bed, Rooted Vascular, Semipermanently Flooded, Excavated

R2AB4Hx: Riverine, Lower Perennial, Aquatic Bed, Floating Vascular, Permanently Flooded, Excavated

R2UBHx: Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded, Excavated

Table 2. Potential Roosting Trees Observed

Tree Type	Number of Potential Roosting Trees Observed	Evidence of Bats Observed (Y/N)
Cabbage Palm (<i>Sabal palmetto</i>)	25	N
Live Oak (<i>Quercus virginiana</i>)	1	N
Overall	26	N

5.0 References

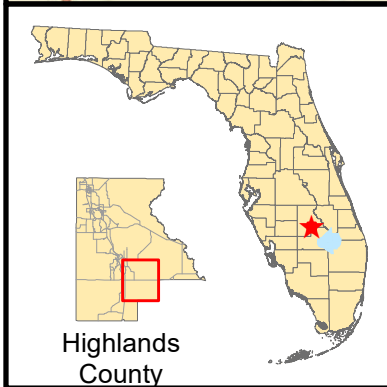
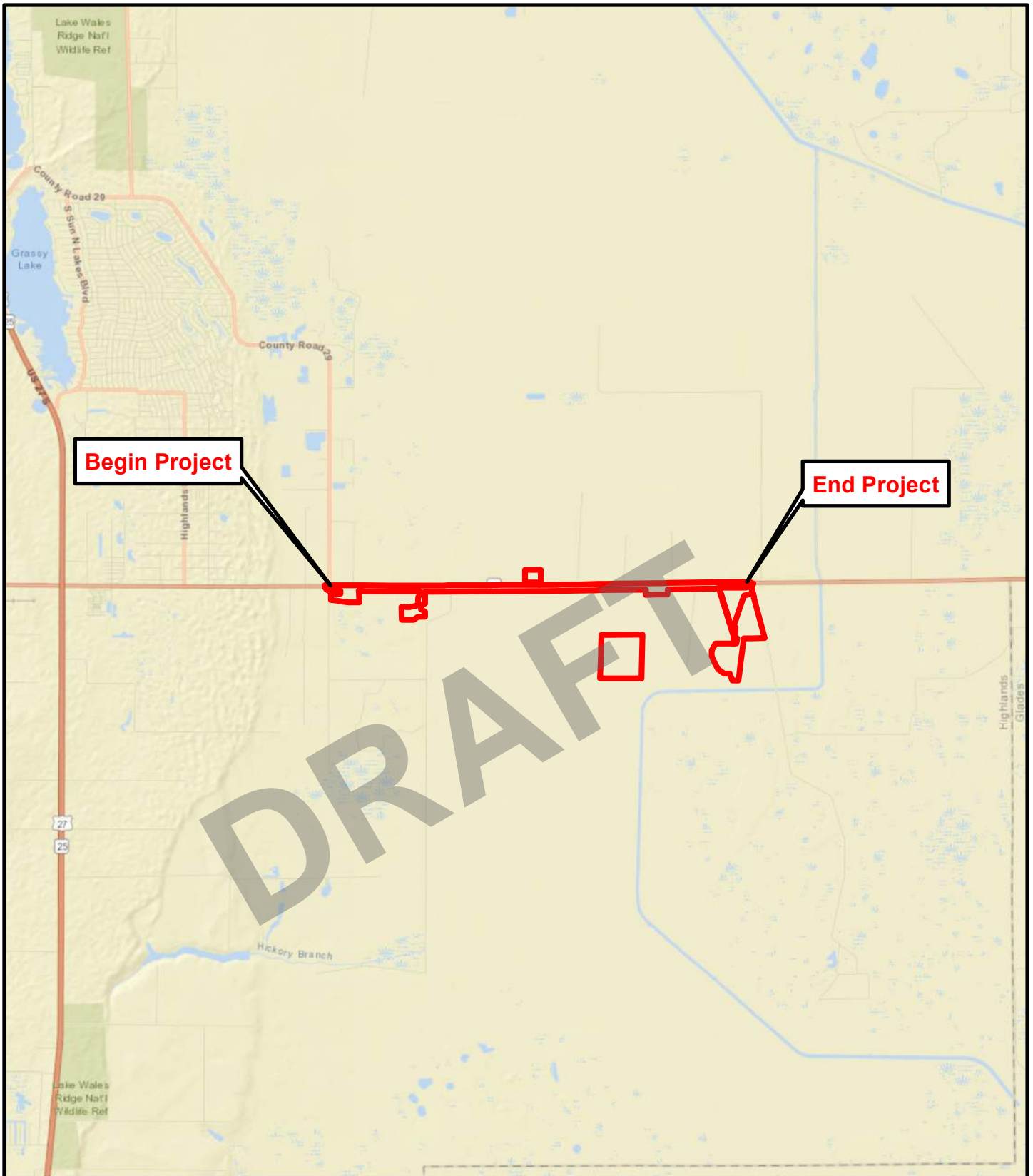
Florida Department of Transportation. 1999. Florida Land Use, Cover and Forms Classification System. Third Edition. 91 pp.

Florida Fish and Wildlife Conservation Commission. 2018. Florida Bonneted Bat: *Eumops floridanus*. (<http://myfwc.com/wildlifehabitats/imperiled/profiles/mammals/florida-bonneted-bat/>)

U.S. Fish and Wildlife Service (USFWS). 2019. Florida Bonneted Bat Effect Determination Key. South Florida Ecological Services, U.S. Fish and Wildlife Service. October 2019.

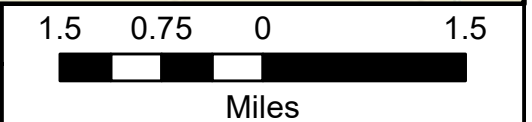
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Legend

Project Study Area



Project Location Map
 SR 70 from CR 29 to Lonesome Island Road
 Project Development and Environment Study
 Highlands County, Florida
 FPID No. 414506-5-22-01

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Attachment A

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Photo 1. Photograph of the extension pole with attached camera for viewing out of reach potential roosting structures.



Photo 2. Photograph of existing potential roosting trees within the project study area.



Photo 3. Photograph of existing potential roosting trees within the project study area.



Photo 4. Photograph of a cabbage palm visually inspected using the extension pole – Tree 1 (see **Attachment C**).



Photo 5. Photograph of a cabbage palm visually inspected using the extension pole – Tree 2 (see **Attachment C**).



Photo 6. Photograph of a cabbage palm visually inspected using the extension pole – Tree 3 (See **Attachment C**).



Photo 7. Photograph of a live oak cavity that was visually inspected using the extension pole – Tree 4 (see **Attachment C**).



Photo 8. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 5 (see **Attachment C**).



Photo 9. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 6 (see **Attachment C**).



Photo 10. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 7 (see **Attachment C**).



Photo 11. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 8 (see **Attachment C**).



Photo 12. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 9 (see **Attachment C**).



Photo 13. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 10 (see **Attachment C**).



Photo 14. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 11 (see **Attachment C**).



Photo 15. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 12 (see **Attachment C**).



Photo 16. Photograph of a cabbage palm visually inspected using the extension pole – Tree 13 (see **Attachment C**).



Photo 17. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 14 (see **Attachment C**).



Photo 18. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 15 (see **Attachment C**).



Photo 19. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 16 (see **Attachment C**).



Photo 20. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 17 (see **Attachment C**).



Photo 21. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 18 (see **Attachment C**).



Photo 22. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 19 (see **Attachment C**).



Photo 23. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 20 (see **Attachment C**).



Photo 24. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 21 (see **Attachment C**).



Photo 25. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 22 (see **Attachment C**).



Photo 26. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 23 (see **Attachment C**).



Photo 27. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 24 (see **Attachment C**).



Photo 28. Photograph of a cabbage palm that was visually inspected using the extension pole – Tree 25 (see **Attachment C**).



Photo 29. Photograph of a cabbage palm visually inspected using the extension pole – Tree 26 (see **Attachment C**).



Photo 30. Photograph of a pavilion structure within the project study area.



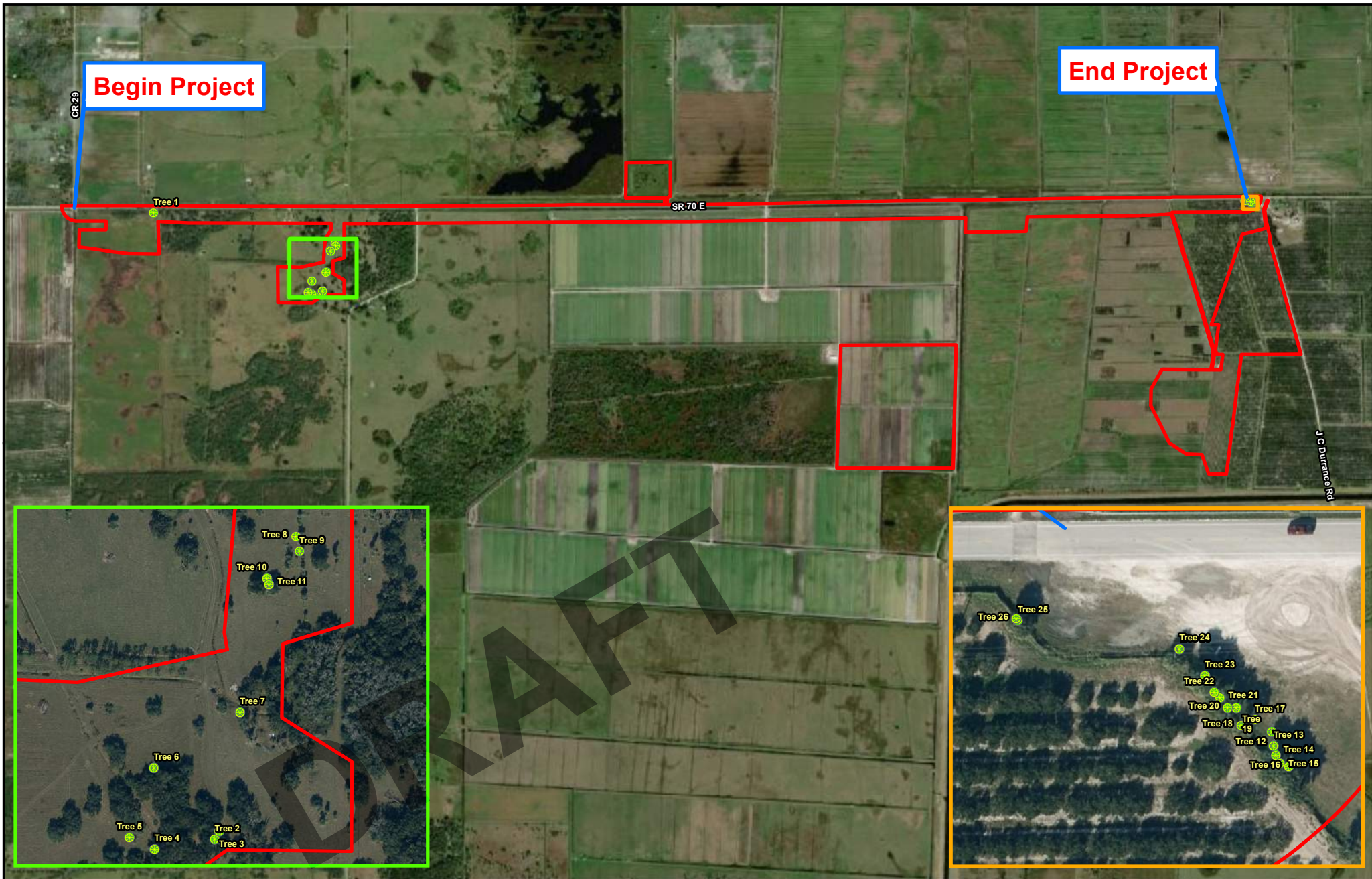
Photo 31. Photograph of a pavilion structure within the project study area.

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Attachment C

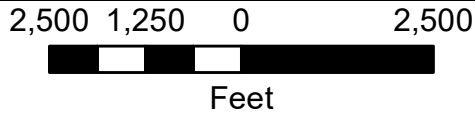
Florida Bonneted Bat Roost Survey Map



Legend

- Project Study Area
- Tree

Florida Bonneted Bat Roost Survey
 SR 70 from CR 29 to Lonesome Island Road
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Attachment C

Overview

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APPENDIX L

Wetland and Surface Water Descriptions and Location Map

FLUCFCS: 617 (Mixed Wetland Hardwoods)

USFWS: PFO1Cd (Palustrine, Forested, Broad-leaved Deciduous, Seasonally Flooded, Partially Drained/Ditched)

Mixed wetland hardwoods are aggregated towards the western terminus of the project, south of State Road 70 (SR 70) and Surface Water 1 (SW 1). These wetlands have been hydrologically altered from the construction of SW 1, a man-made drainage canal. Common tree species present include sweet bay (*Magnolia virginiana*), swamp bay (*Persea palustris*), laurel oak (*Quercus laurifolia*), and red maple (*Acer rubrum*). Groundcover consists primarily of cinnamon fern (*Osmundastrum cinnamomeum*), swamp fern (*Telmatoblechnum serrulatum*), Ceasars weed (*Urena lobata*), arrow arum (*Peltandra virginica*), smartweed (*Persicaria* spp.), and Virginia creeper (*Parthenocissus quinquefolia*). This habitat type includes wetlands WL 1, WL 2 and WL 3.

FLUCFCS: 631 (Wetland Scrub)

USFWS: PSS1Cd (Palustrine, Scrub-Shrub, Broad-leaved Deciduous, Seasonally Flooded, Partially Drained/Ditched)

Wetland scrub is located in the southeast corner of the proposed regional pond, within a sod farm. This wetland appears altered and disturbed. Based on historical aerial interpretation, this system may have emerged from construction of a stormwater management system on the sod farm. Vegetation present includes Carolina willow (*Salix caroliniana*), Brazilian pepper (*Schinus terebinthifolia*), Peruvian primrose willow (*Ludwigia peruviana*), elderberry (*Sambucus nigra*), wax myrtle (*Morella cerifera*), and lantana (*Lantana strigocamara*). This habitat type includes wetland WL 8.

FLUCFCS: 641 (Freshwater Marshes)

USFWS: PEM1Ad (Palustrine, Emergent, Persistent, Temporarily Flooded, Partially Drained/Ditched)

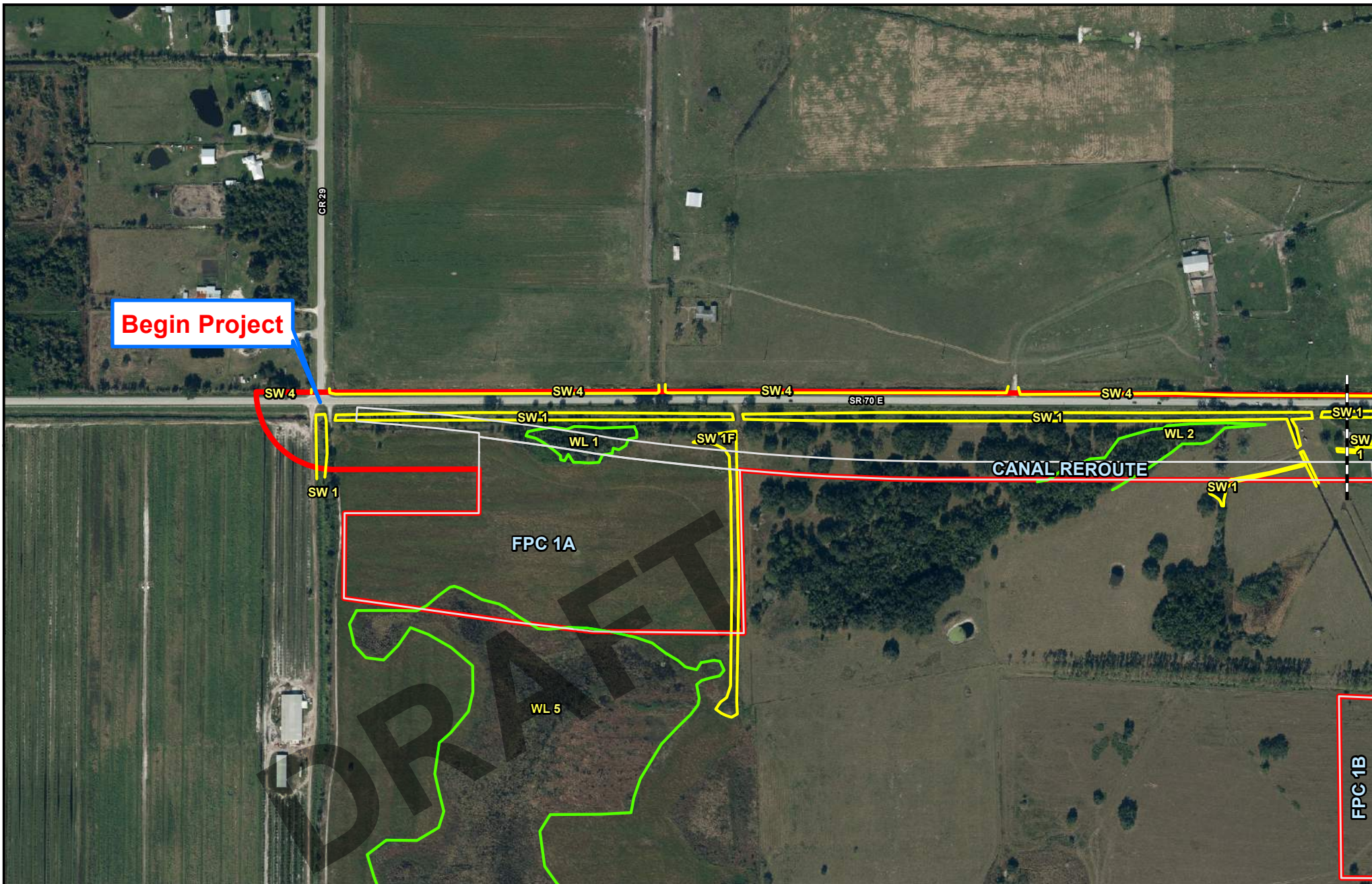
Freshwater marshes are primarily located south of SR 70 and SW 1, within open pasture lands. One freshwater marsh is located north of SR 70 within proposed pond SMF 2b. These wetlands have been hydrologically altered from the construction of SR 70, roadside canals, and drainage ditches within agricultural lands. Vegetation present includes soft rush (*Juncus effusus*), cut grass (*Leersia oryzoides*), maidencane (*Panicum hemitomon*), saltbush (*Baccharis halimifolia*), Peruvian primrose willow, alligatorweed (*Alternanthera philoxeroides*), spadeleaf (*Centella asiatica*), bluestem (*Andropogon* spp.), pennywort (*Hydrocotyle umbellata*), smooth beggarticks (*Bidens laevis*) and smartweed. This habitat type includes wetlands WL 4, WL 5, and WL 7.

FLUCFCS: 510 (Streams and Waterways)
USFWS: R2UBHx (Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded, Excavated)
R2AB3Fx (Riverine, Lower Perennial, Aquatic Bed, Rooted Vascular, Semipermanently Flooded, Excavated)
R2AB4Hx (Riverine, Lower Perennial, Aquatic Bed, Floating Vascular, Permanently Flooded, Excavated)
PEM1Cx (Palustrine, Emergent, Persistent, Seasonally Flooded, Excavated)

Streams and waterways are located throughout the project study area and consist of man-made canals and drainage ditches. These systems act as surface water runoff collection basins for the adjacent roadway and agricultural fields. Water varied from clear flowing water to turbid stagnant water within the larger canals and ditches. Signs of aquatic life were present. Within the larger canals, vegetation was present along the edges of the canal, and floating or rooted in the open water channel. In these canals, vegetation consists of Peruvian primrose willow, saltbush, Carolina willow, water hyacinth (*Eichhornia crassipes*), water lettuce (*Pistia stratiotes*), para grass (*Urochloa mutica*), Johnsons grass (*Sorghum halepense*), Vasey's grass (*Paspalum urvillei*), cattails (*Typha* spp.), Cuban bulrush (*Cyperus blepharoleptos*), duckweed (*Lemna* spp.), giant salvinia (*Salvinia molesta*), wild taro (*Colocasia esculenta*), and dotted smartweed (*Persicaria punctata*). Within agricultural ditches, vegetation consists of soft rush, smartweed, alligatorweed, spadeleaf, pennywort, sedges (*Cyperus* spp.), Ceasars weed, and watersprite (*Ceratopteris thalictroides*). This habitat type includes surface waters SW 1, SW 1A, SW 1B, SW 1C, SW 1D, SW 1F, SW 1G, SW 1H, SW 1Ha, SW1Hb, SW2, SW 3, SW 3A, SW 3B, SW 3C, SW 3D, SW 3E, SW 3F, SW 4, SW 5, SW 5A.

FLUCFCS: 530 (Reservoirs)
USFWS: PUBHx (Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated)

Reservoirs within the project study area are located south of SR 70 within pastureland and consist of surface water SW 1E. This reservoir is a small pond, directly south of SW 1, just west of Southwind Road. This system is used as a cattle pond on the ranch upon which it is located. There was no floating or rooted vascular vegetation in the open water. Water present was turbid with no visible signs of aquatic life. Vegetation along the edge of surface water SW 1E was dominated by bahiagrass (*Paspalum notatum*) but also included Mexican primrose willow (*Ludwigia octovalvis*) and dog fennel (*Eupatorium* spp.). This habitat type includes surface water SW 1E.



Legend


Project Study Area
 Surface Water

Proposed Pond
 Wetland


**Wetland and Surface Water
Location Map**

SR 70 from CR 29 to Lonesome Island Road
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 FPID No. 414506-5-22-01
 Highlands County, FL

Appendix L Page 1 of 7

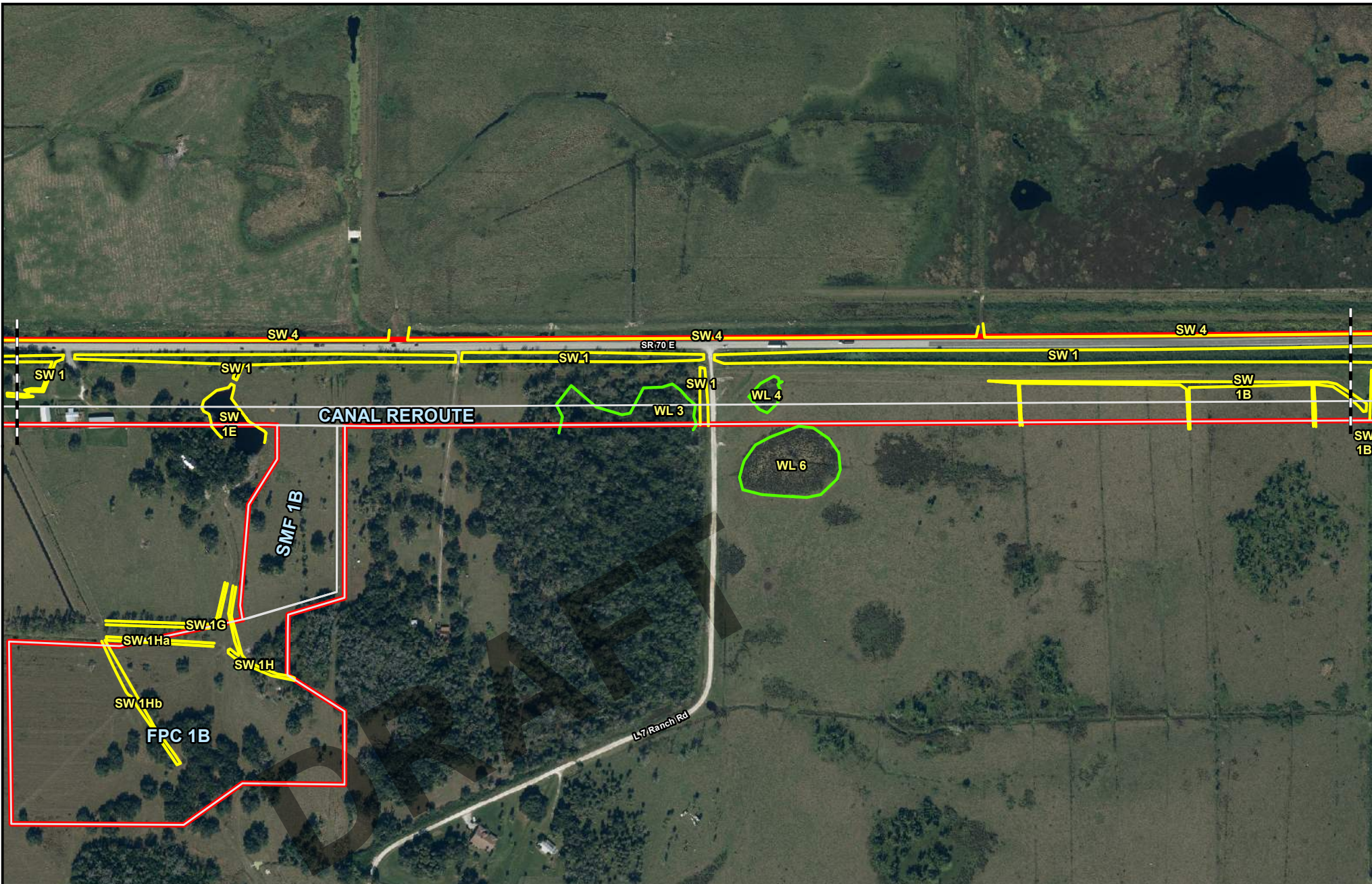


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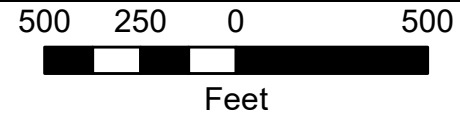


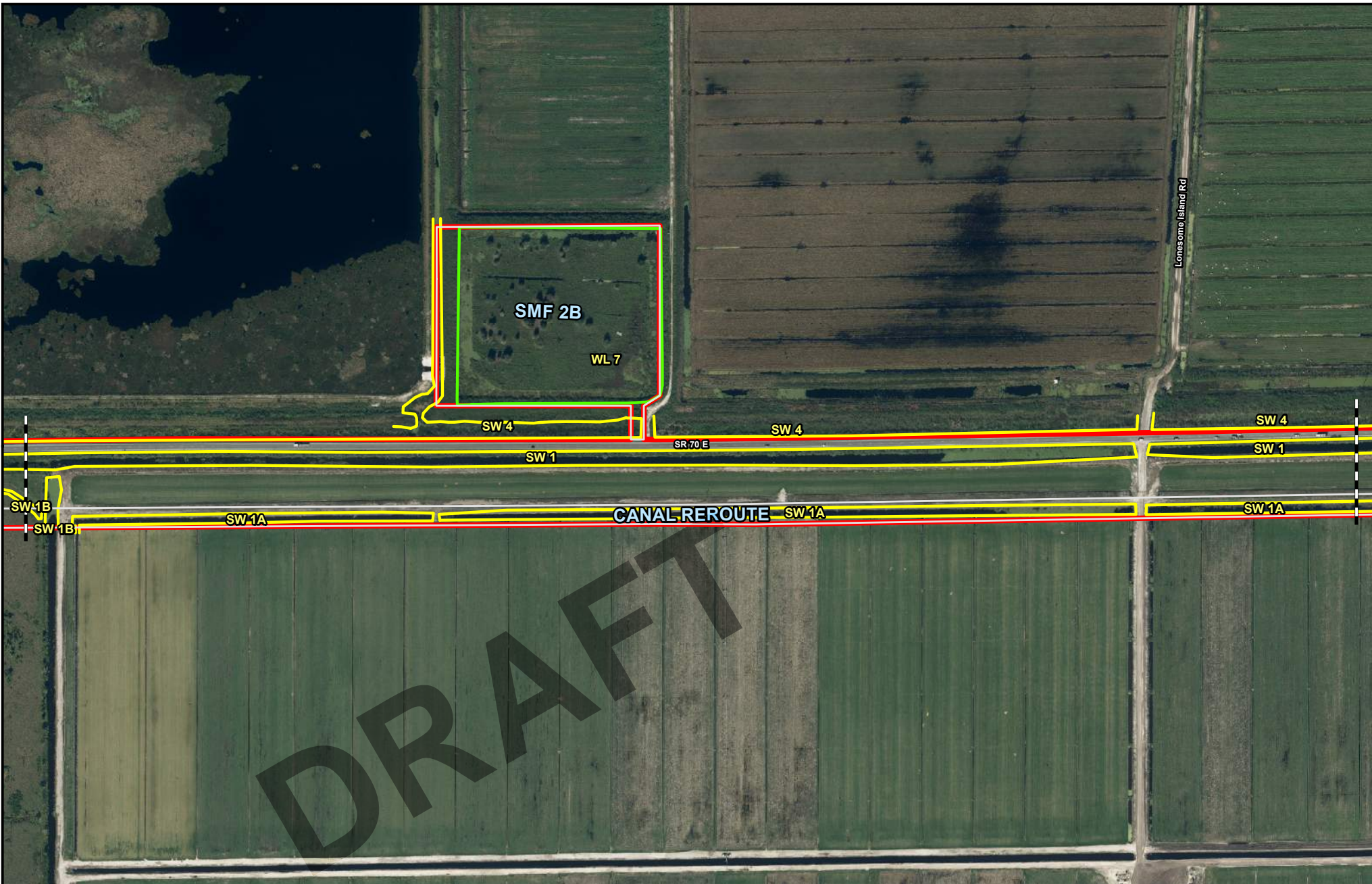
Legend

- Project Study Area
- Surface Water
- Proposed Pond
- Wetland

Wetland and Surface Water Location Map

SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
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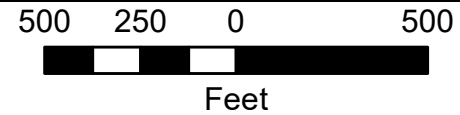


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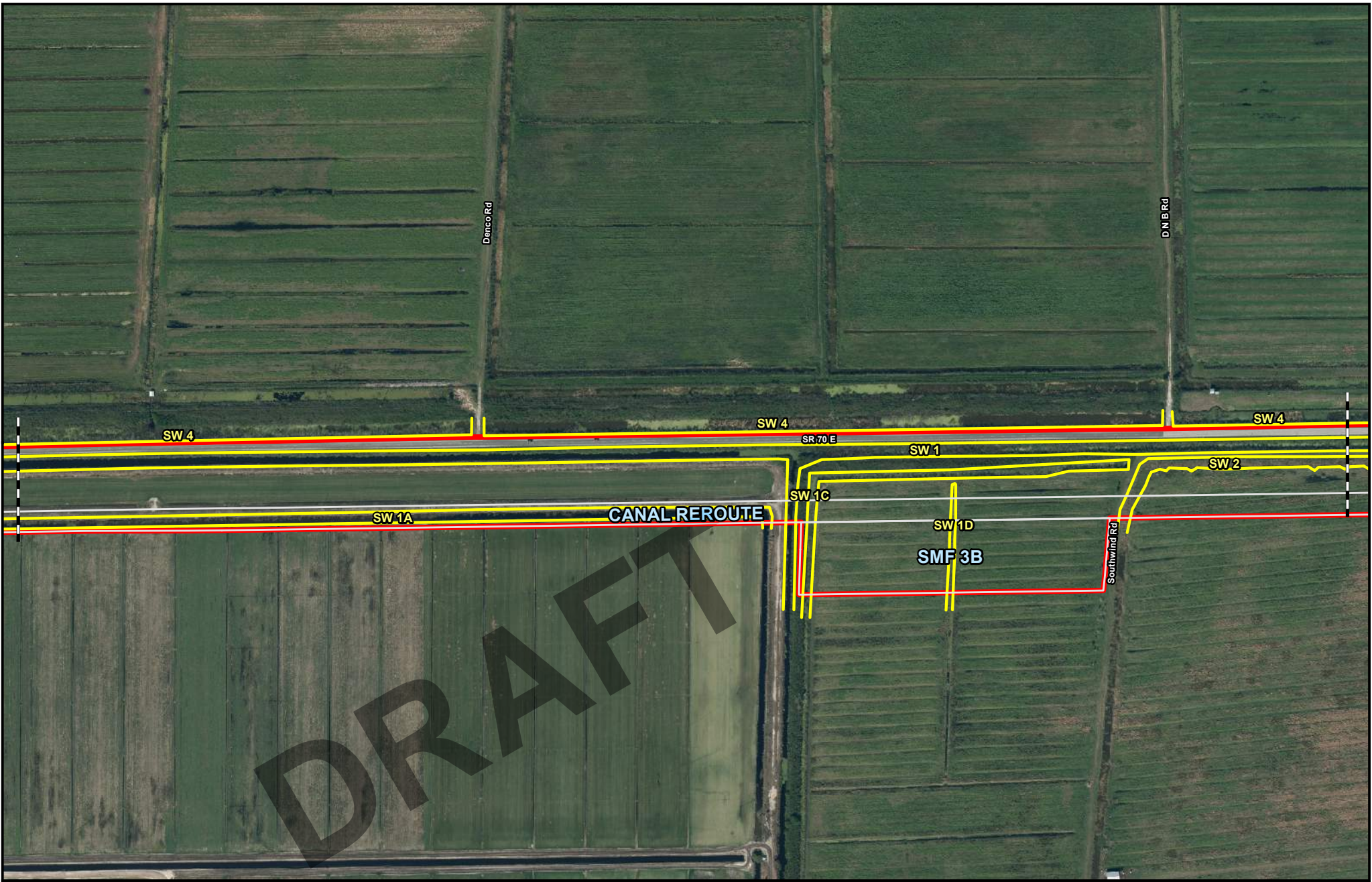
- Project Study Area
- Surface Water
- Proposed Pond
- Wetland

**Wetland and Surface Water
Location Map**

SR 70 from CR 29 to Lonesome Island Road
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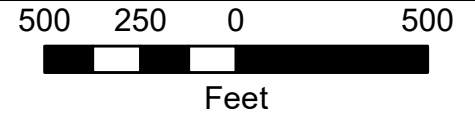
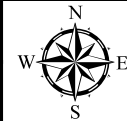


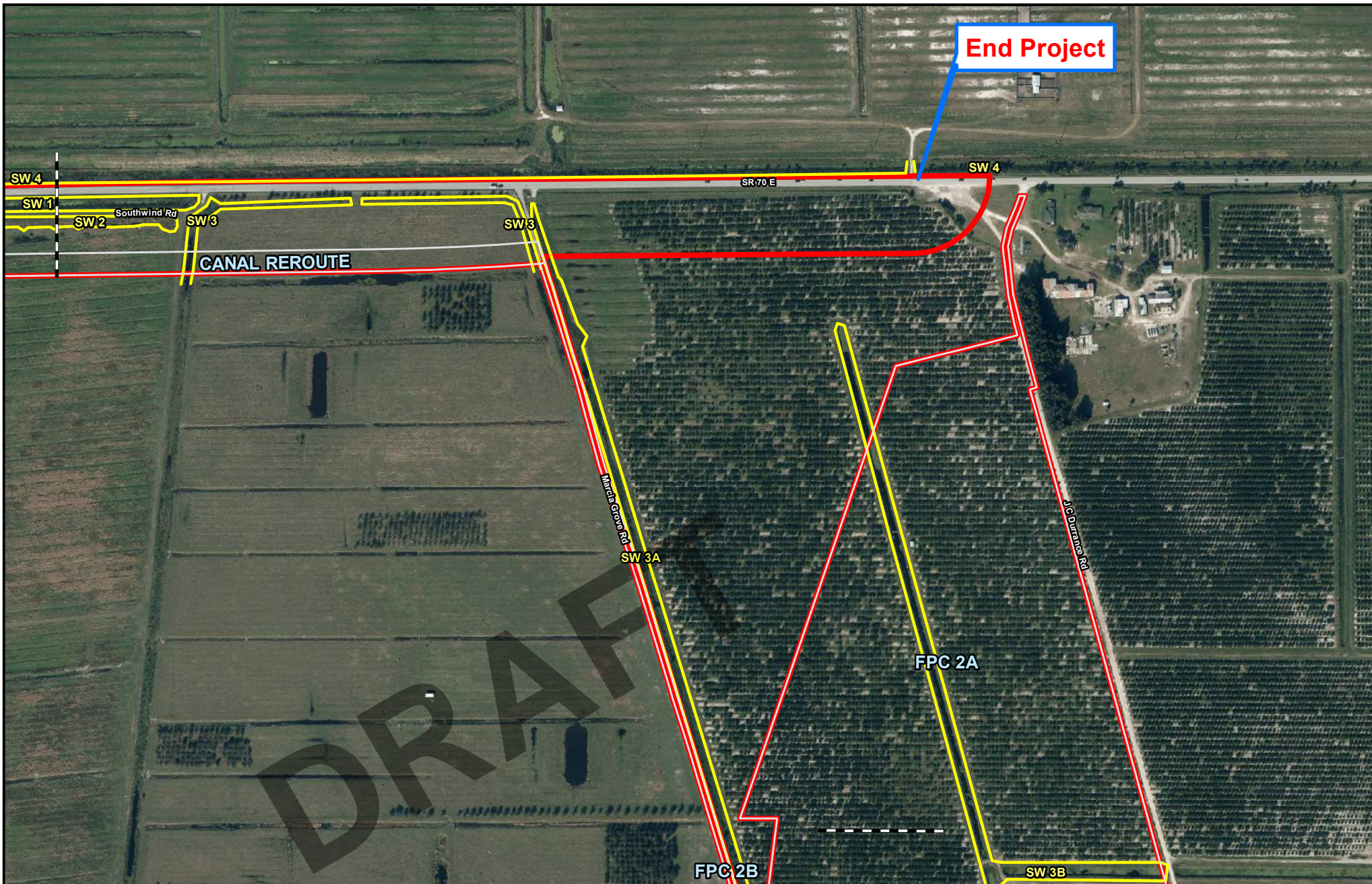
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- Project Study Area
- Surface Water
- Proposed Pond
- Wetland

Wetland and Surface Water Location Map

SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
 Highlands County, FL



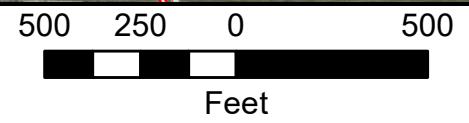


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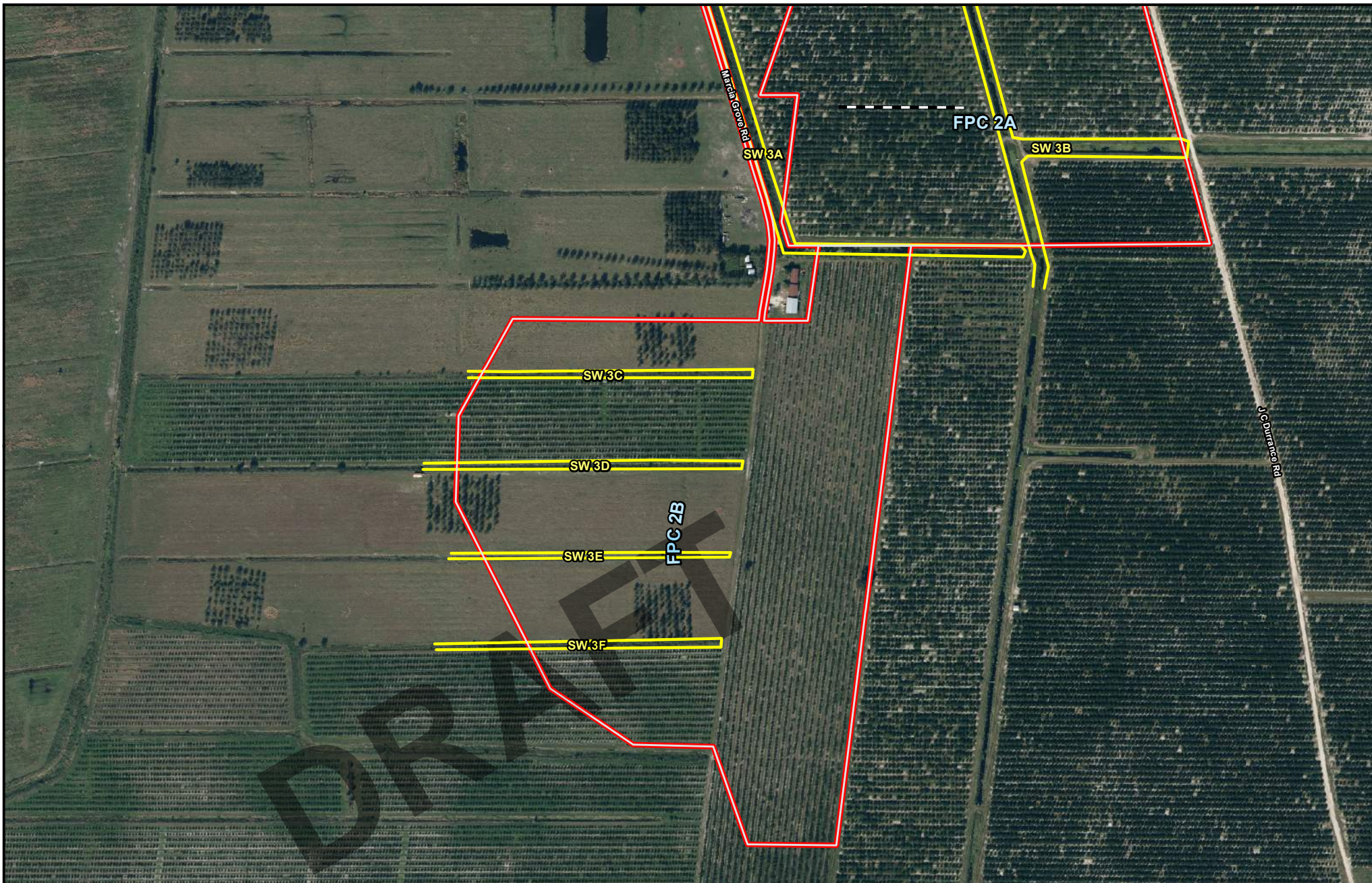
- Project Study Area
- Surface Water
- Proposed Pond
- Wetland

Wetland and Surface Water Location Map

SR 70 from CR 29 to Lonesome Island Road
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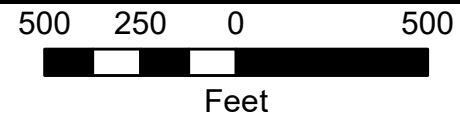
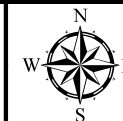


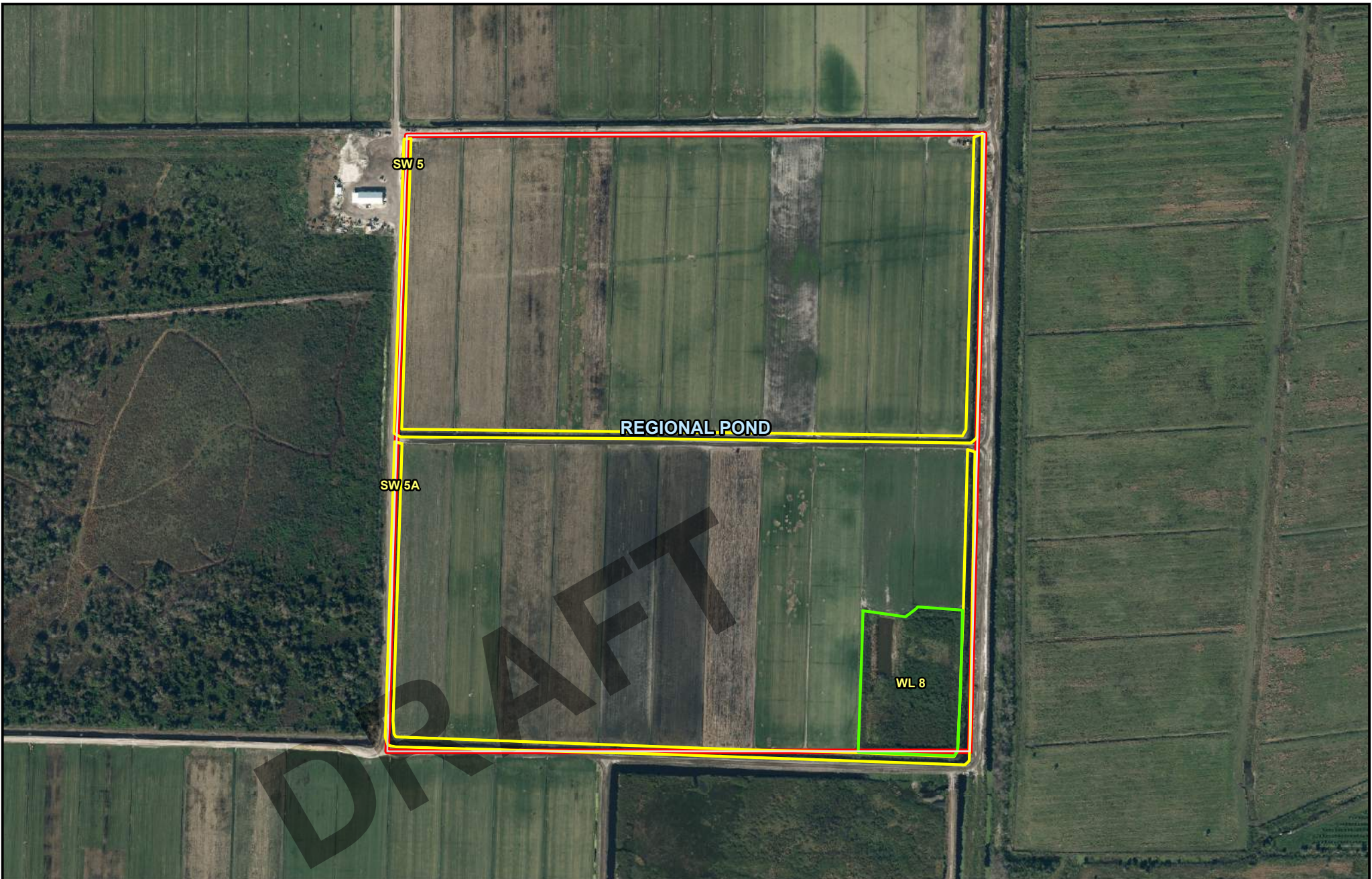
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- Project Study Area
- Surface Water
- Proposed Pond
- Wetland

**Wetland and Surface Water
Location Map**

SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
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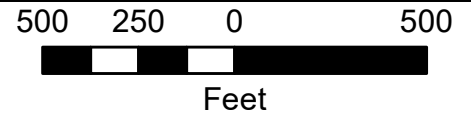


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- Project Study Area
- Surface Water
- Proposed Pond
- Wetland

**Wetland and Surface Water
Location Map**

SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
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APPENDIX M

Wetland and Surface Water Representative Photographs



FLUCFCS: 617 – Mixed Wetland Hardwoods
USFWS: PFO1Cd (Palustrine, Forested, Broad-leaved Deciduous, Seasonally
Flooded, Partially Drained/Ditched)



FLUCFCS: 631 - Wetland Scrub
USFWS: PSS1Cd (Palustrine, Scrub-Shrub, Broad-leaved Deciduous, Seasonally
Flooded, Partially Drained/Ditched)



FLUCFCS: 641 - Freshwater Marshes
USFWS: PEM1Ad (Palustrine, Emergent, Persistent, Temporarily Flooded,
Partially Drained/Ditched)



FLUCFCS: 510 - Streams and Waterways
USFWS: R2UBHx (Riverine, Lower Perennial, Unconsolidated Bottom,
Permanently Flooded, Excavated)



FLUCFCS: 510 - Streams and Waterways
USFWS: R2AB4Hx (Riverine, Lower Perennial, Aquatic Bed, Floating Vascular,
Permanently Flooded, Excavated)



FLUCFCS: 510 - Streams and Waterways
USFWS: R2AB3Fx (Riverine, Lower Perennial, Aquatic Bed, Rooted Vascular,
Semipermanently Flooded, Excavated)



FLUCFCS: 510 - Streams and Waterways
USFWS: PEM1Cx (Palustrine, Emergent, Persistent, Seasonally Flooded, Excavated)

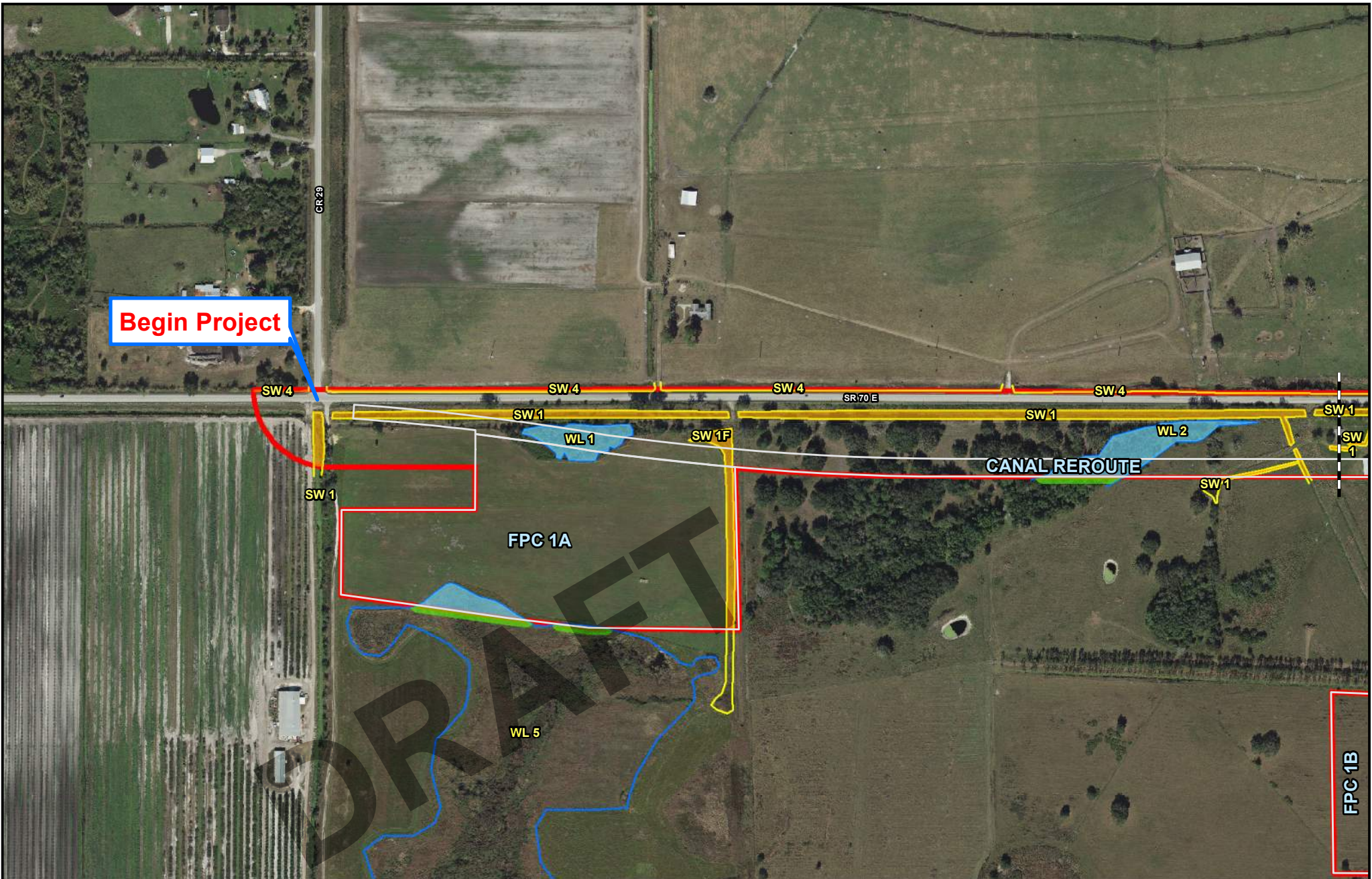


FLUCFCS: 530 - Reservoirs
USFWS: PUBHx (Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated)

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APPENDIX N

Wetland and Surface Water Impact Map



Legend

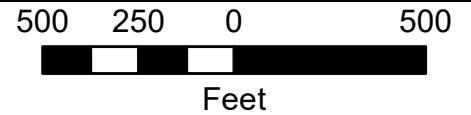
- Project Study Area
- Surface Water
- Surface Water Impact
- Proposed Pond
- Wetland
- Wetland Impact
- Secondary Impact

Wetland and Surface Water Impact Location Map

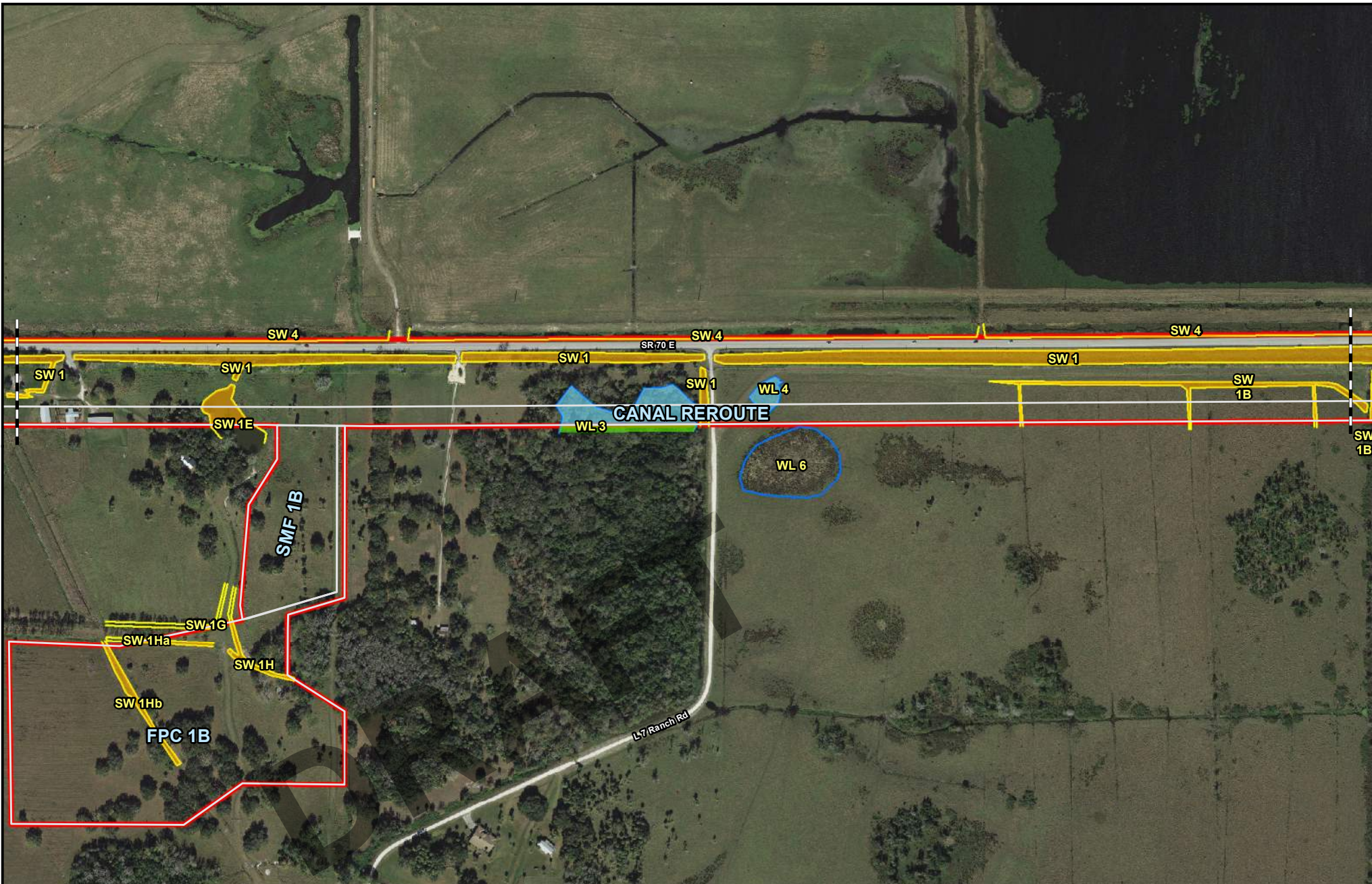
SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
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Appendix N

Page 1 of 7



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Legend		
	Project Study Area	
	Proposed Pond	
	Surface Water Impact	
	Wetland	
	Wetland Impact	
	Secondary Impact	

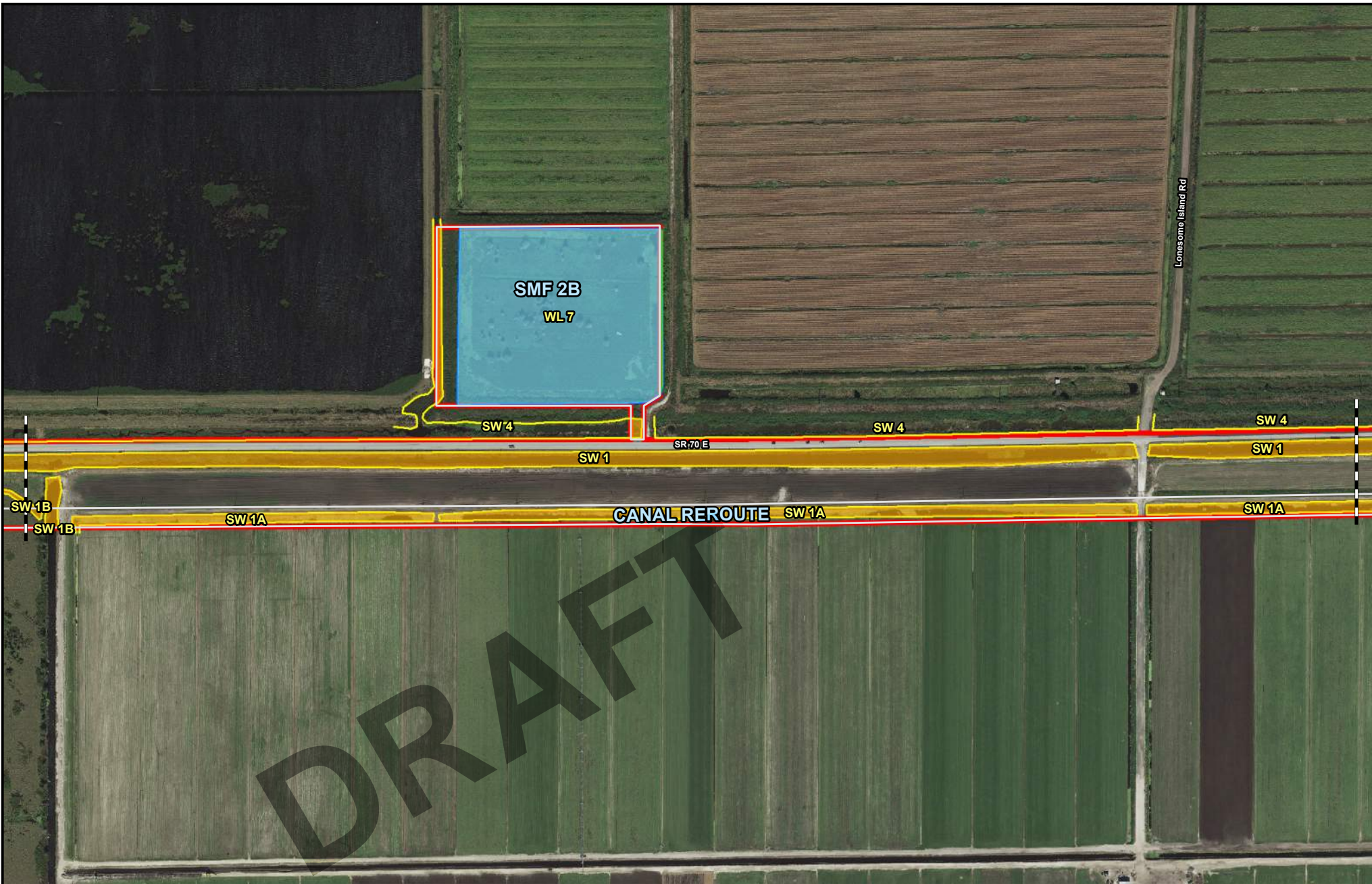
Wetland and Surface Water Impact Location Map
 SR 70 from CR 29 to Lonesome Island Road
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 FPID No. 414506-5-22-01
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Appendix N Page 2 of 7

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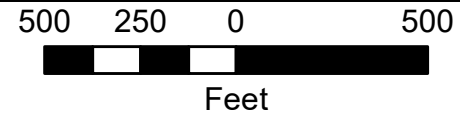
- Project Study Area
- Surface Water
- Surface Water Impact
- Proposed Pond
- Wetland
- Wetland Impact
- Secondary Impact

**Wetland and Surface Water
Impact Location Map**

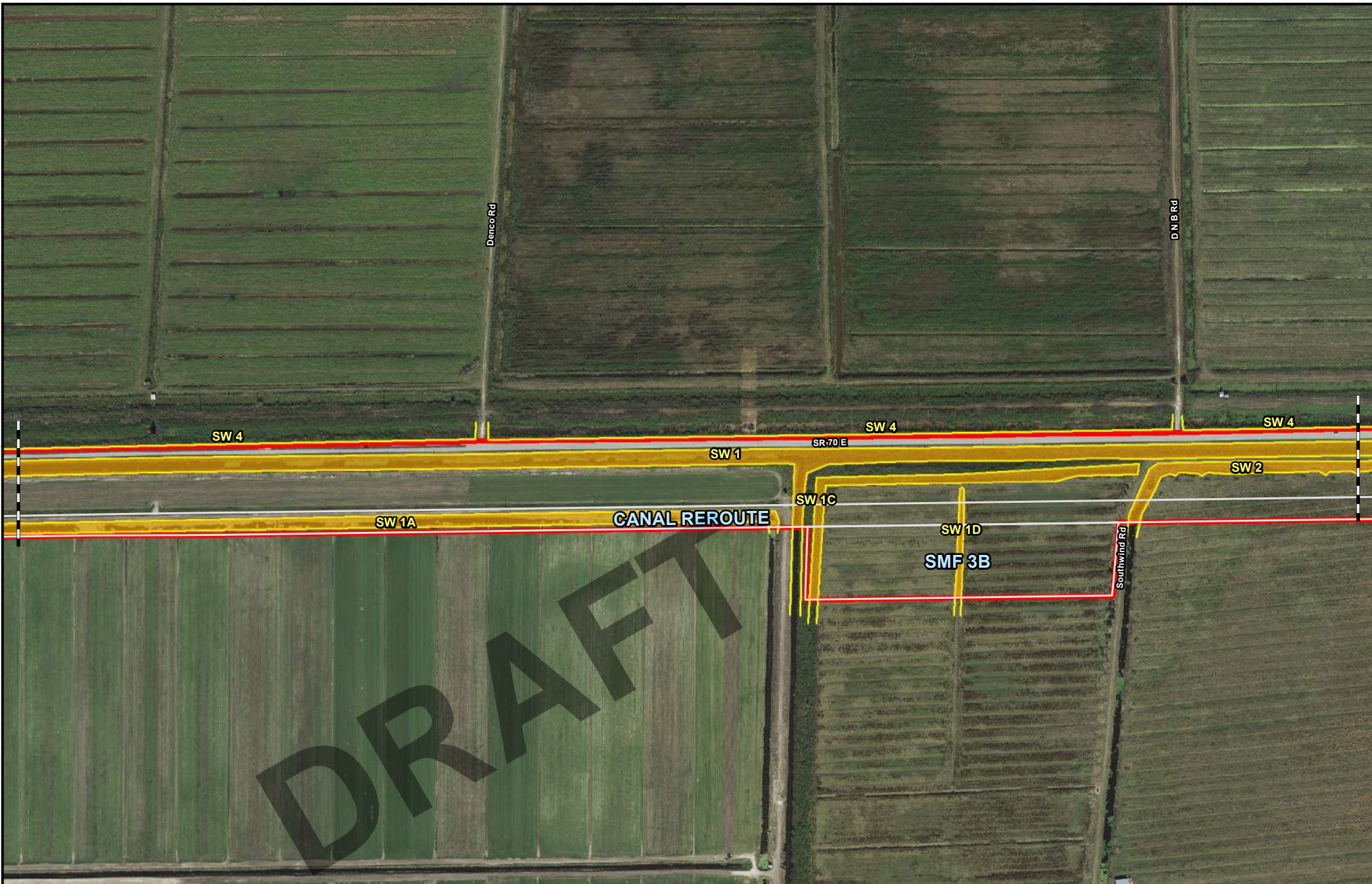
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FPID No. 414506-5-22-01
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Appendix N

Page 3 of 7



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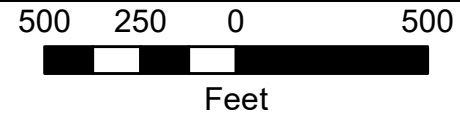


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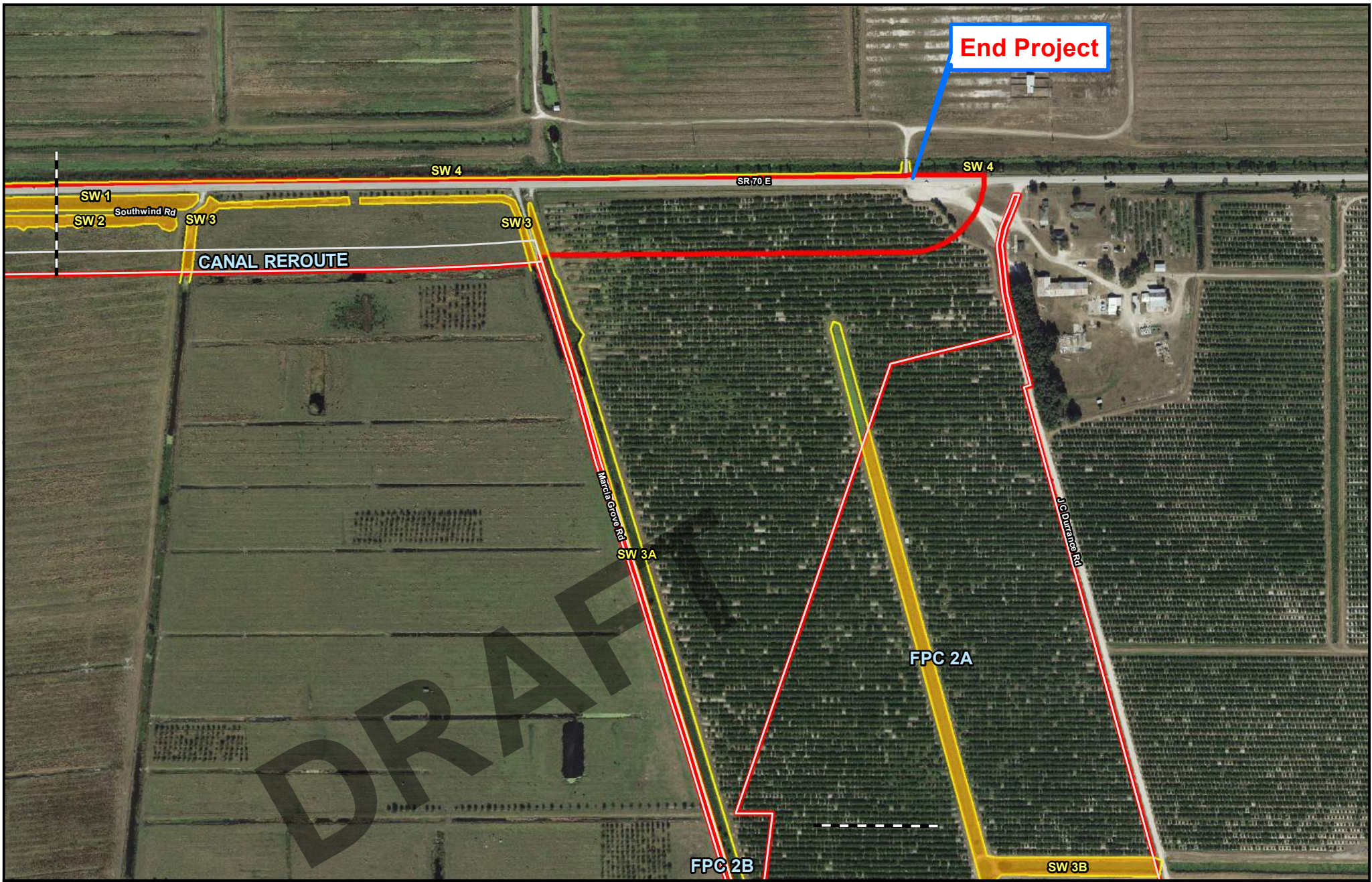
- Project Study Area
- Surface Water
- Surface Water Impact
- Proposed Pond
- Wetland
- Wetland Impact
- Secondary Impact

**Wetland and Surface Water
Impact Location Map**

SR 70 from CR 29 to Lonesome Island Road
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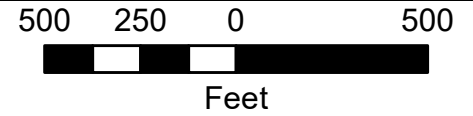
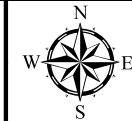


Legend

- Project Study Area
- Surface Water
- Surface Water Impact
- Proposed Pond
- Wetland
- Wetland Impact
- Secondary Impact

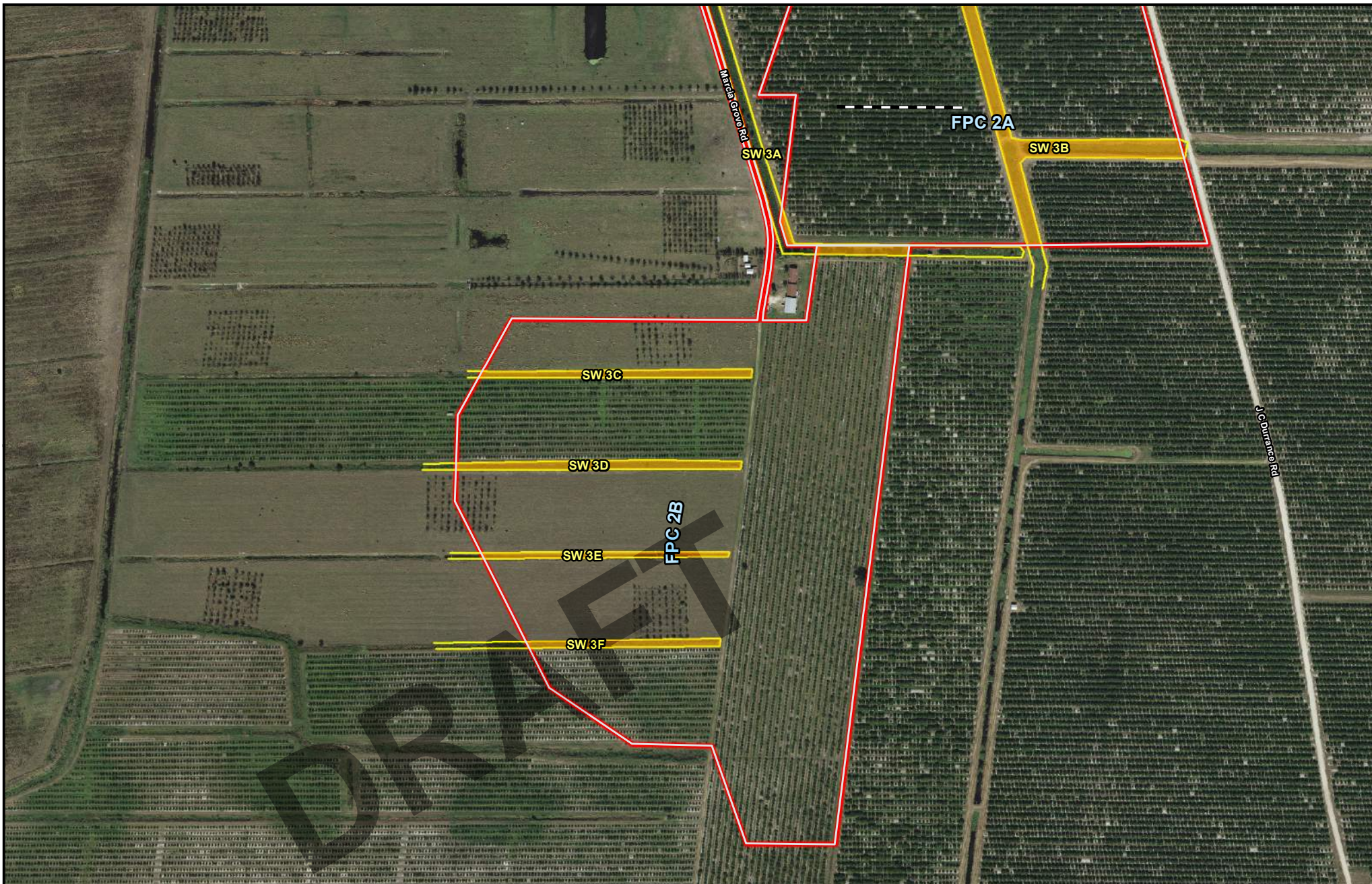
**Wetland and Surface Water
Impact Location Map**

SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01
Highlands County, FL



Kisinger Campo & Associates, Corp.
201 N. Franklin Street, Suite 400
Tampa, FL 33602
Phone: 813/871-5331

Path: \\hofs\dot\41450652201 SR70 - CR29 to Lonesome\NonSubmittal Design\GIS\Maps\Figures\NRE\SR 70_Lonesome_Appendix N Wetlands Impact Map.mxd 8/10/2020

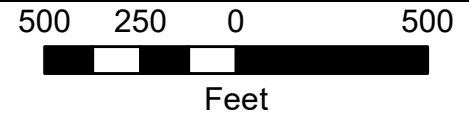


Legend

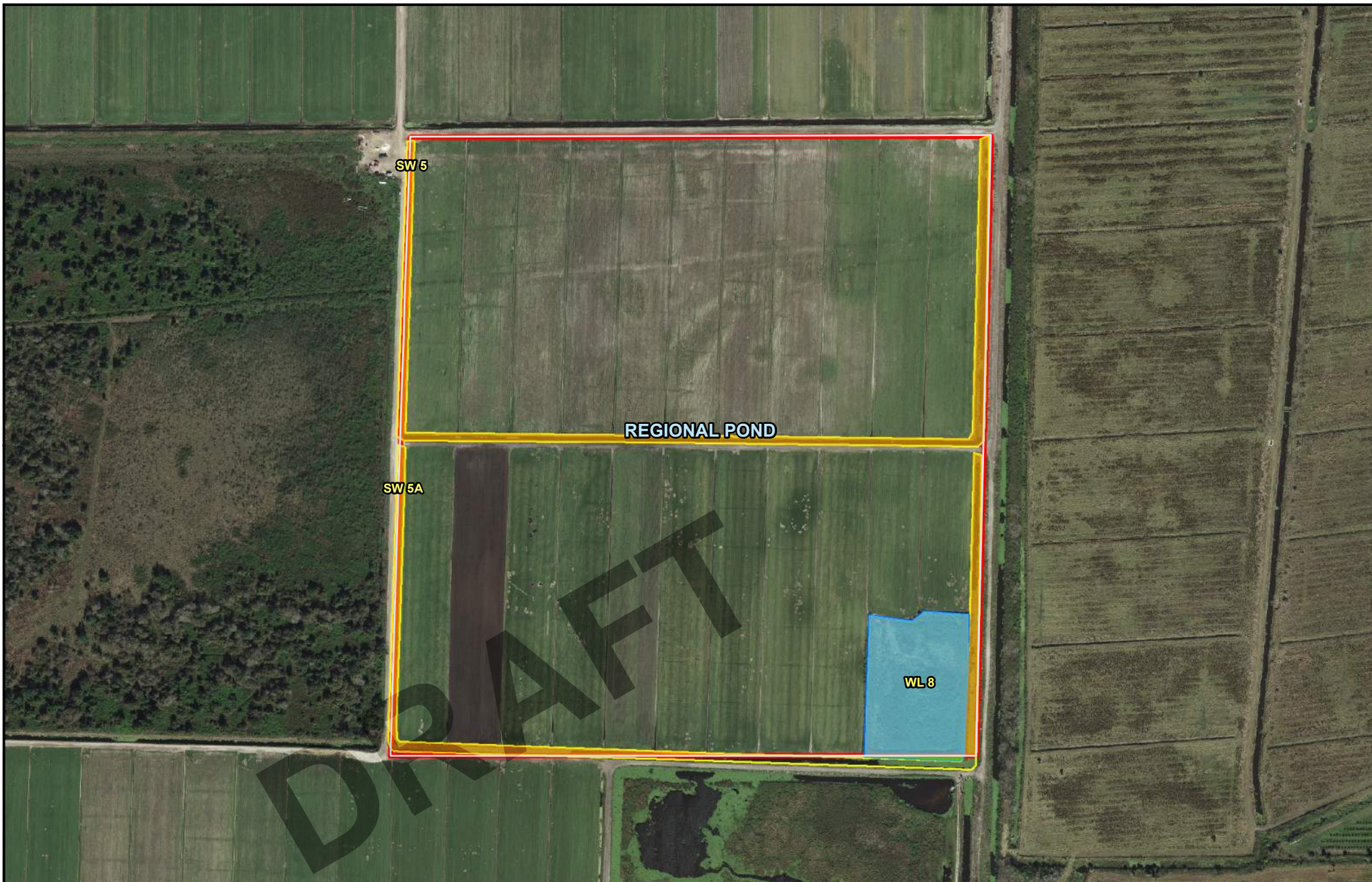
- Project Study Area
- Surface Water
- Surface Water Impact
- Proposed Pond
- Wetland
- Wetland Impact
- Secondary Impact








**Wetland and Surface Water
Impact Location Map**

SR 70 from CR 29 to Lonesome Island Road
Project Development & Environment Study
FPID No. 414506-5-22-01
Highlands County, FL



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Legend		
	Project Study Area	 Surface Water
	Proposed Pond	 Wetland
	Surface Water Impact	 Wetland Impact
		 Secondary Impact

**Wetland and Surface Water
Impact Location Map**
 SR 70 from CR 29 to Lonesome Island Road
 Project Development & Environment Study
 FPID No. 414506-5-22-01
 Highlands County, FL

Appendix N Page 7 of 7

	
	<p>Feet</p>
<p>Kisinger Campo & Associates, Corp. 201 N. Franklin Street, Suite 400 Tampa, FL 33602 Phone: 813/871-5331</p>	

DRAFT

APPENDIX O

Uniform Mitigation Assessment Method Forms

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name SR 70 from CR 29 to Lonesome Island Road		Application Number		Assessment Area Name or Number 510	
FLUCCs code 510		Further classification (optional) R2UBHx, R2AB3Fx, R2AB4Hx, PEM1Cx		Impact or Mitigation Site? Impact	
Assessment Area Size 47.54 acres					
Basin/Watershed Name/Number South Kissimmee		Affected Waterbody (Class) Class III		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)	
<p>Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands</p> <p>The project area is approximately 18 miles northeast of Lake Okeechobee and has ditches running west to east that connect to canals that ultimately outfall to Lake Okeechobee.</p>					
<p>Assessment area description</p> <p>The assessment areas (AA) is comprised of man made canals and drainage ditches. The AAs are surrounded mostly by agricultural lands that are being used for crops, sod or as cattle pasture. There are some herbaceous and forested wetlands located immediately adjacent to the AAs. Vegetation within the canals/ditches is primarily exotic and/or weedy species.</p>					
Significant nearby features State Road 70			Uniqueness (considering the relative rarity in relation to the regional landscape.) This area is not unique.		
Functions flood control, wildlife habitat, nutrient assimilation			Mitigation for previous permit/other historic use N/A		
<p>Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)</p> <p>Based on field observations wildlife utilization can be reasonably expected by various amphibians, freshwater turtles, snakes, alligators, fish, and wading birds.</p>			<p>Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)</p> <p>Anticipated utilization by listed species would include the little blue heron (<i>Egretta caerulea</i>) (ST), tri-colored heron (<i>Egretta tricolor</i>) (ST), and wood storks (<i>Mycteria americana</i>)(FT) for catching prey (small fish).</p>		
<p>Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):</p> <p>Wildlife utilization observed includes deer (<i>Odocoileus virginianus</i>), wild turkey (<i>Meleagris gallopavo</i>), crested caracara (<i>Caracara cheriway</i>), marsh rabbit (<i>Sylvilagus palustris</i>), tri-colored heron (<i>Egretta tricolor</i>), limpkin (<i>Aramus guarauna</i>), Florida softshell turtle (<i>Apalone ferox</i>), gar (<i>Lepisosteus platyrhincus</i>), opossum (<i>Didelphis virginiana</i>), alligator (<i>Alligator mississippiensis</i>), snapping turtle (<i>Chelydra spp.</i>), white egret (<i>Egretta thula</i>), green heron (<i>Butorides virescens</i>), southern leopard frog (<i>Lithobates sphenoccephalus</i>), mosquito fish (<i>Gambusia holbrooki</i>), and other unidentified fish.</p>					
<p>Additional relevant factors:</p> <p>FLUCFCS 510 includes SW 1, SW 1A, SW 1B, SW 1C, SW 1D, SW 1F, SW 1G, SW 1H, SW 1Ha, SW 1Hb, SW 2, SW 3, SW 3A, SW 3B, SW 3C, SW 3D, SW 3E, SW 3F, SW 4, SW 5 and SW 5A.</p>					
Assessment conducted by: R. Bruce Williams / M. Rasmussen			Assessment date(s): 10/02-05/2018; 10/17-19/2018; and 05/21/2020		

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

Site/Project Name SR 70 from CR 29 to Lonesome Island Road	Application Number	Assessment Area Name or Number 510
Impact or Mitigation Permanent / Direct Impact	Assessment conducted by: R. Bruce Williams / M. Rasmussen	Assessment date: 10/8/2018 and 05/21/2020

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

<p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>5</td> <td>0</td> </tr> </table>	5	0	<p>Water runoff drains into the AAs from SR 70 and surrounding agricultural lands. Culverts hydrologically connect a majority of ditches/canals in the AA. The surrounding landscape contains adverse land uses (agricultural lands) that have been subject to land clearing and tilling. Surrounding agricultural activities may artificially drain and flood the ditches, and increase nutrient loading into the system. Provides benefits to downstream habitats through nutrient assimilation. Surrounded by large undeveloped areas, including conservation lands, that provide wildlife habitat. SR 70 acts as a barrier to some wildlife movement.</p>
5	0		
<p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>5</td> <td>0</td> </tr> </table>	5	0	<p>Waters in the AAs appeared healthy with aquatic life present, non-turbid water, no noticeable smell and a steady flow in some areas. However, it can be expected, that due to proximity with SR 70 that there is a lot of runoff from the road into the ditch. Also there is more than likely chemical runoff from agricultural practices in the adjacent lands. In some sections of the ditch numerous floating plants (water hyacinth and water lettuce were observed) may be slowing gas exchange thus reducing dissolved oxygen levels. Vegetation (including nuisance and exotic species) present is tolerable of disturbance and degraded water quality. Use of fertilizers and pesticides likely degrade water quality.</p>
5	0		
<p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>4</td> <td>0</td> </tr> </table>	4	0	<p>Weedy and/or exotic species dominated vegetative cover of a majority of the assessment areas. Common species include Peruvian primrose willow, Mexican primrose willow, water lettuce, Carolina willow, saltbush, smartweed, cattails, Cuban bulrush, para grass, water hyacinth, and soft rush. Open water present in the majority of canals/ditches.</p>
4	0		

Score = sum of above scores/30 (if uplands, divide by 20)
current or w/o pres with
0.47 0

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

For impact assessment areas
FL = delta x acres = 0.47*47.54 =22.344, rounded up to 22.35

Delta = [with-current]
-0.47

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

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

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name SR 70 from CR 29 to Lonesome Island Road		Application Number	Assessment Area Name or Number 530
FLUCCs code 530	Further classification (optional) PUBHx	Impact or Mitigation Site? Impact	Assessment Area Size 0.39
Basin/Watershed Name/Number South Kissimmee	Affected Waterbody (Class) Class III	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) N/A	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands The project area is approximately 18 miles northeast of Lake Okeechobee and has ditches running west to east that connect to canals that ultimately outfall to Lake Okeechobee. The city of Lake Placid is approximately 7.5 miles northeast of the project area and Lake Istokpoga is 7 miles north of the site.			
Assessment area description The assessment area is a small pond and consists mainly of soft rush (<i>Juncus effusus</i>), and smart weed (<i>Persicaria spp.</i>) dominating the groundcover.			
Significant nearby features SR 70, Lake Placid		Uniqueness (considering the relative rarity in relation to the regional landscape.) The assessment area is not unique.	
Functions cattle pond, water attenuation, wildlife habitat		Mitigation for previous permit/other historic use N/A	
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Wildlife utilization can be reasonably expected by various amphibians, freshwater turtles, snakes, alligators, fish, and wading birds during the wet season.		Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Anticipated utilization by listed species would include the little blue heron (<i>Egretta caerulea</i>) (ST), tri-colored heron (<i>Egretta tricolor</i>) (ST), and wood storks (<i>Mycteria americana</i>)(FT) for catching prey (small fish).	
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): No direct or indirect observation of wildlife utilization was noted.			
Additional relevant factors: FLUCFCS 530 includes SW 1E.			
Assessment conducted by: R. Bruce Williams		Assessment date(s): 10/22/2018.	

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

Site/Project Name SR 70 from CR 29 to Lonesome	Application Number	Assessment Area Name or Number 530
Impact or Mitigation Permanent Impact	Assessment conducted by: R. Bruce Williams	Assessment date: 10/22/2018

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

<p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>5</td> <td>0</td> </tr> </table>	5	0	<p>The surrounding area drains into the pond via surface runoff. The surrounding landscape consists of adverse land uses to wildlife and habitat (agricultural lands) that have been subject to land clearing and tilling in the past and present use is pasture for cattle grazing. Surrounding agricultural activities may artificially drain and flood the pond as needed. This surface water may serve as a cattle pond. A culvert connects it to the ditches north of it. Does not appear to provide downstream benefits. SR 70 to the north and property fencing act as barriers to wildlife movement.</p>
5	0		
<p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>3</td> <td>0</td> </tr> </table>	3	0	<p>The assessment area had standing turbid water with no aquatic life observed. A slight odor (smell of manure) was noted. There was erosion along the banks of the assessment area from use, and high nutrient levels can be expected due to surrounding land uses. Culvert presents connect the assessment area to a ditch directly to the north. Minimal vegetation present.</p>
3	0		
<p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>3</td> <td>0</td> </tr> </table>	3	0	<p>The assessment area was mostly bare of vegetation except along its upper banks. Dog fennel (<i>Eupatorium</i> spp.) and Mexican primrose (<i>Ludwigia octovalvis</i>) were noted at less than 5% coverage. Bahia grass (<i>Paspalum notatum</i>) made up the majority of the vegetation along the top of bank. Minimal structural heterogeneity. Adverse land management practices (mowing) present.</p>
3	0		

Score = sum of above scores/30 (if uplands, divide by 20)
current or w/o pres with
0.37 0

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

For impact assessment areas
FL = delta x acres = 0.37*0.39 = 0.144, rounded up to 0.15

Delta = [with-current]
-0.37

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

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

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name SR 70 from to Lonesome Island Road		Application Number		Assessment Area Name or Number 617	
FLUCCs code 617		Further classification (optional) PFO1Cd		Impact or Mitigation Site? Impact	
Assessment Area Size 3.62					
Basin/Watershed Name/Number South Kissimmee		Affected Waterbody (Class) Class III		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)	
<p>Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands</p> <p>The project area is approximately 18 miles northeast of Lake Okeechobee and has ditches running west to east that connect to canals that ultimately outfall to Lake Okeechobee. The city of Lake Placid is approximately 7.5 miles northeast of the project area and Lake Istokpoga is 7 miles north of the site.</p>					
<p>Assessment area description</p> <p>Mixed hardwood wetlands consists mainly of laurel oak and bays (swamp bay and sweet bay) in the canopy with Caesar's weed, cinnamon fern and swamp fern dominating the groundcover.</p>					
Significant nearby features State Road 70, Lake Placid			Uniqueness (considering the relative rarity in relation to the regional landscape.) The assessment area is not unique		
Functions wildlife habitat, flood control, nutrient assimilation			Mitigation for previous permit/other historic use N/A		
<p>Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)</p> <p>Based on field observations wildlife utilization can be reasonably expected by various small mammals, amphibians, freshwater turtles, snakes, and birds.</p>			<p>Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)</p> <p>Anticipated utilization by listed species would include the little blue heron (<i>Egretta caerulea</i>) (ST), tri-colored heron (<i>Egretta tricolor</i>) (ST), and wood storks (<i>Mycteria americana</i>)(FT) as a possible roosting and nesting site.</p>		
<p>Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):</p> <p>Wildlife utilization observed include green anole (<i>Anolis carolinensis</i>), and red bellied woodpecker (<i>Melanerpes carolinus</i>).</p>					
<p>Additional relevant factors:</p> <p>FLUCFCS 617 includes WL 1, WL 2 and WL 3</p>					
Assessment conducted by: R. Bruce Williams			Assessment date(s): 10/17/2018.		

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

Site/Project Name SR 70 from CR 29 to Lonesome Island Road	Application Number	Assessment Area Name or Number 617
Impact or Mitigation Permanent / Direct Impact	Assessment conducted by: R. Bruce Williams	Assessment date: 11/1/2018

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

<p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>6</td> <td>0</td> </tr> </table>	6	0	<p>The AAs are directly south of SR 70. SR 70 acts as a barrier to wildlife movement to other habitats (conservation lands) to the north. Large open areas (pastures/croplands) and conservation lands surround the assessment areas, providing wildlife habitat. Assessment areas partially drained/ditched from agricultural ditches and the large roadside canal. SR 70 and the large ditch adjacent to it may affect hydrological connectivity to downstream areas. Assessment areas provide downstream benefit.</p>
6	0		
<p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>6</td> <td>0</td> </tr> </table>	6	0	<p>The AAs had good hydrology as indicated by saturated soils. Hydrologic indicators noted include buttress roots, and hypertrophic lenticles. The AA has a hydrological connection to other wetlands. Stormwater drains into the assessment areas via surface runoff and from adjacent canals. SR 70 and the large ditch adjacent to it may affect hydrological connectivity to lands in the north. In addition, the tilling, ditching, and utilization by cattle of the surrounding areas may be affecting hydrology due to excess drainage from ditches and compaction of soils by cattle. Cattle and use of fertilizers and pesticides on agricultural lands may be increasing nutrient loading into the system.</p>
6	0		
<p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>7</td> <td>0</td> </tr> </table>	7	0	<p>Groundcover was dominated by native species. Weedy and/or exotic species present. Canopy comprised of native species. Vegetation appears healthy, with appropriate size and distribution, regeneration and recruitment. Structural heterogeneity present.</p>
7	0		

Score = sum of above scores/30 (if uplands, divide by 20)
current or w/o pres with
0.63 0

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

For impact assessment areas
FL = delta x acres = 0.63*3.62 = 2.281, rounded to 2.28

Delta = [with-current]
-0.63

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

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

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name SR 70 from to Lonesome Island Road		Application Number		Assessment Area Name or Number 617	
FLUCCs code 617		Further classification (optional) PFO1Cd		Impact or Mitigation Site? Impact	
Assessment Area Size 0.48					
Basin/Watershed Name/Number South Kissimmee		Affected Waterbody (Class) Class III		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)	
<p>Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands</p> <p>The project area is approximately 18 miles northeast of Lake Okeechobee and has ditches running west to east that connect to canals that ultimately outfall to Lake Okeechobee. The city of Lake Placid is approximately 7.5 miles northeast of the project area and Lake Istokpoga is 7 miles north of the site.</p>					
<p>Assessment area description</p> <p>Mixed hardwood wetlands consists mainly of laurel oak and bays (swamp bay and sweet bay) in the canopy with Caesar's weed, cinnamon fern and swamp fern dominating the groundcover.</p>					
Significant nearby features State Road 70, Lake Placid			Uniqueness (considering the relative rarity in relation to the regional landscape.) The assessment area is not unique		
Functions wildlife habitat, flood control, nutrient assimilation			Mitigation for previous permit/other historic use N/A		
<p>Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)</p> <p>Based on field observations wildlife utilization can be reasonably expected by various small mammals, amphibians, freshwater turtles, snakes, and birds.</p>			<p>Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)</p> <p>Anticipated utilization by listed species would include the little blue heron (<i>Egretta caerulea</i>) (ST), tri-colored heron (<i>Egretta tricolor</i>) (ST), and wood storks (<i>Mycteria americana</i>)(FT) as a possible roosting and nesting site.</p>		
<p>Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):</p> <p>Wildlife utilization observed include green anole (<i>Anolis carolinensis</i>), and red bellied woodpecker (<i>Melanerpes carolinus</i>).</p>					
<p>Additional relevant factors:</p> <p>FLUCFCS 617 includes WL 1, WL 2 and WL 3</p>					
Assessment conducted by: R. Bruce Williams			Assessment date(s): 10/17/2018.		

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

Site/Project Name SR 70 from CR 29 to Lonesome Island Road	Application Number	Assessment Area Name or Number 617
Impact or Mitigation Secondary Impact	Assessment conducted by: R. Bruce Williams	Assessment date: 11/1/2018

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 assessment areas are directly south of SR 70. SR 70 acts as a barrier to wildlife movement to other habitats (conservation lands) to the north. Large open areas (pastures/croplands) and conservation lands surround the assessment areas, providing wildlife habitat. Assessment areas partially drianed/ditched from agricultural ditches and the large roadside canal. SR 70 and the large ditch adjacent to it may affect hydrological connectivity to downstream areas. Assessment areas provide downstream benefit. With impact: Project will increase barriers to movement and habitat fragmentation.				
<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>6</td> <td>5</td> </tr> </table>	w/o pres or current	with	6	5	
w/o pres or current	with				
6	5				

.500(6)(b)Water Environment (n/a for uplands)	This mixed hardwood wetlands had good hydrology as indicated by saturated soils. Hydrologic indicators noted include buttress roots, and hypertrophic lenticles. This wetland has a hydrological connection to other wetlands to the south. Stormwater drains into the assessment areas via surface runoff and from adjacent canals. SR 70 and the large ditch adjacent to it may affect hydrological connectivity to lands in the north. The drainage ditch north adjacent to the wetland most likely causes some increased subsurface drainage (no culverts observed). In addition, the tilling, ditching, and utilization by cattle of the surrounding areas may be affecting hydrology due to excess drainage from ditches and compaction of soils by cattle. Cattle and use of fertilizers and pesticides on agricultural lands may be increasing nutrient loading into the system. With impact: hydrology and water quality to be maintained through the construction and operation of a stormwater management system.				
<table border="1"> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>6</td> <td>6</td> </tr> </table>	w/o pres or current	with	6	6	
w/o pres or current	with				
6	6				

.500(6)(c)Community structure	Groundcover was dominated by native species. Weedy and/or exotic species present. Canopy comprised of native species. Vegetation appears healthy, with appropriate size and distribution, regeneration and recruitment. Structural heterogeneity present. With impact: disturbance and edge effects may increase exotic species, disrupt community composition and structure.								
<table border="1"> <tr> <td>1. Vegetation and/or</td> <td></td> </tr> <tr> <td>2. Benthic Community</td> <td></td> </tr> <tr> <td>w/o pres or current</td> <td>with</td> </tr> <tr> <td>7</td> <td>6</td> </tr> </table>	1. Vegetation and/or		2. Benthic Community		w/o pres or current	with	7	6	
1. Vegetation and/or									
2. Benthic Community									
w/o pres or current	with								
7	6								

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres	with
0.63	0.57

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

For impact assessment areas
FL = delta x acres = 0.06 * 0.48 = 0.028, rounded up to 0.03

Delta = [with-current]
-0.06

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

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

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name SR 70 from CR 29 to Lonesome Island Road		Application Number		Assessment Area Name or Number 631	
FLUCCs code 631		Further classification (optional) PSS1Cd		Impact or Mitigation Site? Impact	
Assessment Area Size 4.84					
Basin/Watershed Name/Number South Kissimmee		Affected Waterbody (Class) Class III		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)	
<p>Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands</p> <p>The project area is approximately 18 miles northeast of Lake Okeechobee and has ditches running west to east that connect to canals that ultimately outfall to Lake Okeechobee. The city of Lake Placid is approximately 7.5 miles northeast of the project area and Lake Istokpoga is 7 miles north of the site.</p>					
<p>Assessment area description</p> <p>The assessment area is a mixed scrub shrub wetland that consists mainly of Carolina willow, Peruvian primrose willow, Brazilian pepper, elderberry and wax myrtle, in the middle of a sod farm. Assessment area appears to be have been recently disturbed with elevation and hydrology supporting the appropriate conditions for a scrub-shrub wetland to develop.</p>					
Significant nearby features State Road 70, Lake Placid			Uniqueness (considering the relative rarity in relation to the regional landscape.) N/A		
Functions wildlife habitat, flood control, nutrient assimilation			Mitigation for previous permit/other historic use N/A		
<p>Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)</p> <p>Based on field observations wildlife utilization can be reasonably expected by various small mammals, amphibians, freshwater turtles, snakes, and birds.</p>			<p>Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)</p> <p>Anticipated utilization by listed species would include the little blue heron (<i>Egretta caerulea</i>) (ST), tri-colored heron (<i>Egretta tricolor</i>) (ST), and wood storks (<i>Mycteria americana</i>)(FT) as a possible roosting and nesting site.</p>		
<p>Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):</p> <p align="center">Wildlife utilization observed include the little blue heron and American coot.</p>					
<p>Additional relevant factors:</p> <p>FLUCFCS 631 includes WL 8</p>					
Assessment conducted by: M. Rasmussen			Assessment date(s): 5/21/2020		

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

Site/Project Name SR 70 from CR 29 to Lonesome Island Road	Application Number	Assessment Area Name or Number 631
Impact or Mitigation Permanent / Direct Impact	Assessment conducted by: M. Rasmussen	Assessment date: 5/21/2020

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

<p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>6</td> <td>0</td> </tr> </table>	6	0	<p>The assessment area is south of SR 70, within a sod farm. SR 70 and surrounding land use acts as a barrier to wildlife movement to other habitats (conservation lands) to the north. Large open areas (pastures/croplands) and conservation lands surround the assessment areas, providing wildlife habitat. Assessment areas partially drained/ditched from agricultural ditches. SR 70 and the large ditch adjacent to it may affect hydrological connectivity to downstream areas.</p>
6	0		
<p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>5</td> <td>0</td> </tr> </table>	5	0	<p>This scrub-shrub wetland appears altered and disturbed. Hydrological indicators observed included dark soil surface and saturated soils. This wetland has a hydrological connection to surrounding agricultural ditches in the sod farm. Stormwater drains into the assessment areas via surface runoff and from adjacent ditches. In addition, the tilling, ditching, and operation of large mechanical equipment in the surrounding areas may be affecting hydrology due to altered drainage from ditches and compaction of soils by mechanical equipment. Use of fertilizers and pesticides on agricultural lands (sod farms) may be increasing nutrient loading into the system.</p>
5	0		
<p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>5</td> <td>0</td> </tr> </table>	5	0	<p>The assessment area was dominated by Carolina willow. Weedy and/or exotic species were present. Vegetation appears altered and disturbed, with species tolerant of disturbance present. Vegetation appears to be similar in size/age, and dense and overgrown.</p>
5	0		

Score = sum of above scores/30 (if uplands, divide by 20)
current or w/o pres with
0.53 0

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

For impact assessment areas
FL = delta x acres = 0.53*4.84 = 2.565, rounded up to 2.57

Delta = [with-current]
-0.53

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

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

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name SR 70 from CR 29 to Lonesome Island Road		Application Number		Assessment Area Name or Number 641	
FLUCCs code 641		Further classification (optional) PEM1Ad		Impact or Mitigation Site? Impact	
Assessment Area Size 12.96 acres					
Basin/Watershed Name/Number South Kissimmee		Affected Waterbody (Class) Class III		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands The project area is approximately 18 miles northeast of Lake Okeechobee and has ditches running west to east that connect to canals that ultimately outfall to Lake Okeechobee. The city of Lake Placid is approximately 7.5 miles northeast of the project area and Lake Istokpoga is 7 miles north of the site.					
Assessment area description The assessment areas are located within agricultural lands south of SR 70. Vegetation consists of a dominance of soft rush with minimal cut grass, maidencane and smartweed.					
Significant nearby features State Road 70.			Uniqueness (considering the relative rarity in relation to the regional landscape.) The assessment area is not unique.		
Functions wildlife habitat, nutrient assimilation, flood control			Mitigation for previous permit/other historic use N/A		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Based on field observations wildlife utilization can be reasonably expected by various amphibians, freshwater turtles, snakes, and birds seasonally			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Anticipated utilization by listed species would include the little blue heron (<i>Egretta caerulea</i>) (ST), tri-colored heron (<i>Egretta tricolor</i>) (ST), and wood storks (<i>Mycteria americana</i>)(FT) for foraging.		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): No wildlife utilization observed at time of assessment.					
Additional relevant factors: FLUCFCS 641 includes WL 4, WL 5, and WL 7					
Assessment conducted by: R. Bruce Williams / M. Rasmussen			Assessment date(s): 10/17/2018 and 05/21/2020		

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

Site/Project Name SR 70 from CR 29 to Lonesome Island Road	Application Number	Assessment Area Name or Number 641
Impact or Mitigation Permanent Impact	Assessment conducted by: R. Bruce Williams / M. Rasmussen	Assessment date: 10/17/2018 / 5/21/2020

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 6	with 0	The assessment area is directly south of SR 70, located on pastureland. SR 70 and property fencing acts as a barrier to wildlife movement. Large areas of undeveloped lands surround the assessment area, providing wildlife habitat. Assessment area partially drained/ditched from agricultural ditches and the large roadside canal. SR 70 and the large canal to the north may affect hydrological connectivity to downstream areas. Assessment areas provide downstream benefit through nutrient assimilation.
.500(6)(b)Water Environment (n/a for uplands) w/o pres or current 6	with 0	This herbaceous wetland has good hydrology as indicated by soils saturated to the surface. This wetland appears to be an isolated wetland that is supported hydrologically by surface runoff. Adjacent land uses may contribute chemicals and/or excess nutrients into the system, affecting water quality. The drainage ditch north adjacent to the wetland most likely causes some increased subsurface drainage (no direct connections/culverts observed). SR 70 north adjacent to the wetland may interrupt any hydrological connections there may have been historically to habitat in the north. In addition, the tilling, ditching, and utilization by cattle of the surrounding areas may be affecting hydrology due to excess drainage from ditches and compaction of soils by cattle.
.500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community w/o pres or current 7	with 0	The vegetation in this herbaceous wetland consisted primarily of native species. Minimal exotic/nuisance species present. Vegetation present includes soft rush (<i>Juncus effusus</i>), cut grass (<i>Leersia oryzoides</i>), maidencane (<i>Panicum hemitomon</i>), saltbush (<i>Baccharis halimifolia</i>), Peruvian primrose willow (<i>Ludwigia peruviana</i>), alligatorweed (<i>Alternanthera philoxeroides</i>), spadeleaf (<i>Centella asiatica</i>), bluestem (<i>Andropogon</i> spp.), pennywort (<i>Hydrocotyle umbellata</i>), smooth beggarticks (<i>Bidens laevis</i>) and smartweed (<i>Persicaria</i> spp.) Vegetation appears healthy, with appropriate size and distribution. Cover by weedy and/or exotic species minimal. Surrounding land management not optimal for appropriate wildlife support.

Score = sum of above scores/30 (if uplands, divide by 20)	
current or w/o pres 0.63	with 0

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

For impact assessment areas
FL = delta x acres = 0.63*12.96 = 8.165, rounded up to 8.17

Delta = [with-current]
-0.63

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

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

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

Site/Project Name SR 70 from CR 29 to Lonesome Island Road		Application Number		Assessment Area Name or Number 641	
FLUCCs code 641		Further classification (optional) PEM1Ad		Impact or Mitigation Site? Impact	
Assessment Area Size 0.54					
Basin/Watershed Name/Number South Kissimmee		Affected Waterbody (Class) Class III		Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)	
Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands The project area is approximately 18 miles northeast of Lake Okeechobee and has ditches running west to east that connect to canals that ultimately outfall to Lake Okeechobee. The city of Lake Placid is approximately 7.5 miles northeast of the project area and Lake Istokpoga is 7 miles north of the site.					
Assessment area description The assessment areas are located within agricultural lands south of SR 70. Vegetation consists of a dominance of soft rush with minimal cut grass, maidencane and smartweed.					
Significant nearby features State Road 70			Uniqueness (considering the relative rarity in relation to the regional landscape.) The assessment area is not unique.		
Functions wildlife habitat, nutrient assimilation, flood control			Mitigation for previous permit/other historic use N/A		
Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found) Based on field observations wildlife utilization can be reasonably expected by various amphibians, freshwater turtles, snakes, and birds seasonally			Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) Anticipated utilization by listed species would include the little blue heron (<i>Egretta caerulea</i>) (ST), tri-colored heron (<i>Egretta tricolor</i>) (ST), and wood storks (<i>Mycteria americana</i>)(FT) for foraging.		
Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): No wildlife utilization observed at time of assessment.					
Additional relevant factors: FLUCFCS 641 includes WL 4, WL 5, and WL 7					
Assessment conducted by: R. Bruce Williams / M. Rasmussen			Assessment date(s): 10/17/2018 and 05/21/2020		

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

Site/Project Name SR 70 from CR 29 to Lonesome Island Road	Application Number	Assessment Area Name or Number 641
Impact or Mitigation Secondary Impact	Assessment conducted by: R. Bruce Williams / M. Rasmussen	Assessment date: 10/17/2018 / 5/21/2020

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

<p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>6</td> <td>5</td> </tr> </table>	6	5	<p>The assessment area is directly south of SR 70, located on pastureland. SR 70 and property fencing acts as a barrier to wildlife movement. Large areas of undeveloped lands surround the assessment area, providing wildlife habitat. Assessment area partially drained/ditched from agricultural ditches and the large roadside canal. SR 70 and the large canal to the north may affect hydrological connectivity to downstream areas. Assessment areas provide downstream benefit through nutrient assimilation. With impact: project will increase barriers to movement and habitat fragmentation.</p>
6	5		
<p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>6</td> <td>6</td> </tr> </table>	6	6	<p>This herbaceous wetland has good hydrology as indicated by soils saturated to the surface. This wetland appears to be an isolated wetland that is supported hydrologically by surface runoff. Adjacent land uses may contribute chemicals and/or excess nutrients into the system, affecting water quality. The drainage ditch north adjacent to the wetland most likely causes some increased subsurface drainage (no direct connections/culverts observed). SR 70 north adjacent to the wetland may interrupt any hydrological connections there may have been historically to habitat in the north. In addition, the tilling, ditching, and utilization by cattle of the surrounding areas may be affecting hydrology due to excess drainage from ditches and compaction of soils by cattle. With impact: hydrology and water quality to be maintained through the construction and operation of a stormwater management system.</p>
6	6		
<p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>7</td> <td>6</td> </tr> </table>	7	6	<p>The vegetation in this herbaceous wetland consisted mainly of soft rush (<i>Juncus effusus</i>) with 90% coverage. Vegetation appears healthy, with appropriate size and distribution. Cover by weedy and/or exotic species minimal. Surrounding land management not optimal for appropriate wildlife support. With impact: disturbance and edge effects may increase exotic species, disrupt community composition and structure.</p>
7	6		

Score = sum of above scores/30 (if uplands, divide by 20)
current or w/o pres with
0.63 0.57

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

For impact assessment areas
FL = delta x acres = 0.06 * 0.54 = 0.0324 - rounded up to 0.04

Delta = [with-current]
0.06

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

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