STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
TECHNICAL REPORT COVERSHEET

NATURAL RESOURCES EVALUATION ADDENDUM

The City of Palm Bay

Malabar Road Project Development and Environment (PD&E) Study

Limits of Project: St. Johns Heritage Parkway to Minton Road

Brevard County, Florida

Financial Management Number: 437210-1-28-01

ETDM Number: 14396

Date: July 2024

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 Federal Highway Administration and FDOT.

Florida Department of Transportation

RON DESANTIS
GOVERNOR

719 S. Woodland Boulevard
DeLand, Florida 32720-6834

JERROD W. PERDUE, P.E.
SECRETARY

August 21, 2024

Zakia Williams
US Fish and Wildlife Service
North Florida Ecological Services Office
7915 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517

RE: Request for Section 7 Informal Consultation
Malabar Road PD&E Study
Brevard County, Florida
Financial Management Number: 437210-1-28-01

Florida Ecological Services Field Office

Service Project Code No. 2022-I-0358

The U.S. Fish and Wildlife Service has reviewed the information provided and finds that the proposed action is not likely to adversely affect any federally listed species or designated critical habitat protected by the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 et. seq.). A record of this consultation is on file at the Florida Ecological Services Field Office.

This fulfills the requirements of section 7 of the Act and further action is not required. If modifications are made to the project, if additional information involving potential effects to listed species becomes available, or if a new species is listed, reinitiation of consultation may be necessary.

Supervisor

Dear Ms. Zakia Williams

The Florida Department of Transportation is conducting a Project Development and Environment (PD&E) Study to evaluate the proposed widening of Malabar Road from St. Johns Heritage Parkway to Minton Road in Brevard County, Florida. As part of the study, a Natural Resources Evaluation (NRE) has been developed to assess the project for its impacts to wetlands and protected species. The NRE was submitted to the US Fish and Wildlife Service (USFWS) on November 29, 2021, and the USFWS subsequently issued concurrence on December 17, 2021. Due to project modifications, an NRE Addendum has been developed, and the Florida Department of Transportation (FDOT) is reinitiating consultation.

Agency coordination to obtain species and habitat-related information has occurred through the Efficient Transportation Decision Making (ETDM) Program Screening. The final ETDM Summary Report was published on October 25, 2019. The project received a Degree of Effect of Moderate (3) from the USFWS, and the project's class of action is a Type II Categorical Exclusion. Additional coordination took place in December 2019 and is included in Appendix E in the NRE.

The study area is either partially or wholly within several consultation areas; however, there is no suitable habitat for the following species: Everglade snail kite (*Rostrhamus sociabilis plumbeus*), Florida grasshopper sparrow (*Ammodramus savannarum floridanus*), red-cockaded woodpecker (*Picoides borealis*), Carter's warea (*Warea carteri*), Lewton's polygala (*Polygala lewtonii*), and short-leaved rosemary (*Conradina brevifolia*). As there is no suitable habitat and no documented occurrences, it has been determined that the project will have "no effect" for any of these

species. Additionally, it is anticipated that the proposed project will have no impact on the bald eagle as there are no eagle's nests within the project area.

There are five (5) federally protected animal species (Audubon's crested caracara, eastern indigo snake, Florida scrub-jay, tricolored bat, eastern black rail, and wood stork). These species, and their associated effect determinations, are discussed below:

Audubon's Crested Caracara (*Polyborus plancus audubonii*) – Suitable habitat for the caracara was observed near the eastern terminus of the project study area. A species-specific caracara survey was conducted from January through April 2020. Five caracara observation stations were established within the project study area. Adult and juvenile caracara were observed. Caracara activity included foraging in the pastures and along the roadsides, perching on trees and powerlines, traveling over and between pastures, and demonstrating mating behavior, such as pairs perching together, preening, and sharing food was observed. Nesting activity was documented on several occasions, resulting in the positive identification of two caracara nests. The nests range from approximately 1041 meters to approximately 1105 meters from proposed project activities.

The Standard Local Operating Procedures for Endangered Species (SLOPES) for Audubon's crested caracara and the FWS Guidelines provide a series of recommended restrictions for activities in the primary and secondary zones both during nesting season and outside nesting season. The Guidelines and SLOPES flowchart were utilized to determine the impacts on the caracara as a result of the proposed project. The survey identified two caracara nests located within 1500 meters of the proposed project activities; and therefore, avoidance or implementation of conservation measures must be utilized to ensure the project is not likely to adversely affect the caracara. Both strategies will be utilized to eliminate adverse effects to the caracara. To avoid and minimize impacts to caracara foraging habitat, the recommended preferred pond site (C8 and C9 Atl. 1) was chosen to reduce impacts to suitable habitat within 1,500 meters from the nests. Conservation measures will be implemented for areas within the protection zone where avoidance was not practicable. The SLOPES flowchart followed the sequence which concluded with conservation measures and actions proposed outside nesting season in order to obtain a not likely to adversely affect determination.

Based on the distance of the proposed construction activities from the nest; existing disturbances which do not appear to affect caracara nesting; lack of caracara utilization due to unsuitable foraging habitat within the proposed construction footprint; remaining foraging capacity; implementation of conservation measures, including constructing outside of nesting season as described above, FDOT has determined this project "may affect, but is unlikely to adversely affect" the Audubon's crested caracara.

Eastern Indigo Snake (*Drymarchon couperi*) - Suitable habitat for the eastern indigo snake was observed within the project study area. Suitable habitat for the gopher tortoise was also observed;

however, no gopher tortoise burrows (a primary source of shelter) were identified within the proposed project limits during field reviews.

The FWS has a programmatic effect key for the indigo snake. Following this 2013 key, (A) the project is not located in open water or salt marsh, (B) the permit will be conditioned for use of the Services Standard Protection Measures For the Eastern Indigo Snake during site preparation and project construction, (C) there are gopher tortoise burrows, holes, cavities, or other refugia where a snake could be buried or trapped and injured during project activities, (D) the project will impact less than 25 acres of xeric habitat supporting less than 25 active and inactive gopher tortoise burrows, and (E) any permit will be conditioned such that all gopher tortoise burrows, active or inactive will be excavated prior to site manipulation in the vicinity of the burrow. Based on use of the programmatic key, FDOT has determined that this project would result in a "may affect, but not likely to adversely affect" determination for this species.

Florida Scrub-Jay (*Aphelocoma coerulescens*) - The project study area contains habitats consisting mostly of Type III or non-ranked (i.e., non-suitable) scrub-jay habitats. Suitable habitat is suboptimal for the scrub jay as most of these areas contained pine trees or cabbage palms which provide perches for scrub jay avian predators. Scrub jays were not observed during any field events.

A species-specific scrub-jay survey was conducted in areas of suitable habitat during March and April of 2020. Twelve call-stations were established in areas of potential habitat within and adjacent to the limits of construction. No scrub-jays were identified during the survey.

Based on the scrub-jay survey results as well as the current site conditions and limits of proposed impacts, FDOT has determined that this project "may affect, but is not likely to adversely affect" the Florida scrub-jay.

Tricolored Bat (*Perimyotis subflavus*) – Suitable foraging and roosting habitat for the tricolored bat was observed within the proposed project area. The project corridor is mostly developed, and offsite habitat will remain including the adjacent St. Johns River corridor.

FDOT will continue consultation with the USFWS regarding the tricolored bat during the design and permitting phase as needed. If the listing status of the tri-colored bat is elevated by USFWS to threatened or endangered and the proposed site is located within the consultation area during the design and permitting phase of the proposed project, consultation with the USFWS will be re-initiated.

Eastern black rail (*Laterallus jamaicensis jamaicensis*)- Suitable habitat is present within the proposed pond sites for the project. No eastern black rails were observed during field visits and according to FNAI, there has been no documented occurrences within the project area. Technical assistance was provided by USFWS on July 7, 2024, confirming that deferring a species-specific survey until the design phase of the project is acceptable.

Wood Stork (*Mycteria americana*) - The FWS wood stork colony database was searched for active wood stork colonies located within 15-miles of the project area. According to the FWS wood stork colony website, portions of the study area fall within the Core Foraging Area (CFA) of seven wood stork breeding colonies (Deseret Ranch, Grange Island, Grant Farm Island, Kemper Ranch, Micco North, Micco South, and US 192 East). Wood storks were observed during field surveys. The project will impact approximately 0.85 acres of Suitable Foraging Habitat (SFH).

The FWS has a programmatic Effect Determination Key for the Wood Stork in Central and North Peninsular Florida (FWS 2008). Following this 2008 key, (A) The project is more than 2,500 feet from a colony site, (B) project impacts SFH, (C) project impacts to SFH are greater than or equal to 0.5-acre, (D) project impacts to SFH are within the CFA of a colony site, (E-1) project provides SFH compensation within the Service Area of a Service-approved wetland mitigation bank or wood stork conservation bank within the CFA. Based on the programmatic key, FDOT has determined that the project "may affect, but not likely to adversely affect" the wood stork.

We ask that USFWS review the enclosed NRE Addendum for this project and provide comment and/or concurrence with FDOT's determinations for these species. We appreciate the coordination effort and input already provided and look forward to continued consultation on this project. If you have any questions, feel free to contact either Edward Northey at (386) 943-5047, Edward.Northey@dot.state.fl.us or me at (386) 943-5436, Casey.Lyon@dot.state.fl.us at your convenience. Thank you for your assistance with this project.

Sincerely,

DocuSigned by:
Casey Lyon
3B9B80E4828F45B...

Casey Lyon
Environmental Manager
FDOT, District Five

cc: Jack Freeman (Kittelson), Jason Houck, Jada Barhorst (Ardurra)

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September 18, 2024

Deysia Roberson
Florida Department of Transportation District 5
719 South Woodland Boulevard
DeLand, Florida 32720
Deysia.Roberson@dot.state.fl.us

Re: Malabar Road from St. Johns Heritage Parkway to Minton Road, Natural Resource Evaluation Addendum, Brevard County

Dear Ms. Roberson:

Florida Fish and Wildlife Conservation Commission (FWC) staff reviewed the above-referenced Natural Resources Evaluation (NRE) report in accordance with FWC's authorities under Chapter 379, Florida Statutes, and Chapter 68A-27, Florida Administrative Code.

The Florida Department of Transportation District Five in cooperation with the City of Palm Bay is conducting a Project Development and Environment (PD&E) study to evaluate the proposed widening of Malabar Road from St. Johns Heritage Parkway to Minton Road. The proposed project is approximately four miles long and will widen Malabar Road from two to four lanes in order to improve safety, increase capacity, and accommodate multi-modal features along the corridor. The subject Addendum evaluates the preferred stormwater pond alternatives and a floodplain compensation area.

The NRE report was prepared as part of the PD&E study to document wetlands, surface waters, protected species, critical habitat, and Essential Fish Habitat within the project's corridor; evaluate potential impacts associated with the proposed project; provide effect determinations for protected species; identify mitigation needs, and coordinate with federal and state regulatory and resource agencies. The proposed pond alternative C-7 Alt 3 and the floodplain compensation area abut or are in close proximity to the Three Forks Conservation Area managed by the St. Johns River Water Management District (SJRWMD), and coordination with SJRWMD is recommended. FWC staff agrees with the effect determinations and supports the project implementation measures and commitments for protected species. Further coordination could be required during future species-specific surveys and project permitting.

For specific technical questions regarding the content of this letter, please contact Elijah McBride at (904) 603-1200 or Elijah.McBride@myfwc.com. All other inquiries may be directed to ConservationPlanningServices@MyFWC.com.

Sincerely,

Laura DiGruttolo
Land Use Planning Supervisor
Office of Conservation Planning Services

ld/em
Malabar Road from St Johns Heritage Parkway to Minton Road NRE_59825_09182024

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EXECUTIVE SUMMARY

This Natural Resources Evaluation (NRE) addendum has been prepared to document the design changes following agency review of the NRE submitted in November 2021. Since being approved by the US Fish and Wildlife Service (USFWS) on December 17, 2021, and the Florida Fish and Wildlife Conservation Commission on December 29, 2021, changes have been made to the preferred concepts, including the locations of the proposed stormwater management facilities. This NRE addendum is intended to supplement the 2021 NRE and document impacts to natural resources and update effect determinations as a result of the design changes. The design changes are summarized below.

There were two (2) pond site alternatives evaluated for each of the six drainage basins, with the exception of Basin A, for which the existing Pond A was chosen as the preferred site. In addition to pond alternatives, one floodplain compensation (FPC) site was investigated to provide compensation for one Floodplain Impact Area (FIA).

- Following the preliminary analysis, an additional pond site alternative and FPC site in Basin C-7 were assessed and not included in the 2021 NRE. This analysis resulted in a change of the preferred pond site in Basin C-7 from Atl. 2 to Alt. 3.
- The preferred pond site in Basin C-20 changed from Alt. 2 to Alt. 1.

These changes resulted in the following updates to protected species and wetlands:

- An effect determination for the eastern black rail was added due to impacts to suitable habitat associated with the preferred pond sites. All other species effect determinations for federal and state species remain unchanged from the 2021 NRE.
- A commitment to conduct a species-specific survey for the eastern black rail during the design phase was added.
- The monarch butterfly was added as a candidate species proposed for federal listing. FDOT added a commitment to reinitiate consultation with the USFWS if the listing status of the monarch is elevated to threatened or endangered.
- The tricolored bat was added as a candidate species proposed for federal listing. FDOT added a commitment to reinitiate consultation with the USFWS if the listing status of the tricolored bat is elevated to threatened or endangered.
- Wetland impacts increased from 0.0 acres to 1.35 acres of direct wetland impacts and 0.11 acres of secondary impacts.
- Surface water impacts increased from 4.08 acres to 4.12 acres.

1.0 PROJECT OVERVIEW

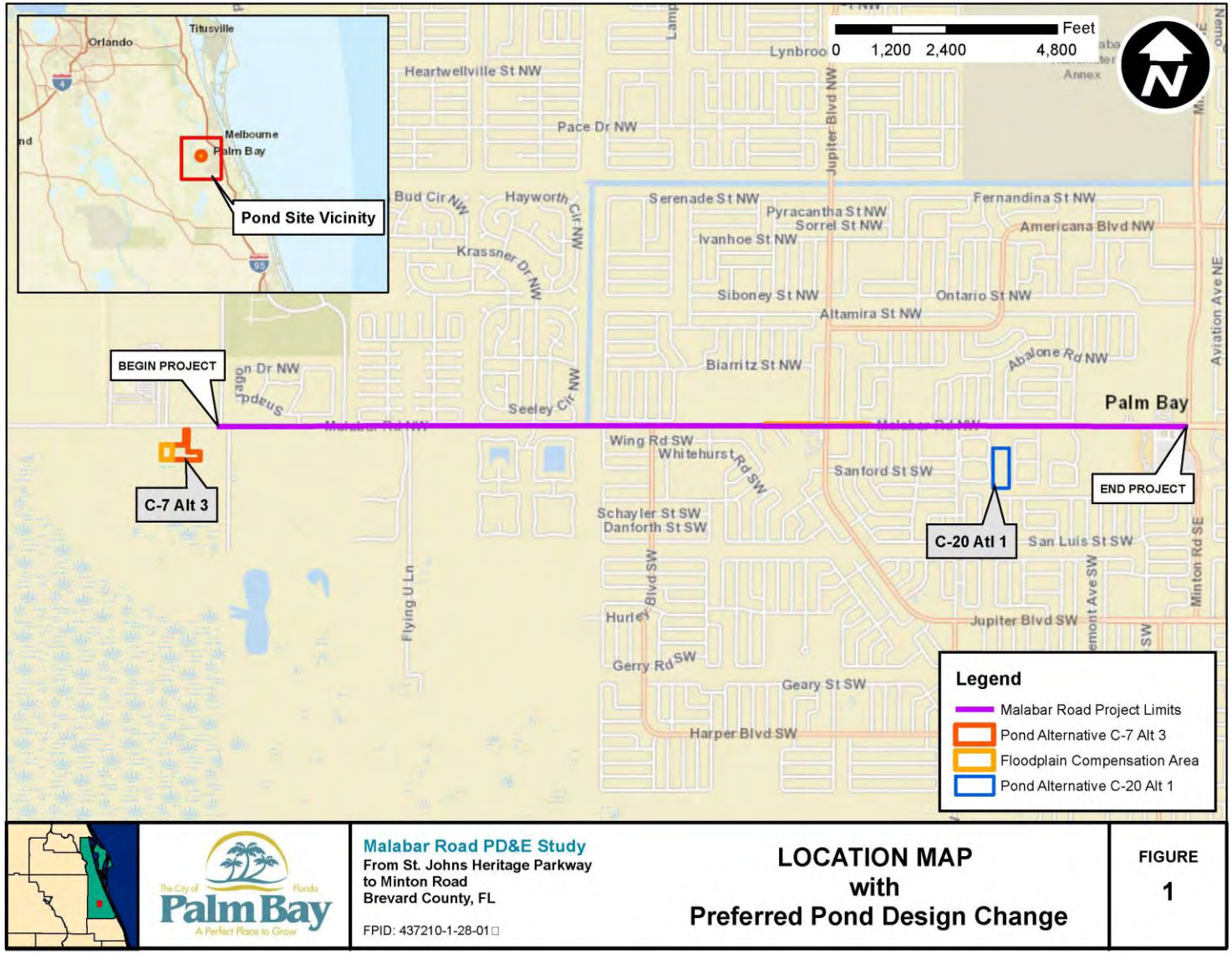
The City of Palm Bay, in cooperation with the Florida Department of Transportation (FDOT) District Five, is proposing to widen Malabar Road from St. Johns Heritage Parkway to Minton Road in Brevard County, Florida. The proposed project is approximately four miles long and will widen Malabar Road from two to four lanes in order to improve safety, increase capacity, and accommodate multi-modal features along the corridor.

The preferred pond site locations have been changed since the November 2021 NRE. In Basin C-20, the preferred pond changed from Alt. 2 to Atl. 1. Both of these sites had been reviewed as part of the original PD&E study and documented in the 2021 NRE. However, 0.46 acres of direct impacts to wetlands are associated with this preferred pond site selection. As a result of the wetland impacts associated with this preferred pond site, an effect determination for the eastern black rail was added.

Following the preliminary analysis, an additional pond site alternative and PFC were assessed in Basin C-7. This pond (C-7 Alt. 3) and FPCA site are located south of Malabar Road and to the west of the intersection with St. Johns Heritage Parkway. Ecologists assessed the proposed C-7 Atl. 3 pond and FPC site to evaluate the area for the presence of wetlands and Other Surface Waters (OSW), as well as protected species and their habitats. This assessment included a field review in May of 2023. A memo detailing impacts to wetlands and listed species associated with the C-7 Alt. 3 pond and FPC site is included in Appendix A. The changes to the preferred pond site locations and pond site alternatives do not have any involvement with Essential Fish Habitat (EFH) and therefore an EFH assessment is not required.

This NRE addendum has been prepared to document changes and provide updated information since the November 2021 NRE was completed for the PD&E Study. Figure 1 shows the design changes detailing the new preferred pond site locations.

Figure 1: Location Map With Preferred Pond Design Change



1.1 AGENCY COORDINATION

The November 2021 NRE was provided to the Florida Fish and Wildlife Commission (FWC) and US Fish and Wildlife Service (USFWS). The USFWS provided concurrence on December 17, 2021. Consultation with FWC was initiated and the agency concurred with the species effect determinations, implementation measures, and commitments for protected species on December 29, 2021. Technical assistance for the eastern black rail was provided by the USFWS in July 2024 and is included in Section 2.1.2 and Appendix D of this report.

2.0 PROTECTED SPECIES AND HABITAT

All state and federally listed species with the potential to be impacted by the proposed project were designated an anticipated effect determination during the PD&E Study. These effect determinations remain valid with the changes in the preferred pond site locations.

2.1 FEDERALLY LISTED SPECIES

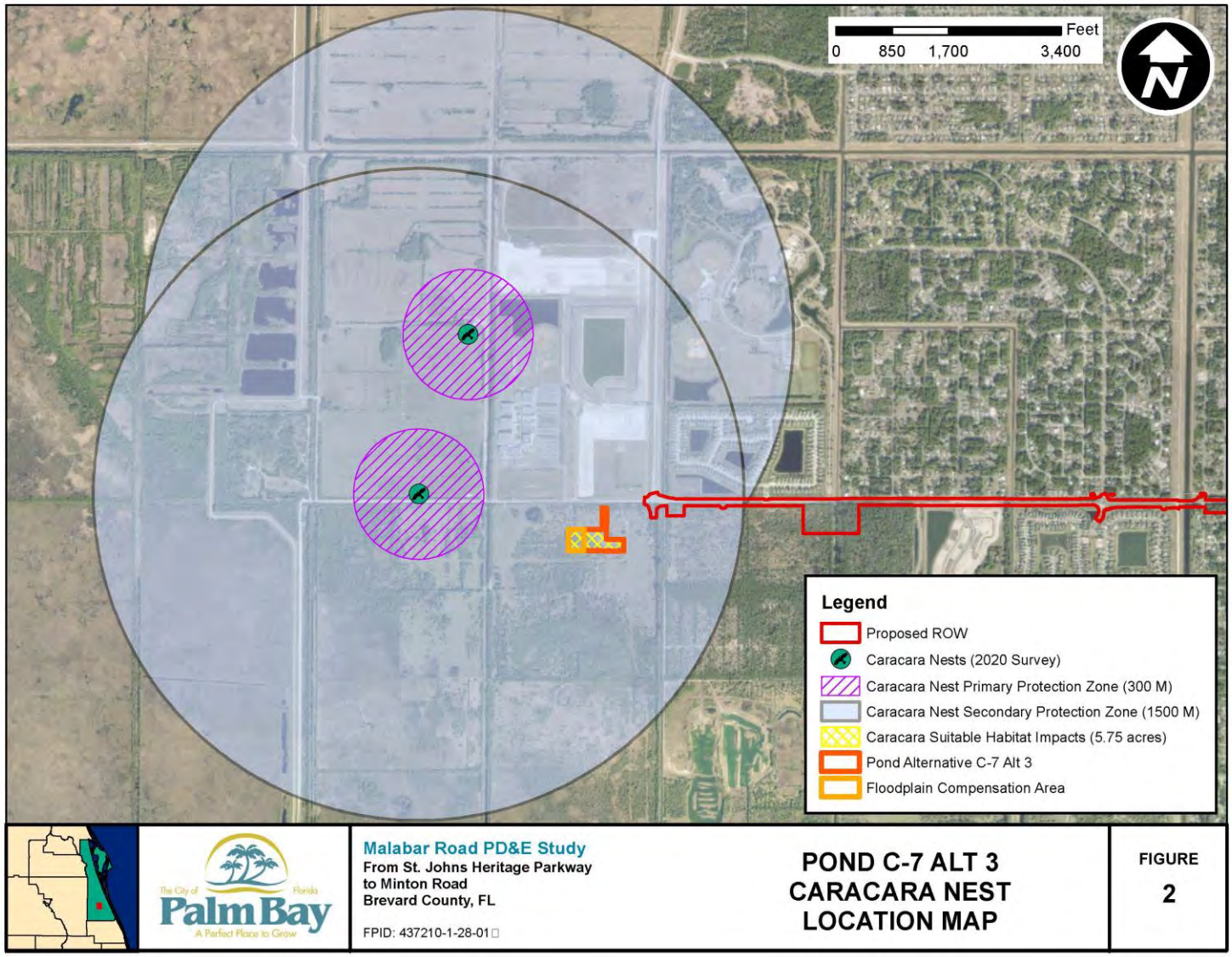
The following species information has been updated from the November 2021 NRE. Subsequent to the 2021 NRE submittal, the monarch butterfly and tricolored bat were added as candidate species proposed for listing. Additionally, the eastern black rail has been included in this addendum due to the presence of suitable black rail habitat within the updated preferred pond sites. No Critical Habitat occurs within the project limits and the project will therefore not result in destruction or adverse modification of designated Critical Habitat.

2.1.1 Audubon's Crested Caracara

USFWS Audubon's crested caracara Consultation Area (CA) is located over the entire project. It is a resident species in Florida that prefers grasslands and pastures in the south-central region of the state, particularly in Glades, DeSoto, Highlands, Okeechobee, and Osceola Counties. Historically, caracara inhabited dry or wet prairies with scattered cabbage palms (*Sabal palmetto*) and occasionally used lightly wooded areas next to those prairies. Many of those areas were converted and frequently replaced by pastures with non-native sod-forming grasses that still support caracaras. The caracara is classified as threatened because of habitat losses and population declines.

Suitable habitat was observed for the Audubon's crested caracara within the C-7 Alt 3 pond site and adjacent FPC. A species-specific caracara survey was conducted from January through April 2020, which included the C-7 Atl. 3 pond and FPC site. Details on the survey methodology can be found in the November 2021 NRE. Adult and juvenile caracara were observed on multiple days of the survey, including observations of adults within the proposed C-7 Alt 3 pond site. The survey resulted in the identification of two caracara nests along the north side of Malabar Road, shown in Figure 2. The subject pond site and FPC are within the USFWS 1,500-meter nest protection zone for crested caracara. Conservation measures will be implemented for areas within the protection zone where avoidance was not practicable. The Standard Local Operating Procedures for Endangered Species (SLOPES) flowchart for Audubon's crested caracara followed the sequence which concluded with conservation measures and actions proposed outside nesting season in order to obtain a not likely to adversely affect determination.

Figure 2: Pond C-7 Alt 3 Caracara Nest Location Map



The addition of the C-7 Alt 3 pond site and adjacent FPC will not impact the primary zone. The pond site and FPC will impact approximately 5.75 acres of caracara habitat within the 1,500-meter nest protection zone. The NRE includes a commitment to conduct a species-specific survey for the Audubon's crested caracara per USFWS protocol during the design and permitting phase of the proposed project. Final impacts to caracara foraging and nesting habitat may change as a result of this survey and will be calculated in design following the completion of the survey. Commitments also include avoiding construction within 1,500 meters of caracara nests during nesting season. Based on the distance of the proposed construction activities from the nest; existing disturbances which do not appear to affect caracara nesting; remaining foraging capacity; implementation of conservation measures, including constructing outside of nesting season as described above, the Recommended Preferred Alternative, including proposed pond sites, "may affect, but is not likely to adversely affect" the Audubon's crested caracara.

The SLOPES for Audubon's crested caracara and the USFWS Caracara Species Conservation Guidelines for South Florida (Guidelines) provide a series of recommended restrictions for activities in the primary and secondary zones both during nesting season and outside nesting season. These recommendations are the basis for the USFWS's concurrence determination. In evaluating impacts to the caracara, the USFWS defines a primary zone as 300 meters (985 feet) and a secondary zone as 1,500 meters (4,9520 feet). Projects within 1,500 meters of a nest that can avoid adverse impacts and/or implement conservation measures would provide a "may affect, but not likely to adversely affect" determination. If impacts are considered adverse and conservation measures cannot be implemented, the project "may affect, and is likely to adversely affect" the caracara and formal consultation is required.

The Guidelines and SLOPES flowchart were utilized to determine the impacts on the caracara as a result of the Recommended Preferred Alternative. The survey identified two caracara nests located within 1500 meters of the Recommended Preferred Alternative; and therefore, avoidance or implementation of conservation measures must be utilized to ensure the project is not likely to adversely affect the caracara. Both strategies will be utilized to eliminate adverse effects to the caracara. To avoid and minimize impacts to caracara foraging habitat, the recommended preferred pond site (C8 and C9 Atl. 1) was chosen to eliminate impacts to suitable habitat within 1,500 meters from the nests. Conservation measures will be implemented for areas within the protection zone where avoidance was not practicable. The SLOPES flowchart followed the sequence which concluded with conservation measures and actions proposed outside nesting season in order to obtain a not likely to adversely affect determination.

The Guidelines identify conservation measures that help reduce the impact of a project on the caracara and are compatible with caracara survival. The conservation measures are defined below along with project-specific measures and conditions in **bold text**.

<u>Conservation Measures</u>

- Management Zones – In evaluating project impacts to the caracara, the USFWS defines a primary zone as 300 m (985 ft), and a secondary zone as 1,500 m (4,920 ft) outward from the nest tree. Protection of the primary zone is very important particularly during the nesting season and must be maintained in order to provide conditions for successful

reproduction. The Recommended Preferred Alternative will not impact the primary zone.

- Secondary Zone –This zone is generally defined as the foraging territory in which the nest site is located. This secondary zone is used by caracaras for the collection of nest material, roosting, and feeding. This amount of suitable habitat contiguous to the nest site may be required to maintain the ecologic function of the nesting territory. Conservation measures for this zone are directed at maintaining the foraging capacity of the area.

    - Maintain pasture, grassland, and wetlands that are necessary for caracara foraging. The impacts within the secondary protection zone are primarily located within the existing roadway and disturbed right-of-way. Construction activities that extend beyond the existing right-of-way to accommodate the roundabout at Malabar Road and St. Johns Heritage Parkway (SJHP) impact approximately 3.01 acres of land which is dominated by dense Brazilian pepper (*Schinus terebinthifolia*) and provides no suitable foraging habitat. Construction activities associated with Pond C-7 Alt 3 and the adjacent FPC site will impact approximately 5.75 acres of caracara habitat. Based on the location of the nests, current conditions including road traffic, farming activities and activities associated with the school, do not appear to affect life history requirements of the caracara. Construction activities including clearing have commenced for the St. Johns Preserve, a single-family home subdivision located just west of St. Johns Heritage Parkway and north of Malabar Road. This development is located between the nests and proposed project impacts, thus limiting utilization to the east where the roadway construction activities occur. The disturbance from the surrounding land uses and construction of the previously mentioned development have not inhibited nesting activity, therefore it is unlikely that disturbance from the construction of the Recommended Preferred Alternative would have an adverse effect. Based on observations in the field, including documented flight activity, caracara are utilizing the large tracts of suitable habitat located to the north, west and south of the nest. Most of these lands are part of the Three Forks Conservation Area and provide optimal caracara nesting and foraging habitat. Foraging capacity will not decrease as a result of the Recommended Preferred Alternative.

    - Limit use of chemicals toxic to wildlife, including pesticides, fertilizers, or herbicides, as they may impact the caracara through its food supply. Due to the nature of the project, use of pesticides, fertilizers, or herbicides are not anticipated.

- Non-nesting Season (May to October) – Impacts during the active nesting season can be avoided by timing of activities near the nest site. Construction activities associated

with the Malabar Road and St. Johns Heritage Parkway intersection occur within the secondary protection zone and will be conducted during the non-nesting season.

Based on the distance of the proposed construction activities from the nest; existing disturbances which do not appear to affect caracara nesting; lack of caracara utilization due to unsuitable foraging habitat within the proposed construction footprint; remaining foraging capacity; implementation of conservation measures, including constructing outside of nesting season as described above, the Recommended Preferred Alternative "may affect, but is not likely to adversely affect" the Audubon's crested caracara. This NRE includes a commitment to conduct a species-specific survey for the Audubon's crested caracara per USFWS protocol during the design and permitting phase of the proposed project. Final impacts to caracara foraging and nesting habitat may change as a result of this survey and will be calculated in design following the completion of the survey, however the project is anticipated to maintain an effect determination of "may affect, but not likely to adversely affect" for the caracara.

2.1.2 Eastern Black Rail

The eastern black rail is listed by the USFWS as threatened due to habitat loss, destruction, and modification; sea level rise and tidal flooding; and incompatible land management. They are wetland-dependent birds and are primarily associated with herbaceous, persistent emergent plant cover. They require dense overhead perennial herbaceous cover with underlying moist to saturated soils with or adjacent to very shallow water. Suitable eastern black rail habitat is present within the proposed pond sites for the project. No eastern black rails were observed during the field reviews and according to FNAI, no individuals have been documented in the project area. Based on the best available information, there is a low probability of occurrence of the eastern black rail within the project area.

Technical assistance for the species was provided by the USFWS on July 7, 2024 and is included in Appendix D. The technical assistance included confirmation by USFWS that deferring species-specific surveys until the design phase of the project was acceptable. Based on this technical assistance, the Department has committed to conducting a species-specific survey in accordance with the current USFWS survey protocol during the design phase of the project. Additionally, unavoidable wetland impacts will be mitigated to prevent loss of wetland functions and values. Based on this information, the proposed project "may affect" the eastern black rail. Following the completion of the survey in the design phase, the Department will re-initiate consultation with the USFWS under Section 7 of the ESA.

2.1.3 Monarch Butterfly

The monarch butterfly is a candidate species proposed for federal listing. In many regions, monarchs breed year-round, including Florida. During breeding season they lay their eggs on their obligate milkweed host plant (primarily *Asclepias* spp.). Milkweed and flowering plants are needed for monarch habitat. No individuals were observed during the field reviews, however flowering plants and habitat suitable to support milkweed species were observed. Consultation with USFWS under Section 7 of the ESA is not required for candidate species, like the monarch. FDOT will continue consultation with the USFWS regarding the monarch butterfly listing status

and potential impacts to this species during the design and permitting phase as needed. FDOT commits to re-initiating consultation with the USFWS to determine the avoidance and minimization measures for protection of the monarch butterfly.

2.1.4 Tricolored Bat

The tricolored bat is a candidate species proposed for federal listing. It is Florida's smallest bat and is distinguished by its unique tricolored fur and pink forearms that contrast their black wings. This wide-ranging species is found throughout the central and eastern United States, and portions of Canada, Mexico, and Central America. Typically hibernating in caves and mines during the winter, tricolored bats in the southern U.S. have an increased utilization of culverts as hibernacula, with shorter hibernation durations and increased winter activity. The tricolored bat is mostly associated with forested habitats and requires habitat suitable for roosting, foraging, and commuting between winter and summer habitats. Roosting singly or in small groups, the tricolored bat prefers to roost in caves, tree foliage, tree cavities, Spanish moss, and man-made structures such as buildings and culverts. They form summer colonies in forested habitats, utilizing cavities, bark, and foliage. The maternity season for tricolored bats in Florida is May 1 through July 15. They forage most commonly over water courses and along forest edges.

Suitable roosting and foraging habitat was observed within the proposed project area; however, the project corridor is mostly developed. While the proposed project will impact suitable roosting and foraging habitat, offsite habitat will remain, including the adjacent St. Johns River corridor, which provides abundant habitat for roosting, foraging, and connectivity between habitats. FDOT will continue consultation with the USFWS regarding the tricolored bat listing status and potential impacts to this species during the design and permitting phase. If the listing status of the tri-colored bat is elevated by USFWS to threatened or endangered, FDOT commits to re-initiating consultation with the USFWS to determine the avoidance and minimization measures for protection of the tricolored bat.

2.1.5 Wood Stork

The wood stork is listed by the USFWS as threatened. Wood storks are associated with freshwater and estuarine wetlands that are used for nesting, roosting, and foraging. Nesting typically occurs in medium to tall trees that occur in stands located in swamps or islands surrounded by open water. Preferred foraging habitat includes wetlands with a mosaic of submerged and/or emergent aquatic vegetation and shallow open-water areas. Particularly attractive feeding sites are depressions in marshes or swamps where fish become concentrated during periods of receding water levels.

According to the USFWS's North Florida Ecological Service Office, the habitats within 15 miles of a wood stork breeding colony are considered to be wood stork CFAs. Portions of the study area fall within the CFA of seven wood stork breeding colonies: Deseret Ranch, Grange Island, Grant Farm Island, Kemper Ranch, Micco North, Micco South, and US 192 East. Wood storks were observed flying over and foraging within the study area. Ecologists observed Suitable Foraging Habitat (SFH) throughout the study area including roadside ditches and canals, and areas within proposed pond site locations. Previously, 0.69 acres of direct impacts to SFH were anticipated from the proposed project. As a result of the change in the preferred pond sites, the Recommended Preferred Alternative will now impact 0.85 acres of SFH. According to the Wood

Stork Effect Determination Key for Central and North Peninsular Florida (Appendix B), the proposed project will result in the following sequential determination: A-B-C-D-E (1) = "may affect, but is not likely to adversely affect" the wood stork. Unavoidable impacts greater than 0.5 acres will be offset at a USFWS-approved mitigation bank within the appropriate CFA to satisfy the elements detailed in the key to ensure that the proposed project does not adversely affect the wood stork. Currently, there are banks with available credits to satisfy the mitigation requirements.

2.1.6 Other Federally Listed Species

The design changes have not resulted in impacts or changes to effect determinations made for other federally listed species with the potential to occur in the project area. In summary, these are:

No Effect

- Everglade snail kite (*Rostrhamus sociabilis audubonii*)
- Florida grasshopper sparrow (*Ammodramus savannarum floridanus*)
- Red-cockaded woodpecker (*Picoides borealis*)
- Carter's warea (*Warea carteri*)
- Lewton's polygala (*Polygala lewtonii*)
- Short-leaved rosemary (*Conradina brevifoia*)

May Affect, Not Likely to Adversely Affect

- Eastern indigo snake (*Drymarchon couperi*)
- Florida scrub-jay (*Aphelocoma coerulescens*)

May Affect

- Eastern black rail (*Laterallus jamaicensis jamaicensis)*

The American alligator (*Alligator mississippiensis*) was listed as an anticipated "may affect, not likely to adversely affect" determination in the November 2021 NRE. Since that time, the USFWS has indicated that they will not consult on this species given that is listed only by similarity of appearance to the American crocodile (*Crocodylus actus*). As a result, no further evaluation or agency coordination will occur for the alligator.

2.2 STATE LISTED SPECIES

The gopher tortoise was a candidate species proposed for federal listing and documented as such in the November 2021 NRE. Since that time, the USFWS announced that listing the gopher tortoise Eastern Distinct Population Segment (DPS) as threatened or endangered is not warranted for most of its range and withdrew the Eastern DPS as a candidate. The gopher tortoise is protected by state regulation and listed as threatened by the FWC.

The design changes have not resulted in changes to effect determinations made for state listed species with the potential to occur in the project area. In summary, these are:

No Effect Anticipated

- Celestial lily (*Nemastylis floridana*)
- Coastal vervain (*Glandularia maritima*)
- Cut-throat grass (*Panicum abscissum*)
- Florida beargrass (*Nolina atopocarpa*)
- Large-flowered rosemary (*Conradina grandiflora*)
- Nodding pinweed (*Lechea cernua*)
- Plume polypody (*Polypodium plumula*)
- Redmargin zephyr-lily (*Zephranthes simpsonii*)
- Sand butterfly pea (*Centrosema Arenicola*)
- Small's flax (*Linum carteri var. smallii*)
- Swamp plume polypody (*Polypodium ptilodon*)
- Widespread polypody (*Polypodium dispersum*)
- Yellow-flowered butterwort (*Pinguicula lutea*)

No Adverse Effect Anticipated

- Florida burrowing owl (*Athene cunicularia floridana*)
- Florida pine snake (*Pituophis melanoleucus*)
- Florida sandhill crane (*Antigone canadensis pratensis*)
- Gopher tortoise (*Gopherus polyphemus*)
- Little blue heron (*Egretta caerulea*)
- Reddish egret (*Egretta rufescens*)
- Roseate spoonbill (*Platalea ajaja*)
- Southeastern American kestrel (*Falco sparverius Paulus*)
- Tricolored heron (*Egretta tricolor*)
- Blue-flowered butterwort (*Deeringothamnus pulchellus*)
- Many-flowered grass pink (*Calopogon multiflorus*)

3.0 WETLAND EVALUATION

During the PD&E study, a wetland evaluation was conducted to identify the location, extent, and functional value of wetlands within the study area; the potential direct, indirect, or cumulative effects of the project's actions on those wetlands; and available mitigation options to satisfy permit requirements from regulatory agencies. In the November 2021 NRE, the proposed wetland and OSW impacts totaled 4.08 acres, which consisted of only impacts to OSWs.

The design change of the preferred pond site alternatives results in additional impacts to wetlands and OSWs. The Recommended Preferred Alternative, including the preferred pond sites, will directly impact 1.35 acres of wetlands and 4.12 acres of OSWs, and incur 0.11 acres of secondary impacts (Figure 3). Table 1 details the impacts to wetlands and OSWs.

The Preferred Alternative has been evaluated in accordance with Federal Executive Order 11990 - "Protection of Wetlands." Based upon the above considerations, it is determined that there are no practicable alternatives to the proposed construction in wetlands and that the proposed action

includes all practicable measures to minimize harm to wetlands which may result from such use. As the project advances through subsequent phases, avoidance and minimization of wetland impacts will continue to be considered to the maximum extent practicable. Therefore, with proper mitigation, the proposed project is expected to result in no significant short or long term impacts to wetlands.

Table 1: Proposed Wetland and Other Surface Water Impacts

Wetland ID	FLUCFCS	Description	Impact Type	Impact Area (ac.)
* WL 1	641	Freshwater Marshes	Pond C-20 Alt. 1	0.46
* WL 4	617	Mixed Wetland Hardwoods	Pond C-7 Alt. 3 & FPC	0.60
			FPC (Secondary)	0.09
* WL 4	641	Freshwater Marsh	Pond C-7 Alt. 3 & FPC	0.29
OSW 2	510	Streams and Waterways	ROW	0.01
OSW 3	510	Streams and Waterways	ROW	0.06
OSW 4	510	Streams and Waterways	ROW	0.06
OSW 5	510	Streams and Waterways	ROW	0.17
OSW 8	510	Streams and Waterways	ROW	0.07
OSW 10	510	Streams and Waterways	ROW	0.15
OSW 11	530	Reservoirs	ROW	0.05
OSW 15	510	Streams and Waterways	ROW	0.01
OSW 16 (C-20 Canal)	510	Streams and Waterways	ROW	2.23
OSW 18	510	Streams and Waterways	ROW	0.72
OSW 19	510	Streams and Waterways	ROW	0.19
OSW 20	510	Streams and Waterways	Pond C-8 & C-9 Atl. 1	0.36
* OSW 22	510	Streams and Waterways	Pond C-7 Alt. 3 & FPC	0.04
			FPC (Secondary)	0.02
Total Direct Wetland Impacts				1.35
Total Other Surface Waters				4.12
Total Secondary Impacts				0.11
Total Proposed Impacts				5.58
* Denotes new impact from the design change				

Figure 3: Pond C-7 Alt 3 Wetlands and Other Surface Waters Map

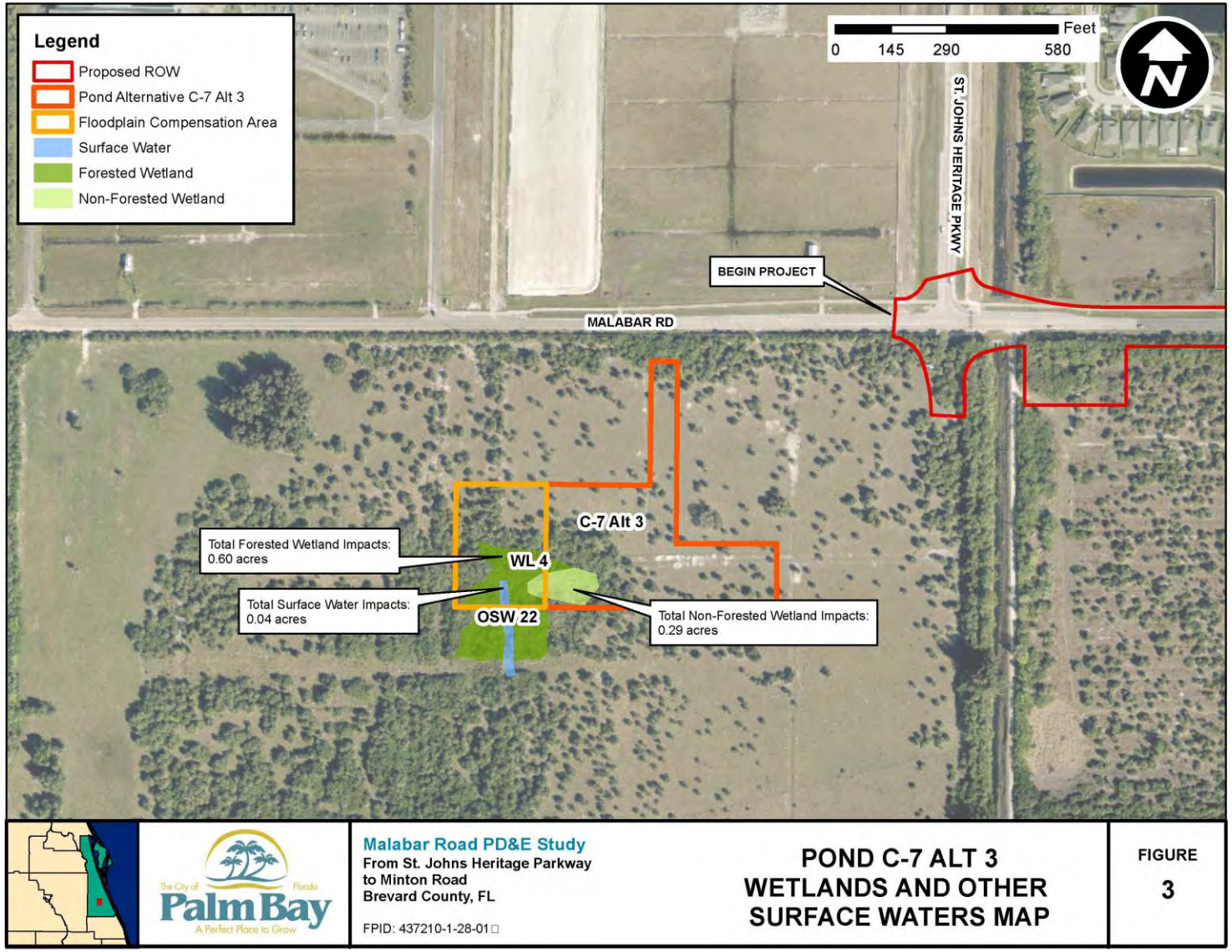
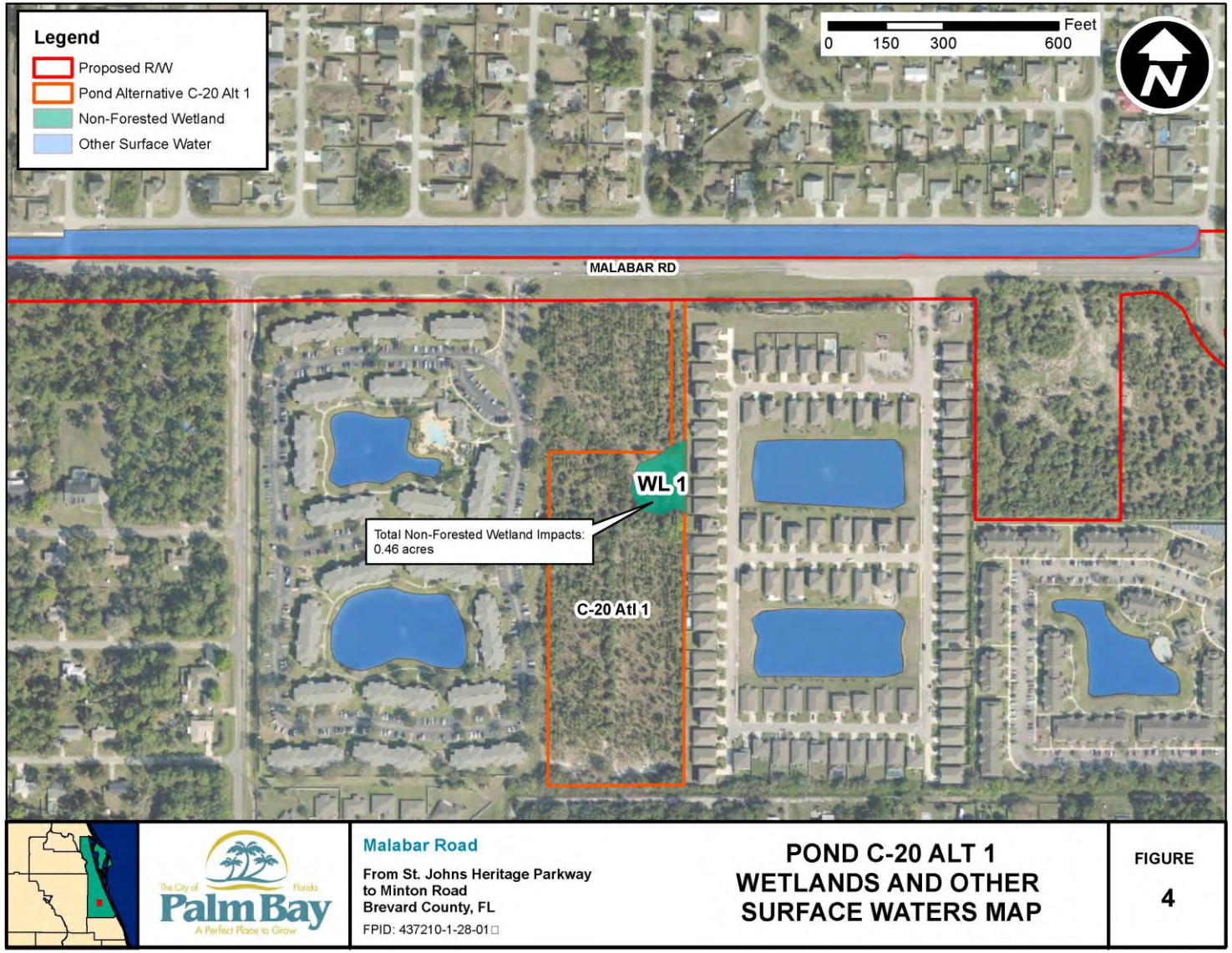


Figure 4: Pond C-20 Alt 1 Wetlands and Other Surface Waters Map



The Uniform Mitigation Assessment Method (UMAM) was utilized to determine the functional value provided by wetlands and OSWs and the amount of mitigation required to offset adverse impacts to those areas for regulatory permits. Most of the impacted OSWs are considered upland cut components of the existing manmade drainage system; and therefore, these OSWs were not included in the wetland assessment as mitigation is not anticipated. One impacted surface water (OSW 22) is wetland cut and has therefore been included in the assessment. The results of the UMAM assessment are provided in Table 2. UMAM assessment forms are located in Appendix C.

Table 2: Proposed Wetland Functional Loss

Wetland ID	Wetland Type	Impact Type	LLS	WE	CS	Impact Area (ac.)	Functional Loss
WL 1	Herbaceous	Direct	5	6	6	0.46	0.261
WL 4	Forested	Direct	6	5	6	0.60	0.340
		Secondary	5	4	5	0.09	0.009
WL 4	Herbaceous	Direct	6	5	6	0.29	0.164
OSW 22	Surface Water	Direct	6	5	6	0.04	0.023
		Secondary	5	4	5	0.02	0.002
						Total Functional Loss	0.799

LLS = Location and Landscape Support
WE = Water Environment
CS = Community Structure

Adverse wetland and OSW 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 U.S.C. §1344. As proposed the project will directly impact 1.35 acres of wetlands and 4.12 acres of OSW, and incur 0.11 acres of secondary impacts, resulting in a function loss of 0.799 units for state and federal jurisdictional wetlands. Compensatory mitigation for this project will be completed through the use of mitigation banks and any other mitigation options that satisfy state and federal requirements.

4.0 CONCLUSION

Based on existing information and both general and species-specific surveys, the Recommended Preferred Alternative will not jeopardize the continued existence of a protected species and/or result in the destruction or adverse modification of critical habitat. Table 3 summarizes the effect determinations for the listed species with the potential to occur in the project area.

The Recommended Alternative will result in direct impacts to 1.35 acres of wetlands and 4.12 acres of OSWs, and 0.11 acres of secondary impacts. The total project impacts will result in a functional loss of 0.799 UMAM units. During the design phase, the FDOT will calculate the appropriate mitigation to satisfy the requirements of Part IV of Chapter 373, F.S., and U.S.C. §1344.

Table 3: Effect Determinations for Listed Species

Common Name	Scientific Name	Status	Effect Determination
Reptiles			
Eastern indigo snake	*Drymarchon couperi*	FT	MANLAA
Florida pine snake	*Pituophis melanoleucus*	ST	NAEA
Gopher tortoise	*Gopherus polyphemus*	ST	NAEA
Birds			
Audubon's crested caracara	*Caracara plancus audubonii*	FT	MANLAA
Bald eagle	*Haliaeetus leucocephalus*	BGEPA / MBTA	---
Eastern black rail	*Laterallus jamaicensis jamaicensis*	FT	MAY EFFECT
Everglade snail kite	*Rostrhamus sociabilis plumbeus*	FE	NO EFFECT
Florida burrowing owl	*Athene cunicularia floridana*	ST	NAEA
Florida grasshopper sparrow	*Ammodramus savannarum floridanus*	FE	NO EFFECT
Florida sandhill crane	*Antigone canadensis pratensis*	ST	NAEA
Florida scrub-jay	*Aphelocoma coerulescens*	FT	MANLAA
Little blue heron	*Egretta caerulea*	ST	NAEA
Red-cockaded woodpecker	*Picoides borealis*	FE	NO EFFECT
Reddish egret	*Egretta rufescens*	ST	NAEA
Roseate spoonbill	*Platalea ajaja*	ST	NAEA
Southeastern American kestrel	*Falco sparverius paulus*	ST	NAEA
Tricolored heron	*Egretta tricolor*	ST	NAEA
Wood stork	*Mycteria americana*	FT	MANLAA
Mammals			
Florida black bear	*Ursus americanus floridanus*	M	---
Tricolored bat	*Perimyotis subflavus*	C	---
Insects			
Monarch butterfly	*Danaus plexippus*	C	---
Plants			
Blue-flowered butterwort	*Deeringothamnus pulchellus*	ST	NAEA
Carter's warea	*Warea carteri*	FE	NO EFFECT
Celestial lily	*Nemastylis floridana*	SE	NEA
Coastal vervain	*Glandularia maritima*	SE	NEA
Cut-throat grass	*Panicum abscissum*	SE	NEA
Florida beargrass	*Nolina atopocarpa*	ST	NEA
Giant Orchid	*Pteroglossaspis ecristata*	ST	NEA
Large-flowered rosemary	*Conradina grandiflora*	ST	NEA
Lewton's polygala	*Polygala lewtonii*	FE	NO EFFECT
Many-flowered grass pink	*Calopogon multiflorus*	ST	NAEA
Nodding pinweed	*Lechea cernua*	ST	NEA

Common Name	Scientific Name	Status	Effect Determination
Plume polypody	*Polypodium plumula*	SE	NEA
Redmargin Zephyrlily	*Zephranthes simpsonii*	ST	NEA
Sand butterfly pea	*Centrosema Arenicola*	SE	NEA
Short-leaved rosemary	*Conradina brevifolia*	FE	NO EFFECT
Small's flax	*Linum carteri var. smallii*	SE	NEA
Swamp plume polypody	*Polypodium ptilodon*	SE	NEA
Widespread polypody	*Polypodium dispersum*	SE	NEA
Yellow-flowered butterwort	*Pinguicula lutea*	SE	NEA

MANLAA = May Affect, Not Likely to Adversely Affect NAEA = No Adverse Effect Anticipated
NEA = No Effect Anticipated
FE = Federally Endangered FT = Federally Threatened
SE = State Endangered ST = State Threatened
M = Managed C = Candidate
BGEPA = Bald and Golden Eagle Protection Act MBTA = Migratory Bird Treaty Act

4.1 IMPLEMENTATION MEASURES

The following are the implementation measures listed in the November 2021 NRE. The verbiage has been updated to reflect the 2023 FDOT Office of Environmental Management Standard Environmental Commitments Guidance.

- Conduct surveys for listed plants in suitable habitat prior to construction and coordinate with the appropriate agency as needed if listed plants are observed within the project area.
- Surveys for gopher tortoise burrows, as well as commensal species, will be conducted during the design phase and permits to relocate tortoises and commensals as appropriate will be obtained from the FWC.
- Surveys for the Florida burrowing owl will be conducted during the design phase. If it is determined individuals or nest areas are found and could be impacted by the project, FDOT will coordinate with FWC to determine appropriate avoidance and minimization measures to apply during construction.
- Provide compensatory mitigation for wetland impacts resulting from project design and construction, per 373.4137, FS and 33 USC § 1344.
- Apply erosion and sediment controls to other best management practices prior to and throughout construction to prevent adverse impacts to wetland and aquatic resources adjacent to the project area.

The following was a commitment in the November 2021 NRE, but is now classified as an implementation measure:

- Conduct specific-species pre-construction surveys for the southeastern American kestrel and coordinate with FWC to receive the necessary authorizations and implement appropriate conservation measures prior to construction if applicable.

The following implementation measure was included in the November 2021 NRE, but has been eliminated as the southern fox squirrel has been removed from Florida's Endangered and Threatened Species List and is not protected under a management plan.

- Conduct specific-species pre-construction surveys for the Southern fox squirrel and coordinate with FWC to receive the necessary authorizations if applicable.

4.2 COMMITMENTS

The following commitments were included in the November 2021 NRE.

- Conduct a species-specific survey for the Audubon's crested caracara per USFWS protocol during the design and permitting phase of the proposed project.
- Avoid construction within 1,500 meters of caracara nests during nesting season by avoiding construction activities from November 1st to April 30th for areas within 1,500 meters of the potential nests.
- The most recent version of the USFWS Standard Protection Measures for the Eastern Indigo Snake will be utilized during construction.
- Provide appropriate mitigation for impacts to wood stork SFH, per the Wood Stork Effect Determination Key (USFWS 2008).

The following commitments were added:

- FDOT commits to reinitiating consultation during design and permitting with USFWS for the eastern black rail and providing the information necessary to determine the type, degree, and extent of impacts to listed species potentially adversely impacted by the proposed project. FDOT will develop mitigation measures in consultation with the USFWS to offset unavoidable impacts. Completion of consultation and documentation of the project's compliance with the avoidance, minimization and mitigation requirements for the impacted resources will be provided by FDOT in a subsequent project re-evaluation prior to each segment.

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

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

APPENDIX A

Pond Site C-7 Alt 3 and FPC Environmental Assessment Memorandum

Inwood consulting engineers

Memo

3000 Dovera Drive, Suite 200, Oviedo, FL 32765 I P: 407-971-8850 I F: 407-971-8955 I www.inwoodinc.com

DATE: 6/27/2023

TO: **Project File**

FROM: Riley Campana, Ecologist

RE: Pond Site C-7 Alt 3 and FPCA Environmental Assessment
Malabar Road PD&E Study from St. Johns Heritage Parkway to Minton Road
FPID: 437210-1-28-0
Brevard County, FL

This memorandum is intended to supplement the Natural Resources Evaluation (NRE) for Malabar Road Project Development and Environment (PD&E) Study. Inwood Consulting Engineers, Inc. (Inwood) performed an assessment of the proposed C-7 Alt 3 pond site to evaluate the area for the presence of wetlands and other surface waters, as well as protected species and their habitats. C-7 Alt 3 is located south of Malabar Road and to the west of the intersection with St. Johns Heritage Parkway. This pond site was not included in the original PD&E Study. A new floodplain compensation area (FPCA) is also proposed adjacent to the western edge of pond site C-7 Alt 3. The location of the proposed pond and FPCA is depicted in **Figure 1**.

Inwood ecologists performed a field review of the pond site and FPCA on May 31, 2023. The eastern portion of the pond is located in unimproved pasture. The pasture consists of sparse cabbage palms (*Sabal palmetto*) and live oaks (*Quercus virginiana*), with a dominant groundcover of bahia grass (*Paspalum notatum*). Other vegetation includes witchgrass (*Panicum oligosanthes*), shrubby false buttonweed (*Spermacoce verticillata*), caesarweed (*Urena lobata*), Brazilian pepper (*Schinus terebinthifolia*), broomsedge bluestem (*Andropogon virginicus*), and American beautyberry (*Callicarpa americana*).

A wetland was observed within the western portion of the proposed pond site and the FPCA. A portion of the wetland (particularly the western area) is forested and is dominated by cabbage palm and Brazilian pepper with no understory vegetation. The wetland also contains a non-forested component. Vegetation observed in the non-forested area of the wetland includes wax myrtle (*Morella cerifera*), rushes (*Juncus* spp.), smartweed (*Persicaria setacea*), duck potato (*Sagittaria latifolia*), maidencane (*Panicum hemitomon*), Fakahatchee grass (*Tripsacum dactyloides*), dogfennel (*Eupatorium capillifolium*), frog's bit (*Limnobium spongia*), barnyard grass (*Echinochloa crus-galli*), swamp fern (*Telmatoblechnum serrulatum*), knotweed (*Persicaria glabra*), dwarf St. John's wort (*Hypericum mutilum*), white top starrush (*Rhynchospora colorata*), Colombian waxweed (*Cuphea carthagenesis*), pickerelweed (*Pontederia cordata*), eastern black nightshade (*Solanum americanum*), sweetscent (*Pluchea odorata*), and swamp flatsedge (*Cyperus ligularis*).

One other surface water was observed within the FPCA. This surface water is a north-south running ditch that is cut through wetlands. The dominant vegetation within the ditch consists of smartweed, rushes, and barnyard grass. Other plant species present include pennywort (*Hydrocotyle* spp.), white top starrush, thistle (*Cirsium* spp.), and false daisy (*Eclipta prostrata*). Approximately **0.28** acres of direct impacts to wetlands are anticipated for pond C-7 Alt 3. Approximately **0.61** acres of direct impacts to wetlands and **0.04** acres of direct impacts to other surface waters are anticipated for the associated FPCA. Wetlands and other surface waters observed within the pond site and FPCA are shown in **Figure 2**.

Unavoidable wetland and other surface water impacts which will result from the construction of this project will be mitigated pursuant to Section 373.4137, Florida Statutes (F.S.), to satisfy all mitigation requirements of Part IV of Chapter 373, F.S., and United Stated Code (U.S.C.) §1344. Compensatory mitigation for this project will be completed through the use of mitigation banks and any other mitigation options that satisfy state and federal requirements. Mitigation for adverse impacts will be provided within the same drainage basin to provide reasonable assurances that the project will not cause unacceptable cumulative impacts.

Suitable habitat was observed for the Audubon's crested caracara, wood stork, gopher tortoise, Florida burrowing owl, Florida sandhill crane, listed wading birds, and southern fox squirrel within the C-7 Alt 3 pond site and adjacent FPCA. A species-specific caracara survey was conducted from January through April 2020. Details on the survey methodology can be found in the NRE document. Adult and juvenile caracara were observed on multiple days of the survey, including observations of adults within the proposed C-7 Alt 3 pond site. The survey resulted in the positive identification of two caracara nests along the north side of Malabar Road, shown in **Figure 3**. The subject pond site and FPCA are within the United States Fish and Wildlife Service's (USFWS) 1,500-meter nest protection zone for crested caracara. Conservation measures will be implemented for areas within the protection zone where avoidance was not practicable. The Standard Local Operating Procedures for Endangered Species flowchart for Audubon's crested caracara followed the sequence which concluded with conservation measures and actions proposed outside nesting season in order to obtain a not likely to adversely affect determination. The conservation measures are defined in the NRE along with project-specific measures and conditions.

The addition of the C-7 Alt 3 pond site and adjacent FPCA will not impact the primary zone. The pond site and FPCA will impact approximately 5.75 acres of caracara habitat within the 1,500-meter nest protection zone. The NRE includes a commitment to conduct a species-specific survey for the Audubon's crested caracara per USFWS protocol during the design and permitting phase of the proposed project. Final impacts to caracara foraging and nesting habitat may change as a result of this survey and will be calculated in design following the completion of the survey. Commitments also include avoiding construction within 1,500 meters of caracara nests during nesting season. Based on the distance of the proposed construction activities from the nest; existing disturbances which do not appear to affect caracara nesting; remaining foraging capacity; implementation of conservation measures, including constructing outside of nesting season as described above, the Recommended Preferred Alternative, including proposed pond sites, "**may affect, but is not likely to adversely affect**" the Audubon's crested caracara.

No other protected species were observed within the pond site during the field review in May of 2023, however wood storks were observed flying over and foraging within the study area during previous field reviews and caracara surveys. According to the Wood Stork Effect Determination Key for Central and North Peninsular Florida, the proposed project "**may affect, but is not likely to adversely affect**" the wood stork. This effect determination was made using the following sequence from the key: A-B-C-D-E(1). Unavoidable impacts to suitable wood stork foraging habitat will be offset at an USFWS-approved mitigation bank within the appropriate CFA to satisfy the elements detailed in the key to ensure that the proposed project does not adversely affect the wood stork.

Suitable gopher tortoise habitat was observed within the pond site location. A 100% gopher tortoise survey was not conducted. No gopher tortoise burrows were observed within the subject pond site or FPCA. The NRE includes an implementation measure to conduct species-specific pre-construction survey for gopher tortoises and coordinate with FWC to receive the necessary permit authorizations prior to construction. Based on the information provided above, the proposed project "**no adverse effect is anticipated**" for the gopher tortoise.

Suitable habitat for the Florida burrowing owl was observed within the pond site and FPCA, however ecologists did not observe burrowing owls during field reviews, general wildlife surveys, and species-specific surveys of the project area. If burrowing owls are observed onsite, coordination with the FWC will occur to discuss avoidance, minimization, and permitting options. The NRE includes an implementation measure to conduct specific-species pre-construction

surveys for the Florida burrowing owl and coordinate with FWC to receive the necessary authorizations and implement the appropriate conservation measures as needed prior to construction. Therefore, "**no adverse effect is anticipated**" for the burrowing owl resulting from the proposed project.

Florida sandhill cranes were observed on multiple occasions throughout the study area during the general wildlife and species-specific surveys. The non-forested wetland area within the pond site and FPCA could provide nesting and roosting habitat for the sandhill crane, and the unimproved pasture provides foraging habitat. Avoidance measures that eliminate the need for FWC take permitting include: avoid impacts to natural wetlands used for breeding, feeding, or sheltering; avoid activities within 400 feet of an active nest; and avoid land use conversion within 1,500 feet of the nest site until after young are capable of sustained flight. "**No adverse effect is anticipated**" for the Florida sandhill crane resulting from the project.

Four imperiled wading bird species have the potential to occur in the study area: the little blue heron, reddish egret, roseate spoonbill, and tricolored heron. Little blue herons and roseate spoonbills were observed during general wildlife and species-specific surveys. Ecologists observed suitable foraging with minimal nesting habitat for wading birds within the pond site and FPCA. No wading bird rookeries are located within the project area. No nesting activity was observed during the field reviews. Inclusion of a stormwater management system will provide a net benefit to water quality that will have a carryover benefit to state listed wading birds that will be addressed during permitting. "**No adverse effect is anticipated**" for wading birds resulting from the proposed project.

Ecologists observed suitable habitat for the southern fox squirrel within the C-7 Alt 3 pond site and adjacent FPCA. No individuals or nests were observed during field reviews of the site. The NRE document includes an implementation measure to conduct specific-species pre-construction surveys for the Southern fox squirrel and coordinate with FWC to receive the necessary authorizations if applicable. "**No adverse effect is anticipated**" for the southern fox squirrel resulting from the proposed project.

The C-7 Alt 3 pond site and FPCA will result in additional impacts to wetlands and other surface waters that were not included in the original NRE document. Mitigation will be provided for these impacts. The addition of the pond site and FCPA will not alter the effect determinations of any protected species as detailed in the NRE.

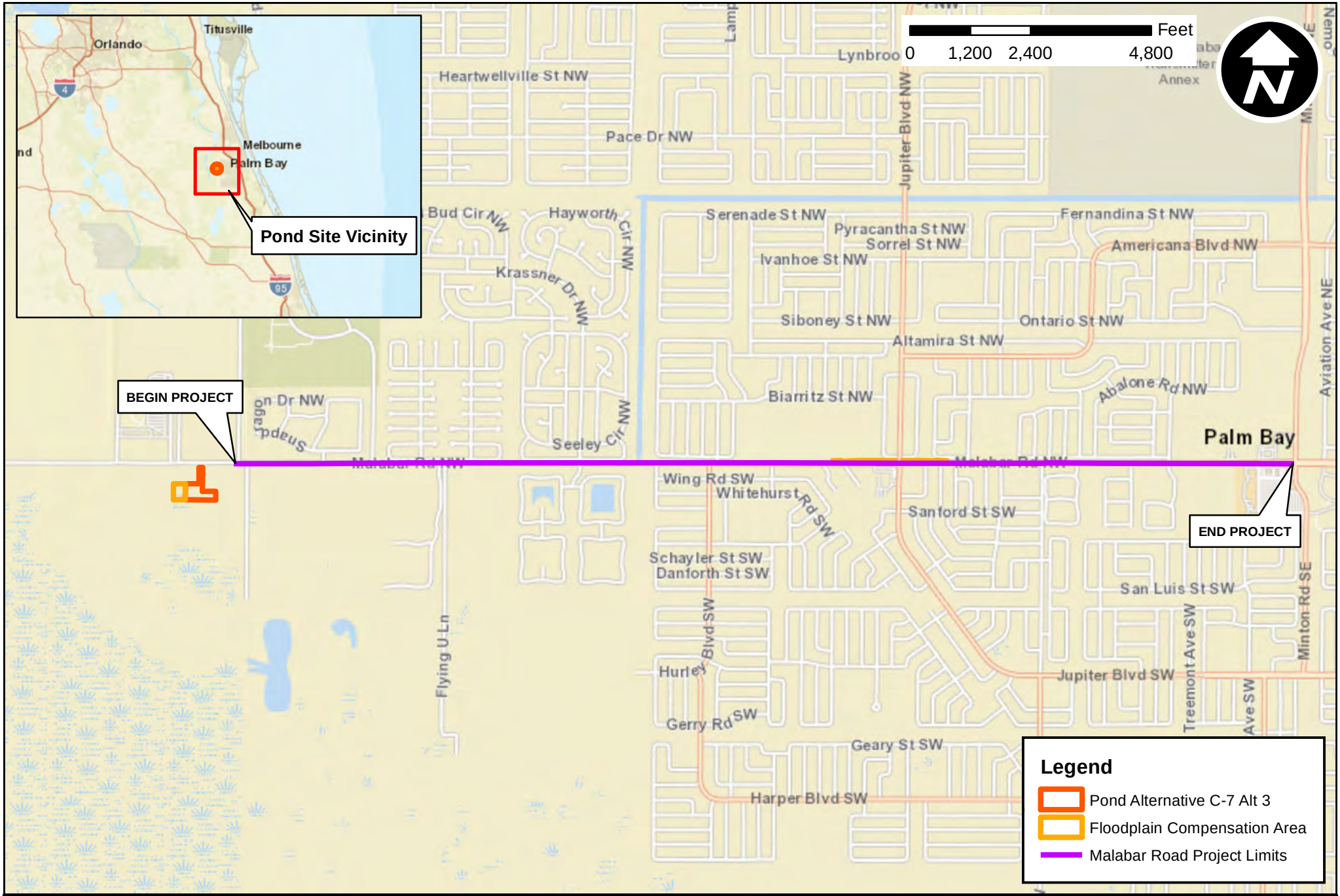
Enclosures: Photo Document, Figure 1, Figure 2, Figure 3

Photo 1: Representative of Unimproved Pasture within C-7 Alt 3 Pond Site

Photo 2: Representative of Surface Water within FPCA

Photo 3: Representative of Forested Wetland within C-7 Alt 3 Pond Site and FPCA

Photo 4: Representative of Non-Forested Wetland within C-7 Alt 3 Pond Site and FPCA



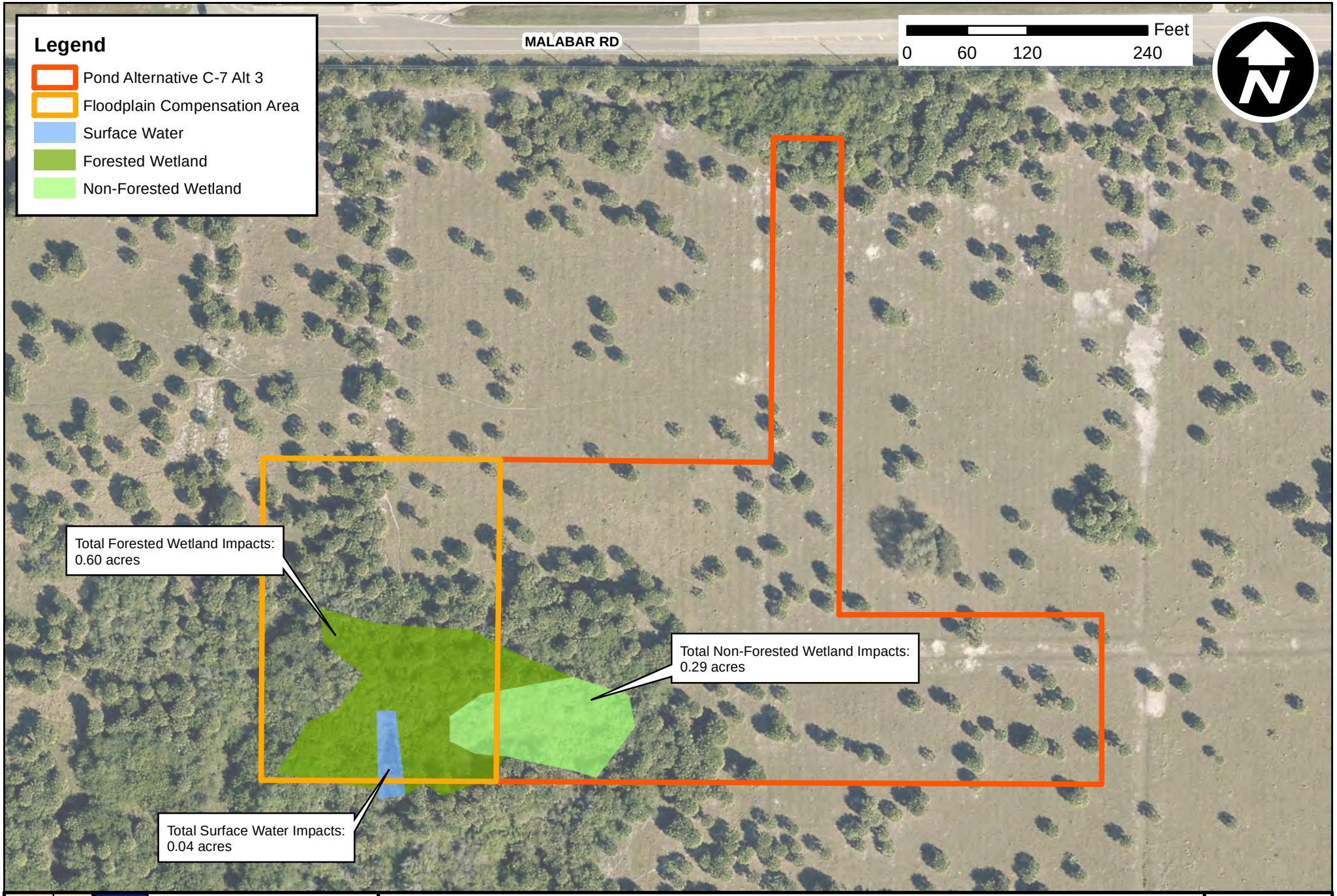
The City of Palm Bay Florida
A Perfect Place to Grow

Malabar Road PD&E Study
From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

POND C-7 ALT 3 LOCATION MAP

FIGURE
1



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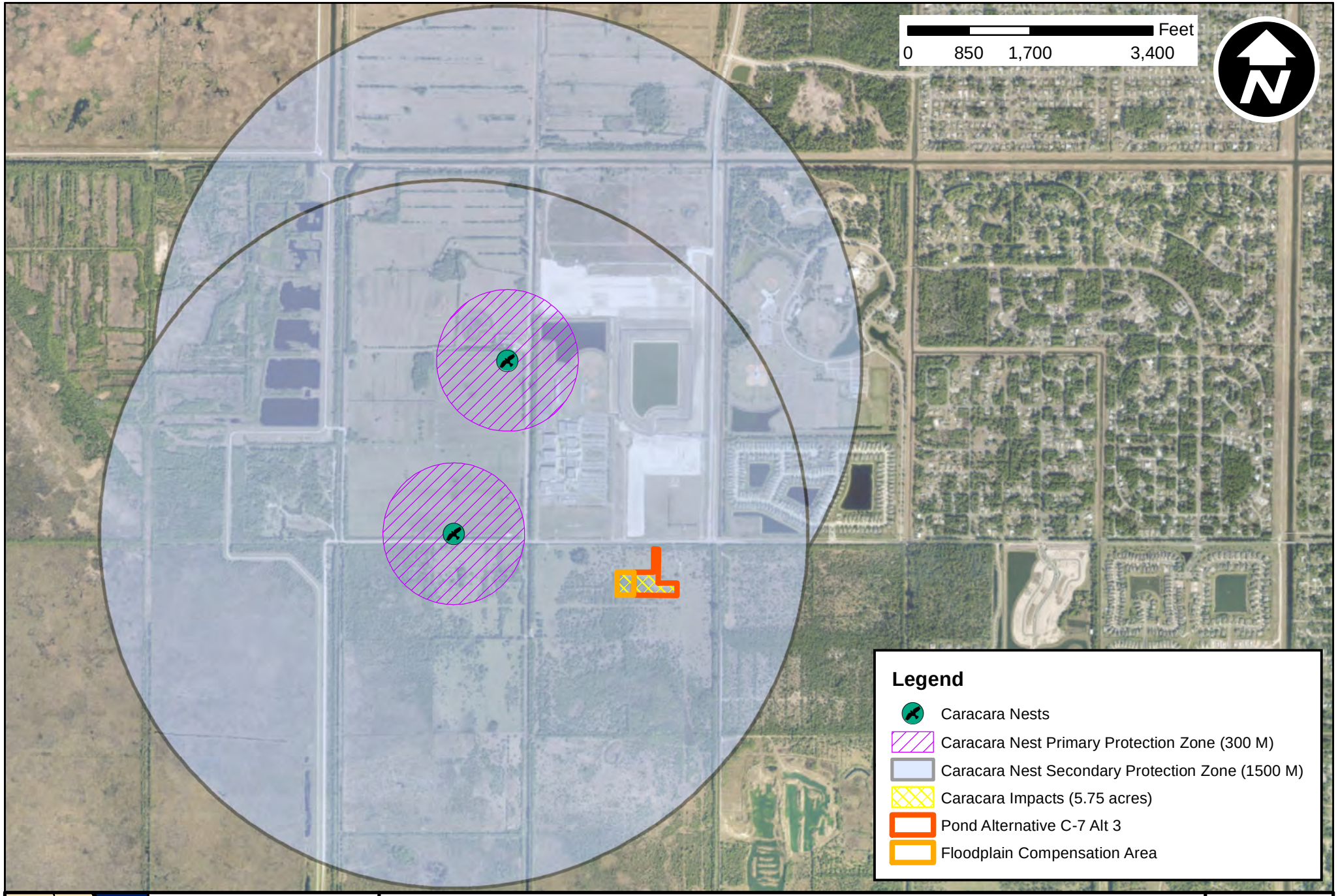
POND C-7 ALT 3 WETLANDS AND OTHER SURFACE WATERS MAP

FIGURE
2



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POND C-7 ALT 3 CARACARA NEST LOCATION MAP

FIGURE
3

APPENDIX B

Wood Stork Effect Determination Key

THE CORPS OF ENGINEERS, JACKSONVILLE DISTRICT, U. S. FISH AND WILDLIFE SERVICE, JACKSONVILLE ECOLOGICAL SERVICES FIELD OFFICE AND STATE OF FLORIDA EFFECT DETERMINATION KEY FOR THE WOOD STORK IN CENTRAL AND NORTH PENINSULAR FLORIDA
September 2008

Purpose and Background

The purpose of this document is to provide a tool to improve the timing and consistency of review of Federal and State permit applications and Federal civil works projects, for potential effects of these projects on the endangered wood stork (*Mycteria americana*) within the Jacksonville Ecological Services Field Office (JAFL) geographic area of responsibility (GAR see below). The key is designed primarily for Corps Project Managers in the Regulatory and Planning Divisions and the Florida Department of Environmental Protection or its authorized designee, or Water Management Districts. The tool consists of the following dichotomous key and reference material. The key is intended to be used to evaluate permit applications and Corps' civil works projects for impacts potentially affecting wood storks or their wetland habitats. At certain steps in the key, the user is referred to graphics depicting known wood stork nesting colonies and their core foraging areas (CFA), footnotes, and other support documents. The graphics and supporting documents may be downloaded from the Corps' web page at http://www.saj.usace.army.mil/permit or at the JAFL web site at http://www.fws.gov/northflorida/WoodStorks. We intend to utilize the most recent information for both the graphics and supporting information; so should this information be updated, we will modify it accordingly. **Note: This information is provided as an aid to project review and analysis, and is not intended to substitute for a comprehensive biological assessment of potential project impacts. Such assessments are site-specific and usually generated by the project applicant or, in the case of civil works projects, by the Corps or project co-sponsor.**

Explanatory footnotes provided in the key must be closely followed whenever encountered.

Scope of the key

This key should only be used in the review of permit applications for effects determinations on wood storks within the JAFL GAR, and not for other listed species. Counties within the JAFL GAR include Alachua, Baker, Bradford, Brevard, Citrus, Clay, Columbia, Dixie, Duval, Flagler, Gilchrist, Hamilton, Hernando, Hillsborough, Lafayette, Lake, Levy, Madison, Manatee, Marion, Nassau, Orange, Pasco, Pinellas, Putnam, St. Johns, Seminole, Sumter, Suwannee, Taylor, Union, and Volusia.

The final effect determination will be based on project location and description, the potential effects to wood storks, and any measures (for example project components, special permit conditions) that avoid or minimize direct, indirect, and/or cumulative

impacts to wood storks and/or suitable wood stork foraging habitat. Projects that key to a "no effect" determination do not require additional consultation or coordination with the JAFL. Projects that key to "NLAA" also do not need further consultation; however, the JAFL staff will assist the Corps if requested, to answer questions regarding the appropriateness of mitigation options. Projects that key to a "may affect" determination equate to "likely to adversely affect" situations, and those projects should not be processed under the SPGP or any other programmatic general permit. For all "may affect" determinations, Corps Project Managers should request the JAFL to initiate formal consultation on the Wood stork.

Summary of General Wood Stork Nesting and Foraging Habitat Information

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 either in swamps or on islands surrounded by relatively broad expanses of open water (Ogden 1991; Rodgers et al. 1996). 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 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.

In addition to limited human disturbance and land-based predation, successful nesting depends on the availability of suitable foraging habitat. Such habitat generally results from a combination 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 that tends to 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 opportunities, a variety of wetland habitats exhibiting short and long hydroperiods should be present. In terms of wood stork foraging, the Service (1999) describes a short hydroperiod as one where a wetland fluctuates between wet and dry in 1 to 5-month cycles, and a long hydroperiod where the wet period is greater than five consecutive months. Wood storks during the wet season generally feed in the shallow water of 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).

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, swamp sloughs, managed impoundments, stock ponds, shallow-seasonally flooded roadside or agricultural ditches, and narrow tidal creeks or shallow tidal pools. Good foraging conditions are characterized by water that is relatively calm, open, and having water depths between 5 and 15 inches (5 and 38 cm). Preferred foraging habitat includes wetlands exhibiting a mosaic of submerged and/or emergent aquatic vegetation, and shallow, open-water areas subject to hydrologic

regimes ranging from dry to wet. 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.

WOOD STORK KEY

Although designed primarily for use by Corps Project Managers in the Regulatory and Planning Divisions, and State Regulatory agencies or their designees, project permit applicants and co-sponsors of civil works projects may find this key and its supporting documents useful in identifying potential project impacts to wood storks, and planning how best to avoid, minimize, or compensate for any identified adverse effects.

A. Project within 2,500 feet of an active colony site[1]……*May affect*

Project more than 2,500 feet from a colony site……go to B

B. Project does not affect suitable foraging habitat[2] (SFH)…….*no effect*

Project impacts SFH[2]……go to C

C. Project impacts to SFH are less than or equal to 0.5 acre[3]…….....*NLAA*[4]

Project impacts to SFH are greater than or equal to 0.5 acre..……..go to D

D. Project impacts to SFH not within a Core Foraging Area[5] (see attached map) of a colony site, and no wood storks have been documented foraging on site…….....NLAA[4]

Project impacts to SFH are within the CFA of a colony site, or wood storks have been documented foraging on a project site outside the CFA ……..….go to E

E. Project provides SFH compensation within the Service Area of a Service-approved wetland mitigation bank or wood stork conservation bank preferably within the CFA, or consists of SFH compensation within the CFA consisting of enhancement, restoration or creation in a project phased approach that provides an amount of habitat and foraging function equivalent to that of impacted SFH (see *Wood Stork Foraging Habitat Assessment Procedure*[6] for guidance), is not contrary to the Service's *Habitat Management Guidelines For The Wood Stork In The Southeast Region* and in accordance with the CWA section 404(b)(1) guidelines……*NLAA*[4]

Project does not satisfy these elements.……....……...*May affect*

[1] An active nesting site is defined as a site currently supporting breeding pairs of wood storks, or has supported breeding wood storks at least once during the preceding 10-year period.

[2] Suitable foraging habitat (SFH) is described as any area containing patches of relatively open (< 25% aquatic vegetation), calm water, and having a permanent or seasonal water depth between 2 and 15 inches (5 to 38 cm). 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 and stock ponds, shallow, seasonally flooded roadside or agricultural ditches, narrow tidal creeks or shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs. See above *Summary of General Wood Stork Nesting and Foraging Habitat Information*.

[3] On an individual basis, projects that impact less than 0.5 acre of SFH generally will not have a measurable effect on wood storks, although we request the Corps to require mitigation for these losses when appropriate. Wood Storks are a wide ranging species, and individually, habitat change from impacts to less than 0.5 acre of SFH is 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.

[4] Upon Corps receipt of a general concurrence issued by the JAFL through the Programmatic Concurrence on this key, "NLAA" determinations for projects made pursuant to this key require no further consultation with the JAFL.

[5] The U.S. Fish and Wildlife Service (Service) has identified core foraging area (CFA) around all known wood stork nesting colonies that is important for reproductive success. In Central Florida, CFAs include suitable foraging habitat (SFH) within a 15-mile radius of the nest colony; CFAs in North Florida include SFH within a 13-mile radius of a colony. The referenced map provides locations of known colonies and their CFAs throughout Florida documented as active within the last 10 years. The Service believes loss of suitable foraging wetlands within these CFAs may reduce foraging opportunities for the wood stork.

[6]This draft document, *Wood Stork Foraging Habitat Assessment Procedure*, by Passarella and Associates, Incorporated, may serve as further guidance in ascertaining wetland foraging value to wood storks and compensating for impacts to wood stork foraging habitat.

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 that were determined "may affect, not likely to adversely affect." It is requested that information on date, Corps identification number, project acreage, project wetland acreage, and latitude and longitude in decimal degrees be sent to the Service quarterly.

Literature Cited

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

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

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

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

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

APPENDIX C

UMAM Assessment Forms

Uniform Mitigation Assessment Method Summary

Site/Project Name:	Application Number:	Date:
Malabar PD&E Study		October 26, 2023

Impact Summary

	Assessment Area	Impact Type	Location and Landscape Support		Water Environment		Community Structure		Impact Delta	Acres	Functional Loss
			Current	w/Impact	Current	w/Impact	Current	w/Impact			
1	WL-1	Direct Impact	5	0	6	0	6	0	0.57	0.46	0.261
2	WL-4 Herbaceous	Direct Impact	6	0	5	0	6	0	0.57	0.29	0.164
3	WL-4 Forested	Direct Impact	6	0	5	0	6	0	0.57	0.60	0.340
4	WL-4 Forested	Secondary	6	5	5	4	6	5	0.10	0.09	0.009
5	OSW 22	Direct	6		5		6		0.57	0.04	0.023
6	OSW 22	Secondary	6	5	5	4	6	5	0.10	0.02	0.002
								TOTAL		1.50	0.799

Mitigation Summary

	Assessment Area	Mitigation Type	Location and Landscape Support		Water Environment		Community Structure		Mitigation Delta	Time Lag	Risk	PAF	RFG	Acres	Functional Gain
			w/o Mit	w/Mit	w/o Mit	w/Mit	w/o Mit	w/Mit							
1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
													TOTAL	0.00	0.000

TOTALS					
Impacts	**Acres**	**Mitigation - Upland**	**Acres**	**Mitigation - Wetland**	**Acres**
				Creation	0.00
		Restoration	0.00	Restoration	0.00
Direct Impacts	0.75	Enhancement	0.00	Enhancement	0.00
Secondary Impacts	0.00	Preservation	0.00	Preservation	0.00
Total Impacts	**0.75**	**Total Upland Mitigation**	**0.00**	**Total Wetland Mitigation**	**0.00**

Total Functional Loss	**0.799**
Total Functional Gain	**0.000**
Mitigation Deficit	**-0.799**

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT
Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Malabar Road PD&E Study		**WL-1**

FLUCCs code	Further classification (optional)	Impact Type	Assessment Area Size
641	**Freshwater Marsh**	**Direct Impact**	**0.46** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
Southern St. Johns River - 20	**Class III**	**N/A**

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

WL-1 is a small isolated sytem within planted pine, located south of Malabar Road and surrounded by residential development.

Assessment area description

WL-1 is a small isolated herbaceous wetland within a parcel utilited for silviculture. Observed vegetation includes wax myrtle, saltbush, water primrosewillow, swamp smartweed, torpedo grass, soft rush, winged loosestrife and prairie iris.

Significant Nearby Features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Malabar Road	**N/A**
Functions **natural water storage**	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) **Herpetiles (tree frogs, snakes, toads, turtles), Birds (owls, woodpeckers, songbirds, wading birds), Small Mammals (mice, raccoon, , bats)**	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) **Eastern indigo snake - FT, wading birds - ST, Tricolored bat (Federal Candidate)**

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

Red-bellied woodpecker, rabbit and raccoon scat, black racer.

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
J. Barhrost	**04/02/20**

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name:	Application Number:	Assessment Area Name or Number:
Malabar Road PD&E Study	**-**	**WL-1**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Impact	**J. Barhrost**	**04/02/20**

Scoring Guidance	Optimal (10)	Moderate(7)	Minimal (4)	Not Present (0)
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

.500(6)(a) Location and Landscape Support

a. Quality and quantity **of habitat support** outside of AA.	Low - surrounded by development
b. **Invasive plant species** in proximity to AA**.**	
c. **Wildlife access** to and from AA (proximity and barriers).	
d. **Downstream benefits** provided to fish and wildlife.	
e. Adverse impacts to wildlife in AA from **land uses** outside of AA.	
f. **Hydrologic impediments and flow restrictions.**	
g. **Dependency** of downstream habitats on quantity or quality of discharges.	
h. Protection of wetland functions provided by uplands (**upland** AAs only).	

Current	With Impact
5	0

Additional Notes:

.500(6)(b) Water Environment (n/a for uplands)

a. Appropriateness of **water levels and flows**.	Mostly appropriate
b. Reliability of **water level indicators**.	Reliable
c. Appropriateness of **soil moisture**.	Appropriate for season
d. **Soil erosion** or **depositional patterns, flow rates/points of discharge.**	
e. **Fire history** (frequency/severity).	
f. **Appropriate vegetative and/or benthic zonation**.	
g. **Hydrologic stress** on vegetation.	
h. **Use by animal**s with hydrologic requirements.	
i. **Plant community composition** associated with water quality (i.e., plants tolerant of poor WQ).	
j. **Water quality of standing water by observation** (I.e., discoloration, turbidity).	
k. **Water quality data** for the type of community.	
l. **Water depth, wave energy, currents, and light penetration**.	

Current	With Impact
6	0

Additional Notes:

.500(6)(c) Community Structure

X Vegetation

_____ Benthic

_____ Both

I. Appropriate/desirable species	moderate
II. Invasive/exotic plant species	
III. Regeneration/recruitment	
IV. Age, size distribution.	
V. Snags, dens, cavity, etc.	
VI. Plants' condition.	
VII. Land management practices.	
VIII. Topographic features (refugia, channels, hummocks).	
IX. Submerged vegetation (only score if present).	
X. Upland assessment area	

Current	With Impact
6	0

Additional Notes:

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	**With Impact**
0.5666667	0

Impact Delta (ID)	
Current - w/Impact	0.566666667

Impact Acres =	0.46

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.261

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Additional Notes:

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT
Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Malabar PD&E Study		**WL-4 Herbaceous**

FLUCCs code	Further classification (optional)	Impact Type	Assessment Area Size
641	Freshwater Marsh	**Direct Impact**	**0.29** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
Southern St. Johns River - 20	**Class III**	**N/A**

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

WL-4 is a small system that connects off-site through a network of wetlands and uplands to the St. Johns River floodplain WL-4 is surrounded by undeveloped land consisting of upland and wetland systems.

Assessment area description

WL-4 (herbaceous) is located within the forested part of WL-4. This area consists of maidencane,f pickerelweed, swamp fern, swamp flatsedge and St John's wort. This wetland relatively is located within a mosaic of uplands and larger wetland systems that connect off site. Disturbance by active catte operation with agricultural ditches

Significant Nearby Features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Malabar Road, St. Johns River	**N/A**

Functions	Mitigation for previous permit/other historic use
provide refuge and food source for wildlife; natural water storage	**N/A**

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
Herpetiles (frogs, snakes, toads, turtles, alligators), Birds (wading birds), Mammals (mice, raccoon, deer, bobcat, bats, fox squirrel)	**Eastern indigo snake - FT, wading birds - ST, bald eagle (BGEPA), Tricolored bat - F Candidate**

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

Deer, wild hog, turkey vulture

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
A.Burke	**06/01/23**

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name:	Application Number:	Assessment Area Name or Number:
Malabar PD&E Study	**-**	**WL-4 Herbaceous**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Impact	**A.Burke**	**06/01/23**

Scoring Guidance	**Optimal (10)**	**Moderate(7)**	**Minimal (4)**	**Not Present (0)**
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

.500(6)(a) Location and Landscape Support

a. Quality and quantity **of habitat support** outside of AA.	moderate
b. **Invasive plant species** in proximity to AA**.**	High Brazilian pepper encroachent
c. **Wildlife access** to and from AA (proximity and barriers).	large tracts of land adjacent to AA
d. **Downstream benefits** provided to fish and wildlife.	
e. Adverse impacts to wildlife in AA from **land uses** outside of AA.	active cattle operation
f. **Hydrologic impediments and flow restrictions.**	agricultural ditches
g. **Dependency** of downstream habitats on quantity or quality of discharges.	high
h. Protection of wetland functions provided by uplands (**upland** AAs only).	N/A

Current	**With Impact**
6	**0**

Additional Notes:

.500(6)(b) Water Environment (n/a for uplands)

a. Appropriateness of **water levels and flows**.	Semi-appropriate for season
b. Reliability of **water level indicators**.	Reliable
c. Appropriateness of **soil moisture**.	Semi-appropriate for season
d. **Soil erosion** or **depositional patterns, flow rates/points of discharge.**	n/a
e. **Fire history** (frequency/severity).	not currently managed for fire
f. **Appropriate vegetative and/or benthic zonation**.	Brazilian pepper encroachment
g. **Hydrologic stress** on vegetation.	
h. **Use by animal**s with hydrologic requirements.	
i. **Plant community composition** associated with water quality (i.e., plants tolerant of poor WQ).	
j. **Water quality of standing water by observation** (I.e., discoloration, turbidity).	n/a
k. **Water quality data** for the type of community.	n/a
l. **Water depth, wave energy, currents, and light penetration.**	n/a

Current	**With Impact**
5	**0**

Additional Notes:

.500(6)(c) Community Structure

X Vegetation

_____ Benthic

_____ Both

I. Appropriate/desirable species	moderate
II. Invasive/exotic plant species	high Brazilian pepper encroachment
III. Regeneration/recruitment	
IV. Age, size distribution.	
V. Snags, dens, cavity, etc.	n/a
VI. Plants' condition.	mostly healthy
VII. Land management practices.	n/a
VIII. Topographic features (refugia, channels, hummocks).	appropriate
IX. Submerged vegetation (only score if present).	n/a
X. Upland assessment area	n/a

Current	**With Impact**
6	**0**

Additional Notes:

Raw Score = Sum of above scores/30 (if uplands, divide by 20)	
Current	**With Impact**
0.5666667	0

Impact Acres =	0.29

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.164

Impact Delta (ID)	
Current - w/Impact	0.566666667

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Additional Notes:

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT
Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Malabar Road PD&E Study		**WL 4 Forested**

FLUCCs code	Further classification (optional)	Impact Type	Assessment Area Size
617	Mixed Wetland Hardwoods	**Direct**	**0.60** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
Southern St. Johns River -20	**Class III**	**N/A**

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

WL-4 is a small system that connects off-site through a network of wetlands and uplands to the St. Johns River floodplain WL-4 is surrounded by undeveloped land consisting of upland and wetland systems.

Assessment area description

WL-4 (forested) is locted near the western terminus of the projected. This wetland consists of forested and herbaceous wetlands. Observed vegetation includes cabbage palm, and slash pine with dense Brazilian pepper.This wetland relatively is located within a mosaic of uplands and larger wetland systems that connect off site. Disturbance by active catte operation with agricultural ditches

Significant Nearby Features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Malabar Road, St. Johns River	**N/A**

Functions	Mitigation for previous permit/other historic use
provide refuge and food source for wildlife; natural water storage	**N/A**

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
Herpetiles (tree frogs, snakes, toads, turtles, alligators), Birds (owls, woodpeckers, songbirds, turkeys, eagles, wading birds), Mammals (mice, raccoon, otter, deer, bobcat, bats, fox squirrel, black bear)	**Eastern indigo snake - FT, wading birds - ST, bald eagle (BGEPA), Tricolored bat - F Candidate**

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

Deer, wild hog, turkey vulture

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
A.Burke	**06/01/23**

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name:	Application Number:	Assessment Area Name or Number:
Malabar PD&E Study	**-**	**WL 4 Forested**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Impact	**A.Burke**	**06/01/23**

Scoring Guidance	**Optimal (10)**	**Moderate(7)**	**Minimal (4)**	**Not Present (0)**
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

.500(6)(a) Location and Landscape Support

a. Quality and quantity **of habitat support** outside of AA.	
b. **Invasive plant species** in proximity to AA**.**	
c. **Wildlife access** to and from AA (proximity and barriers).	
d. **Downstream benefits** provided to fish and wildlife.	
e. Adverse impacts to wildlife in AA from **land uses** outside of AA.	
f. **Hydrologic impediments and flow restrictions.**	
g. **Dependency** of downstream habitats on quantity or quality of discharges.	
h. Protection of wetland functions provided by uplands (**upland** AAs only).	

Current	**With Impact**
6	**0**

Additional Notes:

.500(6)(b) Water Environment (n/a for uplands)

a. Appropriateness of **water levels and flows**.	
b. Reliability of **water level indicators**.	
c. Appropriateness of **soil moisture**.	
d. **Soil erosion** or **depositional patterns, flow rates/points of discharge.**	
e. **Fire history** (frequency/severity).	
f. **Appropriate vegetative and/or benthic zonation**.	
g. **Hydrologic stress** on vegetation.	
h. **Use by animal**s with hydrologic requirements.	
i. **Plant community composition** associated with water quality (i.e., plants tolerant of poor WQ).	
j. **Water quality of standing water by observation** (I.e., discoloration, turbidity).	
k. **Water quality data** for the type of community.	
l. **Water depth, wave energy, currents, and light penetration.**	

Current	**With Impact**
5	**0**

Additional Notes:

.500(6)(c) Community Structure

X Vegetation

_____ Benthic

_____ Both

I. Appropriate/desirable species	
II. Invasive/exotic plant species	
III. Regeneration/recruitment	
IV. Age, size distribution.	
V. Snags, dens, cavity, etc.	
VI. Plants' condition.	
VII. Land management practices.	
VIII. Topographic features (refugia, channels, hummocks).	
IX. Submerged vegetation (only score if present).	
X. Upland assessment area	

Current	**With Impact**
6	**0**

Additional Notes:

Raw Score = Sum of above scores/30 (if uplands, divide by 20)

Current	**With Impact**
0.5666667	0

Impact Delta (ID)	
Current - w/Impact	0.566666667

Impact Acres =	0.60

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.340

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Additional Notes:

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT
Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Malabar Road PD&E Study		**WL-4 Forested**

FLUCCs code	Further classification (optional)	Impact Type	Assessment Area Size
617	Mixed Wetland Hardwoods	**Secondary**	**0.09** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
Southern St. Johns River -20	**Class III**	**N/A**

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

WL-4 is a small system that connects off-site through a network of wetlands and uplands to the St. Johns River floodplain WL-4 is surrounded by undeveloped land consisting of upland and wetland systems.

Assessment area description

WL-4 (forested) is locted near the western terminus of the projected. This wetland consists of forested and herbaceous wetlands. Observed vegetation includes cabbage palm, and slash pine with dense Brazilian pepper.This wetland relatively is located within a mosaic of uplands and larger wetland systems that connect off site. Disturbance by active catte operation with agricultural ditches

Significant Nearby Features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Malabar Road, St. Johns River	**N/A**
Functions **provide refuge and food source for wildlife; natural water storage**	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) **Herpetiles (tree frogs, snakes, toads, turtles, alligators), Birds (owls, woodpeckers, songbirds, turkeys, eagles, wading birds), Mammals (mice, raccoon, otter, deer, bobcat, bats, fox squirrel, black bear)**	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) **Eastern indigo snake - FT, wading birds - ST, bald eagle (BGEPA), Tricolored bat - F Candidate**

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

Deer, wild hog, turkey vulture

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
A.Burke	**06/01/23**

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name:	Application Number:	Assessment Area Name or Number:
Malabar Road PD&E Study	**-**	**WL-4 Forested**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Impact	**A.Burke**	**06/01/23**

Scoring Guidance	**Optimal (10)**	**Moderate(7)**	**Minimal (4)**	**Not Present (0)**
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

.500(6)(a) Location and Landscape Support

a. Quality and quantity **of habitat support** outside of AA.	
b. **Invasive plant species** in proximity to AA**.**	
c. **Wildlife access** to and from AA (proximity and barriers).	
d. **Downstream benefits** provided to fish and wildlife.	
e. Adverse impacts to wildlife in AA from **land uses** outside of AA.	
f. **Hydrologic impediments and flow restrictions.**	
g. **Dependency** of downstream habitats on quantity or quality of discharges.	
h. Protection of wetland functions provided by uplands (**upland** AAs only).	

Current	**With Impact**
6	**5**

Additional Notes:

.500(6)(b) Water Environment (n/a for uplands)

a. Appropriateness of **water levels and flows**.	
b. Reliability of **water level indicators**.	
c. Appropriateness of **soil moisture**.	
d. **Soil erosion** or **depositional patterns, flow rates/points of discharge.**	
e. **Fire history** (frequency/severity).	
f. **Appropriate vegetative and/or benthic zonation**.	
g. **Hydrologic stress** on vegetation.	
h. **Use by animal**s with hydrologic requirements.	
i. **Plant community composition** associated with water quality (i.e., plants tolerant of poor WQ).	
j. **Water quality of standing water by observation** (I.e., discoloration, turbidity).	
k. **Water quality data** for the type of community.	
l. **Water depth, wave energy, currents, and light penetration.**	

Current	**With Impact**
5	**4**

Additional Notes:

.500(6)(c) Community Structure

X Vegetation

_____ Benthic

_____ Both

I. Appropriate/desirable species	
II. Invasive/exotic plant species	
III. Regeneration/recruitment	
IV. Age, size distribution.	
V. Snags, dens, cavity, etc.	
VI. Plants' condition.	
VII. Land management practices.	
VIII. Topographic features (refugia, channels, hummocks).	
IX. Submerged vegetation (only score if present).	
X. Upland assessment area	

Current	**With Impact**
6	**5**

Additional Notes:

Raw Score = Sum of above scores/30 (if uplands, divide by 20)

Current	**With Impact**
0.5666667	0.466666667

Impact Delta (ID)	
Current - w/Impact	0.1

Impact Acres =	0.09

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.009

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Additional Notes:

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT
Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Malabar Road PD&E Study		**OSW 22**

FLUCCs code	Further classification (optional)	Impact Type	Assessment Area Size
510	**Streams and Waterways**	**Direct**	**0.04** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
Southern St. Johns River -20	**III**	**N/A**

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

OSW 22 is a wetland cut surface water that connects off-site through a network of surface waters, wetlands, and uplands to the St. Johns River floodplain OSW 22 is surrounded by undeveloped land consisting of upland and wetland systems.

Assessment area description

OSW 22 is a wetland cut ditch, surrounded by forested wetlands.

Significant Nearby Features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Malabar Road, St. Johns River	**N/A**

Functions	Mitigation for previous permit/other historic use
Water conveyance and storage	**N/A**

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
Herpetiles (tree frogs, snakes, toads, turtles, alligators), wading birds	**Wading bird (ST)**

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

n/a

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
A. Burke	**06/01/23**

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name:	Application Number:	Assessment Area Name or Number:
Malabar Road PD&E Study	**-**	**OSW 22**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Impact	**A. Burke**	**06/01/23**

Scoring Guidance	**Optimal (10)**	**Moderate(7)**	**Minimal (4)**	**Not Present (0)**
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

.500(6)(a) Location and Landscape Support

a. Quality and quantity **of habitat support** outside of AA.	
b. **Invasive plant species** in proximity to AA**.**	
c. **Wildlife access** to and from AA (proximity and barriers).	
d. **Downstream benefits** provided to fish and wildlife.	
e. Adverse impacts to wildlife in AA from **land uses** outside of AA.	
f. **Hydrologic impediments and flow restrictions.**	
g. **Dependency** of downstream habitats on quantity or quality of discharges.	
h. Protection of wetland functions provided by uplands (**upland** AAs only).	

Current	**With Impact**
6	

Additional Notes:

.500(6)(b) Water Environment (n/a for uplands)

a. Appropriateness of **water levels and flows**.	
b. Reliability of **water level indicators**.	
c. Appropriateness of **soil moisture**.	
d. **Soil erosion** or **depositional patterns, flow rates/points of discharge.**	
e. **Fire history** (frequency/severity).	
f. **Appropriate vegetative and/or benthic zonation**.	
g. **Hydrologic stress** on vegetation.	
h. **Use by animal**s with hydrologic requirements.	
i. **Plant community composition** associated with water quality (i.e., plants tolerant of poor WQ).	
j. **Water quality of standing water by observation** (I.e., discoloration, turbidity).	
k. **Water quality data** for the type of community.	
l. Water depth, wave energy, currents, and light penetration.	

Current	**With Impact**
5	

Additional Notes:

.500(6)(c) Community Structure

X Vegetation

_____ Benthic

_____ Both

I. Appropriate/desirable species	
II. Invasive/exotic plant species	
III. Regeneration/recruitment	
IV. Age, size distribution.	
V. Snags, dens, cavity, etc.	
VI. Plants' condition.	
VII. Land management practices.	
VIII. Topographic features (refugia, channels, hummocks).	
IX. Submerged vegetation (only score if present).	
X. Upland assessment area	

Current	**With Impact**
6	

Additional Notes:

Raw Score = Sum of above scores/30 (if uplands, divide by 20)

Current	**With Impact**
0.5666667	0

Impact Delta (ID)	
Current - w/Impact	0.566666667

Impact Acres =	0.04

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.023

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Additional Notes:

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART I - IMPACT
Form 62-345.900(2), F.A.C. (See Sections 62-345.400 F.A.C.)

Site/Project Name	Application Number	Assessment Area Name or Number
Malabar Road PD&E Study		**OSW 22**

FLUCCs code	Further classification (optional)	Impact Type	Assessment Area Size
510	**Streams and Waterways**	**Secondary**	**0.02** Acres

Basin/Watershed Name/Number	Affected Waterbody (Class)	Special Classification (i.e.OFW, AP, other local/state/federal designation of importance)
Southern St. Johns River - 20	**III**	**N/A**

Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands

OSW 22 is a wetland cut surface water that connects off-site through a network of surface waters, wetlands, and uplands to the St. Johns River floodplain OSW 22 is surrounded by undeveloped land consisting of upland and wetland systems.

Assessment area description

OSW 22 is a wetland cut ditch, surrounded by forested wetlands.

Significant Nearby Features	Uniqueness (considering the relative rarity in relation to the regional landscape.)
Malabar Road, St. Johns River	**N/A**

Functions	Mitigation for previous permit/other historic use
Water conveyance and storage	**N/A**

Anticipated Wildlife Utilization Based on Literature Review (List of species that are representative of the assessment area and reasonably expected to be found)	Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area)
Herpetiles (tree frogs, snakes, toads, turtles, alligators), wading birds	**Wading bird (ST)**

Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.):

N/A

Additional relevant factors:

Assessment conducted by:	Assessment date(s):
A. Burke	**06/01/23**

UNIFORM WETLAND MITIGATION ASSESSMENT WORKSHEET - PART II - IMPACT
Form 62-345.900(2), F.A.C. (See Sections 62-345.500 and .600, F.A.C.)

Site/Project Name:	Application Number:	Assessment Area Name or Number:
Malabar Road PD&E Study	**-**	**OSW 22**
Impact or Mitigation:	Assessment Conducted by:	Assessment Date:
Impact	**A. Burke**	**06/01/23**

Scoring Guidance	**Optimal (10)**	**Moderate(7)**	**Minimal (4)**	**Not Present (0)**
The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed	Condition is optimal and fully supports wetland/surface water functions	Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions	Minimal level of support of wetland/surface water functions	Condition is insufficient to provide wetland/surface water functions

Enter Notes below (do NOT score each subcategory individually)

.500(6)(a) Location and Landscape Support

a. Quality and quantity **of habitat support** outside of AA.	
b. **Invasive plant species** in proximity to AA**.**	
c. **Wildlife access** to and from AA (proximity and barriers).	
d. **Downstream benefits** provided to fish and wildlife.	
e. Adverse impacts to wildlife in AA from **land uses** outside of AA.	
f. **Hydrologic impediments and flow restrictions.**	
g. **Dependency** of downstream habitats on quantity or quality of discharges.	
h. Protection of wetland functions provided by uplands (**upland** AAs only).	

Current	**With Impact**
6	**5**

Additional Notes:

.500(6)(b) Water Environment (n/a for uplands)

a. Appropriateness of **water levels and flows**.	
b. Reliability of **water level indicators**.	
c. Appropriateness of **soil moisture**.	
d. **Soil erosion** or **depositional patterns, flow rates/points of discharge.**	
e. **Fire history** (frequency/severity).	
f. **Appropriate vegetative and/or benthic zonation**.	
g. **Hydrologic stress** on vegetation.	
h. **Use by animal**s with hydrologic requirements.	
i. **Plant community composition** associated with water quality (i.e., plants tolerant of poor WQ).	
j. **Water quality of standing water by observation** (I.e., discoloration, turbidity).	
k. **Water quality data** for the type of community.	
l. Water depth, wave energy, currents, and light penetration.	

Current	**With Impact**
5	**4**

Additional Notes:

.500(6)(c) Community Structure

X Vegetation

_____ Benthic

_____ Both

I. Appropriate/desirable species	
II. Invasive/exotic plant species	
III. Regeneration/recruitment	
IV. Age, size distribution.	
V. Snags, dens, cavity, etc.	
VI. Plants' condition.	
VII. Land management practices.	
VIII. Topographic features (refugia, channels, hummocks).	
IX. Submerged vegetation (only score if present).	
X. Upland assessment area	

Current	**With Impact**
6	**5**

Additional Notes:

Raw Score = Sum of above scores/30 (if uplands, divide by 20)

Current	**With Impact**
0.5666667	0.466666667

Impact Delta (ID)	
Current - w/Impact	0.1

Impact Acres =	0.02

Functional Loss (FL) [For Impact Assessment Areas]:	
FL = ID x Impact Acres =	0.002

NOTE: If impact is proposed to be mitigated at a mitigation bank that was assessed using UMAM, then the credits required for mitigation is equal to Functional Loss (FL). If impact mitigation is proposed at a mitigation bank that was not assessed using UMAM, then UMAM cannot be used to assess impacts; use the assessment method of the mitigaiton bank.

Additional Notes:

APPENDIX D

Agency Coordination

Jason Houck

From: Williams, Zakia <zakia_williams@fws.gov>
Sent: Tuesday, July 2, 2024 10:05 AM
To: Jason Houck
Subject: Re: [EXTERNAL] FW: FM# 437210-1 Malabar Rd PD&E ETDM# 14396 - Protected Species and Habitat USFWS Technical Assistance

Good Morning Jason,

The FWS concurs with the FDOT decision to postpone the Eastern Black Rail surveys until the final design stage when all modifications and alternatives have been determined. Once the design is complete FDOT will reinitiate consultation with the Service. Please let me know if you have any further questions.

Thank you,
Zakia

Zakia Williams
Fish and Wildlife Biologist
US Fish and Wildlife Service
7915 Baymeadows Way, Ste. 200
Jacksonville, Florida 32256
(o) 904-404-2452
(f) 904-731-3045
(c) 904-200-2678

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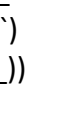

From: Jason Houck
Sent: Thursday, June 13, 2024 11:39 AM
To: zakia_williams@fws.gov
Cc: Jack Freeman <jfreeman@kittelson.com>; Travis Hills <thills@kittelson.com>; Northey, Edward <Edward.Northey@dot.state.fl.us>; Graeber, David <David.Graeber@dot.state.fl.us>; Frank Watanabe <Frank.Watanabe@palmbayflorida.org>; Jada Barhorst <jbarhorst@ardurra.com>
Subject: FM# 437210-1 Malabar Rd PD&E ETDM# 14396 - Protected Species and Habitat USFWS Technical Assistance

Hi Zakia,

I am sending this email on behalf of FDOT D5 and the City of Palm Bay regarding the ongoing PD&E study to widen Malabar Road from St. Johns Heritage Parkey to Minton Road in Brevard County, Florida (FM# 437210-1-28-01 &

ETDM# 14396). The PD&E study is anticipated to be completed as a Type II Categorical Exclusion and we are currently working towards finalizing the required documentation to allow us to conduct the public hearing, complete the study, and move the project into the final design phase.

Habitats within the project footprint include suitable habitat for the eastern black rail. Our team is recommending that surveys for the black rail be completed during the design phase of the project following the current call-response survey methodology. Our NRE will include an effect determination for the eastern black rail and a commitment to conduct surveys during the final design phase of the project.

The purpose of this email is to obtain concurrence from USFWS with our recommendation to defer the required species surveys to the final design phase.

As always, please do not hesitate to reach out if you have any questions or need any additional information.

Thanks and have a great day!

Jason

ARDURRA

Jason Houck, GISP, PWS
Ecology Team Leader
O: 407-971-8850 | **M:** 321-202-3907
3000 Dovera Drive, Suite 200, Oviedo, FL 32765
jhouck@ardurra.com | www.ardurra.com

RON DESANTIS
GOVERNOR

Florida Departme
719 S. Wc
DeLand, F

November 29, 2021

Annie DZiergowski, Deputy Field Supervisor
US Fish and Wildlife Service
North Florida Ecological Services Office
7915 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517

Attention: Mrs. Zakia Williams

RE: Request for Section 7 Informal Consultat
Malabar Road PD&E Study
Brevard County, Florida
Financial Management Number: 437210-1-28-01

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

FWS Log No. 04EF1000-2022-I-0358

The U.S. Fish and Wildlife Service has reviewed the information provided and finds that the proposed action is not likely to adversely affect any federally listed species or designated critical habitat protected by the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 et. seq.). A record of this consultation is on file at the Florida Ecological Service Office.

This fulfills the requirements of section 7 of the Act and further action is not required. If modifications are made to the project, if additional information involving potential effects to listed species becomes available, or if a new species is listed, reinitiation of consultation may be necessary.

José J. Rivera, Division Supervisor, Environmental Review — 12/17/2021 Date

The Florida Department of Transportation is conducting a Project Development and Environment (PD&E) Study to evaluate the proposed widening of Malabar Road from St. Johns Heritage Parkway to Minton Road in Brevard County, Florida. As part of the study, a Natural Resources Evaluation (NRE) has been developed to assess the project for its impacts to wetlands and protected species.

Agency coordination to obtain species and habitat related information has occurred through the Efficient Transportation Decision Making (ETDM) Program Screening. The final ETDM Summary Report was published on October 25, 2019. The project received a Degree of Effect of Moderate (3) from the USFWS and the project's class of action is a Type II Categorical Exclusion. Additional coordination took place in December 2019 and is included in Appendix D in the NRE.

The study area is either partially or wholly within several consultation areas, however, there is no suitable habitat for the following species: Everglade snail kite (*Rostrhamus sociabilis plumbeus*), Florida grasshopper sparrow (*Ammodramus savannarum floridanus*), red-cockaded woodpecker (*Picoides borealis*), Carter's warea (*Warea carteri*), Lewton's polygala (*Polygala lewtonii*), and short-leaved rosemary (*Conradina brevifolia*). As there is no suitable habitat and no documented occurrences, it has been determined that the project will have "no effect" for any of these species. Additionally, "no effect" has been determined for the bald eagle as there are no eagle's nests within the project area.

There are five (5) federally protected animal species (American alligator, Audubon's crested caracara, eastern indigo snake, Florida scrub-jay, and wood stork). These species, and their associated effect determinations, are discussed below:

American Alligator (*Alligator mississippiensis*) - Suitable habitat for the American alligator was observed within the project study area. Most of the habitat consists of canals and reservoirs. No Alligators were observed during the field surveys. While the project will impact suitable habitat, the extent of impacts relative to habitat within the corridor will be minimal and alligators will be able to continue their life history strategies. Based on this information, the proposed project "may affect, but is not likely to adversely affect" the American alligator.

Audubon's Crested Caracara (*Polyborus plancus audubonii*) – Suitable habitat for the caracara was observed near the eastern terminus of the project study area. A species-specific caracara survey was conducted from January through April 2020. Five caracara observation stations were established within the project study area. Adult and juvenile caracara were observed. Caracara activity included foraging in the pastures and along the roadsides, perching on trees and powerlines, traveling over and between pastures, and demonstrating mating behavior, such as pairs perching together, preening, and sharing food was observed. Nesting activity was documented on several occasions, resulting in the positive identification of two caracara nests. The nests range from approximately 1041 meters to approximately 1105 meters from proposed project activities.

The Standard Local Operating Procedures for Endangered Species (SLOPES) for Audubon's crested caracara and the FWS Guidelines provide a series of recommended restrictions for activities in the primary and secondary zones both during nesting season and outside nesting season. The Guidelines and SLOPES flowchart were utilized to determine the impacts on the caracara as a result of the proposed project. The survey identified two caracara nests located within 1500 meters of the proposed project activities; and therefore, avoidance or implementation of conservation measures must be utilized to ensure the project is not likely to adversely affect the caracara. Both strategies will be utilized to eliminate adverse effects to the caracara. To avoid and minimize impacts to caracara foraging habitat, the recommended preferred pond site (C8 and C9 Atl. 1) was chosen to eliminate impacts to suitable habitat within 1,500 meters from the nests. Conservation measures will be implemented for areas within the protection zone where avoidance was not practicable. The SLOPES flowchart followed the sequence which concluded with conservation measures and actions proposed outside nesting season in order to obtain a not likely to adversely affect determination.

Based on the distance of the proposed construction activities from the nest; existing disturbances which do not appear to affect caracara nesting; lack of caracara utilization due to unsuitable foraging habitat within the proposed construction footprint; remaining foraging capacity; implementation of conservation measures, including constructing outside of nesting season as

described above, FDOT has determined this project "may affect, but is unlikely to adversely affect" the Audubon's crested caracara.

Eastern Indigo Snake (*Drymarchon couperi*) - Suitable habitat for the eastern indigo snake was observed within the project study area. Suitable habitat for the gopher tortoise was also observed; however, no gopher tortoise burrows (a primary source of shelter) were identified within the project study area during field reviews.

The FWS has a programmatic effect key for the indigo snake. Following this 2013 key, (A) the project is not located in open water or salt marsh, (B) the permit will be conditioned for use of the Services Standard Protection Measures For the Eastern Indigo Snake during site preparation and project construction, (C) there are gopher tortoise burrows, holes, cavities, or other refugia where a snake could be buried or trapped and injured during project activities, (D) the project will impact less than 25 acres of xeric habitat supporting less than 25 active and inactive gopher tortoise burrows, and (E) any permit will be conditioned such that all gopher tortoise burrows, active or inactive will be excavated prior to site manipulation in the vicinity of the burrow. Based on use of the programmatic key, FDOT has determined that this project would result in a "may affect, but not likely to adversely affect" determination for this species.

Florida Scrub-Jay (*Aphelocoma coerulescens*) - The project study area contains habitats consisting mostly of Type III or non-ranked (i.e., non-suitable) scrub-jay habitats. Suitable habitat is suboptimal for the scrub jay as most of these areas contained pine trees or cabbage palms which provide perches for scrub jay avian predators. Scrub jays were not observed during any field events.

A species-specific scrub-jay survey was conducted in areas of suitable habitat during March and April of 2020. Twelve call-stations were established in areas of potential habitat within and adjacent to the limits of construction. No scrub-jays were identified during the survey.

Based on the scrub-jay survey results as well as the current site conditions and limits of proposed impacts, FDOT has determined that this project "may affect, but is not likely to adversely affect" the Florida scrub-jay.

Wood Stork (*Mycteria americana*) - The FWS wood stork colony database was searched for active wood stork colonies located within 15-miles of the project area. According to the FWS wood stork colony website, portions of the study area fall within the Core Foraging Area (CFA) of seven wood stork breeding colonies (Deseret Ranch, Grange Island, Grant Farm Island, Kemper Ranch, Micco North, Micco South, and US 192 East). Wood storks were observed during field surveys. The project will impact approximately 0.69 acres of Suitable Foraging Habitat (SFH).

The FWS has a programmatic Effect Determination Key for the Wood Stork in Central and North Peninsular Florida (FWS 2008). Following this 2008 key, (A) The project is more than

2,500 feet from a colony site, (B) project impacts SFH, (C) project impacts to SFH are greater than or equal to 0.5-acre, (D) project impacts to SFH are within the CFA of a colony site, (E-1) project provides SFH compensation within the Service Area of a Service-approved wetland mitigation bank or wood stork conservation bank within the CFA. Based on the programmatic key, FDOT has determined that the project "may affect, but not likely to adversely affect" the wood stork.

We appreciate the coordination effort and input already provided and look forward to continued consultation on this project. If you have any questions, feel free to contact either Heather Chasez at (386) 943-5393, heather.chasez@dot.state.fl.us or me at (386) 943-5411, william.walsh@dot.state.fl.us at your convenience. Thank you for your assistance with this project.

Sincerely,

for:

William G. Walsh
Environmental Manager
FDOT, District Five

cc: Jack Freeman (Kittelson), Jason Houck, Jada Barhorst (Inwood), Heather Chasez (FDOT)

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December 29, 2021

Lorena Cucek
FDOT Project Manager
Florida Department of Transportation District Five
719 S Woodland Ave
Deland, Florida 32720
Lorena.Cucek@dot.state.fl.us

Re: Malabar Road from St. Johns Heritage Parkway to Minton Road, Natural Resources Evaluation, Brevard County, Florida, ETDM # 14396

Dear Ms. Cucek:

Florida Fish and Wildlife Conservation Commission (FWC) staff reviewed the Natural Resources Evaluation (NRE) for the above-referenced project in accordance with Chapter 379, Florida Statutes and Rule 68A-27, Florida Administrative Code. The Florida Department of Transportation District Five, in conjunction with the City of Plam Bay, is studying the potential environmental effects of capacity, safety, and multi-modal improvements on Malabar Road from St. Johns Heritage Parkway to Minton Road, a distance of approximately four miles, in the City of Palm Bay and Brevard County, Florida.

The NRE was prepared as part of the Project Development and Environment (PD&E) Study (ETDM Number 14396) to document the natural resources analysis and to summarize potential impacts to wetlands, federal and state protected species, and protected habitats within new proposed right-of-way for the roadway widening project.

FWC staff agrees with the determinations of effect and supports the project implementation measures and commitments for protected species. For specific technical questions regarding the content of this letter, please contact Kristee Booth at (850) 363-6298 or email KristeeBooth@MyFWC.com. All other inquiries may be directed to ConservationPlanningServices@MyFWC.com.

Sincerely,

Jason Hight, Director
Office of Conservation Planning Services

jh/kb
Malabar Road from St. Johns Heritage Parkway to Minton Road NRE_12292021

NATURAL RESOURCES EVALUATION

The City of Palm Bay

Malabar Road Project Development and Environment (PD&E) Study

Limits of Project: St. Johns Heritage Parkway to Minton Road

Brevard County, Florida

Financial Management Number: 437210-1-28-01

ETDM Number: 14396

Date: June 2021

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by 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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EXECUTIVE SUMMARY

The City of Palm Bay in cooperation with the Florida Department of Transportation (FDOT), District 5, is conducting a Project Development and Environment (PD&E) Study to evaluate the proposed widening of Malabar Road from St. Johns Heritage Parkway to Minton Road in Brevard County, Florida. The proposed project is approximately four miles long and will widen Malabar Road from two to four lanes in order to improve safety, increase capacity and accommodate multi-modal features along the corridor. The project occurs within Sections 32, 33, 33, 34, and 35 of Township 28 South, and Range 36 East; and Sections 1, 2, 3, 4, and 5 of Township 29 South, and Range 36 East.

Malabar Road is an east-west regional roadway connecting western Brevard County/City of Palm Bay to US 1 in Malabar. The roadway's maintaining jurisdiction is Brevard County at its western edge, before transitioning to the City of Palm Bay for several miles, and then becoming a state road (S.R. 514) between I-95 and US 1. Malabar Road has an existing diamond interchange with I-95. Within the study area, Malabar Road is an urban minor arterial. The existing typical section is a two-lane undivided roadway with 11-foot or 12-foot travel lanes within a 66-foot right-of-way which extends to 112 feet in some areas, with an 8-foot sidewalk which runs along the north side of Canal C-20. East of the C-10 Canal, the C-20 Canal parallels the north side of Malabar Road.

The alternatives analysis includes evaluation of two widening alternatives, Alternatives A and B, and a no-build alternative; existing and proposed right-of-way widths; intersection alternatives including signals and roundabouts; C-20 Canal impacts; a new bridge over the C-10 Canal; and a shared-use path along the north side of Malabar Road.

Alternative B was selected as the Recommended Preferred Alternative because it provides the wider median plus a 4' grass buffer, both meeting 2021 FDOT Design Manual (FDM) standards, while having a negligible impact on right-of-way and only a slighter higher project cost when compared to Alternative A. The right-of-way required for the recommended preferred alternative typical section is 102' from the St. Johns Heritage Parkway to Canal C-10 and 105' from Canal C-10 to Station 256+80. This will require approximately 34 to 37.5 feet of additional right-of-way. This alternative minimizes impacts to wetlands and surface waters, and protected species and their habitats. The recommended preferred pond sites were chosen to eliminate or reduce wetland impacts and avoid caracara nesting and foraging habitat.

The stormwater runoff from the project will be collected and conveyed via curb and gutter to the preferred pond alternative in each basin. The various pond alternatives consist of dry retention ponds, wet detention ponds, and dry linear swales. Pond sites and configurations may change during the final design phase as more detailed information becomes available.

This Natural Resources Evaluation (NRE) has been prepared as part of the PD&E Study to assess the widening alternatives and identify potential impacts to natural resources throughout the Malabar Road corridor. The purpose of this NRE is to document protected species and habitat and identify the location of wetlands and surface waters within the project corridor in order to determine potential impacts to these resources, provide rationale to support species effect determinations, identify avoidance and minimization measures, and quantify mitigation necessary

for the recommended preferred alternative. This NRE has been prepared in accordance with the *Wetlands and Other Surface Waters* and *Protected Species and Habitat* chapters of the FDOT's *PD&E Manual* (FDOT, 2020) and the current Natural Resources Evaluation Outline and Guidance (FDOT, 2020).

The Recommended Preferred Alternative is located within the following US Fish and Wildlife Service (FWS) Consultation Areas: Audubon's crested caracara (*Polyborus plancus audubonii*), Everglade snail kite (*Rostrhamus sociabilis plumbeus*), Florida grasshopper sparrow (*Ammodramus savannarum floridanus*), Florida scrub-jay (*Aphelocoma coerulescens*), and red-cockaded woodpecker (*Dryobates borealis*). The Recommended Preferred Alternative falls within Core Foraging Areas (CFA) for seven wood stork colonies. The existing habitats in the study area may also support other federally protected species, as well as many state protected species. Based on the results of the general wildlife and species-specific surveys, data collection and USFWS' effect determination key, the Recommended Preferred Alternative will not jeopardize the continued existence of a protected species and/or result in the destruction or adverse modification of critical habitat. However, additional coordination with wildlife agencies will be required during the design and permitting phase and additional wildlife surveys may be required prior to or during construction. Table ES-1 identifies the protected species that were evaluated in this document, their regulatory status, and the effect determination under the recommended preferred alternative.

Figure ES-1: Effect Determinations for Protected Species

Common Name	Scientific Name	Status	Effect Determination
Reptiles			
American alligator	*Alligator mississippiensis*	FT (S/A)	MANLAA
Eastern indigo snake	*Drymarchon couperi*	FT	MANLAA
Florida pine snake	*Pituophis melanoleucus*	ST	NAEA
Gopher tortoise	*Gopherus polyphemus*	C / ST	MANLAA
Birds			
Audubon's crested caracara	*Polyborus plancus audubonii*	FT	MANLAA
Bald eagle	*Haliaeetus leucocephalus*	BGEPA / MBTA	NO EFFECT
Everglade snail kite	*Rostrhamus sociabilis plumbeus*	FE	NO EFFECT
Florida burrowing owl	*Athene cunicularia floridana*	ST	NAEA
Florida grasshopper sparrow	*Ammodramus savannarum floridanus*	FE	NO EFFECT
Florida sandhill crane	*Antigone canadensis pratensis*	ST	NAEA
Florida scrub-jay	*Aphelocoma coerulescens*	FT	MANLAA
Little blue heron	*Egretta caerulea*	ST	NAEA
Red-cockaded woodpecker	*Dryobates borealis*	FE	NO EFFECT
Reddish egret	*Egretta rufescens*	ST	NAEA
Roseate spoonbill	*Platalea ajaja*	ST	NAEA
Southeastern American kestrel	*Falco sparverius Paulus*	ST	NAEA

Common Name	Scientific Name	Status	Effect Determination
Tricolored heron	*Egretta tricolor*	ST	NAEA
Wood stork	*Mycteria americana*	FT	MANLAA
Mammals			
Florida black bear	*Ursus americanus floridanus*	M	NAEA
Southern fox squirrel	*Sciurus niger*	M	NAEA
Plants			
Blue-flowered butterwort	*Deeringothamnus pulchellus*	ST	NAEA
Carter's warea	*Warea carteri*	FE	NO EFFECT
Celestial lily	*Nemastylis floridana*	SE	NEA
Coastal vervain	*Glandularia maritima*	SE	NEA
Cut-throat grass	*Panicum abscissum*	SE	NEA
Florida beargrass	*Nolina atopocarpa*	ST	NEA
Giant Orchid	*Pteroglossaspis ecristata*	ST	NEA
Large-flowered rosemary	*Conradina grandiflora*	ST	NEA
Lewton's polygala	*Polygala lewtonii*	FE	NO EFFECT
Many-flowered grass pink	*Calopogon multiflorus*	ST	NAEA
Nodding pinweed	*Lechea cernua*	ST	NEA
Plume polypody	*Polypodium plumula*	SE	NEA
Redmargin Zephyrlily	*Zephranthes simpsonii*	ST	NEA
Sand butterfly pea	*Centrosema Arenicola*	SE	NEA
Short-leaved rosemary	*Conradina brevifolia*	FE	NO EFFECT
Small's flax	*Linum carteri var. smallii*	SE	NEA
Swamp plume polypody	*Polypodium ptilodon*	SE	NEA
Widespread polypody	*Polypodium dispersum*	SE	NEA
Yellow-flowered butterwort	*Pinguicula lutea*	SE	NEA

MANLAA = May Affect, Not Likely to Adversely Affect
NEA = No Effect Anticipated
NAEA = No Adverse Effect Anticipated

Wetlands and other surface waters (OSWs) with potential to be affected by the proposed project were identified within the Malabar study area. An assessment was performed for wetlands and OSWs in accordance with the Uniform Mitigation Assessment Method (UMAM), pursuant to Chapter 62-345, F.A.C., to determine the functional value provided by the wetlands and OSWs and determine the amount of mitigation required to offset adverse impacts. The impacted OSWs are considered upland cut components of the existing manmade drainage system and were not included in the assessment as mitigation will not be required for impacts to these surface waters. The Preferred Alternative, including the preferred pond sites, will directly impact 0.46 acres of wetlands and 4.08 acres of OSWs.

No Essential Fish Habitat (EFH) has been identified within the study area. According to their ETDM Summary Report No. 14396, dated October 25, 2019, NMFS staff concluded that the project will not impact EFH; therefore, an EFH assessment is not required.

SECTION 1 PROJECT OVERVIEW

Initiated in November 2019, this Project Development and Environment (PD&E) Study has been conducted to assess various widening alternatives for Malabar Road. This PD&E Study and subsequent reports document the project's purpose and need, the alternatives developed, the process of selecting the recommended preferred alternative, and presents the preliminary design analysis for the recommended preferred alternative.

1.1 Project Description

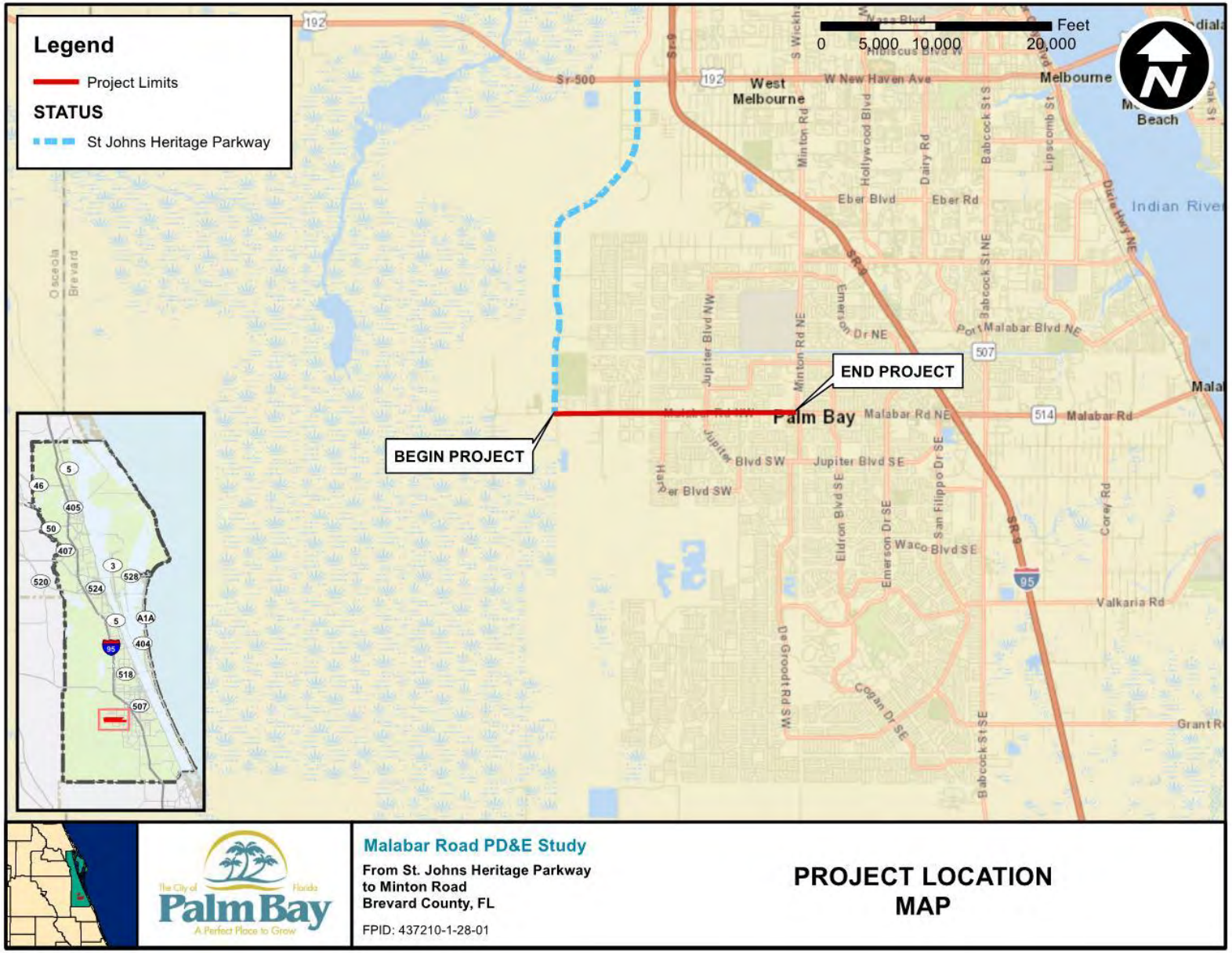
The Malabar Road PD&E Study evaluated capacity, safety, and multi-modal improvements on Malabar Road from St. Johns Heritage Parkway to Minton Road, a distance of approximately four miles, in the City of Palm Bay and Brevard County, Florida. Malabar Road is an east-west regional roadway connecting western Brevard County/City of Palm Bay to US 1 in Malabar. The roadway's maintaining jurisdiction is Brevard County at its western edge, before transitioning to the City of Palm Bay for several miles, and then becoming a state road (S.R. 514) between I-95 and US 1. Malabar Road has an existing diamond interchange with I-95. Within the study area, Malabar Road is an urban minor arterial. The study area is shown in Figure 1.1.

Malabar Road within the project limits is a two lane roadway. The section from St. Johns Heritage Parkway to Garvey Road is undivided, whereas the section from Garvey Road to Minton Road has median turn lanes. An 8' shared-use path is present on Malabar Road's north side for the entirety of the project limits. Minimal sidewalk is present on the south side. No on road bicycle facilities are present along the study limit's length.

There are currently four signalized intersections and numerous unsignalized intersections along the study corridor. The four signalized intersections are located at Krassner Drive/Bending Branch Lane, Jupiter Boulevard, the Plaza Shopping Center, and Minton Road.

This roadway is unique due to the surrounding canal system that is operated/maintained by the Melbourne-Tillman Water Control District (MTWCD). Malabar Road within the project limits crosses over four canals (C-7, C-8, C-9, and C-10). Canal C-20 runs parallel to Malabar Road on the north side from Canal C-10 (250' west of Bavarian Avenue) to approximately 0.30 miles west of Minton Road. One bridge, crossing over Canal C-10, is located within the project limits.

Figure 1-1: Project Location Map



1.2 Purpose and Need

The purpose of this project is to evaluate the need for capacity improvements (roadway widening) and the addition of multi-modal features, and to address safety issues along the corridor. The need for these improvements is described in this section.

1.2.1 Transportation Demand/Capacity

The existing (2020) traffic analysis shows the four signalized intersections and 13 unsignalized intersections operated with an overall Level of Service (LOS) of E or better and no overcapacity movements. Even though the intersections were operating acceptably, the existing traffic analysis for the segments shows multiple segments of the Malabar Road corridor operated worse than the City standard of LOS C, with traffic volumes ranging from 7,200 to 16,000 Annual Average Daily Traffic (AADT).

In the future 2050 no-build condition, the traffic analysis shows three signalized intersections and eleven unsignalized intersections performed at LOS F or with a volume-to-capacity (V/C) ratio greater than 1.0 in either the AM or PM peak hour. Most segments of Malabar Road are projected to function unacceptably as a two-lane roadway, with traffic volumes ranging from 16,000 to 28,000 AADT. Table 1-1 provides the traffic summary for the existing and future no-build conditions.

The operational condition of no-build intersections and segments emphasize the need for capacity enhancements that can be provided by widening the study corridor to four lanes and implementing an access management plan. If Malabar Road is widened to a four-lane facility, the LOS will improve from LOS E/F to LOS C or better with the same future volumes shown in Table 1-1.

Table 1-1: Malabar Road Existing 2020 and No-Build 2050 and LOS

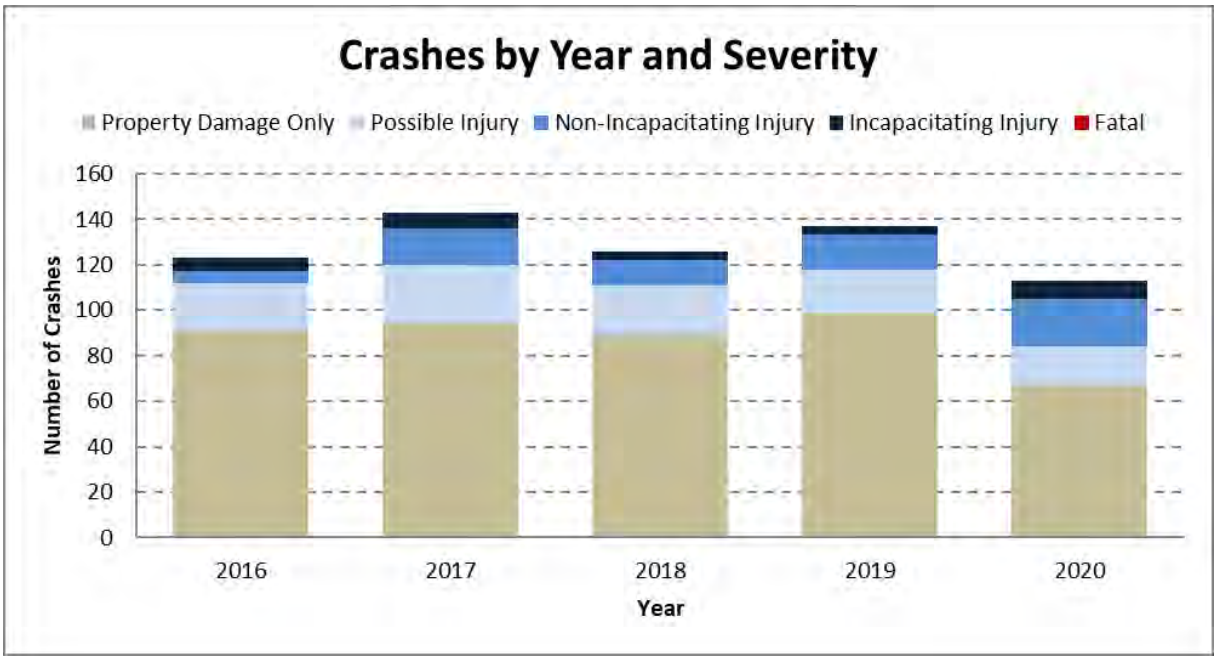
Malabar Road Segment	No. of Lanes	2020 AADT	2020 LOS[1]	2050 AADT	2050 LOS[1]
St. Johns Heritage Parkway to Krassner Dr./Bending Branch Ln.	2	7,200	D	16,000	E
Krassner Dr./Bending Branch Ln. to Jupiter Blvd.	2	11,000	B	21,000	F
Jupiter Blvd. to Plaza Shopping Center	2	16,000	E	28,000	E
Plaza Shopping Center to Minton Rd.	2	16,000	F*	28,000	F*

[1] Displayed LOS is for worst peak hour (AM/PM) and peak direction (EB/WB).
* This is likely due to the relatively short length of segment between signalized intersections and the relatively high control delay of the adjacent signalized intersections.

1.2.2 Safety

Crash records were obtained for Malabar Road from 900' west of the St. Johns Heritage Parkway to ¼ mile east of Minton Road for the most recent five-year period on record (2016 through 2020). There was a total of 642 reported crashes during this period, 202 (32 percent) resulted in at least one injury. There were no reported fatal crashes along the study corridor during the five year period. As displayed in Figure 1-2, the crashes per year along the corridor generally increased between 2016 (123 crashes) and 2019 (137 crashes). The 2020 crash data saw a decrease to 113 crashes, likely due to decreases in traffic volumes related to the COVID-19 pandemic. While the overall total crashes decreased in 2020, the total number of injury crashes was the second highest behind 2017. This could be attributed to higher travel speeds along the corridor due to the lower volume, which leads to more severe crashes. It is important to note the traffic counts for this project were performed in January 2020, prior to the beginning of the pandemic in March 2020.

Figure 1-2: Crashes per Year (Corridor Wide)



The highest crash type observed was rear end, comprising 54 percent of the total crashes. Left turn (14 percent) and sideswipe crashes (12 percent) were the second and third highest crash types.

Three existing signalized intersections at Jupiter Boulevard, the Plaza Shopping Center, and Minton Road were the highest crash locations along the study corridor, accounting for 330 of the 642 total reported crashes (51 percent). The four high crash unsignalized intersections are St. Johns Heritage Parkway, Hurley Boulevard, Hillock Avenue, and Maywood Avenue/Daffodil Drive accounting for 90 total crashes (14 percent). Two high crash segments from 0.05 miles east of Jupiter Boulevard to 0.05 west of Santa Rosa Avenue (1,400 feet in length) and from 0.05 miles east of Maywood Avenue/Daffodil Drive to 0.05 west of the Plaza Shopping Center (1,175 feet in length) accounted for 61 total crashes (10 percent). A crash rate analysis was performed on the

2016 to 2018 crash data because average crash rates were not available for 2019 and 2020. Only one segment of Malabar Road, between Jupiter Boulevard and the Plaza Shopping Center, had a higher than average crash rate for one year of analysis. While the segments had low safety ratios, the three signalized intersections at Jupiter Boulevard, the Plaza Shopping Center, and Minton Road each had higher crash rates than statewide or districtwide averages for similar roadways in at least two of the three analysis years.

Using the predictive safety analysis methods provided in the Highway Safety Manual (HSM), as traffic volumes increase in the no-build condition, crashes are predicted to increase by over 120 percent between 2020 and 2050 using the volumes in Table 1-1. By providing a four-lane facility, the 2050 crashes are predicted to be up to 40 percent less than a two lane facility with the same traffic volumes, emphasizing the need for safety enhancements along Malabar Road.

1.2.3 Modal Interrelationships

An 8′ shared-use path is present on the north side of Malabar Road for the entirety of the project limits. Where Canal C-20 exists, this facility is on the north side of the canal. Minimal sidewalk is present on the south side. No on road, bicycle facilities are present along the length of the project limits.

The Office of Greenways and Trails (OGT) and the Space Coast Transportation Planning Organization (SCTPO) identified trail opportunities in the vicinity of Malabar Road. The St. Johns River Eco-Heritage Trail will align with the St. Johns Heritage Parkway and connect the Brevard Zoo Linear Trail to Malabar Road. The St. Johns River Eco-Heritage Trail will extend south where it will connect to existing trail facilities. In addition to OGT and SCTPO identified trails, two local trails are located in the study vicinity. One local trail runs east-west along Malabar Road from St. John Heritage Parkway to west of Minton Road as previously discussed. The second local trail called the Cross City Trail ends just south of Malabar Road near the City of Palm Bay Public Works Department. The trail is located adjacent to the power lines and starts at Walpole Road and ends just south of Malabar Road. There is no connection between Cross City Trail and the trail paralleling Malabar Road's north side due to the presence of Canal C-20.

Two transit routes with 16 total transit stops (six eastbound and 10 westbound) operate along Malabar Road within the study corridor. Space Coast Area Transit Route 20 connects Heritage and West Melbourne and Route 23 provides service to the West Palm Bay area. Route 20 operates along the entire corridor and Route 23 operates between Jupiter Boulevard and Minton Road. Both routes operate from approximately 6:30 AM to 8:30 PM on weekdays and 7:30 AM to 5:30 PM on Saturdays with hour long headways. The eastbound bus stop in front of the Madalyn Landing Apartments is the only stop with a bus shelter.

The future four-lane roadway will provide a 10′ shared-use path on the north side and an 8′ sidewalk on the south side. Existing transit stop access will be enhanced as part of the four-lane widening and sidewalk improvements.

1.2.4 System Linkage

The western Palm Bay area is anticipated to experience population and traffic growth in the next 30 years, leading to increased travel on facilities west of I-95 and south of US 192. The St. Johns Heritage Parkway is providing a "beltway" facility to accommodate the forecasted increase in traffic in western Palm Bay. The St. Johns Heritage Parkway is already constructed from Malabar

Road to US 192, and a study is being performed for the extension of the Parkway from Babcock Street north to Malabar Road.

Malabar Road is one of three primary east-west roadways connecting to the Parkway and is the only one of those roadways that has an interchange with I-95. Malabar Road from Minton Road to Corporate Circle is four lanes and the section from Corporate Circle to I-95 is six lanes. The Malabar Road four-lane alternative proposed from the St. Johns Heritage Parkway to Minton Road would tie into the existing four-lane section starting at Minton Road.

A PD&E study was recently completed for Malabar Road from Babcock Street to US 1 with a recommended preferred alternative to widen from two to four lanes. Design and right-of-way for the Babcock Street to US 1 project is planned in the SCPTO's 2045 Long Range Transportation Plan (LRTP) Cost Feasible Plan for the 2026 to 2030 time period and construction is planned for the 2031 to 2035 time period.

Providing a four-lane Malabar Road from the St. Johns Heritage Parkway to Minton Road would provide at least four travel lanes from the St. Johns Heritage Parkway to US 1 once the planned projects are constructed. The project will also enhance the access to St. Johns Heritage Parkway.

1.2.5 Project Status

The four-lane widening of Malabar Road from St. Johns Heritage Parkway to Minton Road is documented in the SCTPO's 2045 Long Range Transportation Plan (LRTP) Cost Feasible Plan for design, right-of-way, and construction. The design and right-of-way phases are planned in the 2026 to 2030 time period with a mix of local and state funds. The construction phase is planned in the 2031 to 2035 time period utilizing local funding. The next phase of project development, the final design phase, is currently unfunded. PD&E is the only project phase identified in the FDOT State Transportation Improvement Program (STIP).

1.3 Alternatives Analysis

1.3.1 Roadway Typical Sections

Two initial typical section alternatives were developed to support the Malabar Road purpose and need for capacity and safety improvements:

- Alternative A – Minimum right-of-way alternative
  - 89.5′ right-of-way alternative from the St. Johns Heritage Parkway to Canal C-10
  - 92.5′ right of way alternative from Canal C-10 to Sta. 256+80
- Alternative B – Desired right-of-way alternative
  - 100′ right-of-way alternative from the St. Johns Heritage Parkway to Canal C-10
  - 103′ right of way alternative from Canal C-10 to Sta. 256+80

Each of the initial typical sections were applied from the St. Johns Heritage Parkway to Sta. 256+80, which is just west of the Plaza Shopping Center where Malabar Road begins to transition to a four lane roadway.

Alternative A was developed to minimize the right-of-way impacts to residential properties on the south side of Malabar Road and minimize Canal C-20 impacts on the north side of Malabar Road

east of Canal C-10. The following features are common between the 89.5′ and the 92.5′ typical sections:

- Two 11′ travel lanes in each direction;
- 15.5′ wide median, including Type E curb and gutter;
- Type F curb and gutter outside of the travel lanes; and
- 10′ shared-use path on the north side and 6′ sidewalk on the south side.
    - The inside edge of the 6′ sidewalk is at the back of curb.

The primary difference between the 89.5′ and 92.5′ typical sections is the presence of Canal C-20 on the north side of Malabar Road east of Canal C-10. In the 92.5′ typical, an extra 3′ is added on the north side for guardrail protection between the roadway and Canal C-20.

Alternative A utilized a minimum median width of 15.5′ and the 6′ south side sidewalk at the back of curb to reduce the overall right-of-way needed for the study corridor. Alternative B increases the median width to a desired 22′ median (including Type E curb and gutter). Alternative B also provides a 4′ grass buffer between the south side curb and the sidewalk, which was not provided in Alternative A. The additional 6.5′ in the median and 4′ grass buffer on the south side equates to the 10.5′ difference between the 89.5′/92.5′ Alternative A typical sections and the 100′/103′ Alternative B typical sections. The following features are common between the 100′ and the 103′ typical section alternatives:

- Two 11′ travel lanes in each direction;
- 22′ wide median, including Type E curb and gutter;
- Type F curb and gutter outside of the travel lanes;
- 10′ shared-use path on the north side and 6′ sidewalk on the south side; and
- 4′ grass buffer between the back of the curb and the 6′ south side sidewalk.

Similar to Alternative A, the 3′ difference between the 100′ and 103′ typical sections is north side guardrail protection between the roadway and Canal C-20.

The Alternative A and Alternative B typical sections were presented at the Alternatives Public Meeting conducted on Thursday, September 24, 2020, and subsequent local jurisdiction meetings in October 2020. During these meetings, discussion was held regarding the lack of on-road bicycle facilities being provided in the typical section alternatives. While adding on-road bicycle facilities was deemed not feasible by the study team due to the right-of-way and Canal C-20 impacts, widening the south side sidewalk to 8′ was explored. A 10′ shared-use path is already being proposed on the north side, so widening the south side sidewalk to 8′ would provide a wider facility accommodating both pedestrians and bicycles. The 8′ south side sidewalk was incorporated into the recommended preferred alternative.

1.3.2 Bridge Typical Sections

One bridge structure is present over Canal C-10 at approximately Sta. 142+00. Four bridge typical sections were developed in support of the initial typical section alternatives discussed in the previous section:

- Alternative A – Minimum right-of-way bridge typical sections

    - Raised sidewalk alternative
    - Flush sidewalk with traffic separator alternative
- Alternative B – Desired right-of-way bridge typical sections
    - Raised sidewalk alternative
    - Flush sidewalk with traffic separator alternative

The Alternative A bridge typical sections have a 15.5′ median consistent with the Alternative A roadway typical section. The Alternative B bridge typical sections have a 22′ median consistent with Alternative B roadway typical section. The raised sidewalk bridge typical section (both Alternatives A and B) incorporates a 10′ shared-use path on the north side and 6′ sidewalk on the south side that is raised above the travel lanes and separated by a 1.5′ paved shoulder. A traffic railing with a pedestrian/bicycle railing on top is present to the outside of the bridge structure. The flush sidewalk bridge typical section (both Alternatives A and B) provides the same 10′ shared-use path and 6′ sidewalk, but the facilities are flush with the bridge deck and separated from the travel lanes by a 2.5′ paved shoulder and 1′4″ traffic railing. A pedestrian/bicycle railing is present to the outside of the bridge structure.

1.3.3 Intersection Alternatives

The following intersections were reviewed for either a traffic signal/unsignalized intersection or a roundabout:

- Traffic Signal vs Roundabout Evaluation –
    - Malabar Road & St. Johns Heritage Parkway;
    - Malabar Road & Wisteria Avenue/Abilene Drive;
    - Malabar Road & Krassner Drive/Bending Branch Lane;
    - Malabar Road & Jupiter Boulevard; and
    - Malabar Road & Garvey Road.
- Unsignalized Intersection vs Roundabout Evaluation –
    - Malabar Road & Hurley Boulevard; and
    - Malabar Road & Maywood Avenue/Daffodil Drive.

In order to analyze and compare the signalized/unsignalized alternatives to the roundabouts at each location, an intersection operational analysis and safety analysis were performed. Based on this analysis, roundabouts are anticipated to operate better or the same as the signalized/unsignalized intersection at every location except Garvey Road. Roundabouts have been shown to reduce fatal/injury crash types versus signalized/unsignalized intersections, and the results show the roundabout has lower predicted fatal/injury crashes at every intersection.

During the intersection alternatives analysis, it was determined that the following intersections would remain signalized in the recommended preferred alternative due to operational limitations and right-of-way impacts of a roundabout configuration:

- Malabar Road & Plaza Shopping Center; and
- Malabar Road & Minton Road.

1.4 Preferred Alternative

1.4.1 Typical Section

Alternative B with 8′ south side sidewalks was selected as the recommended preferred alternative by City of Palm Bay and Brevard County. Figure 1-3 displays the typical section from the St. Johns Heritage Parkway to Canal C-10 and Figure 1-4 displays the typical section from Canal C-10 to Station 256+80. The following describes the typical section elements:

- Two 11′ travel lanes in each direction;
- 22′ wide median, including Type E curb and gutter;
- Type F curb and gutter outside of the travel lanes;
- 10′ shared-use path on the north side and 8′ sidewalk on the south side; and
- 4′ grass buffer between the back of the curb and the 8′ south side sidewalk.

Alternative B was selected because it provides the wider median plus the 4′ grass buffer, both meeting 2021 FDOT Design Manual (FDM) standards, while having a negligible impact on right-of-way and only a slighter higher project cost when compared to Alternative A. The right-of-way required for the recommended preferred alternative typical section is 102′ from the St. Johns Heritage Parkway to Canal C-10 and 105′ from Canal C-10 to Station 256+80.

Figure 1-3: Recommended Preferred Alternative – St. Johns Parkway to Canal 10

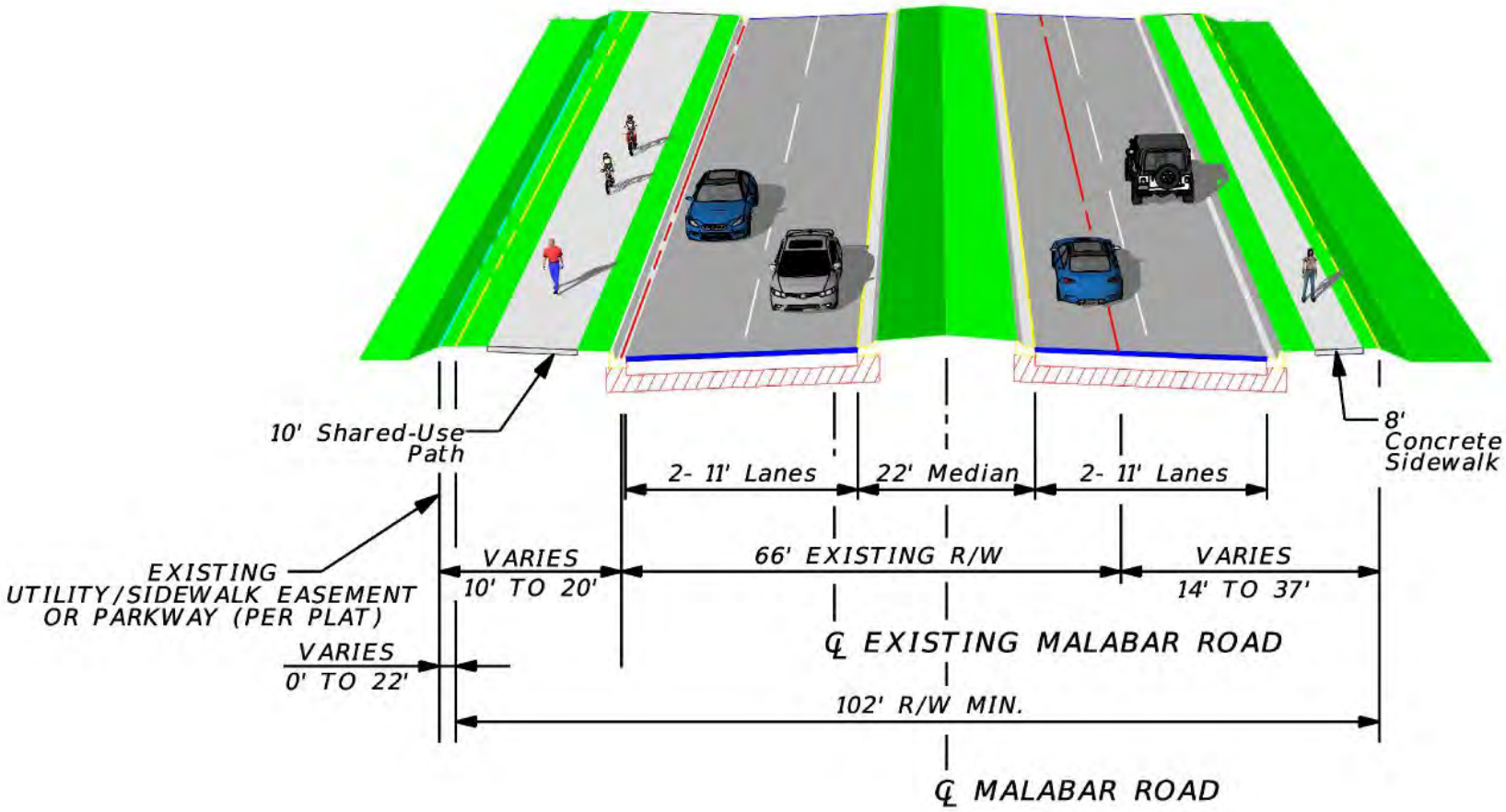
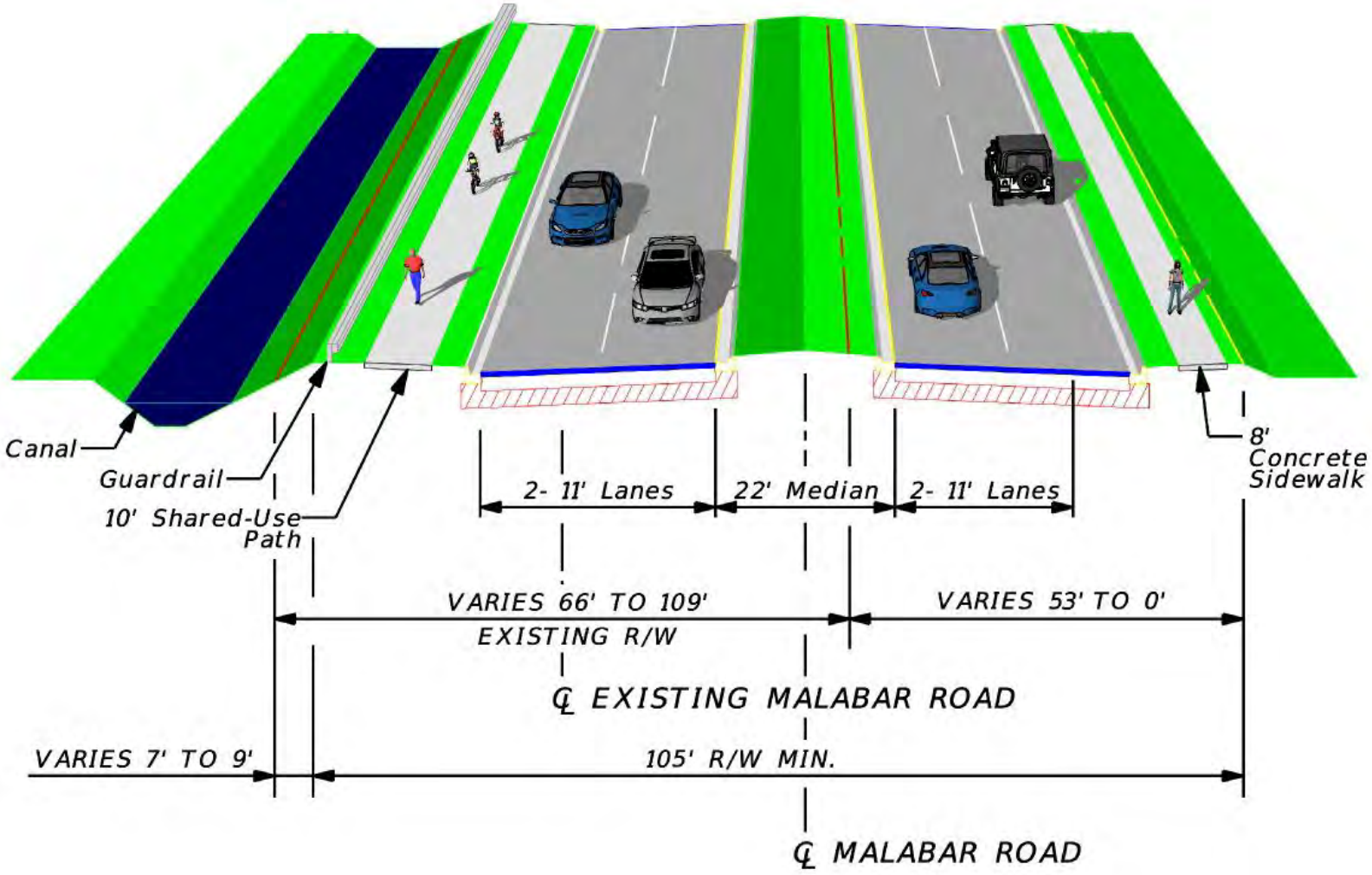


Figure 1-4: Recommended Preferred Alternative – Canal 10- Sta. 246+80



1.4.2 Bridge Typical Section

The recommended preferred alternative right-of-way bridge typical section (Figure 1-5) has a 22′ median consistent with Alternative B roadway typical section. A 10′ shared-use path is provided on the north side and an 8′ sidewalk is provided on the south side. The pedestrian/bicycle facilities are flush with the bridge deck and separated from the travel lanes by a 2.5′ paved shoulder and 1′4″ traffic railing. A pedestrian/bicycle metal railing is present to the outside of the bridge structure.

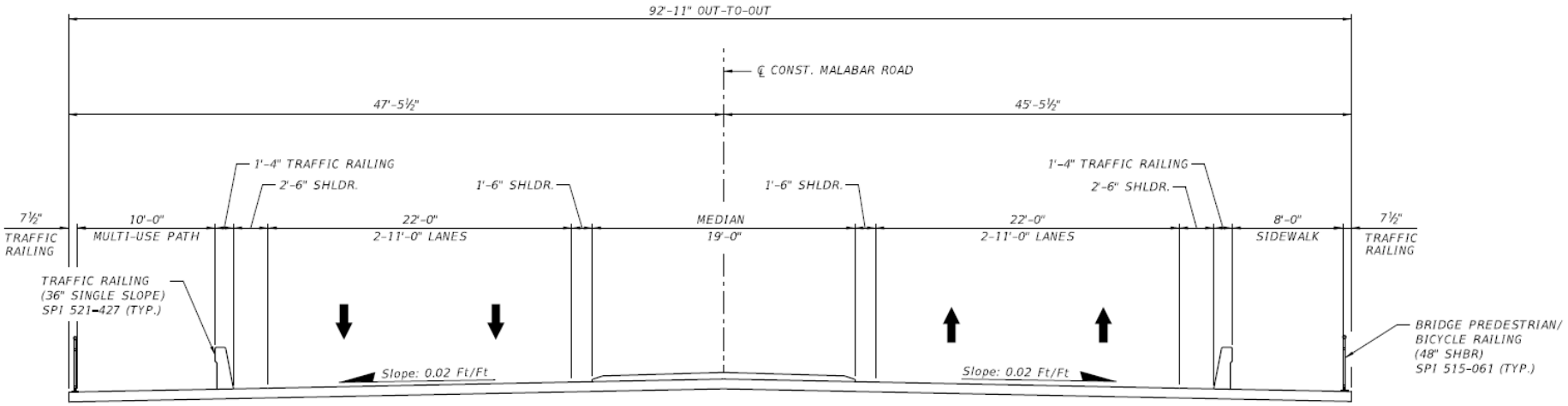
1.4.3 Intersections

Based on the intersection alternatives analysis, the following intersection control types are recommended for the recommended preferred alternative:

- Traffic Signals –
    - Malabar Road & Jupiter Boulevard*;
    - Malabar Road & Garvey Road;
    - Malabar Road & Plaza Shopping Center; and
    - Malabar Road & Minton Road.
- Roundabouts –
    - Malabar Road & St. Johns Heritage Parkway;
    - Malabar Road & Krassner Drive/Bending Branch Lane;
    - Malabar Road & Hurley Boulevard; and
    - Malabar Road & Maywood Avenue/Daffodil Drive.
- Two-Way Stop Control –
    - Malabar Road & Snapdragon Drive;
    - Malabar Road & Championship Circle;
    - Malabar Road & Wisteria Avenue/Abilene Drive;
    - Malabar Road & Bavarian Avenue;
    - Malabar Road & Watoga Avenue/Avery Springs;
    - Malabar Road & Palm Bay Public Works Driveways;
    - Malabar Road & Post Office;
    - Malabar Road & Santa Rosa Avenue;
    - Malabar Road & Madalyn Landing; and
    - Malabar Road & Sutherland Drive.

*While the intersection of Malabar Road and Jupiter Boulevard would have improved operations and safety as a roundabout, the signal alternative was selected due to constrained right-of-way. The US Post Office in the intersection's southwest corner is federal property and cannot be impacted, shifting the alignment to the north requiring the Canal C-20 to be relocated even as a signalized intersection. The roundabout's larger footprint would require additional Canal C-20 relocation impacting nearby residences.

Figure 1-5: Recommended Preferred Alternative – Canal C-10 Bridge



1.5 Proposed Drainage

The project is within the St. Johns River Water Management District (SJRWMD) and the Melbourne-Tillman Water Control District (MTWCD) jurisdiction. The MTWCD maintains a network of canals in Brevard County including several crossing underneath Malabar Road (Canals C-7, C-8, C-9, and C-10) and one that runs parallel to Malabar Road (Canal C-20) for a portion of the study corridor. The City of Palm Bay also maintains smaller canals within the vicinity of the project (Canals 26-06, 14-03b and 13-05).

The design of stormwater management facilities for the PD&E is governed by the rules established by the SJRWMD, City of Palm Bay, and MTWCD. FDOT designs stormwater management facilities to meet water treatment and attenuation requirements to comply with SJRMWD rule Chapter 62-330, F.A.C. and the Statewide Environmental Resource Permit Applicant's Handbook.

The stormwater runoff from the project limits will be collected and conveyed via curb and gutter to the recommended preferred pond alternative for each basin. The various pond alternatives consist of dry retention ponds, wet detention ponds, and dry linear swales. The ponds will discharge at or near the same cross drains that carry the roadway runoff in the existing condition, or directly into canals where appropriate. The proposed ponds have been sized to achieve the required water quality treatment and water quantity attenuation and serve as a budget tool for right-of-way estimation for the project to the City of Palm Bay. There are currently six proposed drainage basins within the project limits. Two pond alternatives were analyzed for each basin with the exception of Basin A for which the existing Pond A will be utilized. In addition to pond alternatives, one floodplain compensation (FPC) site was also investigated to provide compensation for one Floodplain Impact Area (FIA) located at the western end of the project. The results of the preliminary analysis are provided in the associated Pond Siting Report. The Pond Site Assessment detailing impacts to wetlands and listed species is included in Appendix A. The recommended preferred pond alternatives are listed in Table 1-2 below.

Table 1-2: Recommended Preferred Pond Alternatives

Basin	Recommended Preferred Alternative
C-7	Alt. 2
C-8 & C-9	Alt. 1
C-10 West	Alt 2. Option 1 - Use C-10 East Swales
C-10 East	Alt. 1
C-20	Supplemental Swales
	Alt. 1
A	Use Existing City of Palm Bay Pond A
FPC	C- 7

1.6 Report Contents and Purpose

This Natural Resources Evaluation (NRE) has been prepared as part of the PD&E Study to assess the various Malabar Road widening alternatives and identify potential impacts to natural resources throughout the corridor. The purpose of this NRE is to document protected species and habitat and identify the location of wetlands and surface waters within the project corridor in order to determine potential impacts to these resources, provide rationale to support species effect determinations, identify avoidance and minimization measures, and quantify mitigation necessary for the recommended preferred alternative. This NRE has been prepared in accordance with the *Wetlands and Other Surface Waters* and *Protected Species and Habitat* chapters of the FDOT's PD&E Manual (FDOT, 2020) and the current Natural Resources Evaluation Outline and Guidance (FDOT, 2020).

SECTION 2 EXISTING ENVIRONMENTAL CONDITIONS

Prior to field surveys, staff ecologists reviewed the most currently available information to identify existing conditions within the study area. Land use, soils and other natural features were identified to determine what resources occur or have the potential to occur within the Malabar Road Study Area. This information included land use maps provided by the St. Johns River Water Management District (SJRWMD). The land use descriptions were based on the Florida Land Use, Cover and Forms Classification System (FLUCFCS) (FDOT, 1999). Other information included but was not limited to:

- U.S. Geographic Survey (USGS) Topographic Maps (https://viewer.nationalmap.gov/launch/)
- Natural Resources Conservation Service (NRCS) Soil Maps (https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm)
- Florida Natural Areas Inventory (FNAI) Cooperative Land Cover Maps (http://www.fnai.org/landcover.cfm)
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) Maps (https://www.fws.gov/wetlands/data/mapper.html)
- USFWS Consultation Area and Critical Habitats Maps (https://crithab.fws.gov/)
- USFWS Wood Stork Nesting Colonies and Core Foraging Areas Maps (https://www.fws.gov/northflorida/woodstorks/wood-storks/.htm)
- National Marine Fisheries Service (NMFS) Essential Fish Habitat (EFH) Maps (https://www.habitat.noaa.gov/protection/efh/habitatmapper.html)
- Florida Fish and Wildlife Conservation Commission (FWC) Scrub-Jay Observation Maps (http://myfwc.com/research/gis/)
- FWC Bald Eagle Nesting Territory Maps (https://publictemp.myfwc.com/FWRI/EagleNests/nestlocator.aspx)
- FWC Red-Cockaded Woodpecker Observation Maps (http://geodata.myfwc.com/datasets/red-cockaded-woodpecker-observation-locations)
- FWC Wildlife Occurrence Maps (http://geodata.myfwc.com/datasets)
- FWC Species Action Plans

(http://myfwc.com/wildlifehabitats/imperiled/species-action-plans/)

- FDOT Efficient Transportation Decision Making (ETDM) Summary Report #14396 (https://etdmpub.fla-etat.org/est/#)

2.1 Environmental Assessment Study Area

The Malabar Road study area was considered to be the areas directly or indirectly affected by the proposed action and not merely the immediate area involved in the action. It encompassed the geographic extent of the environmental changes that may result from the action. For purposes of this study, the study area included all lands within 2000 feet of the current City right-of-way and included the proposed pond and flood plain compensation sites. Additionally, a 1500-meter (4920 feet) buffer was added to the study area where suitable Audubon's crested caracara habitat occurred in order to fulfill the requirements of the survey protocol outlined by the USFWS.

2.2 Land Use

The land uses within the Malabar Road study area were first characterized by SJRWMD online resources and later modified or delineated by ecologists to reflect field observations made at the time of the study. The Malabar Road study area contains a mixture of several FLUCFCS types including urban and built-up, agriculture, range land, upland forests, water, wetland, barren land, and transportation or other linear utilities (Figures 2-1A - 2-1C). Figure 2-2 shows the topographic map of the study area. A detailed list of the land uses within the study area is provided in Table 2-1 along with additional descriptions of the land uses in Appendix B. Photographs of representative habitats in the study area are provided in Appendix C.

Table 2-1: FLUCFCS within the Malabar Study Area

FLUCFCS CODE	FLUCFCS DESCRIPTION	AREA (ac)	FLUCFCS CODE	FLUCFCS DESCRIPTION	AREA (ac)
110	RESIDENTIAL, LOW DENSITY	198	434	HARDWOOD - CONIFER MIXED	56
120	RESIDENTIAL, MEDIUM DENSITY	1088	440	TREE PLANTATIONS	11
130	RESIDENTIAL, HIGH DENSITY	35	510	STREAMS AND WATERWAYS	50
140	COMMERCIAL AND SERVICES	92	530	RESERVOIRS	57
170	INSTITUTIONAL	88	630	WETLAND FORESTED MIXED	1
211	IMPROVED PASTURES	106	641	FRESHWATER MARSHES	1
212	UNIMPROVED PASTURES	58	646	EMERGENT AQUATIC VEGETATION	2
215	FIELD CROPS	7	743	SPOIL AREAS	3
320	SHRUB AND BRUSHLAND	11	814	ROADS AND HIGHWAYS	54
330	MIXED RANGELAND	82	820	COMMUNICATIONS	3
411	PINE FLATWOODS	82	832	ELECTRICAL POWER TRANSMISSION LINES	22
420	UPLAND HARDWOOD FOREST	14	837	SURFACE WATER COLLECTION BASIN	1
428	CABBAGE PALM	101	TOTAL ACREAGE		2223

Figure 2-1: FLUCFCS Map

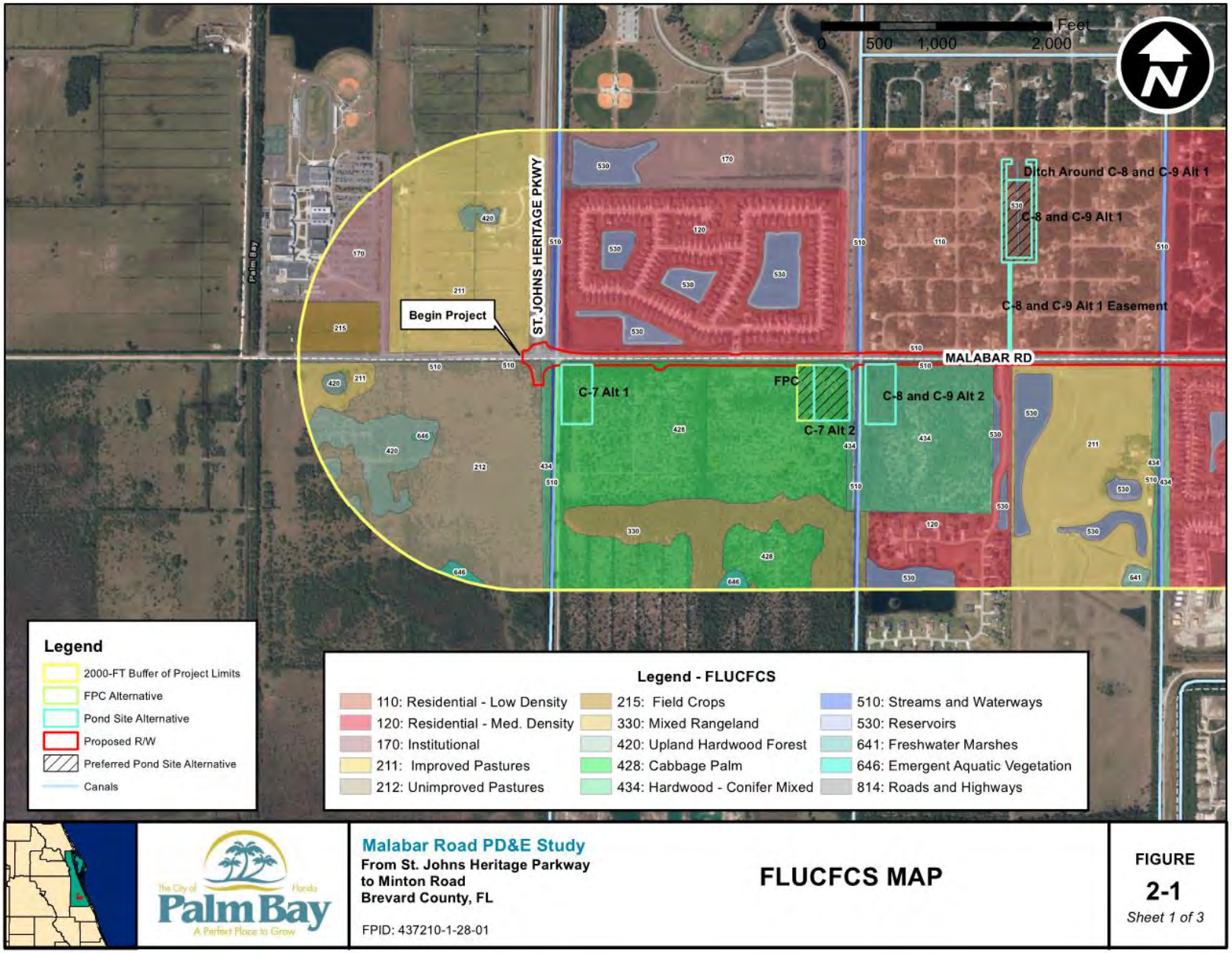


Figure 2-1: FLUCFCS Map

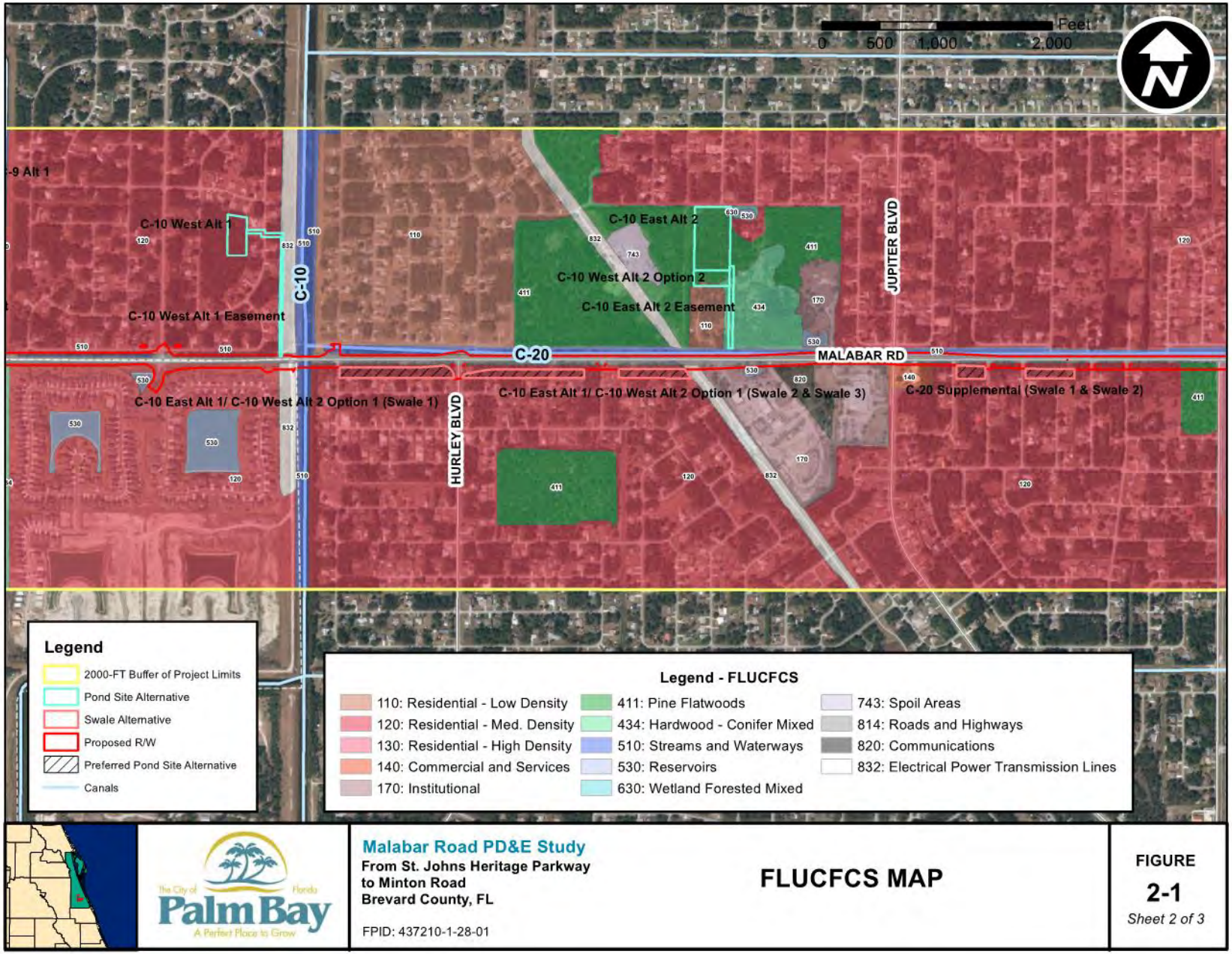


Figure 2-1: FLUCFCS Map

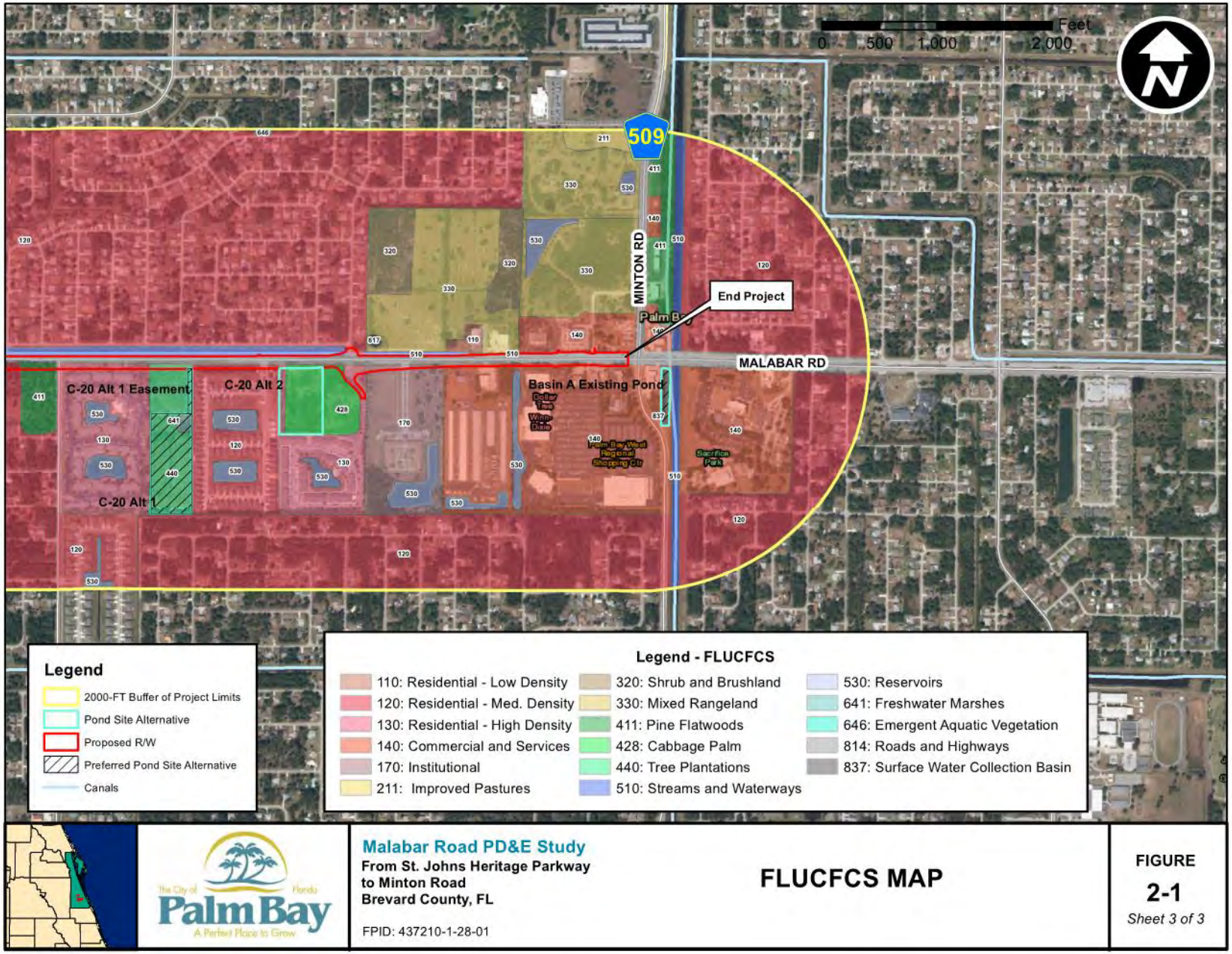
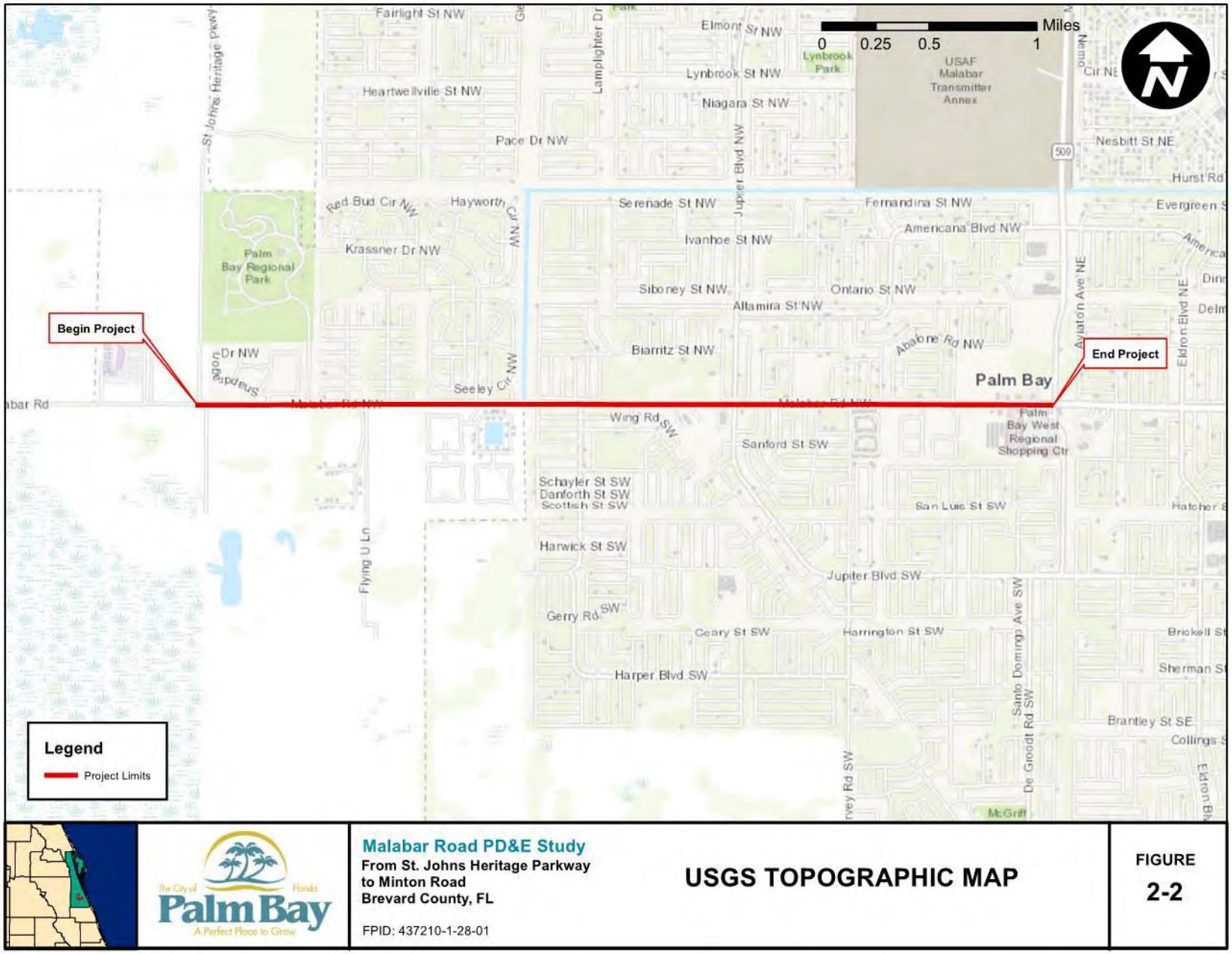


Figure 2-2: USGS Topography Map



2.3 Soils

The soil survey of Brevard County, Florida (USDA NRCS 2016) was reviewed to determine the soil types and characteristics within the Malabar Road study area. According to the soil survey, there are 8 different soil types within the Malabar Road study area. Table 2-2 summarizes and lists the soil types within the study area. The soil types and locations are depicted on Figures 2.3.

The soils encountered along the project limits include Hydrologic Soil Group (HSG) A/D and C/D. For soils assigned a dual HSG, the first letter applies to the drained condition and the second to the undrained condition.

Table 2-2: Soil Types Within the Malabar Study Area

Soil No.	USDA Soil Name	Seasonal High Ground Water		HSG	Soil Classification		
		Depth (inches)	Duration (months)		Depth (inches)	Unified	AASHTO
2	Anclote Sand, Depressional, 0 to 1 percent slopes	0-10	---	A/D	0-19	SP, SP-SM	A-3
					19-72	SP, SP-SM	A-3
17	EauGallie Sand	0-10	---	A/D	0-22	SP, SP-SM	A-3
					22-35	SP-SM, SM	A-2-4, A-3
					35-55	SP, SP-SM	A-3
					55-61	SM, SM-SC, SC	A-2-4
					61-84	SM, SM-SC	A-2-4
18	EauGallie, Winder, and Riviera Soils, Depressional	0-10	---	A/D	0-22	SP, SP-SM	A-3
					22-35	SP-SM, SM	A-2-4, A-3
					35-55	SP, SP-SM	A-3
					55-61	SM, SM-SC, SC	A-2-4
					61-84	SM, SM-SC	A-2-4
19	Riviera Sand	0.25-1.5	---	C/D	N/A	SP-SM	A-3
31	Malabar, Holopaw, and Pineda Soils	0-1.0	---	A/D	N/A	SP	A-3
33	Micco, mucky peat, frequently flooded	0-10.		A/D	0-30	PT	A-8
47	Pineda Sand, 0 to 2 percent slopes	0-10	---	C/D	0-19	SP, SP-SM	A-3
					19-35	SP, SP-SM	A-3
					35-38	SP-SM, SM	A-2-4
					38-60	SM, SM-SC, SC	A-2-4
					60-64	SM, SP-SM	A-2-4, A-3
71	Wabasso Sand	0-10	---	C/D	0-23	SP, SP-SM	A-3
					23-28	SP-SM	A-2-4, A-3
					28-34	SM, SP-SM	A-2-4, A-3
					34-62	SC, SM-SC	A-2

Figure 2-3: NRCS Soils Map

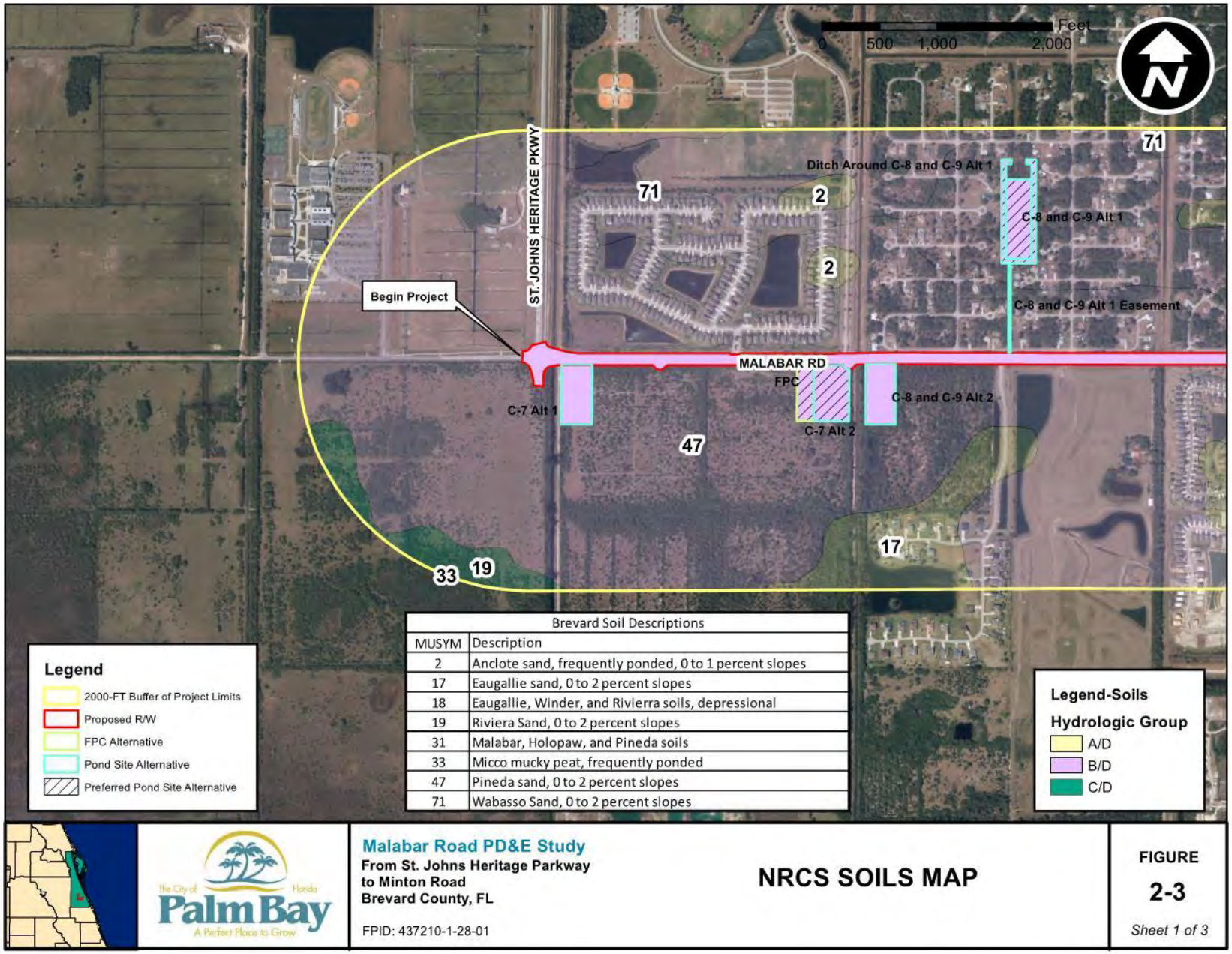


Figure 2-3: NRCS Soils Map

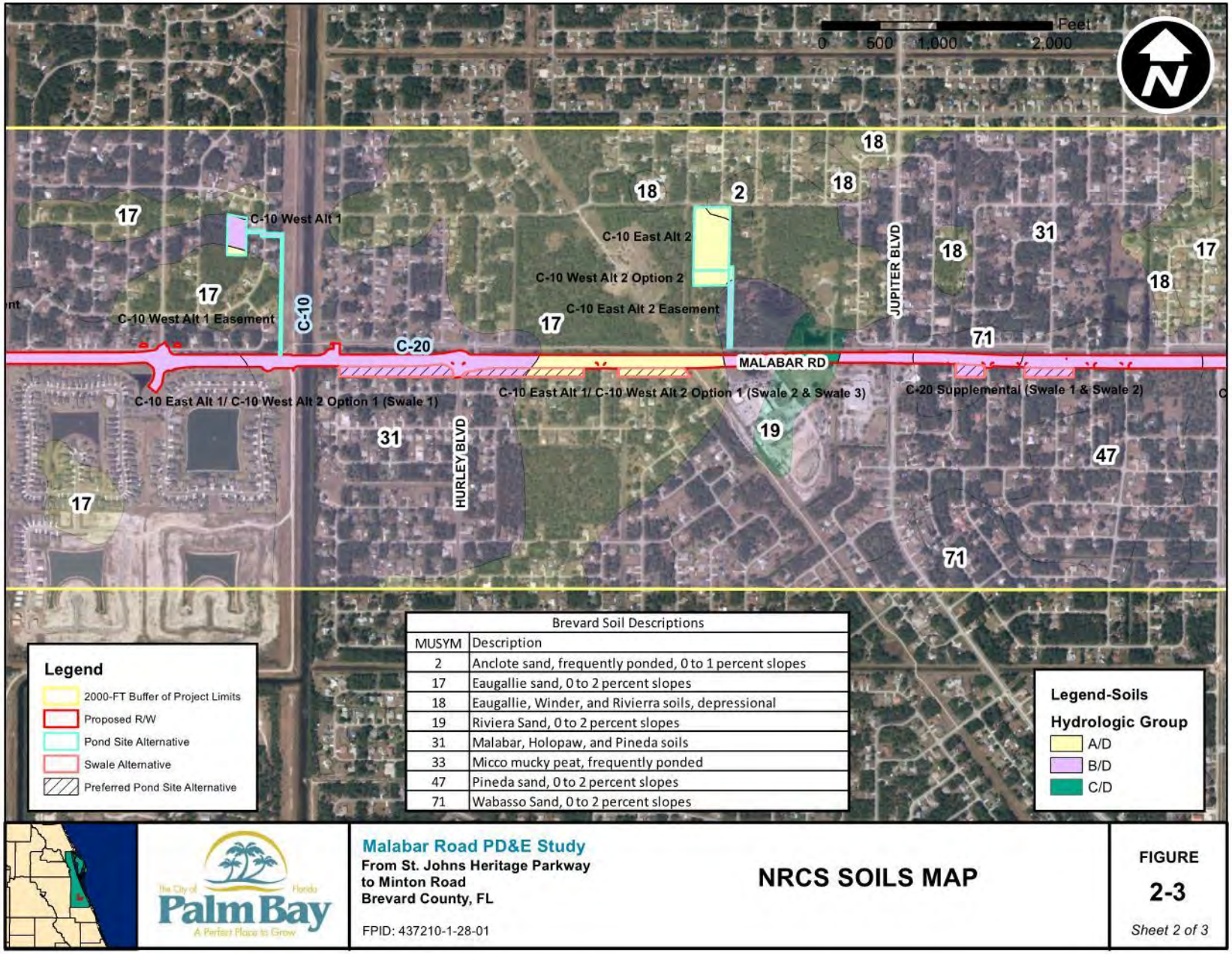
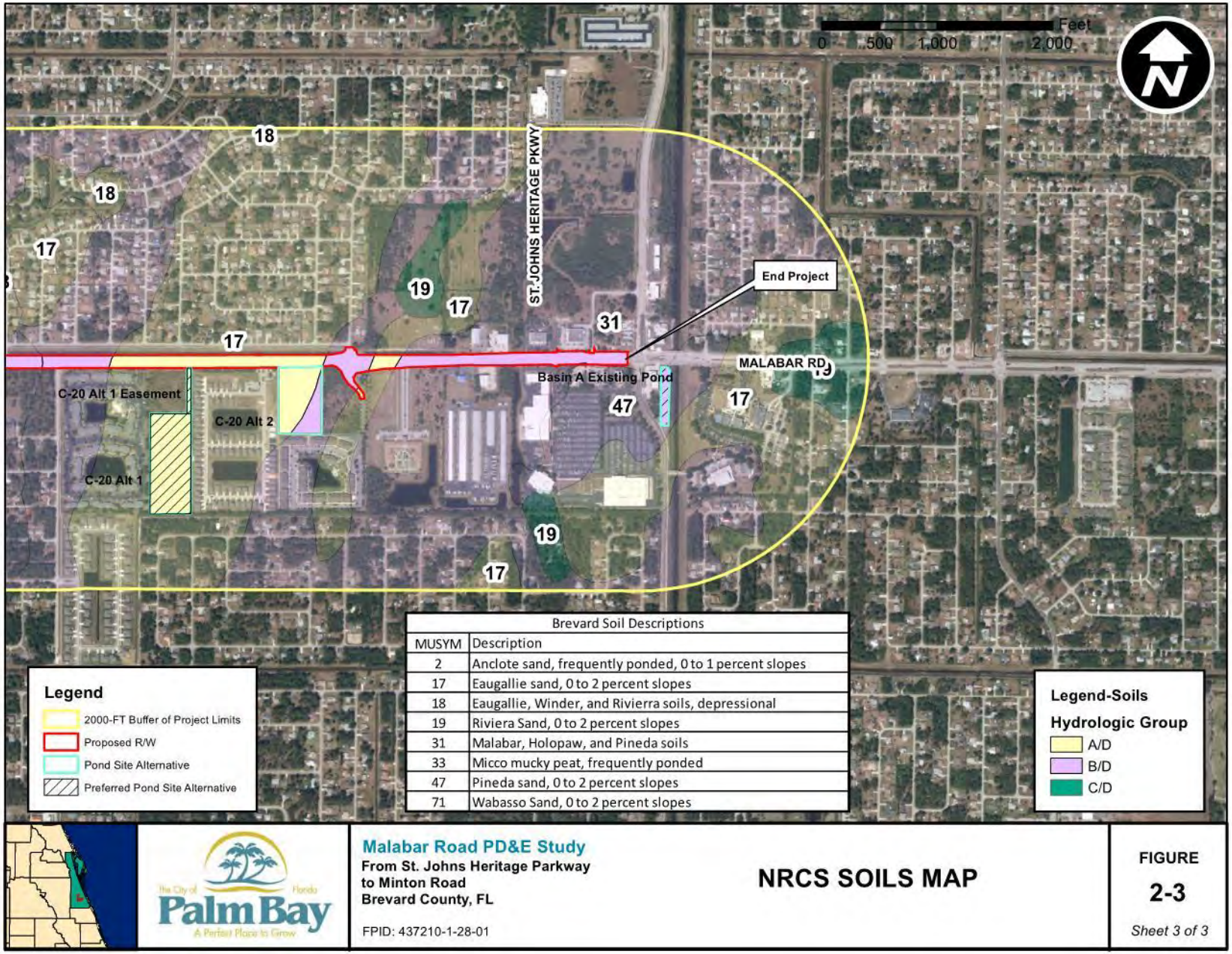


Figure 2-3: NRCS Soils Map



2.4 Other Natural Features

No other significant natural features were identified within the limits of the Malabar Road study area including public and private conservation land; special aquatic sites, including sanctuaries and refuges, Wild and Scenic Rivers, Aquatic Preserves, and Outstanding Florida Waters; nor does it provide designated critical habitat or Essential Fish Habitat to federally protected or managed species. However, the proposed project is located near the Three Forks Conservation Area (TFCA).

The TFCA is a 53,335-acre property owned and managed by the SJRWMD. This conservation area lies within the Upper St. Johns River Basin and comprises a significant portion of the Upper St. Johns River Basin Project, a cooperative effort with the USACE to provide flood control and environmental protection in the region. Comprised mostly of floodplain marsh and wet prairie, the TFCA provides habitat for protected species including the Audubon's crested caracara, Everglade snail kite, wood stork, bald eagle, southeastern American kestrel, Florida sandhill crane and wading birds. While the project area does not include the TFCA, adjacent parcels abut the TFCA boundary, which is approximately 0.25 miles west of the western terminus of the proposed project. No impacts to the TFCA are anticipated as a result of the proposed roadway improvements.

SECTION 3 PROTECTED SPECIES AND HABITAT

A protected species and habitat assessment was conducted in accordance with the PD&E Manual, *Protected Species and Habitat* (FDOT, 2019), to determine the potential effects of the proposed transportation project on protected species and habitat. The term protected species refers to those species that are protected by law, regulation, or rule. The term listed species refers to species that are threatened or endangered at the federal or state level and identified in the Endangered Species Act (ESA) of 1973, as amended; the Florida Endangered and Threatened Species Act, Section 379.2291, Florida Statutes (F.S.); the Florida Regulated Plant Index (5B-40.0055, Florida Administrative Code (FAC).

3.1 Efficient Transportation Decision Making

During the ETDM process, Planning and Programming Screens were prepared for the Malabar Road study area. Environmental Technical Advisory Team (ETAT) representatives reviewed project information and provided comments about potential direct and indirect effects to resources under their jurisdiction. Additionally, they selected a Degree of Effect (DOE) for each alternative and issue. According to the ETDM Summary Report No. 14396, dated October 25, 2019, the USFWS indicated the project alternatives may create a "Moderate" DOE on wildlife and habitat resources while the FWC assigned a DOE of "Minimal".

3.2 Methodology

The study methodology included GIS analyses, ETAT comments review, agency coordination, agency database searches, and field surveys. Section 1.3 lists the data sources utilized for review. Ecologists familiar with Florida's protected species and natural habitats conducted general field surveys and species-specific surveys November 2019 through August 2020 as part of the Malabar Road Study. The field surveys were performed utilizing pedestrian surveys conducted during daylight hours over multiple seasons to document the presence or evidence of protected species utilizing the study area. Species-specific surveys included the Audubon's crested caracara and

the Florida scrub-jay. The species-specific surveys were conducted in accordance with the survey protocols outlined by the USFWS (Appendices D, G) . The ecologists also documented habitat types and predominant plant species, including general wetland limits, during the field reviews.

3.3 Potentially Occurring Listed Species

A total of 40 protected species have the potential to occur in the Malabar Road study area, according to the information obtained during the preliminary data collection. These include the 15 avian, 1 mammal, 5 reptile, and 19 plant species shown on Table 3-1. Ecologists determined a species' potential occurrence in the study area based on its habitat preferences and distributions, existing site conditions, historical data, and multiple field surveys. The likelihood of occurrence was rated as low, moderate, high, or observed. A low rating indicates that the species occurs in Brevard County, but suitable habitat is not present within the study area and the species has not been observed or documented within the study area. A moderate rating indicates that the species occurs in Brevard County, suboptimal habitat or limited suitable habitat occurs within the study area, but the species has not been observed in species-specific surveys or documented within the study area. A high rating indicates that the species occurs within Brevard County, suitable habitat is present within the study area and the species is suspected to occur or has been previously documented within the study area. Observed species are those that have been observed during the evaluation for this PD&E study. Protected species occurrences within the Malabar Road study area are shown on Figure 3-1.

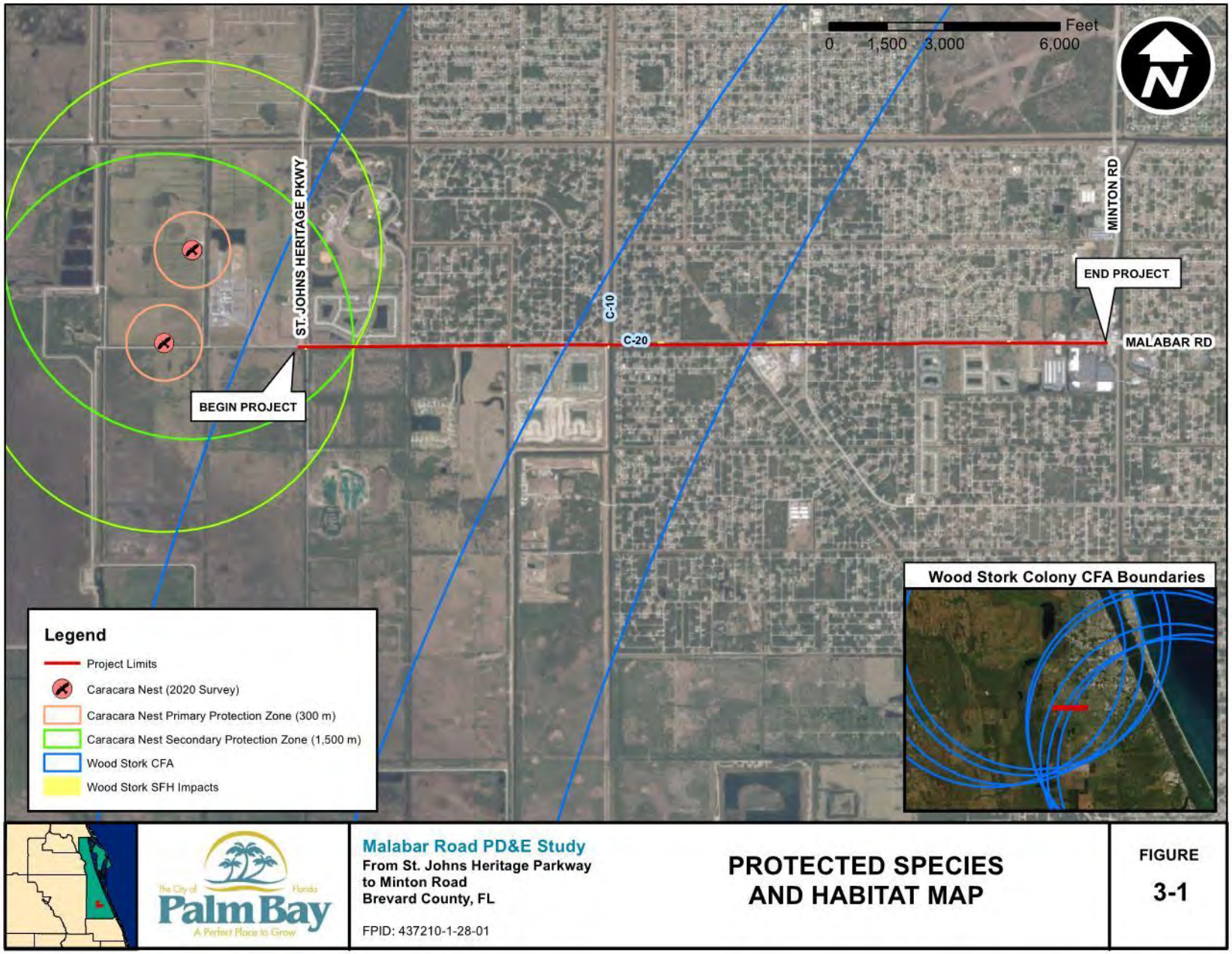
Table 3-1: Protected Species with Potential to Occur in the Malabar Study Area

GROUP	SCIENTIFIC NAME	COMMON NAME	USFWS	FFWCC	FDACS	Potential Occurrence
Avian	*Ammodramus savannarum floridanus*	Florida grasshopper sparrow	E	E		Low
	Aphelocoma coerulescens	Florida scrub jay	T	T		Low
	Athene cunicularia floridana	Burrowing owl		T		Moderate
	Egretta caerulea	Little blue heron		T		Observed
	Egretta rufescens	Reddish Egret		T		Moderate
	Egretta tricolor	Tricolored heron		T		High
	Falco sparverius paulus	Southeastern American kestrel		T		High
	Antigone canadensis pratensis	Florida sandhill crane	MBTA	T		Observed
	Haliaeetus leucocephalus	Southern bald eagle	BGEMA	M		Observed
	Mycteria americana	Wood stork	E	E		Observed
	Pandion haliaetus	Osprey	MBTA	M		Observed
	Picoides borealis	Red-cockaded woodpecker	E	E		Low
	Platalea ajaja	Roseate spoonbill		T		Observed
	Polyborus plancus audubonii	Audubon's crested caracara	T	T		Observed
	Rostrhamus sociabilis plumbeus	Everglades snail kite	E	E		Low
Mammal	*Sciurus niger*	Southern fox squirrel		M		Moderate
	Ursus americanus floridanus	Florida black bear		M		Low
Reptile	*Alligator mississippiensis*	American alligator	T(S/A)	SSC		High
	Drymarchon corais couperi	Eastern indigo snake	T	T		High
	Gopherus polyphemus	Gopher tortoise	C	T		Moderate
	Pituophis melanoleucus mugitis	Florida pine snake		T		Moderate
	Stilosoma extenuatum	Short-tailed snake		T		Low
Plants	*Calopogon multiflorus*	Many-flowered grass-pink			T	Low
	Centrosema Arenicola	Sand butterfly pea			E	Low
	Conradina brevifolia	Short-leaved rosemary	E		E	Low
	Conradina grandiflora	Large-flowered rosemary			T	Low
	Glandularia maritima	Coastal vervain			E	Low
	Lechea cernua	Nodding pinweed			T	Low
	Linum carteri var. smallii	Small's flax			E	Low
	Nemastylis floridana	Celestial lily			E	Low
	Nolina atopocarpa	Florida beargrass			T	Low

GROUP	SCIENTIFIC NAME	COMMON NAME	USFWS	FFWCC	FDACS	Potential Occurrence
Plants	*Panicum abscissum*	Cut-throat grass			E	Low
	Pinguicula caerulea	Blue-flowered butterwort			T	Moderate
	Pinguicula lutea	Yellow-flowered butterwort			T	Moderate
	Polygala lewtonii	Lewton's polygala	E		E	Low
	Polypodium dispersum	Widespread polypody			E	Low
	Polypodium plumula	Plume polypody			E	Low
	Polypodium ptilodon	Swamp plume polypody			E	Low
	Pteroglossaspis ecristata	Giant orchid			T	Low
	Warea carteri	Carter's warea	E		E	Low
	Zephyranthes simpsonii	Redmargin Zephyrlily			T	Low

E = Endangered T = Threatened M = Managed C = Candidate
BGEMA = Bald and Golden Eagle Protection Act
MBTA = Migratory Bird Treaty Act
T(S/A) = Threatened due to Similarity of Appearance
USFWS = United States Fish and Wildlife Service
FWC = Florida Fish and Wildlife Conservation Commission
FDACS = Florida Department of Agriculture and Consumer Services

Figure 3-1: Protected Species and Habitat



3.4 Federally Listed Species and Designated Critical Habitat

The study area is located within or partially within the USFWS Consultation Area (CA) of the Audubon's crested caracara, Everglade snail kite, Florida grasshopper sparrow, Florida scrub-jay, and red-cockaded woodpecker. A Consultation Area is intended to identify the geographical landscape where each federally listed species is most likely to occur. Portions of the study area also fall within seven wood stork Core Foraging Areas (CFA), which include suitable foraging areas important to the reproductive success of known wood stork nesting colonies. The existing habitats in the study area may also support other federally protected species including the American alligator, bald eagle, eastern indigo snake, and gopher tortoise, a candidate species.

3.4.1 **Audubon's Crested Caracara**

USFWS Audubon's crested caracara CA is located over the entire project. It is a resident, non-migratory species in Florida that prefers grasslands and pastures in the south-central region of the state, particularly in Glades, DeSoto, Highlands, Okeechobee, and Osceola Counties (USFWS, 1999). Historically, caracara inhabited dry or wet prairies with scattered cabbage palms (*Sabal palmetto*) and occasionally used lightly wooded areas next to those prairies. Many of those areas were converted and frequently replaced by pastures with non-native sod-forming grasses that still support caracaras. The caracara is classified as threatened because of habitat losses and population declines (Layne, 1996). No critical habitat has been designated for the Audubon's crested caracara.

A species-specific caracara survey was conducted from January through April 2020 in accordance with the caracara survey methodology developed by Morrison (2001), supplemental information established by the USFWS (2004a), and additional survey guidance prepared by the USFWS (2015, 2016). Prior to the start of the survey, biologists conducted site visits of the proposed project area to determine the best vantage points to observe caracara activity along the roadways and up to 1,500 meters from the project boundaries. Based on the preliminary field analysis, an Audubon's Caracara Survey Methodology for the Malabar Road PD&E Study was developed and submitted to the USFWS on December 9, 2019, (Appendix D), that was subsequently approved on December 11, 2019. Surveys were conducted by qualified biologists at least 15 minutes prior to sunrise for at least three hours per survey block. Biologists spent the entire three-hour survey session in the bed of a pick-up truck observing and recording caracara activity with the assistance of binoculars and a Nikon PROSTAFF 5 scope with 16-48 power. A total of eight survey sessions were conducted for each survey block. The survey map depicting the overall project area, survey blocks, and 1,500-meter buffer; data sheets; caracara activity maps; and photographs are included in Appendix E.

Adult and juvenile caracara were observed on multiple days of the survey. Caracara activity included foraging in the pastures and along the roadsides, perching on trees and power poles, traveling over and between pastures, and demonstrating mating behavior, such as pairs perching together, preening, and sharing food was observed. Nesting activity was documented on several occasions (Appendix E), resulting in the positive identification of two caracara nests along the north side of Malabar Road (Figure 3-2). The nests range from approximately 1041 meters to approximately 1105 meters from proposed project activities, which are within the USFWS's 1,500-meter nest protection zone for crested caracara (USFWS, 2015). As a result, the proposed project

"may affect" the crested caracara and further consultation with the USFWS is warranted. There are five "may affect" scenarios, with four providing for a "may affect, not likely to adversely affect" determination. The fifth scenario is a "may affect, and is likely to adversely affect" determination and requires formal consultation.

The Standard Local Operating Procedures for Endangered Species (SLOPES) for Audubon's crested caracara (Appendix F) and the USFWS Guidelines provide a series of recommended restrictions for activities in the primary and secondary zones both during nesting season and outside nesting season. These recommendations are the basis for the USFWS's concurrence determination. In evaluating impacts to the caracara, the USFWS defines a primary zone as 300 meters (985 feet) and a secondary zone as 1,500 meters (4,9520 feet). Projects within 1,500 meters of a nest that can avoid adverse impacts and/or implement conservation measures would provide a "may affect, but not likely to adversely affect" determination. If impacts are considered adverse and conservation measures cannot be implemented, the project "may affect, and is likely to adversely affect" the caracara and formal consultation is required. Mitigation to offset proposed impacts to caracara habitat will be discussed during formal consultation with the USFWS under section 7 of the ESA.

The Guidelines and SLOPES flowchart were utilized to determine the impacts on the caracara as a result of the Recommended Preferred Alternative. The survey identified two caracara nests located within 1500 meters of the Recommended Preferred Alternative; and therefore, avoidance or implementation of conservation measures must be utilized to ensure the project is not likely to adversely affect the caracara. Both strategies will be utilized to eliminate adverse effects to the caracara. To avoid and minimize impacts to caracara foraging habitat, the recommended preferred pond site (C8 and C9 Atl. 1) was chosen to eliminate impacts to suitable habitat within 1,500 meters from the nests. Conservation measures will be implemented for areas within the protection zone where avoidance was not practicable. The SLOPES flowchart followed the sequence which concluded with conservation measures and actions proposed outside nesting season in order to obtain a not likely to adversely affect determination.

The Guidelines identify conservation measures that help reduce the impact of a project on the caracara and are compatible with caracara survival. The conservation measures are defined below along with project-specific measures and conditions in bold text.

Conservation Measures

- Management Zones – In evaluating project impacts to the caracara, the USFWS defines a primary zone as 300 m (985 ft), and a secondary zone as 1,500 m (4,920 ft) outward from the nest tree. Protection of the primary zone is very important particularly during the nesting season and must be maintained in order to provide conditions for successful reproduction. The Recommended Preferred Alternative will not impact the primary zone.

- Secondary Zone –This zone is generally defined as the foraging territory in which the nest site is located. This secondary zone is used by caracaras for the collection of nest material, roosting, and feeding. This amount of suitable habitat contiguous to the nest site may be

required to maintain the ecologic function of the nesting territory. Conservation measures for this zone are directed at maintaining the foraging capacity of the area.

  - Maintain pasture, grassland, and wetlands that are necessary for caracara foraging. All suitable foraging habitat will remain. The impacts within the secondary protection zone are primarily located within the existing roadway and disturbed right-of-way. Construction activities that extend beyond the existing right-of-way to accommodate the roundabout at Malabar Road and St. Johns Heritage Parkway (SJHP) impact approximately 3.01 acres of land which is dominated by dense Brazilian pepper (*Schinus terebinthifolia*) and provides no suitable foraging habitat. Based on the location of the nests, current conditions including road traffic, farming activities and activities associated with the school, do not appear to affect life history requirements of the caracara. Construction activities including clearing have commenced for the St. Johns Preserve, a single-family home subdivision located just west of St. Johns Heritage Parkway and north of Malabar Road. This development is located between the nests and proposed project impacts, thus limiting utilization to the east where the roadway construction activities occur. The disturbance from the surrounding land uses and construction of the previously mentioned development have not inhibited nesting activity, therefore it is unlikely that disturbance from the construction of the Recommended Preferred Alternative would have an adverse effect. Based on observations in the field, including documented flight activity, caracara are utilizing the large tracts of suitable habitat located to the north, west and south of the nest. Most of these lands are part of the Three Forks Conservation Area and provide optimal caracara nesting and foraging habitat. Foraging capacity will not decrease as a result of the Recommended Preferred Alternative.

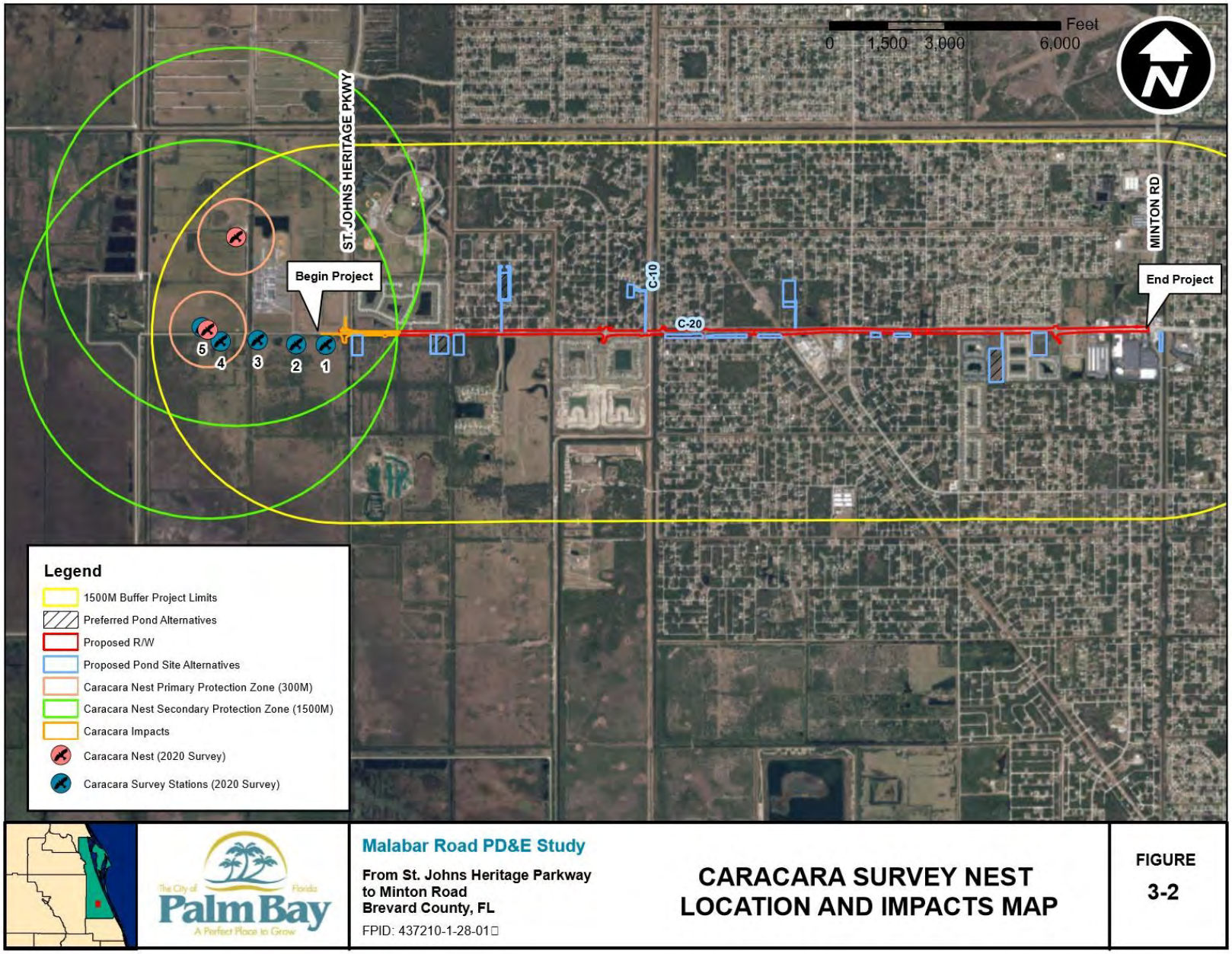
  - Limit use of chemicals toxic to wildlife, including pesticides, fertilizers, or herbicides, as they may impact the caracara through its food supply. Due to the nature of the project, use of pesticides, fertilizers, or herbicides are not anticipated.

- Non-nesting Season (May to October) – Impacts during the active nesting season can be avoided by timing of activities near the nest site. Construction activities associated with the Malabar Road and St. Johns Heritage Parkway intersection occur within the secondary protection zone and will be conducted during the non-nesting season.

Based on the distance of the proposed construction activities from the nest; existing disturbances which do not appear to affect caracara nesting; lack of caracara utilization due to unsuitable foraging habitat within the proposed construction footprint; remaining foraging capacity;

implementation of conservation measures, including constructing outside of nesting season as described above, the Recommended Preferred Alternative "may affect, but is unlikely to adversely affect" the Audubon's crested caracara.

Figure 3-2: Caracara Nest Location and Impacts Map



3.4.2 Everglade Snail Kite

USFWS Everglade snail kite CA is located over the entire project. The Everglade snail kite is classified as endangered due to a "very small population and increasingly limited amount of fresh marsh with sufficient water to ensure an adequate supply of snails" (Bureau of Sport Fisheries and Wildlife, 1973, p. 120). The USFWS has designated critical habitat for snail kites, which consists mostly of marshes near south Florida. The Everglade snail kite is a non-migratory subspecies only found in Florida, particularly near large watersheds (e.g., Everglades, Lake Okeechobee) and the shallow vegetated edges of lakes that support apple snail, the primary component of the snail kite's diet. The corridor is highly developed and lacks the marshes and large waterbodies suited for snails and snail kites. No critical habitat for the snail kite occurs within the project corridor. No suitable habitat and no individuals were observed during the field surveys; therefore, the proposed project alternatives will have "no effect" on the Everglade snail kite.

3.4.3 Florida Grasshopper Sparrow

USFWS Florida grasshopper sparrow CA is located over the entire project. The Florida grasshopper sparrow was listed as endangered because of habitat loss and degradation resulting from conversion of native vegetation to improved pasture and agriculture (51 FR 27492). The Florida grasshopper sparrow is a subspecies of grasshopper sparrow that is endemic to the dry prairie region of central and south Florida. This subspecies is extremely habitat specific and relies on fire every two or three years to maintain its habitat (USFWS, 1999). The primary habitat consists of large (>50 hectares), treeless (less than one tree per acre), and relatively poorly drained prairies dominated by saw palmetto and dwarf oaks (Delany et al., 1985). It is known to occur only in Highlands, Okeechobee, Osceola, and Polk counties (Robertson & Woolfenden, 1992; Delany, 1996) and has been extirpated from Collier and Hendry counties (USFWS, 1999). Even though the study area is within the Florida grasshopper sparrow CA, it is outside the USFWS's current range for this species. No suitable habitat or individuals were observed during the field surveys. The proposed project alternatives will have "no effect" on the Florida grasshopper sparrow.

3.4.4 Florida Scrub-Jay

USFWS Florida scrub-jay CA is located over the entire project. The scrub-jay is classified as threatened due to habitat loss, degradation, and fragmentation (USFWS, 1987). They only occur on ancient dune ecosystems and scrub habitats of peninsular Florida. The USFWS and FWC have documented occurrences of the scrub-jay east of Minton Road, outside the proposed project limits. These populations are surveyed yearly as part of the City Palm Bay's Habitat Conservation Plan (HCP) and Incidental Take Permit (ITP). According to the HCP, no scrub-jay occurrences have been documented within the proposed project area. As part of the ETDM Summary Report, the USFWS recommended a scrub-jay survey in areas of suitable habitat due to the proximity of documented occurrences.

According to the scrub-jay habitats described by Fitzpatrick et al. (1991), the habitats adjacent to Malabar Road consist mostly of Type III or non-ranked (i.e., non-suitable) scrub-jay habitats. One area of Type II scrub-jay habitat was observed. Scrub-jay habitat classifications include the following:

Type I- any upland plant community in which scrub oak species is greater than or equal to 15 percent cover.

Type II – any plant community in which one or more scrub oak species is present but is less than or equal to 15 percent cover.

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

Areas of suitable habitat were surveyed in accordance with the Florida Scrub-Jay Survey Guidelines and Protocols (USFWS, 2007). Using GIS, call-stations were established on a 200 meter grid in potential scrub-jay habitat in and adjacent to the limits of construction. Those call-stations were transferred to a Trimble GPS with sub-meter accuracy so that biologists could determine in the field whether or not the GIS-based call-stations were suitable for the survey. The GIS-based call-station was moved in the field if the topography or density of vegetation would impede a biologist's ability to visually observe a scrub-jay. The geographic coordinates and corresponding land use and cover and scrub-jay habitat class have been provided in Table 3-2.

Table 3-2: Scrub-jay Survey Stations

Call Station	Latitude	Longitude	FLUCFCS Code	Habitat Type	FSJ Observation
FSJ 1	27.998428	-80.685213	440	III	NONE
FSJ 2	27.997592	-80.685091	440	III	NONE
FSJ 3	27.996862	-80.685686	440	III	NONE
FSJ 4	27.9965	-80.684843	440	III	NONE
FSJ 5	27.996048	-80.685648	440	III	NONE
FSJ 6	27.995595	-80.684856	440	III	NONE
FSJ 7	27.99879	-80.681994	428	III	NONE
FSJ 8	27.997546	-80.682167	428	III	NONE
FSJ 9	27.998178	-80.680496	428	III	NONE
FSJ 10	27.997627	-80.680943	428	III	NONE
FSJ 11	27.998584	-80.678373	170	I	NONE
FSJ 12	27.99769	-80.678271	170	I	NONE

Surveys were conducted on calm, clear days about one hour after sunrise in March and April of 2020. Florida scrub-jay vocalizations, including the territorial scolds and the female "hiccup," were broadcast through a JBL speaker for one minute in each cardinal direction. The scrub-jay vocalizations were acquired from the Macaulay Library at the Cornell Lab of Ornithology. If accipiters or other scrub-jay predators were observed near a call station, the survey was temporarily suspended until the accipiters or predators cleared the area. Biologists did not observe Florida scrub-jays nor hear an auditory response to the broadcasts from scrub-jays. The survey station location map, scrub-jay survey data sheets, and scrub-jay habitat assessment sheets with photographs are provided in Appendix G. Based on the scrub-jay survey results as

well as the current site conditions and limits of proposed impacts, the proposed project alternatives "may affect, but are not likely to adversely affect" the Florida scrub-jay.

3.4.5 Red-Cockaded Woodpecker

The USFWS red-cockaded woodpecker (RCW) CA only covers the eastern project terminus near the intersection of Malabar Road and Minton Road, and includes less than 0.08 miles of the project. The RCW is listed by the USFWS as endangered due to habitat loss, degradation and fragmentation (35 FR 16047). The species is still widely distributed throughout the state, but the largest populations occur on federally managed lands in the panhandle (USFWS, 1999). RCW habitat consists of pine stands or pine-dominated forests with little to no understory and numerous old growth pines, particularly longleaf pines. It excavates cavities in the living part of pine trees, typically choosing trees greater than 80 years old. No critical habitat has been designated for the RCW.

No RCW habitat was observed in the study area. While there are areas within the study corridor that contain longleaf pine and pine dominated forests, the trees are too young and located in habitats not suitable for red-cockaded woodpeckers. No RCWs or suitable habitat were observed. The proposed project alternatives will have "no effect" on the red-cockaded woodpecker.

3.4.6 Wood Stork

The wood stork is listed by the USFWS threatened. Wood storks are associated with freshwater and estuarine wetlands that are used for nesting, roosting, and foraging. Nesting typically occurs in medium to tall trees that occur in stands located in swamps or islands surrounded by open water (Odgen, 1991; Rodgers et al. 1996). Preferred foraging habitat includes wetlands with a mosaic of submerged and/or emergent aquatic vegetation, and shallow open-water areas. Particularly attractive feeding sites are depressions in marshes or swamps where fish become concentrated during periods of receding water levels. No critical habitat has been designated for the wood stork.

According to the USFWS's North Florida Ecological Service Office, the habitats within 15 miles of a wood stork breeding colony are considered to be wood stork CFAs. Portions of the study area fall within the CFA of seven wood stork breeding colonies: Deseret Ranch, Grange Island, Grant Farm Island, Kemper Ranch, Micco North, Micco South, and US 192 East. Wood storks were observed flying over and foraging within the study area. Ecologists observed Suitable Foraging Habitat (SFH) throughout the study area including roadside ditches and canals, and areas within proposed pond site locations. The Recommended Preferred Alternative will impact 0.69 acres of SFH. According to the Wood Stork Effect Determination Key for Central and North Peninsular Florida (USFWS, 2008) (Appendix H), the proposed project "may affect, but is not likely to adversely affect" the wood stork. This effect determination was made using the following sequence from the key: A-B-C-D-E(1). Unavoidable impacts greater than 0.5 acres will be offset at an USFWS-approved mitigation bank within the appropriate CFA to satisfy the elements detailed in the key to ensure that the proposed project does not adversely affect the wood stork. Currently, there are banks with available credits to satisfy the mitigation requirements.

3.4.7 American Alligator

The American alligator is listed as threatened due to its similarity of appearance to the American crocodile (*Crocodylus actus*). This listing status allows for state-approved management and control programs in addition to federal protections. Alligators occur throughout Florida but prefer to use freshwater lakes and slow-moving rivers and their associated wetlands. No critical habitat has been designated for the American alligator.

Suitable habitat for the American alligator was observed within the study area. Most of the habitat consists of canals and reservoirs, including proposed pond site locations. No alligators were observed during the surveys. While the project will impact suitable alligator habitat, the extent of impacts relative to habitat within the corridor will be minimal and alligators will be able to continue to fulfill their life history strategies. Based on the information provided above, the proposed project "may affect, but is not likely to adversely affect" the American alligator.

3.4.8 Eastern Indigo Snake

The eastern indigo snake is listed by the USFWS as threatened due to over-collecting for the pet trade as well as habitat loss and fragmentation (USFWS, 1999).) The eastern indigo snake is widely distributed throughout central and south Florida. They occur in a broad range of habitats, from scrub and sandhill to wet prairies and mangrove swamps. Indigo snakes are most closely associated with habitats occupied by gopher tortoises whose burrows provide refugia from cold or desiccating conditions (USFWS, 1999). No critical habitat has been designated for the eastern indigo snake.

Suitable habitat for the indigo snake was observed within the study area, including proposed pond site locations. No indigo snakes were observed during the field reviews. Suitable habitat for the gopher tortoise was observed; however, no gopher tortoise burrows were identified within the proposed project limits. A 100% gopher tortoise survey was not conducted during this PD&E Study, but will be required before construction activities commence. To address any potential effects to the eastern indigo snake, all potentially occupied gopher tortoise burrows within the limits of construction will be excavated and the *Standard Protection Measures for the Indigo Snake* (USFWS, 2013; Appendix I) will be implemented during construction activities. As a result, the proposed alternatives "may affect, but are not likely to adversely affect" the eastern indigo snake. This effect determination was made using the following sequence from the *Eastern Indigo Snake Effect Determination Key* (Appendix I): A–B-C-D-E.

3.4.9 Gopher Tortoise

The gopher tortoise is a Candidate for listing under the ESA by the USFWS and listed as threatened by the FWC. They occur in the southeastern Coastal Plain from Louisiana to South Carolina; the largest portion of the total population is located in Florida (FWC 2012). Gopher tortoises require well-drained, sandy soils for burrowing and nest construction, with a generally open canopy and an abundance of herbaceous groundcover, particularly broadleaf grasses, wiregrass (*Aristida stricta*), legumes and fruits for foraging. Gopher tortoises can be found in most types of upland communities including disturbed areas and pastures. No critical habitat has been designated for the gopher tortoise.

Suitable gopher tortoise habitat was observed within the study area, including proposed pond site locations. A 100% gopher tortoise survey was not conducted. Gopher tortoise burrows were observed within the study area, but not within the proposed project limits. No gopher tortoises were observed during the field surveys. A permit may be necessary from the FWC if tortoises are present within any permanent or temporary construction area. Based on the information provided above, the proposed project "may affect, but is not likely to adversely affect" the gopher tortoise.

3.4.10 Federally Protected Plant Species

According to the FNAI and USFWS, 3 federally protected plants have the potential to occur within the study area (Table 3-1). These species are listed as Endangered and include Carter's warea (*Warea carteri*), Lewton's polygala (*Polygala lewtonii*) and short-leaved rosemary (*Conradina brevifolia).* These species are restricted to sandy habitats maintained by periodic fire, such as scrub, high pine, and sandhill. Limited habitat occurs within the project footprint. Due to development and the agricultural nature of non-developed areas within and adjacent to the study area, these species are unlikely to occur within the project area. Ecologists did not observe federally protected plants during the field surveys. The FNAI database listed no Elemental Occurrences of protected plants within the study area. ETAT comments from the USFWS state that surveys for federally listed plant species should be conducted by a trained botanist. Additional surveys for listed plant species will be conducted during design and permitting. Due to no protected plants being observed during the field surveys, the proposed project "may affect, but is not likely to adversely affect" federally protected plants.

3.5 State Listed Species

The FWC maintains the list of animals designated as federally endangered, federally threatened, state threatened, or species of special concern. While the USFWS has primary responsibility for federally endangered or threatened species in Florida, the FWC works as a cooperating agency to help conserve these species and other imperiled species found in the state. Some listed and non-listed species are considered 'managed species' because of the well-developed programs that address their species' conservation, management, or recovery. The FWC has developed a comprehensive management plan and species action plans for the state's 59 state-listed species (FWC, 2016, 2020).

3.5.1 Florida Burrowing Owl

The FWC listed the Florida burrowing owl as threatened due to loss of native habitat, dependence on altered habitat, and lack of regulatory protections (FWC, 2013a). The burrowing owl is a non-migratory, year-round breeding resident of Florida, and maintains home ranges and territories while nesting. Burrowing owls inhabit upland areas that are sparsely vegetated. Natural habitats include dry prairie and sandhill, but they will make use of ruderal areas such as pastures, airports, parks, and road rights-of-way because much of their native habitat has been altered or converted to other uses.

Ecologists did not observe burrowing owls during the general wildlife and species-specific surveys of the project area. Suitable habitat was observed throughout the study area including proposed pond site locations. Burrowing owls usually dig their own burrows but are known to utilize gopher tortoise burrows and armadillo burrows as well. Gopher tortoise burrows and mammal burrows

were observed within the study area. If burrowing owls are observed onsite, coordination with the FWC will occur to discuss avoidance, minimization, and permitting options. Avoidance measures that eliminate the need for FWC incidental take permitting include: avoiding acts that kill or injure burrowing owls or eggs; maintaining a minimum 10-foot buffer during non-breeding season (July 11-February 14) and a minimum 33-foot buffer during breeding season (February 15 – July 10) around the entrance of Potentially Occupied Burrows (POB); and ensuring that the project does not impact 50% or greater of foraging habitat within a 1,970-foot radius of a POB. Pre-construction surveys will be conducted to adhere to the components of the Imperiled Species Management Plan (ISMP) and permitting guidelines; therefore, "No adverse effect is anticipated" for the burrowing owl resulting from the proposed project.

3.5.2 Florida Pine Snake

The Florida pine snake is listed by the FWC as threatened due to habitat loss, fragmentation, and degradation to upland habitats from development and fire suppression (FWC, 2013b). They inhabit areas that feature well-drained sandy soils with a moderate to open canopy (Franz 1992, Ernst and Ernst 2003). Preferred habitats include sandhill and former sandhill, including old fields and pastures, sand pine scrub, and scrubby flatwoods. The pine snake often coexists with gopher tortoise and pocket gophers, spending the majority of its time underground.

No pine snakes were observed during the field surveys. Minimal suitable habitat was observed within the project corridor, and mostly occurs within the proposed pond site locations. Gopher tortoise, mammal burrows and pocket gopher mounds were observed. All gopher tortoise burrows within the construction limits will be excavated. Current FWC guidelines for the relocation of the Florida pine snake state that any incidentally captured pine snake should be released on-site or allowed to escape unharmed if habitat will remain post-development. "No adverse effect is anticipated" for the Florida pine snake resulting from the proposed project since suitable habitat will remain and current guidelines for relocating commensal species will be followed.

3.5.3 Florida Sandhill Crane

The FWC listed the Florida sandhill crane as threatened due to the loss and degradation to nesting and foraging habitat from development and hydrologic alteration to their potential nesting habitat (FWC, 2013c). It is widely distributed throughout most of peninsular Florida. Sandhill cranes rely on shallow marshes for roosting and nesting and open upland and wetland habitats for foraging (Wood and Nesbitt 2001).

Florida sandhill cranes were observed on multiple occasions throughout the study area during the general wildlife and species specific surveys. Nesting and roosting habitats are limited within the project corridor due to the lack of wetlands. The marshes and wet prairies adjacent to the study area provide potential nesting and roosting habitat for the sandhill crane. The pastures and other open uplands, including the roadway right-of-way, provide foraging habitat. Ecologists observed sandhill cranes, including juveniles, foraging in these areas and roadside ditches during numerous field surveys. Avoidance measures that eliminate the need for FWC take permitting include: avoid impacts to natural wetlands used for breeding, feeding, or sheltering; avoid activities within 400 feet of an active nest; and avoid land used conversion within 1,500 feet of the nest site until after young are capable of sustained flight. Due to the lack of wetland impacts and suitable nesting

habitat within 400 feet of the project limits, "No adverse effect is anticipated" for the Florida sandhill crane resulting from the Recommended Preferred Alternative.

3.5.4 Southeastern American Kestrel

The southeastern American kestrel is listed by the FWC as threatened due to habitat loss, degradation and fragmentation, as well as lack of regulatory protection (FWC 2013d). The southeastern American kestrel is the only non-migratory, permanent resident kestrel in Florida. However, the seasonal occurrence of a migratory subspecies of the northern American kestrel (Falco sparverius sparverius) occurs from September through March in Florida. Confident identification of southeastern American kestrels can only be made during the portion of the breeding season when migratory species are not present (FWC, 2013d). The southeastern American kestrel is a secondary cavity nester, preferring habitats of sandhill and open pine savannah maintained by fire. They can be found in open pine habitats, woodland edges, prairies, pastures, and other agricultural lands.

Ecologists observed suitable habitat throughout the study area, including proposed pond site locations. Kestrels were observed on multiple occasions at multiple locations. Some of the observations occurred during the winter and spring when the migratory subspecies could be present. Activities within the 492 feet (150 meter) buffer of an active nest are considered to cause take. Pre-construction surveys will be conducted to adhere to the components of the ISMP; therefore, "No adverse effect is anticipated" for the southeastern American kestrel resulting from the proposed project.

3.5.5 Imperiled Wading Birds

Four wading birds have the potential to occur in the study area. These species are the little blue heron, reddish egret, roseate spoonbill, and tricolored heron. All four are listed by the FWC as threatened due to the loss and degradation of habitat, particularly from hydrologic alterations to their essential foraging areas (FWC, 2013e). Little blue herons, roseate spoonbills and tricolored herons are widely distributed throughout peninsular Florida. Reddish egrets are found almost exclusively in coastal areas (Greenlaw, 2014). Wading birds depend on healthy wetlands and vegetated areas suitable for resting and breeding which are near foraging areas (FWC, 2013e). They forage in freshwater, brackish, and saltwater habitats. They tend to nest in multi-species colonies of a variety of woody vegetation types including cypress, willow, maple, black mangrove, and cabbage palm (FNAI, 2001).

Ecologists observed suitable foraging with minimal nesting habitat for wading birds throughout the study area, including proposed pond sites. Little blue herons and roseate spoonbills were observed. These observations include fly-overs and foraging in roadside ditches, existing ponds, and drainage ditches in adjacent pastures. No wading bird rookeries are located within the project area. Due to the lack of wetlands within the project limits, potential nesting habitat only occurs in habitats adjacent to the project. No nesting activity was observed during the field reviews. An updated wildlife survey for wading birds may be warranted prior to construction, since wading birds can build new nests each year. Additional components of the ISMP include the Species Action Plans. Specifically, Action 8, among others, identified in A Species Action Plan for Six Imperiled Wading Birds: Little Blue Heron (*Egretta caerulea*), Reddish Egret (*Egretta rufescens*), Roseate Spoonbill (*Platalea ajaja*), Snowy Egret (*Egretta thula*), Tricolored Heron (*Egretta tricolor*), White Ibis (*Eudocimus albus*) (FWC 2013) addresses coordination between the

FWC and other state agencies to promote water quality in stormwater retention facilities. As the FWC is a commenting agency under the Statewide Environmental Resource Permit Program, inclusion of a stormwater management system will provide a net benefit to water quality that will have a carryover benefit to state listed wading birds that will be addressed during permitting. "No adverse effect is anticipated" for wading birds resulting from the proposed project.

3.5.6 State Listed Plant Species

Through regulation by the FDACS Division of Plant Industry, Florida protects plant species native to the state that are endangered, threatened, or commercially exploited. The Florida Regulated Plant Index includes all plants listed as endangered, threatened, or commercially exploited as defined in Chapter 5B-40.0055, F.A.C. According to the FNAI, and FDACS 16 state protected plant species have the potential to occur in the study area (Table 3-1). However, the FNAI database listed no Elemental Occurrences of protected plants within the study area. Many of these plant species occur in open sandy habitats maintained by periodic fire, such as high pine, turkey oak barrens, sandhill, and xeric scrub. These habitats were rarely observed within the study area, but especially limited within the project footprint. Other state listed species prefer mesic and wetland habitats which are limited within the study area. Due to the agricultural nature within and adjacent to the study area, these species are unlikely to occur within the project footprint. Ecologists did not observe state listed plants during the field surveys. Additional surveys for listed plant species will be conducted during design and permitting. "No adverse effect is anticipated" for state listed plant species resulting from the proposed project.

3.6 Other Protected Species or Habitats

3.6.1 Bald Eagle

The bald eagle was removed from the ESA in 2007 and Florida's Endangered and Threatened Species list in 2008; however, it remains protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The bald eagle is a member of the Accipitridae family. Bald eagles tend to nest in the tops of very tall trees that provide unobstructed lines of sight to nearby habitats, particularly lakes and other open waters. Because eagles are piscivorous (fish-eating) raptors, nearly all eagles' nests occur within 1.8 miles of water (Wood et at., 1989). No critical habitat has been designated for the bald eagle.

According to the FWC's Eagle Nest locator, which maintains the location of known eagles' nests in the state, no nests are located within the study area. The nearest eagle's nest (Nest BE010) is located over 3.5 miles from the project area. Suitable habitat for the bald eagle was observed throughout the study area. Several bald eagles were observed during the field reviews. No nests were observed. The proposed project will have "no effect" on the bald eagle since the proposed activities are well outside the 660-foot eagle nest protection buffer.

3.6.2 Florida Black Bear

The Florida black bear was removed from Florida's Endangered and Threatened Species list in 2012; however, it remains protected under Chapter 68A-4.009 F.A.C., Florida Black Bear Conservation Plan. The study area is located in the occasional range of the Central Bear Management Unit (BMU).

The black bear requires large amounts of space for its home range and a variety of forested habitats, including flatwoods, swamps, scrub oak ridges, bayheads, and hammocks. Self-sustaining populations of bears are generally found on large tracks of contiguous forests with understories of berry producing shrubs or trees. These types of habitats are limited within and adjacent to the study area and are restricted to the western terminus of the project. Roadkill data, nuisance incidence data, and telemetry data published by FWC provide evidence that the Ocala/St. Johns subpopulation as well as the core population of the Central BMU do not commonly utilize the study area habitats. The FWC data shows no occurrences along the Malabar Road corridor. The closest data points include 4 reports of nuisance bears between one to two miles away from Malabar Road occurring in 1990, 2012 and 2013. Due to the lack of bear utilization and habitat within the project area, "No adverse effect is anticipated" for the Florida black bear resulting from the proposed project.

3.6.3 Southern Fox Squirrel

The southern fox squirrel was removed from Florida's Endangered and Threatened Species list in 2018; however, it remains protected under Chapter 68A-4.001, 68A-1.004. and 68A-29.002(1)c F.A.C. It is a member of the Sciuridae family. The southern fox squirrel can be found throughout the Florida peninsula and up to central Georgia. They inhabit open, fire-maintained longleaf pine, turkey oak, sandhills, and flatwoods (FNAI 2001; FWC, 2013f). They will also utilize mixed hardwood – conifer forest, open areas with pines and oaks, cypress swamps, pastures, and other agricultural lands including the ecotones between these habitats. Southern fox squirrels typically have two breeding seasons each year. The winter breeding season occurs from October to February while the summer breeding season occurs from April to August (Woodling, 1997).

Ecologists observed suitable habitat for the southern fox squirrel within the study area, including proposed pond site locations. No individuals or nests were observed. Pre-construction surveys will be conducted to adhere to the components of the ISMP and permitting guidelines; therefore, "No adverse effect is anticipated" for the southern fox squirrel resulting from the proposed project.

3.6.4 Strategic Habitat Conservation Areas

Strategic Habitat Conservation Areas (SHCA) are lands in need of protection to maintain natural communities and viable populations of many species that are indicators of the state's biological diversity. In 1994, FWC biologists completed a project entitled *Closing the Gaps in Florida's Wildlife Habitat Conservation System* (Cox et al 1994), which assessed the security of rare and imperiled species on existing conservation lands in Florida. This research identified important habitat areas in Florida with no conservation protection. These SHCA serve as a foundation for conservation planning for species protection through habitat conservation. No SHCA occur within the study area.

3.6.5 Wildlife Management Areas

As previously mentioned in Section 1.3.3, the Three Forks Conservation Area is located near the western terminus of the project corridor. The proposed project will not impact the TFCA.

3.6.6 Aquatic Preserves and Outstanding Waters

Special protection is given to Outstanding Florida Waters (OFW) per Section 62-302.700, F.A.C. Activities or discharges within an OFW, or which significantly degrade an OFW, must meet a more stringent public interest test as outlined in Section 373.414 (1)(a), F.S. (2020). There are no aquatic preserves or OFWs within the Malabar Road study area.

SECTION 4 WETLANDS AND OTHER SURFACE WATERS

Ecologists performed a wetland evaluation of the study area. The wetland evaluation relied on literature reviews and field surveys to identify the location, extent, and functional value of wetlands in the study area; the potential direct, indirect, or cumulative effects of the project's actions to those wetlands; and available mitigation options to satisfy permit requirements from regulatory agencies. This wetland evaluation was performed in accordance with the Presidential Executive Order 11990 ("Protection of Wetlands"); U.S. Department of Transportation Order 5560.1A ("Preservation of the Nation's Wetlands"); Federal Highway Administration Technical Advisory T6640.8A regarding the preservation of environmental documents; and the *Wetlands and Other Surface Waters* chapter of the FDOT's PD&E Manual.

4.1 Efficient Transportation Decision Making

According to the ETDM Summary Report No. 14396, dated October 25, 2019, the EPA and USFWS indicated the project alternatives may create a "Moderate" DOE, while the NMFS, USACE, and SJTWMD indicated a "Minimal" DOE to wetlands and surface waters. The primary issues were the potential loss of wildlife habitat for wetland dependent species, degradation of water quality in wetlands and surface waters, and floodplain impacts that would alter discharge capacity. Alternatively, the FDEP indicated the project alternatives may create a DOE of "None" to wetlands and surface waters.

4.2 Methodology

The study methodology included GIS analysis, ETAT comments review, agency coordination, agency database searches, and field surveys. Section 1.3 lists the data sources utilized for review. Ecologists familiar with Florida's natural plant communities conducted a wetland evaluation to identify wetland vegetation, wetland hydrology, and hydrologic indicators to determine the presence of wetlands and other surface waters as part of the Malabar Road Study. A formal wetland delineation to determine jurisdictional boundaries was not performed; however, the general limits of wetlands and other surface waters were identified in the field using the criteria established in Rule 62-340, F.A.C, and the USACE's Corps of Engineers Wetland Delineation Manual (USACE, 1987) and Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (USACE, 2010). Additionally, wetland boundaries were identified by existing environmental permits throughout the corridor. The wetland limits have not been reviewed by the SJRWMD, FDEP, or USACE. Wetlands and surface waters were classified per the FLUCFCS (FDOT, 1999) and the Classification of Wetlands and Deepwater Habitats of the United States (NWI) (Cowardin et al. 1979). The UMAM was utilized, per Chapter 62-345, F.A.C, for the functional assessment of wetlands within the Malabar Road Study.

4.3 Wetland Habitats and Surface Waters

Wetlands and other surface waters with potential to be affected the proposed project were identified within the study area (Figure 4-1). The project corridor is highly developed with limited natural wetland systems identified within the project area. The following section includes a brief description of each wetland type and other surface water within the study area. Table 4-1 provides details identifying each wetland, including the wetland number, FLUCFCS classification and NWI classification. FLUCFCS classifications are based on the results of the data analysis and field reviews of the study area. NWI classifications were not altered and are based on the listed classification of the nearest NWI wetland system as applicable.

Figure 4-1: Wetlands and Other Surface Waters Map

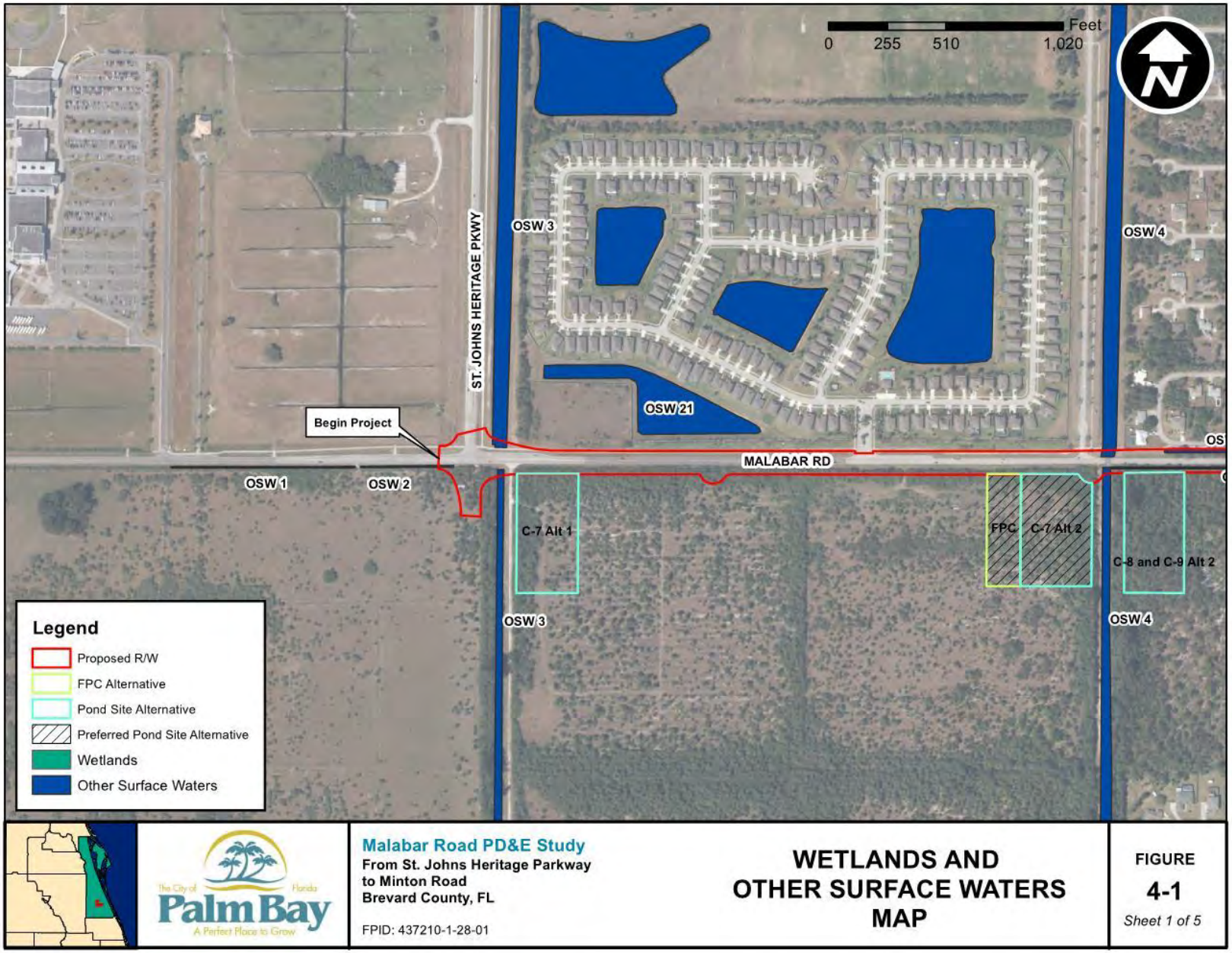


Figure 4-1: Wetlands and Other Surface Waters Map

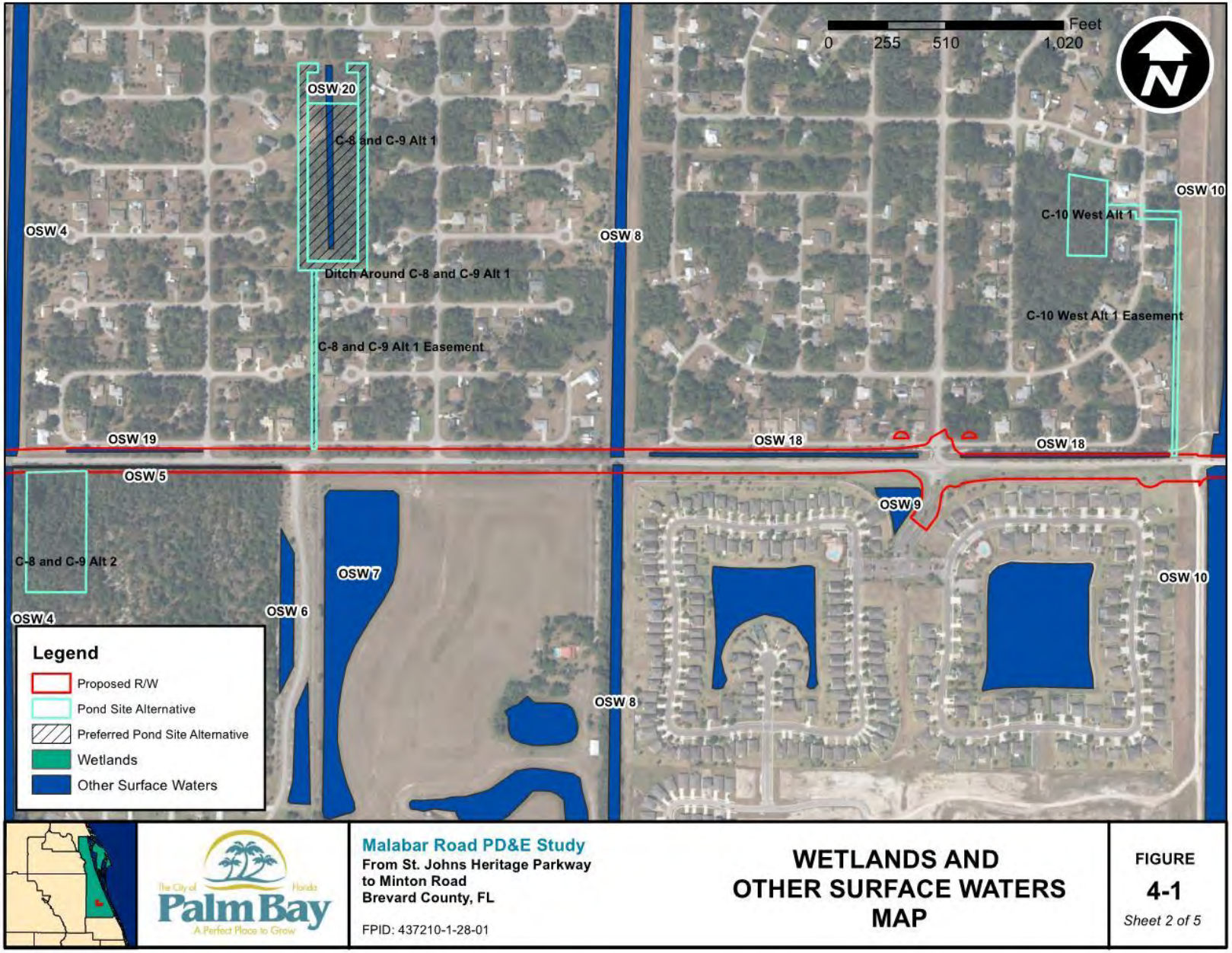
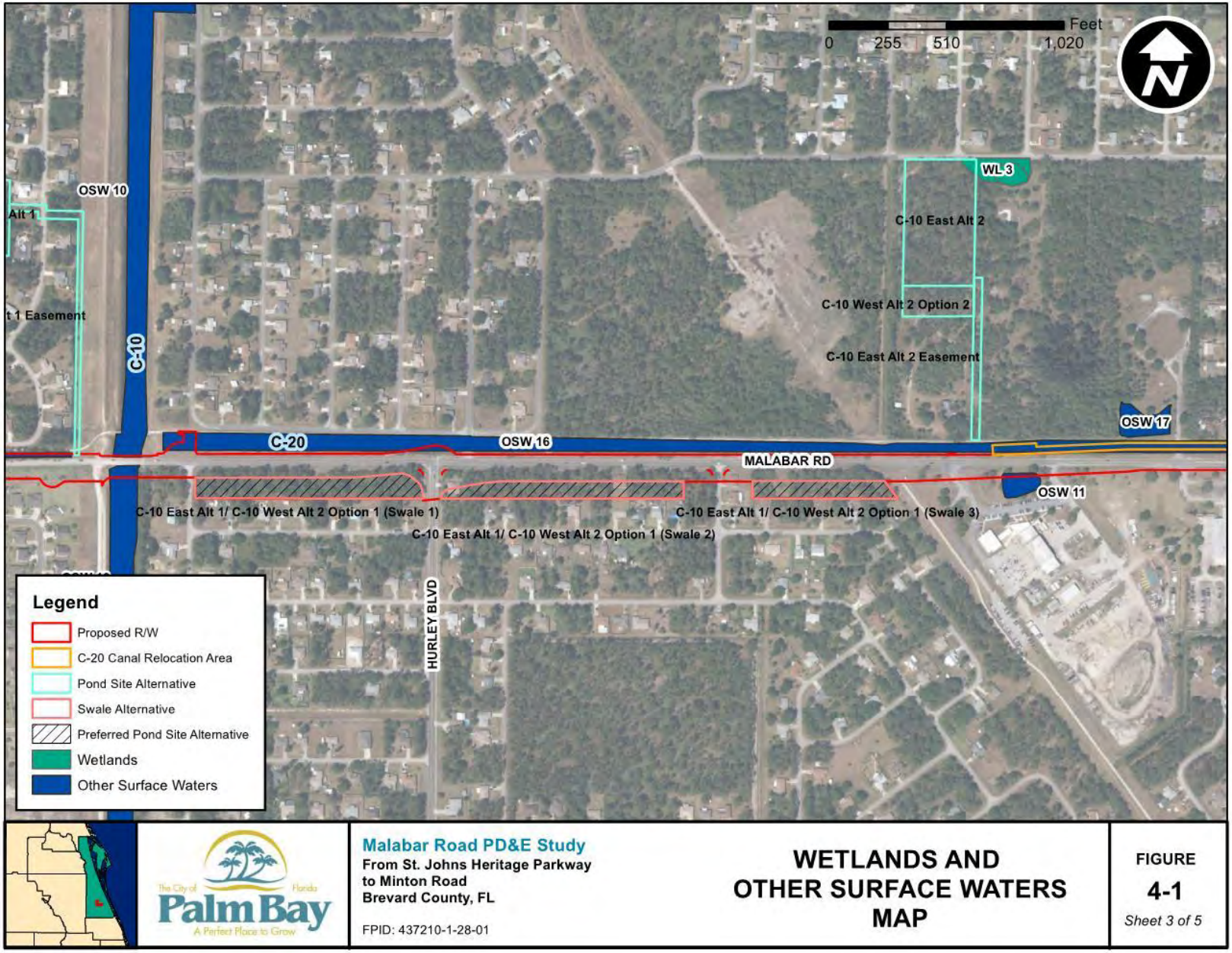


Figure 4-1: Wetlands and Other Surface Waters Map



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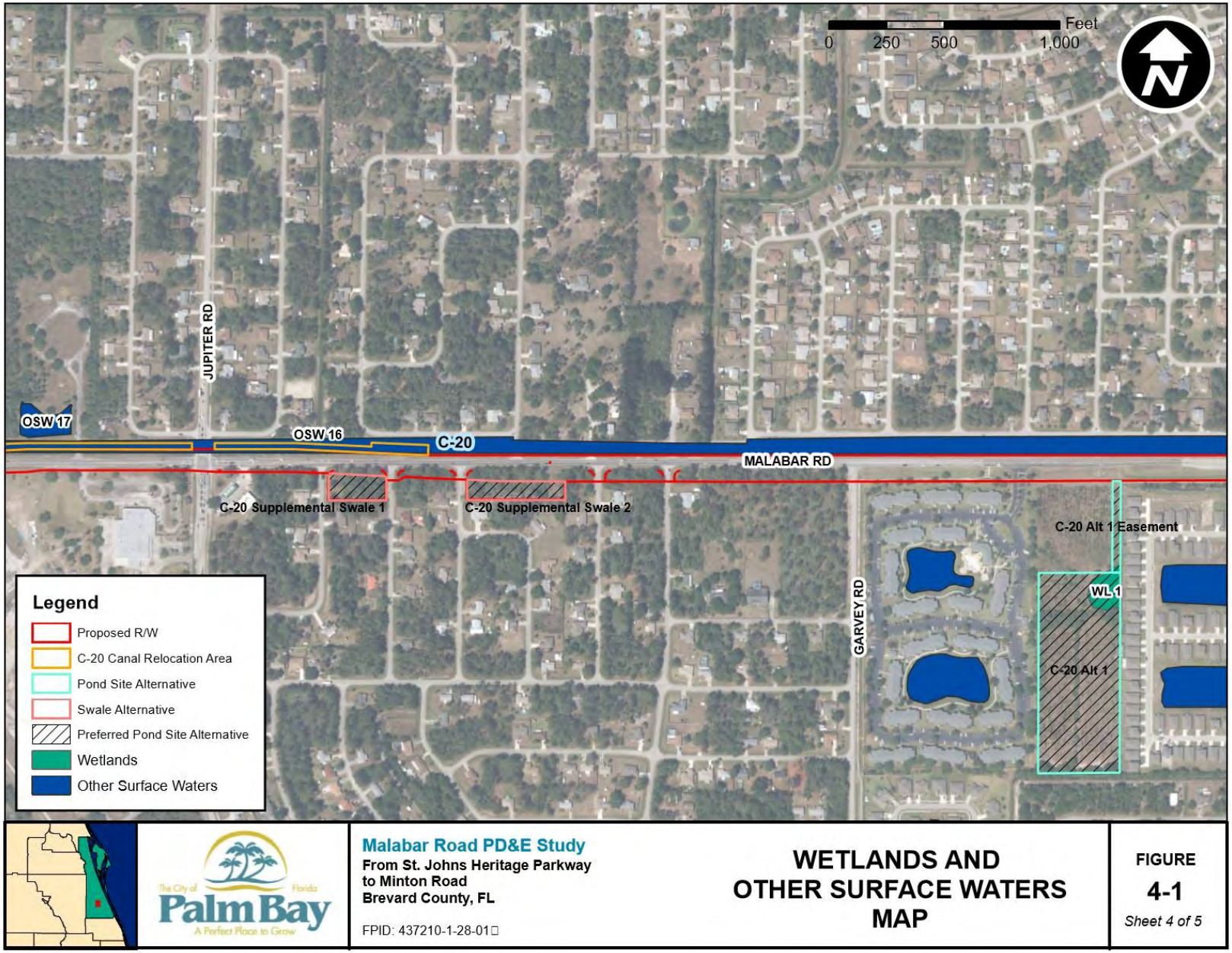

Figure 4-1: Wetlands and Other Surface Waters Map

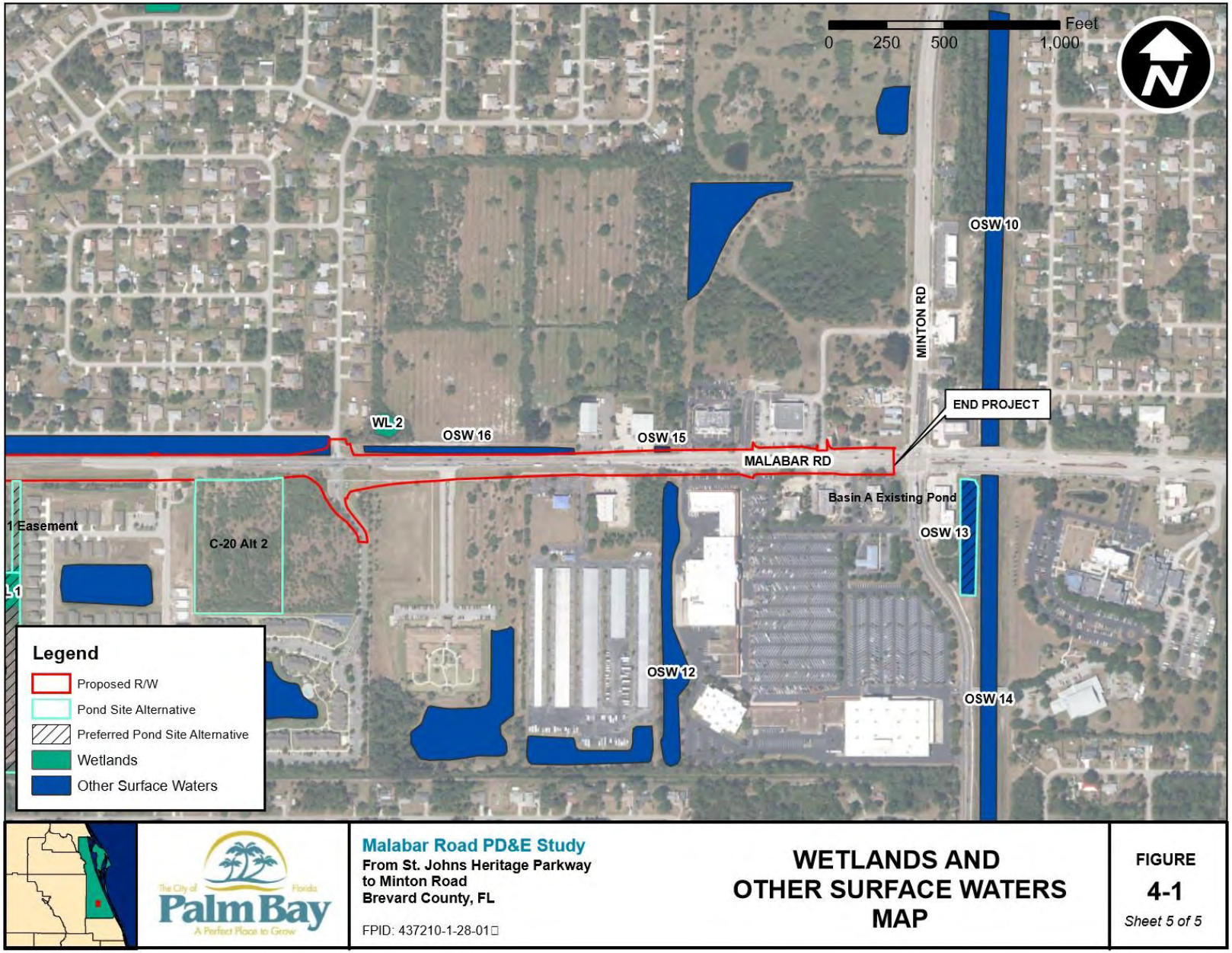

Table 4-1: Wetlands and Other Surface Waters in the Malabar Study Area

Wetland Number	FLUCFCS Classification	USFWS NWI Classification	Description
WL 1	641	N/A	Freshwater Marshes
WL 2	617	N/A	Mixed Wetland Hardwoods
WL 3	630	N/A	Wetland Forested Mixed
OSW 1	510	R5UBFx	Streams and Waterways
OSW 2	510	R5UBFx	Streams and Waterways
OSW 3	510	R5UBFx	Streams and Waterways
OSW 4	510	R5UBFx	Streams and Waterways
OSW 5	510	R5UBFx	Streams and Waterways
OSW 6	530	PUBHx	Reservoirs
OSW 7	530	PUBHx	Reservoirs
OSW 8	510	R5UBFx	Streams and Waterways
OSW 9	530	PUBHx	Reservoirs
OSW 10	510	R5UBFx	Streams and Waterways
OSW 11	530	PUBHx	Reservoirs
OSW 12	530	PUBHx	Reservoirs
OSW 13	837	N/A	Surface Water Collection Basin
OSW 14	510	R5UBFx	Streams and Waterways
OSW 15	510	R5UBFx	Streams and Waterways
OSW 16	510	R5UBFx	Streams and Waterways
OSW 17	530	PUBHx	Reservoirs
OSW 18	510	R5UBFx	Streams and Waterways
OSW 19	510	R5UBFx	Streams and Waterways
OSW 20	510	R5UBFx	Streams and Waterways
OSW 21	530	PUBHx	Reservoirs

4.3.1 Mixed Wetland Hardwoods

FLUCFCS: 617
NWI: N/A
Wetlands: Wetland 2 (WL 2)

Mixed wetland hardwood habitat is located in the southwestern corner of the abandoned citrus grove north of Malabar and just east of Maywood Avenue. This habitat consists of hardwood species with cabbage palm, slash pine (*Pinus elliotti*) and dense Brazilian pepper encroachment. The hydroperiod of this system has been severely diminished due to the internal agricultural ditches and drainage associated with the citrus grove. The proposed alternatives will have no impacts to WL 2.

4.3.2 Wetland Forested Mixed

FLUCFCS: 630
NWI: PUBHx
Wetlands: Wetland 3 (WL 3)

Wetland forested mixed habitat is located north of Malabar Road near proposed pond alternative C 10 East Alt 2. In addition to the forested wetland, a freshwater pond was also identified. Observed vegetation includes red maple (*Acer rubrum*) , Brazilian pepper, wax myrtle (*Myrica cerifera*), saltbush (*Baccharis halimifolia*), swamp fern (*Blechnum serrulatum*), pennywort (*Hydrocotyle* spp.), white-top star rush (*Rhynchospora colorata*) and torpedo grass (*Panicum repens*).

4.3.3 Freshwater Marsh

FLUCFCS: 641
NWI: N/A
Wetlands: Wetland 1 (WL 1)

Freshwater marsh habitat within the project corridor is located south of Malabar Road near proposed pond site C-20 Alt 1. Observed vegetation includes wax myrtle, saltbush, primrose willow (*Ludwigia peruviana*), swamp smartweed (*Persicaria hydropiperoides*), torpedo grass, rush (*Juncus* sp.), winged loosestrife (*Lythrum alatum*), and prairie iris (*Iris savannarum*). The proposed pond site C-20 Alt 1 may result in 0.46 acres of direct impacts to WL 1.

4.3.4 Streams and Waterways

FLUCFCS: 510
NWI: R2UBHx, RU5BFx
Surface Waters: OSW 1, OSW 2, OSW 3, OSW 4, OSW 5, OSW 8, OSW 9, OSW 10, OSW 14, OSW 15, OSW 16, OSW 18, OSW 19, OSW 20

Streams and waterways include rivers, creeks, canals, and other linear bodies of water. There is a network of canals throughout the study area. Most of these canals were excavated in uplands for agricultural activities or stormwater collection. These canals ultimately collect stormwater runoff from roadside ditches. Mitigation is unlikely to be required for impacts to these OSWs. The Recommended Preferred Alternative may result in 4.03 acres of direct impacts to OSWs, which include the C-20 Canal (OSW 16) relocation areas.

4.3.5 Reservoirs

FLUCFCS: 530
NWI: PUBHx, PUSCx,
Surface Waters: OSW 6, OSW 7, OSW 11, OSW 12, OSW 13, OSW 17, OSW 21

Reservoirs are artificial impoundments of water used for irrigation, flood control, municipal and rural water supplies. Reservoirs are located throughout the study area. Many of the reservoirs are permitted stormwater ponds. Impacts to these surface waters will not require mitigation. The Recommended Preferred Alternative may result in 0.05 acres of direct impacts to OSW 11.

4.4 Wetland and Surface Water Impacts

The following subsection examines the proposed direct, indirect, and cumulative effects of the proposed project alternatives on wetlands and other surface waters. The No-Build Alternative will not result in direct or indirect impacts to wetlands or other surface waters in the project area; however, this alternative is not consistent with existing long-range transportation plans and does not meet the stated purpose and need for the Malabar Road Study.

4.4.1 Direct Impacts

The Recommended Preferred Alternative will result in 0.46 acres of direct wetland impacts and 4.08 acres of direct impacts to other surface waters (Table 4-2).

Table 4-2: Potential Direct Wetland and OSW Impacts from the Recommended Preferred Alternative and Pond Site Alternatives

Wetland ID	FLUCFCS	Description	Impact Type	Impact Area (ac.)
WL 1	641	Freshwater Marshes	Pond C-20 Alt. 1	0.46
OSW 2	510	Streams and Waterways	ROW	0.01
OSW 3	510	Streams and Waterways	ROW	0.06
OSW 4	510	Streams and Waterways	ROW	0.06
OSW 5	510	Streams and Waterways	ROW	0.17
OSW 8	510	Streams and Waterways	ROW	0.07
OSW 10	510	Streams and Waterways	ROW	0.15
OSW 11	530	Reservoirs	ROW	0.05
OSW 15	510	Streams and Waterways	ROW	0.01
OSW 16 (C-20 Canal)	510	Streams and Waterways	ROW	2.23
OSW 18	510	Streams and Waterways	ROW	0.72
OSW 19	510	Streams and Waterways	ROW	0.19
OSW 20	510	Streams and Waterways	Pond C-8 & C-9 Atl. 1	0.36
			Total Wetland Impacts	0.46
			Total Other Surface Waters	4.08
			Total Proposed Impacts	4.54

4.4.2 Indirect Impacts

The Recommended Preferred Alternative may create indirect impacts to OSWs; however, these impacts are not considered adverse. Indirect impacts may be addressed by UMAM and offset by mitigation during the design and permitting phase if needed to address any adverse impacts incurred during the final design.

4.4.3 Cumulative Impacts

Cumulative impacts can result from incremental but collectively significant impacts within the basin over time. Cumulative impacts are not anticipated as a result of the proposed project because the project does not incur adverse impacts to wetlands or OSWs. In order to provide reasonable assurances that the project will not cause unacceptable cumulative impacts, mitigation

for adverse impacts will be provided within the same drainage pursuant to Section 373.4137, F.S.

4.5 Avoidance and Minimization

The Recommended Preferred Alternative was designed to avoid and minimize wetlands, OSWs, and protected species habitat impacts to the greatest extent practicable. This was accomplished by utilizing the existing right-of-way when practicable. Pond and floodplain compensation sites were selected to minmize impacts to wetlands. Additionally, the Audubon's crested caracara occupies habitat within the corridor. Pond site locations were adjusted based on the results of the 2020 caracara survey to avoid impacts to caracara nesting habitat. Additionally, the selected design team may offer to change the proposed typical section and/or drainage design so long as it meets design and permitting criteria.

4.6 Wetland Assessment

Wetlands and OSWs with potential to be affected by the proposed project were identified within the Malabar study area. The wetland assessment was conducted in accordance with the UMAM, as described in Chapter 62-345, F.A.C. The UMAM is the state-wide methodology for determining the functional value provided by wetlands and other surface waters and the amount of mitigation required to offset adverse impacts to those areas for regulatory permits. The impacted OSWs are considered upland cut components of the existing manmade drainage system; and therefore, these OSWs were not included in the wetland assessment as mitigation is not anticipated. The results of the UMAM assessment are provided in Table 4-3.

Table 4-3: Proposed Wetland Functional Loss Due to Impacts from Recommended Preferred Alternative

Wetland ID	Wetland Type	Impact Type	LLS	WE	CS	Impact Area (ac.)	Functional Loss
WL 1	641	Herbaceous	5	6	6	0.46	0.26

LLS = Location and Landscape Support
WE = Water Environment
CS = Community Structure

4.7 Conceptual 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 U.S.C. §1344. Compensatory mitigation for this project will be completed through the use of mitigation banks and any other mitigation options that satisfy state and federal requirements.

The Recommended Preferred Alternative will impact approximately 0.69 acre of wood stork SFH. Mitigation will be required for impacts greater than 0.5 acre based on guidance from the Effect Determination Key for the Wood Stork in Central and North Florida (USACE, 2008). Unavoidable impacts may be compensated in accordance with Section 404(b)(1) of the Clean Water Act via the purchase of wetland mitigation at a USFWS-approved wetland mitigation bank whose service area coincides with the CFA of the affected wood stork SFH. Currently, multiple banks have available credits to provide the appropriate mitigation.

SECTION 5 ESSENTIAL FISH HABITAT

The National Marine Fisheries Service (NMFS) is the regulatory agency responsible for the nation's living marine resources and their habitats, including essential fish habitat (EFH). This authority is designated by the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), as amended. The MSFCMA defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. § 1802(10)].

In accordance with the MSFCMA, Section 7 of the ESA, and the FDOT's PD&E Manual, the Malabar Road Study Area was evaluated for potential EFH. According to their ETDM Summary Report No. 14396, dated October 25, 2019, NMFS staff concluded that the project will not impact EFH; therefore, an EFH assessment is not required.

SECTION 6 ANTICIPATED PERMITS

Most land alteration projects, including construction and maintenance activities, are regulated by numerous state and federal agencies and require environmental permits prior to the commencement of construction. Permit applications are reviewed by regulatory agencies for their consistency with regulatory criteria and/or the project's effect on resources (e.g., navigation, wetland function, protected species, and their habitats). During the permit application process, the lead regulatory agencies my request input from other agencies to ensure the project will not adversely impact a regulated or protected resource under their purview. For protected species, a species-specific permit may be required prior to issuance of the environmental permit. The following is a list of anticipated permits needed from state and federal agencies for the proposed project.

6.1 General State 404 Permit (62-331.248)

Section 404 of the CWA established a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Day-to-day responsibility for Section 404 is typically handled by the USACE. However, the State of Florida requested and was granted authority on December 22, 2020 (85 FR 83553), to operate the Section 404 Program for work in most non-tidal waters in the state. Based on the amount of potential direct impacts and location of the project, a General State 404 is anticipated for the proposed work. The State 404 Program is administered by the FDEP.

6.2 National Pollutant Discharge Elimination System Permit

As authorized by the CWA, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources discharges from construction activities. The EPA has delegated its authority to implement the NPDES program to the FDEP. Based on potential impacts to at least one acre of land, it is anticipated that a NDPES permit will be required for the proposed project.

6.3 Individual Environmental Resource Permit

Section 373, FS, and Chapter 62-330, FAC, outline the rules and regulations and establish thresholds for when an environmental permit is required from the state. The Environmental Resource Permit (ERP) program is jointly administered by FDEP and the five water management districts in the state. The project is located within the jurisdiction of the SJRWMD. Based on the

project area and proposed stormwater management facilities, an Individual ERP is anticipated for this project. The ERP is considered to be the Water Quality Certification under Section 401 of the CWA and is required for the 404 permit, above.

6.4 Gopher Tortoise Relocation Permit

Gopher tortoises and their burrows are protected by Chapter 68A-27.003, F.A.C. A gopher tortoise relocation permit must be obtained from FWC before disturbing burrows and construction activities within 25 feet of a gopher tortoise burrow. The number of gopher tortoise burrows located within 25 feet of the project footprint will determine the type of gopher tortoise relocation permit that is needed. Based on the results from the pedestrian field surveys, it is anticipated that the proposed project will require a "10 or Fewer Burrows" permit from FWC. A 100% gopher tortoise survey should be completed during the design of the project to finalize the type of permit needed. Surveys, permitting, excavation, and relocation must be performed by an FWC Authorized Gopher Tortoise Agent.

SECTION 7 CONCLUSION

The Recommended Preferred Alternative will provide additional capacity on Malabar Road, consistent with existing long-range transportation plans for the roadway and region and the stated purpose and need for this PD&E Study. The Recommended Preferred Alternative avoids and minimizes impacts to wetlands, OSWs, protected species, and their habitats to the greatest extent practicable. Based on existing information and both general and species-specific surveys, the Recommended Preferred Alternative will not jeopardize the continued existence of a protected species and/or result in the destruction or adverse modification of critical habitat (Table 7-1). However, additional coordination with wildlife agencies will be required during the design and permitting phase and additional wildlife surveys may be required prior to or during construction.

Table 7-1: Effect Determinations for Listed Species

Common Name	Scientific Name	Status	Effect Determination
Reptiles			
American alligator	*Alligator mississippiensis*	FT (S/A)	MANLAA
Eastern indigo snake	*Drymarchon couperi*	FT	MANLAA
Florida pine snake	*Pituophis melanoleucus*	ST	NAEA
Gopher tortoise	*Gopherus polyphemus*	C / ST	MANLAA
Birds			
Audubon's crested caracara	*Polyborus plancus audubonii*	FT	MANLAA
Bald eagle	*Haliaeetus leucocephalus*	BGEPA / MBTA	NO EFFECT
Everglade snail kite	*Rostrhamus sociabilis plumbeus*	FE	NO EFFECT
Florida burrowing owl	*Athene cunicularia floridana*	ST	NAEA
Florida grasshopper sparrow	*Ammodramus savannarum floridanus*	FE	NO EFFECT
Florida sandhill crane	*Antigone canadensis pratensis*	ST	NAEA
Florida scrub-jay	*Aphelocoma coerulescens*	FT	MANLAA
Little blue heron	*Egretta caerulea*	ST	NAEA
Red-cockaded woodpecker	*Dryobates borealis*	FE	NO EFFECT

Reddish egret	*Egretta rufescens*	ST	NAEA
Roseate spoonbill	*Platalea ajaja*	ST	NAEA
Southeastern American kestrel	*Falco sparverius Paulus*	ST	NAEA
Tricolored heron	*Egretta tricolor*	ST	NAEA
Wood stork	*Mycteria americana*	FT	MANLAA
Mammals			
Florida black bear	*Ursus americanus floridanus*	M	NAEA
Southern fox squirrel	*Sciurus niger*	M	NAEA

Plants			
Blue-flowered butterwort	*Deeringothamnus pulchellus*	ST	NAEA
Carter's werea	*Warea carteri*	FE	NO EFFECT
Celestial lily	*Nemastylis floridana*	SE	NEA
Coastal vervain	*Glandularia maritima*	SE	NEA
Cut-throat grass	*Panicum abscissum*	SE	NEA
Florida beargrass	*Nolina atopocarpa*	ST	NEA
Giant Orchid	*Pteroglossaspis ecristata*	ST	NEA
Large-flowered rosemary	*Conradina grandiflora*	ST	NEA
Lewton's polygala	*Polygala lewtonii*	FE	NO EFFECT
Many-flowered grass pink	*Calopogon multiflorus*	ST	NAEA
Nodding pinweed	*Lechea cernua*	ST	NEA
Plume polypody	*Polypodium plumula*	SE	NEA
Redmargin Zephyrlily	*Zephranthes simpsonii*	ST	NEA
Sand butterfly pea	*Centrosema Arenicola*	SE	NEA
Short-leaved rosemary	*Conradina brevifolia*	FE	NO EFFECT
Small's flax	*Linum carteri var. smallii*	SE	NEA
Swamp plume polypody	*Polypodium ptilodon*	SE	NEA
Widespread polypody	*Polypodium dispersum*	SE	NEA
Yellow-flowered butterwort	*Pinguicula lutea*	SE	NEA

The Recommended Preferred Alternative will directly impact 4.08 acres of OSWs. No direct impacts to natural wetland systems are anticipated. The anticipated impacts to OSWs within the Recommended Preferred Alternative are not considered adverse, as these OSWs are upland cut components of the existing manmade drainage system; and therefore, mitigation is not anticipated.

7.1 Implementation Measures

To ensure the project will not adversely affect protected species or contribute to water quality degradation, the following measures will be implemented.

- Conduct surveys for listed plants in suitable habitat prior to construction and coordinate with the appropriate agency as needed if listed plants are observed within the project area.
- Conduct species-specific pre-construction survey for gopher tortoises and coordinate with FWC to receive the necessary permit authorizations prior to construction.

- Conduct specific-species pre-construction surveys for the Florida burrowing owl and coordinate with FWC to receive the necessary authorizations and implement the appropriate conservation measures as needed prior to construction.
- Conduct specific-species pre-construction surveys for the Southern fox squirrel and coordinate with FWC to receive the necessary authorizations if applicable.
- Provide compensatory mitigation for wetland impacts resulting from project design and construction, per 373.4137, FS and 33 USC § 1344.
- Apply erosion and sediment controls to other best management practices prior to and throughout construction to prevent adverse impacts to wetland and aquatic resources adjacent to the project area.

7.2 Commitments

To ensure the project will not adversely affect protected species and their habitats, the following commitments will be implemented.

- Conduct a species-specific survey for the Audubon's crested caracara per USFWS protocol during the design and permitting phase of the proposed project.
- Avoid construction within 1,500 meters of caracara nests during nesting season by avoiding construction activities from November 1st to April 30th for areas within 1,500 of the potential nests.
- Implement the Standard Protection Measures for the Eastern Indigo Snake during project construction.
- Provide appropriate mitigation for impacts to wood stork SFH, per the Wood Stork Effect Determination Key (USFWS, 2008).
- Conduct specific-species pre-construction surveys for the southeastern American kestrel and coordinate with FWC to receive the necessary authorizations and implement appropriate conservation measures prior to construction if applicable.

7.3 Agency Coordination

7.3.1 Prior Coordination

In October of 2019, comments from the ETAT were provided in the ETDM Summary Report No. 14396. ETAT members submitted comments related to protected species and their habitats, noting the need for protected species surveys and coordination during the PD&E Study, and implementation of protection measures during construction. ETAT members also commented on potential impacts to wetlands and surface waters, noting the need to avoid and/or minimize impacts to wetlands, document cumulative impact criteria, meet water quality and quantity requirements, and implement proper best management practices during construction. Through the PD&E process, these issues have been addressed and documented in this report.

As previously mentioned in Section 3.4.1, the USFWS approved the Audubon's Caracara Survey Methodology for the Malabar Road PD&E Study on December 11, 2019. The USFWS also approved the survey results to be accepted for two years after the survey completion. During this coordination, the USFWS stated if caracara were found using the site, a survey would be needed, as noted in Section 7.2.

7.3.2 Continuing Coordination

The final NRE report will be provided to the relevant resource agencies for review and concurrence with the proposed effect determinations for listed species and potential impacts to wetland resources. Agency coordination will continue during and throughout the design phase of the project when environmental permitting typically occurs. Environmental permits will be required from the FDEP and SJRWMD for the proposed project. Permit applications will be reviewed by the regulatory agencies for potential impacts to environmental resources. During the permitting process, the regulatory agencies will likely request input from the commenting agencies to ensure consistency with regulatory criteria under their purview. Consultation with, or technical assistance by the USFWS shall be required for potential impacts to federally protected species, particularly the Audubon's crested caracara and wood stork.

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APPENDIX A

Pond Site Assessment

Malabar Road PD&E Study Pond Site Assessment

C-7 Alt 1

C-7 Alt 1 is located south of Malabar Road at approximately station 63+58 (RT.). This pond site is located in upland cabbage palm forests with dominated by cabbage palm (*Sabal palmetto*) and Brazilian pepper (*Schinus terebinthifolia*). Shrub layer and ground cover species includes saw palmetto (*Serenoa repens*), broom sedge (*Carex spp.*), cogongrass (*Imperata cylindrica*), dogfennel (*Eupatorium capillifolium*), and bahiagrass (*Paspalum notatum*). No wetlands were observed within the proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with C-7 Alt 1.

Suitable habitat was observed for the caracara (*Polyborus plancus audubonii),* gopher tortoise (*Gopherus polyphemus*), eastern indigo snake (EIS) (*Drymarchon corais couperi*), Florida pine snake (*Pituophis melanoleucus mugitus*), southern fox squirrel (*Sciurus niger niger*) and southeastern American kestrel (*Falco sparverius*). A caracara survey was conducted for the proposed project in 2020, during which two (2) caracara nests were identified. The C-7 Alt 1 proposed pond site is entirely within the foraging habitat of both identified nests. Site C-7 Alt 1 will incur impacts to the caracara. Furthermore, site C-7 Alt 1 may also incur impacts to the gopher tortoise, EIS, Florida pine snake, southern fox squirrel, and southeastern American kestrel. Additional, species specific surveys will likely be required to confirm the absence and minimize impacts to these species should construction activities occur within this pond site.

C-7 Alt 2

C-7 Alt 2 is located south of Malabar Road at approximately station 85+64 (RT.). This pond site is located in upland cabbage palm forests dominated by cabbage palm and Brazilian pepper. Shrub layer and ground cover species includes saw palmetto broom sedge, cogongrass, dogfennel, and bahiagrass. No wetlands were observed within the proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with C-7 Alt 2.

Suitable habitat was observed for the caracara, gopher tortoise, EIS, Florida pine snake, and southeastern American kestrel. No protected species were observed within the pond site during the field reviews. Site C-7 Alt 2 may incur impacts to the caracara, gopher tortoise, EIS, Florida pine snake, southern fox squirrel, and southeastern American kestrel. Species specific surveys will likely be required to confirm the absence and minimize impacts to these species should construction activities occur within this pond site.

C-8 & C-9 Combined Alt 1

C-8 & C-9 Combined Alt 1 is located north of Malabar Road at approximately station 101+65 (LT.). This pond site consists of forested uplands with a canopy dominated by slash pine (*Pinus elliottii*), cabbage palm, and Brazilian pepper. Shrub layer consists of winged sumac (*Rhus copallinum*), American beautyberry (*Callicarpa americana*), and wax myrtle (*Myrica cerifera*). Ground cover

species includes muscadine grape (*Vitis rotundifolia*), greenbrier (*Smilax spp.*), goldenrod (*Solidago spp.*), beggarticks, dogfennel, and Virginia creeper (*Parthenocissus quinquefolia*). This site also includes two upland cut ditches. One ditch runs north/south and contains standing water along with wetland vegetation such as pickerelweed (*Pontederia cordata*), duck potato (*Sagittaria lancifolia*), pennywort (*Hydrocotyle spp.*), primrose willow (*Ludwigia peruviana*), and torpedo grass (*Panicum repens*). The second ditch runs east/west and consists of cogon-grass throughout. Approximately **0.36** acres of direct impacts to other surface waters are anticipated for C-8 & C-9 Combined Alt 1.

Suitable habitat for the gopher tortoise, EIS, southern fox squirrel, wood stork, and wading birds was observed within the pond site. No protected species were observed within the C-8 & C-9 Combined Alt 1 during the field reviews. C-8 & C-9 Combined Alt 1 may incur impacts to the gopher tortoise, EIS, southern fox squirrel, wood stork, and wading birds. Species specific surveys will likely be required to confirm absence and minimize impacts to these species should construction activities occur within this pond site.

C-8 & C-9 Combined Alt 2

C-8 & C-9 Combined Alt 2 is located south of Malabar Road at approximately station 89+98 (RT.). This pond site consists of forested uplands with a dense canopy comprised of cabbage palm, slash pine, laurel oak (*Quercus laurifolia*), and live oak (*Quercus virginiana*). Understory species consist of immature canopy species, American beauty berry, and saw palmetto. Groundcover is dominantly comprised of leaf litter and includes bahiagrass, dog fennel, and broom sedge. No wetlands were observed within the proposed pond site; therefore, no impacts to wetlands are anticipated for C-8 & C-9 Combined Alt 2.

Suitable habitat was observed for the gopher tortoise, EIS, Florida pine snake, and southern fox squirrel. No protected species were observed within the pond site during field reviews. Site C-8 & C-9 Combined Alt 2 may incur impacts to the gopher tortoise, EIS, Florida pine snake, and southern fox squirrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species should construction activities occur within this pond site.

C-10 West Alt 1

C-10 West Alt 1 is located north of Malabar Road at approximately station 135+09 (LT.). The site is located in pine flatwoods and completely surrounded by private residences. Canopy species include slash pine and cabbage palm. Understory species consists of saw palmetto. Ground cover consists of greenbrier, and muscadine grape and fallen pine needles and palm fronds. No wetlands were observed within the proposed pond site; therefore, no impacts to wetlands are anticipated for C-10 West Alt 1.

Suitable habitat for the gopher tortoise, EIS, Florida pine snake, and southern fox squirrel was observed within this pond site. No protected species were observed within the pond site during the field reviews. Site C-10 West Alt 1 may incur impacts to the gopher tortoise EIS, Florida pine

snake, and southern fox squirrel. Species specific survey will likely be required to confirm absence and minimize impacts to this species should construction activities occur within this pond site.

C-10 East Alt 1 (Swale Part 1-3)/C-10 West Alt 2 Option 1

C-10 East Alt 1 (Swale Part 1-3)/C-10 West Alt 2 Option 1 is located south of Malabar Road at approximately station 144+97 (Rt.). This proposed swale is located in forested upland. Canopy species include slash pine, longleaf pine (*Pinus palustris*), cabbage palm, and laurel oak. The understory is comprised of saw palmetto. Groundcover species include bracken fern (*Pteridium aquilinum*), rosary pea, greenbrier, muscadine grape, shiny blueberry (*Vaccinium myrsinites*), and goldenrod. No wetlands were observed within the proposed swale; therefore, no impacts to wetlands are anticipated for C-10 East Alt 1 (Swale Part 1).

Suitable habitat for the gopher tortoise and EIS were observed within this proposed swale. No protected species were observed within the pond site during the field reviews. C-10 East Alt 1 (Swale Part 1-3)/C-10 West Alt 2 Option 1 may incur impacts to the gopher tortoise and EIS. Species specific surveys will likely be required to confirm absence and minimize impacts to this species should construction activities occur within this proposed swale.

C-10 West Alt 2, Option 2

C-10 East Alt 2 is located north of Malabar Road at approximately station 175+65 (LT.). This pond site is located in upland forest and forested wetlands. Vegetative species within the uplands include a canopy comprised of slash pine, long leaf pine, laurel oak, live oak, and cabbage palm. Understory species consist of immature canopy species and saw palmetto. Ground cover comprised of goldenrod, bahiagrass, muscadine grape, greenbrier, and dogfennel. Observed vegetation within the forested wetland includes a canopy comprised of red maple (*Acer rubrum*). Understory consists of Brazilain pepper, wax myrtle, and salt bush (*Baccharis halimifolia*). Groundcover includes swamp fern (*Thelypteris confluens*), white-top star rush (*Rhynchospora colorata*), torpedo grass. Approximately **0.07** acres of direct impacts to wetlands are anticipated for C-10 East Alt 2.

Suitable habitat for the gopher tortoise, EIS, Florida pine snake, and southern fox squirrel was observed within this pond site. No protected species were observed within the pond site during the field reviews. Site C-10 East Alt 2 may incur impacts to the gopher tortoise EIS, Florida pine snake, and southern fox squirrel. Species specific survey will likely be required to confirm absence and minimize impacts to this species should construction activities occur within this pond site.

C-10 West Alt 2 (Option 2)

C-10 West Alt 2 (Option 2) is located north of Malabar Road at approximately station 175+65 (Lt.). This pond site is located in forested uplands. Observed vegetation includes a canopy comprised of slash pine, long leaf pine, laurel oak, live oak, and cabbage palm. Understory species consist of immature canopy species and saw palmetto. Ground cover comprised of goldenrod, bahiagrass, muscadine grape, greenbrier, and dogfennel. No wetlands were observed within the

proposed pond site; therefore, no impacts to wetlands are anticipated for C-10 West Alt 2 (Option 2).

Suitable habitat for the gopher tortoise, EIS, Florida pine snake, and southern fox squirrel was observed within this pond site. No protected species were observed within the pond site during the field reviews. Site C-10 West Alt 2 (Option 2) may incur impacts to the gopher tortoise EIS, Florida pine snake, and southern fox squirrel. Species specific survey will likely be required to confirm absence and minimize impacts to this species should construction activities occur within this pond site.

C-20 Supplemental Swale (1 and 2)

C-20 Supplemental Swale (1 and 2) is located south of Malabar Road at approximately station 198+44 (Rt.). This proposed swale consists of forested upland immediately adjacent to private residences. Canopy species include longleaf pine, slash pine, and laurel oak. The understory consists of saw palmetto, cabbage palm, and Brazilian pepper. Ground cover species include golden rod, muscadine grape, and bahiagrass. No wetlands were observed within the proposed swale; therefore, no impacts to wetlands are anticipated for C-20 Supplemental Swale (1 and 2).

Suitable habitat for the gopher tortoise and EIS were observed within this proposed swale. No protected species were observed within the pond site during the field reviews. C-20 Supplemental Swale (1 and 2) may incur impacts to the gopher tortoise and EIS. Species specific surveys will likely be required to confirm absence and minimize impacts to this species should construction activities occur within this proposed swale.

C-20 Alt 1

C-20 East Alt 1 is located south of Malabar Road at approximately station 229+06 (RT.). The northern portion of this pond site is located in a stand of planted slash pine. Other vegetative species observed within the planted pine includes canopy species such as laurel oak; understory species including wax myrtle; and groundcover consisting of dog fennel and bahiagrass. A wetland was observed toward the northern portion of the proposed pond site. Vegetation observed in the wetland includes a canopy comprised of red maple; understory consisting of wax myrtle and primrose willow; and ground cover comprised of torpedo grass, smartweed (*Persicaria spp.*), iris (*Iris spp.*), and winged loosestrife (*Lythrum alatum*). Approximately **0.46** acres of direct impacts to wetlands are anticipated for C-20 East Alt 1.

Suitable habitat was observed for the gopher tortoise, EIS, Florida scrub-jay (*Aphelocoma coerulescens*), southern fox squirrel wood stork, southeastern American kestrel, wood stork, and wading birds. No scrub-jays were observed in this pond site area during the 2020 scrub-jay survey. No protected species were observed within the pond site during the field reviews. Site C-20 East Alt 1 may incur impacts to the gopher tortoise, southern fox squirrel, wood stork, and wading birds. Species specific surveys will likely be required to confirm absence and minimize impacts to these species should construction activities occur within this pond site.

C-20 Alt 2

C-20 East Alt 2 is located south of Malabar Road at approximately station 240+39 (RT.). This pond site is located in shrub and brushland with patches of exposed white sand and areas of dense cabbage palm growth. Observed vegetation includes a shrub layer comprised of cabbage palm and Brazilian pepper. Groundcover consisting of ragweed (*Ambrosia spp.*), dogfennel, sedges, Guinea grass, and bahiagrass. No wetlands were observed within the proposed pond site; therefore, no impacts to wetlands are anticipated for C-20 East Alt 2.

Suitable habitat for the gopher tortoise, EIS, Florida scrub-jay, southern fox-squirrel, and southeastern American kestrel was observed within the pond site. No scrub-jays were observed in this pond site area during the 2020 scrub-jay survey. No protected species were observed within the pond site during the field reviews. Site C-20 East Alt 2 may incur impacts to the gopher tortoise and southeastern American kestrel. Species specific surveys will likely be required to confirm absence and minimize impacts to these species should construction activities occur within this pond site.

FPCA

The FPCA is located south of Malabar Road at approximately station 84+17 (RT.). The FPCA is located in upland cabbage palm forests dominated by cabbage palm and Brazilian pepper. Shrub layer and ground cover species includes saw palmetto broom sedge, cogongrass, dogfennel, and bahiagrass. No wetlands were observed within the proposed pond site; therefore, no impacts to wetlands are anticipated to be associated with the FPCA.

Suitable habitat was observed for the caracara, gopher tortoise, EIS, Florida pine snake, and southeastern American kestrel. No protected species were observed within the pond site during the field reviews. The FPCA may incur impacts to the caracara, gopher tortoise, EIS, Florida pine snake, southern fox squirrel, and southeastern American kestrel. Species specific surveys will likely be required to confirm the absence and minimize impacts to these species should construction activities occur within this pond site.

APPENDIX B

Land Use and Habitat Descriptions

Urban and Built-up (FLUCFCS 100)

Urban and built-up lands consists of areas of intensive use with much land occupied by man-made-structures. This category includes residential, commercial, recreational, industrial, and institutional classifications. Urban and built-up lands within the project corridor include Low Density Residential (FLUCFCS 110), Medium Density Residential (FLUCFCS 120), Medium Density Under Construction (FLUCFCS 129), High Density Residential (FLUCFCS 130), Commercial and Services (FLUCFCS 140), and Institutional (FLUCFCS 170).

Urban and built-up lands occur throughout the project corridor. These lands are generally landscaped and maintained, providing little to no habitat for listed species.

Agriculture (FLUCFCS 200)

Agricultural lands consist of areas that are cultivated to produce food crops and livestock. This land use category includes pastures, crops, citrus groves, nurseries, and orchards. Agricultural lands within the project corridor include Improved Pastures (FLUCFCS 211), Unimproved Pastures (FLUCFCS 212), and Field Crops (FLUCFCS 215).

Agricultural lands occur within the western portion of the project corridor and predominantly include pasture lands. Pasture lands are dominated by herbaceous species and grasses associated with active cattle grazing with limited canopy and shrub species. Canopy species include slash pine (*Pinus elliottii*) and cabbage palm (*Sabal palmetto*). Shrub species consist of Brazilian pepper (*Schinus terebinthifolia*) and immature canopy species. These agricultural lands provide large areas of contiguous, undeveloped areas which provide valuable foraging habitat for listed species and common wildlife species.

Rangeland (FLUCFCS 300)

Rangelands consist of areas where the potential natural vegetation is predominantly grasses, grass-like plants, forbs, or shrubs, and is capable of being grazed. This category includes herbaceous dry prairie, shrub and brushland, and mixed rangeland. Rangelands occurring within the project corridor include Shrub and Brushland (FLUCFCS 320) and Mixed Rangeland (FLUCFCS 330).

Rangelands occur toward the eastern portion of the project corridor. Vegetation within these areas include a sparse canopy of live oak, laurel oak, and cabbage palm. Understory species consist of immature canopy species, and Brazilian pepper. Herbaceous vegetation includes bahiagrass (Paspalum notatum), lantana (*Lantana strigocamara*), bushy bluestem (*Andropogon glomeratus*), pawpaw, indigo, dog fennel, ragweed, beggar ticks, Florida pusley, kiss me quick, frogfruits. These rangelands provide large areas of contiguous, undeveloped areas which provide valuable foraging habitat for listed species and common wildlife species.

Upland Forests (FLUCFCS 400)

Upland forests consist of upland areas that support a tree canopy closure of ten percent or more and includes both xeric and mesic forest communities. Upland forests occurring within the project corridor include Pine Flatwoods (FLUCFCS 411), Upland Hardwood Forests (FLUCFCS 420), Cabbage Palm (FLUCFCS 428), Hardwood- Conifer Mixed (FLUCFCS 434), and Tree Plantations (FLUCFCS 440).

Areas of upland forests occur throughout the project corridor; however, the largest swaths of upland forest occur toward the western end. Vegetation within upland forests is generally dominated by slash pine, with an understory comprised of cabbage palm, saw palmetto, wax myrtle, winged sumac. Herbaceous species include some sedges, lantana, and indigo. These upland forests provide large areas of contiguous, undeveloped land which provide valuable habitat for listed species and common wildlife species.

Water (FLUCFCS 500)

Water consists of land that predominantly or persistently covered by water. Examples of this land use includes lakes, streams, waterways, and canals. Water occurring within the project corridor include Streams and Waterways (FLUCFCS 510) and Reservoirs (FLUCFCS 530). Water is found throughout the project area primarily consisting of a network of canals and roadside ditches. These areas provide valuable foraging habitat for listed species, especially wading birds.

Wetlands (FLUCFCS 600)

Wetlands consists of lands where the water table is at, near, or above the land surface for a large amount of most years. Wetlands can be forests, meaning they are dominated by canopy species, or non-forested, meaning they are dominated by shrub and/or herbaceous species. The wetlands occurring within the project area include Mixed Wetland Hardwoods (FLUCFCS 617), Freshwater Marshes (FLUCFCS 641), and Emergent Aquatic Vegetation (FLUCFCS 646). The forested wetlands within the corridor and adjacent to the project are dominated by Brazilian pepper. Canopy species include red maple, water oak, cabbage palm, and slash pine. Understory and groundcover species include saltbush, wax myrtle, swamp fern and water pennywort (*Hydrocotyle* spp) . Vegetation within the freshwater marshes consist of wax myrtle, saltbush, water primrose, swamp smartweed (*Persicaria hydropiperoides*), torpedo grass, soft rush (*Juncu*s sp.) and prairie iris (*Iris savannarum*). The wetlands within the corridor provide valuable habitat for listed species and common wildlife species; however, many of the wetland systems within the corridor are functionally diminished by Brazilian pepper encroachment and adjacent development.

Barren Land (FLUCFCS 700)

Barren land includes areas that have little or no vegetation and limited potential to support vegetative communities. Barren land can temporarily exist due to human inactivity or land in transition between land use types. Barren land occurring within the project corridor includes Spoil Areas (FLUCFCS 734).

One spoil area occurs toward the center or the project corridor more than 700-feet north of Malabar Road.

Communication, Transportation & Utilities (FLUCFCS 800)

Communication, transportation, and utilities include areas of lands and facilities used for the movement of people and goods. This land use type occurring within the project area include Roads and Highways (FLUCFCS 814), Communications (FLUCFCS 820), Electrical Power Transmission Lines (FLUCFCS 832) and Surface Water Collection Basins (FLUCFCS 837). Although these areas do not contain much vegetation, in some instances such as in the right-of-way, they can provide some foraging habitat for listed species and common wildlife.

APPENDIX C

Photographs

Photo 1: Representative of habitat within proposed pond site C-7 Alt 1 – suitable caracara habitat

Photo 2: Representative of habitat within proposed pond site C-7 Alt 2 and the FPCA – suitable caracara habitat

Photo 3: Representative of habitat and ditch within proposed pond site C-8 & C-9 Combined Alt 1

Photo 4: Representative of habitat within proposed pond site C-8 & C-9 Combined Alt 2

Photo 5: Representative of habitat within proposed pond site C-10 West Alt 1

Photo 6: Representative of habitat within proposed swale C-10 East Alt 1/C-10 West Alt 2

Photo 7: Representative of habitat within proposed pond site C-10 East Alt 2 and C-10 East Alt 2 Expansion for C-10 West Alt 2

Photo 8: Representative habitat within proposed C-20 Supplemental Swale

Photo 9: Representative of wetland and upland habitats within proposed pond C-20 Alt 1 – uplands contain suitable Florida scrub-jay habitat

Photo 10: Representative of habitat within proposed pond site C-20 Alt 2 – contains suitable Florida scrub-jay habitat

Photo 11: Representative of ditch north of Malabar Road

Photo 12: Representative of ditch north of Malabar Road

Photo 13: Representative of existing maintained RW south of Malabar Road

Photo 14: Caracara perched in nesting tree within pasture adjacent to Malabar Road

Photo 15: Caracara perched in nesting tree within pasture adjacent to Malabar Road

Photo 16: Caracara bathing within pasture adjacent to Malabar Road

Photo 17: Representative of suitable Florida scrub-jay habitat south of Malabar Road

Photo 18: Representative of swale adjacent to Malabar Road

Photo 19: Representative of bridge on Malabar Road crossing over canal

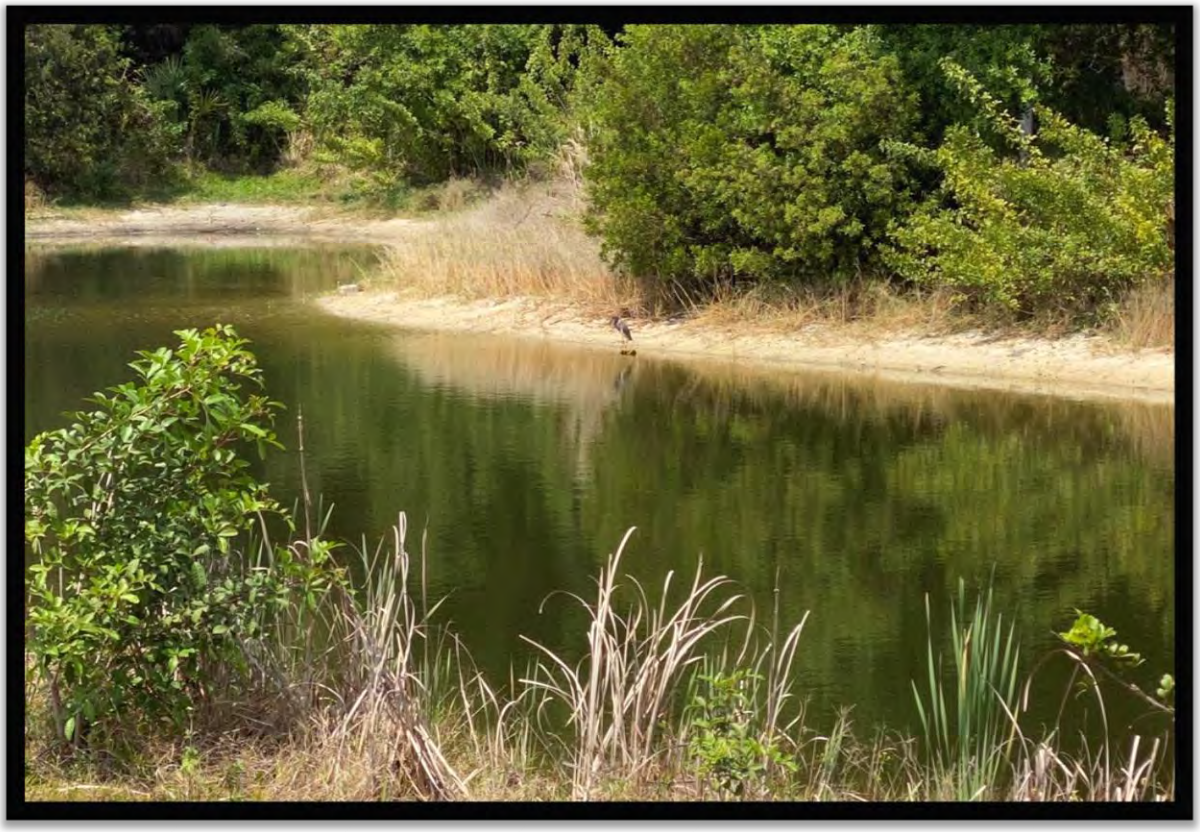


Photo 20: Representative of existing pond adjacent to Malabar Road with wading bird foraging

APPENDIX D

Audubon's Crested Caracara Survey Methodology and Survey Concurrence

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

The northern crested caracara (*Caracara cheriway*) is a resident, diurnal, and non-migratory raptor that occurs primarily in Florida, Texas, Arizona, Cuba, Mexico, Central America, and the northern portions of South America (Morrison and Dwyer 2012). Only the Florida population, which is isolated from the remainder of the species, is listed as threatened under the Endangered Species Act.

In order to avoid the potential for unauthorized take, future project sites within the caracara consultation area (Figure 1) containing habitats (same or similar) as described below should undergo a formal caracara survey to determine site utilization by caracaras. The intent of caracara surveys is three-fold: (1) to determine the location(s) of active caracara nest(s) that could be adversely affected by the proposed project; (2) to determine the presence and use of the project area by breeding and non-breeding caracaras, including the approximate boundaries of breeding territories, if possible; and (3) to determine the fate and productivity of any caracara nest found.

We recommend coordinating with the U.S. Fish and Wildlife Service (Service) prior to conducting surveys, including submittal of a proposed survey plan and list of observers which follows the guidance below. Following the guidance will ensure that the surveys are timed during the period of greatest detection to document caracaras within or adjacent to the proposed project. The Service has caracara observation and nest location data as well as designated caracara congregation areas that may be of use for planning surveys. For project consultations under the Endangered Species Act, surveys must follow this protocol and must be no older than the previous caracara nesting season (January – April) in order to be considered valid. In the event that construction or vegetation clearing activity will occur more than one year after permitting is completed, contact the Service to discuss the need for follow-up surveys.

Foraging and Nesting Habitat

The Florida caracara population commonly occurs on dry or wet prairies with scattered cabbage palms (*Sabal palmetto*). It may also be found in lightly wooded areas. Scattered saw palmetto (*Serenoa repens*), scrub oaks (*Quercus geminata, Q. minima, Q. pumila*), and cypress (*Taxodium* spp.) may also be present. Widespread changes in land use may have caused a change in habitat use in this species. Morrison and Humphrey (2001) found a strong association of caracara home ranges with improved pasture. The presence of seasonal wetlands, which may serve as foraging habitat, is an important factor in the attractiveness of these pastures to caracaras (Service 1999). Therefore, today we recognize caracara foraging habitat (and nesting territories) as those areas with short herbaceous vegetation. This includes native wet and dry prairies, but also improved, unimproved, and woodland pastures, sod farms, row crops, levees, and rangeland. Juvenile caracaras may also use citrus and tree farms.

The primary nesting substrate is cabbage palm, although there have been rare reports of nesting in slash pine (pers. obs.), cypress, oak, red cedar (Morrison 2007), Australian pine

(*Casuarina* sp.), saw palmetto, and black gum (*Nyssa sylvatica*), and even more atypical locations such as an electrical substation, radio tower, and billboard (Dwyer and DallaRosa 2015).

Survey Design and Planning

The protective area for a caracara nest is a radius of about 1,500 meters (m) (4,920 feet) from the nest. Therefore, the survey area should include the project area and a 1,500-m buffer zone around the perimeter of the project area (including access roads) to account for off-site nest trees in territories that might overlap onto the project area. A recent aerial photograph depicting the project boundary and buffer zone should be used to identify all areas of suitable habitat and to preliminarily map observation blocks. An observation block is defined as an area easily observable from one vantage point. Enough observation blocks must be identified to cover all suitable habitats within the project boundary and 1,500-m buffer. Surveyors should try to obtain legal access to non-project property within the survey area where suitable habitat exists; these efforts should be documented (e.g., copy of letter, email, etc.). If permission cannot be obtained, contact the Service for additional guidance prior to initiating surveys.

Prior to the first survey, a site visit should be conducted to confirm suitable habitat and the location of observation blocks. Based on this site assessment (*e.g.*, presence of visual obstructions), observation blocks may need to be revised. During the site visit, also identify observer survey stations (at least one per observation block). Survey stations should be located to allow full, unobstructed view of the observation block – strategic points are those where caracaras are more likely to be seen going to and from potential nesting or foraging sites. Based on the site assessment, update the aerial photo to show suitable habitat, and labeled observation blocks and their respective survey stations. The location of survey stations may be adjusted if needed based on initial survey results in order to obtain a different/better view of caracara activity. Any adjustments to the survey design should be documented via revised maps.

Observer Qualifications

Information from a recent study (Dwyer *et al.* 2012) suggested that the probability that a visit or series of visits (*i.e.*, a survey) would lead to the discovery of an existing caracara nest increases with an experienced observer. Due to their cryptic nest site locations and unorthodox method of foraging (walking on the ground), successful nest site surveys require a specific skillset acquired by conducting numerous surveys under the supervision of an experienced caracara surveyor. In addition, caracaras can be hard to find and identify at long distances, especially under low-light conditions. Caracaras may also be wary of humans and will change their behavior in the presence of people, which can make locating nests extremely difficult for less experienced observers. Due to these factors, surveys must be conducted by a qualified biologist having at least two years of experience conducting bird surveys and at least 40 hours of caracara survey experience (i.e., equivalent to one survey season) under the supervision of an experienced caracara surveyor. If an observer does not meet these minimum qualifications,

the observer should be accompanied by a qualified observer who will serve as the primary observer. Even in cases of qualified observers, and where staff resources allow it, having two observers at the same station can increase the probability of finding a nest.

Conducting Foraging and Nesting Surveys

The highest probability of success in finding caracara nests is during the period of January through March. This period covers the time when adult caracaras are foraging to feed nestlings and therefore, become more visible to observers. As such, surveys must start no later than January 10 and continue through April 30 to provide adequate data to conclude whether or not the site contains an active caracara nest and/or foraging habitat. If the survey starts after January 10, and no nest are found, the survey may not be considered valid by the Service. Surveys considered invalid should be repeated the following nesting season using the latest Service protocol to ensure that early nesting birds were not missed. Surveys should not be conducted in November or December without additional coordination with the Service to avoid disturbing nesting caracaras during nest initiation or incubation, when they are more prone to disturbance.

A complete survey of the project area consists of one survey session every two weeks of each observation block within the project area and the 1,500-m buffer from early January (i.e., Jan 1 - 10) through April 30 (unless a nest is found within the observation block prior to April 30; in that event, begin Productivity Surveys as described below). A survey session is defined as a single survey within an identified observation block initiated at least 15 minutes prior to sunrise and lasting 3 hours (Dwyer et al. 2012). The entire 3-hour survey session must be spent viewing the one observation block – observers cannot rotate between stations, cruise roads, or leave the observation block unless following a flying caracara. If the survey area is large or includes obstructed views, and multiple observation blocks are required, then multiple observers (preferred) or additional survey sessions will be needed to complete the survey of the entire project area. Afternoon or evening surveys are optional, but cannot be substituted for early morning surveys (in the event of not finding a nest). More frequent morning surveys (i.e., more than one during any two-week period) of an observation block are also optional, and can increase the probability of finding a nest, but cannot replace the subsequent “once per two-week surveys” through April 30 (in the event of not finding a nest).

Surveys should be conducted from inside a vehicle (best option is a truck or similar vehicle to maximize height and minimize view obstructions) or an appropriate wildlife blind using high-power binoculars. This minimizes caracara disturbance and behavior alteration, and increases the probability of finding nest locations. Depending on the distance being surveyed, or the proximity of the caracara/nest being observed, it may also be acceptable for the observer to be adjacent to the vehicle if that affords better viewing. A spotting scope is essential when documenting behavior of caracaras and confirming nest tree locations that are far away. If this cannot be accomplished (e.g., due to visibility or vehicle access restrictions), the Service should be contacted to provide site-specific guidance.

Weather conditions must be adequate to clearly view the whole area. Surveys should not be conducted when it is rainy or foggy (Dwyer *et al*. 2012). Wind speed should be less than 12 miles per hour (19 kilometers per hour; Beaufort Number 3). Weather conditions and other important information must be recorded on field data sheets as itemized below (see Reporting).

During the survey, from a stationary position, search for caracara activity, including birds perched in trees or on sentinel posts, flying along roads or levees, or carrying nesting material or food. Watch for other birds, such as American crows (*Corvus brachyrhynchos*), red-tailed hawks (*Buteo jamaicensis*), red-shouldered hawks (*Buteo lineatus*), bald eagles (*Haliaeetus leucocephalus*), and turkey vultures (*Cathertes aura*), that might elicit an aggressive response from caracaras. Nesting caracaras will often chase potential predators away from the nest, thus revealing their presence. Also, vultures can indicate the presence of carrion that may attract caracaras. If the observer is near or on a road, pay attention to road-killed animals that may serve as forage for caracaras. If in a pasture, look for cow or calf carcasses on which caracaras may forage.

If a caracara is sighted, document its activity (*i.e.*, foraging, roosting, preening, territorial behavior, etc.) and location on an aerial map. If a caracara is in flight, document on the aerial map the direction the bird came from, the direction it is flying in, and if it is carrying nesting material or food. Make all reasonable efforts to track the bird to a potential nest location. If a potential nest tree is detected, then the observer can reposition to improve observation of the bird's behavior. All observer locations during a survey should be marked on the aerial. All caracara observations must be recorded on the field data sheets, including time of observation, number of birds, plumage (adult/juvenile), activity/behavior (*e.g.*, perching, foraging, feeding, preening, courtship or territorial display, etc.), and nest stage (building, incubating, nestlings, fledglings), if applicable. Corresponding caracara locations and flight paths must be marked and labeled on the aerial map. Also mark any potential or confirmed nest tree locations on the aerial photo, with GPS coordinates of the observation site and an estimate of the direction and distance of the nest from the observation point (a rangefinder may help to measure distance). Do not try to approach the nest as this may cause the caracara to abandon their nesting attempt. It may be possible to use a compass bearing from two different locations to triangulate the location of a nest tree that may be too far away and not near recognizable landmarks.

Survey sessions of each observation block must be repeated at two week intervals. Once a nest tree location is confirmed, report the location to the Service and transition to Productivity Surveys. In addition to location of nest trees, the survey data described above can be used to understand the use of the survey area (*e.g.*, as foraging or roosting habitat) by both breeding and non-breeding caracaras. Non-breeding caracaras can include both juveniles and adults. Detailed survey data are also useful in approximating boundaries of breeding territories, which is typically important to identifying the number of territories that may be impacted by a proposed project and the anticipated effect that proposed activities may have on a breeding

caracara pair. This is especially true for projects which are large in size or include habitat conversion. For more details on caracaras, see Service (1999) and Morrison and Dwyer (2012).

Conducting Productivity Surveys

Once a nest tree is confirmed or highly suspected, begin productivity surveys. These surveys involve the same repeated, two-week visits, but the surveyor need only observe the nest for the amount of time necessary to determine nest status (*i.e.,* incubating, nestlings, fledglings, or failed) and may survey the nest tree at any time during the day (assuming the weather conditions are appropriate). This will likely require much less effort per day than nest surveys. Many times, a spotting scope can be more useful than binoculars in observing activity in the nest that will indicate the nest status. As nesting progresses, the nestlings will become more active and easier to observe. Record the bird activity and number of nestlings. Record the fledging date and number of fledglings. From the fledging date, and previous observations, estimate the egg-laying date. If the nest appears to fail, continue surveying the nest tree area until April 30 as re-nesting may occur. If nests are deemed active on April 30, continue surveying those nest trees until they are either successful or have failed.

Reporting

An example field data sheet is provided at the end of this document, but observers may use their own data sheet format as long as the required information is collected. Requirements for final reports are as follows:

1. Map of field-verified habitat types within the project area and 1,500-m buffer;
2. Copies of marked aerial photo(s) showing all suitable habitat, with labeled observation blocks and their respective survey stations (including any alternate station locations used);
3. For each survey station, copies of any photos taken that document the field of view, nest tree or caracaras;
4. Documentation of efforts to contact adjacent landowners, and copies of access agreements, if applicable;
5. A summary table with the following information for each observer: name, hours of experience conducting caracara surveys (as of January 1), approximate number of caracara nests previously found, and whether the observer served as a primary or secondary observer;
6. Copies of all individual field data sheets which include the following information for each survey:
    - observation block/survey station identification,
    - survey date,
    - observer name(s),
    - observer location (*e.g.*, in a vehicle, blind, on foot),
    - start and end times,

- start and end weather conditions (temperature, wind speed and direction, cloud cover, visibility, and precipitation),
- caracara location/activity details including (for each observation):
  - time of observation,
  - number of birds,
  - plumage,
  - activity/behavior, and
  - nesting stage, if applicable, and
- an aerial map showing all observed caracara locations and flight paths (labeled to correspond with activity details) and any potential/confirmed nest tree locations; and

7. Location data (*e.g.*, latitude/longitude) for all caracara observations and potential/confirmed nest trees in Excel, projected shapefile (the preferred projection is Florida Albers NAD83 in meters), or .kml/.kmz format and attributed to include the information in (6) above.

Additional survey or reporting requirements may exist if the caracara surveys are required by a Service Biological Opinion (BO)(in this event, refer to the Terms and Conditions of the BO). For questions or additional guidance regarding the above survey protocol, please contact the Service's caracara lead biologist, Steve Schubert, at 772-469-4249 or 772-562-3909.

Literature Cited

Dwyer, J.F., and J.P. Dalla Rosa. 2015. Use of anthropogenic nest substrates by crested caracaras. Southeastern Naturalist 12(1):N10-N15.

Dwyer, J. F., J. L. Morrison, and J. D. Fraser. 2012. Factors influencing detection of nesting crested caracaras. The Journal of Wildlife Management 76(4):857–862.

Morrison, J. L. 2001. Recommended management practices and survey protocols for Audubon's crested caracaras (*Polyborus plancus audubonii*) in Florida. Technical Report No. 18. Florida Fish and Wildlife Conservation Commission. Tallahassee, Florida.

Morrison, J. L. 2007. Characteristics of nest sites used by crested caracaras in South-Central Florida. Florida Field Naturalist 35(1):1-8.

Morrison, J. L. and J. F. Dwyer. 2012. Crested Caracara (*Caracara cheriway*), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology. Retrieved from the Birds of North America: https://birdsna.org/Species-Account/bna/species/crecar1

U.S. Fish and Wildlife Service (Service). 1999. South Florida multi-species recovery plan. Atlanta, Georgia. http://www.fws.gov/verobeach/MSRPPDFs/AudubonsCrestedCaracara.pdf

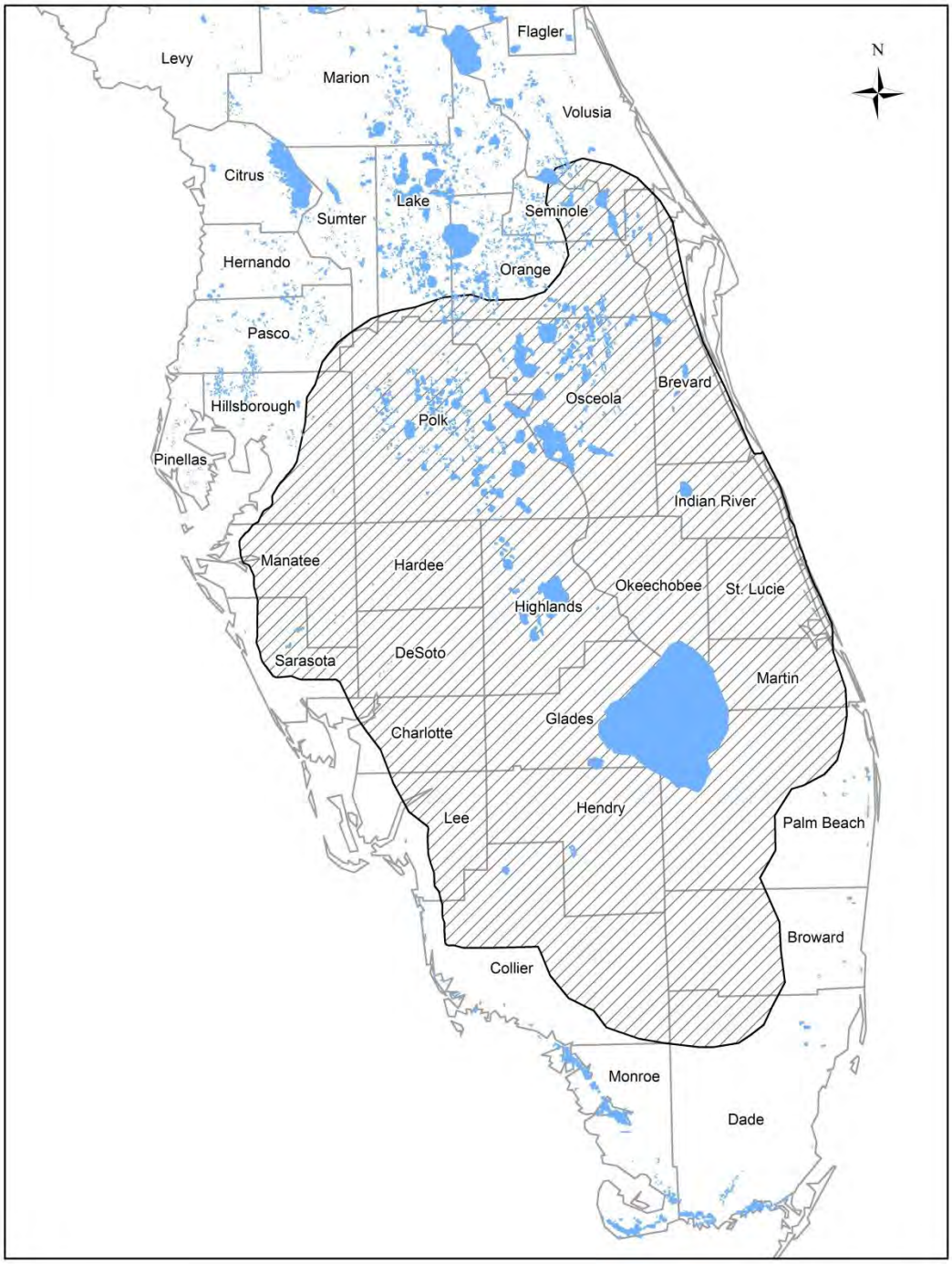


Figure 1. USFWS consultation area for crested caracara.

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

Caracara Survey Form (updated 12/9/2016)

Project Name: _____

Location/Observation Block/Lat-Long:_____

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start:					
Finish:					

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

FW: [EXTERNAL] Malabar Rd PD&E Study, Brevard County - Caracara Survey Methods Memo

Jason Houck
To Jada Barhorst

Reply | Reply All | Forward | ...

Thu 4/29/2021 3:39 PM

Please consider the environment before printing this e-mail

From: Williams, Zakia <zakia_williams@fws.gov>
Sent: Wednesday, December 11, 2019 8:29 PM
To: Jason Houck <jhouck@inwoodinc.com>
Subject: Re: [EXTERNAL] Malabar Rd PD&E Study, Brevard County - Caracara Survey Methods Memo

Jason,

We can allow the survey results to be good for two years. If caracara is found to be using the site. We would ask that before any work is being done on the site, the consultant/contractor do a cursory survey to check for nest or caracara that could have moved into the area.

Zakia

On Wed, Dec 11, 2019 at 6:32 PM Jason Houck <jhouck@inwoodinc.com> wrote:

> Zakia,
>
> Just one other question. Would you be willing to allow the survey results to be good for two years? This is the same approach we used on Babcock and will allow us to keep everything within the two-year study schedule.
>
> Thanks!
>
> Jason
>
> **Jason Houck, GISP, PWS**
>
> **ASSOCIATE PRINCIPAL - ECOLOGICAL SERVICES MANAGER**
>
> **FWC Authorized Gopher Tortoise Agent**
>
> ---
>
> ***INWOOD CONSULTING ENGINEERS***
>
> 3000 Dovera Dr, Suite 200, Oviedo, FL 32765

FWS Log No 2019-TA-1025

The Service concurs with your effect determination(s) for resources protected by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). This finding fulfills the requirements of the Act.

12/11/19

Jay B. Herrington
Field Supervisor

Date

Inwood consulting engineers

Roadway Design
PD&E Studies
Structures
Water Resources
Ecology
Utilities
Public Involvement

December 9, 2019

Ms. Zakia Williams
Project Consultation Biologist
U. S. Fish & Wildlife Service
North Florida Ecological Services Office
7915 Baymeadows Way, Suite 200
zakia_williams@fws.gov

Subject: Malabar Road Project Development and Environment (PD&E) Study
From St. Johns Heritage Parkway to Minton Road
ETDM: TBD
Financial Project Number: 437210-1-28-01
Brevard County, Florida

Dear Ms. Williams,

The Florida Department of Transportation (FDOT), District 5, is conducting a Project Development and Environment (PD&E) Study to evaluate alternatives to widen Malabar Road from St. Johns Heritage Parkway to Minton Road in Brevard County. The proposed project is approximately four (4) miles long and is located in Sections 1, 2, 3, 4, 5, 6, 31, 32, 33, 34, 35, 36, Township 28S, 29S, Range 36E. A project location map (**Figure 1**) is included as part of this correspondence.

The project is located within the U.S. Fish and Wildlife Service's (USFWS) Consultation Area (CA) for the Audubon's crested caracara (*Polyborus plancus audubonnii*). Inwood Consulting Engineers, Inc. (Inwood) is preparing to conduct a caracara survey in the project area. Based on preliminary field reviews of the project area, Inwood is proposing five (5) caracara observation blocks consisting of one observation station per block that provide up to 1,500 meters of direct line-of-sight from the project area. The observation blocks and corresponding observation stations are shown in **Figure 2**. These blocks and station locations have been selected and ground-truthed based on existing habitats within the project area that are suitable for caracara nesting and to avoid barriers to direct line-of-sight (e.g. tree stands, vegetated fence line, etc.) as best as possible. Suitable habitat for the caracara commonly occurs in wet prairies, as well as pastures with scattered cabbage palm (*Sabal palmetto*) and occasionally within live oak (*Quercus virginiana*). The majority of suitable habitat occurs toward the start of the project to about the middle and occurs both north and south of Malabar Road. Some areas of suitable habitat are currently in the beginning stages of development and have not been included in this study for that reason.

Inwood biologists will conduct the survey in accordance with current USFWS guidelines. The survey will be conducted by qualified biologists who have accrued more than 40 hours of caracara survey. The survey will begin the first week of January 2020 and continue bi-weekly through the end of April for a total of 8 survey events per observation block.

3000 Dovera Drive
Suite 200
Oviedo, FL 32765

P: 407-971-8850
F: 407-971-8955
www.inwoodinc.com

Biologists will arrive at the observation station approximately 15 minutes before sunrise for each survey event. The biologists will spend the entire survey event in the back of a pickup truck observing and recording activity with the assistance of binoculars and a Nikon PROSTAFF 5 scope with 16-48 power. Surveys will last a minimum of three (3) hours per event. Observations will be documented utilizing the appropriate data sheets provided by the USFWS. Onsite communication between observers will be conducted through the use of cell phones and two-way radios.

Please review the proposed caracara survey methodology, above, and the attached figures, and provide concurrence that these are acceptable to USFWS. We appreciate your cooperation.

Very truly yours,

Inwood Consulting Engineers, Inc.

Jason Houck, GISP, PWS
Associate Principal
Ecological Services Manager

cc: Frank Watanabe (Palm Bay), Lorena Cucek (FDOT), Jack Freeman (Kittelson), Jada Barhorst (Inwood)

Enclosures: Figure 1 and Figure 2

FDOT

District 5

Malabar Road

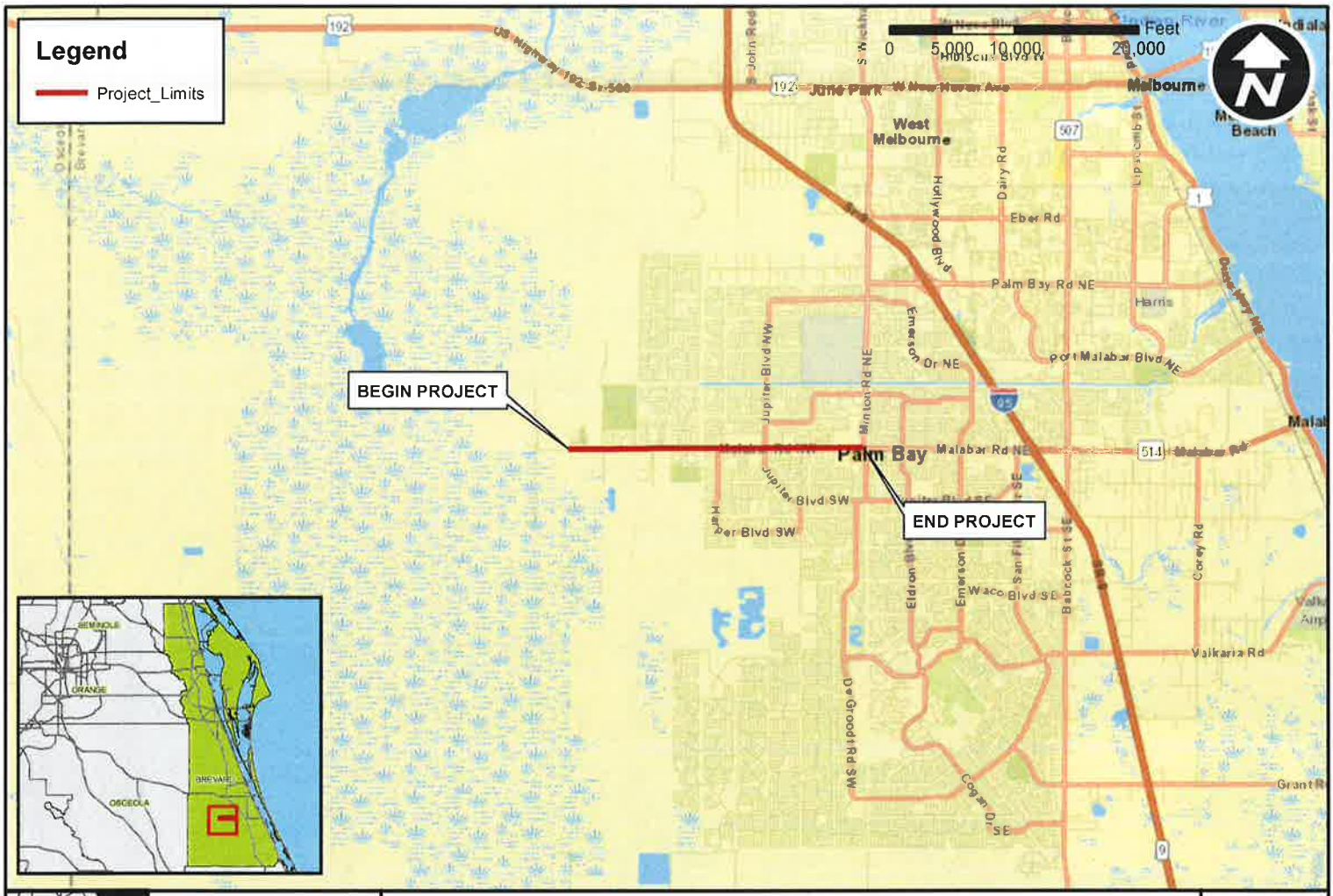
From St. Johns Heritage Parkway
to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

AUDUBON'S CARACARA OBSERVATION BLOCK MAP

FIGURE

2



Malabar Road

From St. Johns Heritage Parkway
to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

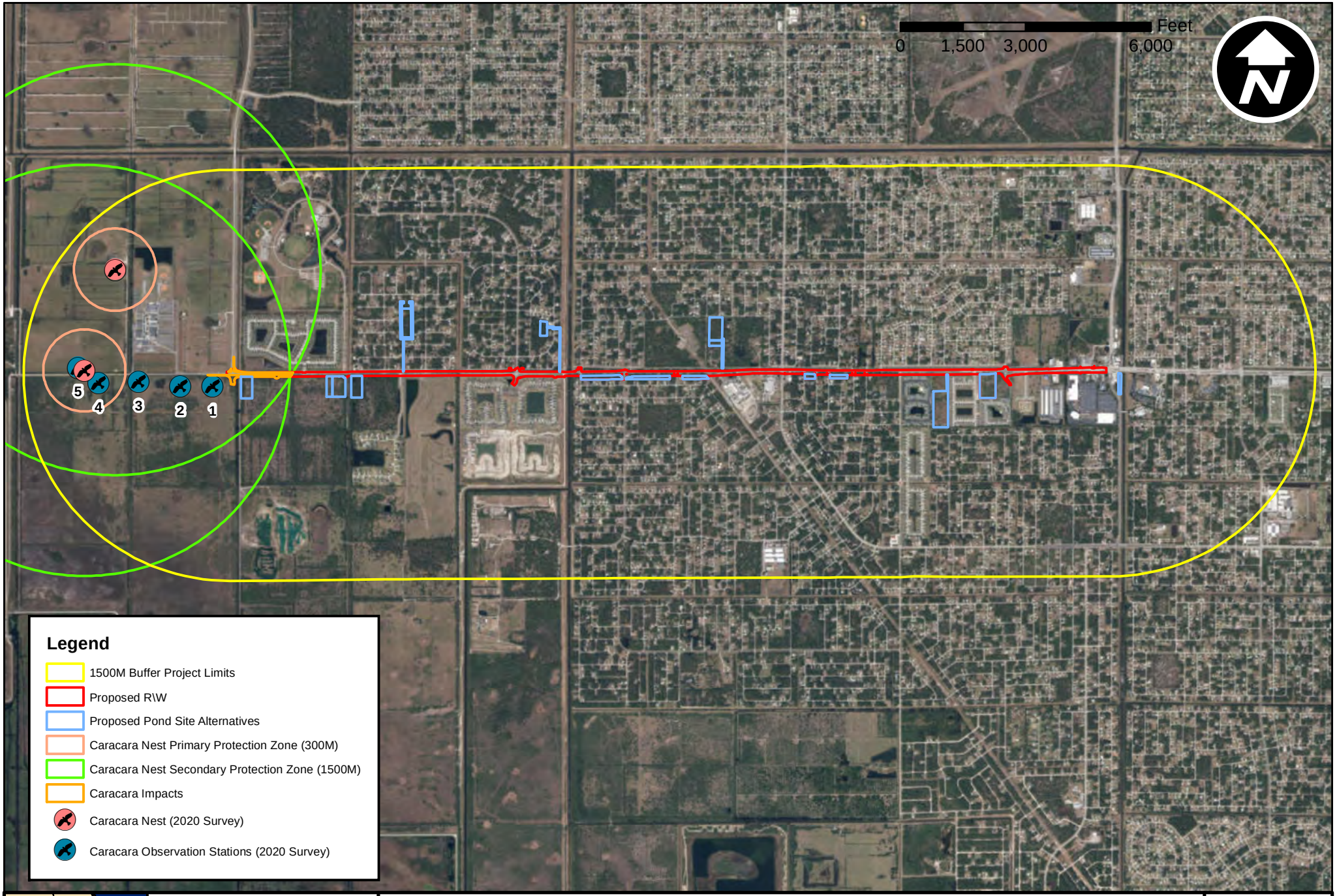
District 5

PROJECT LOCATION MAP

FIGURE
1

APPENDIX E

Audubon's Crested Caracara 2020 Survey Data



The City of Palm Bay Florida
A Perfect Place to Grow

Malabar Road PD&E Study

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

CARACARA SURVEY NEST LOCATION AND IMPACT MAP

FIGURE
1

Photo 1: Representative habitat of Observation Station 1

Photo 2:Representative habitat of Observation Station 2

Photo 3:Representative habitat of Observation Station 3

Photo 4: Representative habitat of Observation Station 4

Photo 5: Representative habitat of Observation Station 5

Photo 6: Caracara perched on nest tree located in northern portion of pasture near Observation Station 5

Photo 7: Pair of caracaras observed near nest tree located in northern portion of pasture near Observation Station 5

Photo 8: Caracara inside nest tree located in northern portion of pasture new Observation Station 5

Photo 9: Pair of caracaras perched on and next to nest tree located in southern portion of pasture at Observation Station 5

Photo 10: Pair of caracaras perched in nest tree located in southern portion of pasture at Observation Station 5

Photo 11: Caracara perched in pine tree located in southeastern portion of pasture near Observation Station 5

Photo 12: Caracara bathing in puddle located in southeastern portion of pasture near Observation Station 5

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Melaleuca Rd PGE Study
Location/Observation Block/Lat-Long: Station 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/16/2020	7:01 AM	10:02 AM	J. Barkoist L. Rittenberg

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:01 AM	62°F	Calm	5%	Stratus	light fog
Finish: 10:02 AM	72°F	W 5-10 MPH	0%	—	none

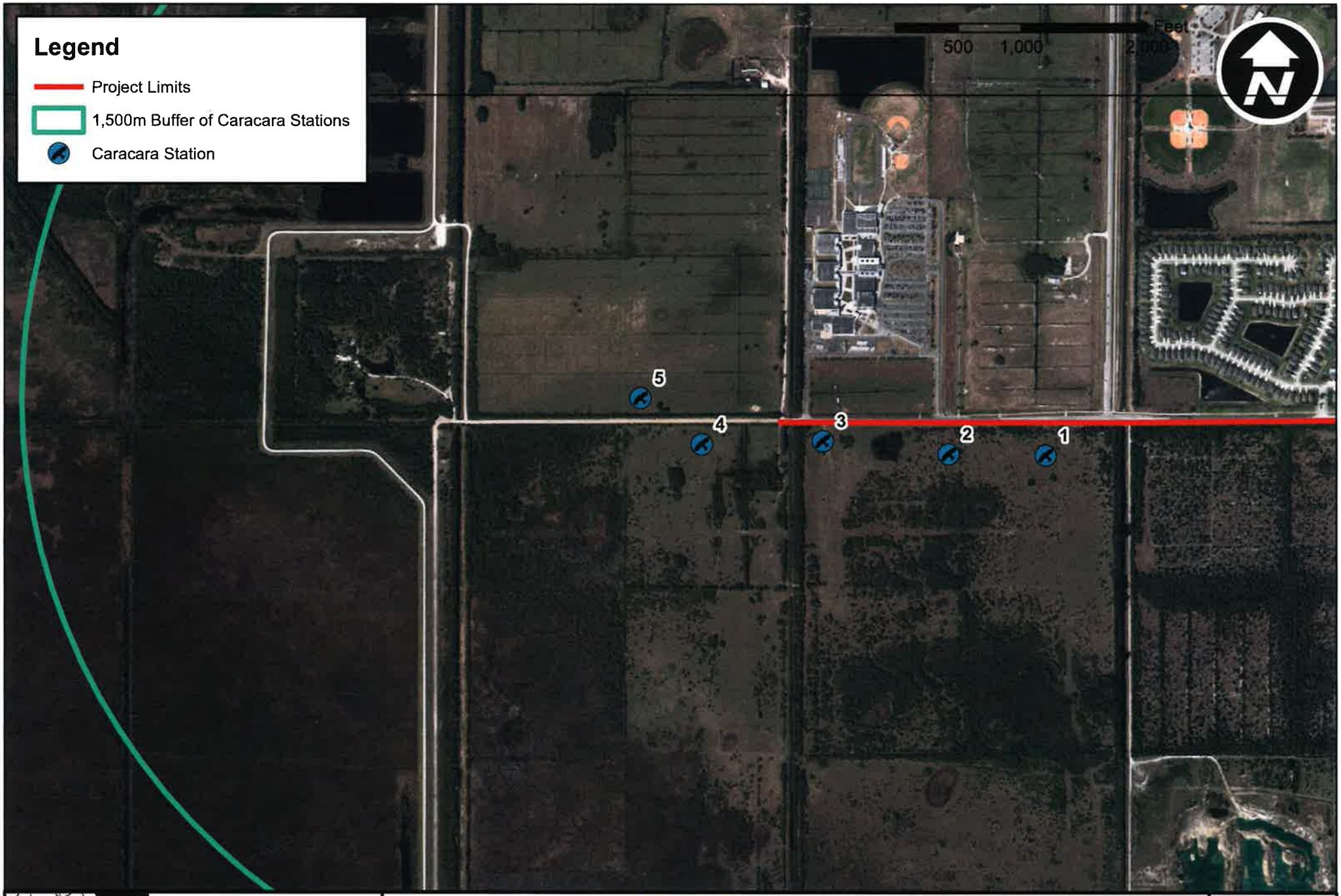
Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Active cattle pasture with scattered cabbage palm, S of Melaleuca Rd. - lots of road noise / heavy 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
—	NO		CARACARA —

red shoulder hawk, red bellied w.p, sandhill crane, Cardinal, catbird/mourning dove, palm warbler, common grackle, blue jay, black vulture, kestral, tree swallow, gray kingbird, Northern Mockingbird, white pelicans, Turkey Vulture, white ibis, Northern harrier



FDOT

District 5

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

L. Rittaburg
J. Barhorst

NO CARACARA

CARACARA SURVEY STATION LOCATION MAP

DATE 1 / 16 / 2020

STATION

1

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Miller Rd

Location/Observation Block/Lat-Long: Block 2

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/16/2020	0701	1001	J. Hawk R. Scherer

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0701	62°F	0	10%		no
Finish: 1001	73°F	3-5 mph W→E	5%		no

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
RS Hawk, BT grackle, mockingbird, sandhill crane, mourning dove, N. harriers, Savannah sparrow, white ibis, wild turkeys, black 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 caracara observed

FDOT

District 5

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

No caracara observed

CARACARA SURVEY STATION LOCATION MAP

DATE 1 / 16 / 2020

STATION

2

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malibar ~~PD/E~~ PD + E
Location/Observation Block/Lat-Long: Station 3

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/14/2020	7:05AM	10:06 AM	Taylor Mueller; Leah Rittenburg

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:05 AM	66°F	E 2MPH	15%	Cumulous	Light fog
Finish: 10:06 AM	76°F	SE 10MPH	80%	Cumulous-Nimbus Cumulus	None

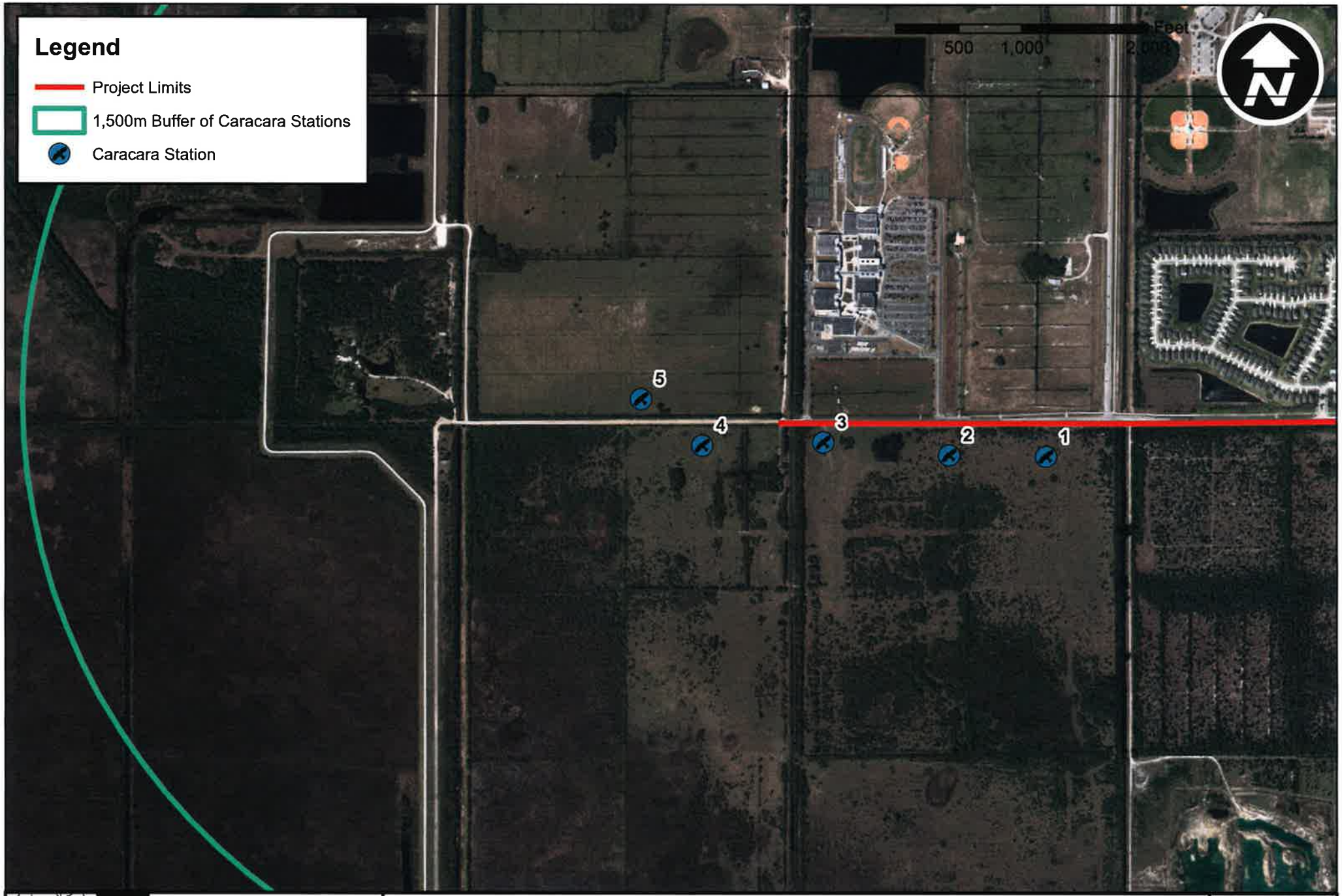
Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
cabbage palms, open ~~agricult~~ field/pasture, bahia grass, Brazilian pepper, Australian pine next to road with school bus traffic only construction noises heard

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	CARACARA	OBSERVED
	|	|	\ /
	|	|	\ /
	|	|	\ /

Northern mockingbird, killdeer, black vulture, turkey vulture
Redshouldered hawks, cows, cattle egret, sand hill crane, common-grackle, white-tailed deer, mourning dove, glossy ibis, boat-tailed grackle
blue-jay, cardinal, palm warbler, Eastern pheobe, red-bellied woodpecker



FDOT

District 5

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

T. Mueller
L. Rittenburg

CARACARA SURVEY STATION LOCATION MAP

DATE 1 / 14 / 2020

NC CARACARA

STATION

3

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd PD & E Study
Location/Observation Block/Lat-Long: Station 4

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1.14.2020	7:04 AM	10:05 AM	J. Barhorst (323) R. Scherer

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:04 AM	66° F	~~NW~~ Calm	20%	stratus, alto cumulus	light lifting fog
Finish: 10:05 AM	76° F	10 mph SE	60%	Stratocumulus	N/A

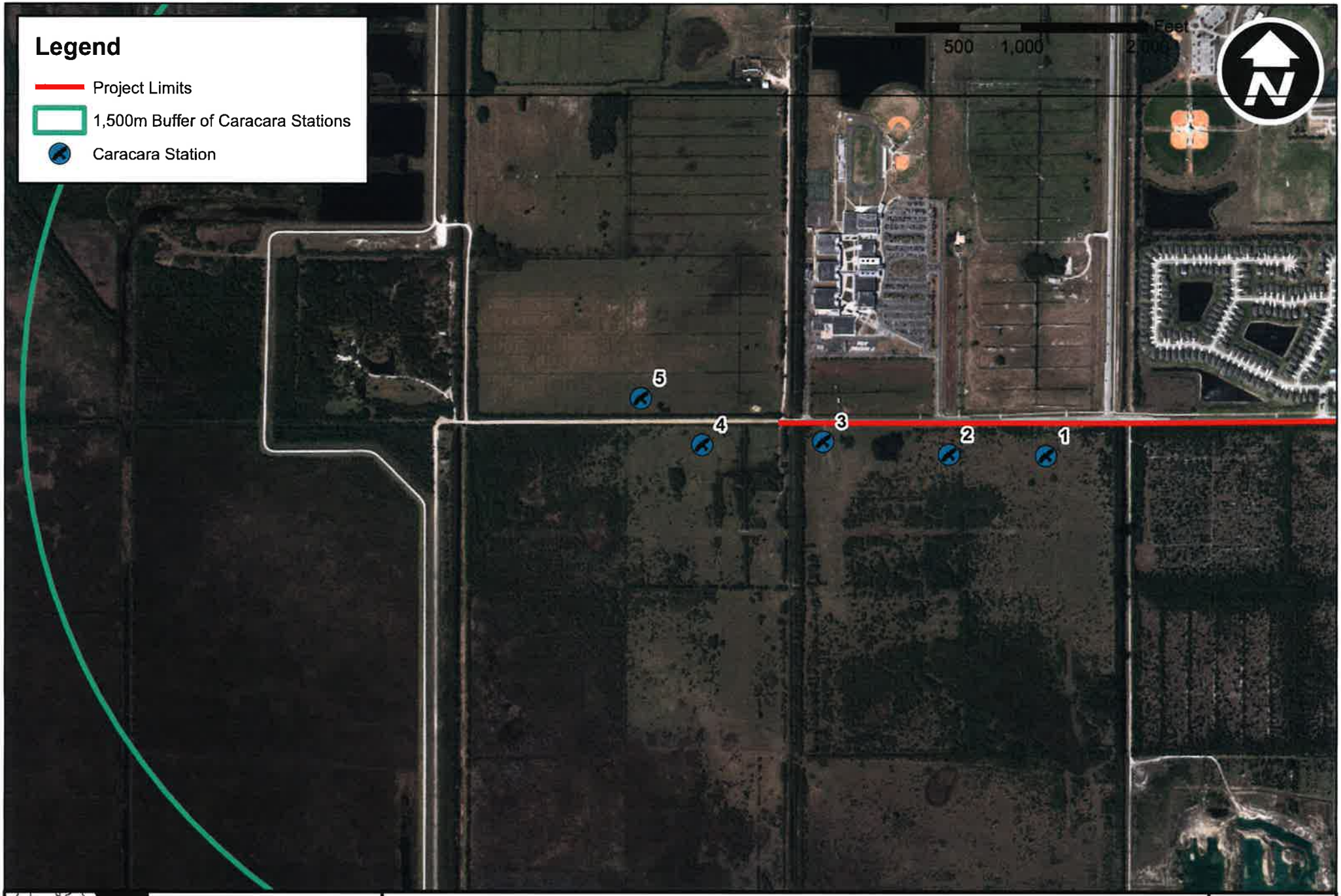
Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Cattle pasture w/ clumps of cabbage palm, S. of Malabar Rd light traffic, small planes flying over every so often. Can hear airboats on the St. Johns River.

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 Caracara observed

Mourning dove, black vulture, great egret, great blue heron, cattle egret, Cardinal, catbird, boat tailed grackle, red bellied w.p, cormorant, turkey, Sandhill crane, mockingbird, Eastern Phoebe, red shouldered hawk, coyote, turkey vulture



FDOT

District 5

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

J. Barbers
R. Scherer

NO Caracara Observed

CARACARA SURVEY STATION LOCATION MAP

DATE 1/14/2020

STATION 4

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar PD&E Study
Location/Observation Block/Lat-Long: STATION 5

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1.14.2020	7:00 Am	10:05 Am	J. Barkurst

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:00 Am	69°F	calm	30%	Stratocumulus Altocumulus	low fog - lifting
Finish: 10:05 Am	79°F	8 mph SSW	5%	a/w stratus	N/A

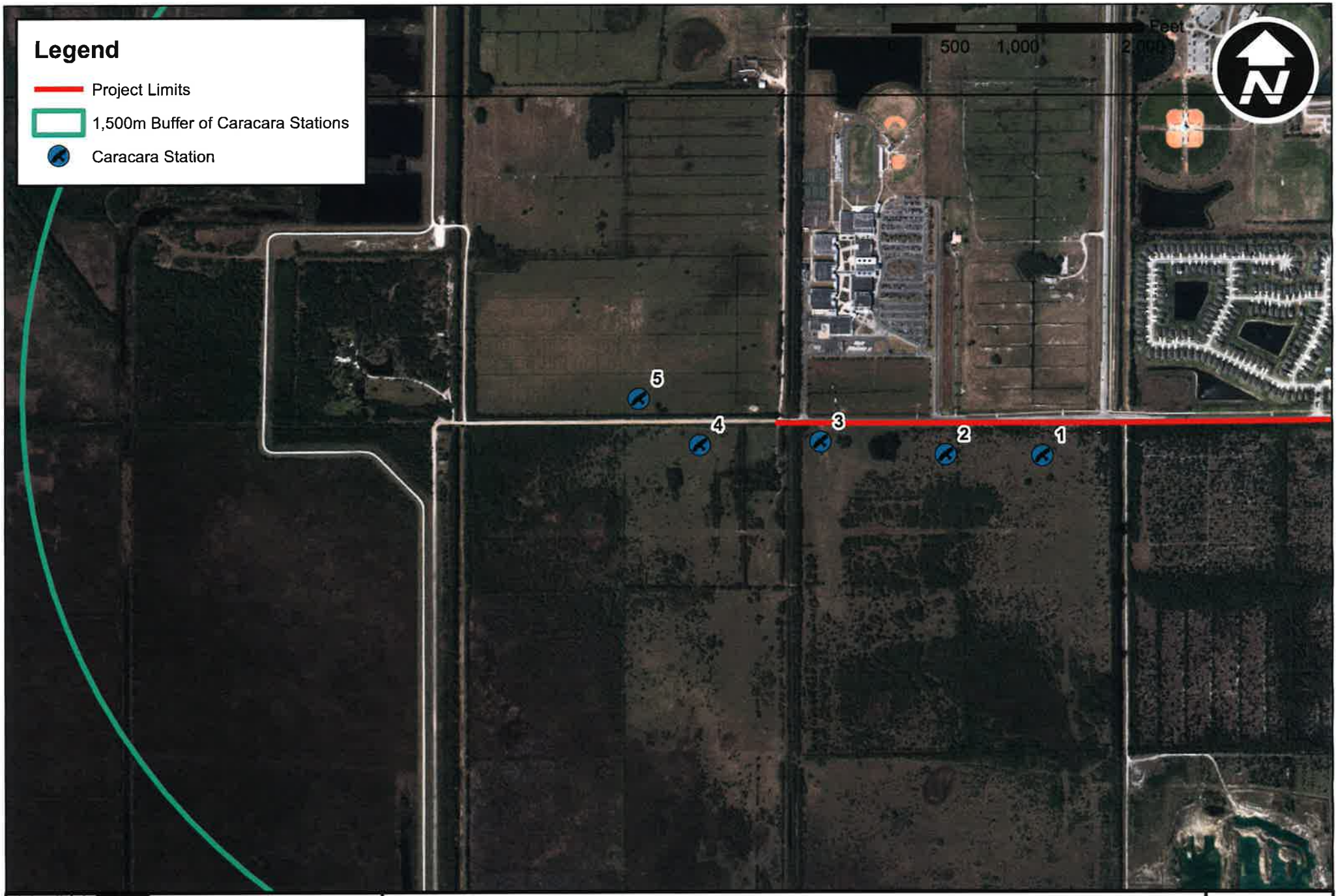
Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
open pasture w/ scattered cabbage palm, ~~[illegible]~~ west of high school w/ heavy bus traffic/traffic in A.M.

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 Caracara observed

Wood stork, black vulture, red shouldered hawk, eastern meadowlark
Mourning dove, great egret, glossy ibis, cormorant, cattle egret
Anhinga, Coyote, red bellied w.p., turkey Vulture, catbird
Gray kingbird, tree swallow



FDOT

District 5

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

J. Barkis
No Caracara Observed

CARACARA SURVEY STATION LOCATION MAP

DATE 1/15/2020

STATION

5

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd

Location/Observation Block/Lat-Long: Station 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/30/2020	7:17 AM	10:17 AM	L. Ritterburg, T. Mueller, A. Burke

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:17AM	57°F	N 9 MPH	100%	cumulus	mild fog
Finish: 10:17AM	63°F	NNW 13MPH	95%	cumulus	NONE

Observation Point Information

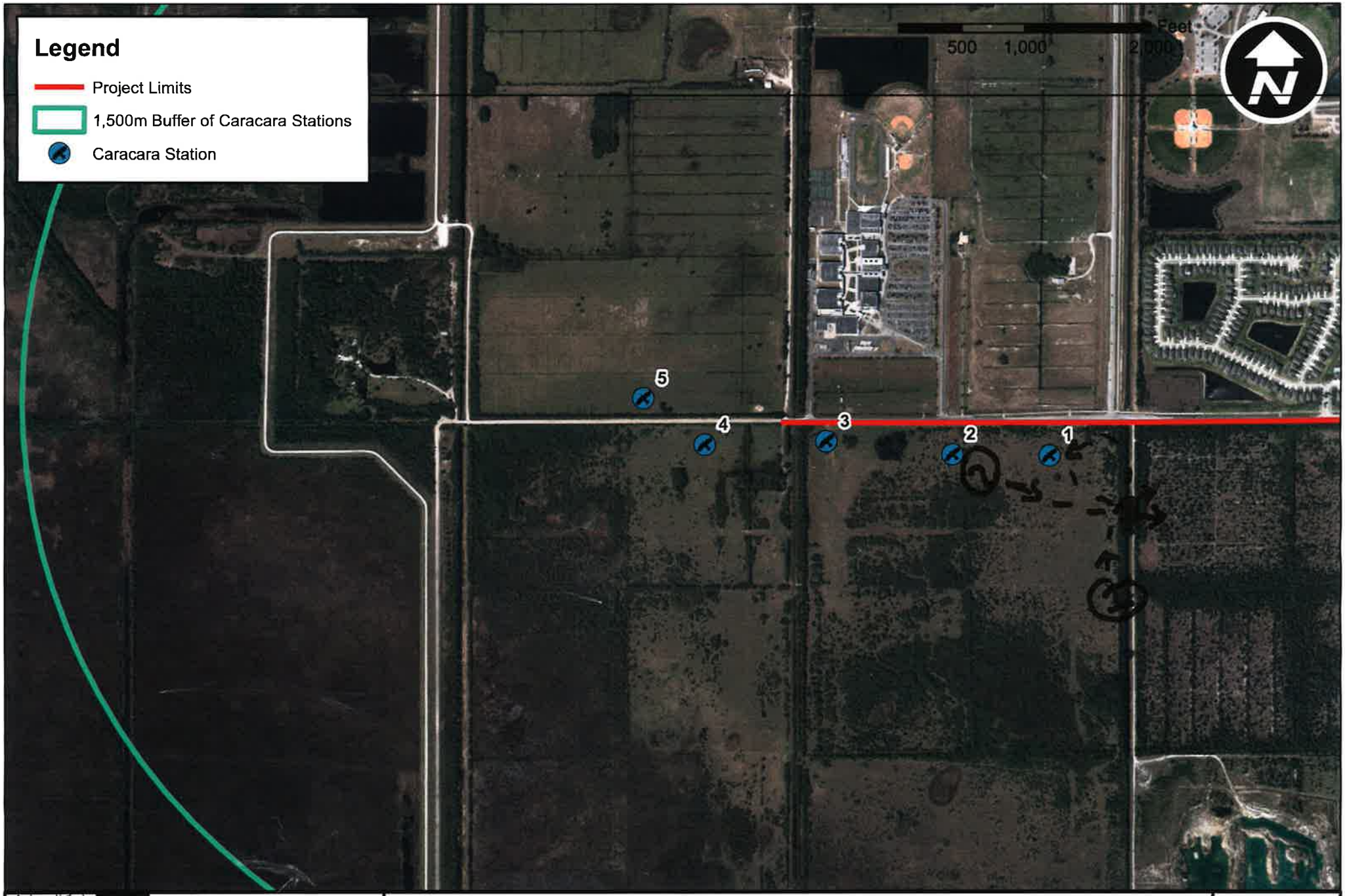
General Site and Habitat Conditions; Other Activities in the Area
pasture with cabbage palms, saw palmetto, bahia grass, Andropogon spp. heavy traffic noise along Malabar Rd

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 1	A	8:52 AM	①Flew S→N along tree line circled pasture and landed on pine in tree line East of pasture. 9:19 AM flew into pasture E of treeline
Station 1	A	8:53 AM	Flew from west to east and landed on pine in tree line East of pasture w/ first caracara. 9:17AM flew into pasture E of treeline
		~~9:17~~ A	

Red-shouldered hawk, sandhill crane, cattle egret, common grackle, American robin, purple martin, double-crested cormorant, black vulture, ~~bald eagle~~, turkey vulture, bald eagle



FDOT

District 5

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

T. Mueller
L. Rittenburg
A. Burke

CARACARA SURVEY STATION LOCATION MAP

DATE 1/30/2020

STATION 1

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Road
Location/Observation Block/Lat-Long: Station 2

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/30/2020	7:08	10:08	Ben Shepherd Riley Scharer

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 708	57	8 mph NNW	100	cumul.	Ø
Finish: 10:08	63	13 mph NNW	100	cumuli	Ø

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
Station 2	A	8:50	flew N to SSE, seemed to fly toward cabbage palm but lost line of sight

wildlife obs. vultures, cattle, deer, red shouldered hawk, purple martin, crow, tree swallow, sandhill crane, cattle egret, gull sp, great blue heron

District 5

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

CARACARA SURVEY STATION LOCATION MAP

DATE 1/30/2020

STATION 2

8

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd

Location/Observation Block/Lat-Long: Station 3

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/28/2020	7:00am	10:00am	T. Mueller R. Scherer

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:00am	55°F	NNW 6 mph	80%	cumulus	N/A
Finish: 10:00am	61°F	N 13 mph	0%	N/A	N/A

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
active cattle pasture, adjacent to Malabar Rd

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	7:16	flying East to West along power line, lost sight past treeline

wild pigs, white-tailed deer, black vulture, red shouldered hawk, mockingbird, blue jay, grackle, cattle egret, purple martin, tree swallow, gulls, turkey vulture, killdeer, American crow, robin

FDOT

District 5

Malabar Road

From St. Johns Heritage Parkway
to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

R. Schera
T. Mueller

CARACARA SURVEY STATION LOCATION MAP

DATE 1/28/20

STATION

3

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd. PD&E

Location/Observation Block/Lat-Long: Station 4

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1-28-2020	7:00 AM	10:00 AM	J. Barkhorst, L. Rittenbaugh

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:00AM	55°F	ENE 5-10mph	80%	Alto Cumulus	N/A
Finish: 10:00AM	62°F	NE 10-15 MPH	0%		N/A

Observation Point Information

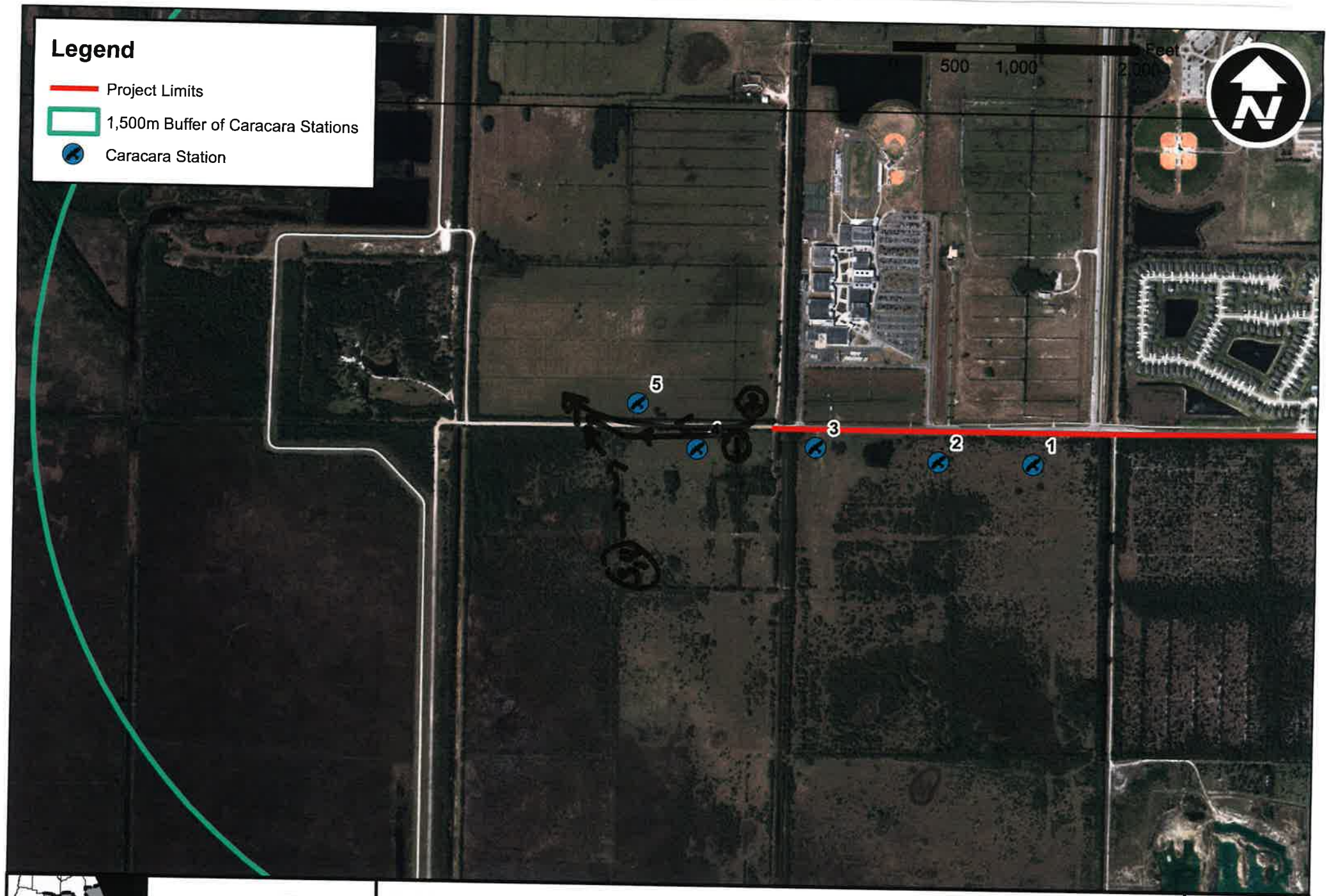
General Site and Habitat Conditions; Other Activities in the Area
Open pasture w/ scattered cabbage palm. S of Malabar Rd light traffic going to 3 Forks, cem near buses & other noise associated w/ high school + St. Johns Heritage Pkwy.

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
1	Station 4	A	7:15	chasing hawk; E→W; in flock of vultures slightly E of station flew W along roadway edge of field flew out of sight
2	4	A	7:15	E→W along road; flew W to NW out of sight
3/4	4	2A	7:37	1 Adult flying N above treeline at W edge of pasture, 2nd Adult flew same route slightly behind both flew N over Malabar and down out of sight

Black Vulture, cattle egret, caracara, red-shouldered hawk, American crow, mourning dove, common grackle, Eastern meadowlark, sandhill crane, great egret, Kestrel, robin, turkey vulture, white ibis, tree swallow, Phoebe, turkey, yellow-rumped warbler, anhinga, marsh hawk



FDOT

District 5

Malabar Road

From St. Johns Heritage Parkway
to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

L. Rittenburg
J. Barhorst

CARACARA SURVEY STATION LOCATION MAP

DATE 1/28/2020

STATION

4

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd. PD&E
Location/Observation Block/Lat-Long: Block 5

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
1/29/2020	0700	1000	J. Hovick

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0700	48°F	0-3 NE	40%		no
Finish: 1000	64°F	3-5 NE	40%		no

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Blk vulture, turkey vulture, wild hog, mourning dove, catbird, coyote, cattle egret, kestrel, marsh hawk, bald eagle, grackle, white ibis, turkey, sand hill crane, robin, E meadowlark, great blue heron, loggerhead shrike, 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
5	Im	0720-0737	Flight from N, foraging in ditch, flew away towards the East after approx. 15 mins
5	Im	0819-0947	Flight E→W landing on sand pile and foraging, 0924 flew to ditch from berm. 0947 flight W→E from ditch

FDOT

District 5

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

CARACARA SURVEY STATION LOCATION MAP

DATE 1 / 29 / 2020

STATION 5

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd PD&E

Location/Observation Block/Lat-Long: Station 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2-13-2020	6:48 AM	9:50 AM	J. Barkovich, Leah Wittenberg

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:48 AM	73°F	0-3 mph S	100%	Stratus	somewhat heavy fog limiting visibility to ~3/4 km.
Finish: 9:50 AM	77°F	15-20 MPH S	5%	Strato-cumulus	NONE

Observation Point Information

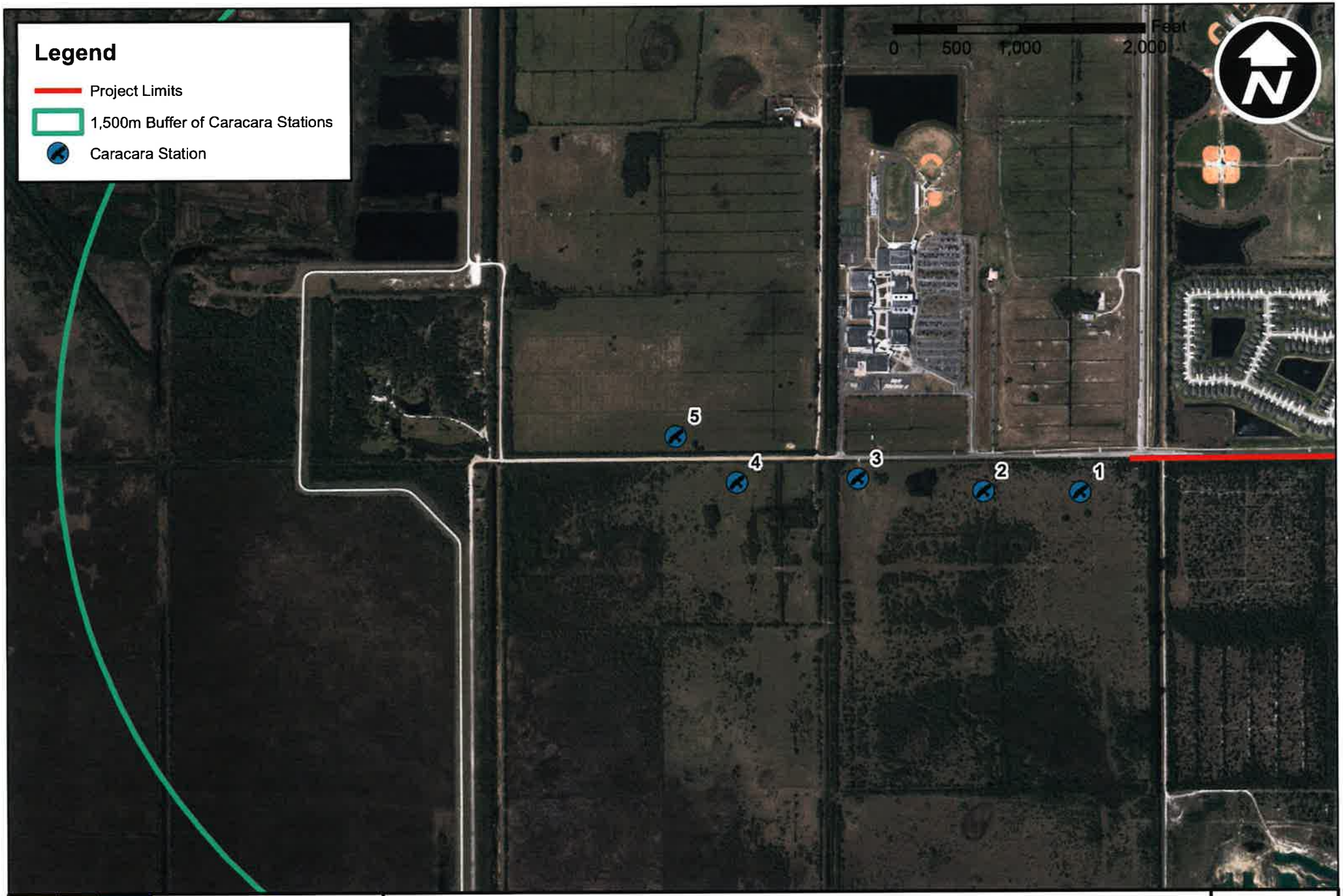
General Site and Habitat Conditions; Other Activities in the Area

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		CARACARA

Robin, Barred Owls, sandhill crane, red-shouldered hawk, Pileated woodpecker, cardinal, Woodstork, mourning dove, red-bellied woodpecker, great-blue heron, common grackle, hogs, catbird, eastern phoebe, black vulture, white ibis, osprey, kestrel, palm warbler, turkey vulture, tree swallow



Malabar Road

From St. Johns Heritage Parkway
to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

J. Barhorst
D. L. Rittenberg
No CARACARA

CARACARA SURVEY STATION LOCATION MAP

DATE 2 / 13 / 2020

STATION 1

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd
Location/Observation Block/Lat-Long: Station 2

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/13/20	6:50	9:50	Taylor Mueller, Riley Scherer

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:50	70°F	8mph S	0%		light fog
Finish: 9:50	77°F	15mph S	5%	cumulus	N/A

Observation Point Information

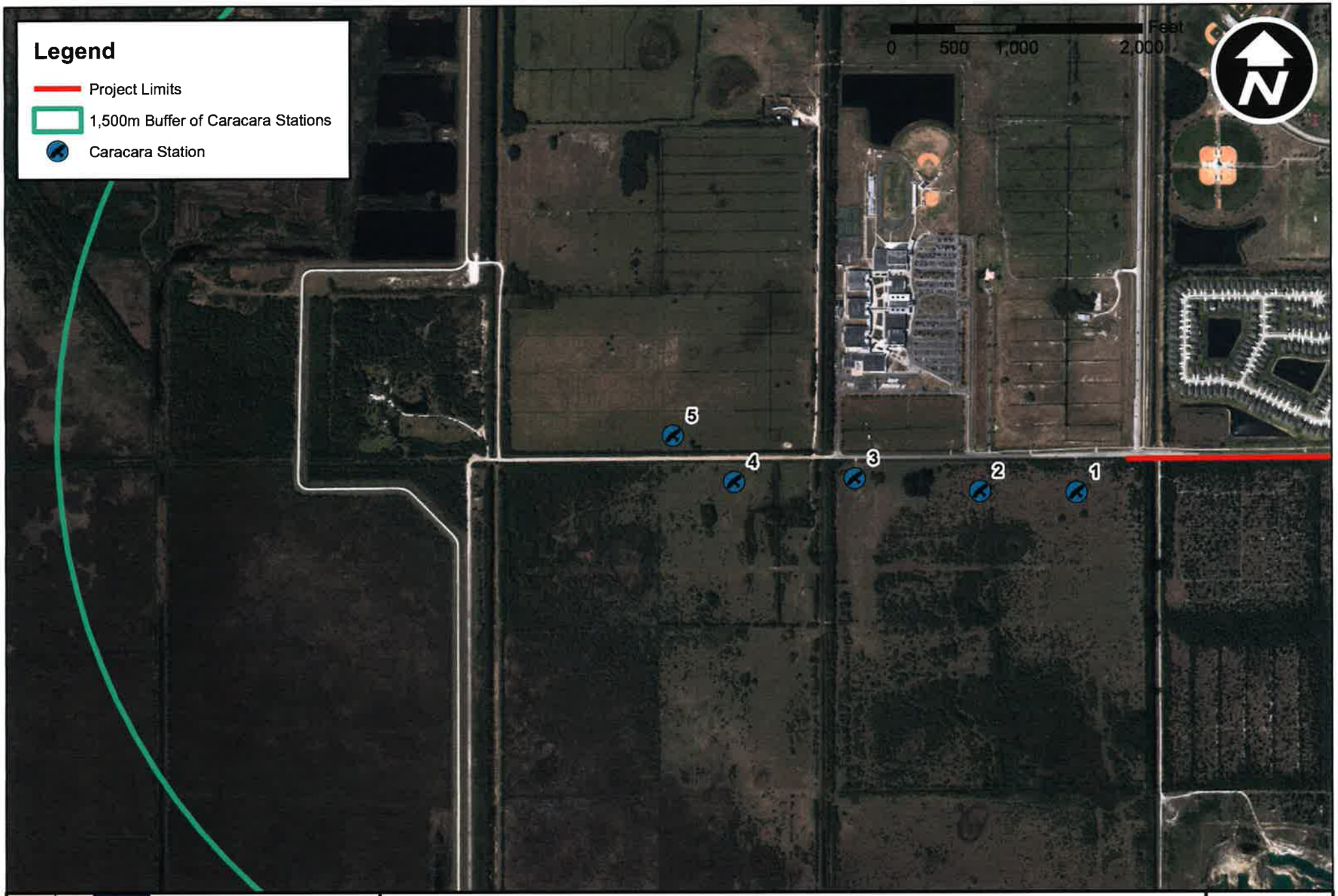
General Site and Habitat Conditions; Other Activities in the Area
active cattle pasture, S of Malabar Rd

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 caracara observed

Wildlife observed: robin, cat bird, barred owl, cattle egret, sandhill crane, wild pigs, red shouldered hawk, boat tailed grackle, purple martins, gull, black vulture, cormorant, cardinal, osprey, turkey vulture



Palm Bay

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

No Caracara observed

CARACARA SURVEY STATION LOCATION MAP

DATE 2 / 13 / 2020

STATION 2

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd

Location/Observation Block/Lat-Long: Station 3 ~~F. Mueller L. Rittenburg~~

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/11/2020	6:48 AM	9:48 AM	T. Mueller L. Rittenburg

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:48 AM	66°F	0-2 MPH S	5%	stratus	mild fog
Finish: 9:48am	76°F	10-15 MPH SSE	20%	stratus cumulus	none

Observation Point Information

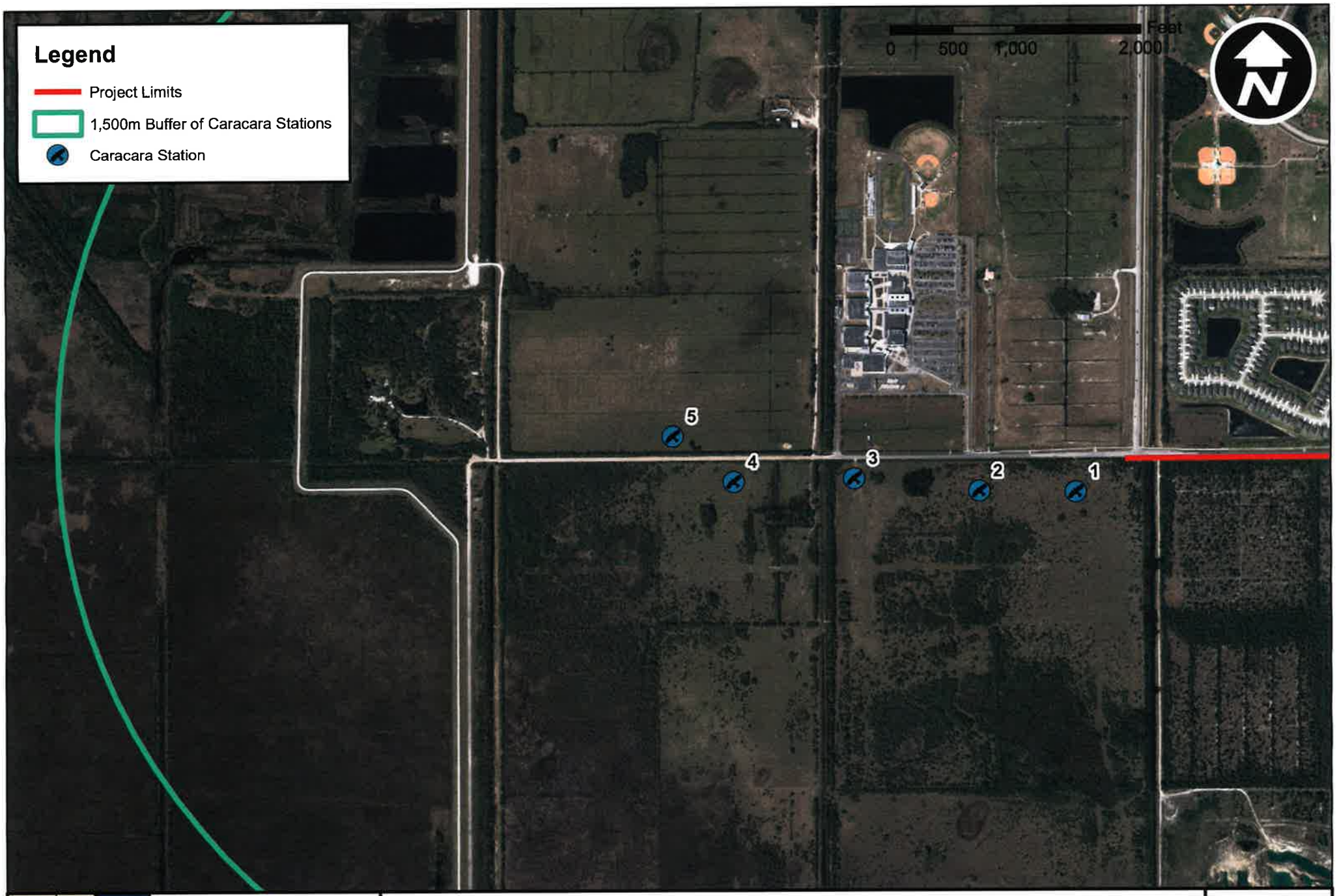
General Site and Habitat Conditions; Other Activities in the Area

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	CARACARA

shouldered hawk, common grackle, blue jay, cardinal, cattle egr
ng dove, Grey Catbird, American robin, boat-tailed grackle, Northern mockingbi
ay, Eastern phoebe, Sandhill crane, Pileated woodpecker, black vulture
ed gull, osprey, red-bellied woodpecker, yellow-rumped warbler,
ey vulture



Palm Bay

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

NO CARACARA

T. Mueller C. Rittenburg

CARACARA SURVEY STATION LOCATION MAP

DATE 2 / 11 / 2020

STATION 3

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Milbur Rd. PD+E

Location/Observation Block/Lat-Long: Block 4

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/11/2020	0655	0955	J. Houck + R. Scherer

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 0655	66°F	0-3 S→N	20%		no
Finish: 0955	76°F	10-12 mph SSE	20%		no

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
cattle egret, robin, mourning dove, cardinal, cattbird, black vultures, mocking bird, turkey vulture, otter, osprey,

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

Palm Bay

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

CARACARA SURVEY STATION LOCATION MAP

V. Houck
R. Scharar
NO caracara observed

DATE 2/11/2020

STATION 4

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd.

Location/Observation Block/Lat-Long: Block 5

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/12/20	6:50a	9:54a	T. Mueller

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:50a	67°	SW 2 mph	100%	Cirrocumulus	light fog
Finish: 9:54a	76°	SSE 5 mph	60%	cumulus / cirrus cumulonimbus	none

Observation Point Information

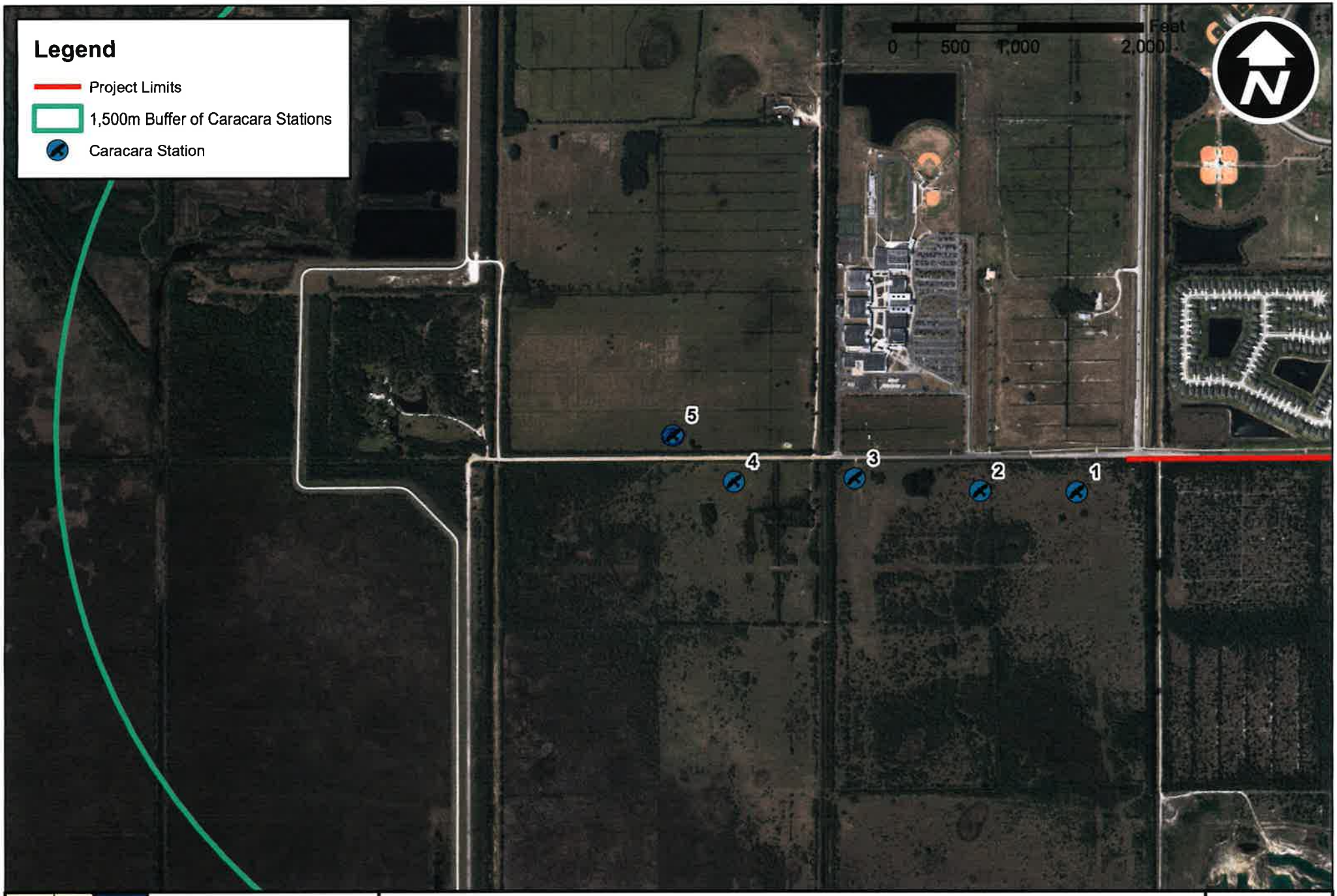
General Site and Habitat Conditions; Other Activities in the Area

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 caracara observed

Wildlife observed: Robins, red shouldered hawk; Sandhill crane; catbird; mourning dove; boat tailed grackle; meadowlark; white egret; coyote; cattle egret; cormorant; white ibis; osprey; black vulture; little blue; glossy ibis; American Crow; cardinal; turkey vulture;



Malabar Road

From St. Johns Heritage Parkway
to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

CARACARA SURVEY STATION LOCATION MAP

T. Mueller
No caracara observed

DATE 2/12/2020

STATION 5

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar PD&E
Location/Observation Block/Lat-Long: station 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2.27.2020	6:34AM	9:38AM	J. Barkhurst

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:34AM	53°F	10-15 mph NW	90%	Stratus Stratocumulus	NO
Finish: 9:38AM	54°F	10-15 mph NW	20%	Stratocumulus Cirrus	NO

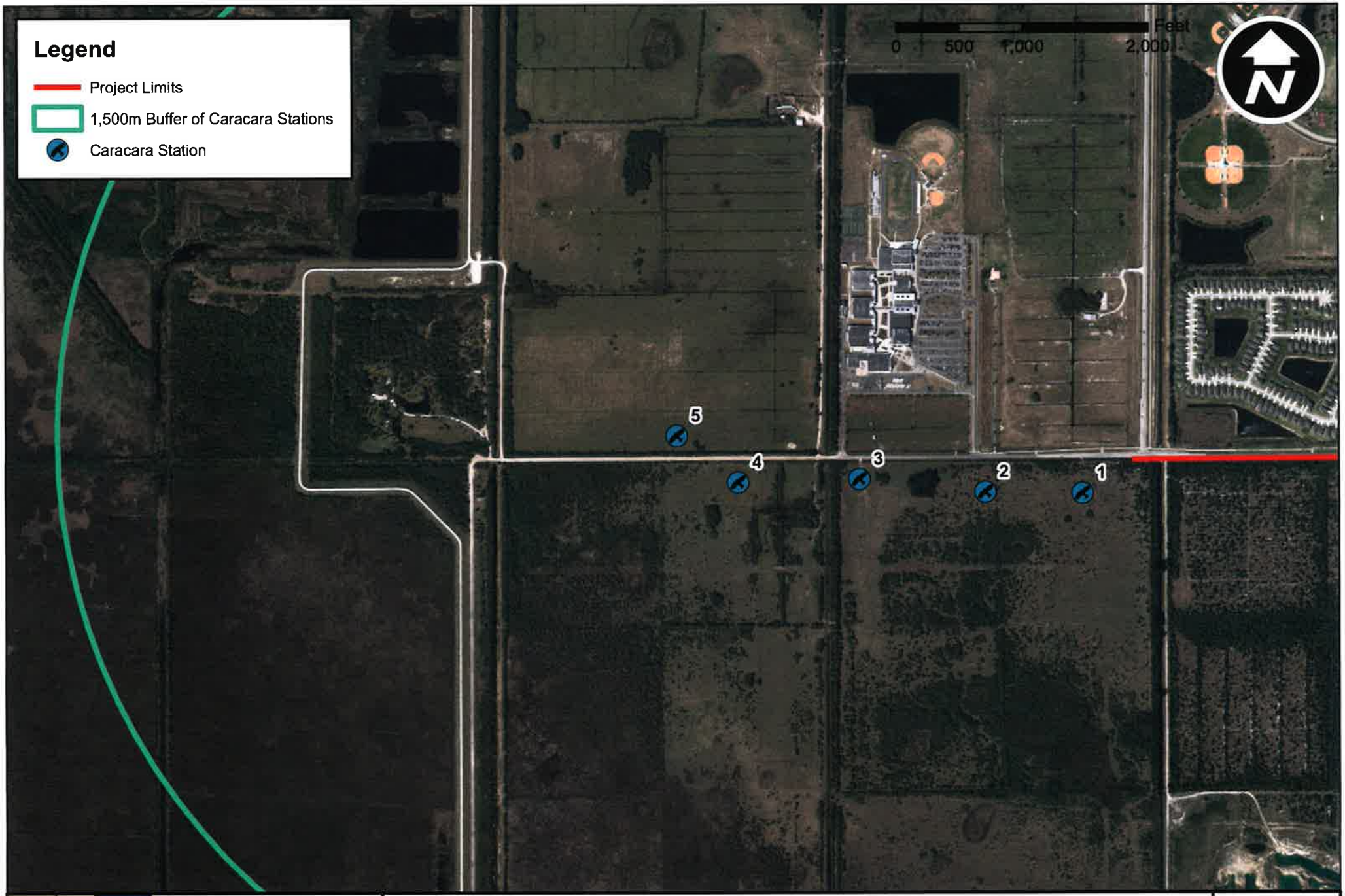
Observation Point Information

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 Caracara observed

Black Vulture, swallow tailed kite, turkey vulture, tree swallow, woodstork, great egret, red-shouldered hawk



Malabar Road

From St. Johns Heritage Parkway
to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

J. Barkevist
No Cara Cara observed

CARACARA SURVEY STATION LOCATION MAP

DATE 2 / 27 / 2020

STATION 1

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd
Location/Observation Block/Lat-Long: Station 2

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/27/2020	6:39 AM	9:39 AM	T. Mueller, R. Scherer

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:39 AM	53°F	NW 14 mph	75%	Cumulus	none
Finish: 9:39 AM	54°F	NNW 15 mph	10%	cumulus	none

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 caracara observed

wildlife observed: white tailed deer, black vulture, tree swallow, red shouldered hawk, mourning dove, cormorant, sandhill crane, cattle egret, white ibis, turkey vulture, great blue heron, cardinal, woodstork, 8 meadowlark, yellow rumped warbler

Palm Bay

Malabar Road no caracara observed

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL T. Mueller
A. Scherer

FPID: 437210-1-28-01

CARACARA SURVEY STATION LOCATION MAP

DATE 2 / 27 / 2020

STATION 2

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd

Location/Observation Block/Lat-Long: Station 3

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2/25/20	6:36a	9:36a	T. Mueller; L. Rittenburg

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:36a	61°	S 5 mph	5%	cirrus	none
Finish: 9:36a	74°	S 13 mph	15%	cirrus	none

Observation Point Information

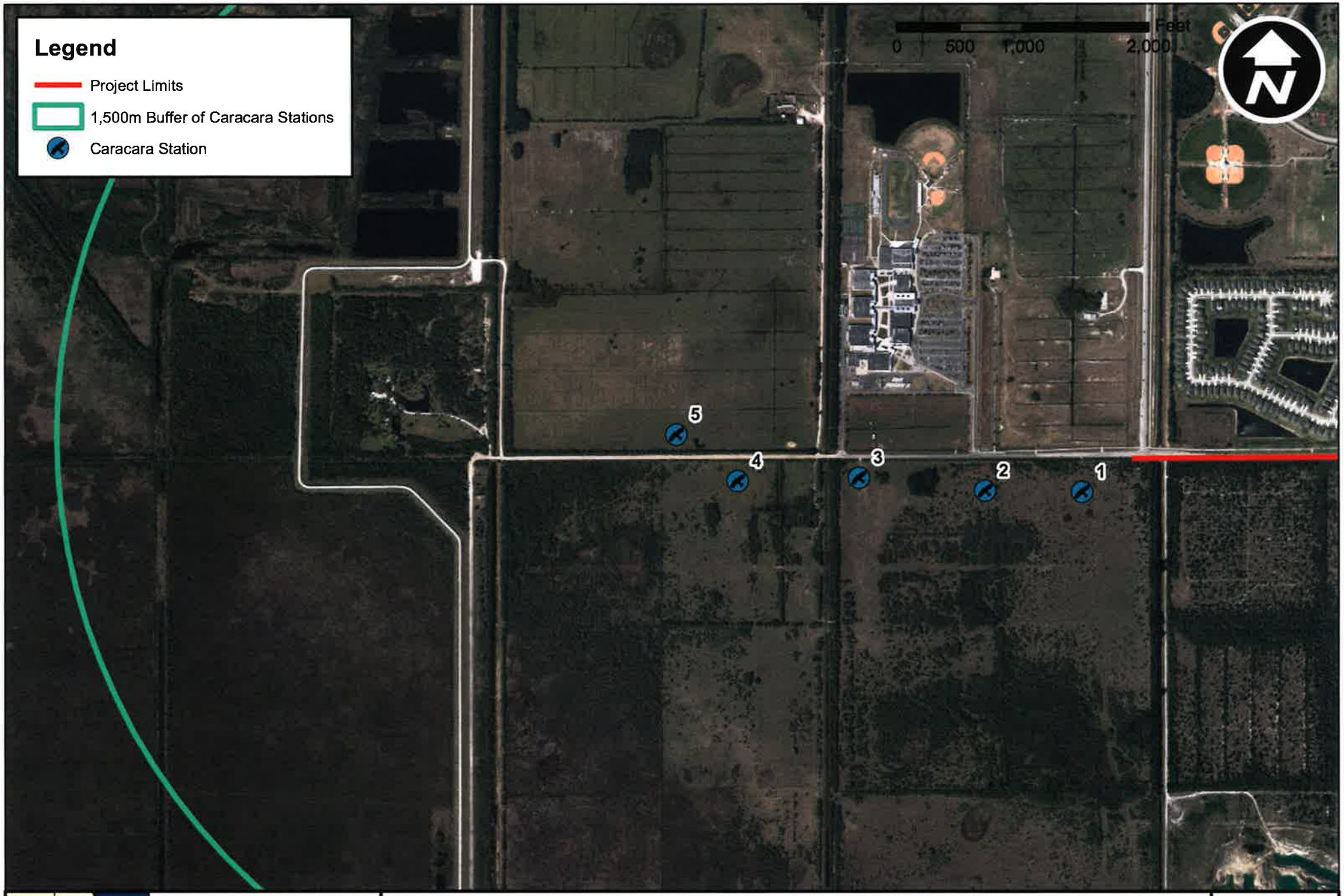
General Site and Habitat Conditions; Other Activities in the Area

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	CARACARA
		|	]]

Wildlife observed: catbird; cardinal; red-shouldered hawks, sandhill crane mourning dove, gray squirrel; white ibis; Black vulture; robin; cardinal; mockingbird; boat-tailed grackle, yellow-rumped warbler, Eastern phoebe, bluejay, osprey, turkey, rock pigeon, American crow; fish crow, red-bellied woodpecker cattle egret, palm warbler, turkey vulture



Malabar Road

From St. Johns Heritage Parkway
to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

NO CARACARA

T. Mueller
L. Rittenburg

CARACARA SURVEY STATION LOCATION MAP

DATE 2/25/2020

STATION 3

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd PD&E
Location/Observation Block/Lat-Long: Station 4

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
2.25.2020	6:35 AM	9:35 AM	J. Barbosa, R. Scheyer

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:35 AM	62°F	S 0-5 mph	25%	cirrus	very light fog
Finish: 9:35 AM	74°F	S 10-15 mph	20%	cirrus	none

Observation Point Information

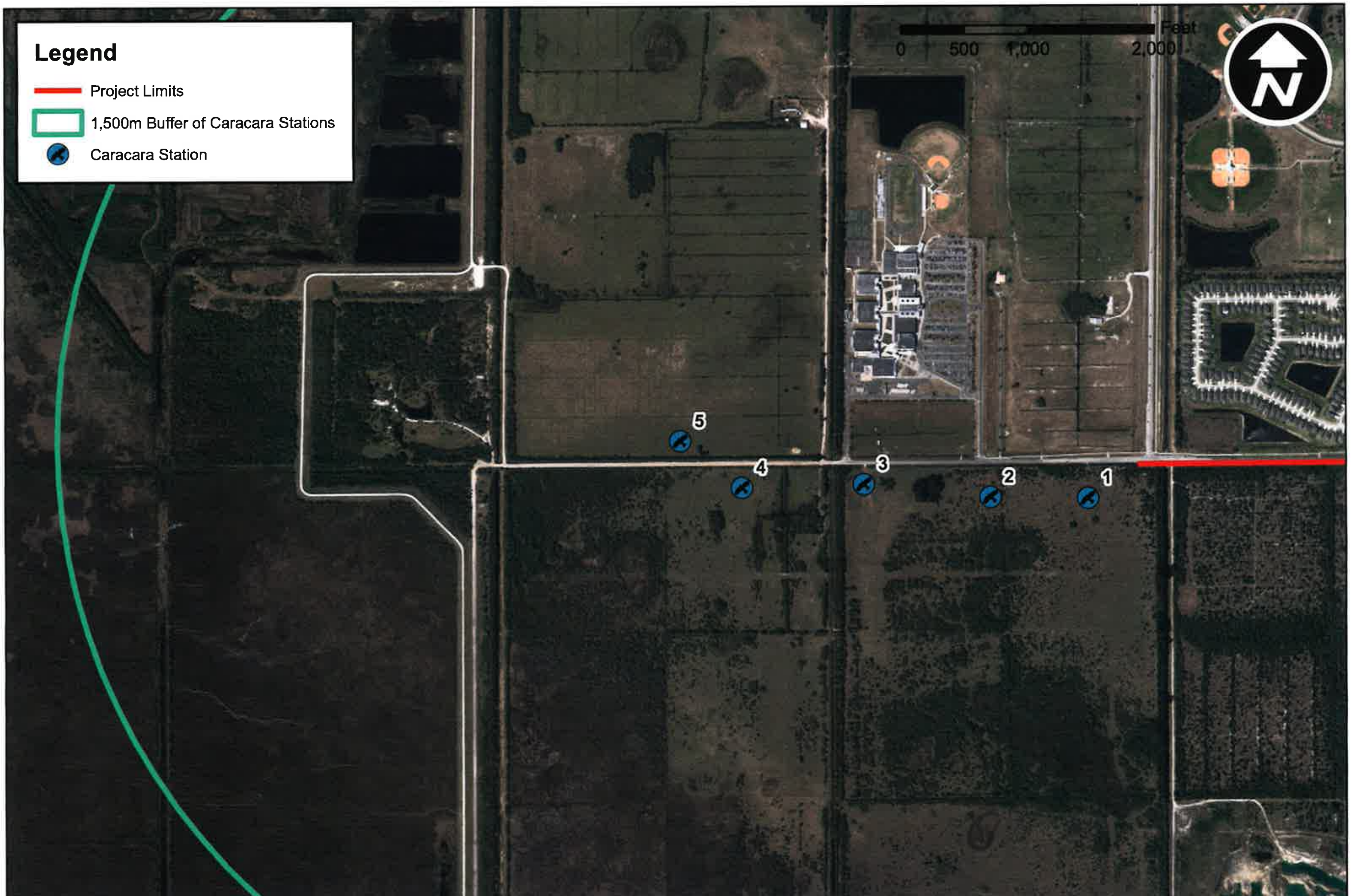
General Site and Habitat Conditions; Other Activities in the Area

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
			ND Caracara observed

red shouldered hawk, mourning dove, cardinal cathird, cattle egret, sandhill crane, black vulture, great egret, boat tailed grackle, robin, white ibis phoebe, cardinal, Northern harrier, turkey, white tailed deer, mockingbird, turkey vulture



Malabar Road

From St. Johns Heritage Parkway
to Minton Road
Brevard County, FL
FPID: 437210-1-28-01

No caracara observ

J. Barhorst
R. Schevers

CARACARA SURVEY STATION LOCATION MAP

DATE 2/25/2020

STATION 4

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Road PD&E
Location/Observation Block/Lat-Long: Station 5

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
28 Feb 2020	6:35 am	9:35 am	G. Haddle

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:35am	42°F	NW 9	0	NA	NA
Finish: 9:35am	52°F	NW 10-12	0	NA	NA

Observation Point Information

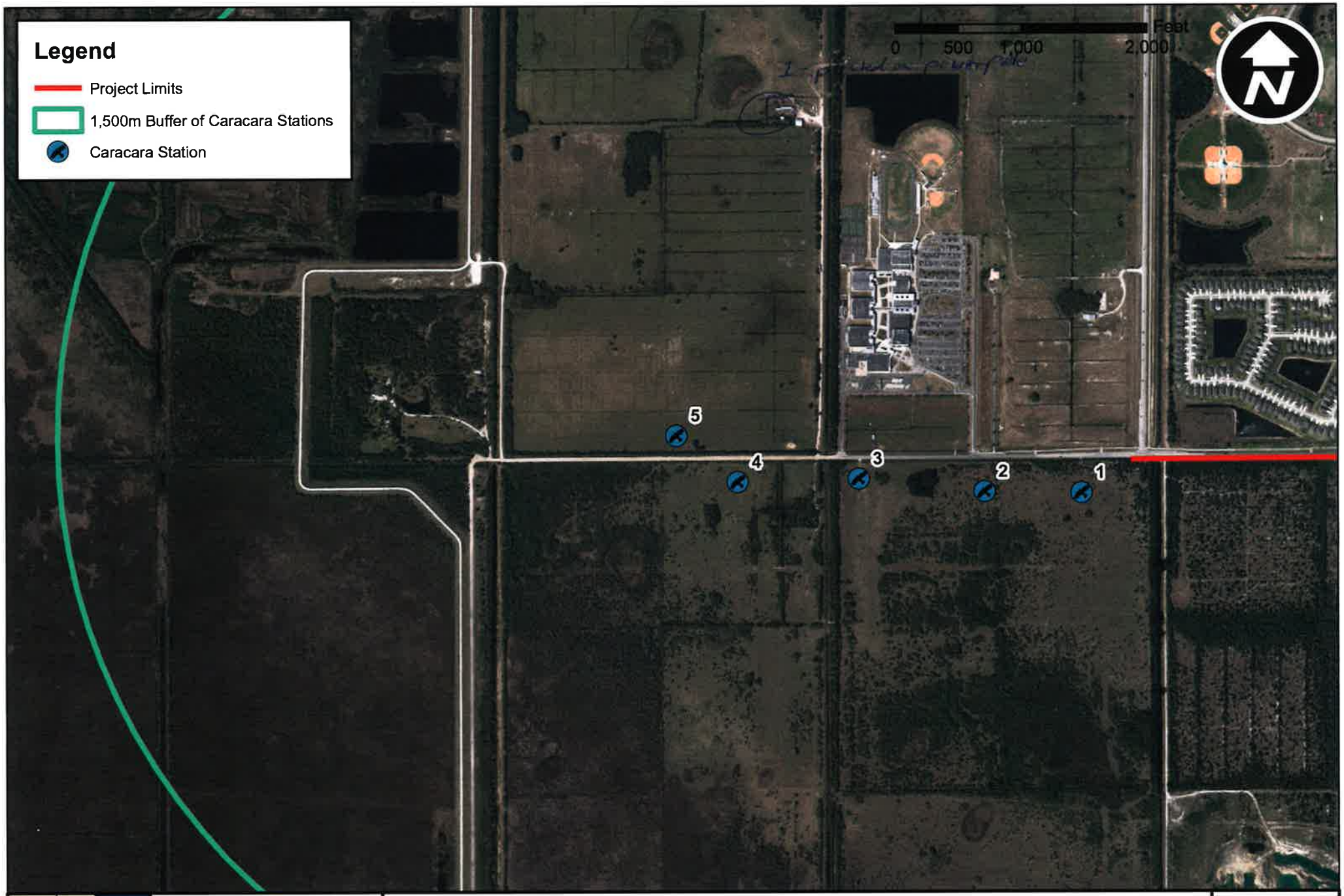
General Site and Habitat Conditions; Other Activities in the Area
Cattle present. Rancher arrived @ 7:15 am waiting on others. 3 rancher trucks enter gate @ 8:06 am. Set up observation station at gate. Combo lock not there.

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
5	A	7:25-7:41 7:38-7:41	One adult perches on powerpole (see 1 on map) next to farm buildings. flew away @ 7:41. Another adult perches with the first adult on same powerpole. 7:41 - juvenile bald eagle flies by from SW to NW and flushes two adult caracaras.
5	A	7:44-7:46	one adult perches on same powerpole (see 1 on map).
5	A	7:57-8:00 8:08-8:18	7:57 one adult perches on same powerpole. Flies away @ 8:00 8:08 one adult perches on powerpole. 8:13 another adult perches with first adult. Observed preening each other. 8:16 second adult flies out of sight. 8:18 first adult flies out of sight.

black vulture, boat tailed grackle, meadowlark, white ibis, wild turkey, Sandhill crane, great egret, wood stork, Northern Cardinal, red-shouldered hawk, little blue heron, cattle egret, crow, merlin, great blue heron, Northern harrier, juv. bald eagle, Eastern phoebe, gray squirrel, mourning dove



Palm Bay

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

CARACARA SURVEY STATION LOCATION MAP

DATE 2/28/20

STATION 5

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar RD PD&E

Location/Observation Block/Lat-Long: StaAm 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
10.12.20	7:19Am		J.Barhorst C. Hitchburg

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:19 Am	60°F	Calm	90%	Stratus	light low fog
Finish: 10:22 AM	70°F	calm	90%	stratus cirrus	NO

Observation Point Information

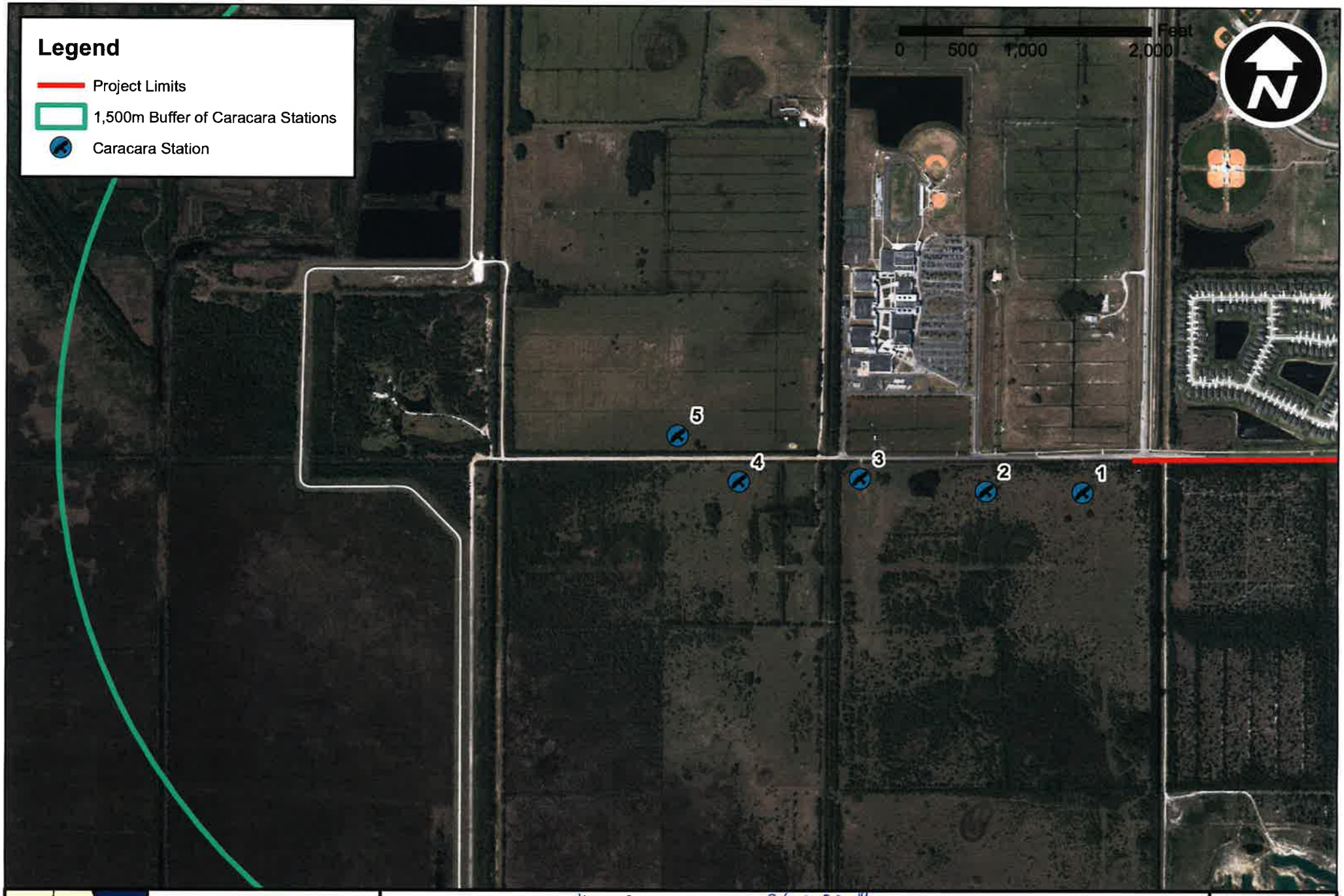
General Site and Habitat Conditions; Other Activities in the Area

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 Caracara observed

Red-shouldered hawk, Cardinal, swallowtailed kite, cattle egret black Vulture, barred owl, sandhill crane, wood stork, boat tailed grackle fish crow, cormorant, osprey, redbellied woo., house wren, little blue heron limpkin, catbird, white tailed deer



Malabar Road

From St. Johns Heritage Parkway
to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

No Caracara observed

J. Barhorst
L. Rittenberg

CARACARA SURVEY STATION LOCATION MAP

DATE 03/12/2020

STATION 1

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd
Location/Observation Block/Lat-Long: Station 2

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/12/20	7:21a	10:23a	T. Mueller

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:21a	60°	W 1mph	85%	Stratocumulus	light
Finish: 10:23a	70°	SW 1mph	85%	Stratus	none

Observation Point Information

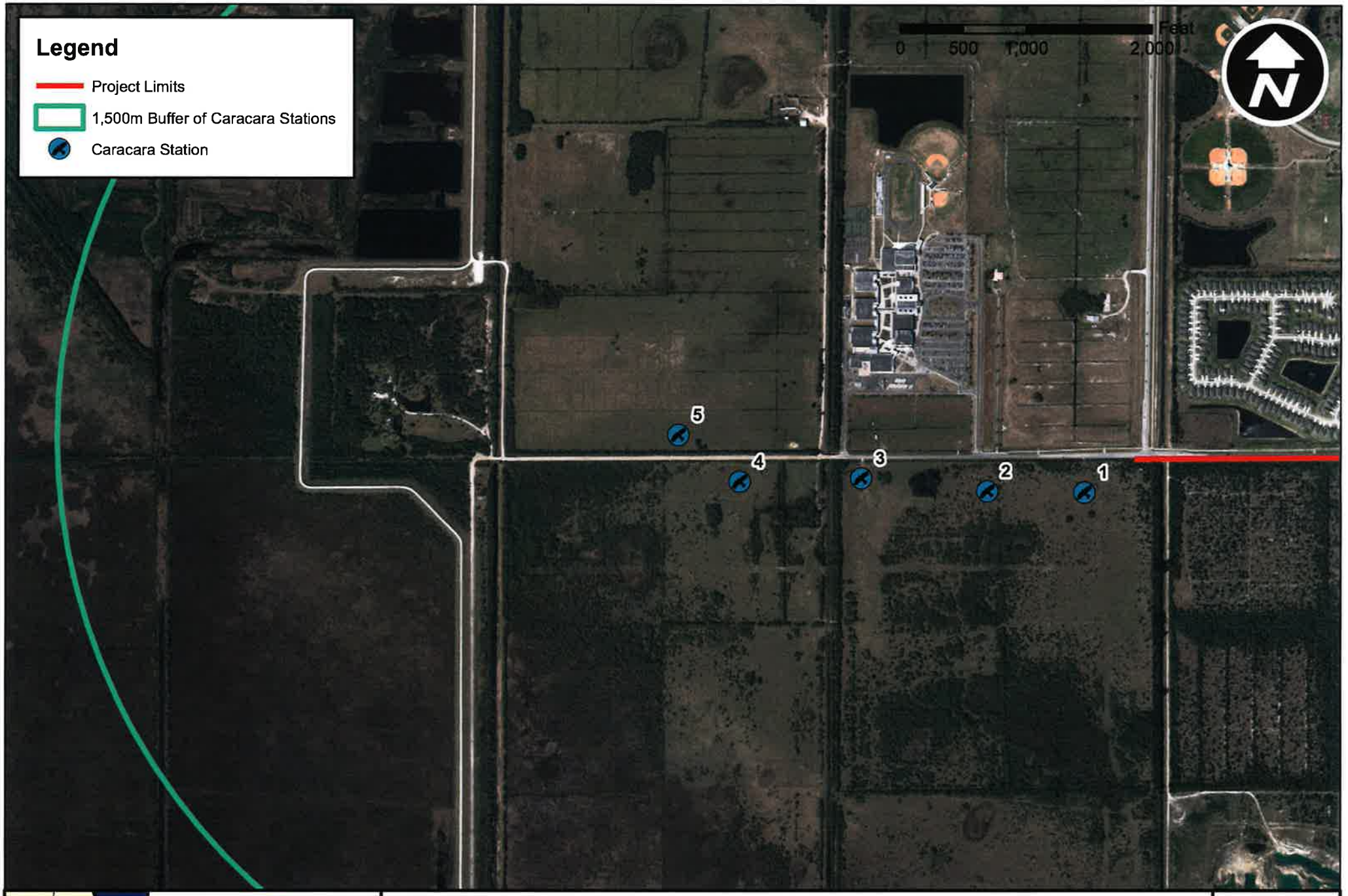
General Site and Habitat Conditions; Other Activities in the Area

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 caracara observed

Wildlife observed: common grackle; cardinal; American Crow; great egret; black vulture; red bellied woodpecker; morning dove; boat tailed grackle; swallow tailed kite; cormorant; anhinga; turkey; meadowlark; sand hill crane; cattle egret; glossy ibis; robin; catbird;



Palm Bay
A Future Rises in View

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

no cara cara observed

CARACARA SURVEY STATION LOCATION MAP

DATE 3/12/20

STATION 2

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd.

Location/Observation Block/Lat-Long: Station 3

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/10/20	7:29	10:29 AM	T. Mueller; L. Rittenhouse

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 729	67°	E 4 mph	30%	cumulocirrus	none
Finish: 10:29 AM	72°	ESE 12 MPH	10%	annulus	none

Observation Point Information

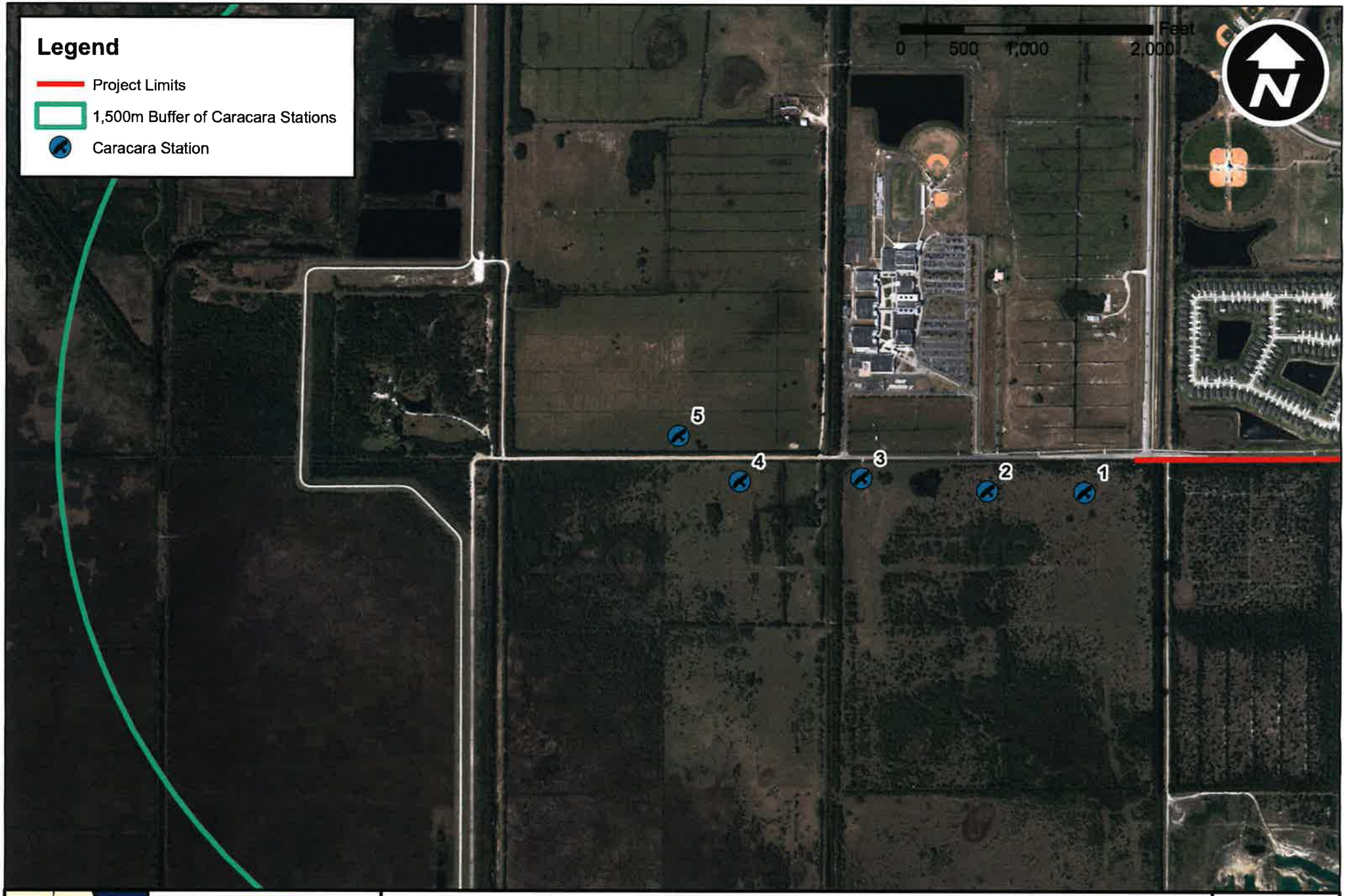
General Site and Habitat Conditions; Other Activities in the Area

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		CARACARA

Wildlife observed: black vulture, white-tailed deer, red shouldered hawk, cattle egret, swallow-tailed kite, meadowlark, mourning dove, cedar bird, osprey, glossy ibis, cardinal, common grackle, boat-tailed grackle, white ibis, palm warbler, sandhill crane, red-bellied woodpecker, tree swallow, rock pigeon, eastern phoebe, ring-billed gull, grey squirrel, cow, hog, Northern harrier, turkey vulture



Palm Bay

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL
FPID: 437210-1-28-01

NO CARACARA
T. Mueller
L. Rittenburg

CARACARA SURVEY STATION LOCATION MAP

DATE 3 / 10 / 2020

STATION 3

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Melaleuca PD&E

Location/Observation Block/Lat-Long: Station 4

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3.10.2020	7:25AM	7:30AM	J. Barkhorst

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:25AM	59°F	0-5mph E	25%	stratus cirrus altocumulus	NO
Finish: 7:30AM	73°F	10-12mph ESE	80%	cumulus w/ to cumulus cirrus	NO

Observation Point Information

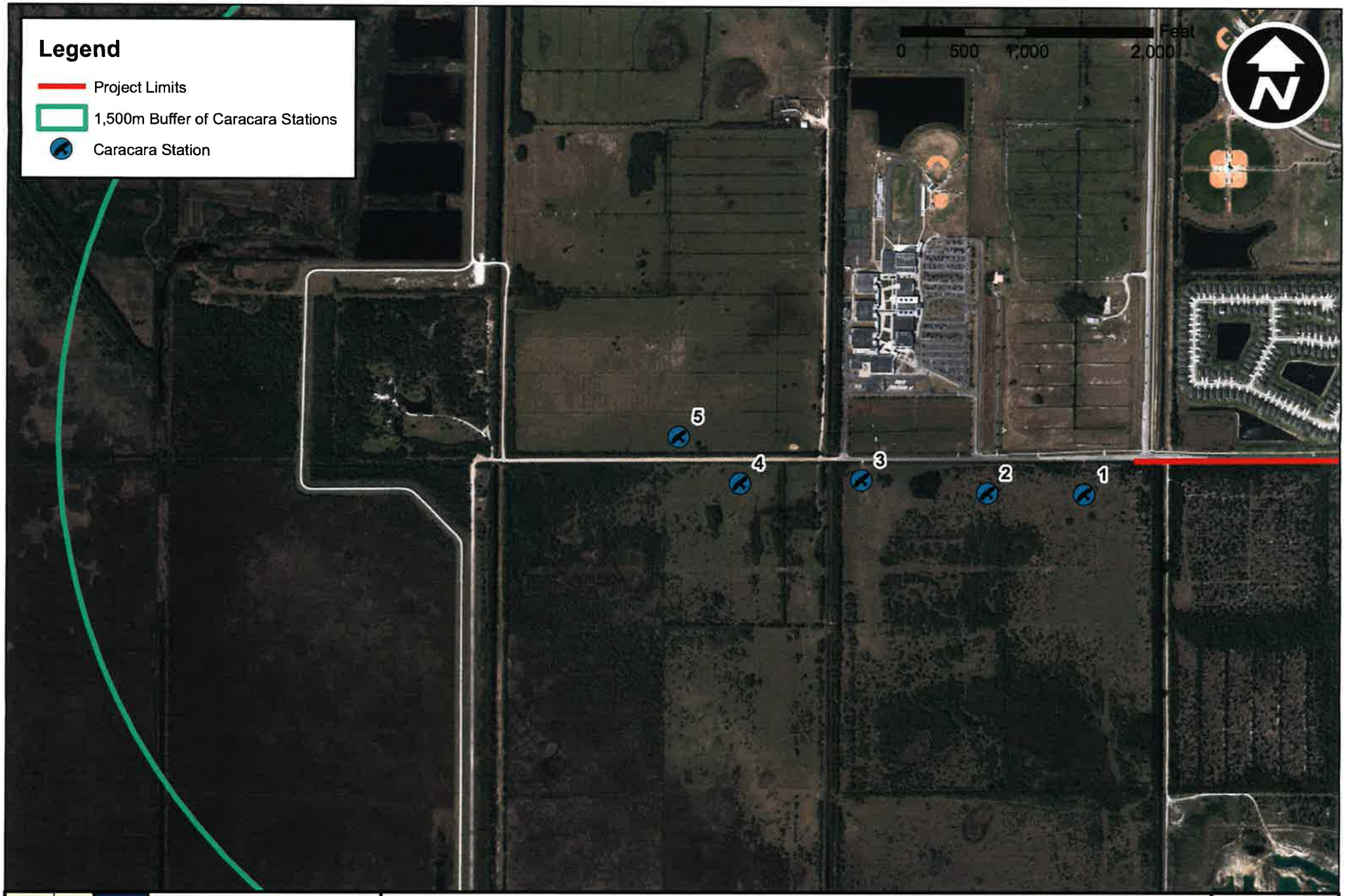
General Site and Habitat Conditions; Other Activities in the Area

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 Caracara observed

Cattle egret, swallow tailed kite, turkey, red shouldered hawk, Common grackle, cardinal, mourning dove, black vulture, fish crow, cowbird, robin, white ibis, boat tailed grackle, red winged blackbird, Turkey Vulture.



Malabar Road

From St. Johns Heritage Parkway
to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

J. Barhorst
No Caracara observed

CARACARA SURVEY STATION LOCATION MAP

DATE 3/10/2020

STATION 4

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd

Location/Observation Block/Lat-Long: Station 5

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3.11.2020	7:20 Am	10:40 Am	J. Barkorst

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:20	55°F	NW 0-3mph	10%	altocumulus cirrus	low lifting fog
Finish: 10:40am	73°F	calm	5%	Cumulus	ND

Observation Point Information

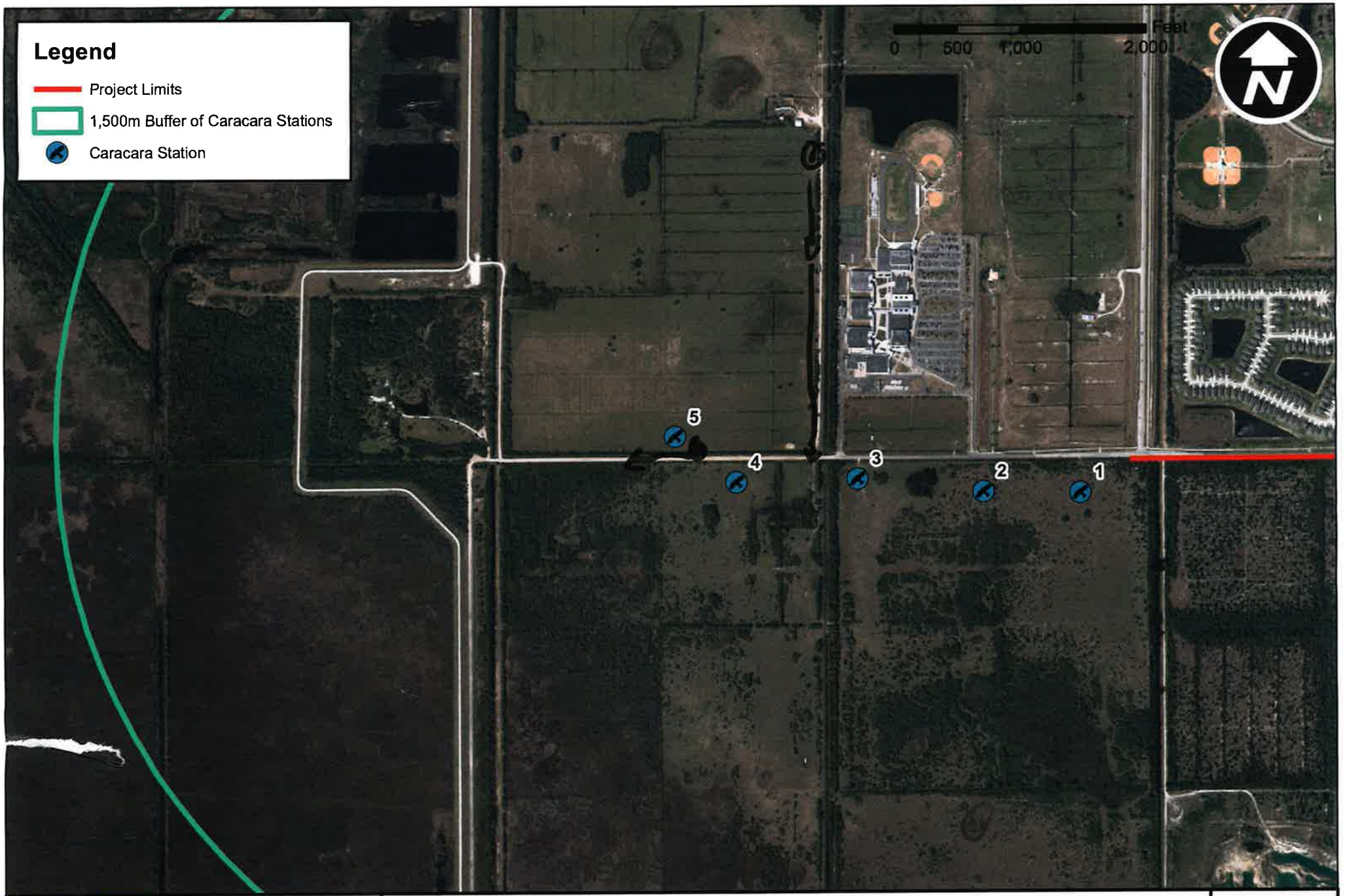
General Site and Habitat Conditions; Other Activities in the Area

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
①	Station 5	1 A	9:35 Am	Flying south along eastern treeline of pasture. Flew across malabar out of sight.
②	Station 5	2 A 1 unidentified	10:05 Am	Heard thrashing & scolding calls from cabbage palm then 3 caracara flew out of palm duest over Malabar Rd & out of site. Unable to tell all ages.
				- Searched base of palms for evidence of nesting. Nothing found.

Eastern meadowlark, sandhill crane, black vulture, Cattle egret, redbellied w.p., red shouldered hawk, Kestrel, boat-tailed grackle, great egret, pileated w.p., osprey, white ibis, Mourning dove, turkey, tree swallow, gray squirrel, little blue heron, cardinal, bald eagle, Catbird



Palm Bay

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

5 TRAP HORSE

CARACARA SURVEY STATION LOCATION MAP

DATE 3/10/2020

STATION 5

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd PD&E
Location/Observation Block/Lat-Long: Station 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3-26-20	7:00Am	10:12Am	J. Barkhurst

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:00Am	67°F	0-3mph W	25%	Cirrus Stratus	light fog
Finish: 10:12Am	74°F	10mph NW	70°	Cumulus	No

visibility ~ ½ mile

Observation Point Information

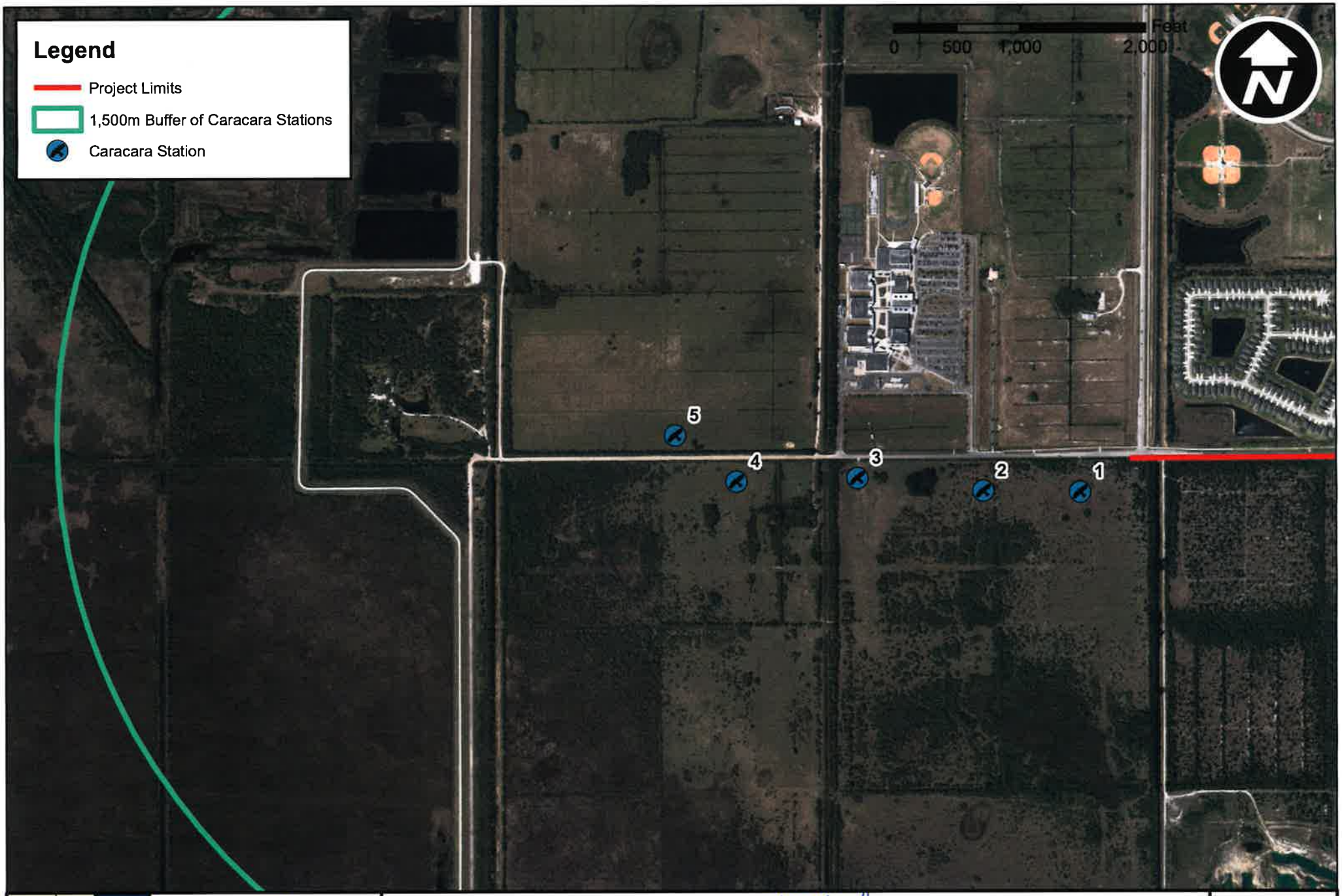
General Site and Habitat Conditions; Other Activities in the Area

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 Caracara observed

wild turkey, cardinal, barred owl, mourning dove, boat-tailed grackle, great egret, bobwhite quail, cattle egret, sandhill crane, black vulture, meadowlark, white-tailed deer, osprey



Palm Bay

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

No Caracara observed
J. Barhorst

CARACARA SURVEY STATION LOCATION MAP

DATE 3 / 26 / 2020

STATION 1

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malakoff Rd
Location/Observation Block/Lat-Long: Station 2

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/26/20	7:04a	10:06a	T. Mueller; A. Burke

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:04a	67°	W 6 mph	30%	Cumulous	light.
Finish: 10:06a	74°	NW 8 mph	98%	Cum/cum nimbus	Ø

Observation Point Information

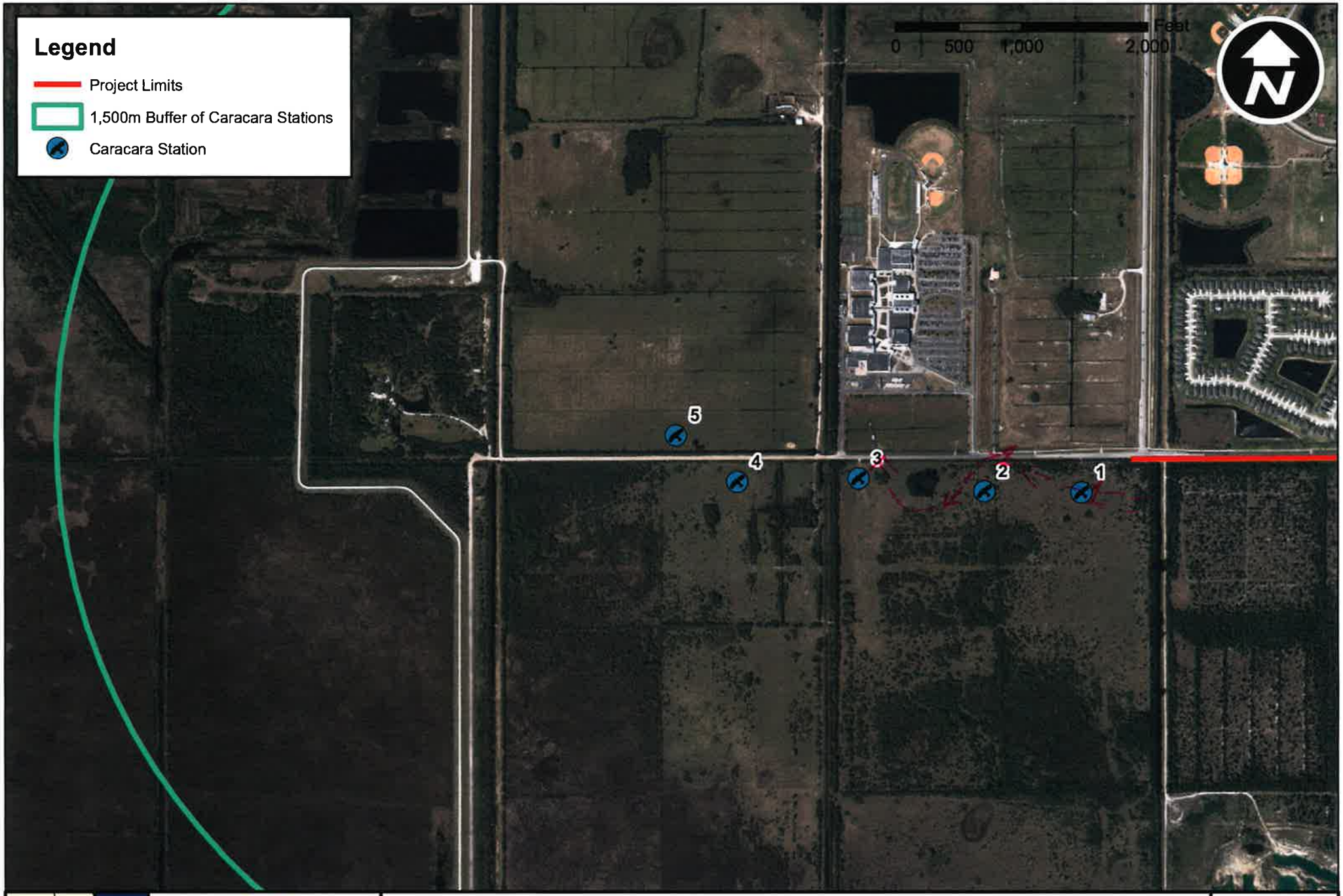
General Site and Habitat Conditions; Other Activities in the Area

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
Station 2	adult	7:11	flew from east to west over pasture; continued west out of sight to the NW behind Aust. Pine stand between St. 2 & St 3

wildlife observed: mourning dove; cattle egret; sandhill crane; mallard; turkey; meadowlark; blackwinged; common grackle; cardinal; red shouldered hawk; tree swallow; blue heron; red bellied woodpecker;



Palm Bay

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL
FPID: 437210-1-28-01

No cara cara observed

CARACARA SURVEY STATION LOCATION MAP

DATE 3/26/2020

STATION 2

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd.
Location/Observation Block/Lat-Long: Station 3

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3/24/20	7:05a	10:05a	T. Mueller

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:05a	64°	S 3mph	60%	cumulus	none
Finish: 10:05a	74°	WSW 7mph	0%	none	none

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
Hog carcass observed near entry gate

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 care cara observed

Wildlife observed: white tailed deer; wild turkey; cattle egret; black vulture; catbird; opossum; red shouldered hawk; morning dove; common grackle; red bellied woodpecker; boat tailed grackle; Sandhill crane; wood stork; cormorant; killdeer; rock pigeon;

Palm Bay

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

no caracara observed

CARACARA SURVEY STATION LOCATION MAP

DATE 3/24/2020

STATION 3

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar PD&E

Location/Observation Block/Lat-Long: Station 4

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3.24.20	6:58 AM	10:07 AM	J. Barkalow

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:58 AM	64°F	Calm	50%	altocumulus stratus	NO
Finish: 10:07 AM	74°F	WSW 5-10 mph	10%	cirrus	NO

Observation Point Information

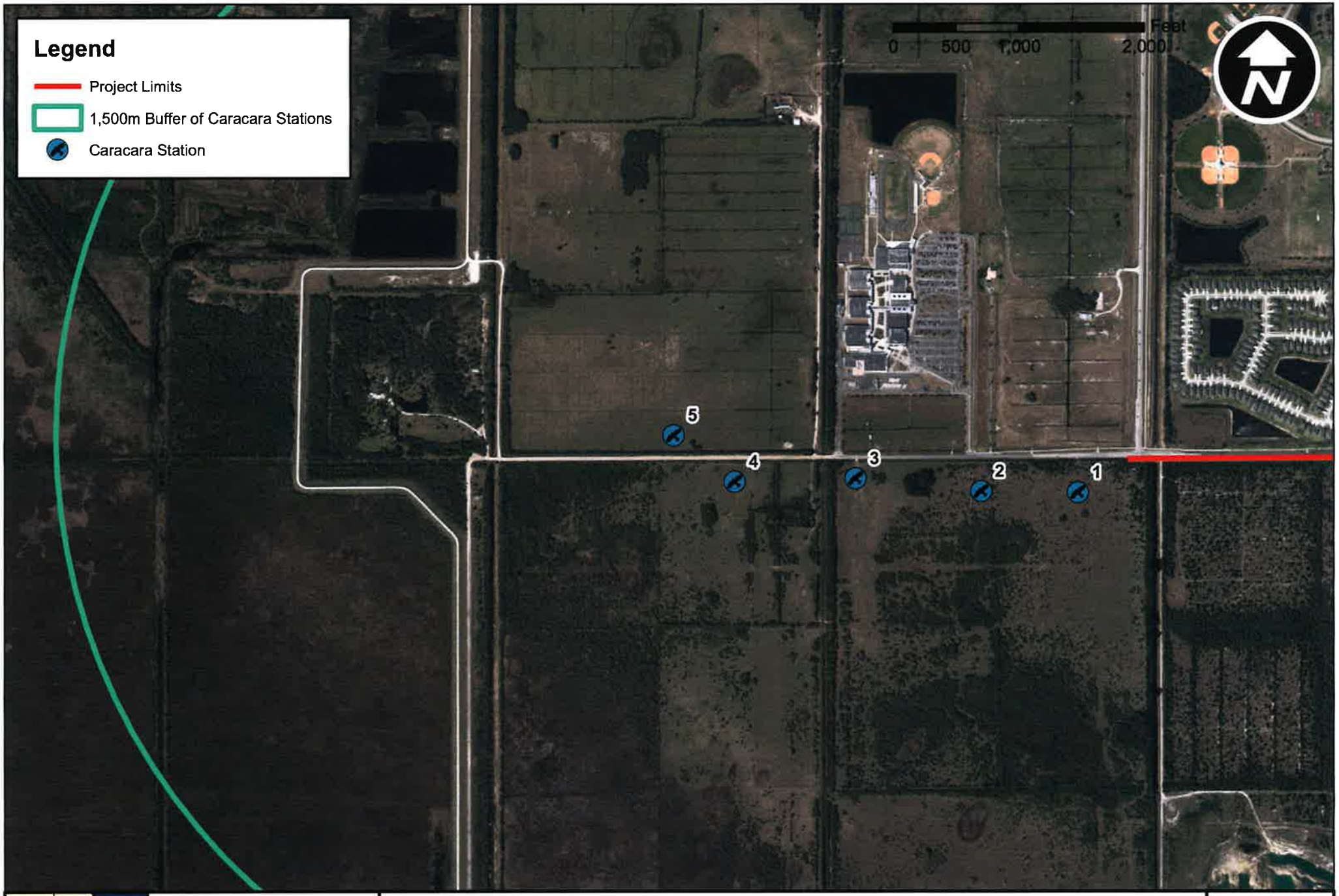
General Site and Habitat Conditions; Other Activities in the Area

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 Caracara observed

mourning dove, red-shouldered hawk, turkey vulture, cattle egret, black vulture, wild turkey, common grackle, cormorant, sandhill crane, meadowlark, cardinal, cattbird, American crow



Malabar Road

From St. Johns Heritage Parkway
to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

NO Caracara

S. Burkhart

CARACARA SURVEY STATION LOCATION MAP

DATE 3/24/2020

STATION 4

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd PD&E

Location/Observation Block/Lat-Long: Station 5

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
3.25.20	7:03AM		J. Barhorst

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:03AM	67°F	Calm	100%	Stratus	Light fog - [illegible] visibility
Finish: 10:35AM	74°F	10mph SW	75%	Cumulus	No

Observation Point Information

General Site and Habitat Conditions; Other Activities in the Area
- observed kestrel perched on dead palm snag w/ multiple cavity holes

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
leaving station 5	Im	10:23am	while driving east toward gate leaving field, 1 im. caracara flew from S. [illegible] (Camphor tree), perched for a 5 min. then flew N out of sight

Barred owl, sandhill crane, mobe, red-shouldered hawk, black vulture, turkey vulture, meadowlark, boat-tailed grackle, cardinal, pileated w.p., catbird, red-[illegible], wild turkey, white tailed [illegible], gray squirrel, fish crow, [illegible] kestrel, [illegible], great blue heron, great [illegible]

Palm Bay

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL
FPID: 437210-1-28-01

JBaylor

CARACARA SURVEY STATION LOCATION MAP

DATE 3/25/20

STATION 5

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Meldon Rd
Location/Observation Block/Lat-Long: Station 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/9/20	6:56a	9:56a	T. Mueller

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:56a	70°	WSW 0-9mph	30%	Cirrus	none
Finish: 9:56a	78°	WSW 14mph	100%	Cumulus	none

Observation Point Information

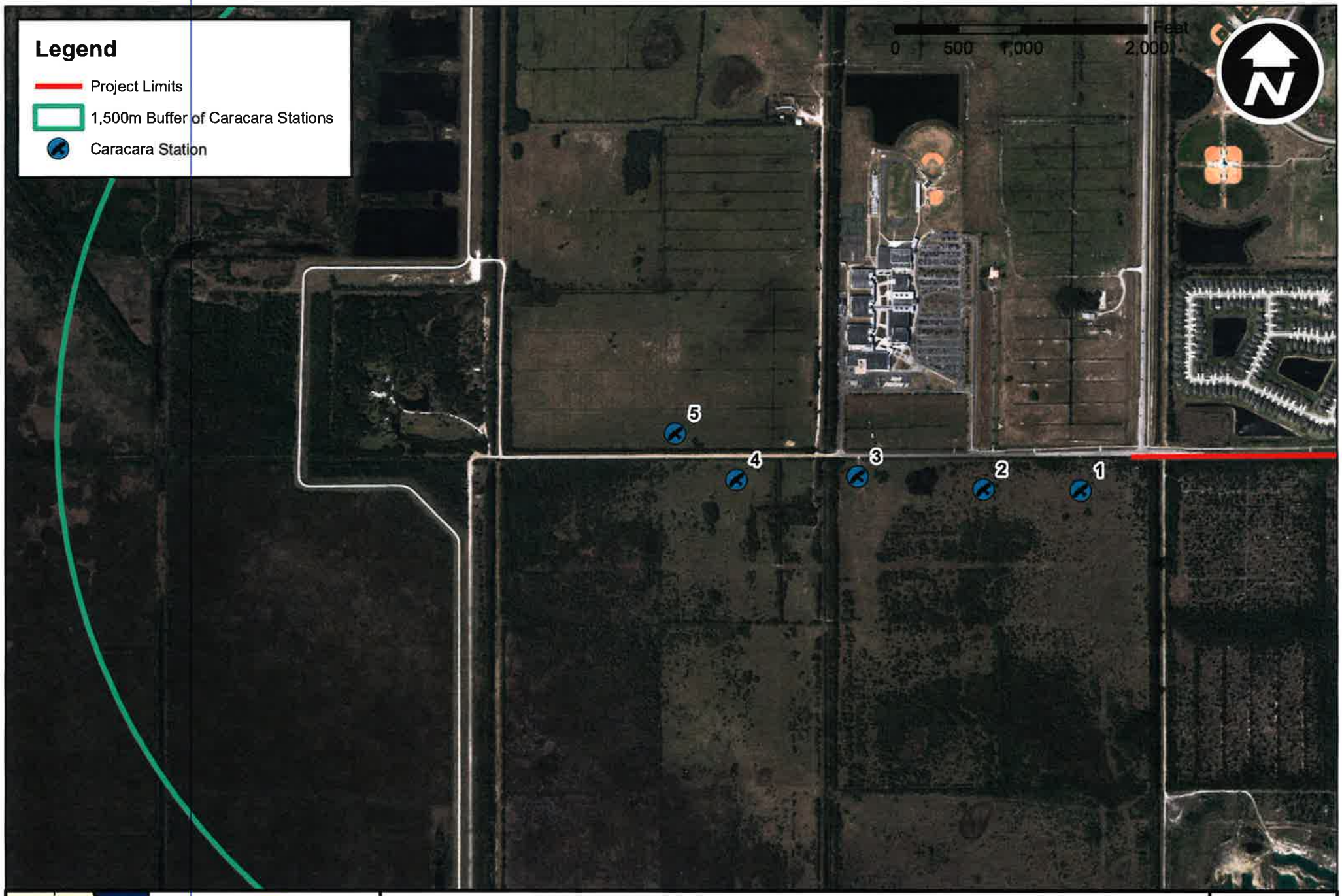
General Site and Habitat Conditions; Other Activities in the Area

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 cara cara observed.

Wildlife observed: black vulture; cattle egret; sandhill crane; bobwhite quail; boat tailed grackle; cardinal; swallow tailed kite; little blue heron; tree swallows; 8 turkey vulture; glossy ibis



Palm Bay

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

no caracara observed

CARACARA SURVEY STATION LOCATION MAP

DATE 4/9/20

STATION 1

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Mabbet PD&E

Location/Observation Block/Lat-Long: Section 2

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/9/2020	6:53		B. Shepherd

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:53	70	7mph WSW	50	Cumul. strat	ø
Finish: 9:59	77	13mph W	50	Cumul.	ø

Observation Point Information

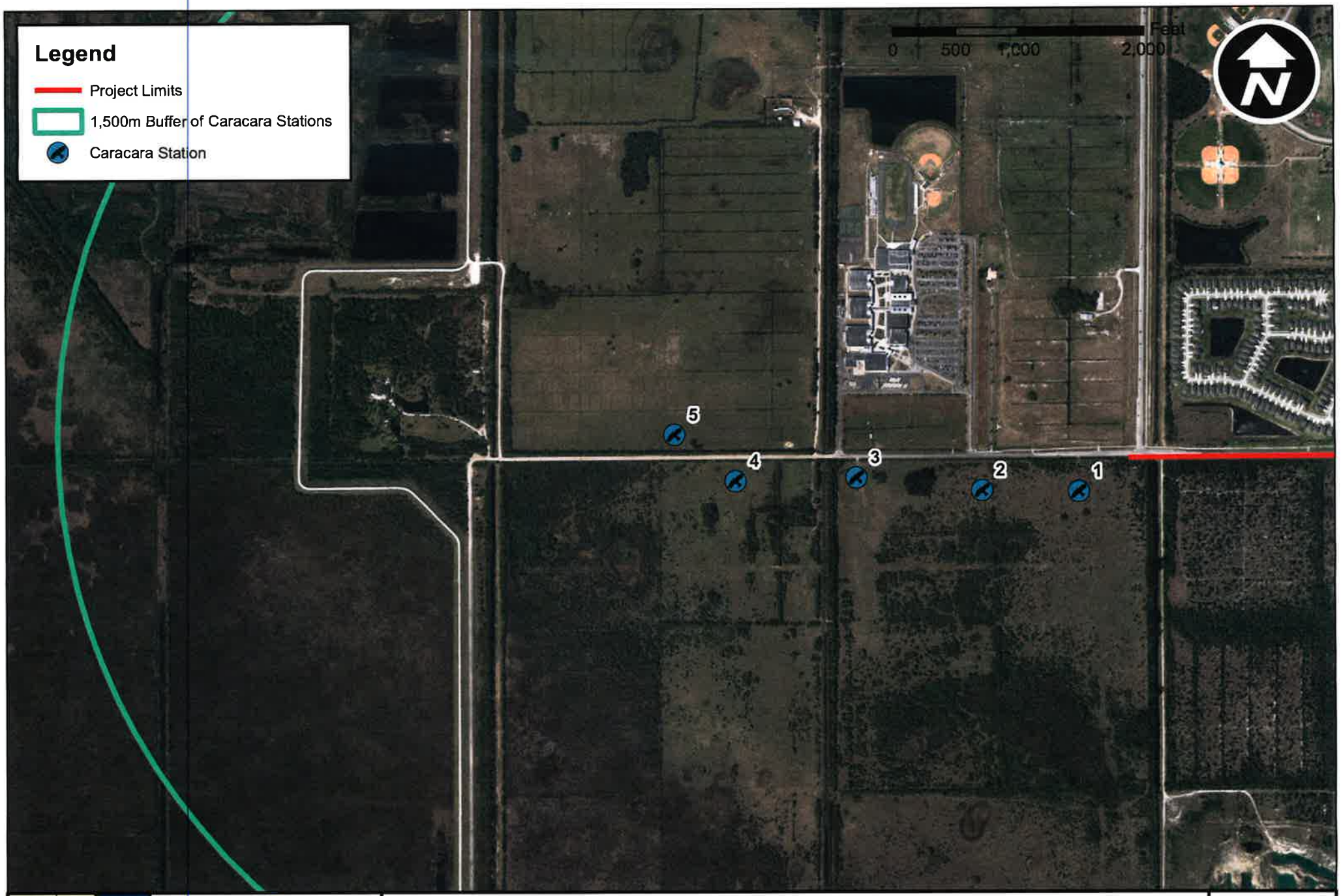
General Site and Habitat Conditions; Other Activities in the Area

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

wildlife obs. cattle egret, Am. crow, Sandhill crane, mourning dove, white ibis, swallow-tail kite vultures, great blue egret



Palm Bay

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

CARACARA SURVEY STATION LOCATION MAP

DATE 4 / 9 / 2020

STATION

2

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Marlatt Rd

Location/Observation Block/Lat-Long: Station 3

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/7/20	7:02a	10:02	T. Mueller

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 7:02	63°	Calm	20%	cirrus/cumulus	none
Finish: 10:02	77°	E 7 mph	80%	cumulus	none

Observation Point Information

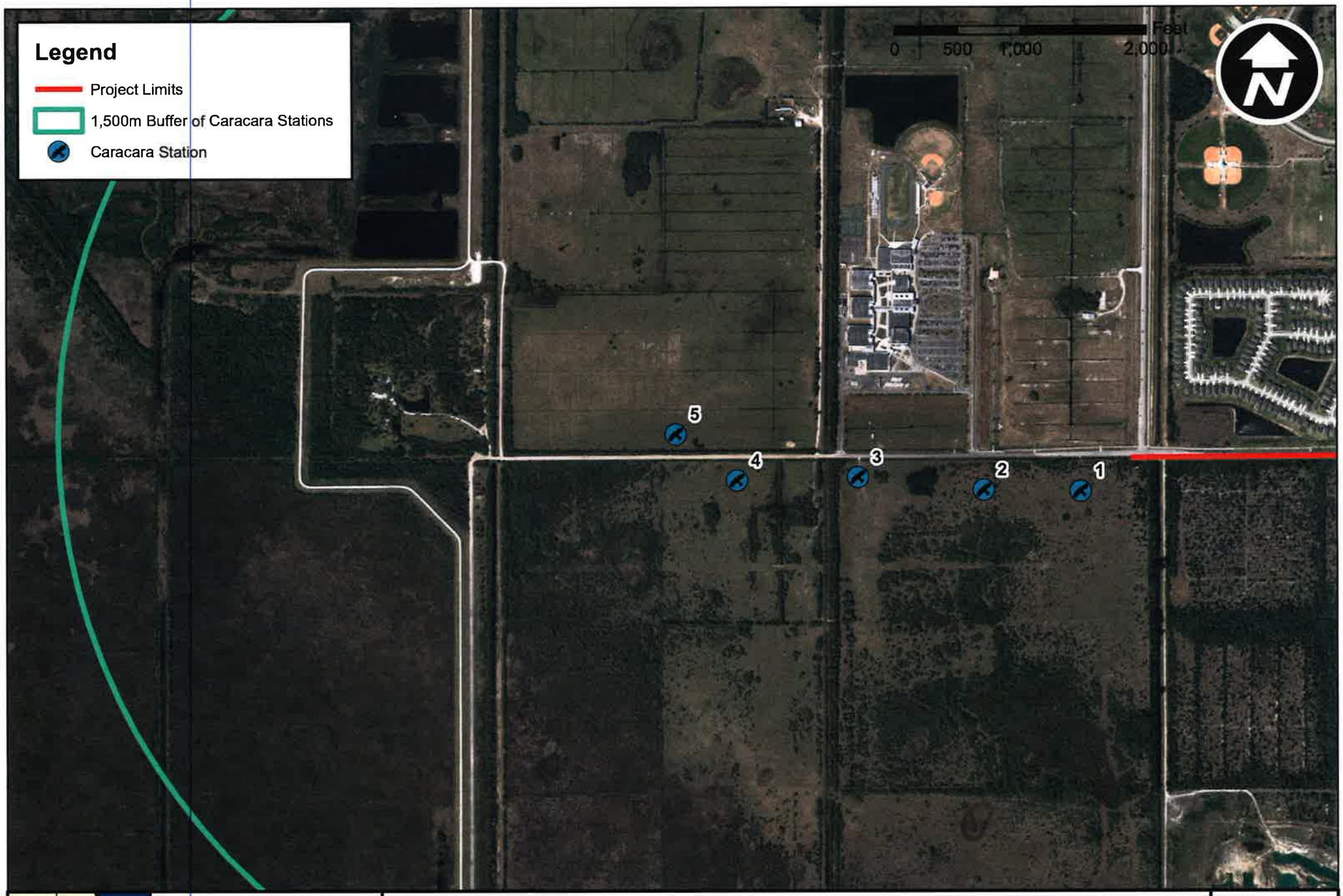
General Site and Habitat Conditions; Other Activities in the Area

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 caracara observed

observed wildlife: black vulture; hogearcess; American Crow; boattailed grackle; sandhill crane; cattle egret; cardinal; Great egret; turkey; meadowlark; red shouldered hawk; red bellied woodpecker.



Palm Bay

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

no caracara observed

CARACARA SURVEY STATION LOCATION MAP

DATE 4/7/20

STATION 3

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Melaleuca Rd. PD & PE

Location/Observation Block/Lat-Long: Station 4

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4.7.2020	6:53 AM	10:01 AM	J. Barhorst

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:53 AM	63°F	Calm	10%	cirrus cumulus and Stratus	NO
Finish: 10:01 AM	77°F	5 mp E	50%	cumulus	NO

Observation Point Information

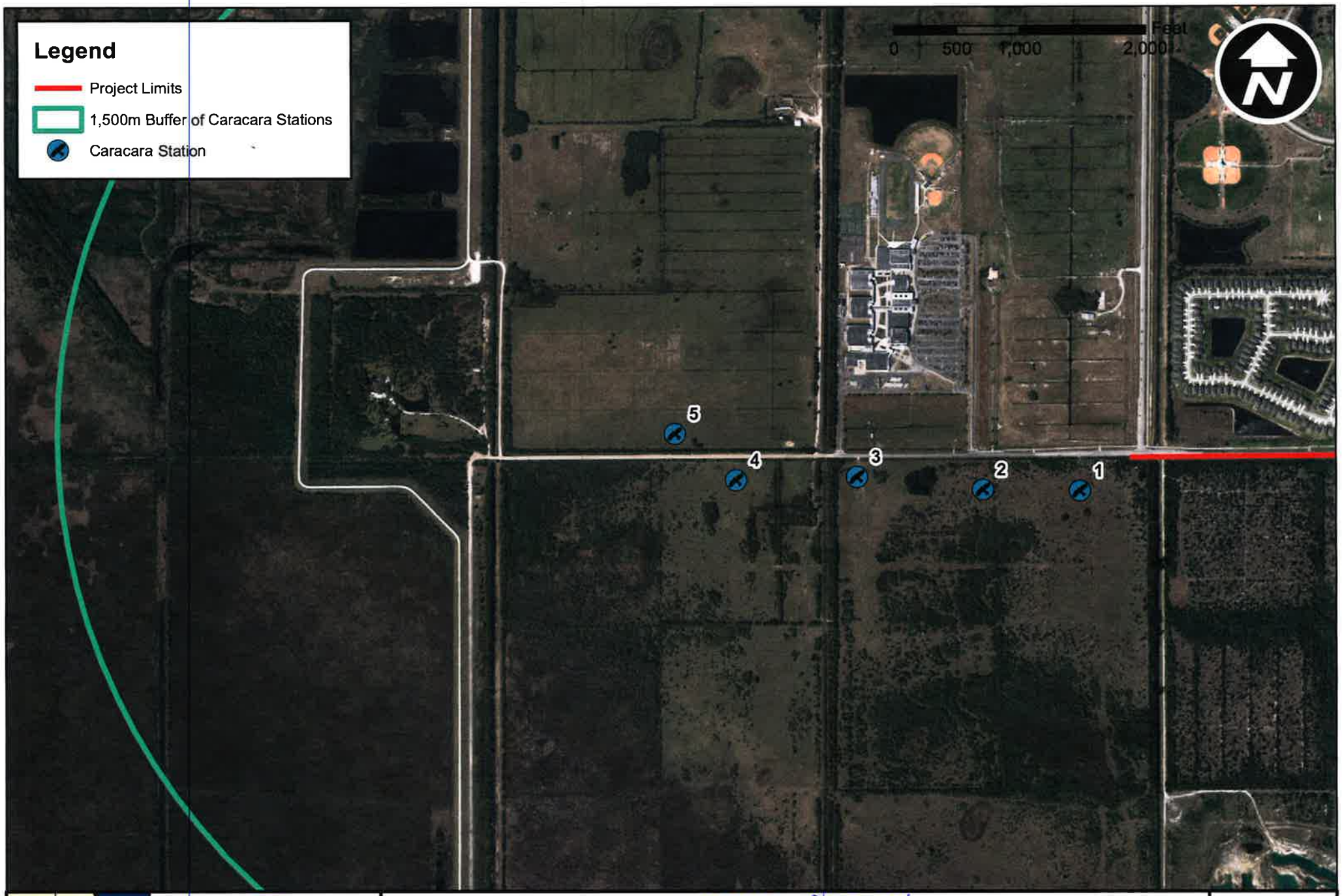
General Site and Habitat Conditions; Other Activities in the Area

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 caracara observed

white tailed deer, sandhill crane, meadowlark, mourning dove, fish crow, black vulture, cattle egret, cardinal, bobwhite quail, wild turkey, cormorant, pileated w.p., grackle, great egret, house wren, great blue heron, ibis (white), red shouldered hawk



Malabar Road

From St. Johns Heritage Parkway
to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

no caracara observed

J. Barthorst

CARACARA SURVEY STATION LOCATION MAP

DATE 4/7/2020

STATION 4

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Maldoar Rd.
Location/Observation Block/Lat-Long: Station 5

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/8/20	6:55a		T. Mueller; A. Burke

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:55a	68°	SW 5 mph	0%	n/a	light fog
Finish: 9:55a	76°	W 9 mph	0%	n/a	n/a

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
5	A	7:33	observed flying low west to east across southern end of pasture - landed on fence in tree line (N-S) between pasture and high school. @ 7:52a flew SE beyond treeline

wildlife observed; Black vulture; boat tailed grackle; meadowlark; cattle egret; cormorant; Sandhill crane, Mourning dove, great blue heron, mottled duck, wood stork, American crow; roseate spoonbill; ibis; ground dove; loggerhead shrike;

Malabar Road

From St. Johns Heritage Parkway
to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

CARACARA SURVEY STATION LOCATION MAP

DATE 4/8/2020

STATION 5

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Mulaba PD & E

Location/Observation Block/Lat-Long: Station 1

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4.23.20	6:40 am	9:49 am	J. Barkhurst

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:40	69°F	5mph SE	80%	Stratus Cirus a/f Cumulus	ND
Finish: 9:49 am	80°F	10-15mph SSE	50%	Cirus Cumulus	ND

Observation Point Information

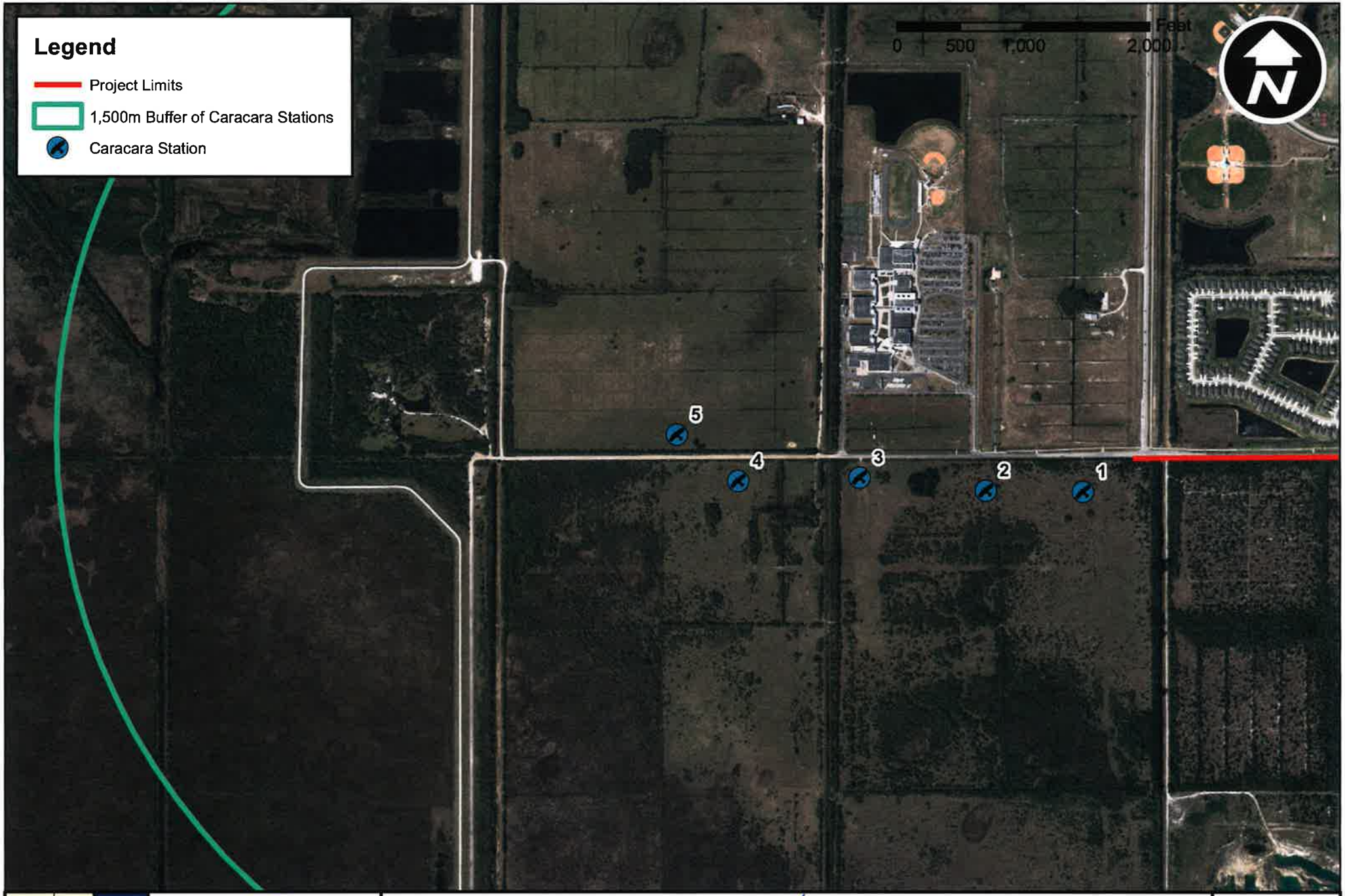
General Site and Habitat Conditions; Other Activities in the Area

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 Caracara observed

Cattle egret, Cardinal, red bellied woodpecker, Bobwhite quail, little blue, black vulture, swallow tailed kite, bluejay, mourning dove, sandhill crane, roseate spoonbill, red-shouldered hawk, great blue heron, Turkey Vulture,



Malabar Road

From St. Johns Heritage Parkway
to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

No Caracara observed
J. Barhorst

CARACARA SURVEY STATION LOCATION MAP

DATE 4/22/20

STATION 1

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar Rd
Location/Observation Block/Lat-Long: Station 2

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/23/20	6:43a	9:47a	T. Mueller

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:43a	69°	ESE 7 mph	30%	Cirrus	none
Finish: 9:47a	80°	SSE 13 mph	15%	Cirrus / cumulus	none

Observation Point Information

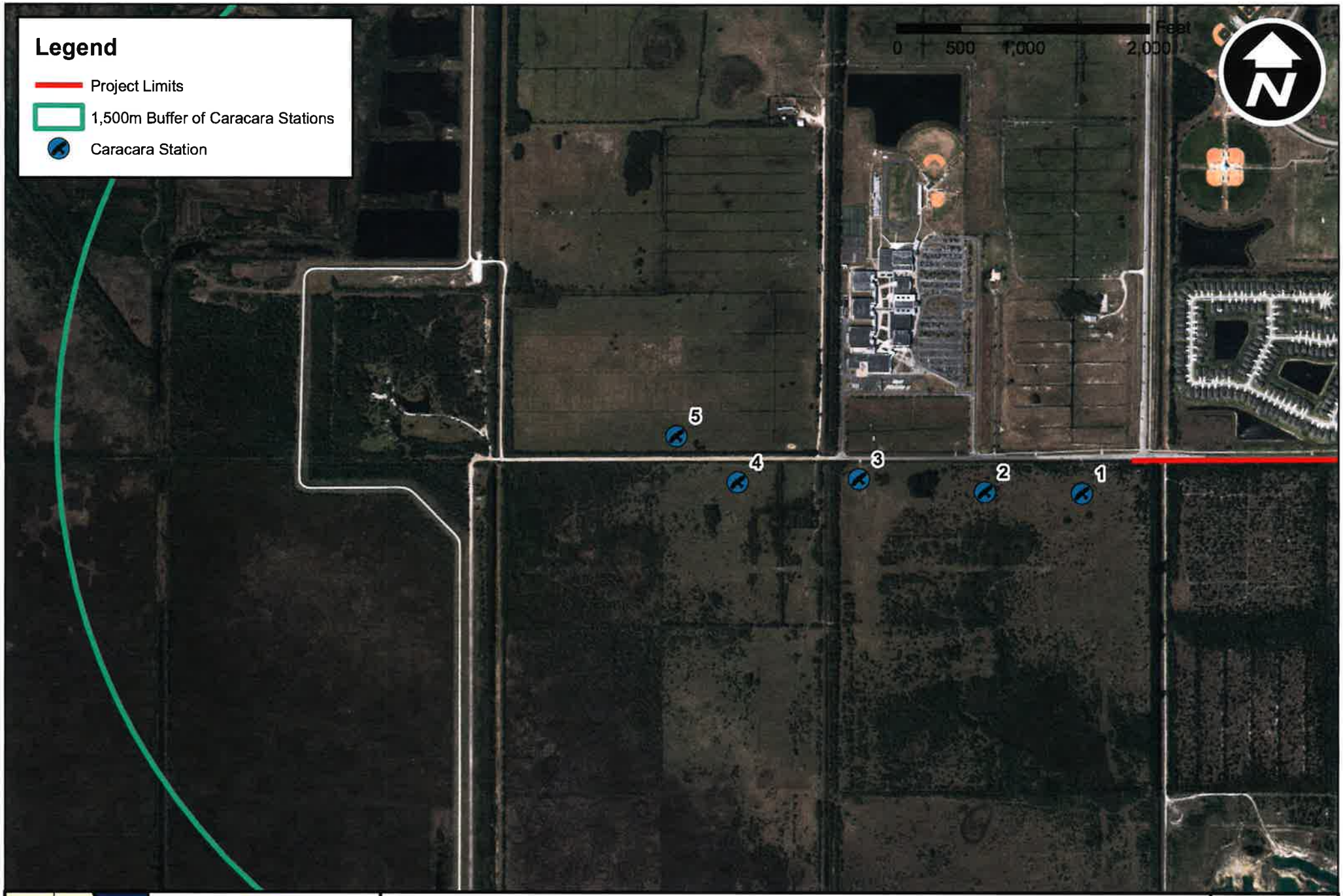
General Site and Habitat Conditions; Other Activities in the Area

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 caracara observed

Observed wildlife: mourning dove; red shouldered hawk; Swallow tail kite, Osprey, tree swallows, turkey; black vulture; osecte spoonbill; bluejay; turkey vulture; boat tailed grackle; cattle egret; ibis



Palm Bay

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

no cara cara observed

CARACARA SURVEY STATION LOCATION MAP

DATE 1/23/20

STATION 2

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Meleber Rd
Location/Observation Block/Lat-Long: Station 3

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/21/20	6:36a	9:36a	J Mueller

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:36a	62°	SW 2mph	30%	cumulocirrus	light fog
Finish: 9:36a	68	WNW 7mph	70%	cumulus	none

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
			[illegible]
Station 3		9:36a	2 caracara observed flying south to north between stations 3 & 4. circled pasture and continued north down tree line between high school and station 5.

Observed wildlife: hogs; cardinal; cattle egret; blackvulture; morning dove; common grackle; red bellied woodpecker; boattailed grackle; red shouldered hawk;

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Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

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CARACARA SURVEY STATION LOCATION MAP

DATE 4/21/20

STATION 3

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Melear Rd

Location/Observation Block/Lat-Long: 3 (south)

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4/22/20	6:40a	9:44a	T. Mueller

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:40a	68°	WNW 3 mph	15%	cirrus	none
Finish: 9:44a	73°	NNE 6 mph	30%	cirrus	none

Observation Point Information

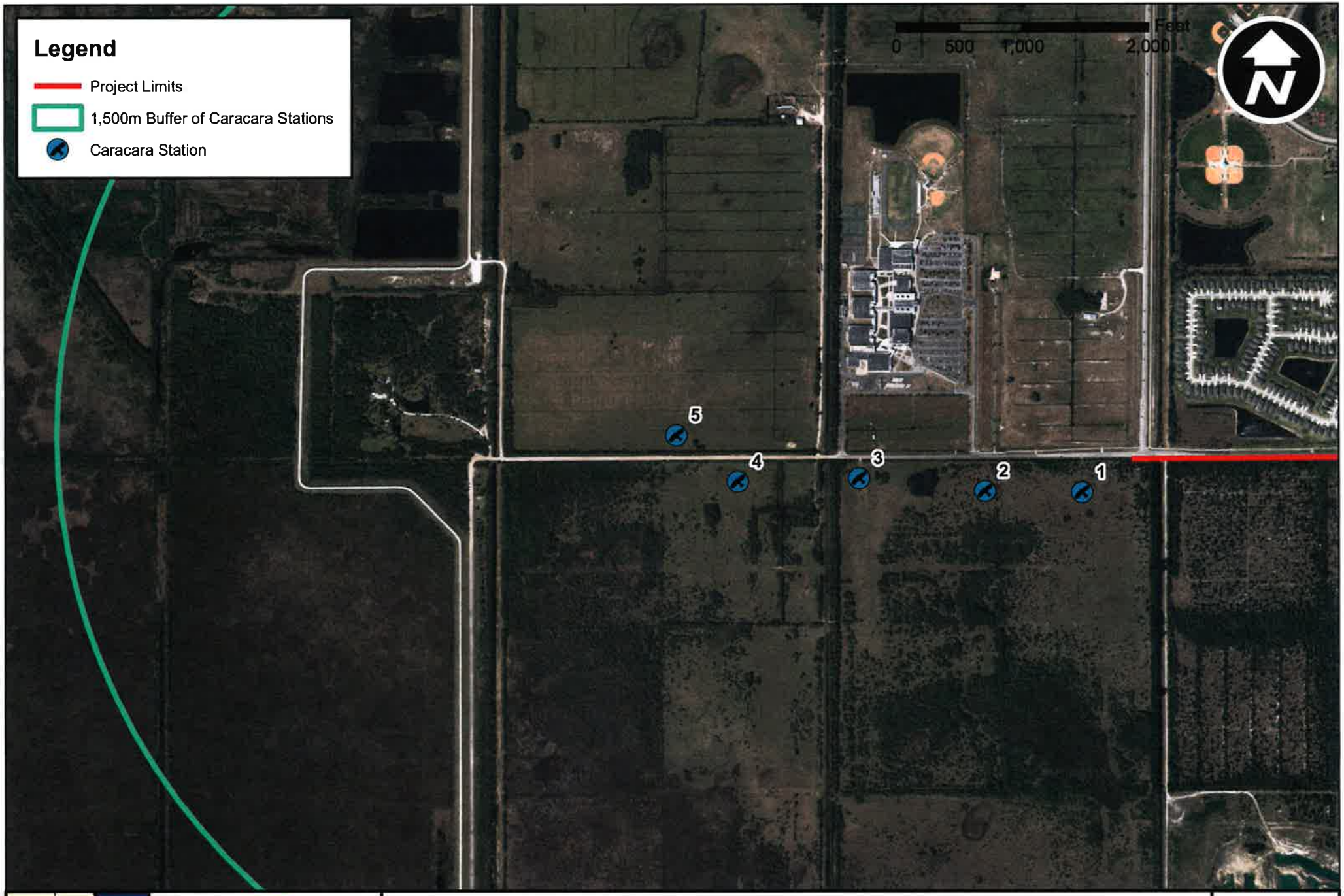
General Site and Habitat Conditions; Other Activities in the Area
This is an additional station located South of station 3. W/in pasture. Dominated by Cabbage palm; other veg species include; Brazilian pepper; various sedges, and grasses.

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 caracara observed

Observed wildlife: common grackle; cardinal; black vulture; raccoon; catbird; blue grey gnatcatcher; red bellied woodpecker; ground dove; red shouldered hawk; mourning dove; bluejay; great egret; turkey vulture;



Palm Bay

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

No caracara observed

CARACARA SURVEY STATION LOCATION MAP

DATE 4/24/20

STATION

3/South

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Melaleuca Rd POE

Location/Observation Block/Lat-Long: Station 4

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4-21-20	6:36 AM		J. Starkweather

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:36 AM	64°F	Calm	100%	Stratus	fog
Finish: 9:37			50%	Cirus Cumulus	NO

Observation Point Information

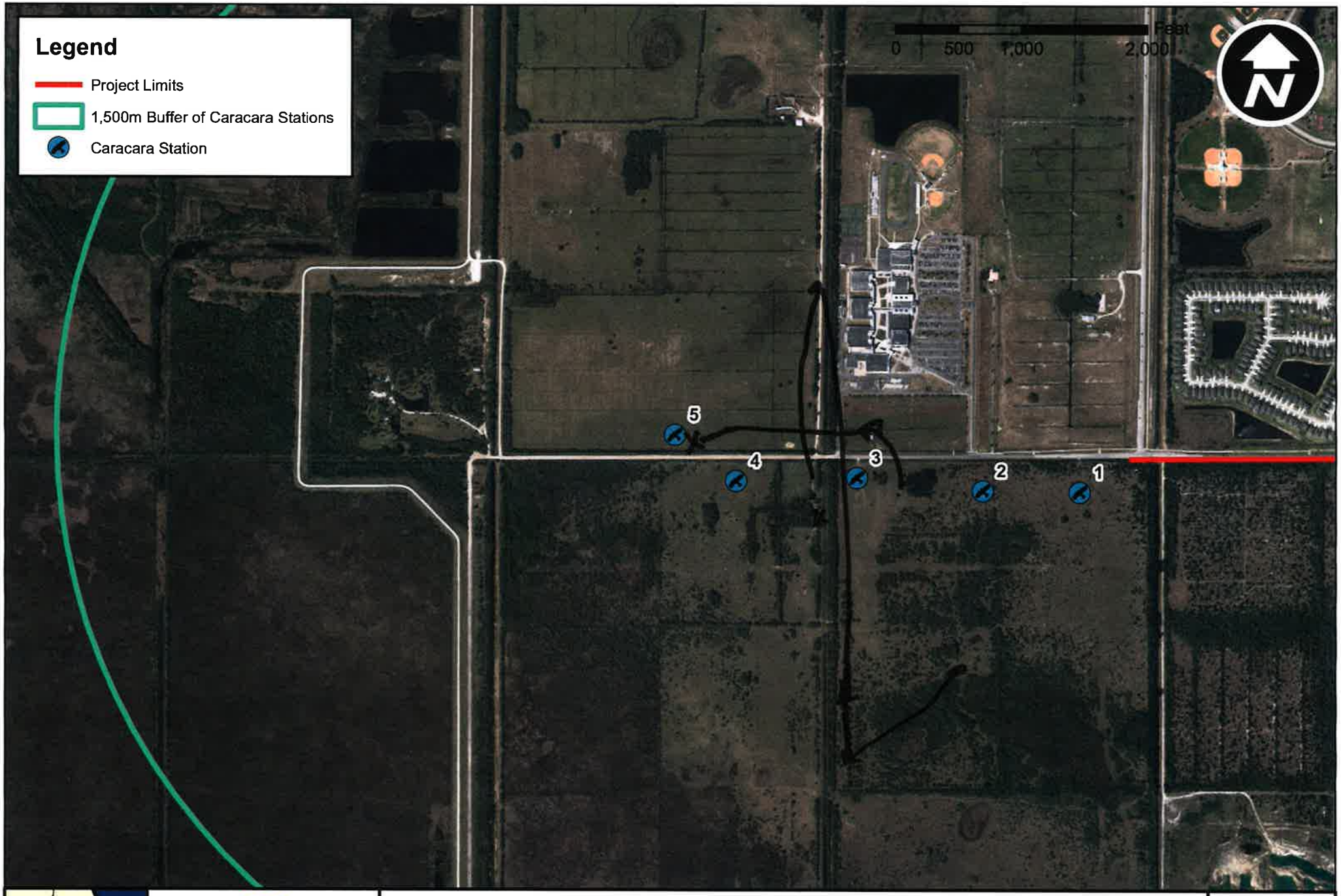
General Site and Habitat Conditions; Other Activities in the Area

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
Station 4	2A	9:37	Alerted by observer 3. 2 Adults circling above tree line E of Station 4 then flew N toward nest in Station 5 block
			Followed Adults to field - station 5 observed courtship behavior - birds perched on pine then flew S. where obs. 3 first saw them. Followed to Souther pastured, then they flew E & then NW
			Adults then flew S. along Station 5 and perched in cabbage palm cluster. Adult disappeared into palm the other remained perched majestic tree in clump Adult emerged from palm but remained perched
		11:10 AM	Both flew out + started foraging in pasture

Black vulture, sandhill crane, cardinal, mourning dove, white ibis bobwhite quail, boat tailed grackle, red shouldered hawk, great egret, cattle egret eastern meadowlark, turkey, red bellied w.p., common grackle



Palm Bay

Malabar Road

From St. Johns Heritage Parkway
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Brevard County, FL

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J. Barkhorst

CARACARA SURVEY STATION LOCATION MAP

DATE 4/21/2020

STATION 4

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

Caracara Survey Form (updated 12/9/2016)

Project Name: Malabar POE

Location/Observation Block/Lat-Long: Station 5

Date	Start Time	Stop Time	Observer Name(s) and Experience Level(s)
4-22-20	6:40 AM		J. Barkasi

Weather

Time	Air Temp	Wind Speed and Direction	% Cloud Cover	Cloud Type	Rain/Fog
Start: 6:40 AM	58°F	0-3 mph WNW	75%	Stratocumulus clouds	very light fog visibility > 1 mile
Finish:					

Observation Point Information

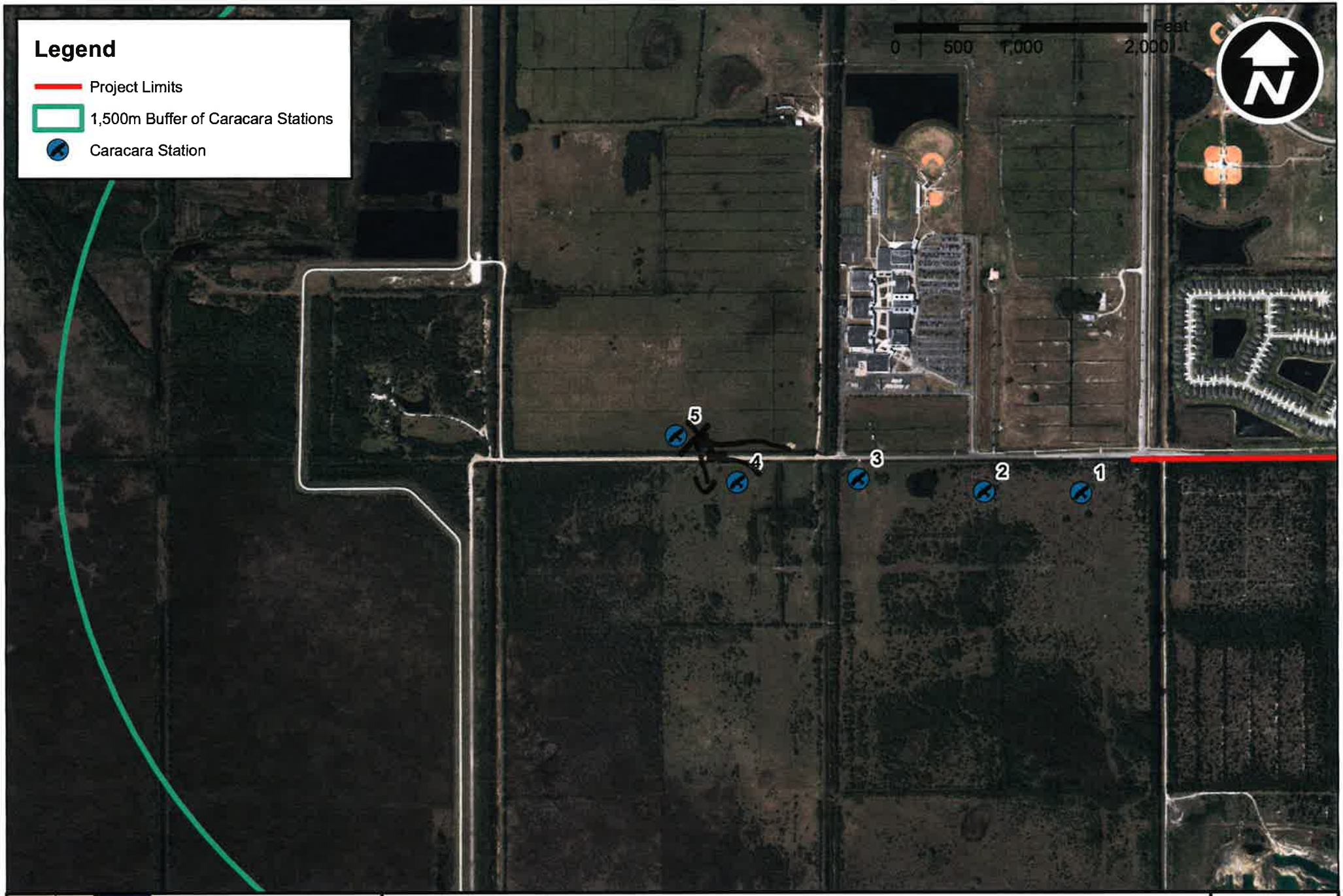
General Site and Habitat Conditions; Other Activities in the Area

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
Station 5	2 A	7:14 AM	2 Adults flew in from SE. 1 landed in field below palms, 1 adult landed in palm w/ food. At 7:21 the other adult flew up into palm
	Same 2 A	9:10	Both remained perched on palm, in and out of nest, circling above nest left the nest tree flying south
	Same 2 A	9:35	returned to nest tree with food, 1 disappeared into tree, the other remained perched on top Remained in this clump and adjacent palms
			until survey ended at 10:45 AM

Glossy ibis, great egret, wild turkey, eastern meadowlark, black vulture, boat-tailed grackle, cardinal, pileated wp., roseate spoonbill, white ibis, red-shouldered hawk, red-bellied cb., Sandhill crane, mourning dove, little blue heron, merganser duck, kestrel, tricolored egret



Palm Bay

Malabar Road

From St. Johns Heritage Parkway to Minton Road
Brevard County, FL
FPID: 437210-1-28-01

J. Bathurst

CARACARA SURVEY STATION LOCATION MAP

DATE 4/22/2020

STATION 5

APPENDIX F

Standard Local Operating Procedures for Audubon's Crested
Caracara

DRAFT

Standard Local Operating Procedures for Endangered Species
Audubon's Crested Caracara

Start Here

STEP 1
- Project Description
- Habitat Description
- Checked County List?

STEP 2
- ✓Check Consultation Area Map
- ✓Check Suitable Habitat

STEP 3

Inside Consultation Area?
- No → **STEP 4** → **No Effect** → **Proceed with Action**
- Yes → Suitable Habitat?
  - No → **No Effect**
  - Yes → Survey Habitat For Nests and aggregations.
    - Nest within 1,500 m / 4,920 ft or Aggregation Present?
      - No → **No Effect**
      - Yes → Recommended Management Practices for Caracaras (Morrison 2001)
        - Can not avoid or implement Conservation Measures → **Likely to Adversely Affect** → **Formal Consultation**
        - Conservation Measures:
          - Conservation measures implemented.
          - Actions proposed outside nesting season.
          - Conservation measures implemented.
          - During nesting season.
          - Site monitor.
          - Conservation measures modified with supporting data
          - Minimal habitat modification in primary or secondary zones.
          - On-site enhancement and restoration.

→ **Not Likely to Adversely Affect** Request Concurrence

→ Service Response?
- Yes → **Proceed with Action**
- No → **Likely to Adversely Affect** → **Formal Consultation**

November 4, 2003

Figure 1.

APPENDIX G

Florida Scrub-jay 2020 Survey Data

Scrub-Jay Survey Guidelines

(Updated 08/24/2007)

Adapted from: *J.W. Fitzpatrick, G.E. Woolfenden and M.T. Kopeny. 1991. Ecology and development-related habitat requirements of the Florida scrub-jay (Aphelocoma coerulescens). Florida Game and Fresh Water Fish Commission, Nongame Wildlife Program Technical Report No. 8. Tallahassee, FL. 49pp.*

The most effective method for surveying a site for Florida scrub-jays is to traverse the area systematically, using a high quality tape recording of Florida scrub-jay territorial scolding in an attempt to attract the jays. The recording should include clear examples of all typical territorial scolds, including the female "hiccup" call. Vocalizations are available by contacting:

Macaulay Library
Cornell Lab of Ornithology
159 Sapsucker Rd.
Ithaca, NY 14850
Email: macaulaylibrary@cornell.edu
http://birds.cornell.edu

Map plant communities either on a 7.5 foot U.S. Geological Survey (USGS) topographic map or an aerial photograph at a scale of no more than 400 feet per inch. The vegetation map must show all forms of existing development. On the vegetation map, establish parallel line transects with playback stations along each transect. Space the transects and playback stations so that all different scrub types will be sampled for jays (i.e., so that the taped calls will be effectively broadcast across areas of concern). These scrub types should include not only the more "classic" xeric oak scrub, scrubby pine flatwoods, scrubby coastal strand, and sand pine scrub, but should also include:

- pine-mesic oak
- xeric oak
- sand live oak
- improved, unimproved, and woodland pastures;
- citrus groves;
- rangeland;
- pine flat woods;
- longleaf pine xeric oak;
- sand pine;
- sand pine plantations;
- forest regeneration areas;
- sand other than beaches;
- disturbed rural land in transition without positive indicators of intended activity; and disturbed burned areas.

The presence of scrub oaks, no matter how sparsely distributed, is the key indicator of "scrub" habitat.

Distances between transects, and between stations along transects, depend on many factors, including power of the speaker used for broadcasting the calls, topography of the site, and the density of the surrounding vegetation. Adequate spacing between transects can be estimated roughly as the distance at which a person listening to the tape directly in front of the speaker perceives the "bird" to be no more than about 100 meters away. A distance of 100 to 200 meters between transects and between stations is generally adequate when using a good-quality, hand-held cassette player broadcasting at full volume.

Surveys should be carried out on calm, clear days about one hour after sunrise, and should terminate before midday heat or wind. Surveys should not be conducted in winds stronger than a moderate breeze (5-8 mph), in mist or fog, or in precipitation exceeding a light, intermittent drizzle. Heat and especially wind lowers the tendency for jays to respond to distant territorial scolds, and wind reduces the distance over which recordings can be heard. Jays are also reluctant to fly on windy days regardless of hour or season. Surveys also should NOT be conducted if accipiters or other scrub-jay predators are present in the area; in the event this is the case, the surveyor should either wait until the predator is gone or come back on another day.

Surveys may be conducted anytime between March 1 through October 31. However, Ideal survey periods include: 1) spring (especially March), 2) fall (September and October), when territorial displays are most frequent and vigorous, and 3) midsummer (July) when young of the year are independent but still distinguishable by plumage. The poorest times of the year to survey are late winter, when jays are most likely to fly far for food, and late spring when the young are quiet and the adults are occupied with molt and feeding fledglings.

Transects may be driven or walked. If driven, step out or stand atop the vehicle at each playback station. Broadcast the calls at each station for at least 1 minute in all four directions around the playback station, emphasizing any direction in which low-growing oak scrub is the predominant vegetation. On the vegetation map, plot the locations and indicate group size of all Florida scrub-jays where they are first seen or heard. Distinguish adult-plumaged jays from juvenile-plumaged jays whenever possible.

At localities with car trails, large areas of scrub can be surveyed with a vehicle in one day. On foot, the process is more laborious because of the relatively large size of territories (often 10 to 40 acres). Once a group is located, stop broadcasting at that station. Remaining at this station briefly should result in the assembly of the entire group. This allows one to estimate group size and, if done during the midsummer, to distinguish young of the year from adults.

Sometimes two or more groups will be attracted to one station, usually from different directions. Observers should be careful, therefore, to plot each group where it was first spotted or heard, not at the site to which the jays were attracted. In rare circumstances, especially at sites where numerous groups congregate at artificial food or water sources, it may be difficult to differentiate groups. This is especially true where jays have become habituated and tame to human approach. Again, in such cases careful observation is extremely important. Studies of such congregations using color-marked jays have confirmed that almost always they consist of members of different family groups. Often they may have crossed several territory boundaries to reach the neutral feeding or drinking areas. The result gives a false impression of extremely high jay density.

It is essential that the subject area be surveyed as often as necessary (for a minimum of 5 days) to establish an accurate count of jay groups and territorial boundaries. If more than 8 to 10 jays are encountered at a single playback station during a fall or spring survey period, the jays at this site should be monitored carefully over several visits and different times of day. Numbers will shift as groups arrive and depart. Often it is possible to watch where the jays come from or return to as a means of determining how many groups are represented. For determining territorial boundaries, it is essential that the surveyor be familiar with different types of behavior exhibited by scrub-jays. Territorial boundaries may be most accurately predicted through a combination of observing scrub-jays and listening for territorial behavior (in the case where several families of scrub-jays exist in contiguous habitat) or by including habitat suitable for occupation by scrub-jays within a territorial boundary (in the case where a family of scrub-jays is somewhat isolated from other groups). If a question exists as to how many groups of scrub-jays are onsite, or where to draw territorial boundaries, it is strongly recommended that the U.S. Fish and Wildlife Service receive permission from the land owner to conduct an independent survey onsite.

The key end products of this procedure are: (1) a complete count of all jay groups onsite and (2) an approximate territory map or home range center for each group. Provide the U.S. Fish and Wildlife Service with a final report that includes the following, as applicable:

A. An information sheet including:
   - Dates and starting and ending times of all surveys conducted.
   - Weather conditions during all surveys, including average temperature, wind speed and direction, visibility, and precipitation.
   - Total number of jay groups found, number of jays in each group and number of juvenile-plumaged jays in each of these groups.

B. An aerial photograph or vegetation map depicting:
   - The entire area of interest.
   - Transect lines and playback stations.
   - Locations of all jays seen or heard while conducting the survey or at any other time, including flight direction.
   - Approximate suspected territory boundaries between jay groups or suspected home range centers for each group.

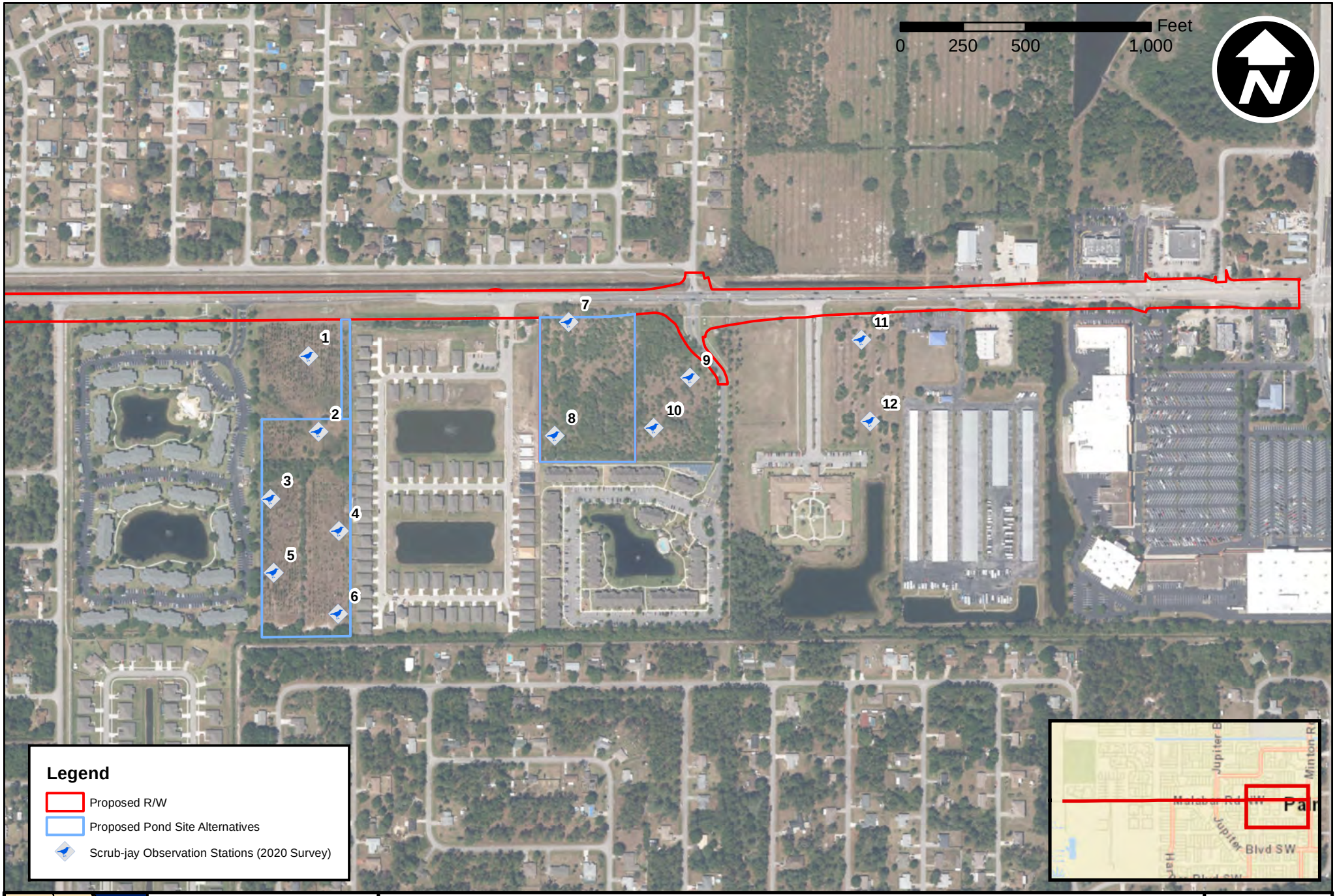
Mail Scrub-jay survey reports to:

North Florida Counties

Scrub-Jay Survey
U.S. Fish and Wildlife Service
7915 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517

South Florida Counties

Scrub-Jay Survey
U.S. Fish and Wildlife Service
1339 20th St.
Vero Beach, FL 32960-3559



The City of Palm Bay, Florida
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Malabar Road PD&E Study
From St. Johns Heritage Parkway to Minton Road
Brevard County, FL

FPID: 437210-1-28-01

SCRUB-JAY SURVEY MAP

FIGURE 1

Habitat Assessment Data Sheet

Call Station No.: FSJ 1 Scientist: T. Mueller

Location: Malabar Rd

FLUCFCS Code: 440

Habitat Description: Tree Plantation

Canopy (include % Scrub Oak):
Slashpine
0% Scrub oak

Shrub (% Scrub Oak:):
Immetve cabbagepalm; gelberry;
Immeture slashpine; Braz. Pepper
5% scrub oak

Herbaceous:
St. Augestine grass; Andropogan;
wire grass; oak saplings;
pawpaw; blackberry;
pine saplings;

Notes:
Few very small open sandy areas;

Scrub Jay Habitat Type (Type I, II, or III): III

Habitat Assessment Data Sheet

Call Station No.: FSJ2 Scientist: T. Mueller

Location: Malabar Rd

FLUCFCS Code: 440

Habitat Description: Tree Plantation

Canopy (include % Scrub Oak):
Laurel oak; cabbage palm
< 1% scrub oak.

Shrub (% Scrub Oak:):
Wax myrtle; Braz. Pepper; primrose willow
Blackberry; cabbage palm; pine seedlings;
0% scrub oak

Herbaceous:
Goldenrod; andropodan;
carpet grass; pine saplings;
meadow beauty; rumex spp.;
St. Augustine grass; crab grass;
carpet grass; spade leaf

Notes:
Ground almost completely covered by grasses and pine needles; Very few small open sandy areas.

Scrub Jay Habitat Type (Type I, II, or III): III

Habitat Assessment Data Sheet

Call Station No.: FSJ 3 Scientist: T. Mueller

Location: Malabar Rd

FLUCFCS Code: 440

Habitat Description: Tree Plantation

Canopy (include % Scrub Oak):
Brazilian Pepper
cabbage palm
slash pine
0% scrub oak

Shrub (% Scrub Oak:):
wax myrtle; Brazil Pepper
saltbush
sand live oak
0% scrub oak

Herbaceous:
Andropogon; blackberry
swamp fern; paw paw
rumex spp; wire grass
pine sapplings
spadeleaf

Notes:
Dense groundcover minimal open sandy patches
small

Scrub Jay Habitat Type (Type I, II, or III): III

Habitat Assessment Data Sheet

Call Station No.: FSG4 Scientist: T. Mellor

Location: Malabar Rd

FLUCFCS Code: 440

Habitat Description: Tree Plantatio

Canopy (include % Scrub Oak):
Slash pine
0% Scrubock

Shrub (% Scrub Oak:):
Braz. Pepper; saltbush; immature pine
0% scrub oak; saw palm; cabbage palm;

Herbaceous:
Dog fennel; andropogon spp; wiregrass
carpet grass; St. Augustine grass
pine saplings;

Notes:

Scrub Jay Habitat Type (Type I, II, or III): III

Habitat Assessment Data Sheet

Call Station No.: FS95 Scientist: T. Mueller

Location: Melebar Rd.

FLUCFCS Code: 440

Habitat Description: Tree Plantation

Canopy (include % Scrub Oak):

Slash pine
laurel oak 0% scrub oak

Shrub (% Scrub Oak:):

oak immature;
saltbush; Braz pepper
cabbage palm; saw palm; 0% scrub oak

Herbaceous:

Andropogen; blackberry;
wire grass; dog fennel;
St Johns wort; St. Augustine grass

Notes: Dense ground cover leaving no open sandy patches.

Scrub Jay Habitat Type (Type I, II, or III): III

Habitat Assessment Data Sheet

Call Station No.: FSU 6 Scientist: T. Mueller

Location: Malabar Rd.

FLUCFCS Code: 440

Habitat Description: Tree Plantation

Canopy (include % Scrub Oak):

live oak; laurel oak; sand live oak;
0% scrub oak

Shrub (% Scrub Oak:):

Immature pine; cabbage palm; wax myrtle
Sand live oak; Brazilian Pepper
0% scrub oak

Herbaceous:

runner oak; wire grass; pine saplings;
Smilax; various sedges; muscadine grape
various grasses

Notes:

large open sandy areas.

Scrub Jay Habitat Type (Type I, II, or III): III

Habitat Assessment Data Sheet

Call Station No.: FSJ7 Scientist: T. Mueller

Location: Malabar Rd.

FLUCFCS Code: 428

Habitat Description: Cabbage Palm

Canopy (include % Scrub Oak):

Slash pine 0% scrub oak

Shrub (% Scrub Oak:):

Sand live oak; Immature pine; Braz Pepper; cabbage palm; Laurel oak; <1%

Herbaceous:

Ragweed; Bahaia grass; crabgrass; big carpetgrass; beggarticks; Blackberry; andropogen

Notes:

Few small open sandy patches; mostly dense groundcover

Scrub Jay Habitat Type (Type I, II, or III): III

Habitat Assessment Data Sheet

Call Station No.: #508 Scientist: T. Mulla

Location: Malabar Rd.

FLUCFCS Code: 428

Habitat Description: Cabbage Palm

Canopy (include % Scrub Oak):

live oak 0% scrub oak

Shrub (% Scrub Oak:):

Cabbage palm; Braz. Pepper Carolina willow; Primrose willow salt bush; wax myrtle 0% scrub oak

Herbaceous:

Beggar tick; hydrocotyl; ragweed; carpetgrass Bahaiagrass; St Augustine grass.

Notes: Some small open sandy patches

Scrub Jay Habitat Type (Type I, II, or III): III

Habitat Assessment Data Sheet

Call Station No.: FSJ 9 Scientist: T. Mellor

Location: Malabar Rd.

FLUCFCS Code: 428

Habitat Description: Cabbage Palm

Canopy (include % Scrub Oak):

cabbage palm; live oak
0% scrub oak

Shrub (% Scrub Oak:):

Laurel ~~oak~~ sapling; Brazpepper;
cabbagepalm;
0% scrub oak

Herbaceous:

Bahiagrass; ragweed;
hydrocotyl; andropogon spp;
muscadine grapevine

Notes:

Groundcover dominated by bahiagrass; Open sandy patches less than a 1' and minimal;

Scrub Jay Habitat Type (Type I, II, or III): III

Habitat Assessment Data Sheet

Call Station No.: FSJ10 Scientist: T. Mueller

Location: Melaber Rd.

FLUCFCS Code: 428

Habitat Description: Cabbage Palm

Canopy (include % Scrub Oak):

Shrub (% Scrub Oak:):

Laurel oak; cabbage palm; Brazilian pepper; saplings

0% scrub oak

Herbaceous:

Dog fennel; Bahaia; Andropogon spp; grapevine; crabgrass; boston sword fern;

Notes:

Ground cover dominated by various grasses, minimal small open sandy patches.

Scrub Jay Habitat Type (Type I, II, or III): III

Habitat Assessment Data Sheet

Call Station No.: FSJ11 Scientist: T. Mueller

Location: Malabar Rd

FLUCFCS Code: 170

Habitat Description: Institutional

Canopy (include % Scrub Oak):

live oak; willow oak; 0% scrub oak

Shrub (% Scrub Oak:):

Chapman's oak; slash pine sand live oak; saw palm cabbage palm 30% Scrub oak

Herbaceous:

Bahiagrass; Florida pusley; Bermuda grass smilax; grapevine

Notes:

Mowed and maintained with large open sandy patches throughout; habitat w/in parcel associated w/ memory care facility

Scrub Jay Habitat Type (Type I, II, or III): I

Habitat Assessment Data Sheet

Call Station No.: FSJR Scientist: T. Muller

Location: Malabar Rd

FLUCFCS Code: 170

Habitat Description: Institutional

Canopy (include % Scrub Oak):

Cavarel oak
Live oak;
Sand live

0% scrub oak

Shrub (% Scrub Oak:):

Sand live; chapmans oak
immature laurel
Cabbage palm, Brez pepper
immature pine; Saw palmetto

<15%

Herbaceous:

Bahaia grass; beggarticks;
Smilax; dogfennel; virginia creeper

Notes:

mowed and maintained w/ Large open sandy patches throughout; Dominated by oak species; habitat w/in parcel associated w/ memory care facility

Scrub Jay Habitat Type (Type I, II, or III): II

Scrub Jay Survey Data Sheet

Call Station No.: FSJ 1 **Scientist:** J. Barhorst, T. Mueller

Date: 3/31/20 **Wind Speed & Direction:** SW 0-5 mph

Call Start Time: 8:53a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:
boat-tailed grackle;
other wildlife: American Crow; Cardinal; catbird, common grackle;

Call Station No.: FSJ 2 **Scientist:** J. Barhorst, T. Mueller

Date: 3/31/20 **Wind Speed & Direction:** SW 0-5 mph

Call Start Time: 9:02a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:
other observed wildlife: cardinal; catbird; american crow;
common grackle; boat-tailed grackle

Call Station No.: FSJ 4 **Scientist:** J. Barhorst; T. Muller

Date: 3/31/20 **Wind Speed & Direction:** SW 0-5 mph

Call Start Time: 9:13a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:
Other observed wildlife; turkey vulture;

Scrub Jay Survey Data Sheet

Call Station No.: FSJ6 **Scientist:** J. Baharst; T. Mella

Date: 3/31/20 **Wind Speed & Direction:** SW 0-7mph

Call Start Time: 9:21a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes: shutdown survey @ 9:23a due to accipiter; resumed @ 9:25a

bluejay

Call Station No.: FSJ5 **Scientist:** J. Baharst; T. Mella

Date: 3/31/20 **Wind Speed & Direction:** SW 0-7mph

Call Start Time: 9:37a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

other wildlife observed: blackvreer,

Call Station No.: FSJ3 **Scientist:** J. Baharst; T. Mella

Date: 3/31/20 **Wind Speed & Direction:** SW 0-7mph

Call Start Time: 9:43a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

Other observed wildlife: oatbird,

Scrub Jay Survey Data Sheet

Call Station No.: FSJ7 **Scientist:** T. Mueller, J. Barbarost

Date: 3/31/20 **Wind Speed & Direction:** SW 0-6mph

Call Start Time: 10:10a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: ~~0~~ **Juveniles:** 0

Notes:

observed wildlife: cardinal

Call Station No.: FSJ8 **Scientist:** T. Mueller, J. Barbarost

Date: 3/31/20 **Wind Speed & Direction:** SW 0-6mph

Call Start Time: 10:18a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: 0 **Juveniles:** 0

Notes:

observed wildlife: cardinal

Call Station No.: FSJ9 **Scientist:** T. Mueller, J. Barbarost

Date: 3/31/20 **Wind Speed & Direction:** SW 0-6mph

Call Start Time: 10:38a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: 0 **Juveniles:** 0

Notes:

n/a

Scrub Jay Survey Data Sheet

Call Station No.: FSJ10 **Scientist:** J. Berhorst; T. Mueller

Date: 3/31/20 **Wind Speed & Direction:** SW 0-6 mph

Call Start Time: 10:46a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: 0 **Juveniles:** 0

Notes:

n/a

Call Station No.: FSJ12 **Scientist:** J. Berhorst; T. Mueller

Date: 3/31/20 **Wind Speed & Direction:** SW 0-7 mph

Call Start Time: 10:59a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: 0 **Juveniles:** 0

Notes:

observed wildlife: Brown thrasher; cardinal

Call Station No.: FSJ11 **Scientist:** J. Berhorst; T. Mueller

Date: 3/31/20 **Wind Speed & Direction:** SW 0-7 mph

Call Start Time: 11:06a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: 0 **Juveniles:** 0

Notes:

observed wildlife: fish crow; American Crow

Scrub Jay Survey Data Sheet

Call Station No.: FSJ10 **Scientist:** J. Berhorst; T. Mella

Date: 4/1/20 **Wind Speed & Direction:** NW 0-8mph

Call Start Time: 10:56a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

wildlife observed: cardinal

Call Station No.: FSJ12 **Scientist:** J. Berhorst

Date: 4/1/20 **Wind Speed & Direction:** NW 0-8mph

Call Start Time: 11:09 **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

wildlife observed: turkey vulture; swallow-tailed kite
cardinal

Call Station No.: FSJ11 **Scientist:** J. Berhorst, T. Mella

Date: 4/1/20 **Wind Speed & Direction:** NW 0 8mph

Call Start Time: 11:26a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

wildlife observed: cardinal

Scrub Jay Survey Data Sheet

Call Station No.: FSJ 1 **Scientist:** J. Berhorst; T. Mueller

Date: 4/1/20 **Wind Speed & Direction:** NW 0-6mph

Call Start Time: 8:48a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

wildlife observed: common grackle;

Call Station No.: FSJ 2 **Scientist:** J. Berhorst; T. Mueller

Date: 4/1/20 **Wind Speed & Direction:** NW 0-6mph

Call Start Time: 9:01 am **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

cardinal;

Call Station No.: FSJ 4 **Scientist:** J. Berhorst; T. Mueller

Date: 4/1/20 **Wind Speed & Direction:** NW 0-8mph

Call Start Time: 9:15a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:**

Adults: **Juveniles:**

Notes:

morning dove

Scrub Jay Survey Data Sheet

Call Station No.: FSJ 6 **Scientist:** J. Barhorst; T. Mueller

Date: 4/1/20 **Wind Speed & Direction:** NW 0-8mph

Call Start Time: 9:25 **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

common grackle

Call Station No.: FSJ 5 **Scientist:** J. Barhorst; T. Mueller

Date: 4/1/20 **Wind Speed & Direction:** NW 0-7mph

Call Start Time: 9:41a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

n/a

Call Station No.: FSJ 3 **Scientist:** J. Barhorst; T. Mueller

Date: 4/1/20 **Wind Speed & Direction:** NW 0-7mph

Call Start Time: 9:53a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

n/a

Scrub Jay Survey Data Sheet

Call Station No.: FSJ 7 **Scientist:** J. Barhorst; T. Mueller

Date: 4/1/20 **Wind Speed & Direction:** NW 0-8mph

Call Start Time: 10:16a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

Turkey Vulture

Call Station No.: FSJ 8 **Scientist:** J. Barhorst; T. Mueller

Date: 4/1/20 **Wind Speed & Direction:** NW 0-8mph

Call Start Time: 10:28a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

catbird; cardinal; common grackle;

Call Station No.: FSJ 9 **Scientist:** J. Barhorst; T. Mueller

Date: 4/1/20 **Wind Speed & Direction:** NW 0-8mph

Call Start Time: 10:49a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

Wood Stork

Scrub Jay Survey Data Sheet

Call Station No.: FSJ 11 **Scientist:** J.Barhorst; T.Mueller

Date: 4/2/20 **Wind Speed & Direction:** NW 0-3mph

Call Start Time: 8:46a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

cardinal; fish crow

Call Station No.: FSJ 12 **Scientist:** J.Barhorst; T.Mueller

Date: 4/2/20 **Wind Speed & Direction:** NW 0-3mph

Call Start Time: 8:52a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

cardinal; common grackle; red eared slider

Call Station No.: FSJ 9 **Scientist:** J.Barhorst; T.Mueller

Date: 4/2/20 **Wind Speed & Direction:** NW 0-3mph

Call Start Time: 9:06a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

Blue-jay; cardinal; boat-tailed grackle; catbird

Scrub Jay Survey Data Sheet

Call Station No.: FSJ 10 **Scientist:** J. Barhorst; T. Mueller

Date: 4/2/20 **Wind Speed & Direction:** clear

Call Start Time: 9:12a **Precipitation & Visibility:** NW 0-3 mph

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

white ibis; cardinal; American Crow; catbird

Call Station No.: FSJ 8 **Scientist:** J. Barhorst; T. Mueller

Date: 4/2/20 **Wind Speed & Direction:** NW 0-4 mph

Call Start Time: 9:26a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

mourning dove; boat tailed grackle; cardinal

Call Station No.: FSJ 7 **Scientist:** J. Barhorst; T. Mueller

Date: 4/2/20 **Wind Speed & Direction:** NW 0-4 mph

Call Start Time: 9:34a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

Catbird; cardinal; house wren;

Scrub Jay Survey Data Sheet

Call Station No.: FSJ3 **Scientist:** J.Barhorst; T.Mueller

Date: 4/2/20 **Wind Speed & Direction:** NW 0-5mph

Call Start Time: 9:52a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

Boat tailed grackle; starling; fish crow;

Call Station No.: FSJ5 **Scientist:** J.Barhorst; T. Mueller

Date: 4/2/20 **Wind Speed & Direction:** NW 0-3mph

Call Start Time: 9:59a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

Black vulture; swallow tailed kite; Blue jay;

Call Station No.: FSJ6 **Scientist:** J.Barhorst; T.Mueller

Date: 4/2/20 **Wind Speed & Direction:** NW 0-5mph

Call Start Time: 10:06a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

Black vulture; turkey vulture;

Scrub Jay Survey Data Sheet

Call Station No.: FSJ 4 **Scientist:** J. Barhorst; T. Mueller

Date: 4/2/20 **Wind Speed & Direction:** NW 0-4mph

Call Start Time: 10:13a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

Cardinal; Black vulture; Boat tailed grackle

Call Station No.: FSJ 3 **Scientist:** J. Barhorst; T. Mueller

Date: 4/2/20 **Wind Speed & Direction:** NW 0-3mph

Call Start Time: 10:23a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

Starling; boat tailed grackle; cardinal; house wren; catbird

Call Station No.: FSJ 2 **Scientist:** J Barhorst; T. Mueller

Date: 4/2/20 **Wind Speed & Direction:** NW 0-2mph

Call Start Time: 10:31a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

Boat tailed grackle; cardinal; Black vulture

Scrub Jay Survey Data Sheet

Call Station No.: FSJ 10 **Scientist:** T. Mueller; J. Barhorst

Date: 4/14/20 **Wind Speed & Direction:** SSW 0-4mph

Call Start Time: 10:11a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: 0 **Juveniles:** 0

Notes:

Cardinal;

Call Station No.: FSJ 12 **Scientist:** T. Mueller; J. Barhorst

Date: 4/14/20 **Wind Speed & Direction:** SSW 0-4mph

Call Start Time: 10:22a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: 0 **Juveniles:** 0

Notes:

Brown thrasher; turkey vulture; Boat-tailed grackle

Call Station No.: FSJ 11 **Scientist:** T. Mueller; J. Barhorst

Date: 4/14/20 **Wind Speed & Direction:** SSW 0-5mph

Call Start Time: 10:27a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: 0 **Juveniles:** 0

Notes:

Cardinal; Bluegray;

Scrub Jay Survey Data Sheet

Call Station No.: FSJ 1 **Scientist:** T. Mueller; J. Bachorst

Date: 4/14/20 **Wind Speed & Direction:** SSW 0-2mph

Call Start Time: 8:38 **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

mourning dove; common grackle; boat tailed grackle

Call Station No.: FSJ 2 **Scientist:** T. Mueller; J. Bachorst

Date: 4/14/20 **Wind Speed & Direction:** SSW 0-2mph

Call Start Time: 8:46a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

Boat tailed grackle; red bellied woodpecker;

Call Station No.: FSJ 4 **Scientist:** T. Mueller; J. Bachorst

Date: 4/14/20 **Wind Speed & Direction:** SSW 0-2mph

Call Start Time: 8:55a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

Cardinal; catbird; boat tailed grackle;

Scrub Jay Survey Data Sheet

Call Station No.: FSJ 6 **Scientist:** T. Mueller; J. Barhorst

Date: 4/14/20 **Wind Speed & Direction:** SSW 0-2mph

Call Start Time: 9:04a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

Blue jay; squirrel; ground dove; red bellied woodpecker

Call Station No.: FSJ 5 **Scientist:** T. Mueller; J Barhorst.

Date: 4/14/20 **Wind Speed & Direction:** SSW 0-2mph

Call Start Time: 9:11a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

Cardinal; boat tailed grackle

Call Station No.: FSJ 3 **Scientist:** T. Mueller; J Barhorst

Date: 4/14/20 **Wind Speed & Direction:** SSW 0-2mph

Call Start Time: 9:18a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: Ø **Juveniles:** Ø

Notes:

cowbird; boat tailed grackle; blue jay;

Scrub Jay Survey Data Sheet

Call Station No.: FSJ7 **Scientist:** T. Mueller, J. Barhorst

Date: 4/14/20 **Wind Speed & Direction:** SSW 0-2 mph

Call Start Time: 9:37a **Precipitation & Visibility:** clear ~~clear~~

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

n/a

Call Station No.: FSJ8 **Scientist:** T. Mueller, J. Barhorst

Date: 4/14/20 **Wind Speed & Direction:** SSW 0-4 mph

Call Start Time: 9:44a **Precipitation & Visibility:** clear ~~clear~~

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

Cardinal; Blackvulture;

Call Station No.: FSJ9 **Scientist:** T. Mueller, J. Barhorst

Date: 4/14/20 **Wind Speed & Direction:** SSW 0-6 mph

Call Start Time: 10:04a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

Blackvulture

Scrub Jay Survey Data Sheet

Call Station No.: FSJ 3 **Scientist:** T. Mueller, J. Berhorst

Date: 4/15/20 **Wind Speed & Direction:** SSW 0-4mph

Call Start Time: 9:00a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: 0 **Juveniles:** 0

Notes:

morning dove; cardinal;

Call Station No.: FSJ 5 **Scientist:** T. Mueller, J. Berhorst

Date: 4/15/20 **Wind Speed & Direction:** SSW 0-4mph

Call Start Time: 907a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: 0 **Juveniles:** 0

Notes:

Mottled duck; fish crow;

Call Station No.: FSJ 6 **Scientist:** T. Mueller, J. Berhorst

Date: 4/15/20 **Wind Speed & Direction:** SSW 0-4mph

Call Start Time: 9:13a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed: **Direction of Flight:** n/a

Adults: 0 **Juveniles:** 0

Notes:

Cardinal

Scrub Jay Survey Data Sheet

Call Station No.: FSS4 **Scientist:** T. Mueller; J. Barhorst

Date: 4/15/20 **Wind Speed & Direction:** SSW 0-5mph

Call Start Time: 9:21 **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: 0 **Juveniles:** 0 **Direction of Flight:** n/a

Notes:

Bluejay; Cardinal

Call Station No.: FSJ2 **Scientist:** T. Mueller; J. Barhorst

Date: 4/15/20 **Wind Speed & Direction:** SSW 0-4mph

Call Start Time: 9:28a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: 0 **Juveniles:** 0 **Direction of Flight:** n/a

Notes:

Cardinal; catbird;

Call Station No.: FSJ1 **Scientist:** T. Mueller; J. Barhorst

Date: 4/15/20 **Wind Speed & Direction:** SSW 0-3mph

Call Start Time: 9:34a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: 0 **Juveniles:** 0 **Direction of Flight:** n/a

Notes:

boat-tailed grackle; catbird;

Scrub Jay Survey Data Sheet

Call Station No.: FSJ8 **Scientist:** T. Mueller; J. Barhorst

Date: 4/15/20 **Wind Speed & Direction:** SSW 0-5mph

Call Start Time: 9:48a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

Black vulture;

Call Station No.: FSJ7 **Scientist:** T. Mueller; J. Barhorst

Date: 4/15/20 **Wind Speed & Direction:** SSW 0-5mph

Call Start Time: 10:03a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

boat tailed grackle; Fish crow

Call Station No.: FSJ9 **Scientist:** T. Mueller; J. Barhorst

Date: 4/15/20 **Wind Speed & Direction:** SSW 0-3mph

Call Start Time: 10:13a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

Cardinal; blue jay; American crow

Scrub Jay Survey Data Sheet

Call Station No.: FSJ 10 **Scientist:** T. Mueller, J. Bahorst

Date: 4/15/20 **Wind Speed & Direction:** SSW 0-3mph

Call Start Time: 10:19a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

Great egret;

Call Station No.: FSJ 12 **Scientist:** T. Mueller; J. Bahorst

Date: 4/15/20 **Wind Speed & Direction:** SSW 0-4mph

Call Start Time: 10:29a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

Brown thrasher; fish crow; grey squirrel;

Call Station No.: FSJ 11 **Scientist:** T. Mueller; J. Bahorst

Date: 4/15/20 **Wind Speed & Direction:** SSW 0-5mph

Call Start Time: 10:34a **Precipitation & Visibility:** clear

Number of Scrub Jays Observed:
Adults: Ø **Juveniles:** Ø **Direction of Flight:** n/a

Notes:

Cardinal, American Crow;

APPENDIX H

Wood Stork Effect Determination Key

THE CORPS OF ENGINEERS, JACKSONVILLE DISTRICT, U. S. FISH AND WILDLIFE SERVICE, JACKSONVILLE ECOLOGICAL SERVICES FIELD OFFICE AND STATE OF FLORIDA EFFECT DETERMINATION KEY FOR THE WOOD STORK IN CENTRAL AND NORTH PENINSULAR FLORIDA
September 2008

Purpose and Background

The purpose of this document is to provide a tool to improve the timing and consistency of review of Federal and State permit applications and Federal civil works projects, for potential effects of these projects on the endangered wood stork (*Mycteria americana*) within the Jacksonville Ecological Services Field Office (JAFL) geographic area of responsibility (GAR see below). The key is designed primarily for Corps Project Managers in the Regulatory and Planning Divisions and the Florida Department of Environmental Protection or its authorized designee, or Water Management Districts. The tool consists of the following dichotomous key and reference material. The key is intended to be used to evaluate permit applications and Corps' civil works projects for impacts potentially affecting wood storks or their wetland habitats. At certain steps in the key, the user is referred to graphics depicting known wood stork nesting colonies and their core foraging areas (CFA), footnotes, and other support documents. The graphics and supporting documents may be downloaded from the Corps' web page at http://www.saj.usace.army.mil/permit or at the JAFL web site at http://www.fws.gov/northflorida/WoodStorks. We intend to utilize the most recent information for both the graphics and supporting information; so should this information be updated, we will modify it accordingly. **Note: This information is provided as an aid to project review and analysis, and is not intended to substitute for a comprehensive biological assessment of potential project impacts. Such assessments are site-specific and usually generated by the project applicant or, in the case of civil works projects, by the Corps or project co-sponsor.**

Explanatory footnotes provided in the key must be closely followed whenever encountered.

Scope of the key

This key should only be used in the review of permit applications for effects determinations on wood storks within the JAFL GAR, and not for other listed species. Counties within the JAFL GAR include Alachua, Baker, Bradford, Brevard, Citrus, Clay, Columbia, Dixie, Duval, Flagler, Gilchrist, Hamilton, Hernando, Hillsborough, Lafayette, Lake, Levy, Madison, Manatee, Marion, Nassau, Orange, Pasco, Pinellas, Putnam, St. Johns, Seminole, Sumter, Suwannee, Taylor, Union, and Volusia.

The final effect determination will be based on project location and description, the potential effects to wood storks, and any measures (for example project components, special permit conditions) that avoid or minimize direct, indirect, and/or cumulative

impacts to wood storks and/or suitable wood stork foraging habitat. Projects that key to a "no effect" determination do not require additional consultation or coordination with the JAFL. Projects that key to "NLAA" also do not need further consultation; however, the JAFL staff will assist the Corps if requested, to answer questions regarding the appropriateness of mitigation options. Projects that key to a "may affect" determination equate to "likely to adversely affect" situations, and those projects should not be processed under the SPGP or any other programmatic general permit. For all "may affect" determinations, Corps Project Managers should request the JAFL to initiate formal consultation on the Wood stork.

Summary of General Wood Stork Nesting and Foraging Habitat Information

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 either in swamps or on islands surrounded by relatively broad expanses of open water (Ogden 1991; Rodgers et al. 1996). 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 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.

In addition to limited human disturbance and land-based predation, successful nesting depends on the availability of suitable foraging habitat. Such habitat generally results from a combination 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 that tends to 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 opportunities, a variety of wetland habitats exhibiting short and long hydroperiods should be present. In terms of wood stork foraging, the Service (1999) describes a short hydroperiod as one where a wetland fluctuates between wet and dry in 1 to 5-month cycles, and a long hydroperiod where the wet period is greater than five consecutive months. Wood storks during the wet season generally feed in the shallow water of 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).

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, swamp sloughs, managed impoundments, stock ponds, shallow-seasonally flooded roadside or agricultural ditches, and narrow tidal creeks or shallow tidal pools. Good foraging conditions are characterized by water that is relatively calm, open, and having water depths between 5 and 15 inches (5 and 38 cm). Preferred foraging habitat includes wetlands exhibiting a mosaic of submerged and/or emergent aquatic vegetation, and shallow, open-water areas subject to hydrologic

regimes ranging from dry to wet. 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.

WOOD STORK KEY

Although designed primarily for use by Corps Project Managers in the Regulatory and Planning Divisions, and State Regulatory agencies or their designees, project permit applicants and co-sponsors of civil works projects may find this key and its supporting documents useful in identifying potential project impacts to wood storks, and planning how best to avoid, minimize, or compensate for any identified adverse effects.

A. Project within 2,500 feet of an active colony site[1]……*May affect*

Project more than 2,500 feet from a colony site……go to B

B. Project does not affect suitable foraging habitat[2] (SFH)…….*no effect*

Project impacts SFH[2]……go to C

C. Project impacts to SFH are less than or equal to 0.5 acre[3]…….....*NLAA*[4]

Project impacts to SFH are greater than or equal to 0.5 acre..……..go to D

D. Project impacts to SFH not within a Core Foraging Area[5] (see attached map) of a colony site, and no wood storks have been documented foraging on site…….....NLAA[4]

Project impacts to SFH are within the CFA of a colony site, or wood storks have been documented foraging on a project site outside the CFA ……..….go to E

E. Project provides SFH compensation within the Service Area of a Service-approved wetland mitigation bank or wood stork conservation bank preferably within the CFA, or consists of SFH compensation within the CFA consisting of enhancement, restoration or creation in a project phased approach that provides an amount of habitat and foraging function equivalent to that of impacted SFH (see *Wood Stork Foraging Habitat Assessment Procedure*[6] for guidance), is not contrary to the Service's *Habitat Management Guidelines For The Wood Stork In The Southeast Region* and in accordance with the CWA section 404(b)(1) guidelines……*NLAA*[4]

Project does not satisfy these elements.……....……...*May affect*

[1] An active nesting site is defined as a site currently supporting breeding pairs of wood storks, or has supported breeding wood storks at least once during the preceding 10-year period.

[2] Suitable foraging habitat (SFH) is described as any area containing patches of relatively open (< 25% aquatic vegetation), calm water, and having a permanent or seasonal water depth between 2 and 15 inches (5 to 38 cm). 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 and stock ponds, shallow, seasonally flooded roadside or agricultural ditches, narrow tidal creeks or shallow tidal pools, managed impoundments, and depressions in cypress heads and swamp sloughs. See above *Summary of General Wood Stork Nesting and Foraging Habitat Information*.

[3] On an individual basis, projects that impact less than 0.5 acre of SFH generally will not have a measurable effect on wood storks, although we request the Corps to require mitigation for these losses when appropriate. Wood Storks are a wide ranging species, and individually, habitat change from impacts to less than 0.5 acre of SFH is 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.

[4] Upon Corps receipt of a general concurrence issued by the JAFL through the Programmatic Concurrence on this key, "NLAA" determinations for projects made pursuant to this key require no further consultation with the JAFL.

[5] The U.S. Fish and Wildlife Service (Service) has identified core foraging area (CFA) around all known wood stork nesting colonies that is important for reproductive success. In Central Florida, CFAs include suitable foraging habitat (SFH) within a 15-mile radius of the nest colony; CFAs in North Florida include SFH within a 13-mile radius of a colony. The referenced map provides locations of known colonies and their CFAs throughout Florida documented as active within the last 10 years. The Service believes loss of suitable foraging wetlands within these CFAs may reduce foraging opportunities for the wood stork.

[6]This draft document, *Wood Stork Foraging Habitat Assessment Procedure*, by Passarella and Associates, Incorporated, may serve as further guidance in ascertaining wetland foraging value to wood storks and compensating for impacts to wood stork foraging habitat.

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 that were determined "may affect, not likely to adversely affect." It is requested that information on date, Corps identification number, project acreage, project wetland acreage, and latitude and longitude in decimal degrees be sent to the Service quarterly.

Literature Cited

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

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

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

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

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

APPENDIX I

Eastern Indigo Snake Effect Determination Key and Standard Protection Measures

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

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

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

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

POSTER INFORMATION

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

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

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

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

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

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

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

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

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

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

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

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

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

PRE-CONSTRUCTION ACTIVITIES

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

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

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

DURING CONSTRUCTION ACTIVITIES

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

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

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

POST CONSTRUCTION ACTIVITIES

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

United States Department of the Interior
U. S. FISH AND WILDLIFE SERVICE
7915 BAYMEADOWS WAY, SUITE 200
JACKSONVILLE, FLORIDA 32256-7517

IN REPLY REFER TO:
August 13, 2013

Colonel Alan M. Dodd, District Engineer
Department of the Army
Jacksonville District Corps of Engineers
P.O Box 4970
Jacksonville, Florida 32232-0019
(Attn: Mr. David S. Hobbie)

RE: Update Addendum to USFWS Concurrence Letter to U.S. Army Corps of Engineers Regarding Use of the Attached Eastern Indigo Snake Programmatic Effect Determination Key

Dear Colonel Dodd:

This letter is to amend the January 25, 2010, letter to the U.S. Army Corps of Engineers regarding the use of the attached eastern indigo snake programmatic effect determination key (key). It supersedes the update addendum issued January 5, 2012.

We have evaluated the original programmatic concurrence and find it suitable and appropriate to extend its use to the remainder of Florida covered by the Panama City Ecological Services Office.

On Page 2

The following replaces the last paragraph above the signatures:

"Thank you for your continued cooperation in the effort to conserve fish and wildlife resources. Any questions or comments should be directed to Annie Dziergowski (North Florida ESO) at 904-731-3089, Harold Mitchell (Panama City ESO) at 850-769-0552, or Victoria Foster (South Florida ESO) at 772-469-4269."

On Page 3

The following replaces both paragraphs under "Scope of the key":

"This key should be used only in the review of permit applications for effects determinations for the eastern indigo snake within the State of Florida, and not for other listed species or for aquatic resources such as Essential Fish Habitat (EFH)."

On Page 4

The following replaces the first paragraph under Conservation Measures:

"The Service routinely concurs with the Corps' "not likely to adversely affect" (NLAA) determination for individual project effects to the eastern indigo snake when assurances are given that

our *Standard Protection Measures for the Eastern Indigo Snake* (Service 2013) located at: http://www.fws.gov/northflorida/IndigoSnakes/indigo-snakes.htm will be used during project site preparation and project construction. There is no designated critical habitat for the eastern indigo snake."

On Page 4 and Page 5 (Couplet D)

The following replaces D. under Conservation Measures:

D. The project will impact less than 25 acres of xeric habitat (scrub, sandhill, or scrubby flatwoods) or less than 25 active and inactive gopher tortoise burrows……*go to* E

The project will impact more than 25 acres of xeric habitat (scrub, sandhill, or scrubby flatwoods) or more than 25 active and inactive gopher tortoise burrows and consultation with the Service is requested[2]…… *"may affect"*

On Page 5

The following replaces footnote #3:

"[3]If excavating potentially occupied burrows, active or inactive, individuals must first obtain state authorization via a FWC 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 ."

Thank you for making these amendments concerning the Eastern Indigo Snake Key. If you have any questions, please contact Jodie Smithem of my staff at the address on the letterhead, by email at jodie_smithem@fws.gov, or by calling (904)731-3134.

Sincerely,

Dawn Jennings
Acting Field Supervisor

cc:
Panama City Ecological Services Field Office, Panama City, FL
South Florida Ecological Services Field Office, Vero Beach, FL

United States Department of the Interior

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

January 25, 2010

David S. Hobbie
Chief, Regulatory Division
U.S. Army Corps of Engineers
Post Office Box 4970
Jacksonville, Florida 32232-0019

Service Federal Activity Code: 41420-2009-FA-0642
Service Consultation Code: 41420-2009-I-0467
41910-2010-I-0045
Subject: North and South Florida Ecological Services Field Offices Programmatic Concurrence for Use of Original Eastern Indigo Snake Key(s) Until Further Notice

Dear Mr. Hobbie:

The U.S. Fish and Wildlife Service's (Service) South and North Florida Ecological Services Field Offices (FO), through consultation with the U.S. Army Corps of Engineers Jacksonville District (Corps), propose revision to both Programmatic concurrence letters/keys for the federally threatened Eastern Indigo Snake (*Drymarchon corais couperi*), (indigo snake), and now provide one key for both FO's. The original programmatic key was issued by the South Florida FO on November 9, 2007. The North Florida FO issued a revised version of the original key on September 18, 2008. Both keys were similar in content, but reflected differences in geographic work areas between the two Field Offices. The enclosed key satisfies each office's responsibilities under the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C.1531 *et seq.*).

Footnote number 3 in the original keys indicated "A member of the excavation team should be authorized for Incidental Take during excavation through either a section 10(a)(1)(A) permit issued by the Service or an incidental take permit issued by the Florida Fish and Wildlife Conservation Commission (FWC)." We have removed this reference to a Service issued Section 10(a)(1)(A) permit, as one is not necessary for this activity. We also referenced the FWC's revised April 2009 Gopher Tortoise Permitting Guidelines with a link to their website for updated excavation guidance, and have provided a website link to our Standard Protection Measures. All other conditions and criteria apply.

We believe the implementation of the attached key achieves our mutual goal for all users to make consistent effect determinations regarding this species. The use of this key for review of projects

located in all referenced counties in our respective geographic work areas leads the Service to concur with the Corps' determination of "may affect, not likely to adversely affect" (MANLAA) for the Eastern indigo snake. The biological rationale for the determinations is contained within the referenced documents and is submitted in accordance with section 7 of the Act.

Should circumstances change or new information become available regarding the eastern indigo snake or implementation of the key, the determinations may be reconsidered as deemed necessary.

Thank you for your continued cooperation in the effort to conserve fish and wildlife resources. Any questions or comments should be directed to either Allen Webb (Vero Beach) at 772-562-3909, extension 246, or Jay Herrington (Jacksonville) at 904-731-3326.

Sincerely,

Paul Souza
Field Supervisor
South Florida Ecological Services Office

David L. Hankla
Field Supervisor
North Florida Ecological Services Office

Enclosure

cc: electronic only
FWC, Tallahassee, Florida (Dr. Elsa Haubold)
Service, Jacksonville, Florida (Jay Herrington)
Service, Vero Beach, Florida (Sandra Sneckenberger)

Eastern Indigo Snake Programmatic Effect Determination Key

Scope of the key

This key should be used only in the review of permit applications for effects determinations within the North and South Florida Ecological Services Field Offices Geographic Areas of Responsibility (GAR), and not for other listed species or for aquatic resources such as Essential Fish Habitat (EFH). Counties within the **North** Florida GAR include Alachua, Baker, Bradford, Brevard, Citrus, Clay, Columbia, Dixie, Duval, Flagler, Gilchrist, Hamilton, Hernando, Hillsborough, Lafayette, Lake, Levy, Madison, Manatee, Marion, Nassau, Orange, Pasco, Pinellas, Putnam, St. Johns, Seminole, Sumter, Suwannee, Taylor, Union, and Volusia.

Counties in the **South** Florida GAR include Broward, Charlotte, Collier, De Soto, Glades, Hardee, Hendry, Highlands, Lee, Indian River, Martin, Miami-Dade, Monroe, Okeechobee, Osceola, Palm Beach, Polk, Sarasota, St. Lucie.

Habitat

Over most of its range, the eastern indigo snake frequents several habitat types, including pine flatwoods, scrubby flatwoods, high pine, dry prairie, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields, coastal dunes, and human-altered habitats (Service 1999). Eastern indigo snakes appear to need a mosaic of habitats to complete their life cycle. Wherever the eastern indigo snake occurs in xeric habitats, it is closely associated with the gopher tortoise *(Gopherus polyphemus),* the burrows of which provide shelter from winter cold and summer desiccation (Speake et al. 1978; Layne and Steiner 1996). Interspersion of tortoise-inhabited uplands and wetlands improves habitat quality for this species (Landers and Speake 1980; Auffenberg and Franz 1982).

In south Florida, agricultural sites, such as sugar cane fields, created in former wetland areas are occupied by eastern indigo snakes (Enge pers. comm. 2007). Formerly, indigo snakes would have only occupied higher elevation sites within the wetlands. The introduction of agriculture and its associated canal systems has resulted in an increase in rodents and other species of snakes that are prey for eastern indigo snakes. The result is that indigos occur at higher densities in these areas than they did historically.

Even though thermal stress may not be a limiting factor throughout the year in south Florida, indigo snakes still seek and use underground refugia. On the sandy central ridge of central Florida, eastern indigos use gopher tortoise burrows more (62 percent) than other underground refugia (Layne and Steiner 1996). Other underground refugia used include armadillo (*Dasypus novemcinctus*) burrows near citrus groves, cotton rat (*Sigmodon hispidus*) burrows, and land crab (*Cardisoma guanhumi*) burrows in coastal areas (Service 2006). Natural ground holes, hollows at the base of trees or shrubs, ground litter, trash piles, and crevices of rock-lined ditch walls are also used (Layne and Steiner 1996). These refugia are used most frequently where tortoise burrows are not available, principally in low-lying areas off the central and coastal ridges. In extreme south Florida (the Everglades and Florida Keys), indigo snakes are found in tropical

hardwood hammocks, pine rocklands, freshwater marshes, abandoned agricultural land, coastal prairie, mangrove swamps, and human-altered habitats (Steiner et al. 1983). It is suspected that they prefer hammocks and pine forests, because most observations occur in these habitats disproportionately to their presence in the landscape (Steiner et al. 1983). Hammocks may be important breeding areas as juveniles are typically found there. The eastern indigo snake is a snake-eater so the presence of other snake species may be a good indicator of habitat quality.

Conservation Measures

The Service routinely concurs with the Corps' "not likely to adversely affect" (NLAA) determination for individual project effects to the eastern indigo snake when assurances are given that our *Standard Protection Measures for the Eastern Indigo Snake* (Service 2004) located at: http://www.fws.gov/northflorida/IndigoSnakes/indigo-snakes will be used during project site preparation and project construction. There is no designated critical habitat for the eastern indigo snake.

In an effort to reduce correspondence in effect determinations and responses, the Service is providing an Eastern Indigo Snake Effect Determination Key, similar in utility to the West Indian Manatee Effect Determination Key and the Wood Stork Effect Determination Keys presently being utilized by the Corps. If the use of this key results in a Corps' determination of "no effect" for a particular project, the Service supports this determination. If the use of this Key results in a determination of NLAA, the Service concurs with this determination and no additional correspondence will be necessary[1]. This key is subject to revisitation as the Corps and Service deem necessary.

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 *Standard Protection Measures For The Eastern Indigo Snake* 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[2] .....*"may affect"*

C. There are gopher tortoise burrows, holes, cavities, or other refugia where a snake could be buried or trapped and injured during project activities .....*go to* D

There are no gopher tortoise burrows, holes, cavities, or other refugia where a snake could be buried or trapped and injured during project activities .....*"NLAA"*

D. The project will impact less than 25 acres of xeric habitat supporting less than 25 active and inactive gopher tortoise burrows.....*go to* E

The project will impact more than 25 acres of xeric habitat or more than 25 active and inactive gopher tortoise burrows and consultation with the Service is requested[2]..... *"may affect"*

E. Any permit will be conditioned such that all gopher tortoise burrows, active or inactive, will be evacuated prior to site manipulation in the vicinity of the burrow[3]. If an 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 indigo snake, no work will commence until the snake has vacated the vicinity of proposed work..... *"NLAA"*

Permit will not be conditioned as outlined above and consultation with the Service is requested[2] ..... *"may affect"*

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[1]With an outcome of "no effect" or "NLAA" as outlined in this key, the requirements of section 7 of the Act are fulfilled for the eastern indigo snake and no further action is required.

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

[3] If burrow excavation is utilized, it should be performed by experienced personnel. The method used should minimize the potential for injury of an indigo snake. Applicants should follow the excavation guidance provided within the Florida Fish and Wildlife Conservation Commission's revised April 2009 Gopher Tortoise Permitting Guidelines located at **http://myfwc.com/License/Permits_ProtectedWildlife.htm#gophertortoise**. A member of the excavation team should be authorized for Incidental Take during excavation through an incidental take permit issued by the Florida Fish and Wildlife Conservation Commission.