

**CLEARLAKE ROAD (SR 501)
PROJECT DEVELOPMENT AND ENVIRONMENT (PD&E) STUDY
FROM MICHIGAN AVENUE (MP 2.235) TO INDUSTRY ROAD (MP 3.358)
BREVARD COUNTY, FLORIDA**

**FINANCIAL PROJECT ID: 433605-1-22-01
EFFICIENT TRANSPORTATION DECISION MAKING (ETDM) #13120**

FINAL

**NATURAL RESOURCE
EVALUATION REPORT (NRE)**



**FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT 5
719 SOUTH WOODLAND BOULEVARD
DELAND, FL 32720**

DECEMBER 2016



Florida Department of
TRANSPORTATION

Clearlake Road (SR 501) PD&E Study: Natural Resources Evaluation (NRE) Report

From Michigan Avenue to Industry Road

FPID: 433605-1-22-01

ETDM #: 13120

December 2016

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EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study to evaluate alternative improvements to provide increased capacity on Clearlake Road between Michigan Avenue and Industry Road, located in the City of Cocoa. Study objectives include the following: determine proposed typical sections and develop preliminary conceptual design plans for proposed improvements while minimizing impacts to the environment; consider agency and public comments; and ensure study compliance with all applicable federal and state laws. Improvement alternatives will be identified which will improve safety and meet future transportation demand.

The study was evaluated through the FDOT's Efficient Transportation Decision Making (ETDM) process. This study is designated as ETDM study #13120. An ETDM *Programming Screen Summary Report* was published on November 6, 2014 containing comments from the Environmental Technical Advisory Team (ETAT) on the study's effects on various natural, physical and social resources. This study is being conducted as a State Environmental Impact Report (SEIR).

This *Natural Resource Evaluation Report* (NRE) is being prepared as part of this PD&E Study. This report summarizes the possible impacts to wetlands, federally and state protected species, and habitats. The identification of measures to avoid, minimize and mitigate for any potential impacts is also discussed.

Wetlands

Pursuant to Executive Order 11990 entitled "Protection of Wetlands," (May 1977) the U.S. Department of Transportation (USDOT) developed a policy, Preservation of the Nation's Wetlands (USDOT Order 5660.1A), dated August 24, 1978, which requires all federally-funded highway studies to protect wetlands to the fullest extent possible. Although this is a state-funded project, in accordance with this policy, as well as *Part 2, Chapter 18 - Wetlands* of the FDOT *PD&E Manual*, study alternatives were assessed to determine potential wetland impacts associated with the construction of each alternative.

Four (4) wetland areas (W1-W4) and one (1) surface water area (SW1) were identified and mapped within the project area. A description of the dominant floral species, soil types, land use, and other pertinent remarks are provided in subsequent sections of this report. The Uniform Mitigation Assessment Methodology (UMAM) analysis was performed on potential wetland impact areas. Impacts vary considerably for each of the subalternatives being considered. Direct and secondary impacts resulting from each were evaluated, and UMAM scores were derived to determine the total Functional Loss (FL) that may result. The total FL that would result from the proposed alternatives range on the low side from 2.24 for Subalternative C, which impacts a small portion of the lower quality wetlands, W1 and W3; to FL of 5.79 for Subalternative D, which impacts the largest amount of wetlands and the highest quality area, W2 (Table 3-1). The Recommended Alternative (VE Alternative with Pond 3C) consists of a modification to Subalternative D to reduce impacts to W2, resulting in a FL of 4.55 (Table 3-3).

Following the public hearing for this PD&E, a meeting was held with the Department, the BP gas owners, and their attorney on March 29, 2016 to discuss the possible realignment of the Recommended Alternative. The realignment consists of modifying the Recommended Alternative of a 35 mph 'Bulb-Out' to a 35 mph curve which runs through the BP gas station property (Preferred Alternative). This would involve a complete take of the BP gas property in order to accommodate the new alignment and would also use the remainder of the parcel for an offsite pond, thus eliminating the need to expand the existing pond just north of Walmart that is included as part of the Recommended Alternative. This alternative would primarily impact W2 (1.23 ac) and the outer fringe of W3 (0.04 ac). Secondary wetland impacts would affect W1, W2, and W3 to varying degrees. The direct functional loss associated with this alternative is 0.75, the secondary functional loss is 2.22 and the total functional loss is 2.97 (Table 3-4).

Final determination of jurisdictional boundaries, proposed wetland impacts and mitigation requirements will be coordinated between the FDOT and permitting agencies during the final design stage of the study.

Protected Species & Habitat

The study corridor was also assessed for the presence of suitable habitat for federal- and/or state-listed protected species in accordance with 50 Code of Federal Regulations (CFR) Part 402 of

the Endangered Species Act (ESA) of 1973, as amended, Chapters 5B-40: *Preservation of Native Flora of Florida* and 68A-27 Florida Administrative Code (F.A.C.) *Rules Relating to Endangered or Threatened Species*, and Part 2, Chapter 27 - *Wildlife and Habitat Impacts* of the FDOT PD&E Manual.

Database searches to determine potential and documented occurrences for protected species were performed, and field surveys were conducted on February 18, 2015. No federally or state protected wildlife species were observed, however one federal listed and one state listed wildlife species have a high likelihood for utilization of study habitats. One (1) state listed plant species was observed in the study area.

The wood stork (*Mycteria americana*) is designated as threatened by both the US Fish and Wildlife Service (USFWS) and the Florida Fish and Wildlife Conservation Commission (FWC). The study corridor is located within the Core Foraging Area (CFA) of one (1) documented wood stork colony. No wood storks were observed during field reviews and suitable foraging habitat (SFH) is limited to portions of a stormwater pond on the corridor. No impacts to SFH are associated with the preferred alternative. Therefore, when applying the preferred alternative to the September 2008 Effect Determination Key for the Wood Stork in Central and North Peninsular Florida, indications are that the project is not likely to adversely affect the wood stork.

One (1) FWC listed wetland dependent avian species, white ibis (*Eudocimus albus*), has a high likelihood of occurrence and several have a moderate likelihood of occurrence along the study corridor. Wetland dependent species with moderate potential to utilize corridor habitats include: Florida sandhill crane (*Grus canadensis pratensis*), little blue heron (*Egretta caerulea*), roseate spoonbill (*Platalea ajaja*), snowy egret (*Egretta thula*), and tricolored heron (*Egretta tricolor*). Florida sandhill crane is listed as threatened by the FWC; the remaining species are listed as species of special concern by the FWC. Because unavoidable impacts to surface waters which provide foraging habitat will be mitigated, the project is not anticipated to result in unacceptable impacts to wetland dependent bird species.

One (1) plant listed by the state as Commercially Exploited (CE), royal fern (*Osmunda regalis*), was observed in one of the study area wetlands. This fern was observed along the excavated

channel of a disturbed shrub wetland. Since only portions of existing habitat for this species may be affected by the proposed improvements, and it is thought to be common in local habitats, long term viability of this species is not anticipated to be affected. Therefore, the proposed project is not anticipated to have long-term negative effects on this plant species.

Commitments to protect these species and habitats are provided and detailed in this report. These commitments include, but are not limited to protection measures employed during design and construction phases. Standard operating measures such as providing compensatory mitigation measures for impacts to foraging habitat and resurveying of suitable habitat areas prior to construction will also provide protection for species and habitat. If protected species are located, coordination with the USFWS, FWC and/or the Florida Department of Agriculture and Consumer Services - Division of Plant Industry (FDACS–DPI) will be initiated to determine permit requirements or modifications to construction activities that may be required.

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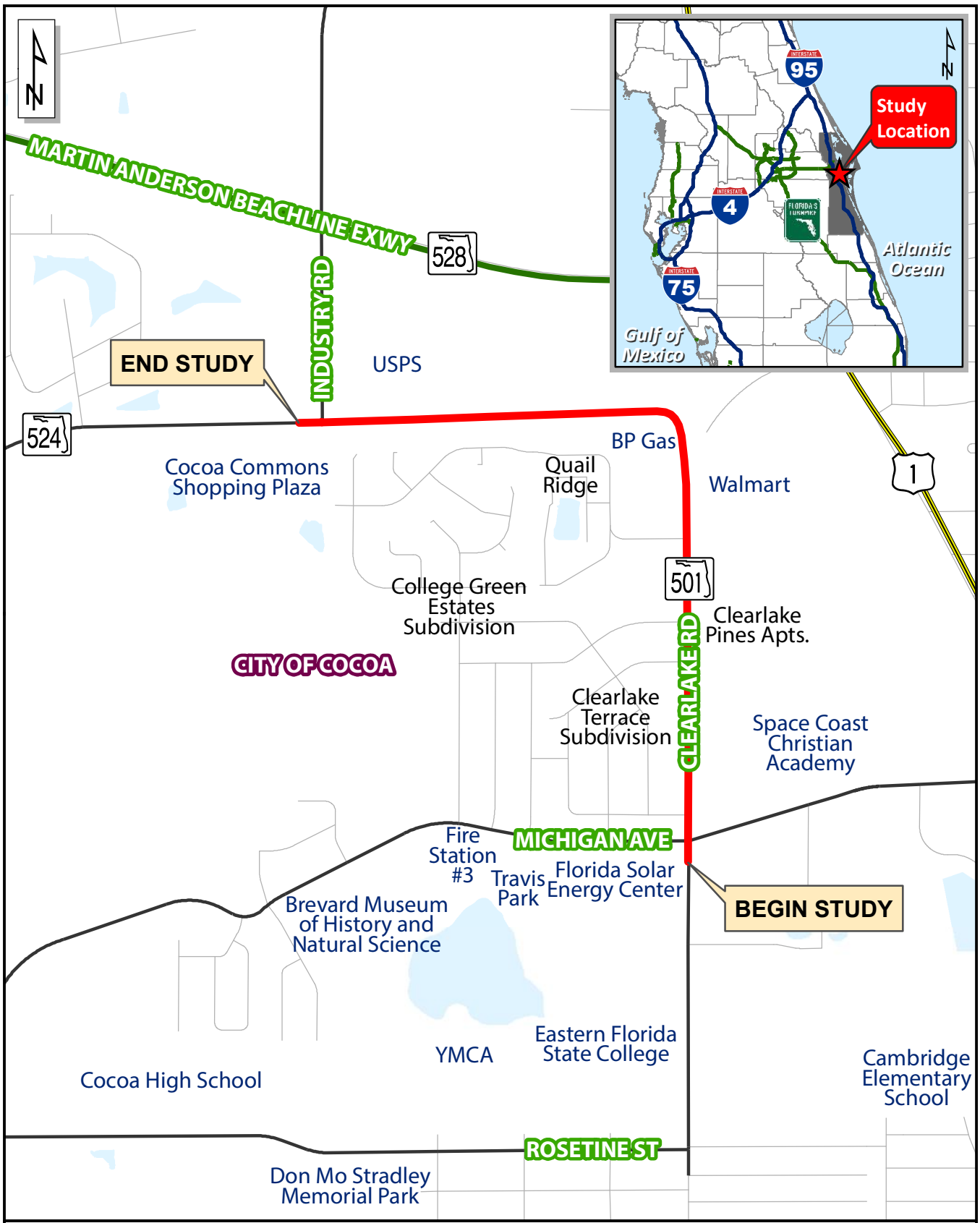
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- Appendix A: Representative Wetland Photographs
- Appendix B: UMAM Data Sheets
- Appendix C: ETDM Programming Screen Summary Report
- Appendix D: Standard Protection Measures for the Eastern Indigo Snake

Section 1 – INTRODUCTION

1.1 Project Description

Clearlake Road between Michigan Avenue to the south and Industry Road to the north is classified as an Urban Principle Arterial. For a short distance (0.137 miles) north of Michigan Avenue, the road has four lanes with a 12 foot paved median. For the next 0.457 miles northward, the roadway has one, 12 foot lane southbound with grass shoulders and two, 12 foot lanes with curb and gutter in the northbound direction. For the last 0.529 miles, the roadway has two, 12 foot lanes, one in each direction, with four foot paved shoulders. The posted speed limit along this section of Clearlake Road varies and is posted at 40 mph and 45 mph. The various typical sections found along this corridor is due in part to roadway improvements required of adjacent developers. There are signalized intersections at Michigan Avenue, Otterbein Avenue, and Industry Road. It is anticipated that the improved roadway will be a four lane urban typical section. Clearlake Road is not a Strategic Intermodal System (SIS) facility but Industry Road has an interchange with SR 528 (Beachline Expressway) located just to the north which is a designated SIS facility connecting the City of Orlando and the Orlando International Airport to the west with the Port of Port Canaveral to the east.



Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 to Industry Road
 Brevard County

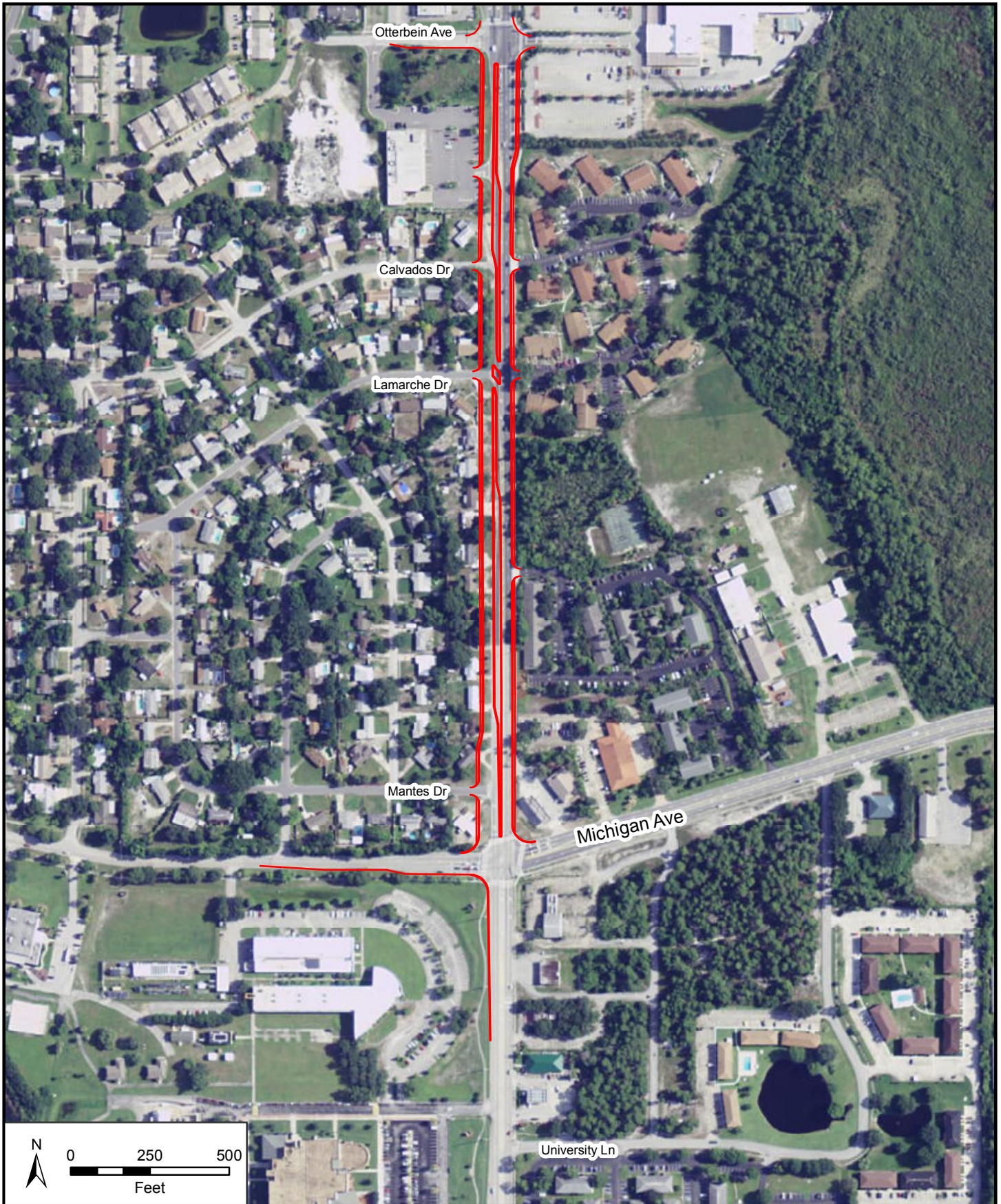
Study Location Map

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1.2 Purpose and Need

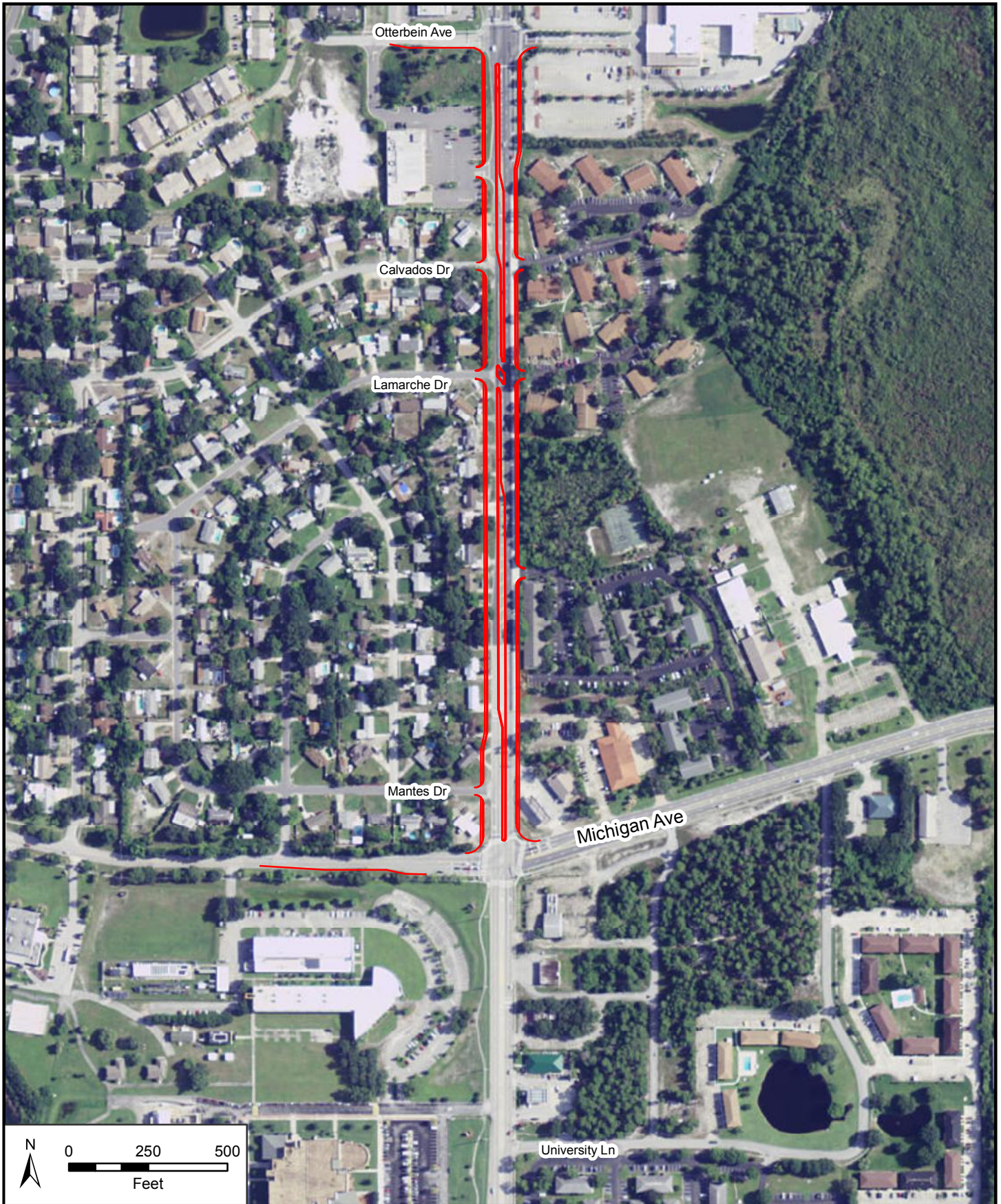
The purpose of this project is to provide increased capacity on Clearlake Road between Michigan Avenue and Industry Road, located in the City of Cocoa. Raw field-collected tube traffic counts were adjusted using a seasonal adjustment factor obtained from the 2013 Florida Transportation Information DVD to estimate 2014 Annual Average Daily Traffic (AADT). The estimated AADT for Clearlake Road from Michigan Avenue to Otterbein Avenue is 20,000 vehicles per day. From Otterbein Road to Industry Road, the 2014 estimated AADT is also 20,000. These traffic volumes result in a Level of Service (LOS) 'C' from Michigan Avenue to Otterbein Avenue and from Otterbein Avenue to Industry Road, a LOS 'D' northbound/westbound and 'C' southbound/eastbound. The projected AADT in the year 2043 is 26,000 vehicles per day (vpd) from Michigan Avenue to Otterbein Avenue as well as from Otterbein Avenue to Industry Road. The entire study corridor will operate at unacceptable LOS (E/F) in the AM and PM peak hours in the design year 2043 if no improvements are made. The need for mainline and intersections improvements is apparent today.



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Figure 1-2A
Alternative 1: West Alignment
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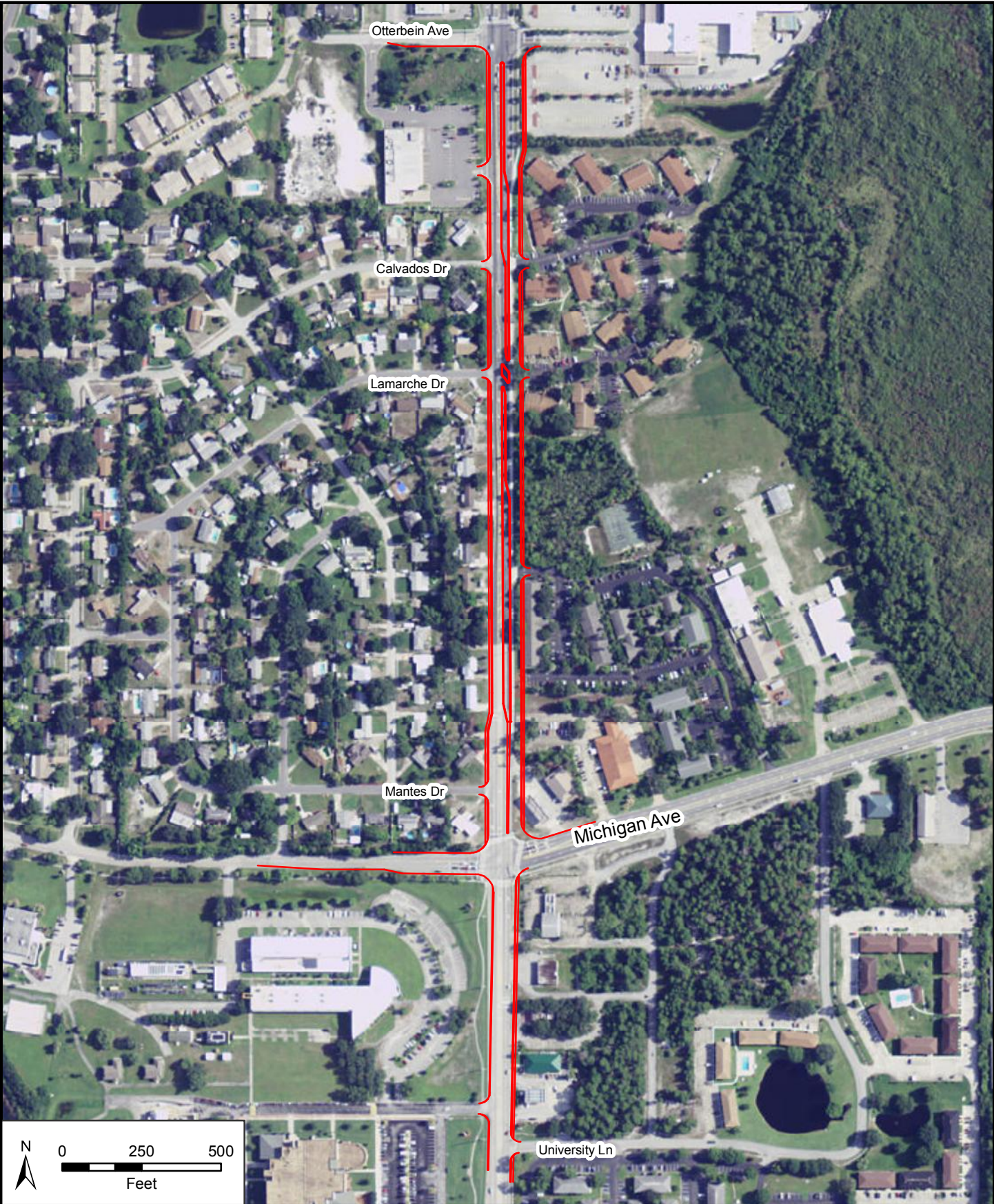


Clearlake Road (SR 501) PD&E Study
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Figure 1-2B
Alternative 2: Center Alignment

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Figure 1-2C
Alternative 3: East Alignment
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1.3 Purpose of this Report

This *Natural Resource Evaluation Report (NRE)* is one of several documents being prepared as part of this PD&E Study. This report documents wetlands and protected species within the study corridor. Pursuant to Presidential Executive Order 11990 entitled “Protection of Wetlands,” the U.S. Department of Transportation (USDOT) has developed a policy, Preservation of the Nation’s Wetlands (USDOT Order 5660.1A), dated August 24, 1978, which requires all federally-funded highway studies to protect wetlands to the fullest extent possible. In accordance with this policy, as well as *Part 2, Chapter 18 - Wetlands* of the FDOT *PD&E Manual*, study alternatives were assessed to determine potential wetland impacts associated with construction of each alternative.

This report also documents existing wildlife resources and assesses existing habitat types found within the study area for potential occurrences of federal and state listed or protected plant and animal species in accordance with *Part 2, Chapter 27 - Wildlife and Habitat Impacts* of the FDOT *PD&E Manual*. Potential impacts to protected species or significant habitat areas that may support these species are also addressed in this report.

1.4 Proposed Alternatives

1.4.1 Urban Four Lane Divided

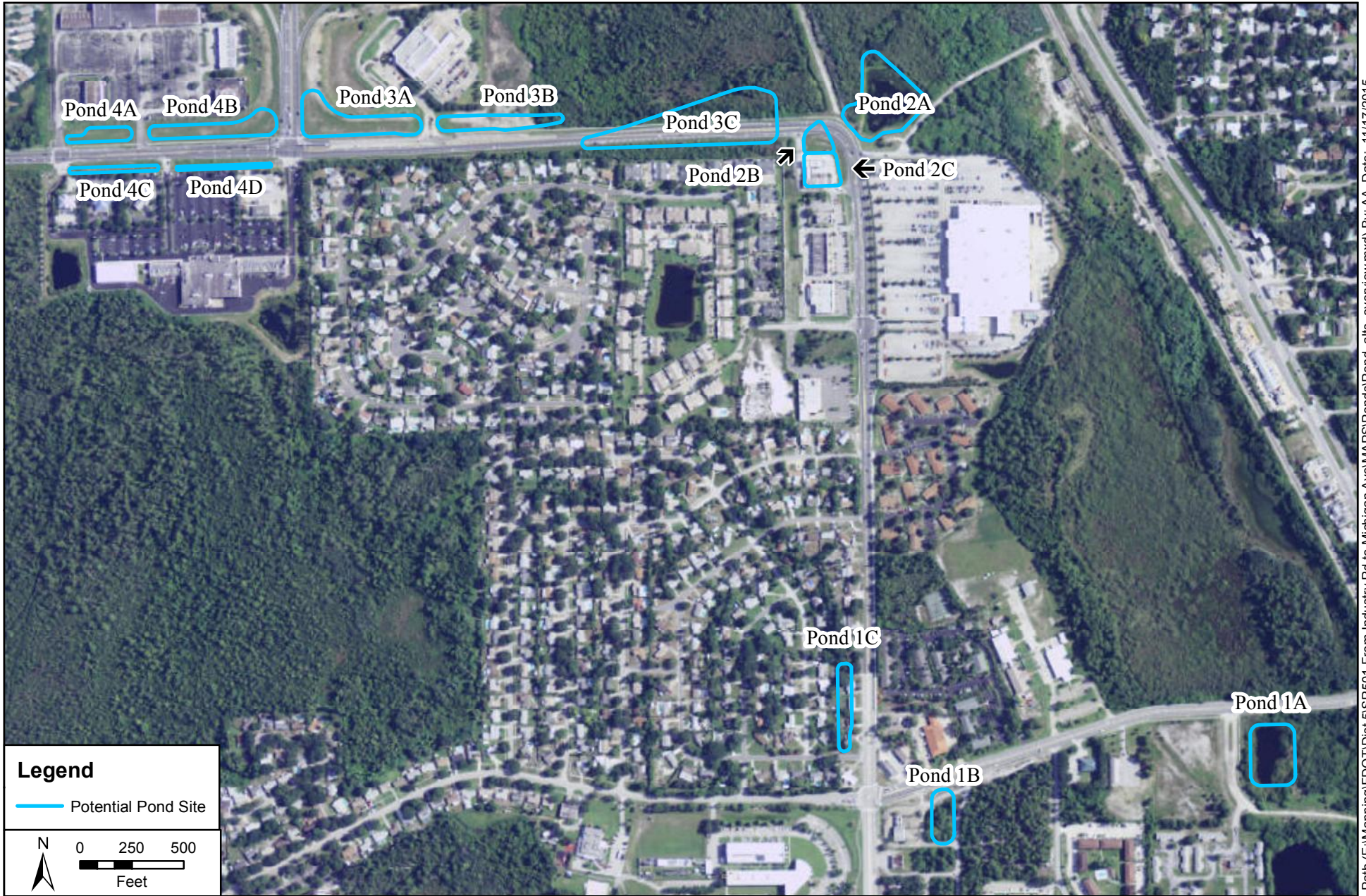
This alternative typical section from Michigan Avenue to Industry Road incorporates the FDOT’s criteria for a four lane divided urban facility. It is comprised of two, 11 foot travel lanes in each direction with a 22 foot median with type E curb and gutter. In each direction, seven foot bicycle lanes are proposed adjacent to type F curb and gutter and six foot sidewalks on both sides. This typical section will require a minimum of 104 feet in order to accommodate mainline improvements. Therefore, right-of-way for the mainline is required under this alternative at the south end of the project where only 73 feet of existing right-of-way is available. Offsite ponds requiring additional right-of-way are also included in order to help accommodate drainage. Figure 1-2 (a) – Figure 1-2 (c) depict the Urban Four Lane Divided typical section for the west, center, and east alignments (Alternatives 1, 2, and 3 respectively) from Michigan Avenue to Otterbein Avenue. Figure 1-3 depicts the offsite pond alternatives evaluated.

1.4.2 Subalternatives

From just north of Otterbein Avenue to Industry Road, the right-of-way is a minimum of 120 feet which can accommodate the proposed four lane divided urban typical section. Within these limits, four subalternatives for the existing 90 degree bend at the north end of Wal-Mart have been developed which can be combined with any of the previously mentioned four lane divided urban typical section alignments (Alternatives 1-3). These subalternatives are described below.

- **Subalternative A: 45 mph curve** – This subalternative consists of realigning the existing curve posted at 25 mph just north of Wal-Mart and introducing a curve which meets FDOT criteria for a 45 mph design speed. This curve will require additional right-of-way with some impact to the Paradise Shoppes at Cocoa and will require relocation of the existing BP gas station. This subalternative is depicted in Figure 1-4A.
- **Subalternative B: 35 mph curve** - This subalternative consists of realigning the existing curve posted at 25 mph just north of Wal-Mart and introducing a curve which meets FDOT criteria for a 35 mph design speed. This curve will require additional right-of-way from the Wal-Mart property and the BP gas station property but will not impact the structural aspects of the gas station or its functionality. This subalternative is depicted in Figure 1-4B.
- **Subalternative C: Roundabout** - This subalternative consists of replacing the existing curve posted at 25 mph just north of Wal-Mart and introducing a roundabout which meets FDOT criteria for a 20 mph design speed. The roundabout will require additional right-of-way from the Wal-Mart property and from vacant land just north of Wal-Mart. This subalternative is depicted in Figure 1-4C.
- **Subalternative D: ‘Bulb-Out’** - This subalternative consists of realigning the existing curve posted at 25 mph just north of Wal-Mart and introducing a ‘bulb-out’ or ‘jug handle’ type curve which meets FDOT criteria for a 45 mph design speed. The ‘bulb-out’ will require a substantial amount of additional right-of-way from vacant land just northwest of Wal-Mart. This subalternative is depicted in Figure 1-4D.

- **VE Alternative:** ‘35 mph Bulb-Out’ – This subalternative consists of realigning the existing curve posted at 25 mph just north of Wal-Mart and introducing a ‘bulb-out’ or ‘jug handle’ type curve which meets FDOT criteria for a 35 mph design speed. The ‘bulb-out’ will require a substantial amount of additional right-of-way from vacant land just northwest of Wal-Mart. This subalternative is depicted in Figure 1-4E.
- **Recommended Alternative:** This alternative consists of the ‘35 mph Bulb-Out’ and pond 3C located directly south of the proposed road location.
- **Preferred Alternative:** The BP gas station alternative, which assumes a complete take of the BP gas station parcel (1.43 acres), proposes a pond adjacent to the proposed curve in the remaining part of the parcel. This pond is proposed within Basin 2 and is a single, wet detention pond. The proposed pond was conceptually evaluated and analyzed to meet the treatment volume requirements and, more importantly, eliminate any impacts (i.e., widening) to the existing Walmart pond, located northeast of the 90-degree, Clearlake Road bend. The Walmart pond is the main outfall for Basin 2, which extends from nearby La Marche Drive to the 90-degree roadway bend. Incorporating a pond into the BP gas station parcel has been found to be a viable pond site alternative. Figure 1-4F shows the BP Gas Alternative from Otterbein Avenue to Industry which has been selected as the Preferred Alternative.

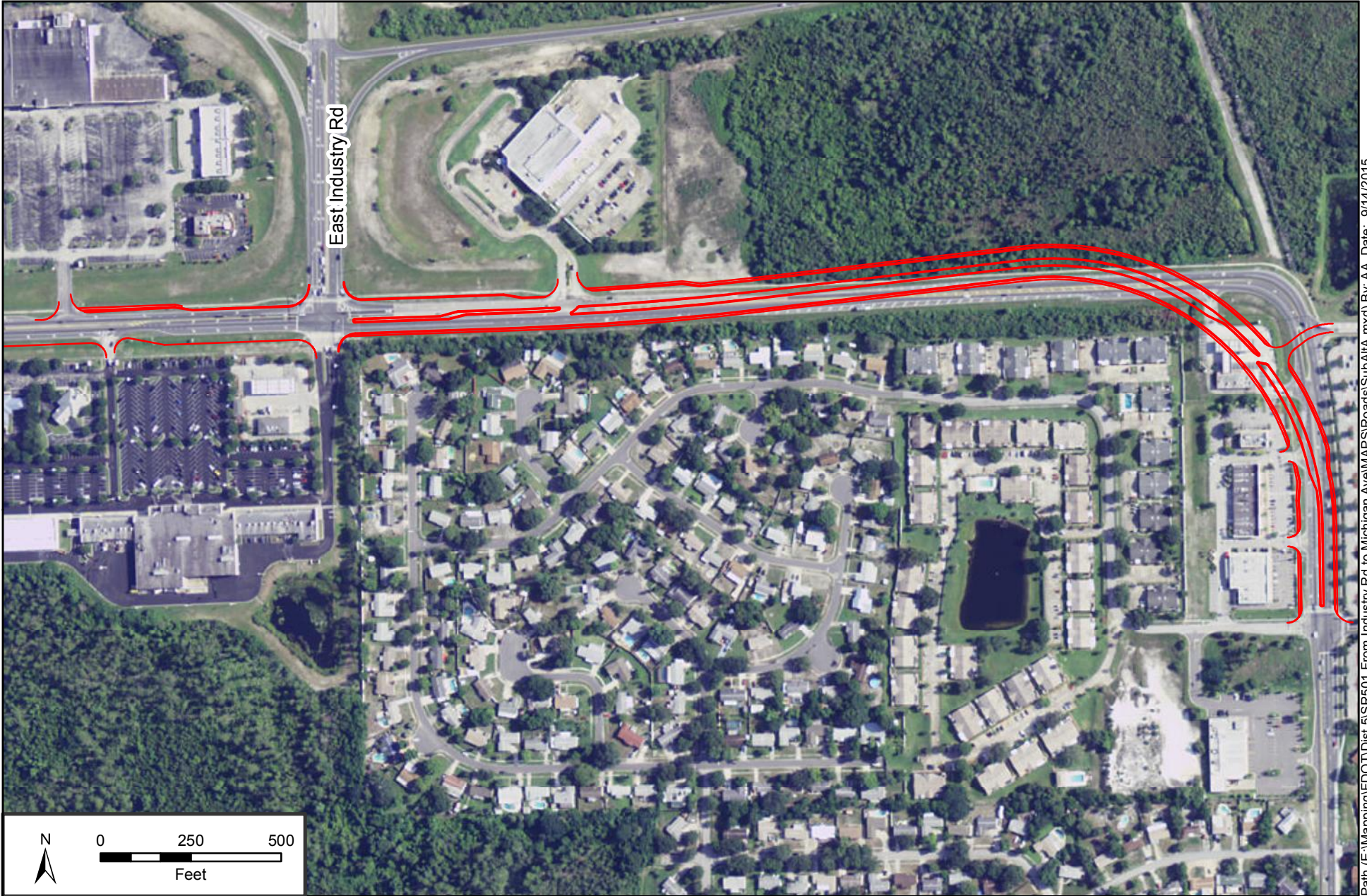


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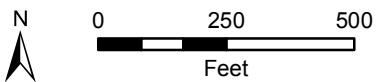
Figure 1-3
Pond Alternatives

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East Industry Rd



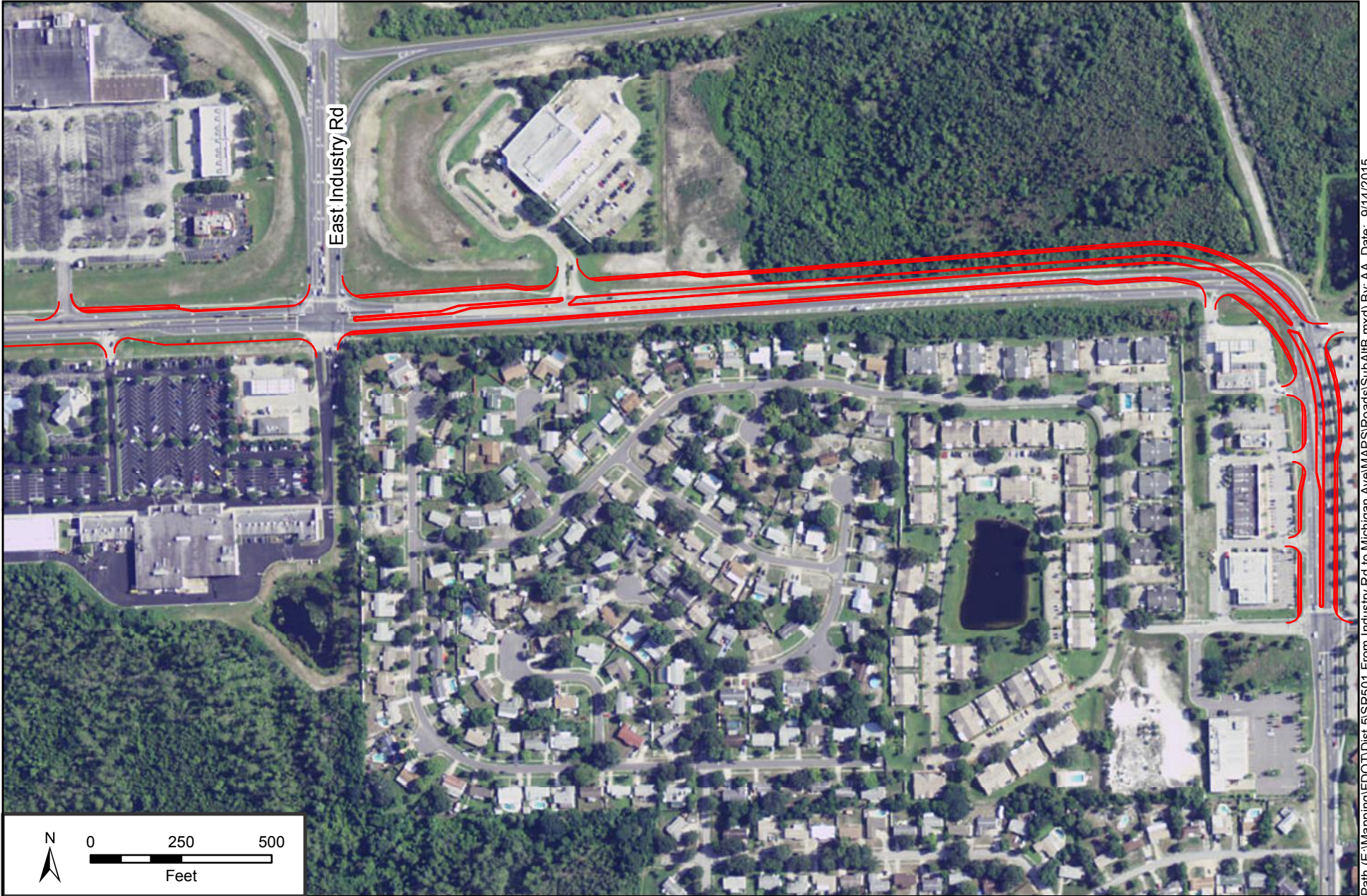
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Figure 1-4A Subalternative A: 45 MPH Curve

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East Industry Rd



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Feet

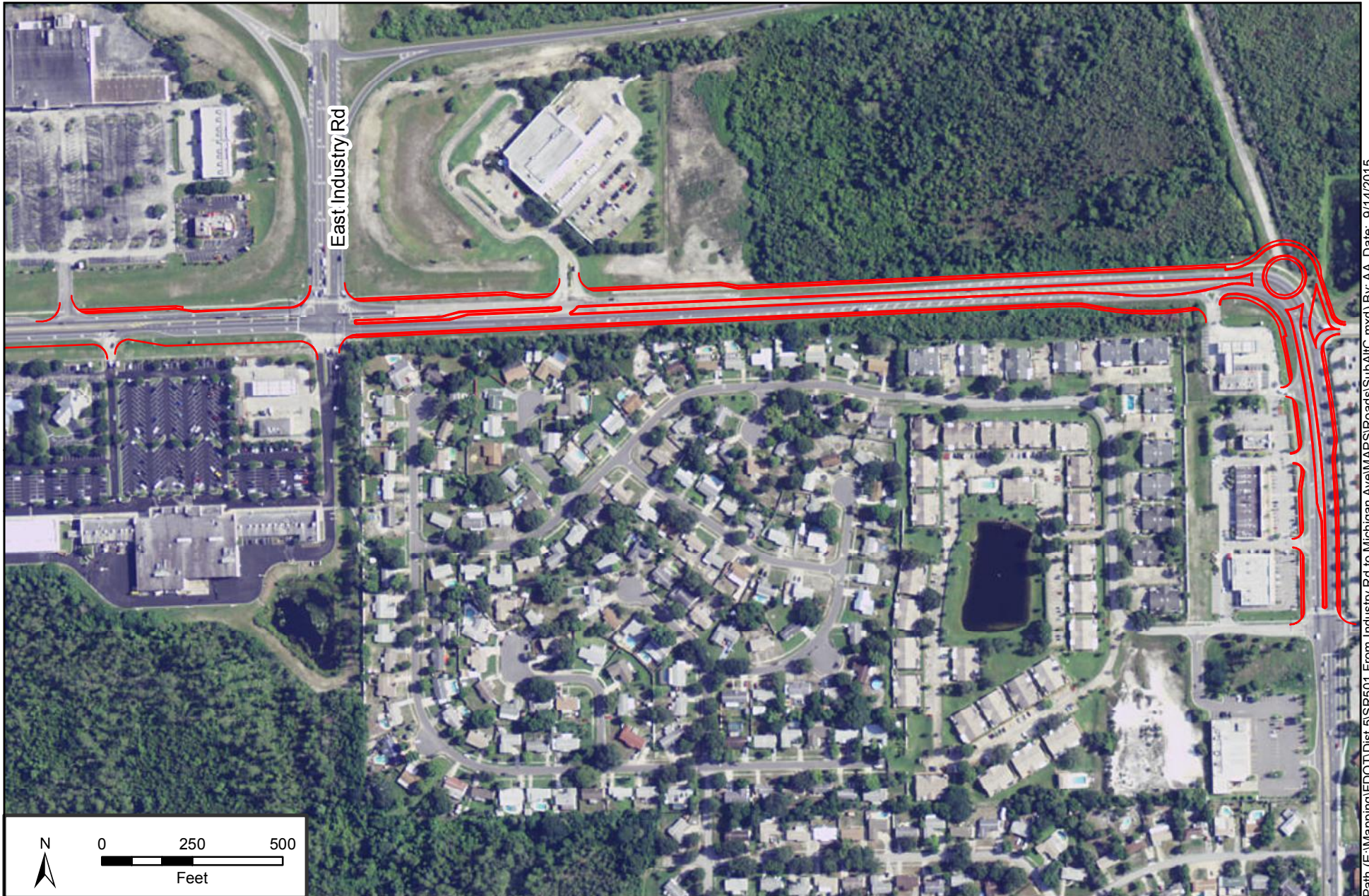
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Figure 1-4B Subalternative B: 35 MPH Curve

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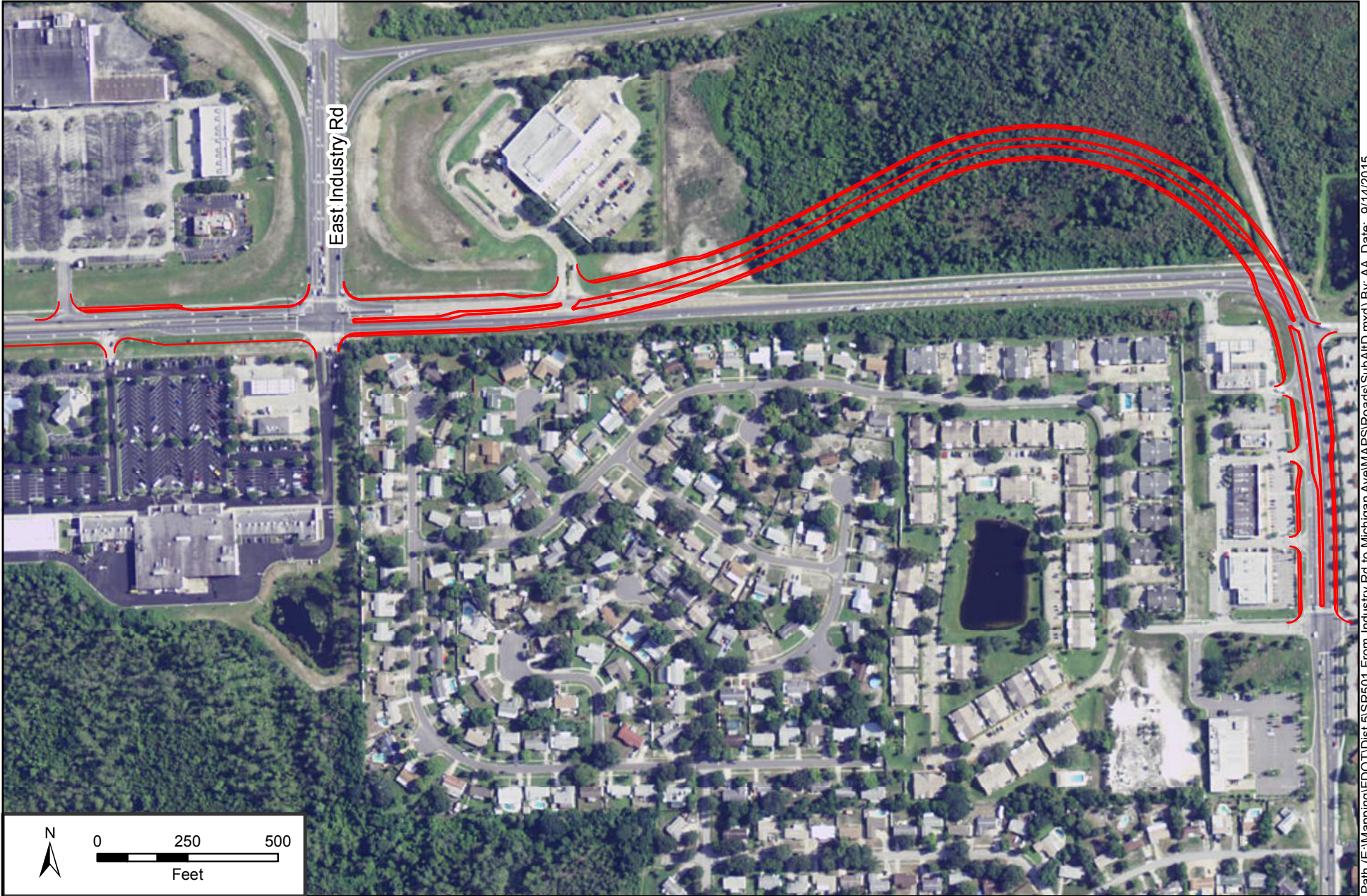


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Figure 1-4C
Subalternative C: Roundabout
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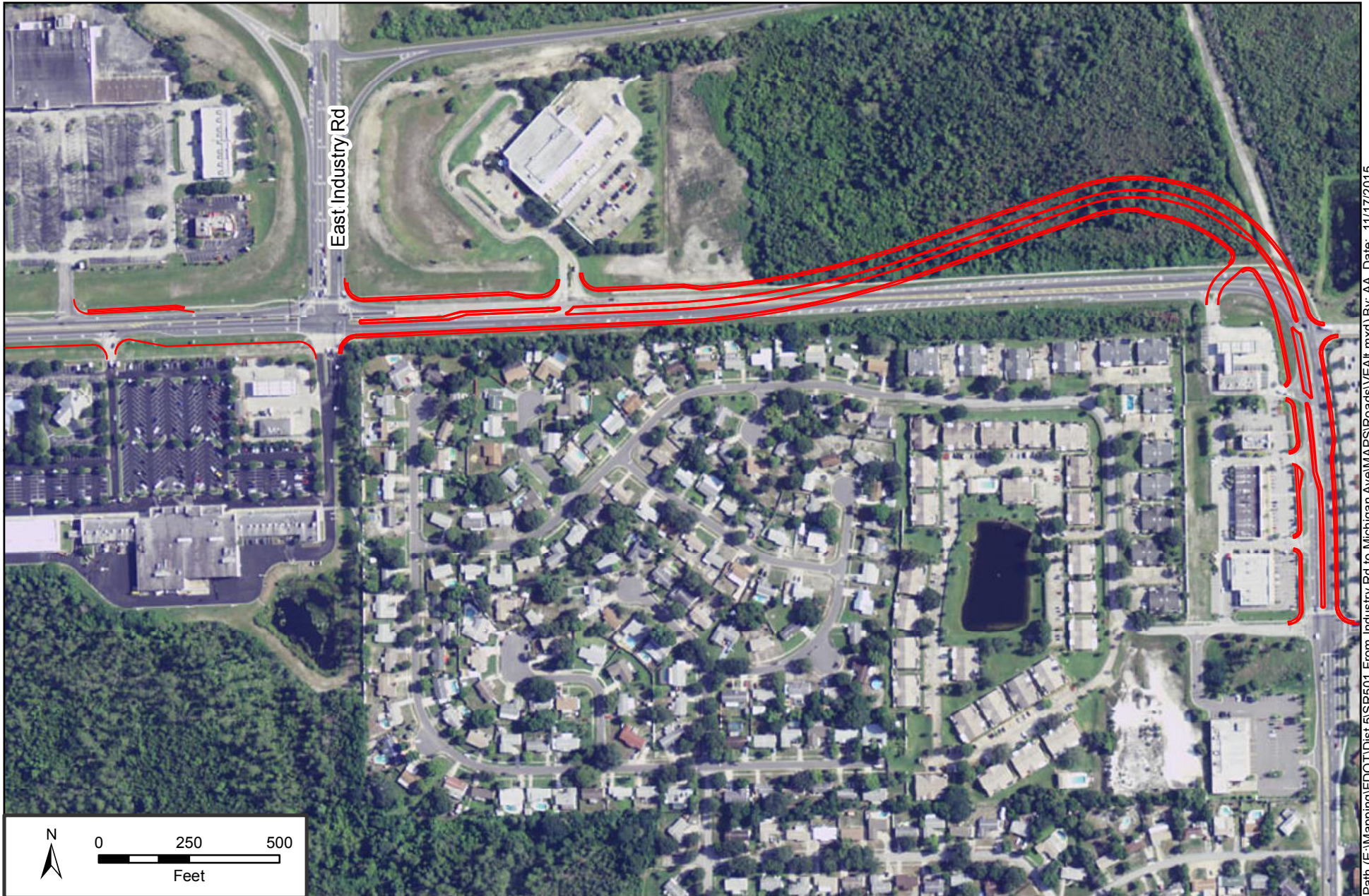


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Figure 1-4D
Subalternative D: Bulb-out
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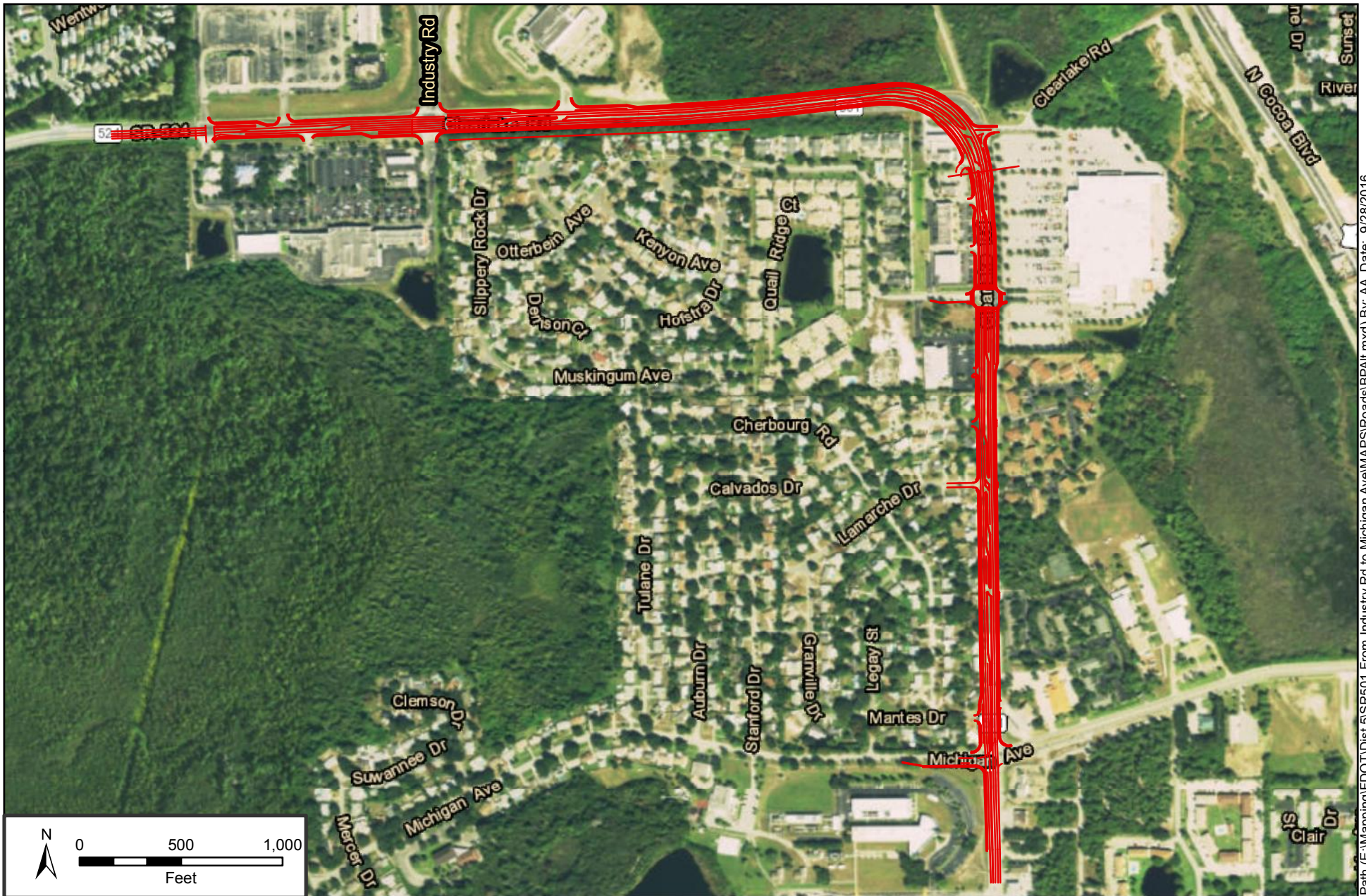




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Figure 1-4E
VE Alternative: 35 MPH Bulb-out
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Figure 1-4F
Preferred Alternative: BP Gas
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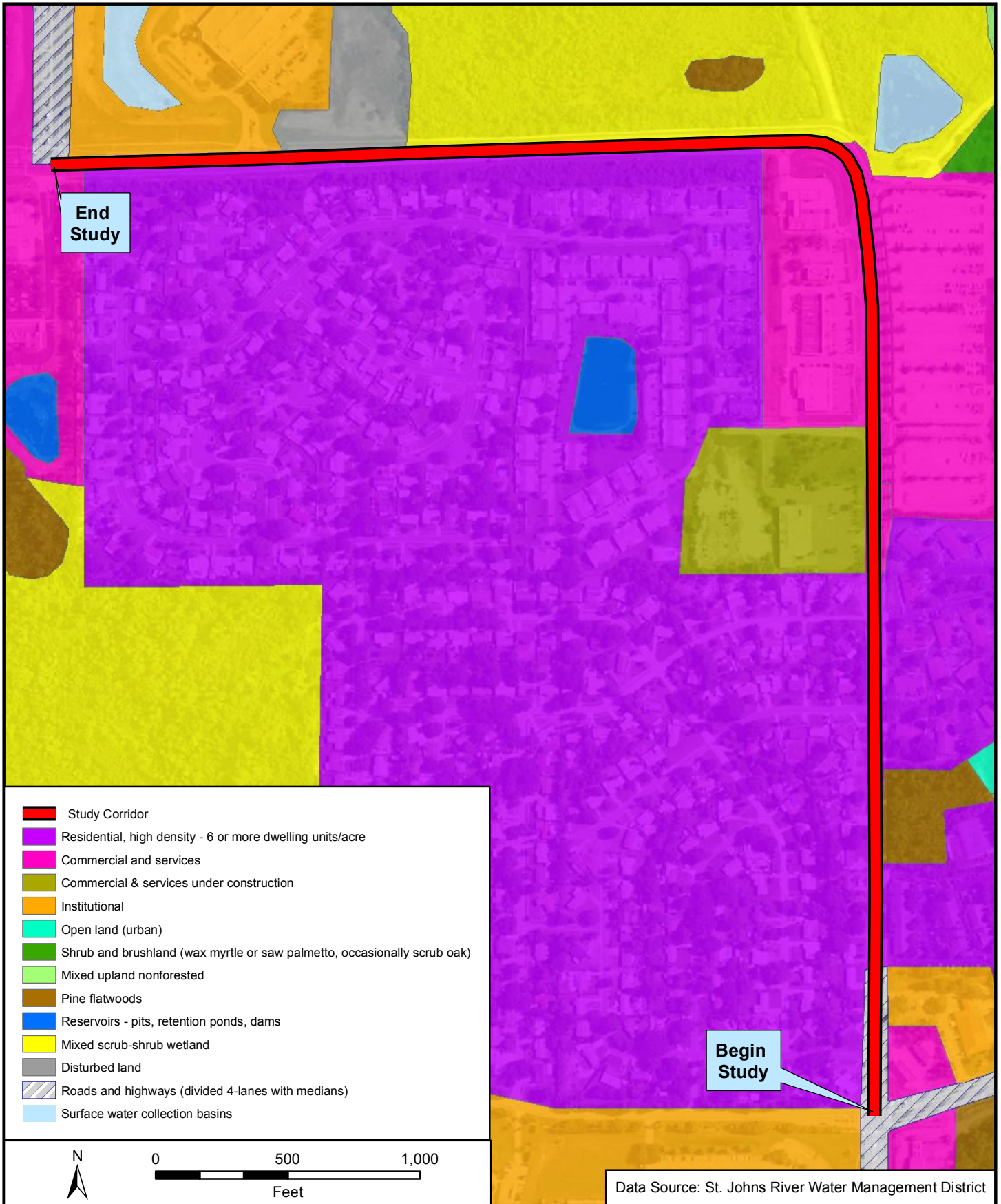


Section 2 - EXISTING ENVIRONMENTAL CONDITIONS

2.1 Existing Land Use

Existing land use along the study corridor was determined utilizing a variety of resources including the National Wetlands Inventory (NWI), the Natural Resources Conservation Services (NRCS) Soil Surveys for Brevard County, land use mapping from the St. John's River Management District (SJRWMD) (SJRWMD, 2009) and field verification during wetland and habitat reviews. Figure 2-1 depicts the overview of existing land use types for the study corridor.

Much of the corridor has been developed to primarily residential areas, with much of the remainder consisting of commercial development such as retail facilities and services. A few small undeveloped vacant tracts remain, but have been cleared such that limited native vegetation remains. One (1) large forested wetland system occurs along the northern side of Clearlake Road and one undeveloped forested upland is found on the west side of Clearlake Road near the southern study terminus. Descriptions of upland and wetland communities are provided in the following sections.



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Clearlake Road (SR 501) PD&E Study
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Figure 2-1 Existing Land Use

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2.2 Natural & Biological Features

2.2.1 Methodology

A variety of resources including land use data, NWI maps, Soil Surveys for Brevard County, aerial photographs (2012), and field surveys were employed to identify the wetland and upland communities that occur within the study area.

All wetlands and surface water features within and immediately adjacent to the study corridor were mapped on a scale of 1" = 200' aerial photographs (2012), assigned an identification number and categorized in accordance with the *Florida Land Use, Cover and Forms Classification System* (FLUCFCS) designation. These codes include whether each site is a wetland (W) or surface water (SW).

Detailed descriptions of native uplands, wetlands and surface waters are provided below. Representative photographs of wetland and surface water features are provided in Appendix A.

2.2.2 Upland Vegetation Communities

The few undeveloped upland areas found within and directly adjacent to the study corridor are described below. These communities are classified according to FLUCFCS, (FDOT 1999). Field reviews confirmed vegetation community types and the presence or potential for occurrence of protected plant and wildlife species. A description of federal and state protected species observed during field surveys or with potential to occur is also included, where applicable. Protected species are also discussed in greater detail in **Section 4**.

Forested Upland (FLUCFCS 436, Upland Scrub, Pine and Hardwoods)

One (1) patch of forested uplands occurs on the study corridor, on the east side of Clearlake Road, just north of Michigan Avenue. Scattered sand pine (*Pinus clausa*) dominates the canopy, with a dense sub-canopy of oaks, primarily sand live oak (*Quercus geminata*). The outer edges support dense Brazilian pepper (*Schinus terebinthifolius*), and turf grasses and upland weeds occur along the mowed edge. Where present, saw palmetto (*Serenoa repens*) dominates the ground cover on the interior. This remnant patch of native upland forest has been disturbed through fragmentation, exotic species encroachment and overgrowth due to fire suppression,

likely limiting the value for wildlife utilization. This upland habitat at one time may have supported species such as gopher tortoise and eastern indigo snake, but due to the above disturbances, the current likelihood is very low.


Vacant Land (FLUCFCS 740, Disturbed Lands)


A cleared, open upland area occurs near the western terminus of the study. A large portion consists of open sand, with clumps of vegetation such as blackberry and patches of weedy upland invaders and turf grasses. This area is of limited value for wildlife due to the extensive disturbance.

2.2.3 Wetlands & Surface Water Features

In accordance with Executive Order 11990, “Protection of Wetlands” (May 1977), the proposed study has been evaluated for potential effects to wetlands. Wetland locations and boundaries were identified and approximated using aerial interpretation and field reconnaissance in February 2015. Wetland boundaries were visually approximated using the U.S. Army Corps of Engineer’s (USACE) “*Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region*” (2008) and the Florida Department of Environmental Protection’s (FDEP) “Delineation of the Landward Extent of Wetlands and Surface Waters” (1995) (Chapter 62-340, F.A.C). Maps depicting all of the wetlands and jurisdictional surface water features within the study area are shown in Figure 2-2A and 2-2B.



 Wetland Boundary

N


0 50 100
 Feet

Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 To Industry Road
 Brevard County

Figure 2-2A
Wetlands and Surface Waters: W1, W2, W3, and SW1

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Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 To Industry Road
 Brevard County

Figure 2-2B Wetlands and Surface Waters: W4

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2.2.3.1 Wetlands

W1 - Shrub Swamp (FLUCFCS 618 – Willow and Elderberry)

W1 is a Carolina willow (*Salix caroliniana*) dominated shrub system that is contiguous with the adjacent retention pond (SW1). The interior supports a dense sub-canopy of willow, with scattered red maple (*Acer rubrum*). Brazilian pepper, cabbage palm (*Sabal palmetto*) and elderberry (*Sambucus canadensis*) also occur, primarily along the outer edges. Little to no ground cover was observed and is limited to weedy upland species such as Spanish needles (*Bidens alba*) and ragweed (*Ambrosia artemisiifolia*) along the mowed edges.

W2 - Maple Swamp (FLUCFCS 617 – Mixed Wetland Hardwoods)

This forested swamp dominates the north side of Clearlake Road and is located within a parcel designated as a St. John's River Water Management District (SJRWMD) Conservation Easement (CE). Prior to road development, W1, W2, and W3 to the south of the road, were likely all part of a contiguous wetland system. W2 overall supports a variety of vegetation components, including forested wetland, shrub-dominated areas, and upland pine islands. Canopy cover varies, but is dominated by a high cover of red maple. Large portions of shrubby areas dominated by Carolina willow occupy the interior. The southern edge along the existing sidewalk are dominated by elderberry, with scattered laurel oak (*Quercus laurifolia*) and Brazilian pepper. In a few areas the Brazilian pepper and blackberry (*Rubus* sp.) occur in very dense patches. An excavated ditch borders this wetland along the southeast corner. The ditch is steep-sided with mowed banks and has 100% cover by duckweed (*Lemna minor*). With the exception of invasive species encroaching on the edges, this system is of relatively good quality. Habitat value however is limited due to fragmentation, and the currently isolated nature of the wetland, being surrounded by roads and development.

W3 – Shrub Wetland/ Ditch (FLUCFCS 618)

This linear ditch/wetland consists of an excavated ditch channel with a dense sub-canopy cover of a variety of forested and shrub species. Carolina willow, Brazilian pepper and elderberry are dominant, with maple and cabbage palm scattered throughout. The ditch channel supports mostly fern species, including chain fern (*Woodwardia* sp.), royal fern (*Osmunda regalis*) and shield

fern (*Thelypteris* sp.). The upland edges are mowed and support typical weedy species such as Spanish needles.

W4- Freshwater Marsh (FLUCFCS 641)

W4 is a wetland area located at the corner of Michigan Avenue and Cocoa Lakes Drive, east of the project's southern terminus. This wetland was not field verified due to the location outside the study corridor, however, has been included due to the addition of Pond Alternative 1A. According to the SJRWMD land use map, this wetland has been categorized as freshwater marsh. Based on review of NWI maps and aerial photographs, the portion of the wetland where Pond 1A is proposed consists of open water with a shrubby fringe.

2.2.3.2 *Surface Waters*

SW1 - Retention Pond (FLUCFCS 534 – Reservoirs less than ten acres)

This pond appears to have been at least partially excavated from the adjacent and contiguous W1. The pond is surrounded by a fence and maintained berm which has been planted with cypress (*Taxodium* sp.) and wax myrtle (*Myrica cerifera*). Vegetation is limited to along the shorelines and consists of arrowhead (*Sagittaria lancifolia*), torpedo grass (*Panicum repens*), alligatorweed (*Alternanthera philoxeroides*), and pennywort (*Hydrocotyle umbellata*). Floating algal mats are frequent. Wildlife value is limited to use by aquatic turtles and other amphibians, as well as providing potential forage for wading birds.

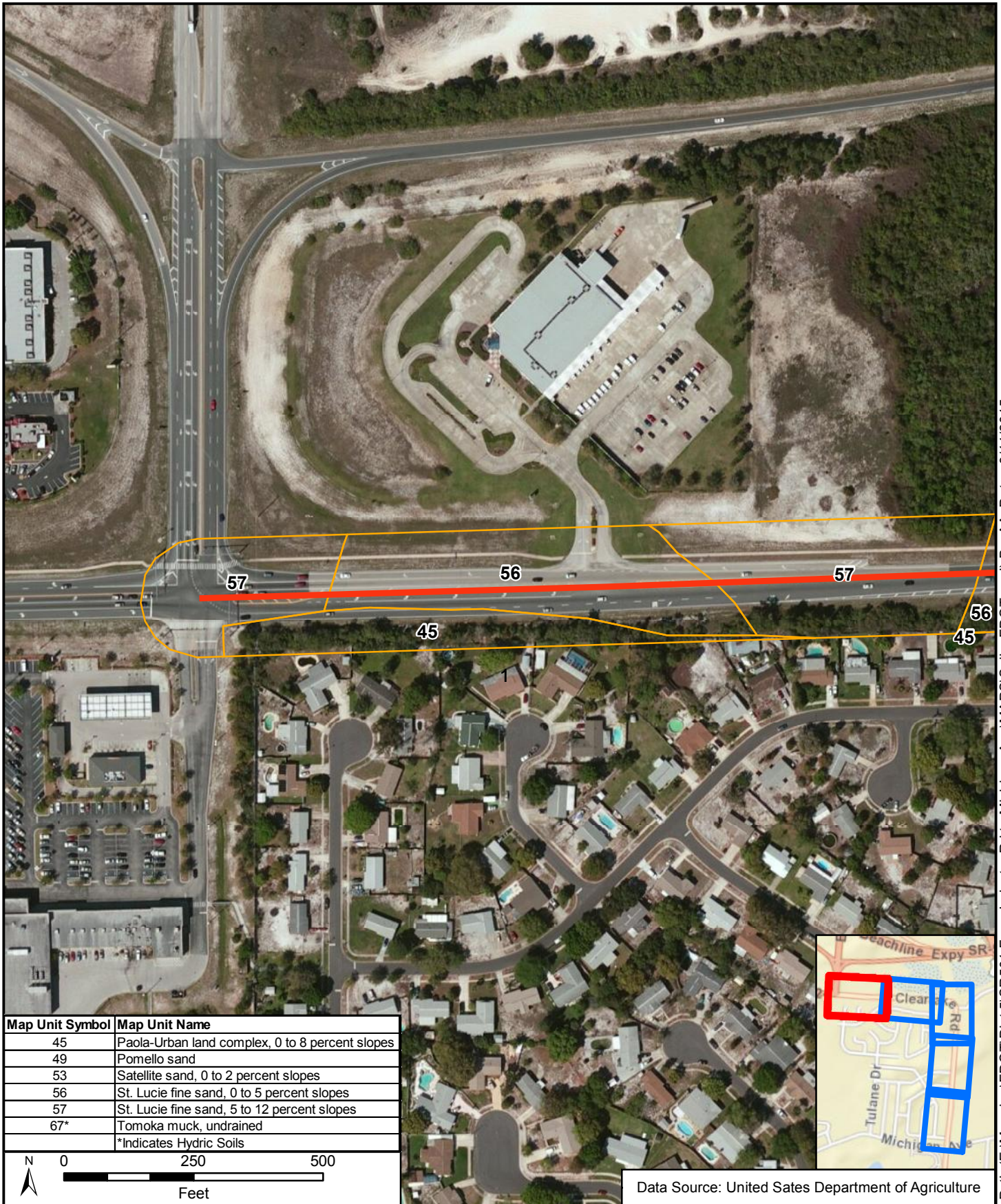
2.2.3.3 *Additional Drainage Features*

Non-wetland, man-made swales occur in various locations along the corridor. These features are generally associated with the stormwater management system currently in place to serve existing roads and development. These drainage features are man-made conveyances constructed within upland soil mapping units and generally do not support wetland vegetation. Water regimes generally consist of intermittent flooding. Dominant vegetation is turf grasses, and mowing of these areas is conducted on a routine basis.

2.3 Soils

Review of the United States Department of Agriculture (USDA) NRCS Soil Survey of Brevard County, Florida and the Soil Survey Geographic Database, (SSURGO, 2013) identified six soil types within the study corridor. Dominant soil types identified along the corridor and their map unit numbers include: Paola-Urban land complex, 0 to 8 percent slopes (#45); St. Lucie fine sand, 0 to 5 percent slopes (#56); and Tomoka muck, undrained (#67). According to the Florida Association of Environmental Soil Scientists' (FAESS) Hydric Soils of Florida Handbook (2007), the only hydric soil type found within the study corridor is Tomoka muck, undrained (#67).

The NRCS soils map for the study corridor is presented in Figure 2-3. Detailed descriptions of the dominant soil types follow.



Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 To Industry Road
 Brevard County

Figure 2-3
Soils

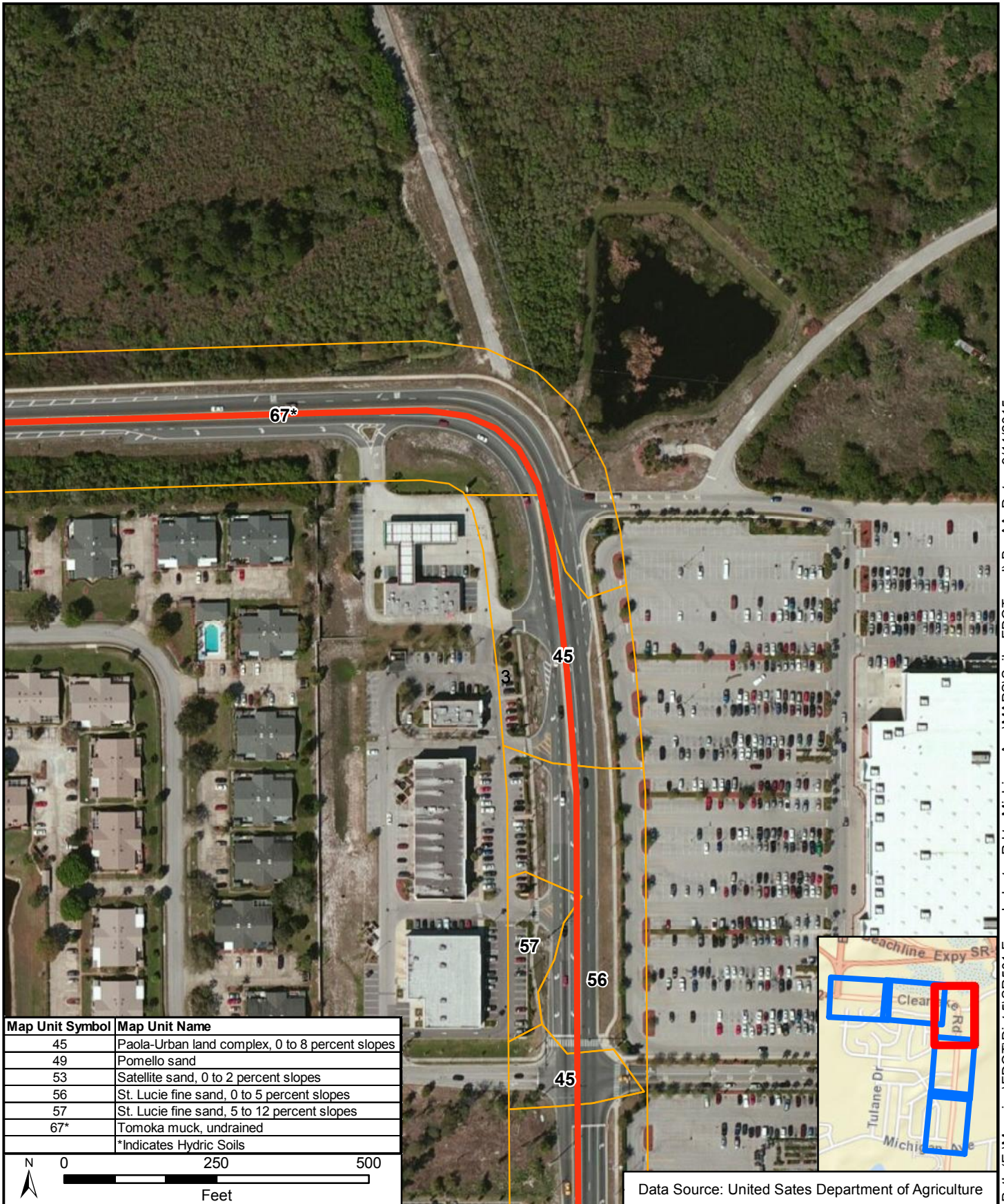




Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 To Industry Road
 Brevard County

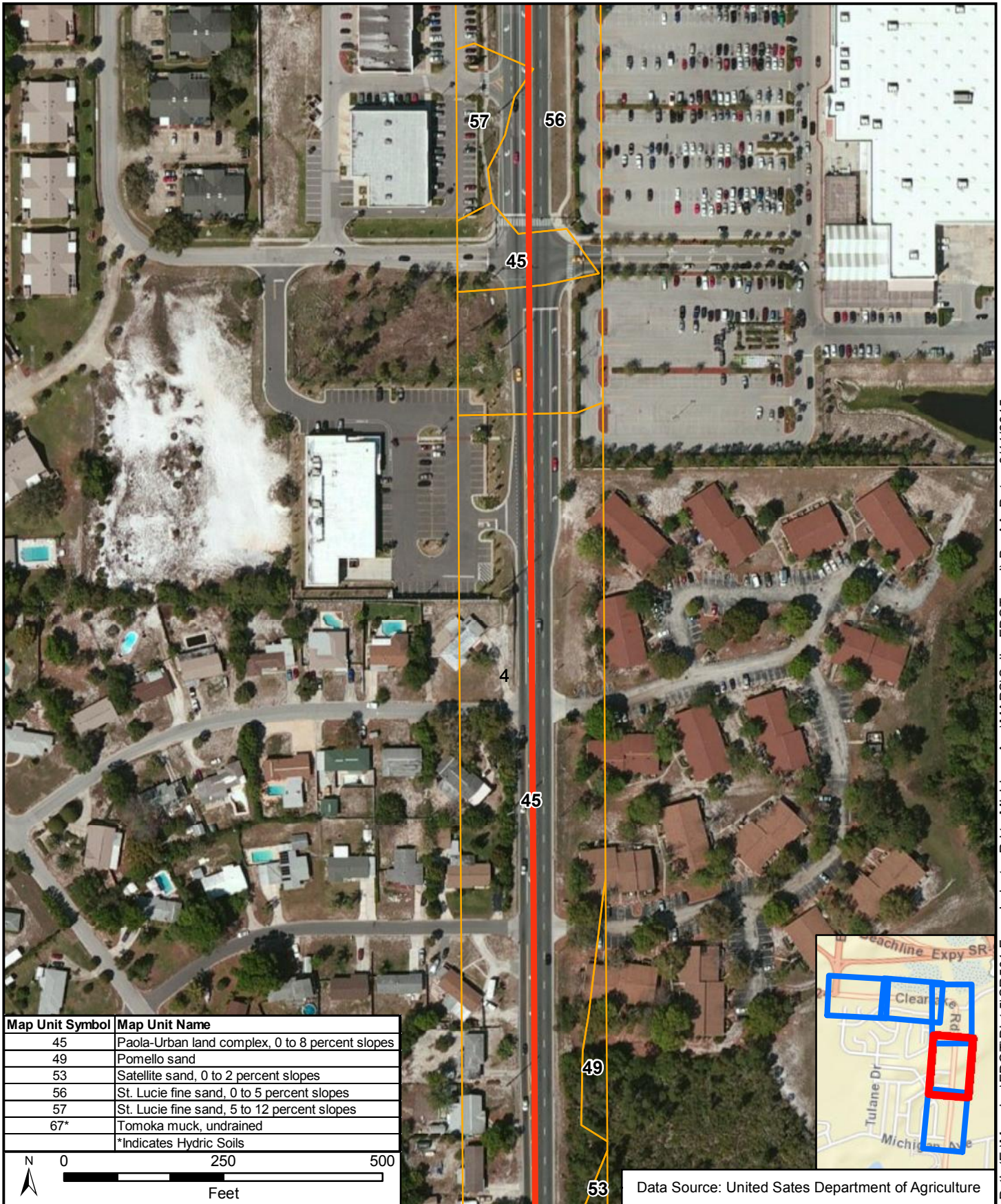
Figure 2-3
Soils





Clearlake Road (SR 501) PD&E Study
From Michigan Avenue
To Industry Road
Brevard County

Figure 2-3
Soils



| Map Unit Symbol | Map Unit Name |
|-----------------|---|
| 45 | Paola-Urban land complex, 0 to 8 percent slopes |
| 49 | Pomello sand |
| 53 | Satellite sand, 0 to 2 percent slopes |
| 56 | St. Lucie fine sand, 0 to 5 percent slopes |
| 57 | St. Lucie fine sand, 5 to 12 percent slopes |
| 67* | Tomoka muck, undrained |
| | *Indicates Hydric Soils |

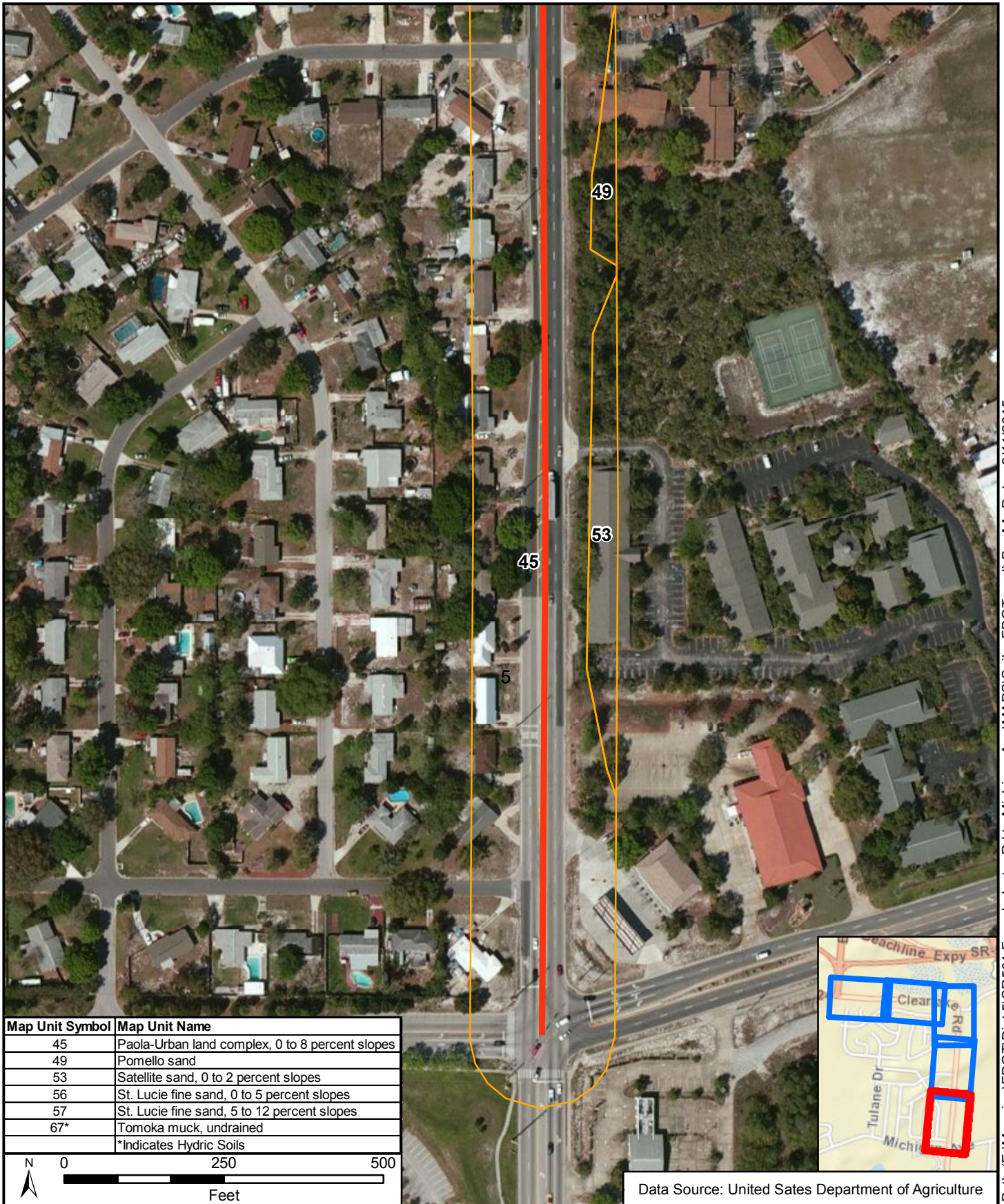
Data Source: United States Department of Agriculture

Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 To Industry Road
 Brevard County

Figure 2-3 Soils

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Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 To Industry Road
 Brevard County

Figure 2-3 Soils

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- Paola-Urban land complex, 0 to 8 percent slopes (#45) - This soil is nearly level to gently sloping and excessively drained. It is found on the uplands of the Coastal Plain with slopes ranging from 0 to 8 percent. The surface layer consists of fine, dark gray sand about five inches thick. In most years, under natural conditions, the water table is at a depth of more than 80 inches. This soil type is associated with much of the developed portions of the study area.
- St. Lucie fine sand, 0 to 5 percent slopes (#56) - This soil is nearly level to gently sloping and excessively drained. It is found on dune-like ridges and on isolated knolls with slopes ranging from 0 to 5 percent. The surface layer consists of fine, gray sand about three inches thick. In most years, under natural conditions, the water table is at a depth of more than 80 inches.
- Tomoka muck, undrained (#67) - This hydric soil is nearly level and very poorly drained. It is found on broad low flats, fresh water marshes and swamps with slopes ranging from 0 to 1 percent. The surface layer consists of very dark reddish brown sapric material about 27 inches thick. The water table is at or on the surface of the soil except during extended dry periods. This soil type coincides with the areas along the corridor where wetlands have been identified.

2.4 Significant Waters & Protection Areas

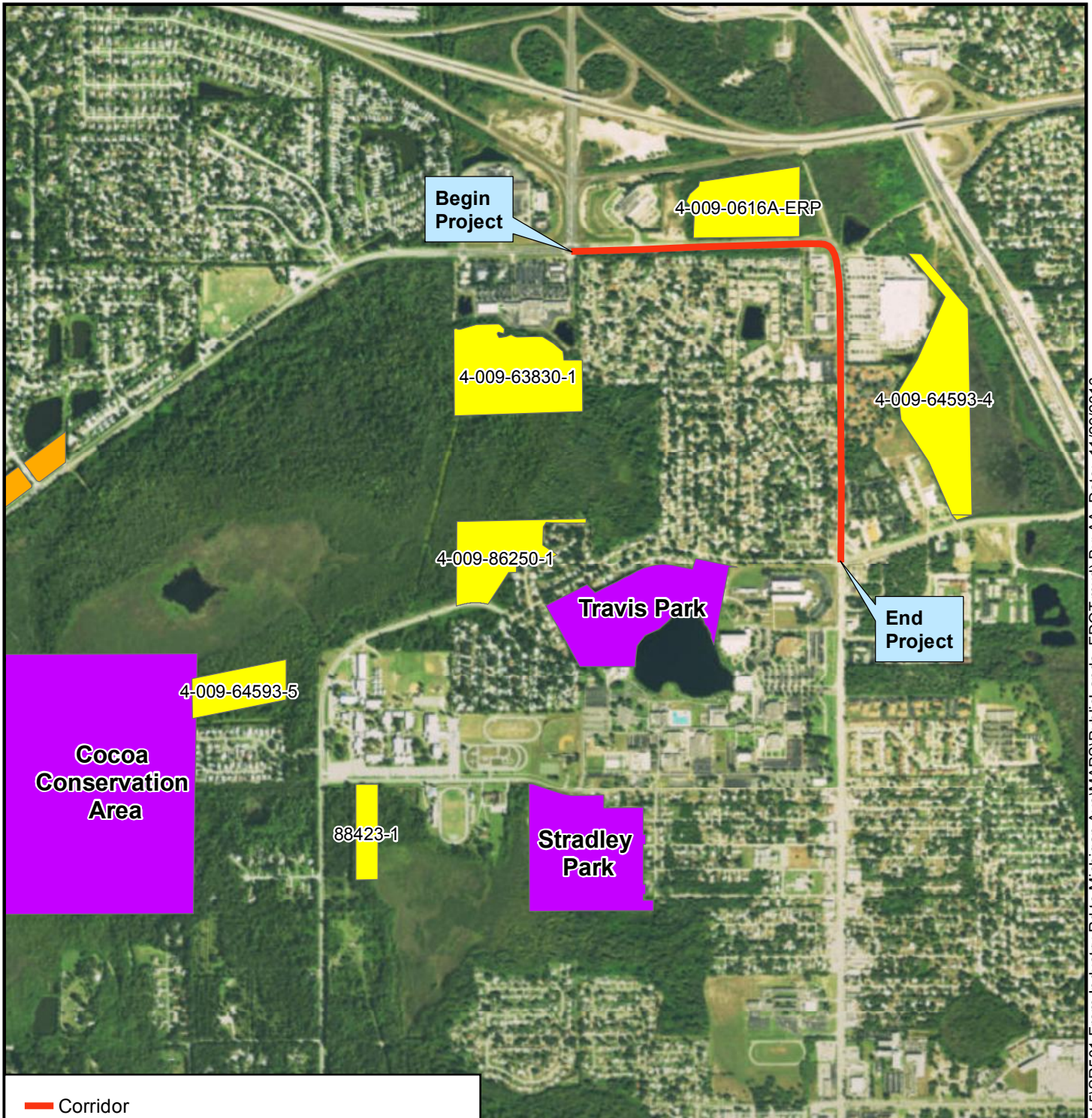
2.4.1 Outstanding Florida Waters (OFWs)

No waterways classified as Outstanding Florida Waters occur within the study corridor.


2.4.2 Protection Areas

A number of parcels in the vicinity of the study area are designated as SJRWMD Regulatory Conservation Easements. One (1) of these parcels encompasses a large portion of W1 described above, and as shown on Figure 2-4. This conservation easement (CE) was granted under SJRWMD Permit #4-009-0616A-ERP on a 16.13 acre parcel in February 2000. The purpose of the CE is to "assure that the property will be retained forever in its existing natural condition and to prevent any use of the property that will impair or interfere with the environmental value of

the property." Prohibited uses listed under the CE include: "Construction or placing buildings, roads, signs, billboards or other advertising, utilities or other structures on or above the ground." According to Chapter 40C.1.1101 of the SJRWMD Organization and Procedures an analysis must be conducted that demonstrates the proposed action cannot practicably be located in a manner that will avoid the conservation easement. In exchange for a release or amendment, the entity making the request must provide SJRWMD with a conservation easement having substantially similar terms over other lands within the same drainage basin that have equivalent or greater ecological and monetary value to the area being released or amended (SJRWMD 2014).



— Corridor
 SJRWMD Regulatory Conservation Easement
Owner
 Brevard County
 City of Cocoa


0
0.25
0.5
 Miles

| Permit # | Grantor |
|-----------------|-------------------------------------|
| 4-009-63830-1 | Sembler Family Partnership #21 Ltd. |
| 4-009-0616A-ERP | Richard R Tenzel |
| 4-009-64593-4 | City of Cocoa |
| 4-009-64593-5 | City of Cocoa |
| 4-009-86250-1 | Wal-Mart Stores East, LP |
| 88423-1 | The School Board of Brevard County |

Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 To Industry Road
 Brevard County

Figure 2-4
Public and Conservation Lands
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Section 3 - WETLAND IMPACTS

The Urban Four Lane Divided typical section for the west, center, and east alignments from Michigan Avenue to Otterbein Avenue, as described previously, do not involve impacts to jurisdictional wetlands or surface waters. Each of the subalternatives, from just north of Otterbein Avenue to Industry Road, however, involve varying degrees of impacts to wetlands and/or surface waters that occur adjacent to the study corridor.

Direct and secondary impacts associated with each of the six subalternatives are depicted in Figures 3-1A through 3-1G. To determine the extent of secondary impacts, the US Army Corps of Engineers' Scope of Effect Tool was utilized. A 250 foot buffer around each of the 5 subalternatives was chosen based on the type of forest, the level of effect to hydrology, water quality, vegetative community, fish, wildlife, and habitat (USACOE 2015). These impacts and an evaluation of the functional loss associated with the direct impacts of each roadway subalternative are summarized in Table 3-1 and discussed below. Impacts associated with pond alternatives are depicted in Figure 3-2A and 3-2B, and are summarized in Table 3-2.

3.1 Results of UMAM Analysis

Uniform Mitigation Assessment Method (UMAM) analyses were conducted to evaluate wetland function and values for each of the wetlands that may be affected by the proposed improvements. UMAM values range from 0 to 1, with a value of 0 reflecting the lowest quality wetland and a value of 1 representing the highest quality wetland. The scores for wetlands that may be directly impacted by the project are: 0.47 for W1; 0.6 for W2; 0.3 for W3; and 0.6 for W4. (Appendix B).

The total Functional Losses (FL) that would result from the proposed alternatives range on the low side from 2.24 for Subalternative C, which impacts a small portion of the lower quality wetlands, W1 and W3; to FL of 5.79 for Subalternative D, which impacts the largest amount of wetlands and to the highest quality area, W2. Subalternatives A and B also involve impacts to W2, however to only the outer fringes, thus resulting in total FL of 2.59 and 2.86, respectively (Table 3-1). The total FL of the Recommended Alternative (VE Alternative with Pond 3C) is 4.55 and the total FL of the Preferred Alternative (BP Gas with Ponds) is 2.97 (Tables 3-3 and 3-4, respectively).

Table 3-1: Roadway Alternative Wetland Impacts and Functional Losses

| Roadway Alternatives | W1 (ac) | W2 (ac) | W3 (ac) | Direct Wetland Impacts (ac) | Secondary Wetland Impact (ac) | Direct Functional Loss | Secondary Functional Loss | Total Functional Loss | SW1 (ac) |
|------------------------------------|---------|---------|---------|-----------------------------|-------------------------------|------------------------|---------------------------|-----------------------|----------|
| Alt 1, West | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Alt 2, Center | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Alt 3, East | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SubAlt A, 45 MPH Curve | 0 | 0.89 | 0.02 | 0.91 | 8.43 | 0.54 | 2.05 | 2.59 | 0 |
| SubAlt B, 35 MPH Curve | 0 | 1.09 | 0 | 1.09 | 9.15 | 0.65 | 2.21 | 2.86 | 0 |
| SubAlt C, Roundabout | 0.14 | 0 | 0.05 | 0.19 | 9.03 | 0.08 | 2.16 | 2.24 | 0.02 |
| SubAlt D, Bulb-Out | 0 | 3.26 | 0 | 3.26 | 14.59 | 1.96 | 3.83 | 5.79 | 0 |
| VE Alt, 35 MPH Bulb-Out (w/o pond) | 0 | 2.04 | 0 | 2.04 | 11.87 | 1.22 | 2.9 | 4.12 | 0 |
| BP Gas (w/o ponds) | 0 | 0.47 | 0 | 0.47 | 8.96 | 0.28 | 2.16 | 2.44 | 0 |

Of the sixteen pond alternatives evaluated, six involve impacts to wetlands or surface waters. Functional losses range from 0.01 for Pond 3D to 0.83 for Pond 3C. Of the ten ponds selected for the Preferred BP Gas Alternative, two ponds impact wetlands: Ponds 3D and 3E. Pond 3D impacts 0.04 acres of Wetland 3 and has a functional loss of 0.01. Pond 3E impacts 0.77 acres of Wetland 2 and has a functional loss of 0.46 (Table 3-2).

Table 3-2: Pond Alternatives Wetland Impacts and Functional Losses

| Pond Alternatives | Wetland Impacts (ac) | Surface Water Impacts (ac) | Functional Loss |
|-------------------|----------------------|----------------------------|-----------------|
| 1A | 1.36 | 0 | 0.82 |
| 1B | 0 | 0 | 0 |
| 1C | 0 | 0 | 0 |
| 2A | 0.32 | 1.41 | 0.15 |
| 2B | 0 | 0 | 0 |
| 2C | 0 | 0 | 0 |
| 2D | 0 | 0 | 0 |
| 3A | 0 | 0 | 0 |
| 3B | 0.12 | 0 | 0.07 |
| 3C | 1.44 | 0 | 0.83 |
| 3D | 0.04 | 0 | 0.01 |
| 3E | 0.77 | 0 | 0.46 |
| 4A | 0 | 0 | 0 |
| 4B | 0 | 0 | 0 |
| 4C | 0 | 0 | 0 |
| 4D | 0 | 0 | 0 |

The Recommended Alternative (VE Alternative) is the 35 MPH Bulb-out with Pond 3C. This alternative would primarily impact W2 (3.35 ac) and the outer fringe of W3 (0.13 ac). Secondary wetland impacts would affect W1, W2, and W3 to varying degrees. The direct functional loss associated with this alternative is 2.05, the secondary functional loss is 2.50 and the total functional loss is 4.55 (Table 3-3).

Table 3-3: VE Alternative with Pond 3C: Wetland Impacts and Functional Losses

| W1 (ac) | W2 (ac) | W3 (ac) | Direct Wetland Impacts (ac) | Secondary Wetland Impact (ac) | Direct Functional Loss | Secondary Functional Loss | Total Functional Loss |
|---------|---------|---------|-----------------------------|-------------------------------|------------------------|---------------------------|-----------------------|
| 0 | 3.35 | 0.13 | 3.48 | 10.33 | 2.05 | 2.50 | 4.55 |

The Preferred Alternative is the BP Gas Alternative with ten ponds. This alternative would primarily impact W2 (1.23 ac) and the outer fringe of W3 (0.04 ac). Secondary wetland impacts would affect W1, W2, and W3 to varying degrees. The direct functional loss associated with this alternative is 0.75, the secondary functional loss is 2.22 and the total functional loss is 2.97 (Table 3-4).

Table 3-4: Preferred Alternative: BP Gas with Ponds

| W1 (ac) | W2 (ac) | W3 (ac) | Direct Wetland Impacts (ac) | Secondary Wetland Impact (ac) | Direct Functional Loss | Secondary Functional Loss | Total Functional Loss |
|----------------|----------------|----------------|------------------------------------|--------------------------------------|-------------------------------|----------------------------------|------------------------------|
| 0 | 1.23 | 0.04 | 1.27 | 9.14 | 0.75 | 2.22 | 2.97 |



Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 To Industry Road
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Figure 3-1A
Wetland Impacts
Subalternative A: 45 MPH Curve
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- Proposed Road Boundary
- Wetland Boundary
- Direct Impact (1.09)
- Secondary Impact (9.15)



0 50 100
Feet

Clearlake Road (SR 501) PD&E Study
From Michigan Avenue
To Industry Road
Brevard County

Figure 3-1B
Wetland Impacts
Subalternative B: 35 MPH Curve
FPID: 433605-1-22-01 | ETDM: 13120





Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 To Industry Road
 Brevard County

Figure 3-1C
Wetland Impacts
Subalternative C: Roundabout
 FPID: 433605-1-22-01 | ETDM: 13120





Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 To Industry Road
 Brevard County

Figure 3-1D
Wetland Impacts
Subalternative D: Bulb Out
 FPID: 433605-1-22-01 | ETDM: 13120











Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 To Industry Road
 Brevard County

Figure 3-1E
Wetlands Impacts
VE Alternative: 35 MPH Bulb-Out
 FPID: 433605-1-22-01 | ETDM: 13120





| | |
|---|-----------------------------|
|  | 35 MPH Bulb Out Alternative |
|  | Wetland Boundary |
|  | Potential Pond Site |
|  | Direct Impact (3.48 ac) |
|  | Secondary Impact (10.33 ac) |

| | |
|---|------------------|
|  | N |
| | 0 50 100 Feet |

Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 To Industry Road
 Brevard County

Figure 3-1F
Wetlands Impacts
Recommended Alternative: 35 MPH Bulb-Out with Pond 3C
 FPID: 433605-1-22-01 | ETDM: 13120

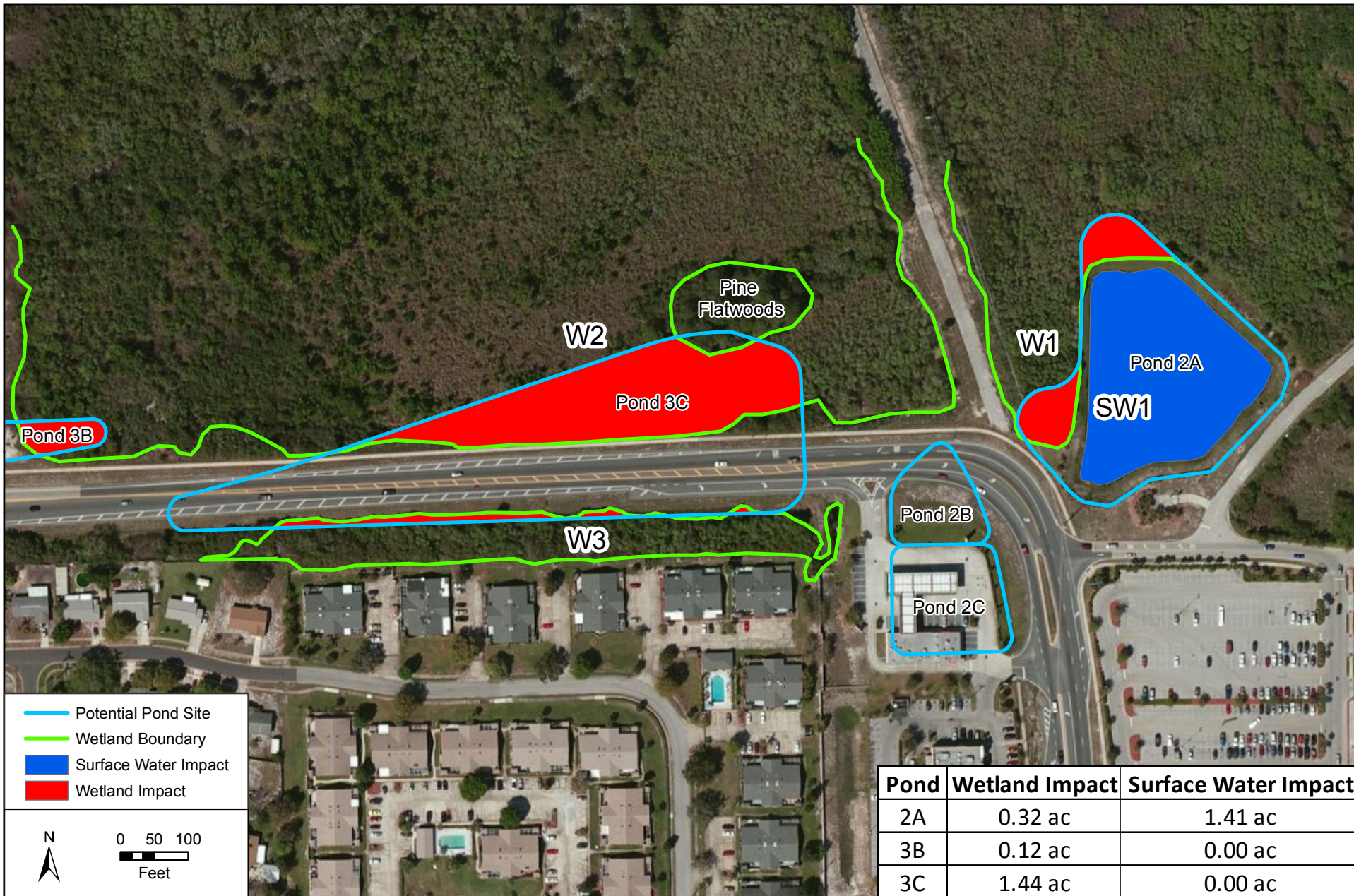




Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 To Industry Road
 Brevard County

Figure 3-1G
Wetlands Impacts
Preferred Alternative: BP Gas
 FPID: 433605-1-22-01 | ETDM: 13120





Path (E:\Mapping\FDOT\Dist 5\SR501 From Industry Rd to Michigan Ave\MAPS\Ponds\Wetland_Impacts.mxd) By: AA Date: 11/30/2015

Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 To Industry Road
 Brevard County

Figure 3-2A
Wetland Impacts- Pond Alternatives 3B, 3C, and 2A

FPID: 433605-1-22-01 | ETDM: 13120





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Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 To Industry Road
 Brevard County

Figure 3-2B
Wetland Impacts- Pond Alternative 1A

FPID: 433605-1-22-01 | ETDM: 13120



3.3 Wetland Impact Mitigation

Study constraints and right-of-way (ROW) limits provide no practicable alternatives that would result in complete avoidance of impacts to wetlands. Whenever possible, permanent impacts will be limited to the smallest degree possible through design modification. Any unavoidable temporary impacts that may occur to wetlands during construction activities will be conducted utilizing Best Management Practices (BMP) and/or FDOT's "*Standard Specifications for Road and Bridge Construction*".

Compensation for wetland impacts will likely be addressed pursuant to S. 373.4137, Florida Statutes (F.S.) in order to satisfy all mitigation requirements of Part IV, Chapter 373, F.S. and 33 United States Code (U.S.C.) 1344.

Several other options for mitigation of wetland impacts exist for FDOT and include public or private mitigation banks and wetland creation, restoration, and / or preservation within the study watershed, which is the Upper St. Johns River Basin watershed. Potential off-site mitigation within nearby conservation areas, easements or parks may be investigated, depending on the impacts associated with the chosen alternative. Mitigation options will be investigated further during the final design phase of the study.

3.4 Coordination with the Permitting Agencies

This project was recently evaluated through the FDOT's ETDM process (ETDM project #13120). An ETDM *Programming Screen Summary Report* was published in November 2014, containing comments from the ETAT on the project's effects on various natural, physical and social resources. Relevant sections of this report are included in Appendix C.

Environmental permits, coordination and authorizations will depend on the impacts associated with the chosen alternative, but may involve the following agencies:

- United States Army Corps of Engineers (USACE) – Section 404 Permit
- United States Fish and Wildlife Service (USFWS) – ESA Section 7 or Section 10
Coordination for potential impacts to wood stork Suitable Foraging Habitat (SFH)

- SJRWMD – Environmental Resource Permit (ERP)
- Florida Department of Environmental Protection (FDEP) - National Pollutant Discharge Elimination System (NPDES) Permit.

Section 4 - PROTECTED SPECIES & HABITAT

The study corridor was assessed for the presence of suitable habitat for federal- and/or state-listed protected species in accordance with 50 Code of Federal Regulation (CFR) Part 402 of the ESA of 1973, as amended, Chapters 5B-40 and 68A-27 F.A.C., and *Part 2, Chapter 27 - Wildlife and Habitat Impacts* of the FDOT PD&E Manual.

4.1 Methodology

Literature reviews, agency database searches, and field reviews of potential habitat were conducted to identify state and federally protected species occurring or potentially occurring within the study area. The Brevard County Soil Survey and recent aerial photographs (2012) were reviewed to determine habitat types occurring within and adjacent to the study corridor. Information sources and databases utilized include the following:

- USFWS Databases
- Florida Natural Areas Inventory (FNAI)
- FWC Databases
- Brevard County Soil Survey
- FWC - Eagle Nest Locator for Brevard County (2012-2013 nesting season data) (one mile radius)
- FWC - Waterbird Colony Locator (1999) (one mile radius)
- USFWS - Wood Stork Rookeries Core Foraging Area (CFA) (15.0 mile radius)

Additionally, environmental concerns expressed by the ETAT members in the ETDM Programming Screen Summary Report were considered when identifying potentially occurring species and habitats.

Field reviews consisted of roadside observations and pedestrian surveys through natural areas and altered habitats with the potential to support protected species. In the absence of physical evidence of a protected species, evaluation of the appropriate habitat was conducted to determine the likelihood of a species being present. Surveys were performed on February 18, 2015.

Surveys took place within the existing ROW of Clearlake Road SR 501, with visual observations conducted on adjacent lands. Any observations of protected species or indicators of their presence (i.e., vocalizations, tracks, scat, burrows, etc.) within or immediately adjacent to the study area were documented. The entire project corridor was walked to specifically look for gopher tortoise burrows and any areas adjacent to the corridor that might support them.

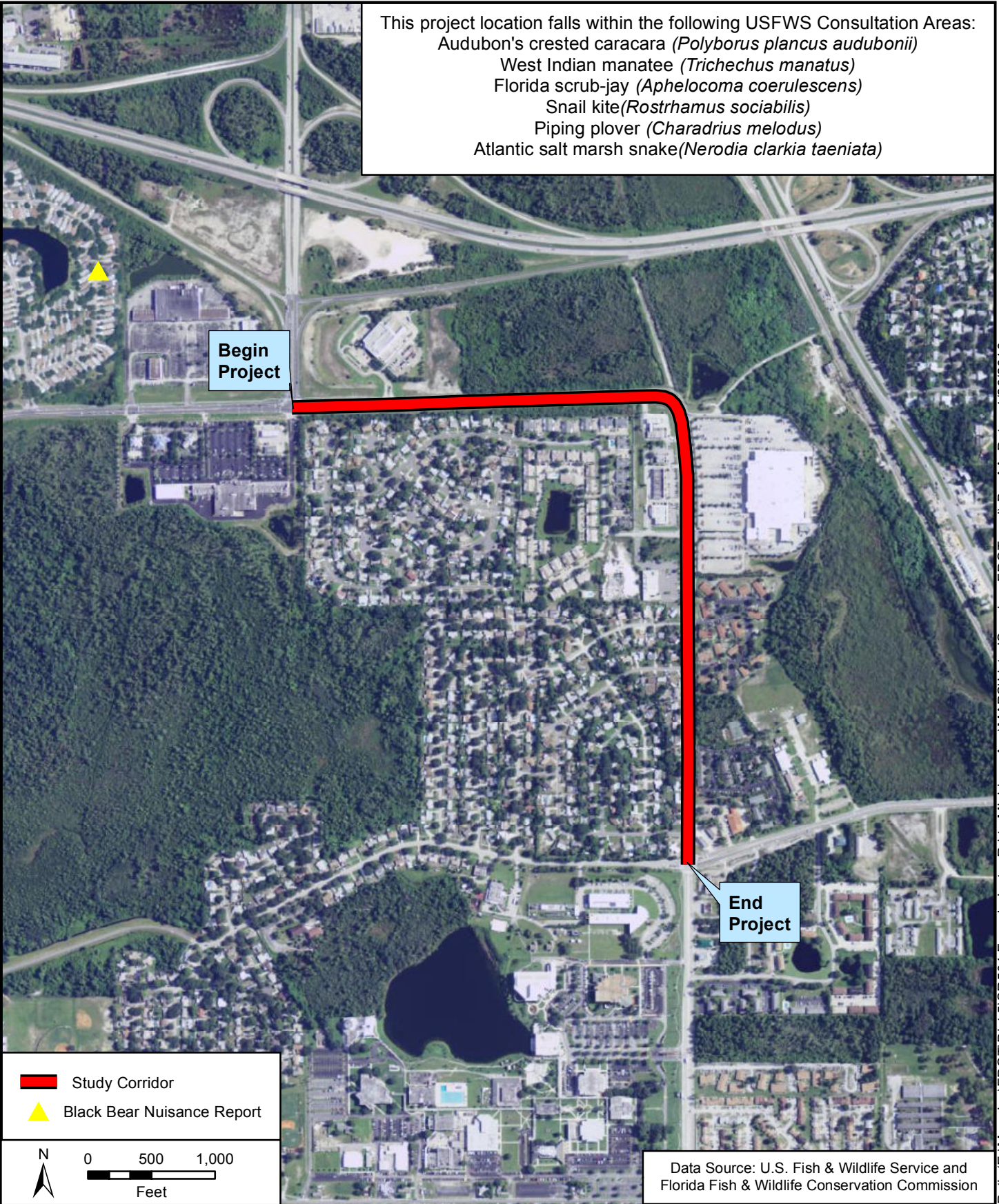
4.2 Results

The study location falls within the USFWS Consultation Area for the following species: Audubon's crested caracara (*Polyborus plancus audubonii*); West Indian manatee (*Trichechus manatus*); Piping plover (*Charadrius melodus*); Florida scrub-jay (*Aphelocoma coerulescens*); Snail kite (*Rostrhamus sociabilis plumbeus*); and Atlantic salt marsh snake (*Nerodia clarkia taeniata*). Suitable habitat for each of these species, however, has been converted, developed, or is entirely lacking on the study corridor, and no effect is anticipated. No gopher tortoises or burrows were observed during field surveys.

Figure 4-1 provides historic species occurrence results from the database searches, based on a one mile radius from the study corridor. The only occurrence record is for one Florida black bear (*Ursus americanus floridanus*) nuisance report documented to the west of the study area.

Figure 4-2 depicts one wood stork colony documented within 15 miles of the corridor, which represents the CFA for this species in Brevard County.

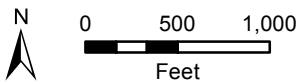
This project location falls within the following USFWS Consultation Areas:
 Audubon's crested caracara (*Polyborus plancus audubonii*)
 West Indian manatee (*Trichechus manatus*)
 Florida scrub-jay (*Aphelocoma coerulescens*)
 Snail kite (*Rostrhamus sociabilis*)
 Piping plover (*Charadrius melodus*)
 Atlantic salt marsh snake (*Nerodia clarkia taeniata*)



Begin Project

End Project

- █ Study Corridor
- ▲ Black Bear Nuisance Report



Data Source: U.S. Fish & Wildlife Service and Florida Fish & Wildlife Conservation Commission

Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 To Industry Road
 Brevard County

Figure 4-1 Listed Species

FPID: 433605-1-22-01 | ETDM: 13120



Path (E:\Mapping\FDOT\Dist 5\SR501 From Industry Rd to Michigan Ave\MAPS\ListedSpecies_FDOT.mxd) By: AA Date: 4/26/2016



Clearlake Road (SR 501) PD&E Study
 From Michigan Avenue
 To Industry Road
 Brevard County

Figure 4-2
Wood Stork Colony and Core Foraging Area
 FPID: 433605-1-22-01 | ETDM: 13120



Based on the above methods, a list of potentially occurring protected species was developed, and each species was assigned a low, moderate or high likelihood for occurrence within habitats found on the study corridor. If a species or species indicator was observed during field reviews it is identified as “observed”. **Table 4-1** lists the federal and state protected wildlife species with the potential to occur within the study corridor, based on potential availability of suitable habitat and known ranges. **Table 4-2** provides the same information for federal and state protected plant species. Definitions for likelihood of occurrence are provided below:

Low - Species with a low likelihood of occurrence within the study corridor are defined as those species that are known to occur in Brevard County or the bio-region, but preferred habitat is limited on the study corridor, or the species is rare or has been extirpated.

Moderate - Species with a moderate likelihood for occurrence are those species known to occur in Brevard or nearby counties, and for which suitable habitat is well represented on the study corridor, but no observations or positive indications exist to verify their presence.

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

Table 4-1: Potentially Occurring Protected Wildlife Species

| Common Name | Scientific Name | Habitat | Federal/State Legal Status | Likelihood for Occurrence |
|----------------------------|---------------------------------------|---|-----------------------------------|----------------------------------|
| Birds | | | | |
| Audubon's crested caracara | <i>Polyborus plancus audubonii</i> | Wet prairies, pastures, | T/T | Low |
| Bald eagle | <i>Haliaeetus leucocephalus</i> | Forests, near open water | BGEPA (CH 68A-16.002, FAC) | Low |
| Florida sandhill crane | <i>Grus canadensis pratensis</i> | Freshwater marshes, prairies, pastures | N/T | Moderate |
| Florida scrub-jay | <i>Aphelocoma coerulescens</i> | Sand pine and xeric oak scrub, scrubby flatwoods | T/T | Low |
| Least tern | <i>Sternula antillarum</i> | Estuaries, bays, rivers | N/T | Low |
| Little blue heron | <i>Egretta caerulea</i> | Swamps, estuaries, ponds, lakes, rivers | N/SSC | Moderate |
| Reddish egret | <i>Egretta rufescens</i> | Estuaries, lagoons, spoil islands | N/SSC | Low |
| Roseate spoonbill | <i>Platalea ajaja</i> | Marshes, mangrove swamps, rivers | N/SSC | Moderate |
| Snowy egret | <i>Egretta thula</i> | Estuaries, bays, saltmarsh pools, tidal channels | N/SSC | Moderate |
| Tricolored heron | <i>Egretta tricolor</i> | Marshes, estuaries, swamps, lagoons, river deltas | N/SSC | Moderate |
| White ibis | <i>Eudocimus albus</i> | Marshes, ponds, lakes, rivers, bays | N/SSC | High |
| Wood Stork | <i>Mycteria americana</i> | Swamps, marshes, sloughs, cypress domes/strands | T/T | High |
| Mammals | | | | |
| Florida black bear | <i>Ursus americanus floridanus</i> | Sand pine and oak scrub, upland hardwood and floodplain forests | N/N (CH 68A-4.009, FAC) | High |
| Reptiles | | | | |
| Eastern indigo snake | <i>Drymarchon corais couperi</i> | Sand pine and oak scrub, mangrove swamps, wet prairies oak hammocks, pine flatwoods | T/T | Moderate |
| Florida pine snake | <i>Pituophis melanoleucas mugitus</i> | Pine-turkey oak woodlands, abandoned fields, long leaf pine forests | N/SSC | Low |
| Gopher tortoise | <i>Gopherus polyphemus</i> | Oak-sandhills, scrub, flatwoods, coastal dunes | Candidate/T | Low |

Table 4-2: Potentially Occurring & Observed Listed Plant Species

| Common Name | Scientific Name | Fed Status | State Status | Habitat | Probability of Presence or Occurrence |
|-----------------------------|---|------------|--------------|--|---------------------------------------|
| Curtiss' milkweed | <i>Asclepias curtissii</i> | X | E | Upland scrub, pine & hardwoods. | Low |
| Pinewoods bluestem | <i>Andropogon arctatus</i> | X | T | Upland scrub, pine & hardwoods. | Moderate |
| Florida sandreed | <i>Calamovilfa curtissii</i> | | T | Upland scrub, pine & hardwoods. | Moderate |
| Sand butterfly pea | <i>Centrosema arenicola</i> | X | E | Upland scrub, pine & hardwoods. | Low |
| Coastal dune sandmat | <i>Chamaesyce cumulicola</i> | X | E | Upland scrub, pine & hardwoods. | Low |
| Satainleaf | <i>Chrysophyllum oliviforme</i> | X | T | Hammocks & pinelands | Moderate |
| Florida jointtailgrass | <i>Coelorachis tuberculosa</i> | X | T | Margins of ponds & hardwood swamps. | Moderate |
| Large flower false rosemary | <i>Conradina grandiflora</i> | X | T | Upland scrub, pine & hardwoods. | Moderate |
| Garberia | <i>Garberia heterophylla</i> | X | T | Upland scrub, pine & hardwoods. | Moderate |
| Coastal mock vervain | <i>Glandularia maritima</i> | X | E | Coastal upland scrub, pine & hardwoods. | Low |
| Tampa mock vervain | <i>Glandularia tampensis</i> | X | E | Hardwood hammocks | Low |
| Indian River prickly-apple | <i>Harrisia fragrans</i> | E | E | Upland scrub, pine & hardwoods on Atlantic coastal ridge. | Low |
| Simpsons' apple cactus | <i>Harrisia simpsonii</i> | X | E | Upland scrub, pine & hardwoods on Atlantic coastal ridge. | Low |
| Nodding pinweed | <i>Lechea cernua</i> | X | T | Upland scrub, pine & hardwoods. | Moderate |
| Drysand pinweed | <i>Lechea divaricata</i> | X | E | Upland scrub, pine & hardwoods. | Low |
| Erect prickly pear | <i>Opuntia stricta</i> | X | T | Upland scrub, pine & hardwoods. | Moderate |
| Cinnamon fern | <i>Osmunda cinnamomea</i> | X | CE | Hardwood swamps. | High |
| Royal fern | <i>Osmunda regalis</i> | X | CE | Hardwood swamps. | Observed |
| Lewtons' milkwort | <i>Polygala lewtonii</i> | E | E | Upland scrub, pine & hardwoods | Low |
| Giant orchid | <i>Pteroglossaspis ecristata</i> | X | T | Upland scrub, pine & hardwoods | Moderate |
| Curtiss' hoarypea | <i>Tephrosia angustissima</i> var. <i>curtissii</i> | X | E | Upland scrub, pine & hardwoods | Low |
| Wild pine | <i>Tillandsia balbisiana</i> | X | T | Hardwood swamps & hammocks. Upland scrub, pine & hardwoods. Epiphytic on hardwood trees. | Moderate |
| Cardinal airplant | <i>Tillandsia fasciculata</i> | X | E | Hardwood swamps & hammocks. Upland scrub, pine & hardwoods. Epiphytic on hardwood trees. | Moderate |
| Giant airplant | <i>Tillandsia utriculata</i> | X | E | Hardwood swamps & hammocks. Upland scrub, pine & hardwoods. Epiphytic on hardwood trees. | Moderate |
| Carters' pineland cress | <i>Warea carteri</i> | E | E | Upland scrub, pine & hardwoods. | Low |
| Coontie | <i>Zamia pumila</i> | X | CE | Upland scrub, pine & hardwoods | Moderate |

T = threatened; E = endangered; SSC = species of special concern; CE = commercially exploited
 X or N = no protection; BGEPA = Bald and Golden Eagle Protection Act

4.2.1 Field Surveys

Land use along the corridor consists primarily of residential and commercial development throughout the corridor, with the exception of the north side of Clearlake Road where a remnant forested wetland occurs. Subsequently, wildlife observations were extremely limited.

No state or federally listed wildlife species were observed. Descriptions are provided below for those species which have been previously documented along the study corridor or have a moderate or high potential to occur within habitats on the corridor.

4.3 Federally Protected Species

Federally protected wildlife species which have been identified as having a moderate or high probability for occurrence in the vicinity of the corridor includes the wood stork (*Mycteria americana*), and Eastern indigo snake (*Drymarchon corais couperi*). No federally listed plant species were observed or are documented for the corridor.

4.3.1 Wood Stork

Wood storks utilize freshwater and estuarine habitats for nesting, foraging, and roosting. Wood storks typically are colonial nesters and construct their nests in medium to tall trees located within wetlands or on islands. Wood storks are listed as threatened by both the USFWS and FWC.

No wood storks or rookeries were observed during field surveys conducted on February 18, 2015. The study area falls within the core foraging area (CFA) of one documented wood stork colony (Figure 4-2). SFH is limited to the littoral zones of the existing stormwater pond (SW1). As defined by the USFWS, SFH includes wetlands and surface waters that have areas of relatively calm water uncluttered by dense thickets of aquatic vegetation, and have permanent or seasonal water depth between two and 15 inches. SFH within the study corridor will be re-evaluated during final permitting of the study, however, proposed impacts to SW1 is currently limited to 0.02 acre of potential impact associated with Subalternative C. The Pond 2A Alternative would also impact SW1, however this would likely be a temporary impact as the pond is reconstructed to accommodate the new stormwater treatment system. The preferred

alternative, BP Alternative, does not affect SW1 therefore no impacts to SFH are associated with the preferred alternative.

Detailed calculations of SFH biomass may be required during future permitting phases of the study if significant foraging habitat is permanently lost and the USFWS continues to utilize these calculations to determine mitigation. Unavoidable wetland impacts will be mitigated as appropriate. However, when applying the preferred alternative to the September 2008 Effect Determination Key for the Wood Stork in Central and North Peninsular Florida, indications are that the project is *not likely to adversely affect* the wood stork. This determination was based on the facts that the project is within the core foraging area (CFA) of a colony site, but more than 2,500 feet from a colony site and the preferred alternative does not impact SFH.

4.3.3 Eastern Indigo Snake

Eastern indigo snakes are large, black, non-venomous snakes which are distributed throughout the southeastern United States. The Eastern indigo snake occurs in a wide variety of habitats, including forested uplands and wetlands as well as wet and dry prairies. This species feeds on snakes, frogs, salamanders, toads, small mammals, birds and young turtles. Eastern indigo snakes are listed as threatened by both the USFWS and FWC.

No individuals were observed during the field surveys, however, some limited areas of suitable habitat for this species occur immediately adjacent to the study corridor, and larger areas of suitable habitat do occur in the vicinity. The probability of occurrence for this species within the corridor is therefore moderate.

To assure the protection of this species during construction, when it is most likely to be affected, the FDOT will require that the Standard Construction Precautions for the Eastern Indigo Snake be implemented (Appendix D). As such, when applying the study specifics to the August 13, 2013, updated addendum to the Eastern Indigo Snake Programmatic Effect Determination Key, indications are that the study *may affect, but is not likely to adversely affect* the Eastern indigo snake. This determination was based on the facts that less than 25 acres of xeric habitat will be impacted, standard protection guidelines will be incorporated in the final project design and implemented during construction, no gopher tortoise burrows were identified, and if found

during preconstruction surveys all active and inactive gopher tortoise burrows will be evacuated prior to construction.

4.4 State Protected Species

State listed wildlife species which have been identified as having a moderate or high probability for occurrence in the vicinity of the corridor includes several species of wetland dependent birds.

One (1) state listed plant species, royal fern (*Osmunda regali*) was observed in the study area, within W3. There is a high likelihood that cinnamon fern (*Osmunda cinnamomea*) also occurs within forested wetlands on the corridor. Both of these fern species are listed by the Florida Department of Agriculture and Consumer Services (FDACS) as Commercially Exploited (CE).

4.4.1 Wetland Dependent Avian Species

This category includes state listed wetland dependent avian species that have a potential to occur on the study corridor based primarily on available foraging habitat. This includes: Florida sandhill crane (*Grus canadensis pratensis*), little blue heron (*Egretta caerulea*), roseate spoonbill (*Platalea ajaja*), snowy egret (*Egretta thula*), tricolored heron (*Egretta tricolor*), and white ibis (*Eudocimus albus*). Florida sandhill crane is listed as threatened by the FWC; the remaining species are listed as species of special concern by the FWC.

No wetland dependent bird species were observed during field surveys. Wetlands and surface waters that provide foraging potential for the wetland dependent avian species include ditches, drainage swales and the SW1 stormwater pond. Unavoidable wetland impacts will be mitigated as appropriate. Impacts to other surface water features are anticipated to be compensated for in the future design of the stormwater management system. The study therefore is not anticipated to have unacceptable impacts to these wetland dependent avian species.

4.4.2 Plants

4.4.2.1 Royal fern (*Osmunda regalis*)

Royal fern was observed at one location, in W3 along the excavated ditch channel. Royal fern is easy to distinguish from all other ferns in Florida due to its bipinnate leaves and relatively large

pinnules. It has a separate reproductive frond similar to cinnamon fern. Royal fern is listed by the FDACS as commercially exploited. Since only portions of existing habitat for this species may be affected by the proposed improvements, and it is thought to be common in local habitats, long term viability of this species is not anticipated to be affected. Therefore, the proposed project is not anticipated to negatively affect this plant species.

4.4.2.2 Cinnamon fern (*Osmunda cinnamomea*)

Cinnamon fern was not observed along the corridor but has a high likelihood of occurrence, based on habitat availability and the presence of ferns that typically occur in association with this species. Cinnamon fern is listed as a commercially exploited fern by the FDACS. Since only portions of potential habitat for this species may be affected by the proposed project, and it is anticipated to be common in local habitats, long term viability of this species is not anticipated to be affected. Therefore, the proposed project is not anticipated to negatively affect this plant species.

4.5 Protected, Non-Listed Species

4.5.1 Florida Black Bear

The Florida black bear was removed from the State Endangered and Threatened Species List in August 23, 2012. However, the FWC's Florida Black Bear Conservation Rule (Rule 68A-4.009, F.A.C.) provides protections making it illegal to take, possess, injure, shoot, collect, or sell black bears or their parts or to attempt to engage in such conduct except as authorized by FWC rule or permit.

Black bear nuisance reports are documented within one mile of the corridor. It is likely that black bears use and move through habitats near and possibly adjacent to the project corridor, and in particular the forested wetlands associated with W2 and adjacent areas.

Section 5 - CONCLUSIONS & COMMITMENTS

5.1 Wetlands

Alternatives evaluated for the Clearlake Road corridor from Michigan Avenue to Industry Road include potential impacts to existing wetlands and surface waters. Wetlands include disturbed shrub systems and remnant forested areas. Surface waters potentially impacted are limited to one existing stormwater pond. The shrubby wetlands have been fragmented and isolated, so are of limited habitat value, and support moderate to high coverage of nuisance and exotic species. The potentially affected forested wetland has also been fragmented and disturbed by adjacent roadway construction, and the impact areas are likely to focus on the southern edges of this system.

Uniform Mitigation Assessment Method (UMAM) analyses were conducted to evaluate wetland function and values for each of the wetlands that may be affected by the study. UMAM values range from 0 to 1, with a value of 0 reflecting the lowest quality wetland and a value of 1 representing the highest quality wetland. The scores for wetlands that may be directly impacted by the project are: 0.47 for W1; 0.6 for W2; 0.3 for W3; and 0.6 for W4. (Appendix B).

The total Functional Losses (FL) that would result from the proposed alternatives range on the low side from 2.24 for Subalternative C, which impacts a small portion of the lower quality wetlands, W1 and W3; to FL of 5.79 for Subalternative D, which impacts the largest amount of wetlands and to the highest quality area, W2. Subalternatives A and B also involve impacts to W2, however to only the outer fringes, thus resulting in total FL of 2.59 and 2.86, respectively (Table 3-1). The total FL of the Recommended Alternative (VE Alternative with Pond 3C) is 4.55 (Table 3-3).

Following the public hearing for this PD&E, a meeting was held with the Department, the BP gas owners, and their attorney on March 29, 2016 to discuss the possible realignment of the Recommended Alternative. The realignment consists of modifying the Recommended Alternative of a 35 mph 'Bulb-Out' to a 35 mph curve which runs through the BP gas station property. This would involve a complete take of the BP gas property in order to accommodate the new alignment and would also use the remainder of the parcel for an offsite pond, thus

eliminating the need to expand the existing pond just north of Walmart that is included as part of the Recommended Alternative. This alternative would primarily impact W2 (1.23 ac) and the outer fringe of W3 (0.04 ac). Secondary wetland impacts would affect W1, W2, and W3 to varying degrees. The direct functional loss associated with this alternative is 0.75, the secondary functional loss is 2.22 and the total functional loss is 2.97 (Table 3-4).

The FDOT is committed to the following measure to address wetland impacts for this study:

- Wetland impacts which will result from the construction of this project will be mitigated pursuant to Section 373.4137, F.S. to satisfy all mitigation requirements of Part IV Chapter 373, F.S. and 33 U.S.C. s.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.

5.2 Protected Species & Habitat

The study may affect but is not likely to adversely affect federally and state protected wildlife species.

Federally protected species which may be affected but are not likely to be adversely affected by the study include the Eastern indigo snake. Federally protected species which are not likely to be adversely affected include the wood stork. State protected species which may be present but are not likely to be significantly impacted by the study include wetland dependent avian species and fern species listed as Commercially Exploited.

Multiple avenues of protection will be employed to negate and minimize any potential affects to these species. Some of the measures employed will include detailed surveys and agency coordination during the study design phase, BMPs during construction, adherence to FDOT's "*Standard Specification for Road and Bridge Construction*", and utilization of standard construction precautions for species such as the Eastern indigo snake.

In order to assure that adverse impacts to protected species within the vicinity of the study corridor will not occur, the FDOT will abide by standard protection measures in addition to the following commitments:

- To assure the protection of the Eastern indigo snake during site preparation and construction, the following will be added as a General Note: Eastern indigo snake habitat has been identified within the project limits. Utilize the US Fish and Wildlife Service Standard Protection Measures for the Eastern Indigo Snake, at the USFWS Link:
http://www.fws.gov.northflorida/IndigoSnakes/20130812_Eastern_indigo_snake_Standard_Protection_Measures.htm
- Coordination with the permitting agencies will take place to quantify and provide compensation for any unavoidable impacts to wood stork suitable foraging habitat (SFH). Mitigation for these impacts will be provided within a USFWS-approved wetland mitigation bank that provides an amount of habitat and foraging function equivalent to that of the impacted SFH in accordance with the *Corps of Engineers* and *U.S. Fish and Wildlife Service Effect Determination Key for the Wood Stork in Central and North Peninsular Florida*.
- During permitting, all potential gopher tortoise habitat that could be impacted by the project will be systematically surveyed according to the current guidelines published by the FWC. If gopher tortoise burrows are found, all practicable measures will be employed to avoid impacts to the burrows. For burrows which cannot be avoided, a permit will be obtained from the FWC for the relocation of gopher tortoises, and relocation will be performed at a time as close to practicable to the start of construction activities at the site of the burrows.

Section 6 - REFERENCES

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APPENDIX A

Representative Wetland Photographs



SW 1 – Stormwater Pond. View to northeast.



SW 3 – Ditch along southern and eastern perimeter of forested wetland. View to north.



SW 3 – Southern boundary of forested wetland. View to east.

APPENDIX B

UMAM Data Sheets

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

| | | | |
|--|--|---|--|
| Site/Project Name Clearlake Road (SR 501) from Michigan Ave. to Industry Rd. | | Application Number N/A | Assessment Area Name or Number Wetland 1 (W1) |
| FLUCCs code 618 | Further classification (optional) Shrub Swamp | | Impact or Mitigation Site? Direct Impact |
| Basin/Watershed Name/Number Upper St. Johns River Basin watershed | Affected Waterbody (Class) | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) N/A | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Historic wetland fragmented and isolated from other systems via constructed roadways; hydrologically connected to adjacent stormwater pond. | | | |
| Assessment area description Disturbed and fragmented Carolina willow (<i>Salix caroliniana</i>) dominated shrub system that is contiguous with the adjacent retention pond (SW1). The interior supports a dense sub-canopy of willow, with scattered red maple (<i>Acer rubrum</i>). Brazilian pepper (<i>Schinus terebinthifolius</i>), cabbage palm (<i>Sabal palmetto</i>), and elderberry (<i>Sambucus canadensis</i>) also occur, primarily along the outer edges. Little to no ground cover was observed and is limited to weedy upland species such as Spanish needles (<i>Bidens alba</i>), and ragweed (<i>Ambrosia artemisiifolia</i>) along the mowed edges. | | | |
| Significant nearby features Located west of Indian River | | Uniqueness (considering the relative rarity in relation to the regional landscape.) N/A | |
| Functions flood control and attenuation; limited habitat value | | 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) various bird species, freshwater fish, turtles, other reptiles & amphibians likely | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) possible use by wading birds for roosting | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): None. | | | |
| Additional relevant factors: | | | |
| Assessment conducted by: V.Handy | | Assessment date(s): | |

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

| | | |
|---|--------------------------------------|--------------------------------------|
| Site/Project Name Clearlake Road (SR 501) from Michigan Ave. to Industry Rd. | Application Number N/A | Assessment Area Name or Number W1 |
| Impact or Mitigation Direct Impact | Assessment conducted by: V. Handy | Assessment date: |

Scoring Guidance
 The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

| Optimal (10) | Moderate(7) | Minimal (4) | Not Present (0) |
|---|--|---|--|
| Condition is optimal and fully supports wetland/surface water functions | Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions | Minimal level of support of wetland/surface water functions | Condition is insufficient to provide wetland/surface water functions |

| | |
|---|---|
| .500(6)(a) Location and Landscape Support | W1 is small remnant area of larger system, fragmented by roads on 3 sides and a stormwater pond has been excavated along eastern edge. Is surrounded by development, with remnant disturbed upland parcel adjacent to the east. |
| w/o pres or current | with |
| 4 | 0 |

| | |
|---|--|
| .500(6)(b)Water Environment (n/a for uplands) | Connected to adjacent stormwater pond, but fragmented from forested system to west by road. Some hydrological connections via ditches and culverts remain. |
| w/o pres or current | with |
| 6 | 0 |

| | |
|--|--|
| .500(6)(c)Community structure | Carolina willow (<i>Salix caroliniana</i>) dominated shrub system that is contiguous with the adjacent retention pond (SW1). The interior supports a dense sub-canopy of willow, with scattered red maple (<i>Acer rubrum</i>). Brazilian pepper (<i>Schinus terebinthifolius</i>), cabbage palm (<i>Sabal palmetto</i>), and elderberry (<i>Sambucus canadensis</i>) also occur, primarily along the outer edges. Little to no ground cover was observed and is limited to weedy upland species such as Spanish needles (<i>Bidens alba</i>), and ragweed (<i>Ambrosia artemisiifolia</i>) along the mowed edges. |
| 1. Vegetation and/or 2. Benthic Community | |
| w/o pres or current | with |
| 4 | 0 |

| | |
|---|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current or w/o pres | with |
| 0.47 | 0 |

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

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

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

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

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

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

| | | | |
|--|--|---|--|
| Site/Project Name Clearlake Road (SR 501) from Michigan Ave. to Industry Rd. | | Application Number N/A | Assessment Area Name or Number Wetland 1 (W1) |
| FLUCCs code 618 | Further classification (optional) Shrub Swamp | | Impact or Mitigation Site? Secondary Impact |
| Basin/Watershed Name/Number Upper St. Johns River Basin watershed | Affected Waterbody (Class) | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) N/A | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Historic wetland fragmented and isolated from other systems via constructed roadways; hydrologically connected to adjacent stormwater pond. | | | |
| Assessment area description Disturbed and fragmented Carolina willow (<i>Salix caroliniana</i>) dominated shrub system that is contiguous with the adjacent retention pond (SW1). The interior supports a dense sub-canopy of willow, with scattered red maple (<i>Acer rubrum</i>). Brazilian pepper (<i>Schinus terebinthifolius</i>), cabbage palm (<i>Sabal palmetto</i>), and elderberry (<i>Sambucus canadensis</i>) also occur, primarily along the outer edges. Little to no ground cover was observed and is limited to weedy upland species such as Spanish needles (<i>Bidens alba</i>), and ragweed (<i>Ambrosia artemisiifolia</i>) along the mowed edges. | | | |
| Significant nearby features Located west of Indian River | | Uniqueness (considering the relative rarity in relation to the regional landscape.) N/A | |
| Functions flood control and attenuation; limited habitat value | | 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) various bird species, freshwater fish, turtles, other reptiles & amphibians likely | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) possible use by wading birds for roosting | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): None. | | | |
| Additional relevant factors: | | | |
| Assessment conducted by: V.Handy | | Assessment date(s): | |

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

| | | |
|---|--------------------------------------|--------------------------------------|
| Site/Project Name Clearlake Road (SR 501) from Michigan Ave. to Industry Rd. | Application Number N/A | Assessment Area Name or Number W1 |
| Impact or Mitigation Secondary Impact | Assessment conducted by: V. Handy | Assessment date: |

| |
|--|
| Scoring Guidance |
| The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed |

| Optimal (10) | Moderate(7) | Minimal (4) | Not Present (0) |
|---|--|---|--|
| Condition is optimal and fully supports wetland/surface water functions | Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions | Minimal level of support of wetland/surface water functions | Condition is insufficient to provide wetland/surface water functions |

| | | |
|---|---|-----------|
| .500(6)(a) Location and Landscape Support | Without Project: W1 is small remnant area of larger system, fragmented by roads on 3 sides and a stormwater pond has been excavated along eastern edge. Is surrounded by development, with remnant disturbed upland parcel adjacent to the east. With Project: Additional fragmentation of wetland system, increase in wildlife barriers, light and noise pollution will increase, reduced food and cover will increase wildlife mortality, roadkill, additional artificial light effects wildlife by increasing predation, reducing foraging time, and disrupting reproduction strategies. | |
| | w/o pres or current 4 | with 2 |

| | | |
|---|--|-----------|
| .500(6)(b)Water Environment (n/a for uplands) | Without Project: Connected to adjacent stormwater pond, but fragmented from forested system to west by road. Some hydrological connections via ditches and culverts remain. With Project: Secondary impacts from road construction may include increased sediment loading and turbidity, additional input of debris, toxicants and nutrients to the wetland. | |
| | w/o pres or current 6 | with 4 |

| | | |
|---|--|-----------|
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community | Without Project: Carolina willow (<i>Salix caroliniana</i>) dominated shrub system that is contiguous with the adjacent retention pond (SW1). The interior supports a dense sub-canopy of willow, with scattered red maple (<i>Acer rubrum</i>). Brazilian pepper (<i>Schinus terebinthifolius</i>), cabbage palm (<i>Sabal palmetto</i>), and elderberry (<i>Sambucus canadensis</i>) also occur, primarily along the outer edges. Little to no ground cover was observed and is limited to weedy upland species such as Spanish needles (<i>Bidens alba</i>), and ragweed (<i>Ambrosia artemisiifolia</i>) along the mowed edges. With Project: Remaining wetlands may suffer from "edge effects", including increased light and creating conditions likely to introduce additional non-native, invasive plants. | |
| | w/o pres or current 4 | with 2 |

| | |
|---|--------------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current or w/o pres 0.47 | with 0.27 |

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

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

| |
|------------------------|
| Delta = [with-current] |
| 0.2 |

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

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

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

| | | | |
|---|--|---|--|
| Site/Project Name Clearlake Road (SR 501) from Michigan Ave. to Industry Rd. | | Application Number N/A | Assessment Area Name or Number Wetland 2 (W2) |
| FLUCCs code 617 | Further classification (optional) Mixed Wetland Hardwoods | Impact or Mitigation Site? Primary Impact | Assessment Area Size |
| Basin/Watershed Name/Number Upper St. Johns River Basin watershed | Affected Waterbody (Class) | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) N/A | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Forested wetland with shrub and upland components. Is southernmost remnant of larger system fragmented and isolated via constructed roadways and development; hydrologically connected via ditches and culverts under/alongside roads. | | | |
| Assessment area description This forested swamp dominates the north side of Clearlake Road and is located within a parcel designated as a St. John's River Water Management District (SJRWMD) Conservation Easement (CE). Prior to road development, W1 and W2 were likely a contiguous wetland system. W2 overall supports a variety of vegetation components, including forested wetland, shrub-dominated areas, and upland pine islands. Canopy cover varies, but along the corridor is dominated by a high cover of red maple. Large portions of shrubby areas dominated by Carolina willow occupy the interior. The southern edge along the existing sidewalk are dominated by elderberry, with scattered laurel oak (Quercus laurifolia) and Brazilian pepper. In a few areas the Brazilian pepper and blackberry (Rubus sp.) occur in very dense patches. An excavated ditch borders this wetland along the southeast corner. The ditch is steep-sided with mowed banks and has 100% cover by duckweed (Lemna minor). With the exception of invasive species encroaching on the edges, this system is of relatively good quality. Habitat value however is somewhat limited due to the currently isolated nature of the wetland, being surrounded by roads and development. | | | |
| Significant nearby features Located west of Indian River | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Is remnant portion of historically larger wetland system. | |
| Functions flood control and attenuation; some habitat and corridor function | | 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) various bird species, small mammals, reptiles & amphibians likely | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) possible use by wading birds for roosting | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): None. | | | |
| Additional relevant factors: | | | |
| Assessment conducted by: V.Handy | | Assessment date(s): | |

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

| | | |
|---|--------------------------------------|--------------------------------------|
| Site/Project Name Clearlake Road (SR 501) from Michigan Ave. to Industry Rd. | Application Number N/A | Assessment Area Name or Number W2 |
| Impact or Mitigation Primary Impact | Assessment conducted by: V. Handy | Assessment date: |

Scoring Guidance
 The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

| Optimal (10) | Moderate(7) | Minimal (4) | Not Present (0) |
|---|--|---|--|
| Condition is optimal and fully supports wetland/surface water functions | Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions | Minimal level of support of wetland/surface water functions | Condition is insufficient to provide wetland/surface water functions |

| | |
|--|---|
| <p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current with</p> <p>5 0</p> | <p>AA is southernmost remaining portion of larger system fragmented on all sides by roads and surrounding development. Drainage ditch excavated along southeastern edge.</p> |
| <p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>w/o pres or current with</p> <p>6 0</p> | <p>Some hydrological connections via ditches and culverts under roads. .Likely impounded and altered flows due to roads.</p> |
| <p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current with</p> <p>7 0</p> | <p>AA overall supports a variety of vegetation components, including forested wetland, shrub-dominated areas, and upland pine islands. Canopy cover varies, but along the corridor is dominated by a high cover of red maple. Large portions of shrubby areas dominated by Carolina willow occupy the interior. The southern edge along the existing sidewalk are dominated by elderberry, with scattered laurel oak (<i>Quercus laurifolia</i>) and Brazilian pepper. In a few areas the Brazilian pepper and blackberry (<i>Rubus</i> sp.) occur in very dense patches. An excavated ditch borders this wetland along the southeast corner. The ditch is steep-sided with mowed banks and has 100% cover by duckweed (<i>Lemna minor</i>). With the exception of invasive species encroaching on the edges, this system supports a vair quality vegetation community.</p> |

| | |
|---|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current or w/o pres | with |
| 0.6 | 0 |

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

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

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

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

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

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

| | | | | | |
|---|--|--|---|--|--|
| Site/Project Name Clearlake Road (SR 501) from Michigan Ave. to Industry Rd. | | Application Number N/A | | Assessment Area Name or Number Wetland 2 (W2) | |
| FLUCCs code 617 | | Further classification (optional) Mixed Wetland Hardwoods | | Impact or Mitigation Site? Secondary Impact | |
| Assessment Area Size | | Basin/Watershed Name/Number Upper St. Johns River Basin watershed | | Affected Waterbody (Class) | |
| | | | | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) N/A | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Forested wetland with shrub and upland components. Is southernmost remnant of larger system fragmented and isolated via constructed roadways and development; hydrologically connected via ditches and culverts under/alongside roads. | | | | | |
| Assessment area description This forested swamp dominates the north side of Clearlake Road and is located within a parcel designated as a St. John's River Water Management District (SJRWMD) Conservation Easement (CE). Prior to road development, W1 and W2 were likely a contiguous wetland system. W2 overall supports a variety of vegetation components, including forested wetland, shrub-dominated areas, and upland pine islands. Canopy cover varies, but along the corridor is dominated by a high cover of red maple. Large portions of shrubby areas dominated by Carolina willow occupy the interior. The southern edge along the existing sidewalk are dominated by elderberry, with scattered laurel oak (Quercus laurifolia) and Brazilian pepper. In a few areas the Brazilian pepper and blackberry (Rubus sp.) occur in very dense patches. An excavated ditch borders this wetland along the southeast corner. The ditch is steep-sided with mowed banks and has 100% cover by duckweed (Lemna minor). With the exception of invasive species encroaching on the edges, this system is of relatively good quality. Habitat value however is somewhat limited due to the currently isolated nature of the wetland, being surrounded by roads and development. | | | | | |
| Significant nearby features Located west of Indian River | | | Uniqueness (considering the relative rarity in relation to the regional landscape.) Is remnant portion of historically larger wetland system. | | |
| Functions flood control and attenuation; some habitat and corridor function | | | 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) various bird species, small mammals, reptiles & amphibians likely | | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) possible use by wading birds for roosting | | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): None. | | | | | |
| Additional relevant factors: | | | | | |
| Assessment conducted by: V.Handy | | | Assessment date(s): | | |

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

| | | |
|---|--------------------------------------|--------------------------------------|
| Site/Project Name Clearlake Road (SR 501) from Michigan Ave. to Industry Rd. | Application Number N/A | Assessment Area Name or Number W2 |
| Impact or Mitigation Secondary Impact | Assessment conducted by: V. Handy | Assessment date: |

| |
|--|
| Scoring Guidance |
| The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed |

| Optimal (10) | Moderate(7) | Minimal (4) | Not Present (0) |
|---|--|---|--|
| Condition is optimal and fully supports wetland/surface water functions | Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions | Minimal level of support of wetland/surface water functions | Condition is insufficient to provide wetland/surface water functions |

| | | |
|---|---|-----------|
| .500(6)(a) Location and Landscape Support | Without Project: W2 is southernmost remaining portion of larger system fragmented on all sides by roads and surrounding development. Drainage ditch excavated along southeastern edge. With Project: Additional fragmentation and increase wildlife barriers, light and noise pollution will increase, reduced food and cover will increase wildlife mortality, roadkill, additional artificial light effects wildlife by increasing predation, reducing foraging time, and disrupting reproduction strategies. | |
| | w/o pres or current 5 | with 2 |

| | | |
|---|---|-----------|
| .500(6)(b)Water Environment (n/a for uplands) | Without Project: Some hydrological connections via ditches and culverts under roads. Likely impounded and altered flows due to roads. With Project: Fragmentation of wetlands by roads can increase sediment loading and turbidity, additional input of debris, toxicants and nutrients to the wetland. | |
| | w/o pres or current 6 | with 4 |

| | | |
|---|--|-----------|
| .500(6)(c)Community structure 1. Vegetation and/or 2. Benthic Community | Without Project: W2 overall supports a variety of vegetation components, including forested wetland, shrub-dominated areas, and upland pine islands. Canopy cover varies, but along the corridor is dominated by a high cover of red maple. Large portions of shrubby areas dominated by Carolina willow occupy the interior. The southern edge along the existing sidewalk are dominated by elderberry, with scattered laurel oak (<i>Quercus laurifolia</i>) and Brazilian pepper. In a few areas the Brazilian pepper and blackberry (<i>Rubus sp.</i>) occur in very dense patches. An excavated ditch borders this wetland along the southeast corner. The ditch is steep-sided with mowed banks and has 100% cover by duckweed (<i>Lemna minor</i>). With the exception of invasive species encroaching on the edges, this system supports a fair quality vegetation community. With Project: Wetlands remaining between the existing and proposed road will suffer from "edge effects", including increased light and creating conditions likely to introduce additional non-native, invasive plants. | |
| | w/o pres or current 7 | with 4 |

| | |
|---|--------------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current or w/o pres 0.6 | with 0.33 |

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

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

| |
|------------------------|
| Delta = [with-current] |
| 0.27 |

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

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

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

| | | | |
|---|--|--|--|
| Site/Project Name Clearlake Road (SR 501) from Michigan Ave. to Industry Rd. | | Application Number N/A | Assessment Area Name or Number Wetland 3 (W3) |
| FLUCCs code 618 | Further classification (optional) Shrub Wetland/Ditch | | Impact or Mitigation Site? Primary Impact |
| Basin/Watershed Name/Number Upper St. Johns River Basin watershed | Affected Waterbody (Class) | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) N/A | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Linear shrub/ditched wetland remnant fragmented from forested system to north by Clearlake Road. Hydrologically connected via culverts to W2 to north. | | | |
| Assessment area description This linear ditch/wetland consists of a ditch channel with a dense sub-canopy cover of a variety of forested and shrub species. Carolina willow, Brazilian pepper and elderberry are dominant, with maple and cabbage palm scattered throughout. The ditch channel supports mostly fern species, including chain fern (<i>Woodwardia</i> sp.), royal fern (<i>Osmunda regalis</i>) and shield fern (<i>Thelypteris</i> sp.). The upland edges are mowed and support typical weedy species such as Spanish needles. | | | |
| Significant nearby features Located west of Indian River | | Uniqueness (considering the relative rarity in relation to the regional landscape.) N/A | |
| Functions Drainage; stormwater treatment | | 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) potential for use by small reptiles & amphibians | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) possible use of portions by wading birds for roosting and foraging | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): None. | | | |
| Additional relevant factors: | | | |
| Assessment conducted by: V.Handy | | Assessment date(s): 2/18/2015 | |

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

| | | |
|---|--------------------------------------|--------------------------------------|
| Site/Project Name Clearlake Road (SR 501) from Michigan Ave. to Industry Rd. | Application Number N/A | Assessment Area Name or Number W3 |
| Impact or Mitigation Primary Impact | Assessment conducted by: V. Handy | Assessment date: |

Scoring Guidance
 The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

| Optimal (10) | Moderate(7) | Minimal (4) | Not Present (0) |
|---|--|---|--|
| Condition is optimal and fully supports wetland/surface water functions | Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions | Minimal level of support of wetland/surface water functions | Condition is insufficient to provide wetland/surface water functions |

| | | |
|---|---|---|
| <p>.500(6)(a) Location and Landscape Support</p> <p>This linear ditch/wetland consists of an excavated ditch channel that was likely previously connected to the forested wetland on the north side of Clearlake Road prior to road construction. This narrow strip transitions to a more shallow swale system on the western end. Habitat value is low based on fragmentation and disturbance from excavation and adjacent roads and development.</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>3</td> <td>0</td> </tr> </table> | 3 | 0 |
| 3 | 0 | |
| <p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>Hydrological connections via ditches and culverts under roads to wetland on north side of road. Poor water quality due to receipt of runoff.</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>4</td> <td>0</td> </tr> </table> | 4 | 0 |
| 4 | 0 | |
| <p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>Carolina willow, Brazilian pepper and elderberry are dominant, with maple and cabbage palm scattered throughout. The ditch channel supports mostly fern species, including chain fern (<i>Woodwardia</i> sp.), royal fern (<i>Osmunda regalis</i>) and shield fern (<i>Thelypteris</i> sp.). The upland edges are mowed and support typical weedy species such as Spanish needles.</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>3</td> <td>0</td> </tr> </table> | 3 | 0 |
| 3 | 0 | |

| | |
|---|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current | with |
| or w/o pres | |
| 0.3 | 0 |

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

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

| |
|------------------------|
| Delta = [with-current] |
|------------------------|

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

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

**PART I – Qualitative Description
(See Section 62-345.400, F.A.C.)**

| | | | |
|---|--|--|--|
| Site/Project Name Clearlake Road (SR 501) from Michigan Ave. to Industry Rd. | | Application Number N/A | Assessment Area Name or Number Wetland 3 (W3) |
| FLUCCs code 618 | Further classification (optional) Shrub Wetland/Ditch | | Impact or Mitigation Site? Secondary Impact |
| Assessment Area Size | | | |
| Basin/Watershed Name/Number Upper St. Johns River Basin watershed | Affected Waterbody (Class) | Special Classification (i.e.OFW, AP, other local/state/federal designation of importance) N/A | |
| Geographic relationship to and hydrologic connection with wetlands, other surface water, uplands Linear shrub/ditched wetland remnant fragmented from forested system to north by Clearlake Road. Hydrologically connected via culverts to W2 to north. | | | |
| Assessment area description This linear ditch/wetland consists of a ditch channel with a dense sub-canopy cover of a variety of forested and shrub species. Carolina willow, Brazilian pepper and elderberry are dominant, with maple and cabbage palm scattered throughout. The ditch channel supports mostly fern species, including chain fern (<i>Woodwardia</i> sp.), royal fern (<i>Osmunda regalis</i>) and shield fern (<i>Thelypteris</i> sp.). The upland edges are mowed and support typical weedy species such as Spanish needles. | | | |
| Significant nearby features Located west of Indian River | | Uniqueness (considering the relative rarity in relation to the regional landscape.) N/A | |
| Functions Drainage; stormwater treatment | | 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) potential for use by small reptiles & amphibians | | Anticipated Utilization by Listed Species (List species, their legal classification (E, T, SSC), type of use, and intensity of use of the assessment area) possible use of portions by wading birds for roosting and foraging | |
| Observed Evidence of Wildlife Utilization (List species directly observed, or other signs such as tracks, droppings, casings, nests, etc.): None. | | | |
| Additional relevant factors: | | | |
| Assessment conducted by: V.Handy | | Assessment date(s): 2/18/2015 | |

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

| | | |
|---|--------------------------------------|--------------------------------------|
| Site/Project Name Clearlake Road (SR 501) from Michigan Ave. to Industry Rd. | Application Number N/A | Assessment Area Name or Number W3 |
| Impact or Mitigation Secondary Impact | Assessment conducted by: V. Handy | Assessment date: |

Scoring Guidance
 The scoring of each indicator is based on what would be suitable for the type of wetland or surface water assessed

| Optimal (10) | Moderate(7) | Minimal (4) | Not Present (0) |
|---|--|---|--|
| Condition is optimal and fully supports wetland/surface water functions | Condition is less than optimal, but sufficient to maintain most wetland/surface waterfunctions | Minimal level of support of wetland/surface water functions | Condition is insufficient to provide wetland/surface water functions |

| | | | |
|---|---|---|---|
| <p>.500(6)(a) Location and Landscape Support</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>3</td> <td>1</td> </tr> </table> | 3 | 1 | <p>Without Project: This linear ditch/wetland consists of an excavated ditch channel that was likely previously connected to the forested wetland on the north side of Clearlake Road prior to road construction. This narrow strip transitions to a more shallow swale system on the western end. Habitat value is low based on fragmentation and disturbance from excavation and adjacent roads and development. With Project: Light and noise pollution will increase, reduced food and cover will increase, wildlife mortality, roadkill, additional artificial light effects wildlife by increasing predation, reducing foraging time, and disrupting reproduction strategies.</p> |
| 3 | 1 | | |
| <p>.500(6)(b)Water Environment (n/a for uplands)</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>4</td> <td>3</td> </tr> </table> | 4 | 3 | <p>Without Project: Hydrological connections via ditches and culverts under roads to wetland on north side of road. Poor water quality due to receipt of runoff. With Project: Secondary impacts from road construction may include increased sediment loading and turbidity, additional input of debris, toxicants and nutrients to the wetland.</p> |
| 4 | 3 | | |
| <p>.500(6)(c)Community structure</p> <p>1. Vegetation and/or 2. Benthic Community</p> <p>w/o pres or current with</p> <table border="1"> <tr> <td>3</td> <td>2</td> </tr> </table> | 3 | 2 | <p>Without Project: Carolina willow, Brazilian pepper and elderberry are dominant, with maple and cabbage palm scattered throughout. The ditch channel supports mostly fern species, including chain fern (<i>Woodwardia</i> sp.), royal fern (<i>Osmunda regalis</i>) and shield fern (<i>Thelypteris</i> sp.). The upland edges are mowed and support typical weedy species such as Spanish needles. With Project: Remaining wetlands may suffer from "edge effects", including increased light and creating conditions likely to introduce additional non-native, invasive plants.</p> |
| 3 | 2 | | |

| | |
|---|------|
| Score = sum of above scores/30 (if uplands, divide by 20) | |
| current or w/o pres | with |
| 0.3 | 0.2 |

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

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

| |
|------------------------|
| Delta = [with-current] |
| 0.1 |

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

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

APPENDIX C

ETDM Programming Screen Summary Report

ETAT Reviews: Natural Wetlands

Project Effect Comments

Coordinator Summary Degree of Effect: ■ *Minimal*

Response By: FDOT District 5 (10/14/2014)

Comments:

A Wetland Evaluation Report (WER) will be conducted during the PD&E Study which will delineate and evaluate the functions and values of adjacent wetland communities. The WER will also estimate approximate wetland impacts for the roadway widening and stormwater ponds. We will attempt to locate any new stormwater ponds in disturbed upland areas and avoid wetland areas to the extent practicable. Best Management Practices will be employed during construction of the project in order to minimize if not prevent point and nonpoint discharges of turbid waters. At this stage we believe that proposed improvements can be accomplished with none to very minimal wetland impacts. We are assigning a Minimal degree of effect for wetland issues.

3 Saint Johns River Water Management District (08/14/2014)

Wetlands Degree of Effect: Moderate

Reviewed By: Eric Muldowney

Coordination Document: Permit Required

Coordination Document Comments:

SWERP required.

Direct Effects

Identified Resources and Level of Importance:

Wetlands within industrial area not likely to be of high importance.

Comments on Effects to Resources:

Amount of wetland impacts unknown at this time.

Additional Comments (optional):

SWERP required.

CLC Commitments and Recommendations:

FDOT District 5 Feedback to Saint Johns River Water Management District's Review

Comments: Thank you for your review and comments. A Wetland Evaluation Report (WER) will be conducted during the PD&E Study which will delineate and evaluate the functions and values of adjacent wetland communities. The WER will also estimate approximate wetland impacts for the roadway widening and stormwater ponds. We will attempt to locate any new stormwater ponds in disturbed upland areas and avoid wetland areas to the extent practicable. Best Management Practices will be employed during construction of the project in order to minimize if not prevent point and nonpoint discharges of turbid waters. At this stage we believe that proposed

improvements can be accomplished with none to very minimal fringe wetland impacts.

Date Feedback Submitted: 10/14/2014

3 National Marine Fisheries Service (08/12/2014)

Wetlands Degree of Effect: Moderate

Reviewed By: Brandon Howard

Coordination Document: No Involvement

Direct Effects

Identified Resources and Level of Importance:

Based on our review of the information provided on the EST website, GIS-based effects analysis on wetlands and interpretation of aerial photographs, NOAA's National Marine Fisheries Service (NMFS) has determined that emergent wetlands, mixed wetland hardwoods, and ditches are located within the project corridor. These wetlands range from moderate to high in quality.

Comments on Effects to Resources:

The wetlands along the proposed roadway expansion provide water quality functions, such as removal of sediments, excess nutrients, and contaminants, which benefit and support these aquatic ecosystems. Through hydrological connections, these wetlands also contribute plant material and other useable nutrients (both dissolved and particulate organic matter) into aquatic food webs that include recreationally, commercially, and ecologically important species within downstream estuaries. If wetland impacts are unavoidable, sequential minimization and mitigation should take place.

In addition to the direct impacts from filling wetlands, construction activities may impact adjacent wetlands through sedimentation and runoff.

Additional Comments (optional):

CLC Commitments and Recommendations:

FDOT District 5 Feedback to National Marine Fisheries Service's Review

Comments: Thank you for your review and comments and determination of no essential fish habitat. We will coordinate with the U.S Fish and Wildlife Service for other species listed under the ESA for a determination of effect.

Date Feedback Submitted: 10/14/2014

2 FL Department of Environmental Protection (08/14/2014)

Wetlands Degree of Effect: Minimal

Reviewed By: Lauren P. Milligan

Coordination Document: Permit Required

Direct Effects

Identified Resources and Level of Importance:

The National Wetlands Inventory GIS report indicates that there are 12.29 acres of palustrine wetlands within the 500-ft. project buffer zone.

Comments on Effects to Resources:

The proposed project will likely require an environmental resource permit (ERP) from the St. Johns River Water Management District. The ERP applicant will be required to eliminate or reduce the proposed wetland resource impacts of roadway construction to the greatest extent practicable:

- Minimization should emphasize avoidance-oriented corridor alignments, wetland fill reductions via pile bridging and steep/vertically retained side slopes, and median width reductions within safety limits.
- Wetlands should not be displaced by the installation of stormwater conveyance and treatment swales; compensatory treatment in adjacent uplands is the preferred alternative.
- After avoidance and minimization have been exhausted, mitigation must be proposed to offset the adverse impacts of the project to existing wetland functions and values. Significant attention is given to forested wetland systems, which are difficult to mitigate.
- The cumulative impacts of concurrent and future transportation improvement projects in the vicinity of the subject project should also be addressed.

Additional Comments (optional):

CLC Commitments and Recommendations:

FDOT District 5 Feedback to FL Department of Environmental Protection's Review

Comments: Thank you for your review and comments. A Wetland Evaluation Report (WER) will be conducted during the PD&E Study which will delineate and evaluate the functions and values of adjacent wetland communities. The WER will also estimate approximate wetland impacts for the roadway widening and stormwater ponds. We will attempt to locate any new stormwater ponds in disturbed upland areas and avoid wetland areas to the extent practicable. Best Management Practices will be employed during construction of the project in order to minimize if not prevent point and nonpoint discharges of turbid waters. At this stage we believe that proposed improvements can be accomplished with none to very minimal fringe wetland impacts.

Date Feedback Submitted: 10/14/2014

Wetlands Degree of Effect: Moderate

Reviewed By: Joseph Sullivan

Coordination Document: PD&E Support Document As Per PD&E Manual

Direct Effects

Identified Resources and Level of Importance:

Each of the resources selected a important to the human environment.

Comments on Effects to Resources:

Due to the area history there should be minimal to moderate impacts to the selected resources. Each should be addressed per State and Federal standard procedure and documented in the appropriate NEPA document. Impacts to resources may require mitigation per State and Federal standards.

Additional Comments (optional):

CLC Commitments and Recommendations:

FDOT District 5 Feedback to Federal Highway Administration's Review

Comments: Thank you for your review and comments. A Wetland Evaluation Report (WER) will be conducted during the PD&E Study which will delineate and evaluate the functions and values of adjacent wetland communities. The WER will also estimate approximate wetland impacts for the roadway widening and stormwater ponds. We will attempt to locate any new stormwater ponds in disturbed upland areas and avoid wetland areas to the extent practicable. Best Management Practices will be employed during construction of the project in order to minimize if not prevent point and nonpoint discharges of turbid waters. At this stage we believe that proposed improvements can be accomplished with none to very minimal fringe wetland impacts.

Date Feedback Submitted: 10/14/2014

2 US Environmental Protection Agency (08/24/2014)

Wetlands Degree of Effect: Minimal

Reviewed By: Madolyn Sanchez

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects

Identified Resources and Level of Importance:

Resources: Wetlands, wetlands habitat, water quality

Level of Importance: These resources are of a high level of importance in the State of Florida and within the project area. The project does not directly impact a large number of wetlands

acres; however, in addition to direct wetland impacts, there may be additional wetland fragmentation, loss of functional value, and potential water quality degradation within wetlands and streams in the project area. EPA is assigning a minimal degree of effect for the wetlands issue but recommends that a wetlands evaluation be conducted for the project and that avoidance and minimization efforts be considered to the greatest extent.

Comments on Effects to Resources:

EPA utilized the GIS analysis data for the project at the programming screen phase to evaluate potential wetlands impacts, based upon the National Wetlands Inventory, for the project. The GIS analysis data indicated that there are approximately 1.6 acres of palustrine wetlands within the 200-foot buffer distance of the project and approximately 12.3 acres of palustrine wetlands within the 500-foot buffer distance. The actual amount of direct impact to wetlands is unknown and should be assessed during the PD&E phase of the project.

The proposed project may have direct, indirect, and cumulative effects on wetlands, wetlands habitat and water quality in the area. The degree of direct wetlands impacts associated with the project will be dependent upon the right-of-way needs for the entire project including stormwater treatment areas. Potential impacts include, but are not limited to, loss of wetlands function, loss of wildlife habitat, degradation of water quality in wetlands, degradation of water quality in surface waters, and reduction in flood storage and capacity.

Other issues of concern include increased stormwater runoff and the increase of pollutants into surface waters and wetlands as a result of the project and other point and nonpoint sources. Every effort should be made to maximize the collection and treatment of stormwater. Stormwater collection and treatment mechanisms should be designed to protect the function of surrounding wetlands, floodplains, and surface water features.

The PD&E study should include a wetland impact analysis which focuses on the wetlands areas to be impacted by the project. This analysis should include a delineation of wetlands; functional analysis of wetlands to determine their value and function; an evaluation of stormwater pond sites to determine their impact on wetlands; avoidance and minimization strategies for wetlands; and mitigation plans to compensate for adverse impacts.

Additional Comments (optional):

CLC Commitments and Recommendations:

FDOT District 5 Feedback to US Environmental Protection Agency's Review

Comments: Thank you for your review and comments. A Wetland Evaluation Report (WER) will be conducted during the PD&E Study which will delineate and evaluate the functions and values of

adjacent wetland communities. The WER will also estimate approximate wetland impacts for the roadway widening and stormwater ponds. We will attempt to locate any new stormwater ponds in disturbed upland areas and avoid wetland areas to the extent practicable. Best Management Practices will be employed during construction of the project in order to minimize if not prevent point and nonpoint discharges of turbid waters. At this stage we believe that proposed improvements can be accomplished with none to very minimal fringe wetland impacts.

Date Feedback Submitted: 10/14/2014

2 US Fish and Wildlife Service (08/12/2014)

Wetlands Degree of Effect: Minimal

Reviewed By: Jane Monaghan

Coordination Document: To Be Determined: Further Coordination Required

Coordination Document Comments:

Wetland impacts not disclosed at time of review.

Direct Effects

Identified Resources and Level of Importance:

Wetland ecosystems across the landscape provide habitat for migratory birds, breeding birds, fish, amphibians and reptiles as well as filtration and flood control services for free.

Comments on Effects to Resources:

The advance notification package does not disclose the amount of wetland habitat that might be impacted by this proposal. Direct impacts could include dredging and filling large, moderate quality large wetlands located north of the highway. Indirect impacts from the road widening, include stormwater runoff that may increase sedimentation in nearby wetlands and contamination from oil, grease, gas, trash may also increase. The large wetland area to the SW of the project contains the Cocoa Conservation Area. Best Management Practices should be followed to avoid further degradation of the habitat from contaminated water.

Additional Comments (optional):

Wetland impacts not disclosed at time of review.

CLC Commitments and Recommendations:

FDOT District 5 Feedback to US Fish and Wildlife Service's Review

Comments: Thank you for your review and comments. We believe roadway improvements can be accomplished with minimal wetland impacts. Stormwater runoff will be conveyed to treatment facilities which should minimize indirect impacts. BMP's will be employed during

construction of the project to further minimize indirect impacts to water resources and habitat.

Date Feedback Submitted: 10/14/2014

2 US Army Corps of Engineers (07/14/2014)

Wetlands Degree of Effect: Minimal

Reviewed By: Andrew Phillips

Coordination Document: Permit Required

Direct Effects

Identified Resources and Level of Importance:

The subject wetland on the north side of SR 501 is medium to low quality based on its vegetative composition and its juxtaposition within the urbanized landscape. The Corps has confirmed a hydrologic connection to waters of the United States making the wetland system jurisdictional.

Comments on Effects to Resources:

minimal effects are expected based on the limited functional value of the system.

Additional Comments (optional):

CLC Commitments and Recommendations:

FDOT District 5 Feedback to US Army Corps of Engineers's Review

Comments: Thank you for your review, Corps jurisdictional determination and information on mitigation service providers.

Date Feedback Submitted: 10/14/2014

The following organization(s) were expected to but did not submit comments for this alternative about potential direct effects in the Wetlands category: Not Available. Contact the ETDM Help Desk for assistance.

Wildlife and Habitat

Project Effect Comments

Coordinator Summary Degree of Effect: ■ *Minimal*

Response By: FDOT District 5 (10/14/2014)

Comments:

The USF&WS and FFWCC provided comments on wildlife issues noting the potential presence of listed species, but giving minimal degrees of effect. We will conduct surveys during the study and coordinate those efforts with the Service and the Commission. We are assigning a Minimal Degree of Effect for this issue.

■ FL Fish and Wildlife Conservation Commission (07/29/2014)

Wildlife and Habitat Degree of Effect: Minimal

Reviewed By: Scott Sanders

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects

Identified Resources and Level of Importance:

Florida Fish and Wildlife Conservation Commission (FWC) staff has reviewed ETDM #13120, Brevard County, and provides the following comments related to potential effects to fish and wildlife resources of this Programming Phase project.

The Project Description Summary states that this project involves increasing the capacity of SR 501 between Michigan Avenue and Industry Road in the City of Cocoa. The existing roadway has sections with two lanes, three lanes, and four lanes, and it is anticipated that the improved road will be a four-lane Suburban Typical Section. The total length of the project is approximately 1.12 miles. The Project Description did not address the potential need for new Drainage Retention Areas (DRAs) to handle the additional stormwater runoff from the expanded roadway.

An assessment of the project area was performed on lands within 500 feet of the proposed alignment to determine potential impacts to habitat which supports listed species and other fish and wildlife resources. Our inventory included a review of aerial and ground-level photography, various wildlife observation and landcover data bases, along with coordination with FWC biologists and other State and Federal agencies. A GIS analysis was performed using the Florida Department of Transportation's (FDOT) Environmental Screening Tool to determine the potential quality and extent of upland and wetland habitat, and other wildlife and fisheries

resource information. We have reviewed the Preliminary Environmental Discussion Comments Report provided by the FDOT, and offer the following comments and recommendations.

Our assessment reveals that the project area is predominantly residential, commercial, and institutional development, with 81.86% classified as High or Low Impact Urban. The only significant area of natural habitat along the alignment is a 35-acre block of shrub wetlands with small islands of slash pine, extending approximately one-quarter mile along the north side of the road just west of the 90 degree turn.

Based on range and preferred habitat type, the following species listed by the Federal Endangered Species Act and the State of Florida as Federally Endangered (FE), Federally Threatened (FT), State-Threatened (ST), or State Species of Special Concern (SSC) have the potential to occur in the project area: gopher frog (SSC), Eastern indigo snake (FT), Florida pine snake (SSC), gopher tortoise (T), least tern (T), limpkin (SSC), snowy egret (SSC), little blue heron (SSC), tricolored heron (SSC), white ibis (SSC), Florida sandhill crane (T), wood stork (FE), burrowing owl (SSC), Southeastern American kestrel (T), Sherman's fox squirrel (SSC), and Florida mouse (SSC). Of these, the most likely to occur are the wading birds, which would utilize the shrubby wetlands to a limited degree, and also the roadside ditches and the stormwater pond near the northeast corner of the roadway. Gopher tortoises and their commensals are also a possibility, for they have been documented in this area and are known to occasionally establish burrows in or near developed land uses.

The GIS analysis revealed several specific characteristics associated with lands along the project alignment that provide an indication of potential habitat quality or sensitivity that will require field studies to verify the presence or absence of listed wildlife species and the quality of wildlife habitat resources. FWC's Priority Wetlands Classification predicts 4 to 6, or 7 to 9 focal species in various wetland areas and 1 to 3 focal species in upland areas. In the Florida Natural Areas Inventory Critical Lands and Waters Identification Project (CLIP), 6.1% of the assessment area is Priority 1 or 2 (high) for Biodiversity Resources. The project is within the 15-mile-radius core foraging area of the Lake Poinsett-Leo's-CR 524 wood stork colony.

Primary wildlife issues associated with this project include: potential adverse effects to a moderate number of species listed by the Federal Endangered Species Act as Endangered or Threatened, or by the State of Florida as Threatened or Species of Special Concern; and potential water quality degradation as a result of additional stormwater runoff from the new roadway surface draining into adjacent wetlands.

Comments on Effects to Resources:

Based on the project information provided, we believe that direct and indirect effects of this project could be minimal, provided that roadway construction avoids the remaining wetland area to the maximum degree possible, any new DRAs are not constructed within areas of natural habitat, and degradation of adjacent or downstream water quality is avoided via inclusion of Best Management Practices in the project design.

Additional Comments (optional):

CLC Commitments and Recommendations:

FDOT District 5 Feedback to FL Fish and Wildlife Conservation Commission's Review

Comments: Thank you for your review, comments, and recommendations. We will conduct wildlife surveys during the study phase and coordinate those findings with the Commission. We will attempt to avoid the wetland area to the maximum degree possible and avoid any new DRAs within the areas of natural habitat.

Date Feedback Submitted: 10/14/2014

3 Federal Highway Administration (08/11/2014)

Wildlife and Habitat Degree of Effect: Moderate

Reviewed By: Joseph Sullivan

Coordination Document: PD&E Support Document As Per PD&E Manual

Direct Effects

Identified Resources and Level of Importance:

Each of the resources selected a important to the human environment.

Comments on Effects to Resources:

Due to the area history there should be minimal to moderate impacts to the selected resources. Each should be addressed per State and Federal standard procedure and documented in the appropriate NEPA document. Impacts to resources may require mitigation per State and Federal standards.

Additional Comments (optional):

CLC Commitments and Recommendations:

FDOT District 5 Feedback to Federal Highway Administration's Review

Comments: Thank you for your review and comments. A Biological Assessment will be conducted during the study phase. This assessment will be coordinated with the US Fish and Wildlife Service along with the Florida Fish and Wildlife Conservation Commission.

Date Feedback Submitted: 10/14/2014

2 US Fish and Wildlife Service (08/12/2014)

Wildlife and Habitat Degree of Effect: Minimal

Reviewed By: Jane Monaghan

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects

Identified Resources and Level of Importance:

Federally listed species and the ecosystems upon which they depend.

Comments on Effects to Resources:

Wood Stork (*Mycteria americana*)

The purpose of the project is to provide increased capacity on SR 501 between Michigan Ave and Industry Rd in the City of Cocoa, Brevard County, FL

The surrounding area is mainly residential and commercial development, with a large area of undeveloped forested habitat with undisturbed wetlands. The action area falls within the Core Foraging Areas (CFA) of at least four active nesting colonies of the endangered wood stork. Direct impacts to wetlands should be avoided.

The Service has determined that the loss of wetlands within a CFA due to an action could result in the loss of foraging habitat for the wood stork. To minimize adverse effects to the wood stork and other wetland dependent species, we recommend that impacts to suitable foraging habitat be avoided. If avoidance is not possible, minimization measure should be employed and best management practices to avoid further degradation of the site. Mitigation for wetland impacts should be discussed with USFWS and will require further coordination. Please refer to the North Florida Field Office website for WOST colony locations. <http://www.fws.gov/northflorida>

Eastern Indigo Snakes (*Drymarchon corais couperi*)

Fragmented agricultural lands, undisturbed uplands and wetlands within the proposed corridor are suitable habitat for the threatened eastern indigo snake (EIS). It is very likely that this species occurs on undeveloped lands and may be found in the agricultural lands and wetland areas within the action area. Widening the highway and increasing the number of vehicle trips per day will likely increase the risks to this species from direct mortality and indirectly from habitat fragmentation and noise disturbance. Development adjacent to the expanded highway would further fragment this already isolated habitat. Individual snakes may have large home ranges of 200 to 250 acres. Direct impacts from vehicles, loss and fragmentation of habitat would contribute to the further decline of this species. Implementing the current standard construction conditions and protection measures for EIS will reduce the direct risks to snakes during the construction phase but not the long term impacts from habitat fragmentation and loss of individuals from interactions with vehicles for the life of the facility. Complete surveys for gopher tortoise burrows (currently a federal candidate species, which may be listed as Threatened before construction begins) should be conducted. Protection guidelines can be found on the North Florida Ecological Services website: <http://www.fws.gov/northflorida>. Surveys for

gopher tortoise burrows will also facilitate the use of the EIS Effect determination key utilized by the Army COE.

The USFWS requests that nylon netting or any type of non-biodegradable material not be used under sod or for erosion control along roadsides or retention ponds due to the risk of entrapment and death for many species of snakes and amphibians. The netting has been found buried and unburied many years after the project is completed, still entrapping and killing many individuals from a variety of species. The netting frequently gets caught in the mowers and can be seen in tangled piles on the side of the road throughout Florida.

Florida Scrub-Jay (*Aphelocoma coerulescens*)

This species was found throughout Brevard County less than ten years ago. Habitat fragmentation and lack of management has continued to take a toll on the populations in Brevard. It is possible that small pockets of families may be utilizing habitat within 500 feet of the proposed widening. FLUCCS maps and soil maps were not included in the Advance Notification package. Historic jay locations for Brevard County should be examined. If necessary, surveys should be done according to guidelines found on the USFWS website (<http://www.fws.gov/northflorida>). Surveys within two years of the construction date are recommended. Survey methodology and results should be submitted to the USFWS office for review at least 60 days before the project commences.

No federally listed plants are known to occur in this area.

Coordination with the Office of Migratory birds will be needed for any eagle nests located within 600 feet of corridor.

Additional Comments (optional):

CLC Commitments and Recommendations:

FDOT District 5 Feedback to US Fish and Wildlife Service's Review

Comments: Thank you for your review and comments. We will attempt to avoid suitable foraging habitat within the core foraging area for several endangered wood stork nesting colonies. We will conduct wildlife surveys at the appropriate time of year as part of our Biological Assessment to be conducted during the study. Further coordination with the Service will occur as the project progresses.

Date Feedback Submitted: 10/14/2014

The following organization(s) were expected to but did not submit comments for this alternative about potential direct effects in the Wildlife and Habitat category: Not Available. Contact the ETDM Help Desk for assistance

APPENDIX D

Standard Protection Measures for the Eastern Indigo Snake

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

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

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

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

POSTER INFORMATION

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

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

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

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

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

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

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

IF YOU SEE A LIVE 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 DEAD 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.



ATTENTION:

THREATENED EASTERN INDIGO SNAKES MAY BE PRESENT ON THIS SITE!!!

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

- Cease clearing activities and allow the 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 U.S. Fish and Wildlife Service (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 DEAD 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.

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

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

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: 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.